

Inspector's Report

CORRIB GAS PIPELINE

An Bord Pleanála CASE REFERENCE

16. GA.0004

Re-routing of the onshore upstream gas pipeline facility relating to the Corrib Gas Field Project at Glengad, Ros Dumhach, Aghoos, Bellagelly South, Co. Mayo

16. DA.0004

Corrib onshore pipeline Acquisition Order 2009

Applicant

RPS, on behalf of Shell E&P Ireland Limited (SEPIL),
Corrib House, 52 Leeson St. Lower, Dublin 2.

Date of Applications

12th February, 2009 – 16.GA.0004

9th February, 2009 – 16.DA.0004

Inspector Mr. Martin Nolan

Preface

This report has been written to stand complete and to provide ABP with a full analysis and assessment of these applications. The report provides firm recommendations on each application. Nevertheless the report is written and provides recommendations on the assessment of the issues considered which will enable the Board to proceed to take whichever decision the Board thinks fit.

This report is laid out in five parts as follows:

Part 1	Outline of the applications and written submissions received	Chapters 1-3
Part 2	Policy Context	Chapters 4-9
Part 3	The Oral Hearing	Chapters 10-16
Part 4	The Issues to be considered	Chapters 17-49
Part 5	Conclusions and Recommendations	Chapters 49-51
Appendices	1 to 3 contain the reports of Mr. O'Sullivan Mr. O'Donnell and Mr. Wright 4 to 8 these contain copies of relevant documents	

The conclusions from each chapter are brought together for both Applications in Chapter 50. The recommendation for the Acquisition Order 16.DA.0004 is contained in Chapter 49. The recommendations on file 16.GA.0004 are presented in Chapter 51.

I wish to thank Mr. Stephen O'Sullivan, Mr. Conor O'Donnell and Mr. Nigel Wright who have assisted me with this report.

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Chapter 1 The Scheme

1.1 Introduction

Shell E & P Ireland (SEPIL) on behalf of the Corrib Gas Partners (Shell E&P, Statoil Hydro and Marathon) is developing the Corrib Gas Field off the coast of Mayo. The project will operate as a subsea production facility with onshore processing. The development includes: the offshore wells, subsea facilities and pipeline as far as the Mayo coast, the onshore section of the pipeline and a gas terminal at Béal an Átha Buí (Bellanaboy), Co. Mayo. The application for approval which is the subject of this report relates to the onshore section of the pipeline between landfall at Glengad and the gas terminal at Bellanaboy.

The proposed route is approximately 9.2km in length and runs from the landfall at Gleann an Ghad (Glengad) to the Bellanaboy Gas Terminal. A Landfall Valve Installation (LVI) will be located close to where the pipeline comes ashore at Glengad. This installation will limit the pressure in the onshore pipeline so that it does not exceed 144 bar as recommended in the Independent Safety Review that was carried out by Advantica dated January 2006 and endorsed by the Technical Advisory Group reporting to the Minister for Communications, Marine and Natural Resources, (now the DCENR).

The gas pipeline together with services and outfall pipeline will be laid underground at a minimum cover of 1.2 m. In 2002 under Section 40 of the Gas Act 1976 consent was granted for the construction of a pipeline, referred to throughout this report as the 2002 scheme. Approximately 3.5 km of the route of this proposed development coincides with the original route of the 2002 scheme. The pipeline starts at the landfall, crossing an area of improved grassland in the Glenamoy Bog Complex candidate Special Area of Conservation (cSAC) at Glengad. It then crosses under Sruwaddacon Bay before heading in a South-South-Easterly direction along the northern bank of the bay through an area of grassland in Rosspart. At this point the route turns North across the local road at Ros Dumhach (Rosspart) into the Rosspart Commonage. The route turns East through the Rosspart Commonage and then continues through a section of blanket bog within the Glenamoy Bog Complex (cSAC). The route then turns south again before crossing under Sruwaddacon Bay for a second time. It then turns in an Easterly direction continuing through peat lands before rejoining parts of the previously approved route through forestry to enter the Bellanaboy Gas Terminal site.

The overall layout of the proposed development is shown on Figure 1.1 as extracted from the E.I.S.¹ and attached.

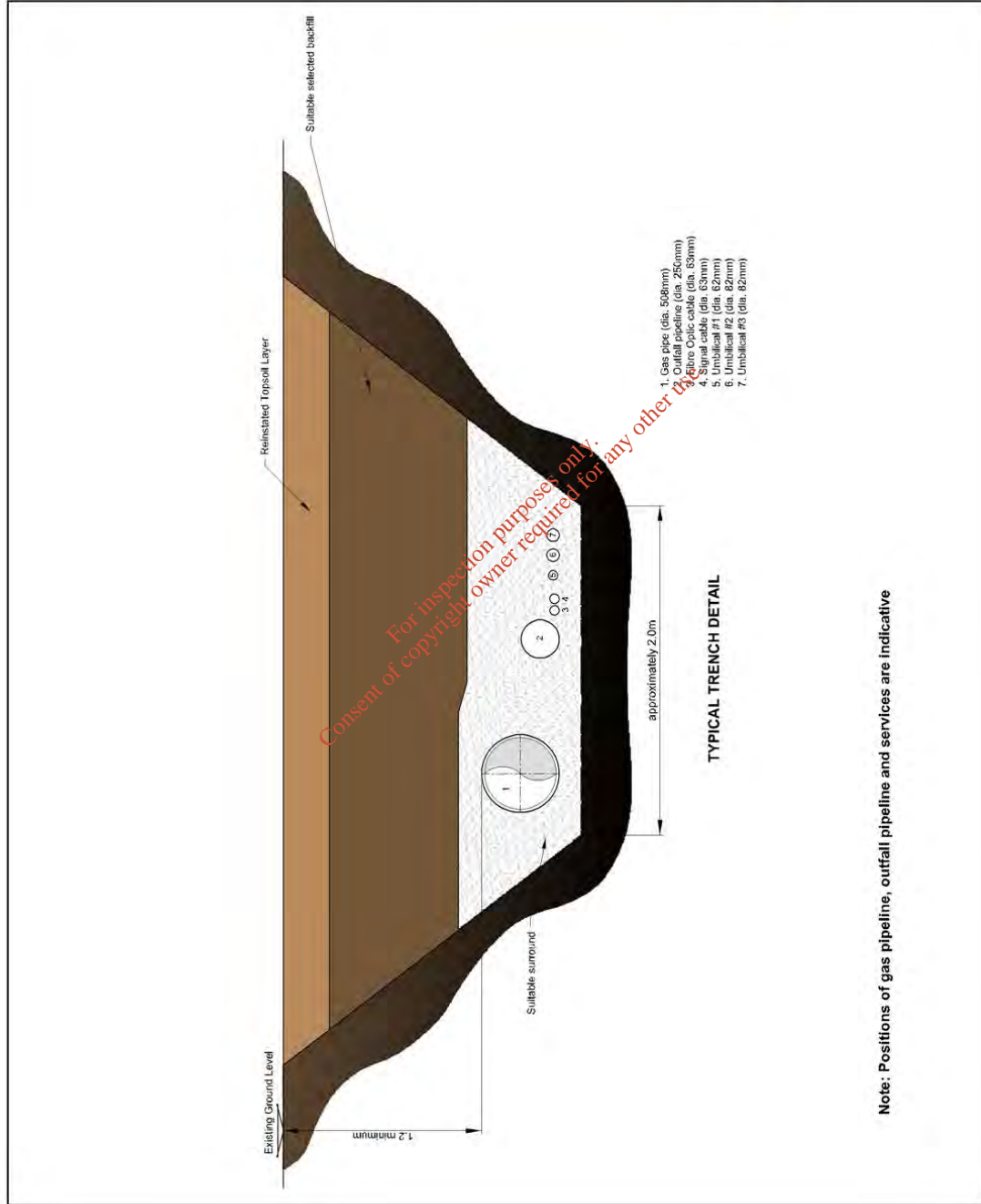
The proposed construction plan which shows the temporary working area as shown in Figure 5.2b.

Figure 2 shows the typical trench detail with the gas pipe and the other six parts of outfall pipeline and services' umbilical pipes.

The typical working area cross section is 40m in designated intact and cut area bog and in non designated intact bog. This is shown in Figure 5.5 extracted from E.I.S.

The pipe crosses under Sruwaddacon Bay in the lower crossing and again at the upper crossing. Figure 5.6 shows the typical installation of sleeve pipe proposed for each of these trenchless crossings.

¹ All figures used in this report have been extracted from E.I.S. except where otherwise noted.



Typical Trench Detail

Figure 2

File Ref: COR02AND0547072.DWG
 Date: February 2009

CORRIB ONSHORE PIPELINE

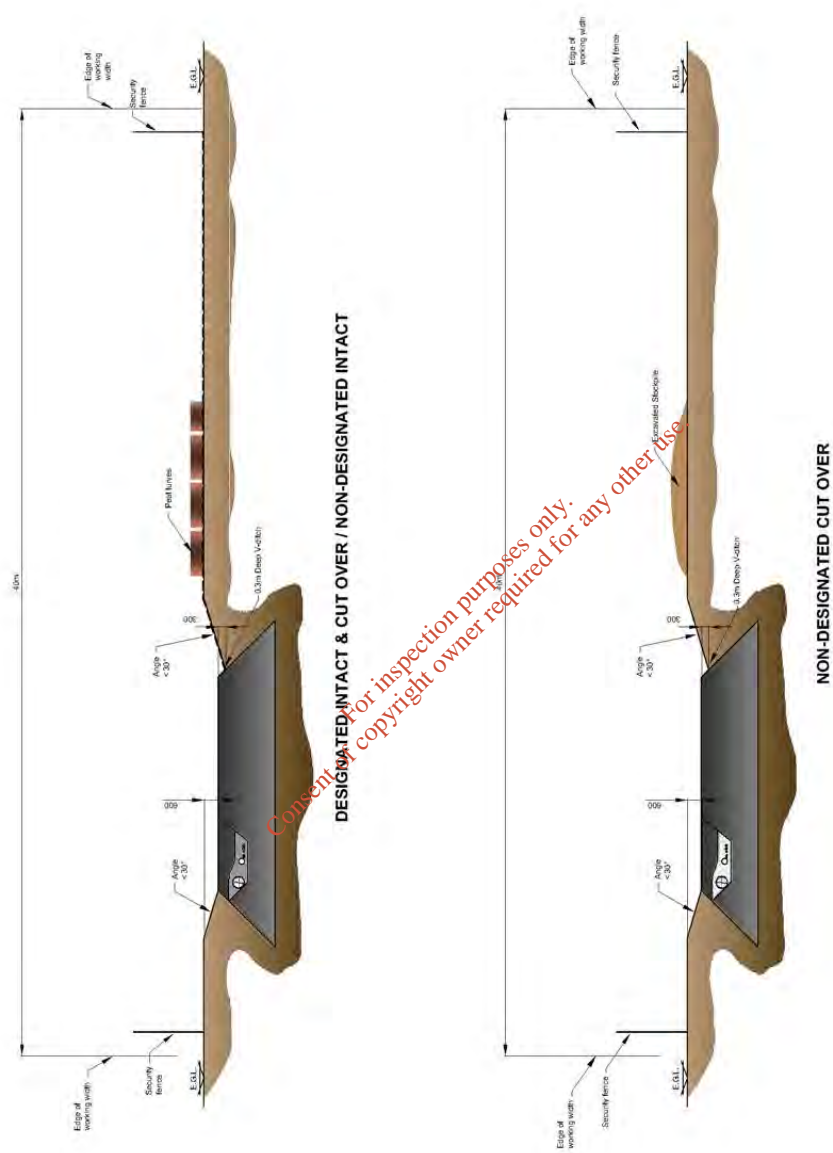
Corrib
 natural gas

RPS

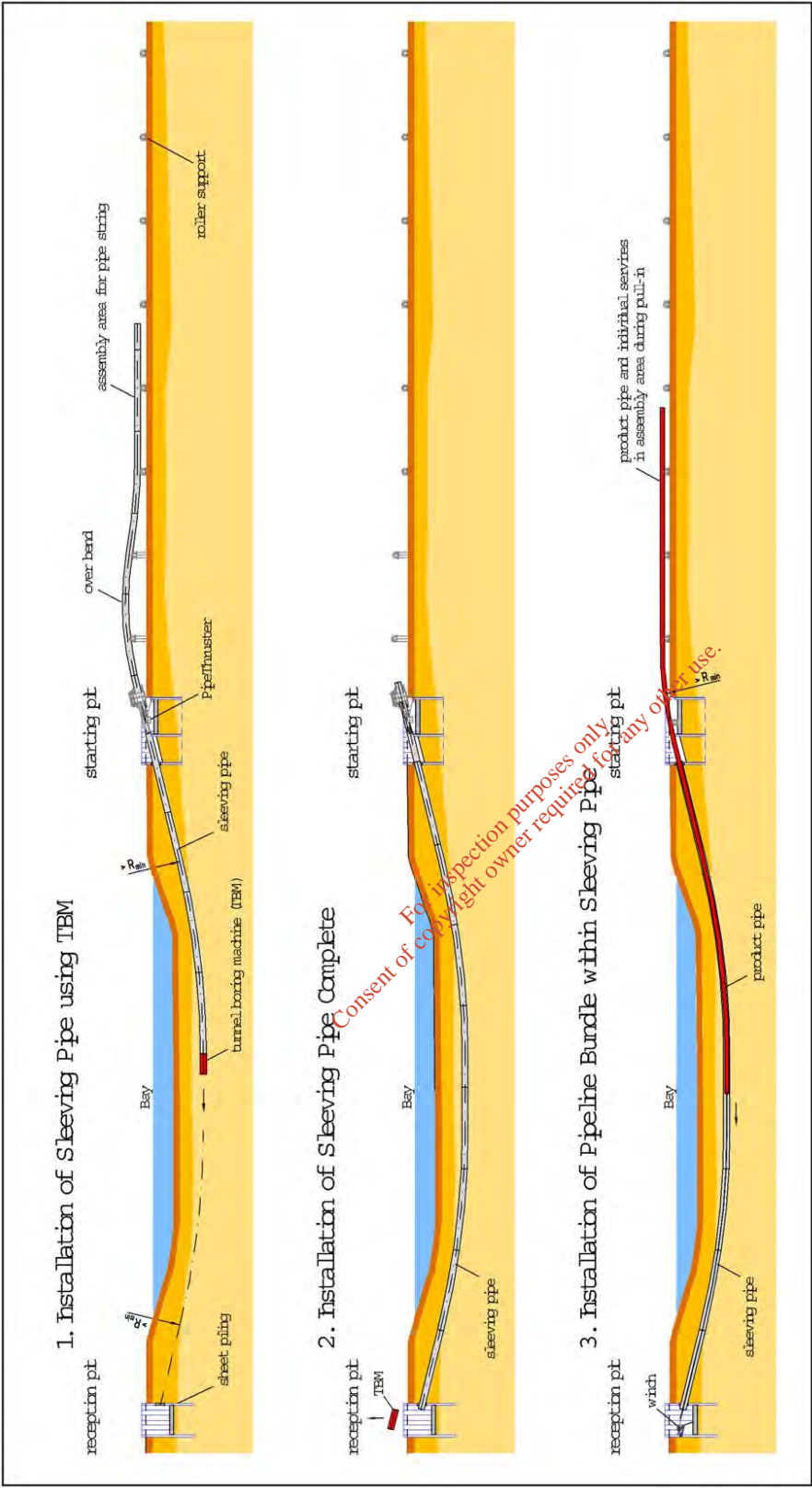
Figure 5.5

File Ref: COR25MDR0470Fg5.5A02
Date: February 2009

CORRIB ONSHORE PIPELINE



Note: Positions of gas pipeline, outfall pipeline and services are indicative



Trenchless Crossing Outline of Direct Pipe Method (source: de la Motte)	CORRIË ONSHORE PIPELINE File Ref: COR250M05077F05.0002 Date: February 2009		

Figure 5.6

1.2 Project Description

The proposed Corrib Onshore Pipeline will consist of the following elements:

- Onshore gas pipeline;
- Services' umbilicals which are used to control the subsea wells;
- Communication and electrical cables from the gas terminal to LVI
- Outfall pipeline which carries surface water from the gas terminal; and
- Landfall Valve Installation (LVI) (located close to the landfall at Glengad).

The proposed onshore pipeline is approximately 9.2 km in length. The gas pipe itself is 508mm (20") in diameter with a nominal wall thickness of 27.1 mm. The normal operating pressure during the first few years of operation will be between 90 bar and 110 bar. SEPIL have indicated that this operating pressure range is similar to that of the two existing Scotland-Ireland Gas Interconnectors operated by Bord Gáis. The first gas interconnector was constructed in 1993 landing at Loughshinny, Co. Meath. The second gas interconnector was constructed in 2002 landing at Gormanston, Co. Dublin.

The development as proposed includes excavation of peat haulage and deposition of 75,000m³ of peat at the Bord na Móna site at Srahmore.

SEPIL have indicated that road strengthening work will be carried out by Mayo Co Co to facilitate this development. The road works involved are to be the subject of an agreement between SEPIL and Mayo Co Co whereby the council will do the works and SEPIL will repay the costs to the council. The road works are not part of the proposed development as set out in the application to ABP.

"The proposed development is expected to be operational for approximately 15-20 years, and has a design life of 30 years."

The gas pipeline together with services and the outfall pipeline will be laid underground at a minimum cover of 1.2 m and at a depth of 1.6 m under road crossings and river crossings. The pipeline will be 4m or more under the bed level at the two Sruwaddacon Bay crossings.

The pipeline will carry unprocessed raw gas from the wells to the terminal.

The pipeline will be operated from the Terminal.

Upon completion of construction, a 14m wide permanent wayleave will remain in place for the lifetime of the pipeline. A 20m wide permanent wayleave will be required in peat lands to accommodate the stone road

Decommissioning of the pipeline after its useful life will involve the removal of any above ground facilities at the LVI and any remaining gas and hydrocarbon residues from the pipeline and services.

The composition of natural gas transmitted around Ireland and the unprocessed Corrib gas is very similar in methane and energy content, the unprocessed gas however contains volumes of liquids and other gases, which are removed at the Gas Terminal.

1.3 Services

A services umbilical link between the Gas Terminal and the offshore subsea facilities will be installed with the onshore and offshore pipelines. The umbilical will contain the following services:

- *Hydraulic fluid supply lines.* These provide hydraulic power to the wellhead valves on the seabed. The hydraulic fluid is a water/monoethylene mixture which will operate at pressures of 210 bar and 610 bar.
- *Chemical supply lines (corrosion inhibitor and methanol).* The chemical supply lines are essential to the operation of the Corrib Pipeline System as they carry both a corrosion inhibitor that prevents corrosion of the pipeline, and methanol that prevents the formation of methane hydrates, an ice like substance consisting of methane and water. The application of chemicals is measured to inhibit corrosion and hydrate formation as necessary. The chemicals are injected continuously at the wellheads and the subsea manifold, and will be transported back to shore in the water phase which is commingled with the natural gas from the wells. When these fluids enter the Gas Terminal, the water phase is separated from the gas phase, and the water is taken through a treatment process. The methanol is recovered within the Gas Terminal for re-use, whereas components of the other injected chemicals are removed in the various stages of the water treatment plant, before the treated water is discharged through the umbilical to a discharge point at the well head.
- *Data communication.* Electrical control cables which run between the terminal and the LVI.

1.3.1 Umbilical

For the onshore section of the pipeline route, the services umbilical comprises three bundles of conduits, each contained within an outer sheath made from Medium Density Poly Ethylene (MDPE) (See Figure 4.3). The outer MDPE sheath (approximately 80 mm in diameter for two lines and approximately 60 mm for the third line) contains steel tubing and electrical cables. These services are arranged within the MDPE outer sheath using spacers / fillers. These services extend for the full length of the pipeline (onshore and offshore) as three discrete umbilicals onshore and combined in a single umbilical offshore.

Onshore, the services' umbilicals will be laid below ground approximately 1m horizontally from the gas pipeline within the same trench and at a similar depth.

A fibre optic control cable and an electrical control cable between the Gas Terminal and the landfall valve installation are laid in the same trench and alongside the umbilical.

1.3.2 Outfall Pipeline

A 254 mm (10 inch) diameter water outfall pipeline made of High Density Poly Ethylene (HDPE) will be installed in the same trench as the onshore gas pipeline and services umbilical (see Figure 4.1 and Figure 4.3). The purpose of this pipeline is to transport treated surface water run-off from the process area of the Gas Terminal to a discharge location approx 12.7 km offshore. It is proposed that an Integrated Pollution Prevention and Control (IPPC) license will be obtained for this discharge.

Note: There is an existing IPPC license for this discharge based on a discharge point at approximately 12.7 km from the landfall but which includes both the discharge of the treated surface water and treated process water.

The services' umbilicals and outfall pipeline typical details are shown in Figure 4.3.

1.4 Landfall Valve Installation (LVI)

The Landfall Valve Installation (LVI) general layout is shown on Figure 4.4. The installation is set down into a lowered hard standing area with side slopes and shown in Figure 4.5 Landfall Valve Installation Detailed Layout and represented in models submitted at the Oral Hearing (OH). The valve configuration in the LVI is shown in Figure 4.6.

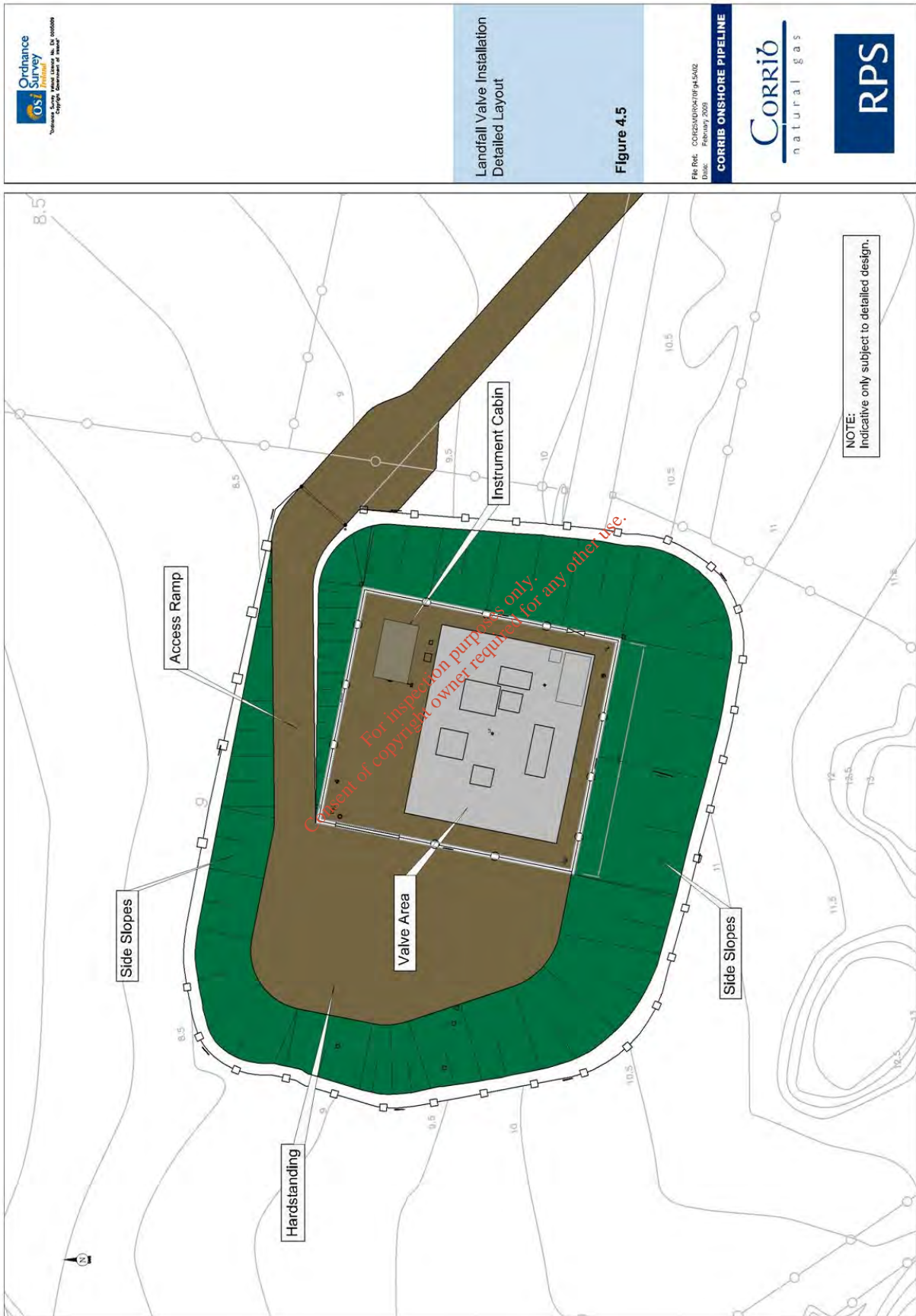
The purpose of the LVI is to limit the pressure in the onshore pipeline to a maximum of 144 bar. In the event that the pressure in the system reaches 144 bar, the onshore pipeline will be shut off from the offshore pipeline.

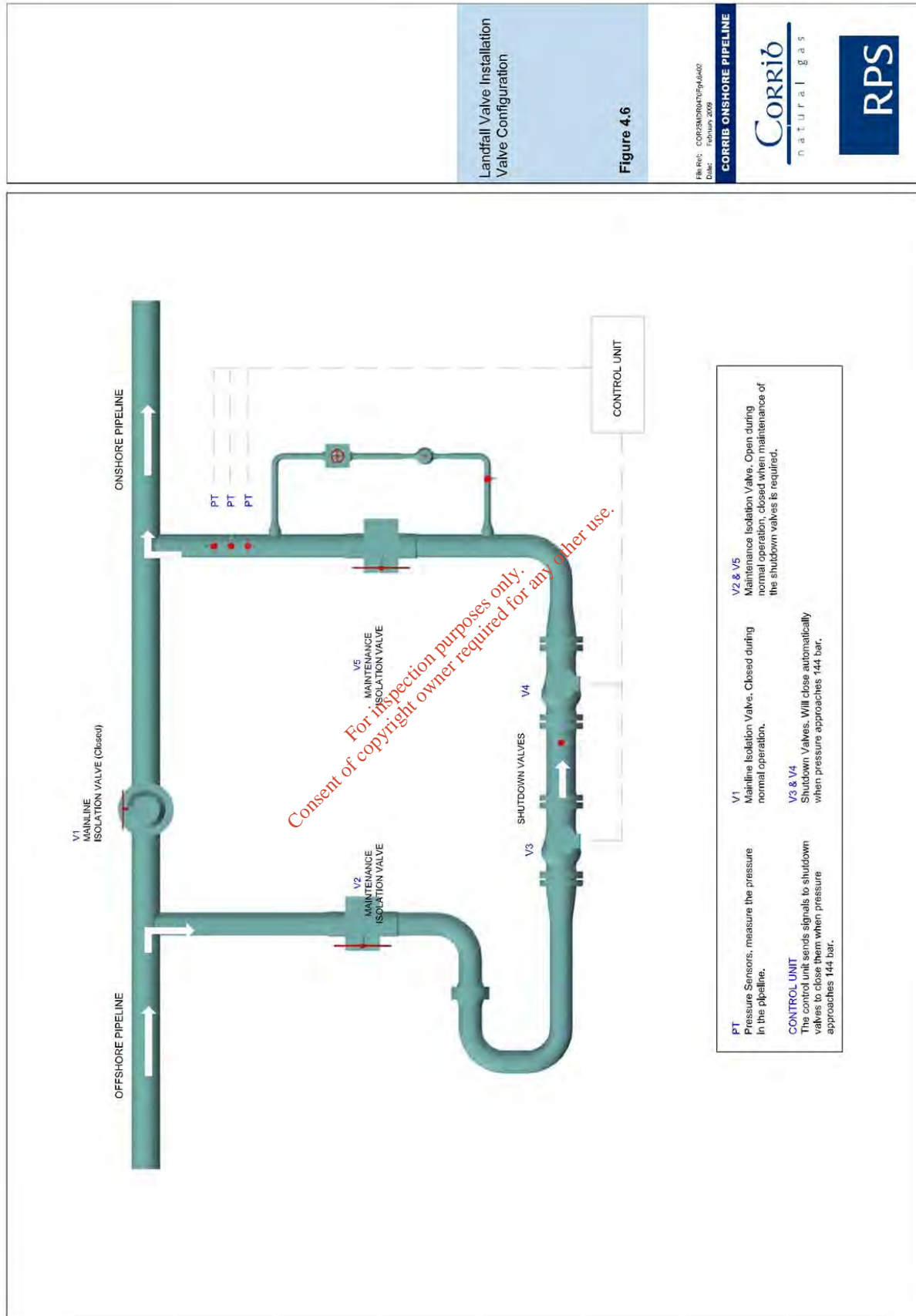
The LVI will be located at the landfall at Glengad as shown in Figure 4.4, in an area of improved agricultural grassland within the Glenamoy Bog Complex candidate Special Area of Conservation (cSAC). There will be a permanent access road from the L1202 down to the LVI.

The LVI will consist of valves, pipe work, instrumentation and supporting equipment. The main elements (isolation valves, pressure limiting system and associated pipe work) will be below ground.

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1.5 The Permission Being Sought

SEPIL advertised in the Western People and in the Irish Times on the 10th February 2009 notice of its intention to make an application for approval to An Bord Pleanála in relation to the construction of the Corrib Onshore Pipeline comprising strategic upstream gas pipeline infrastructure in accordance with Section 182c of the Planning and Development Act 2000 as inserted by the Planning and Development (Strategic Infrastructure) Act 2006.

1.5.1 Section 182C File 16.GA.0004

The following are the first three subsections quoted from Section 182c:

182c (1) Where a person (hereinafter referred to in this section as the ‘undertaker’) intends to carry out a strategic gas infrastructure development (hereinafter referred to in this section and section 182D as ‘proposed development’), the undertaker shall prepare, or cause to be prepared –

- a) An Application of Approval of the Development under Section 182D and*
- b) Environmental Impact Statement in respect of the development and shall apply to the Board for such approval accordingly, indicating in the application whether the application relates to a strategic upstream gas pipeline or a strategic downstream pipeline.*

182c (2) An application under subsection (1) for approval of a proposed development shall, if it will consist of or include a pipeline, be accompanied by a certificate in relation to the pipeline provided under section 26 of the Gas Act 1976, as amended, or section 20 of the Gas (Amendment) Act 2000 by –

- a) In the case of a strategic upstream gas pipeline, the Minister for Communications, Marine and Natural Resources, or*
- b) In the case of a strategic downstream gas pipeline, the Commission.*

182c (3) The proposed development shall not be carried out unless the Board has approved it with or without modifications.

1.6 The Acquisition Order File 16.DA.0004

SEPIL advertised in the Western People and in the Irish Times on the 10th February 2009 notice of its intention to make an application for an Acquisition Order under Section 32 (1A) of the Gas Act 1976 to An Bord Pleanála to acquire compulsorily the right over land to use strips of land specified in the schedule attached to the application.

1.6.1 Section 32 1(A) Gas Act 1976

- a) Section 32(1A) of the GAS Act 1976 as amended by the GAS(Interim)(Regulation)Act 2002 contains the following:*

“(1A)(a) A person may apply to the appropriate Minister of the Government for an order under this section (which order is in this Act also referred to as an ‘acquisition order’) to acquire compulsorily any land or right over land which is acquired by such person in connection with the construction or operation of a pipeline for which such a person applies or has applied for a consent under section 39A or 40 of this Act, as the case may be, and, subject to the following

provisions of this section the appropriate Minister of the Government may make an acquisition order in relation to the land or right over the land

(b) In this subsection ‘appropriate Minister of the Government’ means-

(i) in the case of an upstream pipeline, the Minister for the Marine and Natural Resources, and

(ii) in any other case, the Minister

and

(iii) in subsection (3), by the substitution for “Minister for Lands and the Commission” of “Minister for Agriculture, Food and Rural Development”.

1.6.2 Transfer of Ministerial Functions to An Bord Pleanála

Under Section 37 of the S.I. Act 2006 certain Ministerial functions are transferred to An Bord Pleanála as follows:

“Transfer of certain Ministerial functions under the Gas Act 1976 to Board.

215A. – (1) *The functions of -*

(a) *The Minister for Communications, Marine and Natural Resources,*

(b) *Any other Minister of the Government, or*

(c) *The Commission of Energy Regulation,*

Under sections 31 and 32 or, and the Second Schedule to, the Gas Act 1976, as amended, in relation to the compulsory acquisition of land in respect of a strategic gas infrastructure development are transferred to, and vested in, the Board, and relevant references in that Act to the Minister for Communications, Marine and Natural Resources, any other Minister of the Government or the Commission for Energy Regulation shall be construed as references to the Board and any connected references shall be construed accordingly.

(2) *The transfer of the functions of the Minister of Communications, Marine and Natural Resources, and any other Minister of the Government or the Commission for Energy Regulation to the Board in relation to the compulsory acquisition of land in relation to the compulsory acquisition of land in accordance with subsection (1) shall include the transfer of all necessary ancillary powers in relation to deviation limits, substrata of land, easements, rights over land (including wayleaves and public rights of way), rights of access to land, the revocation or modification of planning permissions or other such functions as may be necessary in order to ensure that the Board can fully carry out its functions in relation to the enactments referred to in subsection (1).”*

1.6.3 The Acquisition Order being sought

In general the acquisition order seeks the following rights over lands:

- permanent wayleave will be 14 m wide (20 m wide in peat lands) within which there will be a restriction on the erection of structures or buildings, the carrying out of works, and restrictions on planting.
- In addition temporary working areas will be required for the duration of construction. This temporary working area will typically be 40 m wide but extends to a wider area at the landfall valve site, at road/river crossings, at compounds, at the tunnel construction pits, and at direction change points.

- Deviation Limits typically 100 m wide but wider at the landfall valve site, at road/river crossings, at compounds, at the tunnel construction pits, and at direction change points. These Deviation Limits define the temporary working areas and define the area within which the permanent wayleave may be relocated from that set out in the drawings. This could arise should archaeology or other obstruction or cause be encountered along the route of the permanent wayleave as set out on the drawings. While the deviation limits extend to 100 m in all typically the actual working area is generally proposed to be 40 m centered on the pipeline as shown on the drawings.
- Construction stated to be 12 months duration

Figures 5.2b shows the general picture of the working areas involved.

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Chapter 2 The Site

2.1 The Location

The Site is located in North West Mayo and runs from Broadhaven Bay at Glengad along by Sruwaddacon Bay and into Rosspport then Aghoos and finally enters the terminal site at Bellanaboy.

The Corrib Gas well field is located 83km west of County Mayo in approximately 350 m of water and at a depth of 3500m below the seabed. The field centre has latitude of 54° 20' N and landfall has a latitude of 54° 17' N.

The proposed onshore pipeline development is located in a site that extends from the landfall of the pipeline at Glengad which faces out onto Broadhaven Bay, a cSAC Broadhaven Bay cSAC: 000472, across the Glengad site which is a cSAC Glenamoy Bog Complex cSAC 000500, under Sruwaddacon Bay, which is a cSAC and SPA, along lands beside and then across through that part of Rosspport, which has residential properties in a rural linear development beside the local road, then through Rosspport Commonage, blanket bog and into the cSAC blanket bog Glenamoy Bog Complex, before crossing under Sruwaddacon Bay (cSAC and SPA) again and then through blanket bog and forestry to the terminal site at Bellanaboy. Refer to proposed construction plan Figure 5.2.b attached in Chapter 1.

The Site also includes the Srahmore deposition site which is a Bórd na Móna site where excess peat will be deposited.

2.2 Special Characteristics of the Site

The site has special characteristics as follows:

- 1) Sruwaddacon Bay in an area of special protection. The Blacksod/Broadhaven Bay SPA No 4037 and the Broadhaven Bay cSAC No 472 and the Glenamoy Bog Complex cSAC 500.
- 2) Part of Rosspport commonage is within the Glenamoy Bog complex and is a cSAC – Site 500.
- 3) The residential properties at Rosspport run along the local road there parallel to the proposed pipeline route.
- 4) The pipe length at 9.2 km will involve significant movement and mobilisation of plant materials and construction support in the Rosspport area which is served by small local roads L5245-0, L52453-25 & L52453-0. The pipeline will be located within 140 m of residential properties.

- 5) The construction methodology involves micro tunneling under Sruwaddacon Bay and special construction using the stone road method through the bog parts of the site.
- 6) There are four public road crossings and two river crossings involved as well as the two proposed sections of the tunnel.
- 7) The area at Dooncarton Hill which is located over Glengad land fall site has been the subject of landslides in 2003.
- 8) The Landfall Valve Installation (LVI) involves a tie in with the offshore pipeline and construction of a valve assemble and controls area in a site which is visible from a number of points two of which are marked as scenic views in Mayo CDP 2008 – 2014.
- 9) The Landfall Valve Installation (LVI) and the pipeline and micro tunnel construction at Glengad will involve significant mobilisation and movement of plant materials and construction support in Glengad which is served by L1202.
- 10) The land uses are agricultural grassland, peat land, forestry. The peat varies in depth up to 5m.
- 11) The mean annual rainfall is 1142 mm over records for 32 years in the area. The prevailing wind is WSW and there are 30 days of gales per annum.
- 12) The site of the pipeline is within the Gaeltacht area of North Mayo. Part of the route and site was the subject of 2002 consent (Appendix 7 Re: Corrib Gas Field consent to construct a pipeline, April 2002) by the Department of Marine and Natural Resources (now DOCENR) for an upstream gas pipeline. SEPIL indicate that the change from that pipeline route was initiated to achieve greater separation from the houses and following mediation by Mr. Peter Cassells. Observers state that the 2002 route is the subject of a High Court case which has not concluded.
- 13) The geology of the area consists of large peat bog areas (blanket bog 60%) with areas of grassland and scrub underlain by Dalradian rock.
- 14) The population of the 5 electoral districts in the area Cnoc an Dáimh, Muing na Bó, Barr Rúscaí, Gleann na Muaidhe, Cnoc na Lobhar was 1,899 in 2006. That population has shown a decline of 11% over 10 years.
- 15) A study area has been defined by the Applicant as the local and wider residents of the 5 electoral districts. In reality, the smaller group of the residents of Glengad, Pollatomish, Aghoos and Rosspart are the local communities affected in their daily lives by the proposed development.

Chapter 3 The Submissions Received

3.1 Introduction

The submissions made to An Bórd Pleanála (ABP) are in three forms; Written Submission (WS), Oral Hearing Submission (OHS) and Closing Statements (CS) made at the Oral Hearing (OH).

The quality of the submissions which have been prepared by the individuals within the local community displays a level of knowledge and technical understanding of the project by the local community that is quite remarkable. The issues raised in these submissions have been of considerable assistance in the examination of the proposed development.

3.2 Written Submissions

The actual written submissions received by An Bord Pleanála following publication of notice of the applications for the proposed development are contained in Appendix 4. A summary of the written submissions can be found in Appendix 6.

The Schedule for written submissions received by ABP is as follows;

Prescribed Bodies	
1	Mayo County Council
2	Dept. of Agriculture, Fisheries & Food
3	Dept of Communications, Energy and Natural Resources
4	Dept. of the Environment, Heritage and Local Government
5	National Roads Authority
7	An Taisce

Observers Submissions	
6	Ian Mac Aindriú, ball d'Údarás na Gaeltachta
8	Turasóireacht Iorrais (Gabhátais) Teo
9	Bord Gáis Networks
10	Irish Business and Employers Confederation (IBEC)
11	Council for the West
12	Dara Calleary, TD
13	Councillor Harry Walsh
14	Fr. Michael Nallen
15	Erris Chamber of Commerce
16	Chambers Ireland
17	Irish Offshore Operators' Association
18	Engineers Ireland
19	Pobal Le Chéile
20	Pobal Chill Chomáin
21	Mícheál Ó Seighin & Others

22	Belmullet G.A.A. Club
23	Fritz and Betty Schult & Others
24	Rossport Solidarity Camp
25	Goodbody Economic Consultants
26	Shevlin Engineering Ltd.
27	Pro Gas Mayo Group
28	J. McAndrew & T. McAndrew
29	Cornelius King & Gerry Sheerin
30	Maura Harrington
31	Monica Muller & Peter Sweetman
32	Roadbridge Ltd.
33	DB Marine Research and Associates
34	Seán Staunton
35	Ethel Corduff and Thomas Corduff
36	John Monaghan
37	Brendan Hegarty
38	Mercury Engineering
39	Teach John Joe Teo
40	Paraic Cosgrove & Padraig McGrath
41	Lennon Quarries
42	Teresa & Bríd McGarry
43	Catherine McAndrew
44	Tom Philbin
45	Colm & Gabrielle Henry
46	Terence M. Conway & Others
47	Kilcawley Construction

3.3 Submissions received at the Oral Hearing

The documents submitted at the OH are filed in Appendix 5. Appendix 5 is contained in nine folders numbered Appendix 5-1 to Appendix 5-9. The documents are filed in date order received and each document has a document reference number.²

The documents referred to in this section relate to documents received at the Oral Hearing. The summaries are taken from these documents and also from the evidence given at the OH. A summary of the submissions to the Oral Hearing can be found in Appendix 6.

The following observers contributed written or verbal submissions at the Oral Hearing:

- Fr. Nallen
- J. McAndrew and T. Mc Andrew
- Pobal le Chéile
- Pobal Chill Chomáin and J. Monaghan

² [DRN OH1 to DRN OH 134a]

- Micheál ó Seighin
- Betty Schult and Winnie Macklin
- Diane Taylor
- Rossport Solidarity Camp
- Cornelius King
- Monica Muller and Peter Sweetman
- Ethel and Thomas Corduff
- Bríd, Teresa McGarry and Brendan Philbin
- Colm and Gabrielle Henry
- Terrence Conway
- Imelda and Edward Moran
- Eamonn O Coileáin
- Máire Breathnach
- Maura Harrington
- Neil McEleney

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Chapter 4 Local Planning Policy: Mayo County Development Plan

4.1 Mayo County Council Submission: April 7th 2009

Mr. Iain Douglas Senior Planner, in the written submission by Mayo County Council, sets out the policies and objectives contained in the Mayo County Development Plan (CDP) 2008 – 2014 which are relevant to this development. These are assessed and summarized as follows:

- 1) It is clear from the Mayo CDP 2008 – 2014, that the Planning Authority supports the realisation of the Corrib Gas Field³.

“It is an objective of the council that it fully supports the realization of the Corrib Gas Field find and any other gas find in the County either on or offshore”

- 2) It is also clear that the Mayo CDP 2008 – 2014 provides protection for the significant landscape resources in the County. Proposed development needs to be assessed and applicants need to demonstrate that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape⁴.

“It is the policy of the Council, through the Landscape Appraisal of County Mayo, to recognize and facilitate appropriate development in a manner that has regard to the character and sensitivity of the landscape, to ensure that development will not have disproportionate effect on the existing or future character of a landscape in terms of location, design and visual prominence, and that development will have regard to the effects of developments on views from the public realm towards sensitive or vulnerable features and areas. In this regard, proposals for development that have the potential to impinge on the integrity of significant landscape resources will be assessed having regard to the guidelines set out in Section 4.18 of the Development Management Guidelines.”

- 3) Views and prospects should not be adversely affected by the development. Map 10 of the Mayo CDP 2008 – 2014 indicates the scenic views in the County. This shows the view from L1202 at Glengad looking towards Garter Hill and down to Broadhaven Bay as highly scenic. This also shows views from Ceathrú Thaidhg south and from L1202 north onto Sruwaddacon Bay as highly scenic views⁵.
- 4) The Mayo CDP 2008 – 2014 Policy is to protect and enhance and conserve cSAC's and natural habitats. [Mayo CDP 2008 – 2014 Policy P/EH-NH1, P/EH-NH3].
- 5) It is clear that Mayo County Council are of the view that the consent under Section 40 of the Gas Act 1976 (as amended) by the Minister for Communication, Marine and Natural Resources on 15th of April 2002 established in principle that natural gas was to be brought ashore to a landfall and that the gas was to be piped to the gas terminal along a route on the north side of Sruwaddacon Bay.

³ [Mayo CDP 2008 -2014 Objective O/TI-G1]

⁴ [Mayo CDP 2008 – 2014 Policy P/EH-LC1]

⁵ [Mayo CDP 2008 – 2014 Policy P/EH-VP1, P/EH-VP2]

- 6) It is the Planning Authority's view that these underlying principles have not changed. It is Mayo County Council's view that the changes in detail leading to this 16.GA.0004 application have come about through acceptance by the developer of the recommendations of the Cassells Report (with regard to the relocation of the pipeline) and the recommendations of the Advantica Report (with regard to the re-design of the LVI).

4.2 Issues Raised by Mayo County Council for the attention of ABP

In the report the planning authority raise a number of matters they wish An Bord Pleanála to consider. The following is an extract from the Mayo Co Co submission which sets out those points:

4.2.4 Landfall Valve Installation

"The Board should satisfy itself that the reasons advanced for rejecting the underground enclosed installation or a combination of an underground enclosed installation with dishing to screen the fence of the underground option are reasonable. In the event that the reasons advanced by SEPIL are accepted by the Board, the area outside the security fence should be kept to the absolute minimum."

This is dealt with in Chapter 29 LVI adequacy of proposed installation

4.2.5 Revised route of onshore pipeline

"The Board should satisfy itself that the reasons advanced for the selection of Route C1 meet the criteria set down in the Cassell's Report."

This is dealt with in Chapter 45 Route Selection.

4.2.6 The stone road

"The Board should satisfy itself that the method of construction will not adversely affect the blanket bog; and if available monitoring data should be provided from other sites to confirm the success of this method and to enable mitigation measures to be assessed."

This is dealt with in Chapter 37 The Stone Road Method.

4.2.7 Constraints in the Ecological Surveys

"The EIS recognises that survey of the pipeline route was not possible between chainages from 89.500 to 89.800. The Board should satisfy itself that the information supplied is sufficient to allow a decision to be made."

This is dealt with as part of the E.I.S. assessment in Chapter 46 E.I.S. SEPIL provided additional information in an addendum to the E.I.S. at OH related to this part of the site.⁶

4.2.8 Environmental Management Plan (EMP)

"Mayo County Council supports the preparation of an EMP and is of the opinion that such an EMP is essential to ensure the development is carried out in accordance with the relevant standards and that any potential impacts arising from the development are minimised."

⁶ [DRN OH7]

This is dealt with in Chapter 41 Other Issues-EMP.

4.2.9 Appropriate Assessment

“The Board should satisfy itself that the Appropriate Assessment screening of the onshore pipeline contained in Appendix P, adequately addresses the likely impact of on the Natura 2000 sites of the project whether alone or in combination with other plans or projects and considers whether these impacts are likely to be significant.”

This is dealt with in Mr. O’Sullivan’s Report Appendix 1 and in Chapter 39 Habitat’s Directive Assessment.

4.3 Section 48/49 Development Contribution Scheme

The development contribution scheme (Mayo County Council Development Contribution Scheme 01/03/04) covers water services, sewerage services, surface water services, amenities, roads, footpaths and public lighting, community open space and recreational facilities and car-parking. The proposed development will not be availing of these service categories. However Mayo Co Co do recommend that a special development contribution condition should be attached to any permission being granted to cover the recoupment of the costs of upgrading the roads in the area and which work will facilitate the carrying out of the proposed development.

4.4 Public Sewerage Facilities and Capacity to Facilitate the Proposed Development

There are no sewerage treatment facilities available in the area. Sewerage waste from the gas terminal site is currently collected and transported to the Bangor Erris Sewage Plant for treatment. A similar arrangement for the disposal of sewage waste arising from the pipeline and LVI sites is acceptable to Mayo County Council. There are other specific references in the Mayo County Council submission which are discussed with in relevant chapters report of this report.

4.5 The Planning Authority’s Overall Considered View on the Proposal

The following sets out Mayo Co Co considered view of the proposal:

“Mayo County Council is of the view that the Consent issued under Section 40 of the Gas Act 1976 (as amended) by the Minister for Communications, the Marine and Natural Resources on 15th April 2002 established in principle that natural gas was to be brought ashore to a landfall valve installation and that the gas was to be piped from the landfall to the gas terminal along a route on the north side of Sruwaddacon Bay. These underlying principles have not changed.

The changes in detail, leading to this application under the Planning and Development (Strategic Infrastructure) Act, 2006, have come about through the acceptance by the developer of the recommendations of the Cassells Report (with regard to the re-location of the pipeline) and the Advantica Report (with regard to the redesign of the LVI).

The consequences of the redesign enforced by Cassells and Advantica are that the pipeline re-route will affect designated ecological sites and habitats and that the LVI will impact on the landscape to a greater degree than under the previous consent.

The construction and mitigation proposed in the EIS should ensure that any impact on either designated sites or the landscape is not significant.

The proposal accords with National, Regional and Local policies and having accepted the recommendations of the Cassells and Advantica reports the health and safety concerns of the local residents have been addressed.

It is Mayo County Council's considered view that the proposed development should be granted permission by An Bord Pleanála subject to conditions. A schedule of conditions the Council regard as an essential minimum is attached to the Mayo County Council submission."

4.6 Other Submissions by Mayo County Council

Roads Improvements: The council was asked at the Oral Hearing to provide details of the road proposals for the Rosspoint network of roads. This information was submitted⁷. This submission is considered in detail in Chapter 44 'Haul Routes and Traffic Plan.'

Water Supply in the Rosspoint Pollatomais and Glengad Areas: Mayo County Council was also asked to provide details of the water supplies affected by the proposed development. Accordingly details of the Rosspoint GWS and Pollatomais GWS were provided⁸. Details of the drinking water results for 2005-2009 for the Carrowmore Lake Supply were also requested and these were supplied⁹. The information on Water Supply is considered in Chapter 24 Protection of Drinking Water Supply.

The Board is obliged under Section 182D 10(a) of the Planning and Development (Strategic Infrastructure) Act 2006 to have regard to the provisions of the development plan for the area.

4.7 Inspectors Conclusions

Mayo County Council supports the proposed development and subject to those matters about which it asked for ABP to satisfy itself Mayo County Council recommends that ABP grant this permission for the proposed development.

Mayo County Council intends to carry out extensive road works on the Haul Routes to facilitate this development. The work will be subject to agreement between SEPIL and Mayo Co Co.

Sepil have agreed to pay the costs of the road works involved.

4.8 Inspectors Recommendation

In response to the submission of Mayo Co Co and in the event that the Board decide to grant permission for the proposed development I recommend the conditions as set out in Chapter 51.

⁷ [DRN OH 52]

⁸ [DRN OH 52].

⁹ [DRN OH 85 and DRN OH90].

Chapter 5 Regional Planning Policy

5.1 Regional Planning Guidelines

The following extracts from the 2004 Regional Planning Guidelines provide a context for the West region. The infrastructure priorities for the region clearly identify electricity infrastructure and connectivity for 10kV and 220kV lines as priority for the region. The RPG's recommend the development of the Bellacorrick Gas powered generating station.

Udarás na Gaeltachta Policy is to establish and sustain a strong and balanced Industrial base in the Gaeltacht. To this end the RPG's supports Udarás na Gaeltachta's focus and encourages the build-up of population in the existing centres of population in the Gaeltacht area.

5.1.10 Context of the Region.

"The West Region comprises the counties of Galway, Mayo and Roscommon and incorporates Galway City, an area covering 13,801 sq km. The region consists of four county/city authorities and a number of town councils. Roscommon is mainly rural in character with the urban centres being Roscommon and Castlerea. The River Shannon and its system of lakes form the eastern boundary of the county for 100kms. County Mayo is located on the western seaboard and is part of the Atlantic rim of the European Union. The three main town councils are Ballina, Castlebar and Westport. County Galway covers the largest area of the West Region and the principle towns are Ballinasloe, Tuam and Loughrea. The City of Galway is the major regional centre. The Galway and Mayo Gaeltacht is also a unique feature of the region.

Traditionally, the economy of the west has been rural in nature and there is a high dependency level due to the large number of small farm holdings, resulting in increased pressure to promote and encourage farm diversification and also to examine alternative means of earning incomes.

The population of the region is 380,297, with a density of 26.6 persons per sq. km. This accounts for 9.7 percent of the national figure. There has been a 7.86 percent increase in population over the six-year inter-censal period 1996-2002, just below the national average. The urban population in the west increased by 14.9 percent over the same period.

The economy of the West Region has experienced some growth and development in the past 6-10 years in particular. Traditionally, agriculture accounted for a large proportion of the labour force within this region with 24.9% of the workforce involved in this activity in 1993. However, the figure seven years later had diminished to 16.3% as a share of the total workforce. Against this for the same period, industrial employment rose from 23.5% to 28.5%, an increase of 5%. Service employment also rose from 51.6% to 55.2% slightly over the percentage increase recorded in the state as a whole over the seven-year period. Significantly, the unemployment in 1993 stood at 14.9% with the rate down to 5% seven years later in 2000."

Extracted from the 2004
Regional Planning Guidelines

5.1.11 Overall Regional Infrastructural Priorities

“Energy

The proposal for the operation of a Gas powered generating station (Bellacorrick) is recommended should the reserves of the Corrib Gas field come on shore in the future. This obviously would be of benefit to the Region as a whole. Current deficiencies in the power supply of north Mayo need to be addressed immediately particularly in light of the status of Ballina as a linked hub. For this part, an extension of a 220 Kv from Castlebar into Bellacorrick and into Ballina is necessary as part of this energy strategy. Planning Authorities should take into account the location of existing gas infrastructure in granting planning permission. The Gas grid in the region should be extended to all towns in excess of 3,000 population as first priority and to other towns with large energy users together with towns close to the network, subsequently the grid should be extended to all urban areas. .”

Extracted from the 2004
Regional Planning Guidelines

5.1.12 Large Scale Potential Development for the Region

“Corrib Gas Field

The Corrib Gas field is a 230 million year old reservoir, situated approximately 70 kilometers off the Mullet peninsula in Co. Mayo. It was located in 1996. The reservoir is 11,500 ft. under the seabed and the gas field, when developed, will produce gas over a period of between 15 and 20 years. The discovery of the Corrib gas field is a major opportunity for the West Region. The development of the necessary on shore facilities to enable the potential of the gas field to be utilised in the region and national context is supported. Into the future, the potential of this very important natural resource find can be of enormous benefit to the region as a whole and is seen as a project of large scale potential development for the region.

To enable the region to extract the full benefit of this natural resource, a major distribution network serving all major urban centres in the region must be constructed. This will enable them to offer a choice of energy sources to potential entrepreneurs as well as providing a cheap clean residential energy supply.”

Extracted from the 2004
Regional Planning Guidelines

The Board is obliged to have regard to the RPG’S under Section 143(1)(c) of the Planning and Development Act 2000-2006.

5.2 Inspectors Conclusion

It is clear that the RPGs support the development of the Corrib Gas Field and that the potential of the proposed gas field is seen a major benefit to the region.

Chapter 6 National Planning Policy Government Policy for Gas Infrastructure Development

6.1 National Development Plan (NDP) 2007 – 2013

The NDP 2007 – 2013 sets out the national investment plan and priority spending areas. The €8.5 bn investment in energy over the plan period is aimed at underpinning the security of supply, a competitively priced energy market and environmental sustainability. In the section of the NDP dealing with the energy programme the following strategic context is set out;

“The ability of the economy to perform successfully depends critically on the supply of adequate, affordable and environmentally sustainable energy. Security of supply is of paramount importance to ensuring the continued economic development of the country and the spending under this Plan will help ensure that objective. Without an expectation and delivery of a secure supply of energy, investment and output of the economy will suffer. Therefore, during the Plan period, there will be significant investment in crucial infrastructure.

Ensuring the efficient operation of a competitive energy market will be critical to the success of the economy. Ireland’s growing dependence on imported fossil fuels (with the consequent growth in greenhouse gas emissions) highlights the need to mitigate the economic, social and environmental risks through new policy approaches. Security of supply, and lessening the dependence on any one source of energy or fuel type, will be a key challenge. Efficiency in the use of energy must also be improved.

Over the period 2005-2010, energy demand is projected to increase by 1.6% per annum. This level of increase can be expected to be maintained to 2013. Within this overall growth figure, annual electricity demand is expected to grow by 3.1% and gas demand by 6.5%. Managing our demand for energy in a sustainable way will therefore be extremely important.”

[National Development Plan, 2007 - 2013]

6.2 Delivering a Sustainable Energy Future for Ireland (The White Paper)

In this White Paper (published 2007), Mr. Noel Dempsey the then Minister for Communications, Energy and Natural Resources set out the vision for Ireland in energy terms in 2020 “...as a fully sustainable, secure, efficient, affordable and competitive all-island energy market...” and “the Hallmarks of the Irish Energy market by 2020 will be reliable supply, highly efficient use of energy, competitive pricing and sustainable, diverse energy resources. It will be securely underpinned by robust infrastructure and cutting edge technology.”

6.2.13 Security and Reliability of Gas Supplies

The White Paper states as follows:

White Paper “3.3.1. *Ireland has a well developed framework to ensure the adequacy of gas supplies and transportation infrastructure into the country. Recent years have seen substantial investment in the transmission network and the new pipelines recently completed (Mayo-Galway & South- North) will enable the indigenous gas find at Corrib to be brought to the market, assist in the development of an all-island gas network and enable more communities to benefit from the availability of natural gas. In light of global, EU and UK trends, natural gas will continue to play a vital role in the Irish fuel mix for some decades yet. Business as usual projections indicate that more than 70% of our electricity would be generated from natural gas by 2020. Our alternative scenario, with renewables contributing 33% by 2020, will see greater diversity in the fuel mix with gas contributing just under 50% to power generation.”*

White Paper “3.3.2. *The UK is now the source of some 87% of our natural gas and the UK’s own demand for imports is growing strongly. Norway will remain a significant supplier of gas to UK in the medium term. Ireland’s location in Europe from the view-point of gas supply sources is becoming less peripheral. In the last 12 months the UK has achieved a significant increase in gas import capacity through accelerated infrastructure developments with resultant benefits for Ireland.*

Both Pipeline and LNG capacity has increased significantly. These include the Langeled pipeline from Norway, the new pipeline from the Netherlands and new LNG terminals at Milford Haven.

Further expansion of LNG capacity and gas interconnection is underway in the UK and Europe which will benefit Ireland in terms of security of wholesale gas supplies within this regional market.”

White Paper “3.3.3. *While the prognosis for gas supplies is relatively secure as a result, it is prudent for Ireland to develop a longer term strategy to reduce over reliance on gas imports from the UK. This strategy will also address mechanisms to achieve greater benefits from trading with the competitive UK market.....*

We will set an explicit security of supply standard for the natural gas system from 2008 which will also set the framework for evaluating future supply options and protection standards...”

White Paper “3.3.4. *It is also the case that because of our reliance on gas supplies from the UK from the single exit point at Moffat, the Gas Exit Reform Measures to the National Transmission System planned by the UK authorities have implications for the Irish natural gas sector and for security of supply.*

Work is underway by CER and the Department to put in place, and agree with the UK authorities, the necessary arrangements to ensure security of gas supply, negate market risk and reduce entry barriers for new players in the markets downstream of Moffat.”

White Paper “3.3.5. *Actions:*

- *We will ask CER to take a strategic “look forward”, taking account of EU and global trends, on a 20 year time horizon in its Gas Capacity Statement 2007-2014. This will support enhanced long term planning to 2020 and beyond for security of gas supply;*
- *We will review the scope for enhanced fuel switching in gas based power generation as a contributor to security of supply;*

- ***We will set an explicit Security of Supply standard for the natural gas system from 2008 which will also set the framework for evaluating future supply options and protection standards;***
- *We will, through CER, agree and implement the necessary arrangements in 2007 to address the impact of changes in the UK regulatory regime for gas exit;*
- ***We will continue to invest in the gas network for security of supply and regional development through BGE's investment programme of over €1.7 billion under the NDP 2007-2013;***
- *We will continue to actively encourage private sector interest in investing in gas storage facilities and LNG and review the potential role for Government intervention in the event of market failure in light of the study's findings;*
- *We will put in place an all-island strategy by 2008 for gas storage and LNG facilities in light of the outcome of the all-island study;*
- *We will continue to progress the all-island gas market, with 2010 set as the target date for implementation of streamlined tariff and market arrangements for the all-island market;*
- ***We will ensure that infrastructure reinforcement in the Ireland/Scotland gas interconnection network is undertaken as necessary, on a fully cost effective basis;***
- *We will continue to enhance arrangements for regular structured dialogue with UK on issues of mutual interest in relation to gas supply and demand;*
- *We will, together with CER, work with the UK and the EU to deliver the Regional Gas Market initiatives and regional regulatory structures in the medium term which will facilitate gas trade between Ireland, the UK and Northern Europe;*
- ***We will explore the medium to longer term options for further gas interconnection in light of the all-island market and development of the regional gas market;***
- *We will work in Europe to ensure Ireland's needs are met under EU plans to assist diversification by Member States currently dependent on one gas supplier;*
- *We will work proactively with other EU Member States and the Commission through the forum of the Gas Coordination Group and the Energy Correspondents Network to ensure Coordination of security of supply measures by EU in the event of an energy crisis or a major gas supply disruption;*
- *We will work to develop a comprehensive energy dialogue with key partners, within the EU and the wider international framework, and drawing on input from our national diplomatic network;"*

White Paper “3.19.5 The retention of the gas and electricity transmission and distribution networks and strategic energy infrastructure in State ownership is Government policy and these assets will never be privatized. The continued strategic development through multi annual corporate strategies of the Semi State companies both in terms of competitive market activities and their monopoly network interests will be encouraged and overseen by Government”

[The White Paper, Delivering a Sustainable Energy Future for Ireland -The Energy Policy Framework 2007 - 2020]

6.3 National Spatial Strategy for Ireland 2002 - 2020

Section 3.7.2. of the National Spatial Strategy (NSS) for Ireland 2002 – 2020 sets out the following;

“Reliable and effective energy systems, such as gas and electricity to power industry and services, are key prerequisites for effective regional development. Ireland’s electricity and gas networks are evolving in an integrated way, serving the whole island, while focusing on strategic locations.

Prime considerations in terms of spatial policies relating to energy include

- *developing energy infrastructure on an all-island basis to the practical and mutual benefit of both the Republic and Northern Ireland*
- *strengthening energy networks in the West, North West, Border and North Eastern areas in particular*
- *enhancing both the robustness and choice of energy supplies across the regions, through improvements to the national grids for electricity and gas.*

There may also be potential for streamlining infrastructure co-ordination, planning and delivery, for example by combining the provision of different types of infrastructure in one physical corridor, where appropriate and feasible.

Bord Gais is currently involved in a substantial investment programme designed to augment the existing natural gas transmission network, (which runs between Limerick, Cork, Dublin and Dundalk), with the new ‘Pipelines to the West’.

This will create a ringmain and will for the first time allow Galway, Ballinasloe, Tullamore, Mullingar and Athlone to be connected to the gas network. Bord Gais is also building a second inter-connector between Ireland and the UK, which will secure sufficient gas supplies to Ireland for the foreseeable future.

*Bord Gais has also been licensed in Northern Ireland to construct new pipelines from Belfast to Derry and from Gormanston, County Meath to Antrim. This project will involve grant aid including exchequer support by the Irish Government. **The Government also decided in 2001 that in principle, and subject to a more detailed analysis, the gas network should be extended to Letterkenny from Derry and to Sligo via a spur from the Mayo/Galway pipeline, which is planned to connect the Corrib field to the gas network.** Figure 3.5 illustrates the gas network in terms of existing and proposed pipelines, excluding local and industry spurs.*

The net effect of these planned and envisaged developments is that the spatial framework of gateways, hubs and other elements of the urban-rural structure outlined earlier in this section will, broadly speaking, benefit from an extensive gas pipeline network interconnected with both domestic and international gas supplies.

The Government will shortly publish a white paper on energy policy which will further expand on the strategies and targets for implementation of these targets”

[National Spatial Strategy for Ireland, 2002 - 2020]

6.4 Common Approach to Natural Gas on an All Island Basis

Extract from Study on Common Approach to Natural Gas Storage And Liquefied Natural Gas on an All Island Basis Executive Summary, Jointly commissioned by the Department of Communications, Energy and Natural Resources and the Department of Enterprise, Trade and Investment, Northern Ireland, November 2007. The report was prepared by TPA Solutions, an independent consultancy servicing the gas industry.

The following are extracts from the Executive Summary of this report:

“All Island Gas Supply and Demand Scenarios

The position will change substantially when the Corrib field comes onstream. At that time, total indigenous production should rise to some 10 mcm/d for about three years, after which it will begin to decline relatively sharply. There is considerable uncertainty of the situation post 2015, with the possibility of as yet undiscovered reserves in the Atlantic Margin being developed.

*The current shortfall between annual daily gas demand and indigenous gas supply is about 15 mcm/d, with the peak demand shortfall amounting to 28 mcm/d. This shortfall is essentially made up from gas storage and imports from Great Britain (GB). **The annual shortfall will fall to about 10 mcm/d when the Corrib Gas Field is at peak production.** However, in the absence of any other discoveries and/or indigenous supply developments, the shortfall between annual daily gas demand and indigenous gas production is projected to be around 20 mcm/d by 2020, with all of this being imported. The equivalent peak shortfall is projected at nearly 40 mcm/d.*

- ***Corrib contribution to gas demand will be relatively small and short lived***
- ***Until Corrib production comes on stream, the import requirement for peak demand is about 27 mcm/day”***

“All Island Gas Imports & Security of Supply

The probability of a sustained interruption to supplies through the SWSOS or at Ballough is considered to be very low. However the consequences to the island of Ireland should such an event occur, would be potentially very serious for the island of Ireland economy.

The EU Council Directive 2004/67/EC concerning measures to safeguard security of natural gas supply requires, inter alia, member states to ensure supplies to domestic customers from disruption under various circumstances. However, given the unique circumstances of the island of Ireland caused by the dependence on gas for electricity generation and the lack of diversified gas supply sources, measures that incorporate, and go beyond, the EU Directive are required. These measures should be designed to ensure a certain minimum security of supply based on diversification and/or storage. They would cover both the domestic gas market and the power generation sector and could be met by a variety of mechanisms, including new indigenous gas sources...”

“Security of Supply Measures - Discussion

The dilemma facing both policy makers and potential investors is that the situation is to some extent dynamic, with the potential of changing each year. For example, in 2007 a number of events have and could occur, any one of which change the security of supply situation in any future year. These include the CER/ESB decision to close a number of oil fired power stations in 2010, the award of salt exploration licences in Northern Ireland, the outcome of exploration in the Celtic Sea, a recommendation on an onshore route for the Corrib pipeline and the possible submission of a request for planning permission by Shannon LNG.

- *Ireland is unique compared with other European countries in its lack of diversity of supply sources, high dependence on gas for power generation and very limited gas storage”*

“Security of Supply Measures - Conclusions

A potential pipeline capacity constraint in the SWSOS has been identified by the CER in the latest Gas Capacity Statement by 2008/9 if Corrib is delayed and storage is not available.

Sitting on the far western edge of the pan-European gas market, the combination of a 90% dependence in part on a single piece of infrastructure for its gas supplies and a 65% and growing dependence on gas for electric power generation, make it uniquely vulnerable within the EU to the consequences of any disruption to gas supplies on a local and/or regional level.

The principal conclusion of this report is that the consequences of any major failure of supplies from GB would be as significant for the power sector and thus the island of Ireland economy as a whole, as for the domestic gas market. Thus this situation needs to be addressed in an integrated and holistic way so as to provide an element of security to both sectors.”

“Recommendations for Security of Supply Measures

The situation with regard to supply of gas to the island will change over the period covered by this report. Some of these changes are reasonably predictable (eg Corrib).

Medium Term Recommendation

- *Flatten Corrib production profile*

6. The Corrib field is being developed with a production profile delivering maximum production for three years, followed by a relatively rapid decline in production. Consideration should be given to developing the field with the same nameplate facilities capacity, but producing it at less than maximum reservoir capacity in initial years so as to permit an increase in indigenous supplies should this be required in the event of a failure of supplies from GB. This would also have the advantage of prolonging the lower level of output before decline. The need for this would reduce in the event that other supplies to the island of Ireland became available.”

6.5 Inspectors Conclusion:

National Policy for the Energy Sector is well developed. Energy supply is a vital component within the National Economy. The security of energy supply is identified as a critical National Interest. National Policy is to strengthen the physical infrastructure links with UK and also strengthen the agreements with UK and European Energy Markets. National Policy is to ensure a diversity of energy sources and to move towards high efficiency use of energy. As regards Gas infrastructure, significant investment is provided in the period of the plan for BGE Galway Mayo Pipeline to connect to the Corrib Gas Field and to bring Natural Gas to towns in the west. It is expected that gas usage will increase by 6.5% per annum up to 2013.

The White Paper sets out a target of 50% for Gas contribution to Electricity Generation by 2020. This is to be achieved by bringing increased renewable energy sources on stream up to 2020. In absence of this increased renewable energy, Gas, on a business as usual basis, would be the energy source for 70% of electricity generation by 2020. Having diverse sources of secure energy supply into the future is central to National Policy. It is clear that bringing the Corrib Gas Field into production and connecting the supply from Corrib into the National Gas Network is a Government priority and has been a Government priority for some considerable time.

Note: There is comment in the North South energy all Island Strategy that a flatter Corrib Gas Production Profile (i.e. reduce the initial maximum production profile planned for Corrib) would be worthwhile in certain circumstances, such action would provide indigenous resources out along should supplies be threatened from UK. Any such measure is a matter for Government Policy to implement. That issue was raised at the OH by the observers.

Chapter 7 Associated Permissions and Consents

7.1 Schedule of Existing Consents

The following is a list of the previous consents/licences/approvals that are associated with the Corrib Gas Field development and have been granted as extracted from Table 1 in the E.I.S.;

Table 7.1: Existing Consents and Approvals for the Corrib Gas Field Development

License/Consent	Status
Petroleum Lease by the Minister for the Marine and Natural Resources	Granted 2001
Plan of Development for the Corrib Field by the Minister for the Marine and Natural Resources	Approved 2002
Consent under Continental Shelf Act 1968 from the Minister for the Marine and Natural Resources	Granted 2002
Foreshore License for pipeline, umbilical and outfall from the Minister for the Marine and Natural Resources	Granted 2002
Consent to Construct a Pipeline (Section 40 of the Gas Act) from the Minister of the Marine and Natural Resources	Granted 2002
Planning Permission – Bellanaboy Bridge Gas Terminal and associated peat deposition site from An Bórd Pleanála.	Granted 2004
Waste license from EPA for deposition at An Srath Mór (Srahmore) (Bórd na Móna)	Granted 2004
Integrated Pollution Prevention and Control License from the Environmental Protection Agency for Bellanaboy Bridge Gas Terminal	Granted 2007

7.2 Schedule from the Letter of Application to An Bórd Pleanála

There follows an extraction from the Application to An Bórd Pleanála stating the nature of prior consents on the proposed site.

Reg. Ref. No:	Nature of Proposed Development	Nature of Final Decision of Application Grant of Refusal by Planning Authority/An Bord Pleanála
Mayo County Council Planning Ref. P09/20	Amendments to the Main Terminal including the addition of: Fire Protection Shields; a Heat Shield; Stair Towers; and an Access Platform. It is also proposed to relocate a Continuous Emissions Monitoring System Analyser Enclosure; relocate 63no. of the permitted, and add 5 no. new Fire & Gas Detectors; enlarge a Gas Metering Cabinet; modify Access Platforms; replace ladders with stairs and platforms and remove culvert & ramp over an internal road.	Awaiting decision from Planning Authority.
Mayo County Council Planning Ref. P08/1620 An Bord Pleanála Ref. PL16 .231952	Amendments to the Main Terminal involving the relocation and change in dimensions of the permitted surface water Emergency Holding Tanks and the addition of an Electrical Switch Room and a Transformer at the main entrance to the site.	Decision to grant permission subject to conditions, issued by Planning Authority Awaiting decision from ABP

An Bord Pleanála Refs. 16.GA0001 & 16.DA0001	Application by Shell E & P Ireland Ltd. for Approval for a Strategic Upstream Gas Pipeline and associated development in the Townlands of Glengad (Dooncarton), Rosadoagh, Aghoos, and Bellagelly South, Co. Mayo. Application by Shell E & P Ireland Ltd. for an Acquisition Order to facilitate the construction, operation and maintenance of the Corrib Onshore Pipeline.	Applications withdrawn on 12 th December 2008 prior to decision of An Bord Pleanála.
Mayo County Council Planning Ref. P08/0170 An Bord Pleanála Ref. PL 16.229487	Amendments to the Administration, Maintenance, and Laboratory Complex buildings, Waste Water Treatment Building, Control Building, East West Access Road and Methanol Still, and associated works.	Following First Party appeal against the decision to grant the case was granted permission, subject to conditions.
Mayo County Council Planning Ref. P08/1182	Amendments to the Main Terminal for the reception and separation of gas in Bellagelly South TD and for a Peat Deposition Site in TDs of Srahmore and Attavally. The proposed development includes the provision of new structures in the form of selective catalytic reduction building and an associated storage tank and transfer pumps.	Decision to grant permission subject to conditions issued by Planning Authority
Mayo County Council Planning Ref. P08/774	Amendments to the Main Terminal in particular, to the Sales Gas Compressor building, the Heating Medium Fired Heater, the Heating Medium Surge Drum.	Decision to grant permission subject to conditions issued by Planning Authority
Mayo County Council Planning Ref. P07/3322	Amendments to the Main Terminal Entrance from the R314 and associated site works including erection of CCTV cameras.	Decision to grant permission subject to conditions issued by Planning Authority
Mayo County Council Planning Ref. P06/2565 (An Bord Pleanála Appeal Ref. PL16.223463)	Retention of alterations to an agricultural entrance and the construction access road and associated works, to be retained for a period of 5 years. (This refers to the existing access road from the L1202 public road in the townland of Gleann an Ghad (Glengad or Dooncarton))	Permission granted by the Board on appeal subject to conditions
Mayo County Council Planning Ref. P03/3343 (An Bord Pleanála Appeal Ref. PL 16.207212)	Gas terminal at Bellanaboy Bridge, Co. Mayo, including peat deposition facility at Srahmore.	Permission granted by the Board on appeal subject to conditions
Mayo County Council Planning Ref. P01/900 (An Bord Pleanála Appeal Ref. PL16.126073)	Gas terminal at Bellanaboy Bridge, Co. Mayo.	Permission refused by the Board on appeal.

As noted above, concurrent planning applications occur to the existing Terminal at Bellanaboy Bridge. The proposed pipeline will occur within the overall terminal site, and will connect to the existing terminal. However, no valid planning application has been made in respect of the land of the defined application site of the proposed pipeline within the last 6 months. As such, Site Notices are printed on a white background.

7.3 Schedule of Other Relevant Permissions

- IPPC License (P0738-01) for the Bellanaboy Bridge Gas Terminal.
- Waste License (W199-1) for the Peat Deposition Site at Srahmore.

7.4 Seven Phases of Development for the Scheme

The Works to be carried out to install and commission the Corrib Gas Field and pipeline system will be undertaken in 7 phases, as described below as detailed by the Department of Communications, Environment and Natural Resources.

Phase 1: Nearshore Trench Construction

Phase 1 works consist of excavation of a trench from the High Water Mark westwards for approximately 1200 m along the proposed pipeline route (to a water depth of –11 m LAT). The shallow bedrock, which is present for approximately 200 m of the route, will be removed with a jack-up barge by mechanical means. A dredger will clear all spoil in conjunction with a split-hopper barge that transfers it to an agreed area of the seabed for temporary storage.

Phase 2: Landfall

This includes the continuation of the trench from Phase 1 through the High Water Mark and eastwards via a cutting through the cliff-face at Glengad, using conventional land based excavators and rock breakers; and the installation of a pull-in winch for the initiation of pipe pulling from the offshore vessel. The winch wire will be pulled from the seaward end of the trench referenced in Phase 1 to shore from a barge. Foundations for umbilical pull-in equipment, to be used in Phase 5, may also be installed. To facilitate access to the site, temporary access roads will be constructed.

Phase 3: Onshore Pipeline and Umbilical

This includes installation of the pipeline, umbilical and outfall pipe along the previously consented route from the landfall to the Terminal at Bellanaboy. The work originally intended to take place under this phase of the works is now subject to new applications for consents to An Bord Pleanála under the Strategic Infrastructure Act and to DCENR under Section 40 of the Gas Act. An application will also be made for a Licence under the Foreshore Act in respect of the foreshore elements of these works. These applications are made in the context of a modified onshore pipeline route and the implementation of Advantica's recommendations including an enhanced modified landfall valve installation.

Phase 4: Offshore Pipeline

Installation of the 20" pipeline will be undertaken by a dynamically positioned pipe laybarge which will set up at the end of the trench constructed in Phase 1, pick-up the pull-in wire and lay a pipe bundle as the winch pulls from shore. The bundle will comprise the 20" pipe, with the PE outfall pipe and umbilical conduit strapped to it. Pipelay will continue with the laying out of the pipe and outfall in a combined operation as the laybarge moves offshore. The vessels used in Phase 1 will return and commence the backfilling of the nearshore trench. All

the rock will be returned before capping the trench with sand. Regular surveys will confirm that the seabed is restored to its original level.

The laybarge will be supported by a number of supply boats, including a survey boat and a trenching support vessel, which will undertake trenching operations out to KP 70.1 (approx. 13.3 km from the landfall). As-built surveys will be conducted to record the number and extent of freespans along the whole length of the pipeline. Those freespans not meeting the maximum allowable height criteria of 0.57m will be corrected by pipe lowering using the trencher or rock emplacement, or a combination of both. The final as-built surveys will also be conducted to verify the depth of burial of the mechanically back-filled trench (between KP 82.2 and KP 83.4) and the depth of lowering elsewhere (from KP 82.2 to KP 70.1).

Phase 5: Offshore Umbilical

Laying of the offshore umbilical will be carried out by a lay vessel starting at Broadhaven Bay and laying out to the Corrib field. The umbilical lay will be initiated by pulling the shore end into a protective conduit that runs for at least 1700m from a water depth of 15m to the landfall. Immediately ahead of the umbilical installation a vessel will use a towed seabed plough to prepare a trench for the umbilical to a depth of 0.6m below the seabed. The offshore end of the umbilical will be laid down with its termination assembly located close to the manifold for subsequent pull-in and connection. An as-built survey will be carried out on the entire umbilical checking for depth of cover. Any further protection of the umbilical will be carried out as part of the Phase 6 works.

Phase 6: Manifold Installation And Infield Works

The subsea facilities at the offshore location comprise of a manifold, up to 7 wellhead protection structures, interconnecting umbilicals and flowlines. All items will be installed from Construction Vessels using diverless techniques. The structures will be transported to site on the vessel deck and lowered with a crane and winch. Similar Construction Vessels will also carry out the laying of the infield umbilicals and flowlines, and be used for the support of a seabed trenching machine that will bury the lines. A combination of tunnel structures, mattresses and rock placement will be used to protect the end terminations that cannot be accessed and buried by the trencher. As-built surveys will be carried out to confirm depth of cover of the buried lines.

Phase 7: Hook-Up, Testing and Commissioning

The 20" pipeline, the infield flowlines and the umbilicals will be connected to the seabed structures by means of ROV mounted tooling which will be carried out from one of the construction vessels. The integrity of the pipeline and flowline connections will be tested by flooding them and applying pressure to the entire system. Controls equipment will be function tested from onshore and a visible check made by the vessel offshore. Once the facilities are proven as mechanically complete, the test water will be displaced from the flowlines with methanol (or an alternative fluid) and the pipeline will be dewatered by a train of pigs launched from shore and collected in the manifold subsea pig receiver.

Chapter 8 Planning History

Relevant Planning History relating to the Subject Site and the Surrounding Area

The following planning history was provided by Mayo Co Co in their submission to ABP¹⁰.

(a) Part of the proposed pipeline route was subject to consent for a pipeline in connection with the Corrib Gas Field development given under section 40 of the Gas Act 1976 (as amended) by the Minister for the Marine and Natural Resources on 15th April 2002.

(b) A reference under Section 5 of the Planning & Development Act 2000 Planning Register Ref. P05/1655, An Bord Pleanála Ref 16. RL 2293 was determined by the board on 31/05/2006. The reference was in relation to matters concerning the on-shore pipeline subject of the Ministerial Consent referred to in (a) above.

(c) A planning application to retain (for a period of 5 years) temporary alterations to a previously existing agricultural entrance from the public road, the provision of a temporary construction access road from the public road to the Corrib gas pipeline wayleave at Glengad and all other associated site excavation and site development works above and below ground Planning Register Reference 06/2565. Permission was granted subject to conditions by An Bord Pleanála on 12/11/2007 reference PI 16.223463.

(d) A planning application for a gas terminal, planning register ref. P03/3343, An Bord Pleanála ref. PI 16.207212 was granted on 22/10/2004.

(e) A planning application for Amendments to the previously permitted gas terminal for the reception & separation of gas consisting of changes to the main entrance from the R314 to the site include: the relocation of the pump/sump chamber & surrounding fence from the East to the West side of the main North South access road; the relocation of the services from below ground on the East side to above ground on the West side of the main North South access road, installation of a valve pit (and associated hand rail); the erection of a 5.6 m high cctv mast & associated cctv, the provision of a stone wall on the east side of the main entrance in place of the permitted fence and all associated ancillary site development works. Planning register ref. P07/3322 Permission was granted on 27/06/2008

(f) Amendments to the previously permitted gas terminal for the reception & separation of gas consisting of changes to the Administration, Maintenance and Laboratory Complex Buildings, Waste Water Treatment Building, Control Building, East-West Access Road, and Methanol Still, all associated ancillary site development and landscaping works. Planning register ref. P08/170 An Bord Pleanála ref. PI16. 29487 was granted on 01/12/2008.

(g) Amendments to the previously permitted gas terminal for the reception & separation of gas consisting of changes to the sales gas compressor building, the heating medium fired heater, the heating medium surge drum and associated structures and equipment (including pipework, piperacks, access stairways and platforms). The proposed development also includes for all associated ancillary site development works. Planning register ref. P08/774 Permission was granted on 08/08/2008.

¹⁰ [DRN WS 1 Mayo Co Co]

(h) Amendments to the previously permitted gas terminal for the reception & separation of gas consisting of minor alterations to the Power Generation Building and the addition of a building to contain Selective Catalytic Reactors (SCR), an associated urea solution storage tank and transfer pumps. Planning register ref. P08/1182 Permission was granted on 30/09/2008.

(i) Amendments to the previously permitted gas terminal for the reception & separation of gas consisting of changes to the Emergency Holding Tank (including the provision of associated equipment/structures) and the addition of an electrical switch-room and transformer at the main site entrance. Planning register ref. P08/1620. This application is currently on appeal ref. PL16.231952

(j) Amendments to the previously permitted gas terminal for the reception and separation of gas consisting of the addition of a cold separator vessel, (including the provision of associated pipe work, access stairs, ladders and platforms), 2. no associated fire and gas detectors, an associated fire monitor, modifications to permitted access stairs and platforms and to relocate a permitted fire monitor, including all associated ancillary site development works above and below ground. A peat deposition site in the townlands of Srahmore and Attavally, Bangor Erris. Planning register ref. P09/196, this application is current.

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Chapter 9 Legislative Context

Mr. Stephen O'Sullivan, a Senior Planning Inspector with An Bord Pleanála (ABP), has been appointed by ABP to assist the inspector in examination of these applications. Mr. O'Sullivan has considered and has examined aspects of the applications including the identification of the legislative context for the applications.

In the following extract from Mr. O'Sullivan's report a legislative context for consideration of the proposed development is set out. Mr. O'Sullivan's Report in full is contained in Appendix 1 of this report.

9.1 Mr. O'Sullivan's Report

Mr. O'Sullivan's Report Section 2: Legislation and other consents relevant to the proposed development

“2.1 European legislation

2.1.1 The Environmental Impact Assessment Regime

The following European legislation is relevant:

Directive 85/337/EEC

Adopted in July 1985 to be implemented by the member states by July 1988

This directive has been amended twice, by –

Directive 97/11/EC

Adopted in March 1997 to be implemented by the member states by March 1999

This amended the initial directive in numerous ways in order to ensure it was applied in a harmonized and effective manner. It refers to the types of project requiring EIA, the factors to be assessed, the thresholds or criteria for deciding when EIA was required; the information required in an EIS; scoping for an EIS; transboundary consultation; and public consultation and information.

Directive 2003/35/EC

Adopted in May 2003 and to be implemented by member states by June 2005

This directive was adopted to provide for participation in decision making on environmental matters by the public, including non-governmental organizations, and access to procedures to challenge those decisions. It sought to give effect to the provisions of the Aarhus Convention, which would not otherwise have a direct effect under European or Irish law.

Some provisions of the EIA directive, as amended, are worth noting –

The preamble recognizes–

... that the best environmental policy consists in preventing the creation of pollution or nuisances, rather than subsequently trying to counteract their effects;

... the need to take effects on the environment into account at the earliest possible stage in all the technical planning and decision making processes

and

... that development consent for public and private projects which are likely to have significant effects on the environment should be granted only after prior assessment of the likely significant effects of those projects has been carried out

Article 2(1) states –

Member states shall adopt all necessary measures to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size, location are made subject to a requirement for development consent and an assessment with regard to their effects.

Article 10a was inserted by the 2003 directive. It states –

Member states shall ensure that, in accordance with the relevant national legal system, members of the public

- a) having a sufficient interest, or alternatively*
- b) maintaining the impairment of a right ...*

have access to a review procedure before a court of law or another independent or impartial body established by law to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive.

...

Any such procedure shall be fair, equitable, timely and not prohibitively expensive.

The directive is implemented in various pieces of Irish legislation depending on the code under which a development consent is being given. The Irish provisions relevant to the planning system are in Part X of the Planning and Development Acts 2000-2006 and Part 10 and Schedules 5, 6, and 7 of the Planning and Development Regulations 2001-2007. The judgement of the High Court in Cairde Chill an Disirt Teo. vs. An Bord Pleanála 2009 IEHC 76 indicated that the requirement for a review procedure in Article 10a of the directive may be met by the previously established rules for judicial review.

The judgment of the High Court in Volkmar Klohn vs. An Bord Pleanála, 2008 IEHC 111 described the difference between an EIS – which is a document submitted by an applicant, and EIA – which is an ongoing exercise undertaken by the decision maker. The EIS is there to launch a process that will attract comment and submissions from other parties. A great deal of information can be accumulated between the lodging of the EIS and the final decision by a planning authority or the board. Thus the EIS intended to be comprehensive in its scope, but is rarely definitive in its conclusions. The requirement in paragraph 1(d) of Schedule 6 of the 2001 regulations (that an EIS contain an outline of the main alternatives studied by a developer and an indication of the main reasons for his or her choice) sets a very low threshold for an EIS to pass and does not establish a very specific obligation. It is

noted that there is no such requirement for the alternatives to be addressed in the EIA carried out by the decision maker.

The judgment of the European Court of Justice in Commission vs. Ireland Case C-215/06 (the Derrybrien case) stated that Ireland had failed to comply with the requirements of the EIA directive because Irish legislation allows for retrospective permission to be granted for a development that requires an EIA under the directive; that such a permission would have the same effect as a permission preceding the carrying out of development, and it can be given in non-exceptional circumstances; while the directive requires projects which would have a significant effect on the environment to be identified and made subject to an assessment and a development consent before they are carried out.

I would advise as follows regarding the implications of the law on environmental impact assessment for the current case.

- The requirement under Article 10a for members of the public to have access to a procedure to challenge the procedural or substantial legality of decisions, which arises from the Aarhus convention, is met by the availability of the judicial review procedure for the decision on an application made by the board.
- Environmental impact assessment is a process carried out by a consent authority (in this case the Board) and is to be distinguished from the requirement on an applicant to submit information in the form of an environmental impact statement. The former can be based on information obtained from several sources which may remedy defects in the statement submitted with any application. The directive and subsequent Irish legislation requires an applicant to provide information about alternatives to the proposed development in an EIS, but the level of consideration that must be given to the topic is rather low. No such requirement to consider alternatives is placed upon the consent authority in its carrying out of an environmental impact assessment.
- The regime established by the legislation requires the environmental impact of projects to be assessed before consent for them is granted. The board is precluded from granting retrospective permission for works which fall within the scope of the directive where the works were carried out before an environmental impact assessment was carried out.”

Mr. O'Sullivan's Report Section 2.1.2: The Habitats and Birds Directives

“Directive 92/43/EEC was adopted on 21st May 1992 with a deadline for implementation in May 1994, and amended on various occasions up to 20th December 2006. This directive, known as the Habitats Directive, concerns the conservation of habitats and of wild fauna and flora.

The preamble to the directive state *inter alia* that in view of the threat to certain types of natural habitat it is necessary for them to be defined as having priority in order to favour the early implementation of measures to conserve them; and that it is necessary to designate special areas of conservation to create a coherent European ecological network in order to ensure the restoration or maintenance of natural habitats of Community interest

Article 6 of the directive deals with sites which are designated as special areas of conservation or sites whose designation as such is proposed. It also refers to sites which are classified as Special Protection Areas under Article 4 of the Birds Directive (79/403/EEC).

Article 6 (3) reads -

Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) of the directive reads -

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

Blanket bogs are designated as a habitat of community interest in Annex I of the directive. Active blanket bogs and machair are designated as priority habitats. Atlantic Salmon is designated as a species of community interest in Annex II.

The directive was addressed to the member states and was to be implemented within two years of its adoption.

The decision of the European Court of Justice in C-127/02 (the Waddenzee case) held that, under article 6(3) of the Habitats Directive, an appropriate assessment of the implications for a site of a project requires all aspects of the project that can, by themselves or in combination with other plans or projects, affect the site's conservation objectives, must be identified in the light of the best scientific knowledge in the field. A national consent authority can authorise a project only if it has made certain that the project will not adversely affect the integrity of site, which is the case where no reasonable scientific doubt remains as to the absence of such effects.

The directive was implemented in Irish law mainly through the EC (Natural Habitats) Regulations 1997 -2005. Article 27 of those regulations requires planning authorities to consider the planning application, and the Board to consider appeals on such an application, in a manner consistent with the Habitats Directive. It states that an environmental impact assessment properly carried out shall be an appropriate assessment for the purposes of the regulations. The regulations do not refer to the consent procedure set out in sections 182C & 182D of the Planning and Development Acts 2000-2007. However the board is required by section 182D(10)(c&d) of the acts when considering an application under that procedure to have regard to the presence of a European site (which would include candidate SACs and SPAs) and the effect of a development upon it. In any event, even in the absence of any national legislation on the topic, the habitats directive would be binding directly on An Bord Pleanála as it is an emanation of a state to which the directive was addressed.

Obligations under the Ramsar Convention do not have direct effect under Irish or European Law. Compliance with them depends upon the Birds Directive and subsequent legislation.

The above directives are addressed to the member states. An Bord Pleanála is regarded as 'emanation of a member state' and so the directives are binding upon it in certain circumstances. Members of the public may therefore rely on the provisions of directives in court proceedings against the Board even if those provisions have not been properly transposed into national law, provided the date for the implementation of the directive has passed and that the relevant provisions are clear, precise and unconditional.

As the development proposed in this case is not concerned with the management of a European site, but is likely to have a significant effect on a cSAC, then Article 6 of the Habitats Directive would apply to the consideration of the current application. The matter is considered at section 3.4.7 below."

Mr. O'Sullivan's Report Section 2.2: National legislation

"2.2.1 The Various Statutory Controls on the Corrib Gas Project

The exploitation of the Corrib's natural gas deposit is subject to control under several different statutory regimes. Licences and consents have been granted under some of those regimes, others will be required before the overall scheme is implemented. They can be summarised as follows –

- Under section 13 of the Petroleum and Other Minerals Development Act 1960, the Minister for the Marine and Natural Resources granted the applicant a lease 2001 on the Corrib Gas Field. Under the terms of that lease the applicant submitted a plan of development for the gas field to the Minister for the Marine and Natural Resources which the Minister approved subject to conditions on 15th April 2002. The conditions on the approval of the plan of development included those which referred to the impact of the overall development on the environment.
- Under section 3(1) of the Foreshore Act 1933, the Minister for the Marine and Natural Resources granted a licence on 17th May 2002 to the applicant to lay a gas pipeline on the foreshore. Conditions attached to the licence included those which referred to the impact of the pipeline on the environment. The area to which this licence refers is similar, but does not entirely correspond with, the area required to carry out the development proposed in the current application. SEPIL has indicated that a new foreshore licence would therefore be required before that development could be carried out.
- Under section 40 of the Gas Act 1976, as amended, the Minister for the Marine and Natural Resources gave consent on 15th April 2002 for a gas pipeline from landfall to the terminal at Bellanaboy, Co. Mayo. The route of the pipeline to which this consent refers is similar, but does not entirely correspond with, that proposed in the current application. SEPIL has indicated that a new consent under the Gas Acts would therefore be required before that development could be carried out.
- The Environmental Protection Agency issued an Integrated Pollution Prevention and Control Licence to Shell E&P Ireland Ltd. on 12th November 2007 for the operation of a gas refinery and large combustion plant at Bellanaboy, Co. Mayo. IPPC LICENCE REFERENCE NO P0738-01. The conditions attached to the licence prescribe emission limits for the licensed activities, including those for emissions to the sea which would involve operation of the pipeline proposed in this application.
- The Environmental Protection Agency issued a Waste Licence (W 0199-01) to Bord na Móna Energy Limited on 29th October 2004 for the placement of 450,000m³ of waste peat excavated from the site of the gas terminal at Bellanaboy at Srahmore, Co. Mayo. The conditions attached to the licence control the operation of the waste facility and set limits for emissions from it. They also specify that the licence refers only to peat extracted from the site of the Bellanaboy terminal. SEPIL have indicated that a new waste licence would

be required before the placement of peat from the site of the proposed development could be carried out.

- Planning permission was also granted by the board for the gas terminal at Bellanaboy and the waste deposition facility at Srahmore by the board under PL16. 207212.

The exploitation of the gas field is therefore subject to something akin to the 'statutory maze' referred to in the judgement of the court in O'Connell vs. the EPA. The separation of the environmental control imposed on projects into different consents provided by different public bodies was considered in the case of Murphy vs. An Bord Pleanála and was found to be acceptable, at least in the context of European legislation on Environmental Impact Assessment. The judgement in that case cited the desirability under a split regime to avoid duplicating the responsibilities of public agencies. It follows from this objective that control of any particular aspect of the environmental impact of development should be exercised by the agency whose expertise and statutory powers are best suited to it, and that another agency should not attempt to replicate control of that aspect of development. This approach reduces the likelihood of contradictory standards being imposed in respect of the same issue, and avoids wasteful effort and expenditure. It does not follow from this objective, however, that the Board in its consideration of this application should not have regard to the powers and duties of other public bodies involved in regulating the project. The question is probably best dealt with by bearing in mind the purposes set down in legislation for each of the statutory codes which has a bearing on the overall Corrib project. In the first instance a summary of the relevant provisions of the planning code may be helpful."

Mr. O'Sullivan's Report Section 2.2.2: The regime under planning legislation

"The application for approval for a strategic gas infrastructure development which is before the Board has been made under section 182C of the Planning and Development Acts 2000-2006. It should be noted that the application, like any other planning application, is concerned with a proposed development. A development is comprised of works to land and a change in the use of land, as laid down in section 3 of the Acts. A development is an event which occurs over a relatively short period of time. When the works have been completed and the use of the land has changed, the development has finished. Development should therefore be distinguished from an activity or the continuation of a use which is already established on the land. Any approval consequent to this application would therefore control the development of an upstream gas pipeline, rather than its operation.

The Board is under a statutory duty to consider and decide the application. Under section 182D(5) of the acts the Board may decide to approve the proposed development, modify and approve it, approve it in part only, attach conditions to any approval, or refuse to approve the proposed development.

Before its decision on the application the Board is required by section 182D(1) of the acts to consider the information presented to it in the EIS and in the submissions/observations made on the application which relate to the proper planning and sustainable development of the area and the likely effects on the environment of the area, as well as to the report and recommendations of the person

who conducted the oral hearing. Under section 182D(10) this consideration shall have regard to the provisions of the development plan, to the prescription of any part of the area as a European site and whether the proposed development would have an effect on such a prescribed site, and to provisions of the planning acts and subsequent regulations.

Under section 143(1) of the acts the board has a general duty in its performance of its functions to have regard to the policies and objections of the government, of the Minister for the Environment, Heritage and Local Government, of the planning authority or of any other public body whose functions may have a bearing of the proper planning and sustainable development of area; to the national interest and the effect of the board's performance of its functions on important strategic economic or social issues, and the National Spatial Strategy and any regional planning guidelines.

There is a general duty on any public body to consider all relevant matters and disregard irrelevant matters when making decisions. The planning legislation is quite specific as to the matters which the board must consider when determining the application. The basic criteria are –

- the likely consequences for the proper planning and sustainable development of the area of the proposed development, and
- the likely effects on the environment of the proposed development.
- In considering what those likely consequences and effects would be the Board must have regard to –
- The policies of the Government, of the Minister for the Environment Heritage and Local Government, of Mayo County Council, and of any other public authority where relevant to the proper planning and sustainable development of the area.
- The national interest and issues of strategic economic or social importance to the State
- The presence of prescribed European sites (Special Protection Areas and candidate Special Areas of Conservation) and any effects on such sites arising from the development.
- The provisions of the Planning Acts and Regulations, of the National Spatial Strategy, of the Regional Planning Guidelines and of the County Development Plan.
- The information contained in the Environmental Impact Statement and the observations duly made on the application
- The report and recommendation of the person conducting the oral hearing.

Given the detail with which the legislation outlines the relevant considerations for the present application, it would appear to me that a cautious approach should be adopted in accepting other considerations which are not specified as being relevant to the Board's decision. This cautious approach should be taken in order to avoid any

tainting by irrelevant considerations. Before any other topic is introduced to the assessment and recommendation which would be placed before the Board, it should be clear that it is a topic that relates clearly to the proper planning and sustainable development of the area or the likely effects on the environment. However these are nevertheless broad concepts.”

Mr. O’Sullivan’s report Section 2.2.3: The relationship between the Waste Licensing and IPCC regimes and planning control

“Section 182C does not specify implications to be considered where there is also a requirement for a separate licence under the Waste Management Act 1996 or an Integrated Pollution Prevention Control Licence under the Environmental Protection Agency Act, 1992 and the Protection of the Environment Act, 2003. However the provisions which apply to ordinary planning applications and appeals can be extrapolated to section 182C applications. Thus section 57(3) of the Waste Management Act 1996, as amended by the Planning and Development Act 2000, specifies that the Board may not impose conditions to control emissions from the operation of a waste activity which is subject to licence, but may conclude that a development is unacceptable on environmental grounds notwithstanding that the associated activity would be subject to a waste licence. Similarly section 99F of the Environmental Protection Agency Act 1992, as inserted by the Protection of the Environment Act 2003, prevents the board from placing conditions on a planning permission which seek to control emissions from an activity that is subject to an IPCC licence, but may conclude that the development is unacceptable on environmental grounds.

It is therefore unlikely that conditions could be attached to any permission issued on foot of the current application to control emissions from the operation of the refinery through the proposed pipeline, or from the deposition of peat at Srahmore, such issues being better suited to the competence of the EPA.

It is noted that the EPA did not provide substantial comments to the board on the current application, other than to cite conditions on the IPCC licence which referred to notification to the agency of the quantity of gas to be held in the pipeline, the pressure under which it was to be operated, and the detail of arrangements for the elimination of the gas inventory in the pipeline in the event of an emergency.

The legal responsibility to comply with the requirement of a waste licence or an IPCC licence rests with the person carrying out the licensed activity. The Board cannot assume that the person will not comply with those requirements or take upon itself responsibility to ensure such compliance, although it would be proper to ensure than any conditions or modifications which the Board itself imposed on the proposed development did not frustrate compliance with the licences.”

Mr. O'Sullivan's Report Section 2.2.4: The approval of the plan of development and consent under the Gas Acts

“The approval by the Minister for the Marine and Natural Resources of a plan of development for the Corrib gas field was made under the terms of petroleum lease, itself made pursuant to the Petroleum and Other Minerals Development Act, 1960. The long title of that act states its purposes to include the vesting in the minister of all property in petroleum existing in its natural condition in strata and to make further and better provision for the working and development of such petroleum. Section 13 empowers the minister to grant petroleum leases where he considers this to be in the public interest. The granting of a lease and the subsequent approval of the plan of development can therefore be taken as indicating that the exploitation of the Corrib gas field in accordance with the approved plan is in keeping with government policy relating to the use of the state's mineral resources. Similarly, the long title of the Gas Act 1976 states its purpose as an act to make provision with respect to gas supply. A consent granted under section 40 of that act would indicate that the consented pipeline was in keeping with government policy on gas supply network. These would be material considerations for the current application by virtue of section 143(1) of the Planning and Development Acts 2000-2006. It is not open to the Board to question or judge government policy on energy or any other issue, and it should not attempt to second guess the relevant government department on the question of compliance with national energy policy. However the Board does have a duty under law and the expertise to consider the effect of any particular development on the environment, and this duty cannot be delegated or restricted by the actions of a government department.

The petroleum lease and the consent to the plan of development given by the Minister for the Marine and Natural Resources, and any consent given under the Gas Acts, are thus relevant to the consideration of the current application in that they indicate that the proposed development is part of an overall scheme which is in keeping with government energy policy. However those documents do not relieve or alter the Board of its duty to assess and control the impact of the proposed development on the environment.”

Mr. O'Sullivan's Report Section 2.2.5: The foreshore licence

“The foreshore licence was granted pursuant to the Foreshore Act, 1933, the purpose of which is stated to be, in its long title, to make provision for the granting of leases and licences in respect of foreshore belonging to the state. The system allows for the control of the use and occupation of land which is owned by the state. The granting of a foreshore licence to facilitate the proposed development would therefore indicate that the applicant had the requisite legal interest in land to carry out that part of the development which would impinge on the foreshore. It would not relieve or alter the Board of its duty to assess and control the impact of the proposed development on the environment.”

Chapter 10 Additional Information provided by The Applicant at the Oral Hearing

10.1 Summary of OH Submissions

10.1.14 Opening and Introduction by Mr. Esmonde Keane

10.1.15 Evidence: Project overview

Mr. Ciáran Butler SEPIL presented an overview of the project.¹¹

10.1.16 Evidence: Addendum to E.I.S

SEPIL submitted an Addendum to the E.I.S at the OH.¹²

This document details two additional surveys carried out since the Feb 2009 application, some extra construction details are laid out with regard to Site Compound 5 and the Temporary Shore Access at Aghoos.

1. Chapter 5 Construction & Commissioning

The addendum now proposes that the compound number SC5 in the cSAC Glenamoy Bog Complex be omitted from the proposed development as SEPIL now consider this is no longer required. This amendment to the Scheme gave rise to an amendment in the Compulsory Acquisition Order (CAO) Land Acquisition Required which is shown on DRN OH133 and DRN OH109 and is dealt with in the section of this report dealing with the Acquisition Order at Chapter 49: Acquisition Order Issues.

2. Chapter 5 Temporary Shore Access

The detail of the construction for temporary shore access at Aghoos has been changed and is shown in the addendum on Drawing DG603 P03.

3. Chapter 12 Terrestrial Ecology

Access to part of the site between chainage 89.50 and chainage 89.80 had been restricted prior to completion of the 2009 E.I.S. Surveys were carried out in May 2009 in this area, and a report of the surveys is included in the addendum which concludes that “the ecological assessment of the study area as set out in the Corrib Onshore Pipeline E.I.S (2009) has been confirmed by the findings of the ecological surveys carried out in May 2009”.

A separate report on flush vegetation to the North of the proposed pipeline route in Glenamoy Bog Complex cSAC is also contained in the Addendum. The assessment concludes that there will be no impact from the proposed development on Flush 2, and once mitigation measures are implemented, Flush 1 will also not be impacted whether during or post construction.

¹¹ [DRN OH2]

¹² [DRN OH7]

4. Chapter 15 Geology & Hydrogeology

Monitoring had taken place on ecohydrological changes following the submission of the E.I.S. with the application for the proposed development. This monitoring had taken place at Rossport, Ballagelly, Aghoos and near the Bellanaboy Gas Terminal. This assessment is included in the addendum and concluded that the conceptual hydrogeological model (as outlined in Chapter 15 of the E.I.S) had been substantiated and confirmed by the additional data. As the additional data on the ecohydrological conditions were being presented at the OH there were questions raised by observers who found it difficult to follow the data as presented.

Accordingly SEPIL were asked to submit a non technical summary of the Addendum Appendix C which was submitted on 25th May.¹³

Appendices to DRN OH7 include:

APPENDIX A - Conceptual Design of Proposed Shore Access at Aghoos

APPENDIX B - An Assessment of Flush Vegetation to the North of the Proposed Pipeline Route in the Glenamoy Bog Complex cSAC - The Results of Ecological Surveys South of Sruwaddacon Bay at Aghoos

APPENDIX C – Ecohydrological and Ecohydrogeological Impact Assessment of Proposed Corrib Onshore Pipeline – Supplementary Information

APPENDIX D - Stone Road Reinstatement Drawings

10.1.17 Evidence: Traffic

Evidence was given by Mr. Conall Mc Aonghusa clarifying key aspects of the E.I.S. with respect to the haul routes and traffic plan. Mr. McAonghusa summarized the approach taken to traffic assessment, and indicated that the significant impacts would all be associated with the construction phase of the project. He outlined the mitigation measures proposed and indicated that SEPIL traffic approach had been developed in co-operation with Mayo County Council, and was broadly agreed. Mayo Co Co will undertake strengthening works and maintenance works on the haul route at SEPIL's expense. A convoy system with stop/go controls will be used in the Rossport road network, and for access to and from Glengad to get heavy haulage in and out of those areas. The roads in Rossport area cannot be widened because of local resistance to land acquisition for road widening purposes. Mr. Mc Aonghusa then provided a response on behalf of SEPIL to proposed conditions as recommended by Mayo Co Co in their submission to An Bord Pleanála.

10.1.18 Evidence: Route Selection Process & Alternatives Considered

Mr. Ciáran Butler presented a summary of the route selection process and alternatives considered.¹⁴ He presented a summary of the main reasons for selection of route C1 and he presented a summary of the alternative layouts considered for LVI at Glengad. In questions at OH, SEPIL were asked to provide information to demonstrate that a robust analysis of route alternatives had been undertaken. ABP had requested this at the 182c pre application consultations [File 16.GC.0004 refers]. SEPIL provided a “clarification of the Route Development Process”¹⁵ and this included an iterative series of evaluations of alternative

¹³ [DRN OH27]

¹⁴ [DRN OH3]

¹⁵ [DRN OH104]

pipeline corridors, comparing corridors under technical, community and environmental criteria.

10.1.19 Strategic Policy, Planning & Development Context by Des Cox

Submitted on Day 1 of the Oral Hearing.¹⁶

This document gives an overview of the Planning & Development context for the project. The History of Consents for this project is outlined. The legislative context for the proposed development is discussed. An explanation is given of the strategic policy context of the proposed development and in particular the context of the project in relation to The Regional Planning Guidelines for the West Region 2004 and the Mayo County Development Plan 2008-2014.

10.1.20 Construction Methodology and need for CAO by Eamon Kelly

Submitted on Day 1 of the Oral Hearing.¹⁷

Brief of Evidence presented in two parts.

The first part describes the proposed construction methods, proposed installation and testing methods, the likely construction programme and the construction supervision team. For this report the pipeline is divided into 7 sections and the proposed methods to be used on each are discussed. The principle methods described are The Spread Technique, The Stone Road Method, Micro-Tunnelling techniques and the proposed pipeline testing operation.

The second part deals with the issue of CAO (Compulsory Acquisition Order). A Master Map is attached to the document and the applicant is seeking CAO for all areas shaded green in the master map. This green shaded area is shown as the Temporary Working Area. Permanent Way leave required for post-construction access is shaded red. The Land Requirements for each of the 7 sections is then individually discussed in detail.

10.1.21 Geotechnical & Stability by Turlough Johnson

Submitted on Day 2 of the Oral Hearing.¹⁸

The scope of evidence considered is outlined. Details are given of the Geotechnical Investigation and the sources of information used. A Geotechnical overview of the proposed pipeline route is given. The Peat Stability Assessment approach which is used is discussed. There is a description of the approach used to assess the stone road in peat areas. A Geotechnical overview of the marine crossings using trenchless technique is given. The Geotechnical Risk Register is explained. Details are given of the Geotechnical assessment of the cliff near the LVI. The report comments on the Pollatomais landslides and the Peat Slip at Aghoos during road works in 2008. The geotechnical supervision and monitoring to be implemented for the project is described. Comments are made on Third Party submissions. Turlough Johnson states *“Taking into account the findings of the walkover survey, the results of the stability assessment and the proposed stone road construction method it is considered that the pipeline can be safely constructed along the proposed pipeline route.”*

10.1.22 QRA by Philip Crossthwaite

Submitted on Day 2 of the Oral Hearing.¹⁹

¹⁶ [DRN OH4]

¹⁷ [DRN OH5]

¹⁸ [DRN OH11]

¹⁹ [DRN OH12]

This QRA was carried out on the proposed pipeline to determine the levels of risk at the houses in the vicinity of the pipeline and the LVI. The methodology used to carry out the QRA is described. A definition is given of the system (pipelines & LVI) being analysed. There is a discussion on the frequencies, consequences and impacts of potential releases. Frequencies and impacts are then combined to give a quantified risk, both individual and societal. Some conditions suggested by Mayo County Council as being relevant to this project are then addressed. In his summary Philip Crossthwaite states that at the nearest occupied dwelling to the pipeline the individual risks are “*extremely low*”, at the nearest occupied dwelling to the LVI the individual risks are “*negligible*” and the overall societal risk is “*negligible*”.

10.1.23 Pipeline Design & Safety (including pipeline integrity management plan and pipeline emergency response) by John Purvis

Submitted on Day 2 of the Oral Hearing.²⁰

The context and overall assessment of the Corrib Onshore Pipeline is outlined and an overview is given of the Corrib Onshore Pipeline System. The Pipeline design is described and several parameters used in the design are given. Many important issues are discussed in detail including; wall thickness, test, operating and transient pressure, erosion, corrosion, stability, services, outfall pipeline and the LVI. Pipeline Operation, Maintenance and Integrity Management are covered in this document. PIMS is described. Damage, fatigue, fracture etc. of the pipeline will be monitored by SEPIL. An emergency response plan which is in development is discussed. John Purvis states that the pipeline will be decommissioned to comply with relevant EU and national legislation and outlines some possible methods of decommissioning.

10.1.24 LVI by John Gurden

Submitted on Day 2 of the Oral Hearing.²¹

This document describes the engineering and design of the Glengad LVI. It is explained that the LVI is necessary because of recommendations of TAG and in order to meet health and public safety requirements. It is described how the LVI forms an integral part of the Over Pressurisation Protection System for the onshore pipeline. The operation of the LVI Safety Shutdown System is explained. The LVI was designed to cause minimum visual impact to Glengad. The other main features of the LVI are then described including layout, access and noise issues. John Gurden states that “*the LVI has been engineered and designed to established and agreed industry codes and standards.*”

10.1.25 Srahmore Peat Deposition Site by Aidan McGee

Submitted on Day 2 of the Oral Hearing.²²

This document explains the context of the Srahmore site and describes the proposed development. There is a description of the infrastructure and facilities at the site. The Operation and Management of the site is outlined and in particular Deposition, Stabilisation and Monitoring are discussed.

²⁰ [DRN OH13]

²¹ [DRN OH14]

²² [DRN OH15]

10.1.26 Landscape & Visual Impact by Ray Holbeach

Submitted on Day 2 of the Oral Hearing.²³

This document provides a description of the assessment approach and a summary of the assessment. Potential impacts of the proposed development are discussed both in terms of landscape character and visual impact. Both the operational and construction stage are considered. Mitigation measures are also discussed.

10.1.27 Archaeology & Architecture by Lisa Courtney

Submitted on Day 3 of the Oral Hearing.²⁴

In this document the assessment approach is outlined. There is an assessment summary divided into three categories: Architectural Heritage, Cultural Heritage and Archaeological Heritage. Mitigation measures are discussed for each of these three categories.

10.1.28 Socio-economic impacts by Des Cox

Submitted on Day 3 of the Oral Hearing.²⁵

This document firstly describes the existing environment in the area. There is a description of the community engagement and liaison which has been associated with this project. The Socio-Economic profile of the area is outlined. Potential socio-economic impacts of the proposed developments are discussed as are possible mitigation measures. Community Investment associated with this development is highlighted.

10.1.29 Ecohydrology, Ecohydrogeology by Eileen McCarthy

Submitted on Day 3 of the Oral Hearing.²⁶

This document is an overview of assessments of the eco-hydrology of designated peatlands within the Glenamoy Bog complex cSAC and non-designated EU Annex 1 intact blanket bog that occur along and near the pipeline. The assessment methodology used is outlined. Factors influencing the eco-hydrology of the area are discussed. The potential eco-hydrological impacts of the proposed development are outlined and mitigation measures are discussed.

10.1.30 Marine Ecology by Ian Wilson

Submitted on Day 3 of the Oral Hearing.²⁷

This document firstly outlines the assessment approach taken to assess the marine environmental issues. There is a summary of existing environmental conditions in Sruwaddacon Bay. The potential impacts of the three proposed marine pipeline crossings (which are at the lower and upper Sruwaddacon and the mouth of the Leenamore river) are discussed. The potential impacts on migratory Annex II species in Sruwaddacon Bay are identified. There is a summary of mitigation measures proposed and possible residual impacts.

²³ [DRN OH16]

²⁴ [DRN OH19]

²⁵ [DRN OH20]

²⁶ [DRN OH21]

²⁷ [DRN OH22]

10.1.31 Ecology by Jenny Neff

Submitted on Day 3 of the Oral Hearing.²⁸

This document firstly outlines the assessment approach taken in assessing the terrestrial ecology. An overview of the proposed pipeline in terms of ecology is provided. Potential ecological impacts of the proposed development are discussed. The potential ecological impacts of the proposed peat deposition at Srahmore are also discussed. Issues raised by third parties are addressed.

10.1.32 Cumulative Impact & Interactions by Agnes McLaverty

Submitted on Day 3 of the Oral Hearing.²⁹

This document firstly outlines the assessment approach taken. The Project is divided up into five elements (Offshore installation, Offshore pipeline, Onshore pipeline, Gas Terminal & associated peat deposition site and the BGE Mayo to Galway pipeline.) Assessments of cumulative impacts and impact interactions are carried out. Conditions suggested by Mayo County Council are discussed and amendments are proposed by SEPIL to those conditions.

10.1.33 Noise & Vibration by Darragh Kingston

Mr. Darragh Kingston, an experienced noise and vibration professional presented a summary of the E.I.S. consideration of noise vibration. He outlined the modeling used to predict the noise levels, and he outlined the mitigation measures proposed to reduce the impacts of noise and vibration.

10.1.34 ERRATA for E.I.S.

Submitted to the Oral Hearing on Day 1.³⁰

Several changes to chapters and references in the EIS were corrected in the errata submitted.

10.2 Additional Documents Submitted by SEPIL at the OH

The following documents were also submitted by SEPIL in response to questions and requests for information from the Inspector

10.2.1 Non-Technical Summary of the Addendum by Eileen McCarthy

Submitted to the Oral Hearing on Day 4.³¹

This is supplementary information of eco-hydrological and eco-hydrogeological Impact Assessment of the proposed onshore pipeline. The report details the investigations which took place and analyses the significance of the results in the context of impact assessment.

10.2.2 Drawings of Works at Glengad Landfall

Submitted to the Oral Hearing on Day 8.³²

²⁸ [DRN OH23]

²⁹ [DRN OH24]

³⁰ [DNR OH6]

³¹ [DRN OH27]

³² [DRN OH44]

Drawings were submitted detailing an overview of works at Glengad Landfall [DG 0111 R05, DG 0099R13].

These drawings show offshore-onshore pipe overlap of construction

10.2.3 Supplementary information Phil Crossthwaite (DNV) on QRA

Submitted to the Oral Hearing on Day 9.³³

Supplementary information requested on 3rd June 2009 with regard to the QRA which includes a table of hazard distances from the jet flames at pressures of 100bar and 144 bar from holes in the pipeline and a representation of the sensitivity of the individual risk predictions. The tables also show hazard distances for full bore pipe rupture at 345 bar (Glengad) and 100 bar (downstream of LVI) and 144 bar (downstream of LVI).

10.2.4 Supplementary Geotechnical information

- Glenamoy Estuary Crossing Site Investigation AGECE Factual Report September 2004
- Irish Drilling Investigation 2002
- RPS Peat Probe & Shear Vane Tests 2008
- AGECE Corrib Onshore Pipeline Report June 2009

Submitted to the Oral Hearing on Day 9.³⁴

10.2.5 JP Kenny Landslip Analysis (Peat Slip)

Submitted to the Oral Hearing on Day 9.³⁵ These relate to the 2002 pipeline as then proposed.

The document entails a discussion of the pipe parameters, operating data and design criteria with respect to the landslip and load issues along the route. Load cases for each configuration are examined (7 in total) and conclusions are drawn for each case.

10.2.6 Reference projects (tunnels)

Submitted to the Oral Hearing on Day 9.³⁶

The document has a table detailing some projects internationally for reference with the location and tunnel diameter of each project including the pipe diameter and length of tunnel used for each.

10.2.7 Fact sheet on Umbilical Leak

Submitted to the Oral Hearing on Day 9.³⁷

This document details the prevention of failure in place for the umbilical and the leak detection system in place. The consequences and environmental impact of a leak or failure are also discussed.

³³ [DRN OH45]

³⁴ [DRN OH46]

³⁵ [DRN OH47]

³⁶ [DRN OH48]

³⁷ [DRN OH49]

10.2.8 QRA Data Netherlands (in Dutch)

Submitted to the Oral Hearing on Day 11.³⁸

This is a series of documents detailing the study tour by RPS in Netherlands. A guideline for carrying out QRA's in Netherlands is attached along with a risk contour for a pipeline Lauwersoog to Anjum. The report is in Dutch.

10.2.9 Bowtie Diagrams Example of Qualitative Risk Management

Submitted to the Oral Hearing on Day 12.³⁹

This document details the adopted approach to qualitative analysis (referred to as bowtie analysis) which provides a visualisation of the relationships between the causes of accidents, the possible escalation of such events to a range of possible outcomes. It makes links with QRA and attached are several bowtie diagrams. This document was provided as an example of the ongoing work preparing detail risk management documentation which is not yet completed for the management and operation of the pipeline.

10.2.10 Potential and effect of gas passing through closed valves

Submitted to the Oral Hearing on Day 12.⁴⁰

The document looks at the potential relating to the query raised during the hearing regarding the possibility of well head valves offshore and/or LVI valves passing gas fluid and thereby allowing an increase in the pressures of the Offshore and Onshore sections of the upstream pipeline. In certain circumstances it was accepted in evidence that the offshore pipeline pressure could rise to 345 bar over a period of time if the subsea valves closed in the wells and gas fluid leaked through the valves. It was also accepted in evidence that in the event that the terminal was not available to take and process gas and that the LVI was shut that the onshore pipeline pressure could continue to rise above 144 bar. This would arise in circumstances where the offshore wells and the shut in valves offshore passed small amounts of gas over time and thus raised the pressure in the offshore pipeline to well head pressure 345 bar.

In turn the LVI valves could pass small amounts of gas and over time the onshore pipeline pressure could rise above 144 bar. In evidence it was stated that such events were extremely unlikely, that the passing through valves of gas (and pressure) would take a long time to build up pressure and that operational management of the situation would prevent pressures rising by flaring off gas if necessary at the terminal. It was also indicated in evidence that it was possible to put in place a temporary connection to the flaring stack in the event that gas could not pass through the terminal itself.

10.2.11 Notes on flexibility testing of 3 LPP coating

Submitted to the Oral Hearing on Day 12.⁴¹

The document outlines the flexibility testing which was undertaken by SEPIL on 3LPP coated pipe and details the main results of these tests where tears were apparent or lifting of the internal coating. The document concludes that this cracking of the coating system is a surface 'phenomenon' as no loss of adhesion of the 3LPP coating system to the substrate was apparent before or after testing.

³⁸ [DRN OH61]

³⁹ [DRN OH63]

⁴⁰ [DRN OH64]

⁴¹ [DRN OH65]

10.2.12 Pictures of onshore pipes in storage

Submitted to the Oral Hearing on Day 12.⁴²

View of the internal coating of the pipelines and the temporary shed for storage and protection of the pipes.

10.2.13 Statement Re: Scour & Deposition in Sruwaddacon Bay

Submitted to the Oral Hearing on Day 12.⁴³

The document is a response to the query posed by ABP regarding the likelihood of the pipelines which cross Sruwaddacon bay becoming dislodged or exposed due to bed level changes arising from the natural marine and estuarine sediment movement over time. Sedimentary changes, morphological changes and natural changes upper and lower Sruwaddacon bay are presented with the conclusion that even with conservative estimates of possible lowering of the local seabed does not result in the exposure of the top of the pipe.

10.2.14 Environment Management Framework from Casino Gas Field: SANTOS

Submitted to the Oral Hearing on Day 12.⁴⁴

Environment Management Framework for the Casino Gas Field Development detailing the achievement of the project environmental objectives and targets through implementation of mitigation measures. This was submitted as an example of the environmental management on the Casino Gas Field project

10.2.15 Environmental Report from Casino Gas Field: SANTOS

Submitted to the Oral Hearing on Day 12.⁴⁵

The document has an overview of the project proposed for the Casino Gas Field and the various components involved including onshore and offshore pipelines. There is also an impact assessment for the marine and land based environments. This document was also submitted as an example of environmental management practice.

10.2.16 Fact Sheet: Intelligent Pigging

Submitted to the Oral Hearing on Day 12.⁴⁶

This document is a short factsheet which states that an intelligent pig will run through the pipeline prior to production to provide a base signature for future IP inspections. The choice of technology is discussed as well as the accuracy and tests to be carried out to calibrate and determine magnetization levels to be used in the IP configuration.

10.2.17 QRA Phil Crossthwaite DNV

Submitted to the Oral Hearing on Day 12.⁴⁷

⁴² [DRN OH66]

⁴³ [DRN OH64]

⁴⁴ [DRN OH68]

⁴⁵ [DRN OH71]

⁴⁶ [DRN OH74]

⁴⁷ [DRN OH75]

This document relates to the effect of incorporating a failure frequency due to ground movement on the risks from the pipeline in the vicinity of the landfall valve installation and the overall risk from the LVI given the various pressure regimes that can occur there.

10.2.18 Consequence Impact Maps

Submitted to the Oral Hearing on Day 12.⁴⁸

Consequence maps are provided overlaid on aerial photographs for those sections of the proposed onshore pipeline in the Rosspoint area and the proposed LVI. The values shown are determined by QRA.

10.2.19 Website Printout: Sharpening Shell's Safety Culture

Submitted to the Oral Hearing on Day 12.⁴⁹

This document details the initiatives recently (2007) employed by Shell in order to improve its Safety record with respect to the other large oil and gas companies.

10.2.20 Additional Information DNV about QRA (dispersion distance)

Submitted to the Oral Hearing on Day 13.⁵⁰

The document quotes dispersion distances for a hole of 31mm in the pipeline at 144bar and for a 31mm hole in the pipeline at 345bar.

10.2.21 AM & PM Turning Movement Srahmore Site 8

Submitted to the Oral Hearing on Day 13.⁵¹

This amended Figure TR0016 shows visualizations of the AM and PM Peak Turning Movements with Peak Construction Traffic at Srahmore Peat Deposition Site which had been incorrectly stated in the E.I.S.

10.2.22 Response by SEPIL to DEHLG

Submitted to the Oral Hearing on Day 14.⁵²

This is a further submission related to the EIS Addendum (RPS May 2009). This is a response to the comments in NPWS' submission on the addendum document submitted by SEPIL.

10.2.23 Response by SEPIL to DEHLG/ NPWS Re: Srahmore

Submitted to the Oral Hearing on Day 14.⁵³

This submission is made on behalf of Bórd na Móna in response to submission and statements made to the hearing by DEHLG and NPWS relating to Srahmore site. One query relates to whether the deposition is a deviation from the IPPC rehabilitation plan, another to drainage of the peat and blanket bog.

⁴⁸ [DRN OH77]

⁴⁹ [DRN OH78]

⁵⁰ [DRN OH79]

⁵¹ [DRN OH82]

⁵² [DRN OH83]

⁵³ [DRN OH84]

10.2.24 Corine Landcover Map Glenamoy Bog Complex

Submitted to the Oral Hearing on Day 14.⁵⁴

10.2.25 Photomap biodiversity enhancement

Replacement Habitat-SEPIL now owns this site and has identified this area which SEPIL is prepared to provide as replacement habitat for the Glenamoy Bog Complex.

Submitted to the Oral Hearing on Day 14.⁵⁵

10.2.26 EMP 2009 Landfall, Near-shore and Offshore Pipeline works:

Submitted to the Oral Hearing on Day 16.⁵⁶

This is a bridging document for the Environment Management Plan including discussion of offshore and onshore pipelines. There is a transport management plan and an oil spill contingency plan included also. This document relates to the offshore pull in works and has been approved by DCENR. The document was submitted as an example of the EMP proposed for the onshore pipeline.

10.2.27 Disc: EMP [See DRN 91 Above]

Submitted to the Oral Hearing on Day 16.⁵⁷

10.2.28 JP Kenny Stone Road / Pipeline Analysis

Submitted to the Oral Hearing on Day 16.⁵⁸

Work completed by JP Kenny which details the results of Finite Element Analysis (FEA) modelling for the pipeline with regard to settlement of the stone road and finds stresses are within safe limits. This document relates to additional analysis requested by ABP (Mr. C. O' Donnell) at the OH.

10.2.29 Haul Road Pavement Design June 2009

Submitted to the Oral Hearing on Day 16.⁵⁹

The document is prepared by Tobin Engineers and details some historic pavement surveys as well as providing a detailed pavement design analysis. The Mayo County Councils plans for road strengthening are discussed as well as cross sections details of the proposal for strengthening the road.

10.2.30 AGECE Additional Information June 2009 detailing Stone Road Settlement Analysis

Submitted to the Oral Hearing on Day 16.⁶⁰

⁵⁴ [DRN OH86]

⁵⁵ [DRN OH88]

⁵⁶ [DRN OH91]

⁵⁷ [DRN OH93]

⁵⁸ [DRN OH94]

⁵⁹ [DRN OH95]

⁶⁰ [DRN OH96]

Work completed by AGECE detailing analyses of the stone road settlement, impact of peat landslide on the stone road with pipe, qualitative assessment of relative potential for peat failure and a brief review of the Dooncarton Landslides. This document was submitted in response to a request by ABP (Mr. C. O'Donnell) for additional information at the OH.

10.2.31 Document No. 96 includes drawing No 001 of 14/6/09

Submitted to the Oral Hearing on Day 16.⁶¹

Drawing associated with the document AGECE Additional Information Report June 2009.⁶²

10.2.32 Additional response to NPWS Q No 12 (Corrib Onshore Pipeline Response to NPWS Q12)

Submitted to the Oral Hearing Day 16.⁶³

Responds to question from NPWS regarding an assessment of the relative potential for peat failure along the proposed pipeline route. This refers to the report 'Corrib Onshore Pipeline, Additional Information' by AGECE.⁶⁴ The document details areas of low, medium and high risk of peat failure with reference to defined sections along the proposed route.

10.2.33 Preparation of EMP

Submitted to the Oral Hearing on Day 16.⁶⁵ A discussion of the preparations necessary for the EMP and the guidelines followed in doing so. Also states some details of the EMP, its approval and consent process.

10.2.34 Copy of 2008 application of file GA0001 Road Strengthening Proposals

Submitted to the Oral Hearing on Day 16.⁶⁶

The document quotes Chapter 7 from 2008 EIS which identifies that road strengthening would be needed in some identified areas along the haul route and discussion of such with Mayo County Council. Details of the stop-go system for the one way Convoy System are enclosed also. This information was requested at the OH by the inspector.

10.2.35 Details of stone road at/from terminal

Submitted to the Oral Hearing on Day 16.⁶⁷

This document briefly

10.2.36 Details of transport and traffic for site workers to site

Submitted to the Oral Hearing on Day 16.⁶⁸

⁶¹ [DRN OH97]

⁶² [DRN OH96]

⁶³ [DRN OH98]

⁶⁴ [DRN OH96]

⁶⁵ [DRN OH99]

⁶⁶ [DRN OH100]

⁶⁷ [DRN OH101]

⁶⁸ [DRN OH102]

This document states that site workers will be transported from the terminal every morning in crew vans as appropriate. Security will be transported in mini vans and supervisory staff will use jeeps and park in the compound.

10.2.37 Overview of works at terminal site DG0112R12

Submitted to the Oral Hearing on Day 16.⁶⁹

The drawing details the various components of the terminal site with regard to the pipeline route. This drawing was submitted to clarify details of the proposed development where it approaches the terminal and to clarify the overlap of works there between the previous work and the proposed development.

10.2.38 Clarification of Route Development Process

Submitted to the Oral Hearing on Day 16.⁷⁰

This document includes the route selection criteria used by SEPIL and contains qualitative assessment of the routes considered.

10.2.39 Schedule House Proximity – Distances and map

Submitted to the Oral Hearing on Day 16.⁷¹

Map of the pipeline route with houses shown and numbered and their distances from the pipeline quoted.

10.2.40 Supplementary information DNV Phil Crossthwaite

Submitted to the Oral Hearing on Day 16.⁷²

Regarding questions raised over the hazard range quoted in the 2004 DNV report on the risks from the Ballinaboy Gas Terminal. This relates to a question by an observer regarding evidence given at the OH into the Terminal Development concerning the hazard range arising from a full bore pipeline rupture where it enters the Terminal facility.

10.2.41 Pipeline Statutory Risk Assessment Regime: Netherlands

Submitted to the Oral Hearing on Day 16.⁷³

The document details the risk assessment procedures undertaken in the Netherlands. The document shows in sections background and current measures, proposals to change to quantified risk assessment as a regime and regulatory requirements for risk assessment in the Netherlands.

10.2.42 Consequence Impact Maps - Second Set

Submitted to the Oral Hearing on Day 16.⁷⁴

Supplementary information to be read in conjunction with the Consequence Maps submitted to the Oral Hearing.⁷⁵ These maps include the area of the L1202 and also Aghoos area.

⁶⁹ [DRN OH103]

⁷⁰ [DRN OH104]

⁷¹ [DRN OH105]

⁷² [DRN OH106]

⁷³ [DRN OH107]

⁷⁴ [DRN OH108]

10.2.43 Change to Compulsory Acquisition Order (CAO) Map - Drawing WL(2)027A03:

Submitted to the Oral Hearing on Day 16.⁷⁶

Extract Map of area showing relevant lands, deviation limits and road crossings. This document relates to the change in CAO Land Acquisition Requirement because SEPIL have decided not to acquire and not to use the land originally identified for compound SC5.

10.2.44 Corrosion Management Wet Gas Pipelines

Submitted to the Oral Hearing on Day 16.⁷⁷

The document provides a brief overview of the NACE 1999 corrosion conference paper referring to relevant Shell experience with wet gas pipelines and their safety precautions with regard to corrosion risks in pipelines.

10.2.45 Noise & Vibration - Additional Information

Submitted to the Oral Hearing on Day 16.⁷⁸

The document details the consequences in noise and vibration of an emergency shutdown of the LVI and its restarting.

10.2.46 Pressure Regime: Subsea to BGE (Also includes Corrib Key High Pressure Trips)

Submitted to the Oral Hearing on Day 16.⁷⁹

The document presents an overview of the Pressure Regime of the Corrib upstream pipeline system and the Ballinaboy Gas Terminal through the delivery of sales gas to BGE downstream.

10.2.47 Arup Review of Glinsk as Possible Landfall

Submitted to the Oral Hearing on Day 16.⁸⁰

Review of Glinsk as a landfall site by Arup Consulting Engineers. The report details the evaluation criteria used, the physical area involved and the technical, safety and environmental impact of the site as a landfall. The area is then compared with Glengad concluding that the Glinsk coastline presents major environmental and engineering difficulties.

10.2.48 Maximum Length of Umbilical

Submitted to the Oral Hearing on Day 16.⁸¹

The document details that the maximum length of umbilical depends on the maximum weight and volume that can be accommodated in the installation vessel.

⁷⁵ [DRN OH77]

⁷⁶ [DRN OH109]

⁷⁷ [DNR OH110]

⁷⁸ [DRN OH111]

⁷⁹ [DRN OH112]

⁸⁰ [DRN OH113]

⁸¹ [DRN OH114]

10.2.49 Security Activity Profile – Additional Information

Submitted to the Oral Hearing on Day 16.⁸²

The document provides a profile of the 24 hour presence and extent of security personnel on site during construction phase of the development. The training involved and their transport to and from the site by bus, lighting and construction related to security and vehicle speed is also mentioned.

10.2.50 Surface Water Management & Monitoring Proposals

Submitted to the Oral Hearing on Day 16.⁸³

The document discusses the recommendations in the EIS to use sedimentation and filtration techniques for surface water run-off from the construction areas before discharging into the existing watercourses. It details the surface water policy regarding temporary working area also and the surface water monitoring programme.

10.2.51 High Level Pipeline Construction Costs

Submitted to the Oral Hearing on Day 17.⁸⁴

The applicant was requested to submit a high level summary of comparative pipeline costs of construction per km. The request was to cover the following types of construction: Construction on land, Construction on peat lands, Construction in a tunnel in estuary, Construction using open cut in estuary, Construction of pipeline offshore. The information was requested to inform the analysis of the Route Selection Process as carried out by the applicant and to provide an input into understanding the influence and significance of costs in Route Selection Process.

This brief document provides indicative construction costs for pipeline elements that are either included within the proposed Corrib Pipeline design, or that have been considered during route selection but are not part of the proposed design. The data and the assumptions and exclusions involved are set out in [DRN OH117].

10.2.52 Status of works carried out under previous permission Consent and Photographs

Submitted to the Oral Hearing on Day 17.⁸⁵

The document includes a table detailing 8 works carried out from the landfall way leave to the compound and Aghoos road with details of their status, whether permitted/consented or not whether finished/unfinished or not. There are some photographs attached also. This document was requested by the inspector to establish impacts of the proposed onshore pipeline and cumulative impacts from the previous works on the 2002 consented pipeline on the area.

10.2.53 Note on Inspection of pipeline tunnel section for gas leak

Submitted to the Oral Hearing on Day 18.⁸⁶

⁸² [DRN OH115]

⁸³ [DRN OH116]

⁸⁴ [DRN OH117]

⁸⁵ [DRN OH119]

⁸⁶ [DRN OH121]

This note was prepared to answer a question by an observer in which he queried how a leak in one of the tunnel crossings under Sruwaddacon Bay would be detected. It states that in the event of a leak it could be detected by a surface disturbance.

10.2.54 Dispersion of gas from pipeline hole Response by Phil Crossthwaite

Submitted to the Oral Hearing on Day 18.⁸⁷

This note is in response to a question by an observer regarding dispersion plots in the 2002 report by DNV (Technical Note 5). Mr. Crossthwaite makes some additional comments regarding the dispersion clouds pertaining to temperature of the gas at release and its effect on cloud formation and the likelihood of a leak underground at 345 bar blowing off the top layer of soil.

10.2.55 Surface water design basis rainfall event

Submitted to the Oral Hearing on Day 18.⁸⁸

This document details that the Belmullet Weather Station was used to inform the surface water management system for the temporary works for the Corrib Onshore Pipeline and justifies the use of Met. Eireann data for local weather information. The surface water management system has been designed in accordance with the design criteria set out in the CIRA guidance on 'Control of Water Pollution from Linear Construction Projects.'

10.2.56 CAO map

Submitted to the Oral Hearing on Day 19.⁸⁹

Refer to DRN 109. This document relates to the change in CAO Land Acquisition Requirement because SEPIL no longer propose to use compound number SC5.

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⁸⁷ [DRN OH122]

⁸⁸ [DRN OH126]

⁸⁹ [DRN OH133]

Chapter 11 Planning Authority Submission To the Oral Hearing

11.1 Additional Submissions by Mayo County Council to OH

Mayo County Council were requested to submit: (1) details of proposed upgrading on roads to facilitate the proposed development, (2) details of the water supplies that could be affected by the site and construction of the proposed pipeline, (3) a hard copy of the Mayo CDP 2008 – 2014 and a copy of the SEA prepared with the CDP. (4) Finally Mayo Co Co were asked to respond to SEPIL's proposed amendments to conditions proposed to ABP by Mayo Co. Accordingly, Mayo Co Co submitted a report on infrastructure.

11.1.57 Infrastructure Report

Mayo Co Co submitted a report on infrastructure which included the details of the road works proposed by Mayo Co Co. This sets out the road maintenance and strengthening improvements carried out to date to facilitate the Corrib Field Development and also sets out the works proposed to facilitate upgrading of the road network as a haul route for the construction of the onshore pipeline. **The central point in this submission is the decision by Mayo Co Co that a road maintenance and strengthening programme at existing road width 4.5 m [L-5245] and 3.0m [L-52453-0 & L-52453-25] will be sufficient to carry the traffic associated with constructing the 4 km of onshore pipeline in Rosspoint, North of Sruwaddacon Bay [DRN OH52].** This decision appears to have been taken because of absence of agreement (or in anticipation of absence of such agreement) to land dedication voluntarily by adjoining landowners for widening the local roads in Rosspoint. This submission is dealt with in Chapter 44 Haul Route and Traffic Plan.

11.1.58 Protection of Water Supplies

Details of water supply tests and analysis for 2005 – 2009 on the Carrowmore Lake Water Supply Scheme were submitted by Mayo Co Co. [DRN OH85 , DRN OH90]

Details of Pollathomais GWS and the Rosspoint GWS were also submitted [DRN OH52]. The water supply issues are dealt with in Chapter 24 Protection of Water Supply.

11.1.59 Mayo CDP 2008-2014

The Mayo CDP 2008-2014 & SEA were submitted [DRN OH52a, OH52b].

11.1.60 Conditions Recommended by Mayo Co Co

In respect of SEPILs proposed amendments to those conditions put forward by Mayo Co Co to ABP [DRN OH24 submitted by SEPIL]. Mayo Co Co indicated that they had no objections to the rewording suggested by SEPIL just so that it is consistent with the spirit and intention of their suggested conditions [DRN OH 87 e-mail from Mayo Co Co]. Mayo Co Co also indicated that, in light of the statement by Chief Technical Advisor of the DCENR that Mayo Co Co would not now recommend conditions relating to safety. Conditions for the consideration of the Board in relation to this development are dealt with in Chapter 50 Conclusions 182c application.

The Chief Technical Advisor has confirmed that the Minister for Energy was responsible for safety of the upstream pipeline [DCENR 11-05-2009 Appendix 6].

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Chapter 12 Dept. of Communications, Energy and Natural Resources

DCENR are a prescribed body in respect of 16.GA.0004.

ABP on 21/04/2009 requested the following information from DCENR:

- a) An outline of the regulatory system in relation to the health and safety monitoring that will apply to the proposed development during its commissioning phase and during the operational phase over its lifetime.
- b) An outline of the remit of the department in relation to licences for the overall development of the Corrib Gas Project and the consideration involved in assessing such licences.

12.1 DCENR submissions to OH

1. DCENR through Mr. Bob Hanna – Chief Technical Adviser, made a submission to ABP on 11/05/2009.
2. DCENR through The Chief Technical Adviser, Dr. Brown and Mr. Verbreugan were represented at the OH.
3. The Chief Technical Adviser, Dr. Brown and Mr. Verbreugan answered questions at the OH, and The Chief Technical Adviser made a closing statement submission⁹⁰ on behalf of DCENR.

12.2 DCENR response of 11/05/09

12.2.61 The following points have been made by The Chief Technical Adviser in the submission 11/05/09

1. The Minister for Energy is currently responsible for upstream gas safety.
2. It is intended that CER will take over this responsibility when suitable legislation has been enacted.
3. Prior to August 2005 safety matters were addressed within the general framework of the phased consent system operated by Petroleum Affairs Division [PAD] within the Department.
4. A QRA was required and different safety related documents were not required to be submitted until the appropriate phase of the consents process was reached.
5. This differs from the approach in most countries with more experience of Natural Gas (NG) projects, where a safety case encompassing all aspects of design operations and maintenance is required at the outset of a project. The regime to be operated by CER will be more similar to international practice.
6. A Technical Advisory Group (TAG) was established by the Minister for Marine and Natural Resources in 2005 to commission an independent safety review of the onshore

⁹⁰ [DRN OH125]

pipeline, and to design and implement a new inspection and monitoring regime for the project.

7. The Chief Technical Adviser's submission outlines the role of TAG and the work carried out by TAG and the Independent Safety Review.
8. TAG in their report 27/01/2006 to Minister Dempsey, recommended the primary pipeline design code be designated at IS EN 14161 with IS 328 and PD 8010 to apply where they exceed IS EN 14161. Legal advice indicated that compliance with these codes could be made compulsory under petroleum development related authorisation leases and agreements.
9. The inspection and monitoring regime that will be applied in this section (onshore pipeline) of the project will be as per IS 328.
10. The relevant code for the offshore section of the pipeline for inspection and monitoring purposes shall be DNV-OS-F101 provisions of PD 8010-2 2004 may be substituted by agreement with TAG.
11. TAG required a code compliance document be submitted by the developer. TAG also required a Pipeline Integrity Management Plan be submitted by a date to be agreed.
12. TAG wrote to the Developer 15/09/2008 setting out a full range of information required. A full response 29/04/2009 has been received on the basis of the new application under Section 40 of the Gas Act 1976 for permission to construct a pipeline, and this is being considered by TAG.
13. In all 33 separate issues were raised with the developer at that time.
14. In his evidence the Chief Technical Adviser updated the letter of 11/04/2009 that while the Minister is the one to approve the Section 40 Application under the Gas Act, and that while PAD has work and analysis to carry out in that respect, there is no reason subject to condition in so far as the remit of TAG is concerned, why the Minister should not approve the Section 40 application.. **[Inspectors Note: In other words, TAG are satisfied with the safety aspects of the current application.⁹¹]**
15. The Chief Technical Adviser's letter then clarifies implementation issues and indicates that there will be a defined commissioning procedure, including third party inspection and observation of the hydro testing procedure.
16. The Chief Technical Adviser clarified that while DCENR has a responsibility as regards safety, other agencies have a role in terms of certain elements of the project - the HSA with regard to the terminal.

12.2.62 Remit of DCENR

- i. The Chief Technical Adviser's letter clarifies the process used by DCENR for deciding applications pursuant to Section 13 of Petroleum and other Minerals Development Act 1960 as amended and in the case of upstream pipelines Section 40 of the Gas Act 1976.

⁹¹ [Evidence 21/06/2009, 17.36].

- ii. In particular the considerations where an E.I.A. is required are outlined. The applications are considered from an environmental engineering integrity (fitness for purpose) and safety perspective and specific conditions relevant to any element of the assessment may attach to a consent issued.

12.2.63 Other Consents Required

The Chief Technical Adviser outlined that in addition to the Consents under the Gas Acts and Planning Permission Petroleum Infrastructure Projects may also require permissions from the Department of Agriculture Fisheries and Food in respect of Foreshore Licence under the Foreshore Act 1933, as well as from the EPA in respect of an Integrated Pollution Prevention and Control Licence under the EPA Act 1992 as amended by the Protection of the Environment Act 2003 which gave effect to the Integrated Pollution Prevention and Control Directive.

12.2.64 Strategic importance of this project to Ireland

- a) Ireland would lose most of its electricity supplies if there was a significant interruption to gas supplies from Britain.
- b) The government has been concerned about gas security of supply issues and has commissioned a special report on the matter.
- c) A very significant part of the annual gas needs could be met by Corrib Field as well as a very high part of the daily maximum demand for a number of years.
- d) The potential contribution that Corrib Gas Field can bring to Ireland is explicitly recognised in government's white paper on energy.

12.2.65 Security and Security of Supply

23a. In relation to security of supply, The Chief Technical Adviser and also Dr Brown had indicated that Corrib Gas Field (and the security of the LVI as part of that development) was one supply input to the National Grid. That the two interconnectors to the UK and the North-South interconnector, together with the proposed LNG connection to the National Grid reduced reliance on any one input connection. Mr. Hanna indicated that the Security of the LVI site would be a matter for the Operator SEPIL.

12.3 DCENR Closing Statement

- In his closing statement, The Chief Technical Adviser confirmed the details above.
- He confirmed DCENR have an independent verification process in place. Keane Offshore Integrity [KOIL] is contracted to carry out independent engineering verification of the Corrib Gas Field Development. This will include Health & Safety verification of design, construction installation commissioning maintenance of the production facilities.
- The verification will then be audited by the Minister prior to giving consent to first gas production. This will be carried out by PAD, Petroleum Affairs Division within DCENR.
- Details are provided of the KOIL contract for engineering verification of the Corrib Gas Field Development.

- The Chief Technical Adviser confirmed in his closing statement his evidence given to the OH that TAG is satisfied that the project as currently configured, meets all relevant codes and standards.

12.4 Summary of responses by The Chief Technical Adviser.

The Chief Technical Adviser provided additional information in response to questions from Mr. Wrights. The Chief Technical Adviser provided the following Schedule of Licensed Activity for which the Minister CENR is responsible for the Regulation of Safety.

- Grant of Exploration or Prospecting license.
- Terms and conditions of Exploration License.
- Terms and conditions of Prospecting License.
- Grant of Petroleum Lease.
- Grant of Reserved Area License.
- Including Terms & Conditions.
- Security of Navigation – Regulation of Designated Area by Minister.
- Section 40 of the Gas Act 1976 Application to construct a natural gas pipeline including upstream pipelines.

12.4.1 Security of Energy Installation

- The DCENR, Department of Justice and Department of Defence all have a role in ensuring the security of energy installations. Precise details of security are not made public.
- A review of emerging security requirements around strategic energy infrastructure, together with UK colleagues is about to begin.

12.4.2 Common Cause of Failures

TAG has evaluated these issues to which Advantica made reference. TAG has requested specific analysis of possible multiple valve failures at sea, and of detail design work on evaluation of ground movement. The Chief Technical Adviser indicated that the Oireachtas will decide when to enact the Petroleum & Extraction (Safety) Bill which will include the transfer of Safety Regulation to CER. However, the Department's objective is that the bill will be enacted by the end of 2009.

12.5 Inspectors Conclusions

1. The Minister for Energy is responsible for the safety of the upstream onshore gas pipeline.
2. DCENR have decided what standards are to be used in the design construction and commissioning of the pipeline.
3. A safety case procedure will be implemented by DCENR at the appropriate phase of the overall consents process.
4. TAG has completed its examination of the proposed development and has advised the Minister that there is no reason as far as the remit of TAG is concerned, subject to

conditions, why the Minister should not give consent for the construction of the pipeline.

5. DCENR have an independent verification process in place for the project including Health and Safety, verification of design, construction, installation, commissioning and maintenance of the production facilities.
6. The security of the LVI is a matter for SEPIL.
7. DCENR are proposing legislation which if enacted by the Oireachtas will transfer control and regulation of the upstream pipeline to CER.
8. In the approvals process for development an E.I.S. is required to be submitted to DCENR with a plan seeking approval for working of petroleum under the Petroleum and Other Minerals Development Act 1960. The Minister decides whether the proposed pipeline would or would not be likely to have significant effects on the environment.

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Chapter 13 DEHLG and National Parks and Wildlife Services

The Department of Environment, Heritage and local government is a prescribed body for both applications 16.GA.0004 and 16.DA.0004. The Department provided a written submission [DRN OH 26], participated in the OH and provided additional information requested by the inspector that related to their submission [DRN OH 62d].

Mr. O Sullivan has considered the Natural Environment, Peat Deposition and The Assessment of the likely impact of the proposed development on the European Sites. He has examined and discussed the submissions of the NPWS in his report a copy of which is attached at Appendix 1.

I have prepared the following pages to provide a summary document drawing together the points made by DEHLG and NPWS. I set out below my conclusions on the information provided to ABP by NPWS.

13.1 Inspectors Conclusions

- (1) It is accepted that any archaeological material or issues can be dealt with by licensed archaeologist on site and through consultation and by obtaining permissions as may be required from NPWS.
- (2) NPWS have concerns that the stone road method may have adverse impacts on the peat lands, intact blanket bog and CSAC designated blanket bog.
- (3) DEHLG and NPWS believe it may be best to use the procedure contained in Article 6(4) of the Habitats Directive.
- (4) NPWS have concerns regarding the success of the stone road and reinstatement work carried out at Glencullin on the BGE Mayo-Galway gas pipeline. Monitoring of this site is ongoing.

Construction work in Sruwaddacon Bay SPA is seasonally sensitive and in particular the tunneling works should be carried out in the April to September period.

13.2 Inspectors Summary of points made by DEHLG and NPWS

<u>Document Ref. No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN WS 4		Archaeology	
	1	<ul style="list-style-type: none"> An Archaeologist should: <ul style="list-style-type: none"> i Perform pre-construction centre line testing ii Be present for all sub-surface work iii Monitor areas which have not been tested during construction iv Notify DEHLG four weeks prior to commencement of site preparations v Having completed the work, submit a report to the planning authority and Heritage & planning division vi In sensitive areas permission from NPWS will be required 	
	2	<ul style="list-style-type: none"> Probing should be carried out pre-construction in areas identified in such report. 	
	3	<ul style="list-style-type: none"> Palaeoenvironmental analysis should be performed pre-construction. 	
	4	<ul style="list-style-type: none"> Mitigation as per Chap. 16, table 16.5 of EIS. 	
	5	<ul style="list-style-type: none"> Where Archaeological material is found the Heritage & Planning Division will advise the applicant with regard to preservation, either in situ or by record. 	
	6	<ul style="list-style-type: none"> No works can begin until the archaeologists report has been submitted and permission to proceed has been issued by the Planning Authority in consultation with NPWS 	
		Architectural Heritage	
	7	<ul style="list-style-type: none"> The regulatory body should satisfy itself that the proposed development has little or no impact on the architectural heritage of the area. 	
	8	<ul style="list-style-type: none"> Before any works are carried out (e.g. widening of roads) consideration should be given to the possible effects on structures of architectural heritage merit (e.g. stone walls). 	
		Nature Conservation	
	9	<ul style="list-style-type: none"> NPWS state that the current EIS fails to adequately consider the cumulative effects of other projects as required by Article 6 of the Habitats Directive. Reference should be made to BGE Mayo-Galway pipeline. 	
	10	<ul style="list-style-type: none"> The use of stone haul roads instead of floating roads and bog mats could change the nature, severity and duration of the environmental impacts. 	

<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN WS 4	11	<ul style="list-style-type: none"> • Srahmore peat deposition site: <ul style="list-style-type: none"> i Unclear whether condition 9 of EPA waste licence (Bog and PDA rehabilitation and aftercare) has been implemented. ii Use of this site is a significant deviation from condition 10 of the IPC licence from the EPA. This change has reduced future potential bog area for rehabilitation. 	
	12	<ul style="list-style-type: none"> • Evidence from the Glencullin upper bog cSAC suggest that the proposed development within the Glenamoy Bog is considered likely to have permanent negative impacts on the active blanket bog habitat which is a globally rare habitat and is an Annex 1 habitat of this cSAC. 	
	13	<ul style="list-style-type: none"> • The proposed development will impact on Juniper and Rhynchosporion habitats in the area. Juniper on lowland blanket bog is of significant conservation value. 	
	14	<ul style="list-style-type: none"> • The EIS contains no information about the river headwater which rises in a flush system in the Rossport commonage. This is a ground water dependent terrestrial ecosystem and has high protection status under the WFD. 	
	15	<ul style="list-style-type: none"> • Due to the depth and width of excavation proposed within the bog and the use of heavy plant in wet peat, collapsing of the peat is likely. This would change the hydrology and drainage of the area thus likely causing the loss of some species. 	
	16	<ul style="list-style-type: none"> • The DEHLG believes the possibility of adverse impacts cannot be ruled out so Article6(4) of the Habitats Directive will need to be applied. 	
	17	<ul style="list-style-type: none"> • No carbonate rock material should be used along the gas pipeline route. 	
	18	<ul style="list-style-type: none"> • A peatland geotechnical expert should be employed for all works in the bog and a monitoring programme and contingency plan should be agreed with the NPWS. 	
	19	<ul style="list-style-type: none"> • Several important habitats within the Glenamoy Bog in close proximity to the proposed pipeline have not been adequately addressed in the EIS. 	
	20	<ul style="list-style-type: none"> • The translocation and deposition of the peat spoil at the Srahmore site cannot constitute a blanket bog recreation measure, contrary to the EIS 	
	21	<ul style="list-style-type: none"> • Regarding blanket bog outside the cSAC, the EU habitats directive requires Ireland to maintain this resource in favourable conservation status. 	
	22	<ul style="list-style-type: none"> • The EIS states impacts are unlikely as active blanket bog can be re-instated. This is based on reports that the Glencullen Bog is recovering after re-instatement works. However fissures and a reduction in groundwater 	

		flows show this not to be the case.	
	23	<ul style="list-style-type: none"> The EIS states that conservation objectives for the Glenamoy Bog were not considered as they are not available. However NPWS have publicly available information on objectives for this cSAC. 	
	24	<ul style="list-style-type: none"> The Habitats Directive requires a very high degree of protection and appropriate compensatory habitat where there is a significant risk of adverse effects. 	

<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN WS 4		Birds	
	25	<ul style="list-style-type: none"> Sruwaddacon Bay is part of Blacksod/Broadhaven Bay SPA which qualifies for SPA designation for Ringed Plover, Bar-tailed Godwit and Sandwich Tern. The site is currently being re-designated which may expand the boundary of the SPA and include more bird species. 	
	26	<ul style="list-style-type: none"> Light Bellied Brent Goose use Sruwaddacon Bay particularly at the end of the overwintering period and should be regarded as a special conservation interest for this site. 	
	27	<ul style="list-style-type: none"> After examining the EIS and associated technical reports the species of particular interest to this case are the Light-Bellied Brent Goose and Ringed Plover (which was present in nationally important numbers) 	
	28	<ul style="list-style-type: none"> Woodrow 2006a survey notes that “Sruwaddacon Bay has the potential to hold almost the entire SPA population of Ringed Plover at certain times and its capacity to do so must be retained” 	
	29	<ul style="list-style-type: none"> Surveys have shown Light-bellied Brent Geese to be common in the area particularly around Rinroe beach and Glengad (peak of 362 birds) and Rosspoint Pier (105 birds in April 2007) 	
	30	<ul style="list-style-type: none"> The potential of disturbance caused by the tunnelling works to particular species is of concern. 	
	31	<ul style="list-style-type: none"> The proposed upper crossing crosses or comes close to areas where ringed plover and dunlin were recorded at low tide. If mitigation measures fail construction could cause scour or deposition which could lead to the area being unsuitable for these species. 	
	32	<ul style="list-style-type: none"> The proposed lower crossing intersects with an area that is important to the Light-Bellied Brent Goose 	
	33	<ul style="list-style-type: none"> Surveys show 19 species of bird occurring within 500m of at least one of the proposed launch and reception pits. 	

	34	<ul style="list-style-type: none"> • Potential Impacts to Blacksod/Broadhaven Bay SPA by proposed works: <ul style="list-style-type: none"> i Disturbance of waterbirds of the SPA ii Habitat damage caused to wetland elements of the SPA iii Works carried out outside the SPA which could have a detrimental effect on the SPA 	
	35	<ul style="list-style-type: none"> • The proposed crossing of Sruwaddcon Bay will take 4 months; these works should be carried out between April and September to avoid causing disturbance to various bird species. 	
	36	<ul style="list-style-type: none"> • If an intervention pit is required inside the SPA NPWS should be fully consulted with 	
	37	<ul style="list-style-type: none"> • Mitigation measures as laid out in the on-shore EIS for protection of birds and habitats of the SPA should be fully implemented 	
<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN WS 4		Marine	
	38	<ul style="list-style-type: none"> • The likely impact of noise associated with micro-drilling operations on marine species has not been assessed, this is a significant omission and should be provided to the NPWS. 	
	39	<ul style="list-style-type: none"> • The applicant should clarify the apparent discrepancy between figures reported for cetacean diversity in the EIS and figures reported for cetacean diversity in the 2009 Environmental Management Plan 	
DRN OH 26		NPWS response to EIS Addendum submitted by SEPIL	
	40	<ul style="list-style-type: none"> • Along the proposed pipeline route within the Glenamoy Bog complex SAC all areas are greater than 3 metres deep. A 100 metre length of the pipe is in bog from 4 to 5.4 metres deep 	
	41	<ul style="list-style-type: none"> • See note 14. Regarding flushes NPWS consider that insufficient data has been provided in the EIS and addendum to determine flow directions and the influence of groundwater on these flushes. 	
	42	<ul style="list-style-type: none"> • The complex of large bog pools conform to Annex 1 habitat Dystrophic lakes. These areas are highly sensitive to surface or sub-surface hydrological changes. The impact of this development on this habitat has not been evaluated. 	

<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN OH 26	43	<ul style="list-style-type: none"> See note 13. Annex 1 habitat Depressions on peat substrates of the Rhynchosporion . The species assemblage within this habitat indicates permanent saturation of the bog. The impact of this development on this habitat has not been evaluated. 	
	44	<ul style="list-style-type: none"> Peat pipes need to be located and mapped to determine potential drainage routes so that the effect of the stone road on drainage within the cSAC can be assessed. 	
	45	<ul style="list-style-type: none"> For stone road construction it is assumed that the two methods of construction outlined in the Geotechnical Issues (evidence of T. Johnston) are to be used and that a third method (type 1) outlined in the EIS will not be used. 	
	46	<ul style="list-style-type: none"> In relation to Type 2 stone road construction methodology, insufficient information is provided on the construction methodology and on the control of the peat displaced. The potential impact on the adjacent bog habitats has not been addressed. 	
	47	<ul style="list-style-type: none"> Further information is required on the proposed impermeable plugs (peat or clay) that are part of the hydrological mitigation. 	
	48	<ul style="list-style-type: none"> In NPWS opinion the proposed layout of peat turves will not prevent infiltration of water between the turves which will lead to a discontinuity of the surface flow across the road. The reinstatement of the original bog surface water flows across the road is essential. 	
	49	<ul style="list-style-type: none"> The storage of the turves on the bog surface for 3 months may damage bog vegetation beneath. The stored turves may lose water, shrink and lose vegetation. And thus be vulnerable to erosion. 	
	50	<ul style="list-style-type: none"> The cutting of the turves will be very difficult in deep, wet peat in the Glenamoy Bog cSAC and there is insufficient information on how additional turves will be located. 	
	51	<ul style="list-style-type: none"> See note 36. The effect of the noise of the works on marine species has not been addressed in the EIS, the addendum or in the brief of evidence on the aquatic and marine environments. 	
	52	<ul style="list-style-type: none"> Conclusion: NPWS reiterates that the possibility of adverse impacts on the integrity of the cSAC cannot be ruled out. 	
		Hydrogeological investigation of Two flush systems on Rossport Commonage	
	53	<ul style="list-style-type: none"> Characterising the regime of these two systems is critical in determining if the proposed gas pipeline would impact on their hydro-ecological functioning. 	

<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN OH 26	54	<ul style="list-style-type: none"> • Purpose: To ascertain whether these flushes are: <ul style="list-style-type: none"> i Solely surface water features formed by surface water runoff or, ii Ecosystems with a significant proportion of their groundwater originating from groundwater 	
	55	<p>Methodology: Electrical Conductivity of water was tested. If the water gives a high electrical conductivity reading then the mineral content is high. High mineral content is indicative of groundwater while low mineral content is indicative of rain or bog water.</p>	
	56	<ul style="list-style-type: none"> • Results and Discussion: <ul style="list-style-type: none"> i Water in Bog pools and the first 2 metres peat displays higher readings than expected for a bog but this is due to proximity to the sea. ii However this does not explain high readings in the lower depths in the peat profiles in the flush systems. The flush systems do not appear to have developed in the same way as the blanket bog. iii It is highly likely that groundwater or sub-surface lateral flow is a significant source of water in the area. iv An impact on the groundwater pathway may reduce the local groundwater supply thereby damaging the flush. v Source of water unclear however the linear nature of the flush zones suggests a possible geological control as the linearity of the flush systems is NE-SW, NW-SE the same orientation as faults in North West Mayo region. vi Indeed the flush systems may be a result of both a spring and a fault/fracture pathway 	

<u>Document Reference No.</u>	<u>Note No.</u>	<u>Point Made</u>	<u>Comment</u>
DRN OH 26	57	<ul style="list-style-type: none"> • Conclusions: <ul style="list-style-type: none"> i It is possible that areas of the flush systems are groundwater dependent. ii Not clear if flush systems are enriched with water moving laterally through peat, groundwater moving laterally through possible subsoil/weathered bedrock or from water transmitting from a fault/fracture iii The EIS addendum divides the catchments of the flush systems based on topography iv The catchment divides of the flush systems should be based on the phreatic and piezometric water tables. v The hydrogeological regime of the flush system as a whole needs to be properly characterised before any evaluation can be made on the impact the proposed development may have. 	

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Chapter 14 Environment Protection Agency and Health and Safety Authority

14.1 Environment Protection Agency

14.1.3 Request from ABP to EPA for observations

The EPA are a prescribed body in respect of the 16.GA.0004 Application before ABP. ABP by letter 21/04/2009 requested EPA to submit observations on the proposed development notwithstanding the remit of EPA regarding licensing emissions. This request was issued under Article 217(4)(b) of P&D Regs 2006.

14.1.4 EPA Response

1. The EPA responded on 01/05/2009 and made the following points in that letter.
2. The EPA on 12/11/2007 issued an IPPC Licence P0738-01 to Shell E&P Ireland in respect of the Terminal at Ballinaboy.
3. In issuing the licence, the Board of the Agency took all relevant environmental matters into account and provided for the protection of the environment through the conditions of that licence.
4. Specifically in relation to the route of the gas pipeline from the gas field to the refinery condition 3.18 of the license stated
“The Licensee shall not later than 6 months in advance of commencement of activities on site, notify the Agency in writing of the incoming pipeline route chosen, and shall:
(1) Provide details of the quantity of unrefined gas to be held in the incoming pipeline and
(2) Provide details of the maximum pressure under which the pipeline is to be operated”.
5. Condition 3.19 of the IPPC licence stated “*The Licensee shall submit to the Agency, not later than six months in advance of commencement of activities on the site, details of the modified arrangements for the elimination of the gas inventory in the event of an emergency*”.
6. The Agency had no further comments and were not represented at the OH.

14.1.5 IPPC Licence

The gas pipeline itself will not require an IPPC licence.

14.1.6 Issues Raised at OH

Issues were raised requesting ABP to have EPA attend the OH and answer questions relating to:

- (1) Management of the gas pipeline whereby pressure in the pipeline would be controlled in certain circumstances, by flaring of gas at the terminal or by cold venting gas at the terminal.

- (2) An impact of the gas pipeline in operation relating to such flaring of gas or such cold venting of gas and the noise levels that would be generated by the flaring or venting.
- (3) Relating to differences that now arise between the proposed discharge of process water from the terminal as set out in 16.GA.0004 and the proposal for discharge of process water related to the IPPC Licence [P 0738-01] already granted for the terminal.
- It was requested that ABP not continue with OH until EPA were present to answer these and other questions, and some matters were raised that related directly to the IPPC Licensing process and the Inspectors Report as prepared for the EPA in connection with that licence.
 - It was not within my remit to entertain discussions and questions that were considered not relevant to the 16.GA.0004 and 16.DA.0004 applications being considered. At the OH there was some frustration among observers as a result.
 - In particular it was indicated to the observers that the SI Act 2006 in Article 182D sets out the matters that ABP shall consider and that observers should make any arguments they wished ABP to consider during submissions. It was also pointed out that ABP had the powers to seek further information, publication of notices and re-opening of the OH should the Board consider it necessary to do so and may do so at any time prior to making a decision on the application.
 - The applicant's position was that such matters as required IPPC Licence or a revised IPPC Licence would be dealt with and were being dealt with separately.
 - In my view the issues raised (1), (2), (3) above are matters that relate to the terminal permission and IPPC licence. The document⁹² submitted in relation to item (2) above has been considered in relation to the terminal IPPC Licence. Accordingly I do not consider that ABP should seek further examination of these matters with EPA who are the competent authority to consider these matters and (2) in particular.

14.1.7 Inspectors Conclusion Regarding EPA Involvement

In my view, sufficient latitude was given at OH for all relevant matters to be considered and discussed and for questions relating to matters of relevance to be raised with the applicant. In my view, this report, together with the details presented by the applicant in the E.I.S. and the additional information presented at the OH, all this taken with the submissions of the prescribed bodies and the submissions of the observers provides sufficient information for ABP to evaluate the likely consequences for proper and sustainable development in the area and the likely effects of the proposed development on the environment. I do not recommend that ABP seek any further advice from EPA other than that contained in the letter of 01/05/09 from EPA to ABP.

14.2 Health & Safety Authority

14.2.1 Request by ABP to the Health and Safety Authority for specific information

1. The HSA was not a prescribed body in respect of the 16.GA.0004 application.

⁹² [DRN OH123]

2. ABP by letter 21/04/2009 requested HSA to clarify their role and function if any with regard to the construction commissioning and operational phases of the proposed development.
3. HSA in response 18/05/2009 indicated that “... *offsite gas pipelines are not covered by the Control of Major Accident Hazard Regulations (SI 74 of 2006) and therefore the authority has not remit in this areas...*” and indicated the following points.
4. HSA also indicated that the Safety of Gas Pipelines falls under the CER.
5. HSA can only advise on the suitability of developments in the vicinity of the Corrib Gas Terminal establishment, within the zones indicated in the previously supplied generic advice – April 8th 2004 issued to Mayo Co Co as generic land use planning advice regarding Corrib Gas Terminal. A copy of that advice is attached in Appendix 6

14.2.2 Questions put to the to the Health and Safety Authority

On 15/06/09 the following questions were put to HSA:

Question 1: Will the ‘HSA please restate their role in respect of the Health and Safety Regulation of this pipeline and the LVI in light of the following:

- a) The HSA letter to Bord Pleanala ref 6437 of 18/05/2009
- b) The applicant SEPIL, in evidence given at the oral hearing has confirmed that the explosive atmosphere regulations will apply to the LVI.
- c) The Department of Communications, Energy and Natural Resources in a submission to the oral hearing has confirmed that the Minister for Communications, Energy and Natural Resources is currently responsible for upstream gas safety. However, in oral submission at the oral hearing it was stated by Dr Brown of the Department that the HSA not the Department had responsibility for implementation of the Health and Safety Regulation of explosive atmosphere regulations.

Question 2: What role will HSA have in relation to the preparation and adoption of an emergency plan for use in the event of a failure of the pipeline while in operation?

Question 3: What advice can the HSA provide regarding the safe distance envelope in the event of a pipeline failure? The impacts of such pipeline failure need to be considered as part of the examination of the planning application. Two particular impacts are being examined;

- a) The consequence of failure and the safe distance envelope around the pipeline. The applicant has prepared a series of Consequence Impact Contour Maps copy attached, what advice can the HSA provide regarding the use of these contour maps to examine the consequence of failure of the pipeline? Does the HSA consider that these consequence impact contour maps provide a reasonable basis to examine the consequence of a pipeline failure?
- b) Future new development and proximity to the pipeline, can the HSA provide guidance regarding the distance from the pipeline where new development would be acceptable.

14.2.3 Response by HSA

HSA responded in their letter of 19/06/2009.

Question 1 – Role of HSA This only relates to land use planning advice regarding establishment under the EC COMAH Regulations S.I. No 74 of 2006.

Role of HSA at LVI Under the Atex Products Directive 94/9/EC and under the Atex Worker Protection Directive 1999/92/EC There are responsibilities on persons putting equipment into use and responsibilities on employers to carry out appropriate assessments of explosive risk. There is no requirement for that person or employer to forward documents to HSA, but the Explosion Protection Document, the Safety Statement Document and the Specific Risk Assessment must be retained and implemented by the employer. Inspectors from the HSA then in the course of inspections of work places, seek and review these documents.

Question 2 – The Role of HSA in Preparation of Emergency Plans: The HSA has no role in the preparation, adoption for use of an emergency plan in the event of a failure of a pipeline in operation. However Section 11 of SHWW Act 2005 requires employers to prepare adequate plans and procedures to be followed in emergency, including arranging the necessary contacts with the appropriate emergency services. These plans may come to the attention of HSA during routine inspections but there is no requirement to submit such plans to HSA.

Question 3 -

- a) HSA advice regarding the contour maps prepared by the applicant examining the consequence of failure of the pipeline.
- b) HSE advice regarding proximity distance for new development in the vicinity of the pipeline. In response to question 3 the HSA reiterated the position that it was beyond their remit to provide land use planning in relation to a gas pipeline outside an establishment.

14.2.4 Observers issues

- i. Observers raised issues and requested that ABP use its powers to direct that HSA attend the OH and respond to questions:
 - (1) Regarding safety of gas pipeline.
 - (2) Regarding safety at LVI.
 - (3) Regarding application of explosive atmosphere regulations at LVI.
 - (4) Regarding evidence and considerations that took place at the OH for the Terminal and that related to full bore rupture of the incoming gas pipe at the Terminal.
 - (5) Management of the pressure in the pipeline which could give rise in certain circumstances, to venting or flaring of gas at the Terminal, and where such venting or flaring would cause excessive noise levels 157 db was quoted as the noise level, and that noise levels at such strength were a health and safety issue.
- ii. It was requested that ABP not continue with OH until HSA were present to answer these questions.

14.2.5 Response by Inspector to observers

- i. At the OH, it was pointed out that these matters would be brought to ABP's attention and that the Board had the power to take any actions it considered necessary,

including re-opening of the OH should the Board so require before taking the decision on the 16.GA.0004 Application.

14.2.6 Inspectors Conclusions

- (1) The safety of the pipeline is considered in Chapters 27-30.
- (2) The LVI is considered in Chapter 29.
- (3) Chapter 27 Pipeline Design and Codes of Practice and Chapter 28 QRA consequences of failure and Chapter 20 Regulation of the Pipeline in Operation consider the issues related to pipeline rupture and pipeline management long term.
- (4) It is very clear that HSA does not have a remit to provide advice to the Board in respect of the gas pipeline.
- (5) In relation to the points raised by the observers relative to the HSA, I am satisfied that the issues were raised, that they were considered at OH and that this report which includes a detailed report from Mr. Nigel Wright, Gas Pipeline Consultant, together with the information presented by SEPIL in the E.I.S. 2009, and in supplementary information given to the OH, all that plus the submissions by the observers provides me with sufficient information and provides ABP with sufficient information to enable the Board to take a decision in respect of the proposed development.

I am satisfied that no useful purpose would be served by recalling the OH to enable HSA to be questioned. I expect that such exercise would merely confirm the position of HSA which is clearly set out in their letter of 19/06/2009. I therefore recommend that ABP consider the matters at issue as presented in this report.

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Chapter 15 Observers

The observers made submissions at the Oral Hearing. These are contained in the Appendix 5-1 to Appendix5-9 folders attached. A summary of the Submissions has been included in Appendix 6. The issues raised by observers are considered under the various headings chapter by chapter below. The Written Submissions received by ABP and the submissions by observers at the OH have informed the analysis of the issues chapter by chapter below.

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Chapter 16 Other Issues

16.1 Challenge to Assistant Inspector

Issue: Mr. O'Sullivan Assistant to the Inspector objection raised. Mr. Sweetman raised an objection to Mr. Stephen O'Sullivan being nominated by ABP to assist the inspector conducting the OH. The basis for the objection concerned Mr. O'Sullivan's involvement in matters considered previously by ABP as follows.⁹³ Mr. O'Sullivan was the inspector involved in the An Taisce Section 5 Referral [16.PL 2293]. Mr. Sweetman disagreed with Mr. O'Sullivan's submission in that matter to ABP and disagreed with Mr. O'Sullivan's interpretation of Planning & Development Regulations in that submission.

Accordingly Mr. Sweetman indicated that having regard to the fact that the works at Glengad are a major contentious part of the proposed development in this case, Mr. Sweetman said it was in the interest of everyone that Mr. O'Sullivan should be replaced. Mr. Sweetman said that in order for justice to be done in respect of this 16.GA.0004 Application it must be seen to be done and accordingly he requested that Mr. O'Sullivan be replaced.

Mr. Sweetman subsequently set out briefly in writing the arguments against Mr. O'Sullivan's involvement in the 16.GA.0004 file.⁹⁴

1. *In the case [16.RC.2293] it is our submission that the inspector misadvised the Board in this matter.*
2. *In the case [PL.16.223463] – this is now where the inspector has a direct conflict justice must be done and seen to be done. It is impossible to grant permission for this development with Mr. O'Sullivan as an adviser to the Board, and for it to be seen as justice.*

16.1.7 Inspectors Comment

It is outside my remit to review the reports prepared by Mr. O'Sullivan for the Board in these cases. That is a matter for the Board itself to consider. In my view Mr. Sweetman is at liberty to disagree with Mr. O'Sullivan's reports on these files. Mr. Sweetman did not conduct the examination of the files for ABP, Mr. O'Sullivan did conduct the examination and prepared his reports accordingly.

The proposed development 16.GA.0004 is a new Planning Application for Development under the S1 Act 2006. In my view Mr. O'Sullivan's familiarity with the site has some advantage. Mr. O'Sullivan in this instance will be making his report to me. It will then be a matter for me to prepare my report to the Board in light of all the information including Mr. O'Sullivan's report. This objection is a matter for the Board to consider.

⁹³ [evidence 19th May, 14.27]

⁹⁴ [DRN OH10]

16.1.8 Questions arising for the board

Is there a conflict of interest arising for Mr. O’Sullivan because of his involvement with files 16.RL.2293 and PL.16.223463? [and because of his reports on those files which are disputed as misadvice to the Board, and which it is contended are in conflict with the regulations, and that in his submission he dealt with matters outside his remit]

16.2 Gender Balance of the Oral Hearing Group

Gender Balance

Pobal Le Cheile raised an issue regarding lack of gender balance of the inspectors team at the Oral Hearing and posed a question ‘was there gender balance on ABP itself’. The underlying point being made was that Pobal Le Cheile was conscious of the importance of gender balance, and that better decision making in relation to the proposed development could result from a balanced view of the issues involved. The issue was raised: I bring it to the attention of the Board without any comment, as I believe the point stands on its own.

16.3 No Response from ABP to Correspondence

Letters to ABP without response

An issue was raised by some observers concerning correspondence with ABP. The point being made was that where an observer writes to ABP looking for information or seeking some action by ABP that occasions have occurred where responses have not been received. These matters were not pursued at the OH because the correspondence concerned was issued after the closing date for receipt of submissions on the proposed development.

16.3.1 Inspectors Conclusion

In my view this is not a matter for consideration here. As far as the observers who raised the issue were concerned, they had opportunity to make written submissions to ABP following publication of the notices by SEPII that applications had been made to ABP for approval under 182C of Planning and Development Acts for permission to construct an upstream onshore gas pipeline and under the Gas Acts for powers to acquire compulsory rights over lands. They also attended the OH and they had opportunity there to raise issues of concern, and opportunity to argue the points at issue which they did and which are dealt with in this report in the relevant chapters.

16.4 Methane Content of Corrib Gas

There seemed to be some confusion over the constituents of the raw gas with observers claiming conflicting percentages of methane were quoted by the applicant. Table 4-6 (EIS 2009 Appendix Q1 Section 4.4) clearly shows the percentage weight and percentage molecular weight of the chemicals, including the methane content, present in the raw gas.

16.5 Indicative Costs

SEPIL were asked by the inspector to provide high level costs for the construction of a pipeline. [DRN OH117] was submitted by SEPIL. This information was sought to provide a cost context in relation to the route selection.

The information presented states:

- It should be borne in mind that the Corrib onshore pipeline is in costs terms a very small element of the overall Corrib development, however it has the potential to disproportionately affect the overall outcome of the development. For this reason the cost of the onshore pipeline was not a primary drive in route selection.
- Although costs were considered within the route selection process, they did not play a significant part. Other factors such as safety, real and perceived (e.g. distance to housing), potential for impact on the environment and the community and project schedule were deemed important.

The indicative costs are set out in Table 1:

	Pipeline Element	Cost
1.	Pipeline construction in agricultural land	E 2.3 million / km
2.	Pipeline construction in peat (stone road method)	E 5.2 million / km
3.	Tunnelling under the estuary (including pipe-pull)	E 18 million / km
4.	Open cut method through the bay*	E 14 million / km
5.	Offshore pipeline and umbilical installation	E 0.95 million / km

**High level estimate, scope not well defined*

The above figures are valid for onshore pipeline length of 9.3km and offshore pipeline length of 83.4km. Additional pipeline length beyond these distances will attract a material cost per km of €2.3 million to cover the cost of additional pipe and umbilical.

The figures include construction related costs:

- Mobilisation and demobilisation of plant, personnel and equipment
- Onshore or marine civil works
- Stringing, testing and welding of pipe
- Umbilical installation
- Removal of peat
- Procurement of stone material for temporary working areas and the stone road

The figures exclude costs such as:

- Project management overhead
- Pipe and umbilical procurement cost already incurred
- Landowner compensation costs
- Design and engineering costs
- Permitting and consents costs
- Logistics and storage costs
- Road improvement costs

16.6 Conclusions

1. The costs are indicative so it is necessary to use the figures with care.
2. SEPIL indicate the cost of the onshore pipeline itself is not significant in the overall cost of developing the Corrib Gas Field.
3. The programme for achieving the completion of the connection of the Corrib Gas Field to the Terminal has a significant impact on the overall outcome of the development. [The scheme nett present value is indicated on Route Selection data sheets as being influenced by any delay in programme].
4. The length of the pipeline is a factor in the costs involved.
5. The costs through the peat lands are significantly higher than through agricultural lands.
6. The costs through the bay are more significantly higher again than through agricultural lands.

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Chapter 17 Community Issues

17.1 Summary of Community Issues

Community issues have been handled as follows in this report. The written submissions have been summarised. The submissions to the oral hearing together with the issues raised at the oral hearing and the summary presented in closing statements by observers have been summarised. The following summary schedule of community issues has been extracted from all the submissions made by observers. The issues from this schedule are considered in this chapter where indicated, and otherwise they are considered in the relevant chapters identified in the schedule.

17.1.2 Schedule of Community Issues

Issue	Discussed
1. Ideological – State should own Natural Resources	Ch. 17.2
2. Financial – Private Company will benefit. Project not for benefit of Erris/Kilcommon.	Ch. 17.3
3. Lack of understanding of the application process in terms of approval and consent. Also a lack of confidence in the Board/Government Bodies responsible. a. Frustration at sense of inevitability of the case	Ch. 17.4
4. Suspicion of the high technology involved in the pipeline a. materials used to withstand the proposed pressures and corrosion (experimental valve) b. The safe and competent construction and maintenance of this pipeline (bends, slugging) c. The safe operation of the pipeline at such high pressures , flares and venting	Ch. 17.5
5. Concern at the track record of the applicant internationally with respect to community issues	Ch. 17.6
6. Disruption in everyday lives a. impact of noise activity b. turf cutting c. 24 hour working d. invasion of peaceful local area	Ch. 17.10
7. Community cost of 10 years controversy and conflict and division within the community.	Ch. 17.11
8. Community Development Cill Comáin & SEPIL response	
9. Loss of traditional lifestyle and income a. uses of bog lands for peat and turf farming and grazing b. fishing in the bay due to development. c. Loss of forestry permanently around the area.	Ch. 17.7 & 17.8 Ch. 17.10
10. Impact on the future for their children's heritage	
11. Invasion of Privacy a. Photo and video use by Applicant of local community b. Lighting used along rural areas	Ch. 17.9 Ch. 17.15

12. Poor relations between SEPIL and the community <ul style="list-style-type: none">a. Failing to provide real time information on the project.b. Distrust in their operation with securityc. Distrust in their overall motive in the aread. SEPIL have progressed with work before planning permission is granted	Ch. 17.14
13. Affect on tourism in area	
14. Future Extensification - additional pipelines	Ch. 17.16
15. Project Splitting – Call for one overall body to assess	Ch. 21
16. Multiplicity of approvals required each which has required engagement from community Consent for Scheme of Development for Gas Field Planning for Terminal Pipeline Licences for Waste and IPPC at terminal etc Foreshore Licence	Ch. 22
17. Lack of in depth assessment by Applicant in areas <ul style="list-style-type: none">a. EIS is not sufficient as a document or supplied as suchb. QRA system has been discredited since World Financial Meltdownc. HIPPS system will be used when it was deemed unsatisfactory in 2002	Ch. 46
18. Impact on Development Potential - of their lands and development potential for their families, devaluing of their houses.	
19. Noise & Vibration <ul style="list-style-type: none">a. Early morning HGV trafficb. Construction at Glengad & Tunnel Constructionc. LVId. Security at nighte. Noise from flaring off gas at terminal	Ch. 46
20. Impact Environmentally <ul style="list-style-type: none">a. on the SAC areasb. local wildlife and birdsc. marine life and pollution risk.d. Increased green house emissions will worsen air quality in area.	Ch. 38, 39
21. Safety of Community and Future generations <ul style="list-style-type: none">a. regarding explosion, safety distances (120/190/500/800m?) and overall risksb. During construction phases.c. Possible drinking water contaminationd. Security Risk from sabotage / currently.e. No indication of how H₂S will be detected of leakingf. Increased risk from LVIg. Sruwaddacon high risk of pipe rupture due to strong current	Ch. 30
22. Advantica Report Findings <ul style="list-style-type: none">a. No fail safe methodb. The upstream pipeline does not comply with reclassification of production pipeline to transmission pipelinec. Pressure should be 50% less	Ch. 18
23. Alternative routes and alternative technology available to route the pipeline and to treat the raw gas.	
24. Ground Stability <ul style="list-style-type: none">a. Landslide Danger at Dooncarton historically	Ch. 45

b. Also due to extensive heavy work in whole area of unstable mountain.	
25. Peat Stability	Ch. 34, 35, 37
26. Impact on pristine local natural environment	
27. Perceived small level of benefit locally	Ch. 36
a. Jobs - number of jobs is questioned	
b. That Corrib may supply 60% of Ireland's gas needs is questioned	Ch. 38
28. L1202 Road Traffic Haul Route Issues	Ch. 48
a. Dangerous because overrun with heavy traffic and Widening and Unwidening in parts is dangerous practice for residents and school goers, speed sensors off at night.	
b. Appearance of Gardai security on local road all the time is unsettling	Ch. 44
c. Houses and walls are being damaged in process.	
d. Health and Safety Authority should be monitoring it.	
e. Necessary roadworks for 2008 EIS are now deemed unnecessary for same project	
f. No hydrologist was available from NPWS for questioning at the OH regarding drainage affect on local area due to road construction.	
29. Damage to Property	
30. Lack of clarity in regulatory regime involved and lack of applicability of codes regulations the project is at the front end of technological innovation with regard to the tie back proposed on land for treatment of raw gas.	Ch. 44
31. Issues regarding Legality of Proposal	Ch. 20
a. Code of Practice query	
b. In particular the issue of 'strategic importance and common good'	
c. Retention Planning permission issue	
d. SEPIL owns and occupies the servient and dominant tenement areas and should not be granted CAOs as a result.	Ch. 47
e. The issue of exemption	
32. Lack of supportive infrastructure in the area to deal with construction and/or emergencies.	
33. Other Consents Required	Ch. 41
	Ch. 7

17.2 Assessment of Community Issues - Ideological:

Ownership of the natural resources. The Petroleum and other Minerals Development Act 1960 vests petroleum in the state. The definition of Petroleum under the Act includes Natural Gas. The Act provides for granting of a Petroleum Lease by the Minister. The Oireachtas has established the legislation providing for the ownership and development of natural gas. **In my view the ideological question of ownership of natural resources is outside the remit of planning considerations that can be considered in arriving at a decision on these applications. This is not a matter that is relevant in consideration of the proposed development. Accordingly I find this community concern is not a relevant consideration in this application.**

17.3 Assessment of Community Issues - Financial:

Who benefits financially from Corrib Gas Field? This contention put forward by observers is that there is little or not enough benefit accruing to the Kilcommon / Erris region or indeed to the Irish economy from the overall Corrib Field Development. ABP under Section 143 of P & D Act 2000 must have regard to Government Policy in arriving at its decision on this application. Government policy has been clearly set out [refer Chapter 6]. The terms of the petroleum lease granted to SEPIL have not been made known to ABP. Therefore it is not possible to set down the financial benefit overall to the Irish economy that will arise from the Corrib Gas Field Development.

I do not accept the concern expressed in this regard. The Kinsale Gas Field provided the economic impetus that underpinned the development of BGE and the gas transmission system in Ireland. That same scheme provided the impetus for re-investment in the gas distribution systems in towns and cities across the country. The Corrib Gas Field is already the economic impetus behind the extension of the National Gas Transmission Network from Galway into Mayo and 10 towns will immediately benefit by being connected to the natural gas energy source.

It is not realistic to state that because an international group of oil companies have formed the company behind the development and operation of Corrib, that that group will reap all the financial benefits. Erris itself has already benefitted financially from the investment that is taking place in the region. The balance of energy production has changed in the area from peat based energy production to the development of the infrastructure for natural gas production and there is also wind energy in production and more wind energy planned for the area.

The important financial impact which must be considered here is that any permitted development will have a positive and beneficial impact on the local economy. Gas Powered Electricity Generation is a type of technology that twins well with Wind Energy Electricity Generation. Government policy has identified in the recent white paper on energy that the development of both Natural Gas Infrastructure and the Wind Energy Sector is a priority. It is clear to me that Mayo and the Erris region in particular can benefit significantly from these developments. The completion of the Corrib Gas Field Development will in my view bring economic benefit to the region.

I find that this community concern is not sustainable and to say that the Erris region has not benefitted or will not benefit from the development is in my view an unrealistic position.

17.4 Lack of confidence in the approval system for the project

Lack of confidence or knowledge in the application process of approval, and concern at the inevitability felt by local community that ABP will grant this application without proper consideration of the issues.

I bring this concern to the attention of the Board. It is clear to me that the process adopted by ABP is such as to provide access to all whether stakeholders or not, to engage with the decision making process and to make the issues of concern known to the Board who then investigate the issues before reaching their decision on the Application.

At the OH there were expressions of confidence also that ABP would consider fully the issues involved and it is worth recording that fact. It is also worth pointing out that the Corrib Gas Field Development is a very large project and because it involves a number of different processes that observers may be concerned at the extent of involvement demanded from them if they want to engage fully with all the processes.

I have found that the observers that engaged with ABP and made submissions were well informed and had a good grasp of the technical and legal system involved in the application. I do accept that engagement by observers is time consuming and can be very cumbersome due to the process involved. I find however that this objection to the project is not sustainable.

17.5 High technology.

The high technology involved has created a suspicion and concern that adequate information may not be available to properly assess the technology concerned. Much of this concern has to do with safety issues and the technology controls as applied by international and national standards and procedures. Chapters 27-30 deal with pipeline design issues and safety. Chapters 34-37 deal with ground stability issues. The Board has retained Mr. Nigel Wright, Gas Consultant, and Mr. Conor O'Donnell, Geotechnical Consultant, to provide the expertise and advice on the technological issues involved. Their reports are attached in Appendix 3 and Appendix 2 respectively.

Chapter 20 deals with the regulatory system involved in overseeing the development and operation of the proposed development.

I found the local community remarkably well informed on the highly technical issues involved in the project. The OH itself, while it did take up a lot of time, it served an essential purpose of allowing for examination and questioning of SEPIL and the application by the observers who will be most affected by the proposed development.

It has been possible to examine the issues involved, including those areas where highly technical specification details were involved. I cannot accept this objection. I am satisfied that a full examination of the issues involved has been conducted. I am satisfied that sufficient technical expertise has been retained by the Board to fully examine the issues involved and to provide the advice required to enable the Board to take a fully informed decision on the proposed development. I have set out some areas in the chapters below where I consider the Board should seek further information.

17.6 Track Record Internationally of Shell

I will not try to review the record of one of the partners in the SEPIL Group. I would pose this issue another way, would it be expected that any international company [or national company for that matter] where they enjoyed a most favourable record of high environmental awareness in their operations, would it be expected that a development project by such company's would get a less rigorous examination in the course of arriving at a decision whether to grant permission or not just because of such good reputation?

I do not think so. That is, the answer to this matter – a full examination of the issues is being carried out, and the decision of ABP at the end of the process will be based on a rigorous analysis of the relevant issues. In my view it is within the competency of Planning & Development system in the country to examine to decide to implement and to control industries operating in Ireland. Accordingly, I cannot sustain this objection.

17.7 Cill Comáin Development Plan 2006 – 2010

The Cill Comáin Development Plan 2006-2010 was submitted to the OH. Comhar Dun Chaocháin Teoranta produced this plan. The mission of this community development co-operative [Registered 28th March 1995] is to promote the linguistic culture, infrastructural, economic, educational and social development of the parish of Cill Comain.

In the parish, 2002 census figures show 65% of population speak Irish [33% in Dun Chaochain itself] and 40% speak Irish on a daily basis [74% in Dun Chaochain itself].

The Parish population was 1927 in 2002. 1 person per 11.44 Ha., about 1/5th of the national average population density. Population declined by 9.5% between 1996 and 2002 [national population increased by 8% in the same period]. The settlement pattern is largely dispersed and the economy for the most part dependent of activities such as small scale farming and seasonal fishing.

There are 5 primary schools in the parish – Ceathrú Thaidhg, Ros Dumhach, Glenn na Muaidhe, Poll a Thomais, Inbhéar and one second level school, Coláiste Chomáin in Ros Dumhach.

The plan identified the potential negative impact on tourism, fishing and water supply as the dominant economic effect of the Corrib Gas Project. The plan identified a staffing complement of 27 proposed for the Corrib Gas project.

The plan identifies and profiles the resources of the parish and analyses the strengths and weaknesses of the area.

The plan proposes 57 actions under the following headings:

- Community, Enterprise, Employment.
- Education and Training.
- Environment and Infrastructure.
- Language, Culture and Tourism.
- Services and Facilities.

The plan contains no actions related to the Corrib Gas Field Development. That fact indicates to me that the Corrib Gas Field may be too sensitive a subject for a local community group to address in their action plan.

I found this plan quite a useful document in profiling the parish of Cill Chomain under the headings above, and providing a clear focus of what are the local priorities over the period of the plan. The plan provides a long list of actions, many of which are suitable for consideration as part of the process of using the fund from the Community Gain condition recommended in Chapter 48 should ABP decide to grant permission for this proposed development. The E.I.S. acknowledges the Cill Chomain Development Plan in Section 6.2. The E.I.S. however defines “community” as not confined to the local area within which the project is proposed to be constructed, but also community includes a wider local population and a wider national population that are expected to benefit from the Corrib Gas Field Development.

17.8 “The Price of our Souls” by Micheal Mc Gaughan “Our Story the Rossport 5”.

These books were submitted by Mr. T Conway on 5th June as part of his submission to the oral hearing. “The Price of our Souls” subheading Gas Shell and Ireland. This book provides a series of articles in part 1 on aspects of gas field development and other technology developments which it relates to the Corrib Gas Field Development. In part 2, the articles focus on specific events and aspects of the Corrib Field Development in Erris, with emphasis on conflicts between SEPIL/EEI position and that of the local community.

“Our Story the Rossport 5” presents in an easily readable form, the events and family and personal experiences of Willie Corduff, Micheal O’Seighin, Brendan Philbin, Vincent Mc Grath, Philip Mc Grath. These 5 people have become known as the Rossport 5 following their committal to jail in 2005 for Contempt of Court following their prevention of SEPIL entering their lands to commence works on the pipeline [2002 consented scheme].

The conclusion I draw from these submissions by Pobal Cill Comáin, Mr. Conway and the local community is that there is a very strong community in the area. In the course of my examination of the project I noted that all the community energies, that were apparent, seemed to be fully engaged in dealing with the issues and impacts of the proposed development and principal among those issues was safety within the community. It seems to me that the situation is polarised to such an extent that there is a great difficulty within the community in considering or discussing potential benefits that might accrue from the Corrib Gas Field Development.

The issue for me that comes out of this extraordinary energy being channeled by the local community into the examination of this project is that there is uncertainty there. I see therefore the need for transparency, the need for clarity in both information and decision making process. The final conclusions and recommendations of this report will I hope provide that clarity and transparency to enable ABP to take a fully informed decision.

17.9 SEPIL Community & Socio Economic Issues

SEPIL provide a review of community and socio-economic issues in Chapter 6 of the E.I.S.

This section deals with the impact of the proposed development on human beings as well as considering community concerns raised and the socio economic conditions in the area of the proposed development.

The attached Fig 6.1 shows the five electoral districts Knockdaff, Muingnabo, Barroosky, Glenamoy, Knocknalower. This is referred to as the study area. This area has been used as the basis for analysis of the local area within which 16.GA.0004 is located. The population was 1899 in 2006 census a decline of 10.8% since 1996.⁹⁵ Employment levels show 545 people in employment, an increase of 20% over 1996 – 2006.

This compares with a 43% increase in employment in Mayo County in that same period. The E.I.S. Section 6.3.9 analyses the degree of deprivation using the National Deprivation Index 2007, and concludes that the analysis confirms a long term and unchanging pattern of relative material deprivation within the local and wider vicinity of the study area.

The E.I.S Section 6.4 identifies the following impacts:

1. In terms of demography no impacts during construction phase – workers will travel into the area to work.
2. Employment: 700 – 800 construction jobs on the terminal construction at peak 120 – 140 construction jobs on the onshore pipeline construction (12 month programme). 55 Direct jobs during the operational life of the Terminal, and a further expected 76 people indirectly will be required during the operational life of the pipeline, in additional employment created or existing employment consolidated as a result of the support services required in logistics, construction, catering, transport and retailing.
3. Accommodation: It has been estimated that 40% of the construction work force will live in rented accommodation or B & B accommodation while working on the project.
4. Irish Language: It is not expected that the proposed development will have any impact either positive or negative on the Irish language.
5. In the operational phase it is expected that there will be a slight positive impact on the demography of the area, it is expected the proposed development will serve to consolidate population levels in the area.
6. Impacts: Community impacts are detailed for the construction phase at 6.4.1.3. These are identified as traffic noise, dust, severance across holdings, visual impact, disturbance including

⁹⁵ [Table 6.3]

restricted access locally. It is not expected that the visiting community will be affected as the major visitor attractions are removed from the area. It is accepted in E.I.S. that the Corrib Gas Field Development has created a conflict within the community between those in favor and those against the development.

7. **Mitigation:** The mitigation measures proposed are the use of the appropriate methods of construction and appropriate hours of operation. It is proposed that the E.M.P. for the construction phase will detail how to deal with dirt and dust generated. The E.M.P. will also include details of road signage and public information and consultation proposed during construction. As no adverse impacts are expected during the operational phase of the development, no remedial or reductive measures are considered necessary.
8. Compensation comprises the significant mitigation for loss of land and property, either temporarily or permanently.
9. **Benefits:** The E.I.S. sets out details of the Social Investment Programme. This is proposed to include a short, medium and long term social investment programme in Kilcommon and in the wider Erris area. This investment programme has been made up of a local grants programme and a scholarship programme. In 2009 a longer term fund has been established Phase 1 (2009 – 2012) and has a budget of approximately €5m. This fund will be administered by SEPIL with an advisory board who will help establish the vision, objectives and structure of the fund.

Mr. Cox in his submission on behalf of SEPIL to the OH⁹⁶, indicated that community investment by SEPIL includes a voluntary programme of investment and also a contribution by way of condition attached to planning permission. He outlined that €5.7m has been contributed towards upgrading roads and water supply infrastructure in respect of the permission received for the Terminal. A further €30,000 has been contributed towards Mayo Co. Co Fire Service and a further €64,000 has been contributed for artwork. There was also a levy of €1 per m³ of waste peat transported to the deposition site. This peat levy fund is being administered by Mayo Co Co.

In considering the residual impact of the proposed development SEPIL set out the following:

- 55 Direct jobs, 76 additional indirect jobs.
- The Goodbody Report⁹⁷ which was commissioned by SEPIL sets out the economic assessment of the Corrib Gas Project.
- Benefits:
 - €3bn to Ireland GDP over its lifespan.
 - Supply 60% of Ireland's gas needs over 15 to 20 years
 - One trillion cubic feet of natural gas over the life of the project
 - Moderate Ireland's dependency on imports of gas
 - 12 towns benefitting from receipt of natural gas as well as North West Network.
 - Attractiveness of NW for inward investment will be enhanced by availability of natural gas. This may lead to electricity generation in the North West which will further enhance the areas attractiveness for investment.
 - Indirect benefits from the social investment activity now and in the future of the SEPIL partners.
 - This project when completed will encourage further investment in exploration off West Coast.
 - 815 Construction jobs, 130 permanent jobs thereafter [55 direct 75 indirect to supply needs of gas field and its employees].

⁹⁶ [DRN OH20 on the Community & Socio Economic Issues Section 7]

⁹⁷ A copy of The Goodbody Report is contained in the written submission at Appendix 4

- Construction will add €512m to GDP €181m of this will be for local suppliers/communities.

17.10 Protection of future of children's heritage

Observers concerns in this regard were that the proposed development will impact on both the freedom to use the pristine environment of the area, the changes that will result to the area because of the development, and the change in behaviour of family relatives etc., who may not choose to come and visit the area because of the proposed development.

There was much comment at the OH about the enjoyment that observers had in the area in their own youth, about the natural environment and the warmth in the community. It was put forward that the proposed development is having a negative impact on all these things and that the community is concerned that their own children's heritage is being diminished or impacted negatively. **The issue for me here is clarity regarding the impact of the onshore pipeline. If that clarity can be established, then objective review and assessment of the proposed development can be conducted by ABP. This clarity will also make possible objective review by the general public. It is my intention to seek to bring transparent and clear information forward for all concerned in this report. In this way I hope that this report will overcome the uncertainty that exists at present in the local community.**

In my view sufficient clarity has been achieved to enable a comprehensive assessment of the impacts of the proposed development to be made. The proper planning and development of the area is also concerned with the heritage of the area and with the sustainability of any proposed development into the future.

In my view therefore ABP in carrying out its examination of this development will consider the many factors which will have a bearing on the future heritage of the children from the area.

I do not accept that the proposed development is incompatible with the future heritage of the children from the area.

17.11 Loss of traditional lifestyle and income

Observers Position

1. Observers made the argument that because of the proposed development a loss of traditional lifestyle and income would be a significant impact on the local community.
2. In effect the issues raised concern the impact of the proposed construction on turf cutting and on cattle grazing on the commonage, and on fishing in the Bay, loss of forestry.
3. **I find that as regards cattle grazing, there will be a temporary impact for the duration of the construction and for the extended period when it is to be expected that the reinstatement of the peat land will be protected until it gets an opportunity to settle after the reinstatement.**
4. SEPIL have indicated that mitigation will consist of the provision of access for those landowners involved across the temporary working area as will be agreed when required. SEPIL also propose compensation for landowners for the loss involved.
5. As regards turf cutting, this matter was avoided in E.I.S and in detail it was also avoided in discussions at OH.
6. **I find that there will be an impact on turf cutting operations in the area. I have no details of the areas where individuals normally harvest turf other than to see on site the current practice which does involve a lot of turf harvesting in and around the proposed route and temporary working area. The impact may involve both the cutting**

and drying of turf itself and also the temporary storage of turf on the road margins pending transport or sale. This undoubtedly will be a difficult matter to resolve by agreement on a case by case basis.

7. I find that the E.I.S. has not dealt with the issue adequately.
8. As regards fishing in the bay, that matter does not relate nor is it relevant to the onshore pipeline; accordingly I have no remit to consider that matter.
9. Loss of forestry. There is a loss of forestry involved along the route south of Sruwaddacon Bay. That forestry plantation is extensive and I do not consider the loss to be significant in terms of the overall area of forestry. **I find therefore that the loss of forestry involved from an economic point of view will be more than compensated for by the industry being created by the gas project.**
10. As regards the impact on lifestyle, I find that the impact will be minimal and temporary, and will only impinge on the lifestyle in so far as the temporary working area will be fenced off during the construction works. Thereafter the use of the lands and the continuity of the lifestyle of the area will continue as before.

17.12 The Community Cost.

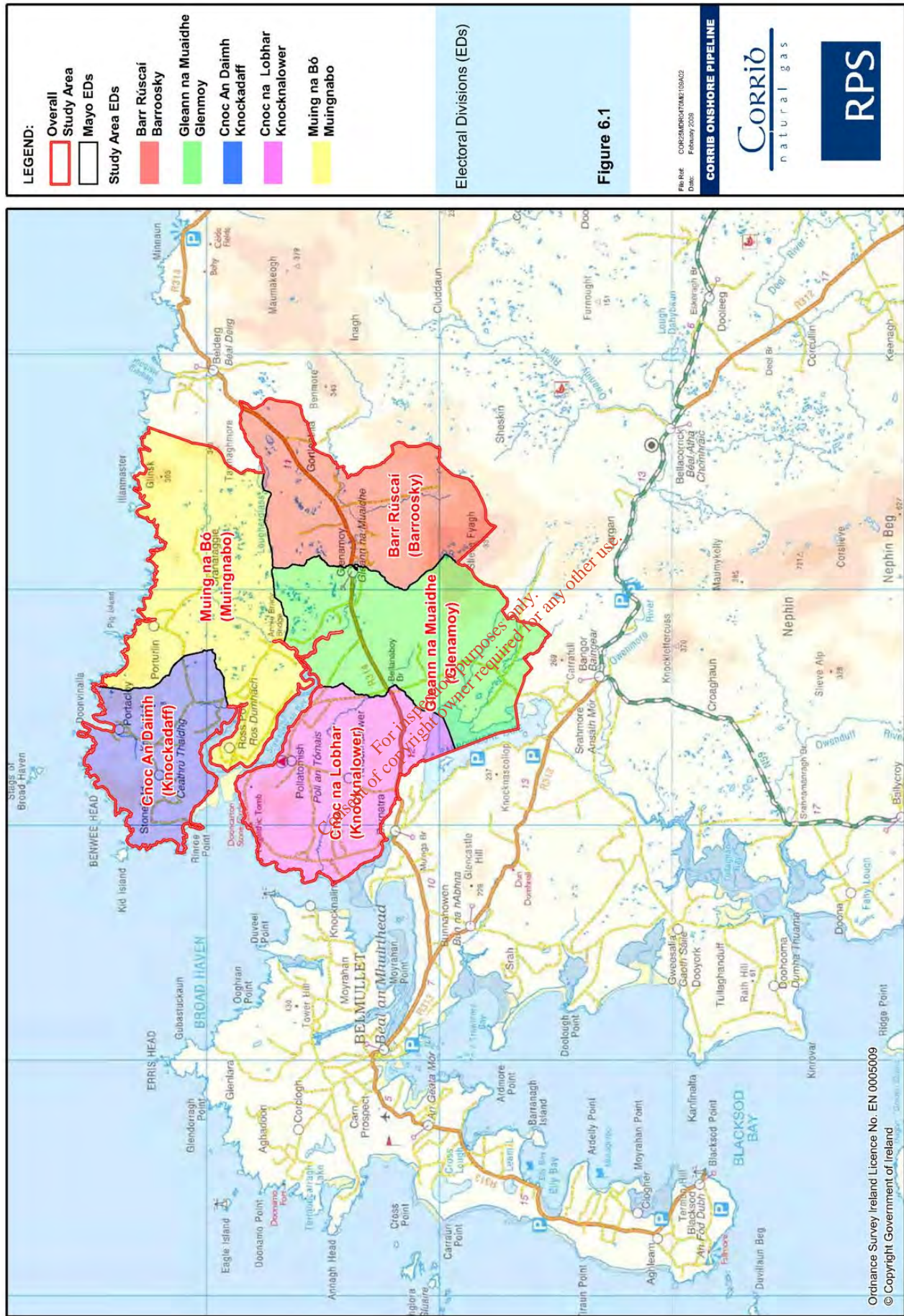
Observer's position

The following summarises the different aspects of the impact on the community as presented by observers.

1. The whole project of Corrib Gas has had a negative impact on the community.
2. Safety and risk are causing fear and anxiety among the community.
3. The lack of proper information and the perceived lack of a proper process which locals could access and have a meaningful involvement in such process were identified as issues from the start of the project 9 years ago.
4. The historical peaceful pristine area renowned for tourism and visitors has in the views expressed, given way to fears, tension, depression, security personnel, garda escorted convoys and a division within the community.
5. Locals believe the infrastructure is not capable of handling the demands being placed by the project.
6. Among landowners, some have agreed to provide land for road improvements, others have not agreed, all for different reasons, but the result is considered to be a hazardous haul route (to Glengad) and not the same safe road where people could traditionally walk safely at will.
7. The local community believe that the multinational companies behind SEPIL have huge resources and up against the community who do not have the resources to fully engage in the process.
8. The local situation was one where tourist and visitors created a demand for sites in the area where there were low crime rates, and neighbours looked after each other, now it was argued that people are going to jail, confrontation is a daily event, public are denied access to beaches, court cases abound, and propaganda [locals accept it is two sided propaganda] is constantly being distributed.
9. The local views expressed dissatisfaction that there were advantages either for the local community, the region or the national benefit being derived for the Corrib Gas Scheme.
10. Locals see gaps in the due process and are critical that each part of the development is being considered to the exclusion of other parts.

11. The local views expressed concern that Health & Safety issues, landslide issues, the conservation value of designated sites along the route, and the movement of large quantities of peat over 9 miles into another bog, that such issues were being ignored or that adequate attention was not being taken of local rights or local views in deciding what should happen with the project.

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12. Views were expressed that an overall look by an independent body should be taken of the entire project.
13. An alternative proposal had been put forward which would have brought the onshore pipeline in at Glinsk and away from residential areas.

These matters were brought out in many submissions and statements and in written submissions and by many observers who participated in the OH.

17.12.1 Applicants Position

The applicant presented details of the consultation process engaged upon and presented details of measures to mitigate various impacts. These matters are considered in the individual chapters of this report. The applicant did not specifically respond to the impacts and the community cost as expressed by observers. However, and as outlined above, details of the applicants contribution to the local community were presented and the community fund which has been established was outlined. The applicant also presented a summary of the benefits to the local regional and national economy from the project.

17.12.2 Inspectors Assessment of Community Cost

1. I think it is worth considering all these matters. While 16.GA.0004 and 16.DA.0004 applications are very specific, there is a need to assess the wider implications and impact that the proposed development and other associated development on the Corrib Gas Field has on the area and on the environment of the area including the impact on the local community.
2. The local community was represented by a wide cross section of people from diverse backgrounds. The main participants were by and large from the communities of Glengad, Pollatomais and Rosspoint. There were between 20 and 40 local attendances each day at the OH. The level of participation was very high.
3. The level of information and knowledge demonstrated by the local participants was well informed and at times highly technical in both matters of legislation and in matters relating to the proposed development itself and the gas industry.
4. I recognise that relations have broken down between SEPIL and the local community to such an extent that there exists mistrust on both sides.
5. The impacts to date of the project have been severe on this communities spirit.
6. My approach to the overall assessment of the proposed development is to establish as precisely as I can, the factual position. This includes clarity with regard to the alleged pollution of drinking water sources, clarity with regard to the impacts of the proposed development on the designated sites in the area, clarity with regard to the road proposals that will serve the proposed construction of the pipeline, clarity of precisely the consequences of failure of the pipeline itself and the other associated umbilical's, clarity of the actual construction proposed through the peat lands and the analysis that has been carried out for that, clarity of any end point connections and boundaries between the proposed development and other aspects of the overall Corrib Field Development at Glengad and along the route of the pipeline and at the terminal, and as much clarity as possible on the many issues raised by observers in submissions and questions, as well as seeking clarity on the regulatory regime that is responsible and that will be responsible for regulating and controlling the proposed development and clarity about the standards being implemented in the design, construction, commissioning and operation of the proposed development. Mr. O'Sullivan, Mr.

Wright and Mr. O'Donnell have assisted me in assembling and interpreting the factual situation.

Having established the factual position, I believe I can then advise the Board in as objective a manner as possible, on the various issues to that the Board itself can make a decision on the applications before it.

This is I believe the only possible response to meet the concerns and objections of the local community. In summary therefore in response to the cost to the community and the negative impact of the proposed development on the community, I propose to present an objective factual assessment of the proposed development to ABP. That in my view is the best response to the community.

17.13 Working Relationship SEPIL and Local Community

1. Notwithstanding the situation whereby on one side there are those who may continue to confront the proposed development, and on the other side that SEPIL have a determined plan to complete the Corrib Gas Field development, there is a need for the leadership in the local community and the management in SEPIL to have a system of machinery in place whereby the many issues that have to be dealt with can (1) be communicated, (2) provide feedback and suggestions, (3) be reviewed.
2. The Liaison officer for the proposed development is an essential position and I expect a busy post during any project as extensive as this proposed development. However, the Liaison Officer cannot provide either the time or the required level of communication, feedback and review required on his/her own.
3. The Project Monitoring Committee (PMC) established by Mayo Co Co to oversee the terminal construction under one of the conditions of the planning permission is an essential part of the control of the project. Nevertheless, it seems to me there is room for a group which has representatives of the community and representatives of SEPIL which could usefully be established to act as a clearing house for communication, feedback and review of the ongoing issues as they arise.
4. Such a system of clearing house direct contact between SEPIL and the local community can work. Indeed, such a system works well on many difficult projects, and in my own experience such a system can avoid legal confrontation and can resolve difficult issues by discussion and agreement where the leadership exists on both sides to make the system work.
5. Regardless of whether such a system of “clearing house” is possible, I strongly believe that there is an obligation on the Applicant to provide good timely accurate information to the community on issues that will affect that community, I recommend that such a condition be attached to any permission that the Board may decide to grant for this development.
6. I accept that the community otherwise will find themselves being confronted with an activity unawares such as heavy slow moving equipment mobilisation etc.

17.13.3 Inspectors Recommendation

In the event that ABP decide to grant permission for this development I therefore recommend that SEPIL be requested to establish a group within the Project Monitoring Committee structure and reporting to the PMC and subject to the agreement of Mayo Co Co. The group would work to provide a local liaison function for communications feedback and review of ongoing issues on the construction site.

(a) Representatives of the local community who are prepared to represent their community to the best of their ability.

(b) Management of SEPIL who will be prepared to be responsive to issues of concern locally.

Reason : To establish a direct system of local liaison between the applicant and the local community

17.14 Community Concerns: Privacy

1. This issue relates to the observers concerns about the use of photographic and video equipment along the site by SEPIL in respect of activities that relate to previous or other parts of the development of the Corrib Gas Field. Apparently video cameras and photography is used by SEPIL. SEPIL indicated at the OH that where such equipment is necessary or becomes necessary, it may be used on the proposed development. SEPIL indicated that the purpose was to safeguard the security of the site and to safeguard workers on the site and equipment and materials on site.
2. It was clear from evidence at OH that video equipment is used by the local community – film was shown of confrontations at the terminal construction site, and at other sites where SEPIL work was being undertaken.
3. Observers were concerned that images and videos of innocent activity by members of the local community were being collected, and that it was unclear how these images might be used. Observers indicated that images of their children had been included, and that the whole issue was a serious invasion of privacy.

17.14.1 Inspectors Assessment

In the normal course of events, a certain amount of photography and video images would be collected for site record of the site, and of matters related to the construction project. A number of questions arise:

- (A) Is this a planning question in the first place? I believe it is. The manner in which SEPIL proposes to conduct the construction project is a planning issue. Should SEPIL invade private use of lands or normal private activity with noise, vibration, dust, disturbance, light etc., such matters would be assessed and could be controlled through conditions on a planning permission or indeed if the invasion of privacy was considered excessive then refusal of permission could be based on such excessive invasion of private activity.
- (B) How can such activity be controlled in any planning permission? I accept the position of observers that innocent activity, everyday activity, activity such as the enjoyment of the beach and sea at Glengad where it is filmed or photographed such filming or photography should be controlled. I propose the following conditions to control the activity.

17.14.2 Inspectors Recommendation

Accordingly I recommend that SEPIL be conditioned, on any permission that is to be considered for the proposed development, to establish a system whereby all photography and video footage taken by SEPIL employees, contractors, anyone associated with the proposed development, be controlled. The system and method of control shall be set out for agreement in the EMP. SEPIL shall pay to Mayo Co Co the costs involved in putting in position a person who will verify that the control system for images is working properly and that a system for destroying such images is put in place. While this condition will be onerous on all concerned, the uncontrolled use of photo and image footage would not be an acceptable impact of the proposed development.

Reason: To manage and protect the privacy of the local community from any unnecessary impact from photo or video imagery.

17.15 Community Concerns: Impact on Tourism

Observers have made a number of points here.

1. That the impact of the construction of the proposed development on the natural environment would reduce the attractiveness of the area for tourists.
2. The construction works have generated demand for accommodation and use of facilities including boats such that tourists to the area are being excluded and business's relying on tourism are being impacted upon.

I cannot accept either of these matters as realistic propositions. In the first case while I can accept there will be a visual and traffic disruption during construction of the pipeline. That impact will be temporary and indeed it may in itself promote visitation to the area out of interest to see construction under way. In the aftermath of the construction there will be very little impact on tourism, visual and otherwise.

In regard to the second issue, if the construction business is filling up the demand for services, be that boat hire, accommodation or other services in the area that economic boost must be positive not negative for the providers of these services. Accordingly I do not accept this community concern it is not sustainable.

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Chapter 18 Advantica Report and 144 bar

18.1 Introduction

An Independent Safety Review of the onshore section of the proposed Corrib Gas pipeline was carried out by Advantica who presented this review in January 2006 to the Minister for Communications Energy and Natural Resources. The recommendations of the report were accepted by TAG and by the Minister for Communications, Marine and Natural Resources. Subsequently the recommendations of Advantica were accepted by SEPIL. SEPIL have indicated in the E.I.S. for the proposed development that the Advantica Recommendations have been incorporated in the design.

In Appendix Q8 of the E.I.S. SEPIL present a review of the recommendations one by one, together with a statement of the action taken by SEPIL in the design of the proposed development in response to the recommendation.

The Advantica Report in itself relates to the 2002 pipeline route and that design and consequently is not a relevant technical report in assessing the 16.GA.0004 proposed development. Nevertheless the Advantica Report did present a specialised technical analysis of the 2002 scheme. The report articulated concerns raised by the local community at that time and brought forward fundamental recommendations which were clear and which were accepted by the Minister DCMNR and SEPIL.

The local community has respect for the Advantica Report and they understand the recommendations from that report. The local community however, have concerns that the proposed development will not be safe because the pipeline is different in both the route (part different) and in the LVI [not in the 2002 Scheme and thus not subject to review by Advantica] and in other detailing construction as proposed in the peat lands.

The Advantica Report provides a very clear background of recommendations to assist with the examination and evaluation of the safety of the proposed development. The evaluation and examination of the safety of the 16.GA.0004 Scheme has been evaluated in its own right against the Design Codes and International Practice in Gas Pipeline Design. Mr. Nigel Wright, a Gas Consultant, has been appointed by ABP to provide technical expertise and advice on the project. Mr. Wright's report of Safety of the Pipeline is contained in Appendix 3 and is considered in Chapter 27 to Chapter 30. The Advantica Report has been used as a reference standard and has been quoted regularly throughout Mr. Wright's report and in this report. A copy of the Advantica report is contained in Appendix 8.

18.2 Pressure Limit on the Onshore Pipeline at 144 bar

One of the main recommendations of Advantica was that the onshore pipeline pressure should be limited at 144 bar. SEPIL have now proposed a land fall valve installation which will incorporate a set of pressure monitors downstream of the LVI and which will trip at 136 bar in such a manner that the further increase in pressure will activate the LVI valves to shut automatically before pressure reaches 144 bar. It was outlined in evidence that at 144 bar it was possible to produce the full 350 Million Standard Cubic Feet Per Day (MSCFPD) for which the terminal has been designed.

The LVI is considered in Chapter 29 of this report. Mr. Wright has considered the LVI in his report Appendix 3.

Chapter 19 Selection of Landfall Site Location

19.1 Brief History and Background

19.1.3 Period 2001-2002

In 2001 a route selection process had been carried out and the selected route was then submitted together with the E.I.S. and that route received a consent [2002 Plan of Development Approval 15/04/02 Appendix 7] from Minister for Marine and Natural Resources in 2002. That route selection process has been set out in the documents Corrib Field Development (offshore field to terminal) E.I.S October 2001 as prepared by RSK Environment Ltd for Enterprise Energy Ireland Ltd. Documents submitted for the information of ABP consist of an E.I.S, which was prepared in 2001 for the offshore pipeline and for the complete pipeline and scheme, and a supplementary update report⁹⁸ and supplementary appendices which were prepared in 2008/2009.

In the supplementary report considerations of the alternate landfall sites from an offshore point of view have been set down. SEPIL have taken over from Enterprise Energy Ireland Ltd. Those documents were submitted to ABP for their information. They accompany the E.I.S for the proposed development of the onshore upstream pipeline but they are not part of the 16.GA.0004 application

There are a number of fundamental decisions which were taken by Enterprise Energy Ireland Ltd at that time as the undertaker, which I need to outline here.

1. *“the results of the appraisal well programme have indicated that there are commercial quantities of gas in the Corrib field and the decision has been taken by Enterprise and it’s partners to develop the field”*. 2001 E.I.S Chapter 2 Section 2.2.1.
2. *“The only feasible development scenario is a subsea system tied back to a processing terminal onshore”*. Enterprise Energy Ireland 2001 E.I.S Chapter 4 Section 4.1.2.2.
3. *“On the basis of the above, [i.e. conclusions following landfall and terminal location consideration] it is proposed to construct the Terminal near Bellanboy Bridge and to construct an offshore pipeline which will come ashore at Dooncarton, near the Sruwaddacon inlet, in Broadhaven Bay”*. Enterprise Energy Ireland 2001 E.I.S Chapter 4 Section 4.2.2.
4. Subsequently to these decisions the applications together with the 2001 E.I.S was prepared one for the pipeline offshore and onshore (the original route). A separate E.I.S. was prepared for the Terminal at that time. [Refer Section 1.1.1. E.I.S.2001].

19.1.4 Period 2002-2004

1. There followed a series of applications for various consents and permissions. These resulted in the following consents and permission being granted (copy of the consents licences and permission are included in Appendix 7).
2. Approval to the Corrib Gas Field Plan of Development as proposed by Enterprise Energy Irl Ltd was given by Minister for Marine & Natural Resources 15/04/2002.

The Plan of Development is a Petroleum Lease condition as opposed to a statutory one. The Petroleum Lease was granted under Section 13 of the Petroleum and Other Minerals Development Act 1960.

⁹⁸[Feb 2009 Rev 2]

3. Approval under Section 40 of the Gas Act 1976 to the Application for Consent to construct a pipeline was given by Minister for Marine & Natural Resources 15/04/2002 [i.e. the original route].
4. Foreshore licence granted was given under the Foreshore Acts 1933 by Minister for Marine & Natural Resources for licence to enter onto, use and occupy the licensed area for the purpose of constructing, locating and operating the facilities [i.e. gas pipeline, umbilical, discharge pipeline] 17/05/2002 granted to Enterprise Energy Irl Ltd and partners.
5. Permission order for a gas terminal development at Bellagelly South, Bellanaboy Bridge by ABP Ref PL 16.207212(2004). Approval granted to Shell E&P Irl Ltd.

Note: At the time ABP made this decision SEPIL had consent to construct an onshore upstream pipeline from the landfall at Glengad to the Terminal along the 2002 consented route.

In my view the applicants position is clear that following the approval to the Corrib Gas Field Plan of Development, Consent to Construct a Pipeline, Foreshore Licence for Construction of the pipeline and Planning Permission for the Terminal, the position of landfall and the position of the terminal were fixed at Glengad and at Bellanaboy Bridge respectively. The Applicant had then to comply with the conditions that attached to the approval, consent and licence and planning permission.

19.1.5 Period 2004-2007

There followed a period of controversy during which a series of events took place. The following events have relevance to this proposed development and are not necessarily chronological:

- Opposition on site to SEPIL plans to commence the construction of the onshore pipeline lead to 5 people being put in jail.
- The Minister for Marine and Natural Resources appointed Advantica to conduct an Independent Safety Review of the onshore pipeline. That report was submitted in 17-01-2006. A copy of the Advantica Report is contained in Appendix 8.
- The Minister for Marine and Natural Resources also appointed Technical Advisory Group (TAG) to oversee the safety review report and to provide technical advice to the Department of Marine and Natural Resources. A copy of the TAG report to minister Dempsey is contained in Appendix 8.
- Mr. Peter Cassells was appointed as mediator and Mr. Cassells reported with recommendations in July 2006. A copy of the Cassells report is contained in Appendix 8.
- TAG issued a report on 27-01-2006 endorsing the recommendations of Advantica and setting out standards for the onshore pipeline design.
- The planning and Development (Strategic Infrastructure) Act 2006 was enacted. That Act required that an upstream gas pipeline could not be constructed without obtaining planning permission from ABP.
- SEPIL accepted the Advantica recommendations. They also accepted the Cassells recommendations.

19.2 Commencement of Design of the proposed development

In 2007 SEPIL appointed RPS to identify and develop a modified onshore gas pipeline route.

- This followed the decision by SEPIL to accept the findings of both the Advantica Report [pressure limitation in the onshore pipeline and other recommendations] and the Cassell's Report [“*I am recommending therefore, that Shell modify the route of the pipeline in the vicinity of Rossport to address community concerns regarding proximity to housing,*” and other recommendations]. Those issues of proximity are discussed in more detail in Chapter 45 Route Selection
- RPS initiated a process of route selection for the onshore pipeline and in tandem with that, SEPIL carried out a review of the offshore pipeline route selection [as prepared by RSK] between their engineers in association with RSK [refer Chapter 3 2009 E.I.S. Section 3.4.1.2. and refer Section 2.7 of Letter of Application to ABP for approval under 182C for a strategic upstream pipeline].

“SEPIL’s objective of the route development process has been to find a suitable and feasible alternative route for the Corrib onshore pipeline as approved in 2002. The 2007- 2009 process concluded with the selection of a route that is considered by SEPIL to provide the best balance between community environmental and technical criteria”. Refer 3.4.1 Route Selection process.

The 2007-2009 selection of route is described by RPS as a fresh start and which combined the input from the local community together with the RPS experience in linear infrastructure developments. As a result a wide set of criteria some not used in 2001, were identified for the route selection.

19.2.1 Offshore Consideration and Review of Landfall

Also in 2007 offshore landfall sites were again examined and the alternatives considered. A review was conducted of the offshore considerations by RSK in association with SEPIL Engineers and the following criteria were considered: Geohazards, bathymetry and geology, shore approach, access, offshore pipeline constructability, safety, environmental and schedule. Six landfall options at Glengad, Inver, Inver North, Portacloy, Glinsk and Garter Hill were considered in the offshore review and these lined up with the corridors A,B,C (all Glengad), D(Inver), E(Inver North), F(Portacloy), G(Glinsk), H(Garter Hill) that were being considered for onshore routes by RPS.

Additional site investigation and or further detail site survey does not seem to have been conducted as part of the offshore review in 2007. The conclusions were that Glengad was the better option when considered under all criteria *“in particular Glengad had the advantage of having being studied in much more detail and from this work it is known that there are no requirements for rock blasting. Since the landfall has effectively been already constructed, (the trench was fully excavated and subsequently backfilled in 2005 and 2008) this would be the quickest option with the least schedule impact”*. Refer Section 4.2.1.9. Conclusions as set out in the E.I.S. Supplementary Report.

19.3 Inspectors Conclusions on choice of Glengad as Landfall for the Pipeline.

1. The fact is that consent was given to the project plan for development, to the foreshore licence application to construct the facilities, and the consent was granted to construct the pipeline both offshore and onshore. Those consents followed the submission of an E.I.S for the original pipeline route. That consent confirms the acceptance of the then regulatory regime of Glengad as a suitable landfall location. That consent was confirmed following an EIA process by DCENR as was confirmed in evidence at OH.
2. In considering file 16.GA.0004 for approval, An Bord Pleanála is not in my view constrained by that consent in considering the acceptability or otherwise of the Glengad site as the landfall for the onshore pipeline.
3. The onshore pipeline requires ABP approval in the present regulatory regime. SI Act 2006 in Section 182c (3) says *“The proposed development shall not be carried out unless the Board has approved it with or without modifications”* **However the facts that approvals to the plan for development and that the consent to construct a pipeline had been issued and that the foreshore licence had been issued are a significant consideration of which the Board needs to take account in making a decision on the proposed development.**
4. I have inspected the potential landfall sites at Inver, Glengad, Garter Hill, Portacloy, Glinsk. **I have reviewed the 2001 E.I.S. Route Selection carried out. It is my view that a suitable landfall had been identified at Glengad in 2001.**
5. The proposed development at Glengad must be acceptable from a proper planning and from an environmental impact position on the same basis as the other parts of the proposed development.
6. The suitability of the site does not in itself constrain ABP in considering all aspects of the onshore pipeline proposed development.

The suitability and the full examination of the proposed development is set out in the following chapters.

- i. The impact of the proposed development at Glengad on the environment (Chapter 38 Natural Environment)
- ii. The impact of the Glengad Landfall on the proper planning and sustainable development of the area and the Health & Safety of the community (Chapters 27-30 Safety)
- iii. The visual impact of the proposed development at Glengad. (Chapter 42 Landscape and Visual Impact).

Chapter 20 Regulation System of Operations of Pipeline

The proposed Corrib upstream onshore pipeline will be the first such upstream gas pipeline to be constructed in Ireland. Section 182 c (3) S1 Act 2006 requires that the proposed development shall not be carried out unless the Board has approved it with or without modifications. Section 40 (1) Gas Act 1976 requires that a person shall not without the consent of the Minister for Marine & Natural Resources [now DCENR], construct or operate an upstream pipeline. The role of the following was clarified at the oral hearing.

20.1 Health & Safety Authority

The HSA in their letter to the Board dated 18/05.09 clarified that the HSA has no remit in the area of gas pipelines as these are not covered by the Control of Major Accident Hazard Regulations [SI 74 of 2006]. In effect, then while the terminal comes within the remit of the HSA, the onshore pipeline does not.

20.2 Mayo Co Co Fire Authority

The Chief Fire Officer for Mayo Co Co clarified in evidence at OH that emergency planning for the proposed development falls within the remit of the Major Emergency Plan for Mayo and is maintained by HSE, Mayo Co Co and Gardai. He further clarified that for major sites and particular hazards, it was normal practice that a subsidiary site specific emergency plan would be developed between HSE/Mayo Co Co/Gardai and the operator of the development concerned. It was further clarified that work on any such subsidiary emergency plan for the onshore pipeline would only be commenced when the pipeline was approved.

20.3 SEPIL position on Emergency Response Plan

Mr. John Gurden SEPIL had provided an outline of the Emergency Response Plan that is being prepared and will be completed before the pipeline is commissioned. Mr. Stuart Basford Deputy Manager for the Terminal in evidence outlined that some preliminary contact had been made with the authorities regarding the preparation of an Emergency Plan for the site but that planning permission would need to be in place before the detail work on the plan would be completed.

20.4 Department of Communications Energy & Natural Resources

In a submission dated 11/05/09 by The Chief Technical Adviser DCENR, it was confirmed that the Minister for Energy is currently responsible for upstream gas safety. He further clarified that it is intended that responsibility for upstream gas safety be transferred to CER once suitable legislation can be enacted. This legislation is being drafted and it is expected to be enacted by the Oireachtas in due course. Until that legislation is in place the DCENR itself will operate the consent process for the safety of the upstream gas pipeline. The Chief Technical Adviser outlined that a full safety case procedure [the downstream gas procedure under which CER now regulates BGE operations] for Corrib Gas Pipeline would involve SEPIL in doing a lot of things before the project was submitted for initial consent. That is not the procedure being applied here.

The Chief Technical Adviser further clarified that the developer has the central role in the safety and certification process for the pipeline. As the owner of the project, the developer has to hand over to the operator of the project once commissioning has been completed. There is a procedure for that and the competent authority [now DCENR, but CER in the future] will audit that procedure. The DCENR will operate the procedure in accordance with best practice available to them. All key actions will be witnessed by Government Inspector and the procedure itself comes within the Phase 7 of the project as set out in the Plan for Development of the Corrib Gas Field. The seven phases are set out in Chapter 7 Section 7.4.7 of this report – Phases of development of Corrib Gas Field.

The DCENR is fully operating that process as part of the consent for development of the Corrib Gas Field now. The procedure is phased according to the phases of development. The developer is

required to do a lot of things in each phase. In the case of this onshore pipeline development project, there is continuous involvement by DCENR with SEPIL in respect of the terminal and in respect of the well head and subsea structures development at the same time. DCENR require information from these parts of the project in order to assess impact on safety of the onshore pipeline. DCENR have total oversight of the project from a safety point of view. The commissioning process under phase 7 involves detail audit by two separate sets of consultants, one of whom audits the work of the other. This will involve monitoring and inspection including the Hydro test that will be carried out on the pipeline. TAG have added requirements to the original consent procedures that involve prior series of reports, standards and information around the design, the maintenance scheme, and Integrity Management System for the pipeline. The standards set out in I.S. 328 provide the details of what needs to be done.⁹⁹

20.5 Observers concerns

1. Lack of confidence in the system was expressed by some observers.
2. Observers complained that they lack knowledge regarding the details of the Plan for Development of the Corrib Gas Field.
3. Observers complained that they lack knowledge regarding which set of criteria will be used to assess and approve the final commissioning process.
4. A sense of inevitability was expressed by some observers that the project would proceed regardless of unresolved issues of clarity in the regulatory system that will apply to the project.
5. Observers complained that they lack confidence in Government bodies and ABP that community/observer concerns regarding regulation would be responded to in the process of approval by ABP and consent by DCENR.
6. Concerns were expressed regarding technology and safety of materials, design operation involved [Chapters 27-30 deals with safety issues in more detail].
7. Concern was expressed that HSA should have a more central role in the regulation of this pipeline in operation.

20.6 Planning Authority position

Mayo Co Co in their submission to ABP had recommended approval be granted to the project subject to conditions. Mayo Co Co proposed a series of conditions which included four conditions regarding regulation of Health & Safety i.e. conditions 10,11,12,13 as set out in their submission.

These conditions in summary sought agreement of the planning authority to the following.

- A certified Safety Audit by an independent qualified competent person.
- The form of audit should include quantified and qualitative risk analysis.
- The audit should include combined components to ensure cumulative impacts of upstream pipeline and terminal are assessed.
- The audit to be also submitted to HSA and DCENR.
- The audit should cover the LVI and the pipeline.
- Any amendments to the permitted scheme which relate to the control or impact of major accident hazards shall be notified and agreed by the planning authority following consultation with HSA.

⁹⁹ [Evidence 21st May, 18.07]

- All above relate to conditions 10,11,12 as set out by Mayo Co Co.
- Agreement to a plan for control of traffic close to the terminal for use in the event of a major accident (condition 13).

In questioning Mayo Co Co were asked by the inspector was it their intention to retain expertise to advise them with regard to the conditions they had set out in their submission.

In response Mayo Co Co indicated that "...the safety of the pipeline is not a matter over which Mayo Co Co have control..." and that in view of the submission of 11/05/2009 by DCENR, conditions 10, 11, 12 as recommended by Mayo Co Co should no longer be included.¹⁰⁰

20.7 Inspectors Assessment

I believe it is important to have clarity with regard to the Regulation System and the role of the various Government Department, Planning Authority, Health and Safety Authority, Fire Authority in regulating the proposed development from the Health and Safety point of view.

I believe that clarity was established from the various submissions to ABP and at the OH.

I believe the above discussion gives a reasonable picture of the Regulatory System and provides a good basis for understanding the following recommendations to the Board.

20.8 Inspectors Recommendations

In the event that the Board decide to grant a permission for the proposed development I recommend the following condition

1. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as the construction, testing and commissioning of the pipeline, the Landfall Valve Installation and the equipment and ancillary facilities to the pipeline have been completed to the satisfaction of the competent authority DCENR and have been certified accordingly by the DCENR. A copy of that certification by DCENR to be issued to Mayo Co Co Planning Authority 14 days before the pipeline commences operating.

Reason:

1. In order to ensure that before the pipeline becomes operational that the completed development has been properly certified by the competent Authority.

2. In the interests of protecting the Health and Safety of the Public.

2. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an emergency plan has been prepared for the area between Glengad, Rosspoint, Aghoos and Ballinaboy. The plan shall have been agreed by HSE, Mayo Co Co and Gardaí and shall be in compliance with any requirements set down in the Major Emergency Plan for the area.

Reason:

In order to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area.

3. Prior to the commencement of the operation of the pipeline SEPIL shall obtain the agreement of the Planning Authority for a plan for the control of traffic close to the terminal close to the LVI and in the vicinity of the route of the pipeline for use in the event of a major accident.

Reason:

In the interest of Health & Safety.

¹⁰⁰ [DRN OH 87]

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Chapter 21 Extensification of the Well Field Development

21.1 SEPILs Position

Additional wells are planned at the Main Drill Centre. EIS 2009 Appendix Q1 Section 2.

“The Base Case subsea configuration comprises an 8-well manifold providing a commingling facility for five cluster wells and two satellite wells. A spare connection is available for one additional well. The facility for further wells is provided via tie-in to the upstream end of the manifold header.” EIS 2009 Appendix Q1 Section 2.1

1. SEPIL in Section 2.9 of the letter accompanying the application 16.GA.0004 have discussed the issue of extensification of the well field.
2. SEPIL state the Corrib Gas Field has an envisaged finite capacity. They state that this proposed development does not refer to any planned extension of the life of the Corrib Gas Field or indeed extensification of the upstream infrastructure to serve other possible hydrocarbon discoveries or the associated development infrastructure.
3. SEPIL state that having regard to detailed consideration of in situ reserves *“...it is not considered likely that there will occur any significant future extension to the life of the Corrib Natural Gas Field”*. [Letter Section 2.10]
4. However, SEPIL go on to say without prejudice to above that should gas reserves be greater than predicted, then a requirement to extend the operational life of both onshore and offshore pipelines may arise.
5. In such an event the monitoring of the pipelines including umbilical and outfall pipe as per pipeline integrity management system [PIMS] will enable the condition of the pipeline to be assessed, and will ensure the integrity of the overall pipeline is assured for the duration of its operation to the satisfaction of the Regulator. [Letter Section 2.11].
6. SEPIL confirm that no viable reserves have been discovered. Any such reserves would come within the petroleum licensing regime and regulatory process of the DCENR. [Letter Section 2.12].
7. SEPIL concludes *“assuming however that there is compatibility between any future gas reserves and the existing Corrib Natural Gas Field, it is likely to be the case that in theory at least, such reserves could be connected to the Corrib pipeline system without impacting upon its design, safety or functionality”*.

21.2 Assessment

1. Issues have been raised by observers based on news media reports of additional prospecting for oil and gas reserves, and based on Government Licensing data for petroleum exploration and development offshore. There are concerns that once in place the onshore pipeline will be a natural target to service such developments in the future. The concerns are that this pipeline may be used to carry gas which has less benign constituents, or a higher pressure system, and in those circumstances the less benign constituents and/or the increased pressure may pose an increased risk to the local community.
2. It is clear that what is before the Board in 16.GA.0004 is the onshore pipeline to facilitate the bringing ashore of the existing Corrib Gas Field.

3. I am satisfied that a suitable condition whereby any proposal to extend the use of the onshore pipeline to transport gas from other wells within the Corrib Gas Field can be imposed on any grant of permission to protect and safeguard the integrity of the onshore pipeline.,
4. I am satisfied also that a suitable condition whereby any proposal to connect other gas field developments to the onshore pipeline can be prevented until such proposals have been fully assessed, and until the technical assessment of the compatibility of such developments with Corrib has been proven and satisfies the appropriate competent regulating authority.
5. The consents, licences or permissions that would arise in relation to such development can in my view be dealt with under existing legislation.

21.3 Conclusion

In my view, this is a relevant consideration for ABP. While the ongoing regulation of the operation of this onshore pipeline is not a matter for ABP, I believe it is necessary that ABP be satisfied that during the operational life of the pipeline, that health and safety issues and the risks to the public are adequately regulated. I believe it is also necessary that ABP can be satisfied now that the integrity of the pipeline will be protected. Chapter 20 above considers the regulatory system for the operation of the pipeline.

I am satisfied that the integrity of this onshore upstream pipeline can be protected from any risk that may arise from extensification by the use of a suitable condition in the event that the Board decide to grant a permission for the proposed development whether this extensification of use of the Corrib Gas onshore pipeline, arises by way of new Corrib Gas Field wells, or whether the extensification arises from new gas fields outside the Corrib field itself.

21.4 Inspectors Recommendation

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

1. The use of the onshore pipeline shall be confined to the transportation of natural gas from the Corrib Gas Field as set out in the details of the EIS submitted on 12th February 2009.

Reason: To ensure proper regulation of the development and to protect the integrity of the onshore pipeline.

2. Any proposal to connect additional gas fields to the onshore pipeline shall be the subject of planning permission.

Reason: To protect the integrity of the onshore pipeline.

Chapter 22 Project Splitting

22.1 Overview

Observers claimed that in making the application for the proposed development SEPIL had engaged in project splitting and that the application should be rejected accordingly.

1. SEPIL in the Letter of Application for permission 16.GA.0004 and 16.DA.0004 set out in Section 3 the different regulatory requirements for the project.
 - 182c permission required from ABP for the onshore upstream pipeline development as proposed.
 - CAO Gas Acts 1976 confirmation required from ABP for the acquisition of the right to the lands required for the construction of the pipeline and the permanent way leave required for the lifetime of the development.
 - Consent is required for a new plan of development for the route now proposed under the petroleum lease.
 - Section 40 Gas Acts 1976 permission required from the Minister for consent to construct a pipeline.
 - Foreshore Acts 1933 – 2003 permission required from the Minister for Agriculture Fisheries and Food for a foreshore licence.
2. In addition there may be a requirement to obtain an IPPC Licence and a Waste Licence for aspects of the overall Corrib Gas Field Development as contained in the proposed development 16.GA.0004.
3. In addition there are all the historic consents/permissions which include the Plan for Development Approved 2002 under the Petroleum Lease held by SEPIL for the development of the Corrib Gas Field, the Section 40 Consent to Construct a Pipeline 2002 under the Gas Act 1976, granted by the Minister of Marine and Natural Resources, the Foreshore Licences 2002 granted by the Minister for Marine and Natural Resources and 2008 granted by the Minister for Agriculture Fisheries and Food.
4. In addition it was necessary to obtain a Waste Licence regarding peat disposal at Srahmore in respect of surplus peat from the Terminal site and there was a requirement for the IPPC Licence (P0738-01) for the Terminal.
5. There were also other Planning Permissions [a number of these related to aspects of the overall development].

In the context of the above, it is easy to understand why an argument of project splitting is being put forward and why the observers objection to the proposed development on the grounds of project splitting needs to be considered.

I propose to deal separately with considerations regarding project splitting during the planning and consenting stage of the Corrib Gas Field Development and secondly during the implementation / construction stage.

22.2 Project Splitting during the Planning Stages of the proposed development

22.2.2 Background and Historic Context

The proposed development 16.GA.0004 is part of the overall project for the development of the Corrib Gas Field. SEPIL submitted to ABP a copy of the E.I.S. offshore field to terminal October 2001, together with the 16.GA.0004 Application and the 2009 E.I.S. for the onshore pipeline. It is clear from the letter of application that the 2001 E.I.S. documentation is solely for the information of ABP and does not form part of the 16.GA.0004 Application. The following information has been taken from that 2001 E.I.S.

“Initially, Enterprise Energy Ireland Ltd and the company’s co-ventures Marathon, a subsidiary of Marathon Oil (US based) and Statoil (Norway based), carried out exploration in accordance with the terms of an exploration licence.

In order to develop the Gas Field it was then necessary to obtain a petroleum lease. Subsequent to the petroleum lease, the licence operator then had to apply for approval to the plan of development for the Gas Field. The Minister for Marine & Natural Resources [now DCENR] was the Minister with the authority to grant exploration licence, petroleum lease and approval to the plan of development.

In 2001 an E.I.S. was submitted for approval with an application for planning permission was made to Mayo Co Co for the Terminal.

In 2001 also, the offshore field to terminal E.I.S. was submitted for approval to DOMNR.

The Corrib Gas Field development consisted of a single scheme in respect of the application for approval for the Plan for Development to DOMNR.” [Refer Non Technical Summary 2001 E.I.S. offshore to terminal Pages 3 / 4].

22.2.3 The Consent Process

“Before the Corrib Field can be developed a number of consents and licences must be in place.

The Minister for the Marine and Natural Resources regulates all exploration activities in Irish waters. To date Enterprise and its co-venturers have carried out exploration in the Field in accordance with the terms set out in an exploration licence. As the joint venture proposed to develop the Field, they apply for a Petroleum Lease, which when granted, sets out conditions for production operations.

When a Petroleum Lease has been granted, the Licence Operator, Enterprise, must apply by submitting a Plan of Development, for the Minister’s approval to develop the Field.

The development of the Corrib Field will consist of a number of different elements. Each will require their own specific permissions or licences.

The building of the terminal requires planning permission from the local authority. Because of the energy requirements at the terminal, arising from the need to pressurise the export gas, it will also need an integrated pollution control (IPC) licence from the Environmental Protection Agency before operations can commence. This licence sets out the detailed limits for all emissions from the terminal, and specifies the monitoring regime to be put in place to ensure that these limits are adhered to.

Enterprise must also apply to the Minister for consent under the Gas Act 1976 (as amended) to construct and operate the pipeline from the subsea installation to the terminal. A separate application must also be submitted to the Minister for a Foreshore Licence to lay pipelines across the foreshore. The Minister may attach conditions to his approvals.”

It is clear that on 15th April 2002 the Plan of Development [POD] submitted by Enterprise Energy Ireland Ltd on 21/11/2001 was approved by the Minister for the Marine and Natural Resources. [Copy of the approval is contained in Appendix 7]. It is clear from the submission by the chief technical adviser on behalf of the DCENR that an EIA procedure was involved in the approval.

It is clear from the conditions attached to that consent that approval of the Plan of Development that well field, pipeline, terminal were all included in that approval.

The approval was subject to conditions. Condition 2 in particular is relevant here:

2) *“Compliance with all relevant national and international statutory requirements, regulations in force at the time for a particular location and all directions given by the national or local competent authorities including:*

- *obtaining all necessary planning permissions.*
- *obtaining a foreshore licence.*
- *obtaining an IPCL licence etc.* This is contained in the E.I.S. 2002

It is clear that the issue of dividing up the project was **commenced in the course of obtaining the permissions and consents required by legislation following** the initial approval to the Plan of Development (15th April 2002), the approval to the consent to construct a pipeline (15th April 2002) and the approval of a Foreshore Licence (17th May 2002). As a result planning permission was applied for to Mayo Co Co for the terminal. An application was made for an IPC [now IPPC] licence from EPA.

The approval to the POD underpins the development of the Corrib Gas Field. The 2002 approval was the subject of an EIA procedure and the then competent authority Department of Marine and Natural Resources made the decision to approve the scheme in accordance with the legal framework that applied at that time. On that basis I am satisfied that project splitting has not taken place.

22.2.4 16.GA.0004 contains an E.I.S.

Further to that in view of the fact that an E.I.S. has been submitted with 16.GA.0004, I also reject the claim of project splitting. As part of the assessment of the E.I.S. for the proposed development the cumulative impacts of the other phases of development will be considered.

The Strategic Infrastructure Act 2006 requires that an Application for Approval of the development under 182c be accompanied by a certificate in relation to the pipeline provided under Section 20 of the Gas (Amendment) Act 2000, and in the case of a strategic upstream pipeline, that certificate shall be issued by the Minister for Communications, Marine & Natural Resources. That certificate has been provided with the Letter of Application for 16.GA.0004.

The S.I Act 2006 does not require that an approved Plan of Development shall be submitted as part of the application under 182c.

The observers contend that the 2009 pipeline route (the onshore part) is not part of the scheme as approved under the plan of development in 2002 and that project splitting has taken place, i.e. part of the overall scheme is being built in accordance with the 2002 consents and part of the scheme will be built in accordance with an approval being sought under 182c.

It is a fact that the 16.GA.0004 onshore pipeline follows a different route to that which was included in the Plan of Development as approved in 2002.

It is also a fact that SEPIL has applied for an approval for a new Plan of Development which includes the pipeline route as per 16.GA.0004.

SEPIL has indicated that the change in pipeline route has come about in response to the Cassell's Recommendations. Observers have indicated that the original route [2002] is the subject of legal proceedings, and that the change in route has resulted from that legal challenge. Which or whether the route has been changed.

The 2002 POD is in my view sufficient basis to reject the argument that 16.GA.0004 is premature pending a decision by DCENR on the revised POD.

In saying this I recognise that the change in route is no small matter, nor is it such as to be a change in detail from the original 2002 route. On the contrary, the change in route is a significant alteration to the approved project.

The central point I believe, is that whether the onshore pipeline route is that of the 2002 approved POD and 2002 Section 40 consent or that of the 2009 16.GA.0004 scheme, the principle is the same that there would be an onshore upstream pipeline.

I believe it would be unreasonable and unacceptable to argue that where a change for whatever reason be it significant or otherwise, is necessary in an approved scheme that the whole scheme has to be abandoned and that a new process of approval has to commence for the entire scheme [including the alteration]. The change will necessitate appropriate permission and/or consent as required by legislation, and such is the case in 16.GA.0004. Also there is no guarantee in seeking the appropriate permission for the change that the appropriate permission sought will be forthcoming purely on the basis that the overall scheme had an original approval.

Such was the case where the initial application for the terminal was refused by ABP notwithstanding the approval that had been given in 2002 to the POD of the overall Corrib Gas Field Development.

During the OH observers consistently made statements of their fear that planning permission for 16.GA.0004 would be a fait accompli because the original scheme had been approved. This is not the case as the onshore upstream pipeline development has to be considered on its merits and approved or disapproved accordingly.

On the basis of the above argument I reject the objection that project splitting has taken place in the planning stages of the onshore pipeline.

22.2.5 Project splitting during the implementation stage/ construction stage.

This is the area where I see most objections and most criticism relating to project splitting. Observers have pointed out that at the same time as the Haul Route L1202 is being considered as part of 16.GA.0004 by ABP, in connection with the onshore pipeline, that the same haul route is being used to construct the landfall pull-in works as part of the offshore pipeline, and as part of the scheme approved in 2002. Observers have indicated that the use of the haul route L1202 for the construction of the offshore pipeline is deemed to be exempt development by virtue of the consent received in 2002.

Observers also pointed out that the access road from L1202 to the landfall;

- a) has planning permission as a temporary access granted by ABP on appeal PL.16. 223463. This temporary permission extends over that part of the access road from the L1202 as far as the cSAC boundary.
- b) is the subject of 16.GA.0004 for use as a permanent access and details are set out in the current application as before the Board for decision.
- c) is in use as part of a major construction project that is underway to construct the offshore pipe pull in to Glengad . Observers point out that this use is being considered exempt because of the 2002 consent while in a Section 5 referral (LVI Referral Board Decision on Questions Raised 16.RL.2293) ABP has decided that such development within the cSAC was development and was not exempt development.

These issues are complex and are difficult to articulate within all the legislation and within all the regulatory processes involved. The argument of project splitting by observers is understandable in the context of these complications.

These issues are made more difficult by SEPIL working ahead with the offshore pipeline construction while applying for permission for the onshore pipeline. This is the situation in advance of a decision on the proposed development 16.GA.0004, where overlap of the two developments offshore and onshore has been established see Chapter 23 below.

Notwithstanding that however, in my view, project splitting is not a term that is at all appropriate for articulating on these difficult issues, or for defining an objection (if that is what is required) to certain construction activities. Observers have made a determined effort to use the OH process which is enquiring into the Onshore Upstream Pipeline to re-open aspects of the Terminal Planning Permission and to try to get ABP to somehow expand the process of 16.GA.0004 to include examination of other aspects of the Corrib Gas Field Development. In my view the OH did allow sufficient discussion and did seek additional information to enable these matters to be fully clarified. I am now satisfied that the extent of the proposed development included in 16.GA.0004 has been fully clarified.

In my view, such construction / implementation questions that give rise to the argument of project splitting are not relevant to the considerations of 16.GA.0004. Such issues are matters to be raised in the first instance with the Planning Authority Mayo Co Co under Section 5 of the P&D Act 2000.

22.3 Inspectors Conclusion

In summary I find that the objection of project splitting is not well founded. The original approval to the Corrib Field Plan of Development in 2002 included an EIA procedure. The present application for the proposed development includes an E.I.S. which will be assessed by ABP. In relation to matters under construction on site I find that these are outside of my remit and they are not in my view relevant considerations for ABP in arriving at a decision on 16.GA.0004.

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Chapter 23 Boundaries of the Permissions Sought

23.1 Clarification of the permission sought in 16.GA.0004 Application

Observers argued at the Oral Hearing that there was uncertainty regarding the boundaries of the application for permission for the proposed development.

1. The E.I.S drawings and appendices set out the extent of the proposed development. E.I.S Chapter 1 and Chapter 4 Section 4.2 & Section 4.3 in particular.
2. At the oral hearing questions were raised by observers regarding works at the landfall valve site which were under construction at the time of the OH – May & June 2009. These questions related to the status of the works at Glengad in relation to the 16. GA.0004 proposed development. SEPIL indicated that the works in question related to the offshore pipeline construction and pull-in at the landfall site.
3. SEPIL were requested to submit a drawing to the oral hearing showing the footprint of the sea pipeline works and which would distinguish the temporary works and permanent works and show the county boundary. The drawing should extend up to and including the proposed connection between the sea pipeline and the proposed onshore pipeline. SEPIL submitted two drawings to clarify the issues DG0111 R05 and DG0099 R13.¹⁰¹
4. In Appendix 7 extracts from the E.I.S. set out details from the pipeline design specification and where the specification changes from offshore to onshore in the design of the pipeline.

The change in design specification occurs at the downstream weld at the LVI and at a different location than the starting point for the onshore pipeline that is the subject of 16.GA.0004.

5. Questions were also raised by observers concerning the existence in situ of a stone road extending from the terminal along the route of the pipeline. The questions related to the status of this stone road in relation to the 16. GA.0004 application and to the exclusion of details of this existing stone road from the E.I.S.
6. SEPIL were asked to submit details of the part stone road constructed from the terminal so that any overlap between the stone road on site and the proposed development could be assessed, and so that the impact of the 16. GA.0004 proposed development on the site could be evaluated. SEPIL submitted Drawing No DG0112 and Drawing No 001 of AGECC additional information report June 2009.¹⁰²
7. SEPIL were also asked to submit the following details:
 - (a) Drawings showing other works [other than at landfall site Glengad, and stone road at the terminal] carried out along the route of the 16. GA. 0004 pipeline proposed, and which had been discontinued.
 - (b) Details to include site plan.
 - (c) Photographs of existing condition.
 - (d) A statement indexed to each such part of the works setting out status: finished or unfinished, if works are consented, under what consent, if unfinished, a statement regarding the reinstatement proposed and the process of consent that applies to such reinstatement.SEPIL duly submitted documentation at the Oral Hearing in response to this request.¹⁰³

¹⁰¹ [DRN OH 44 submitted 3/06].

¹⁰² [DRN OH 101, DRN OH97, DRN OH103].

¹⁰³ [DRN OH119 23rd June]

23.2 The facts – landfall site

1. The Drawings DG302 – DG307 submitted as part of the E.I.S. show the pipeline in some detail. The route (blue) of the pipeline is shown commencing at landfall chainage 83.4 and terminating at the terminal tie in point chainage 92.56.
2. Drawing DG0099 R13 submitted at the OH shows the end of the offshore pipeline at chainage 83.442.
3. In evidence¹⁰⁴ SEPIL indicated that the planning application to An Bord Pleanála 16.GA.0004 started at chainage 83.4 on the top of the cliff face and that the onshore pipe itself would connect to the offshore pipe by the insertion of a “pop” piece of pipe less than 12m long somewhere between chainage 83.4 and chainage 83.442. SEPIL were not in a position to say exactly where that connection would occur, but because chainage 83.4 is at the cliff face it was unlikely to occur at that point.
4. In evidence¹⁰⁵ SEPIL confirmed that the offshore umbilical will connect to the onshore umbilical at chainage 83.478 approximately, and that the offshore umbilical is proposed to be laid in 2010. A casing pipe will be laid in 2009, with the pull in of the offshore pipe, and through which the offshore umbilical will be pulled in 2010. The onshore and offshore umbilicals will be connected in a chamber within the LVI compound as shown on DG 2103.
5. In evidence¹⁰⁶ SEPIL confirmed that the surface water drain for the LVI site itself will be laid through the cliff face as part of the works or 16.GA.0004 if approved.
6. In evidence¹⁰⁷ SEPIL indicated that the offshore outfall pipe will be laid in 2009 and will connect to the onshore outfall pipe between chainages 83.4 and 83.442 and that permission is being sought for the outfall pipe up to 83.4 as part of the current 16.GA.0004 application.
7. SEPIL show on DG0111 R05 the extent of “temporary fencing offshore pipeline works” and “the offshore pipeline construction compound”.

23.3 Previous Considerations by ABP

1. ¹⁰⁸The Bord granted permission for the retention of temporary alterations (including widening) of a previously existing agricultural entrance from the public road (the L1202 county Road) to the Corrib Gas pipeline way leave at Glengad for a five year period.
2. ¹⁰⁹The Bord considered and decided a series of questions relating to the construction activity at Rosspoint South (Rosdoagh), Glengad, Bellanaboy, Bellagelly South.

¹⁰⁴ [10th June 15.04]

¹⁰⁵ [10th June 15.11]

¹⁰⁶ [10th June 15.04]

¹⁰⁷ [10th June 15.12]

¹⁰⁸ [PL 16.223463].

¹⁰⁹ [16. RL.2293].

23.4 Assessment of landfall site issues

The situation is complex between the permission now being sought and the 2002 Section 40 consent under the Gas Act 1976 and complex also because of past events, the temporary planning permission and the referral outlined above. The situation is also complicated by previous attempts by SEPIL at construction activity on this site of which no details were sought or provided but which were referred to by observers and SEPIL in passing.

23.4.6 The Access Road to the LVI site from L1202

1. That part of the entrance road to the LVI that was the subject of the temporary retention permission PL 6.223463 has now 3 status positions:

Status 1 A temporary 5 year permission granted by ABP reference 16.223463.

Status 2 In use at present as access road to offshore pipeline construction compound this includes 2.8 m high palisade fence and temporary site offices and 3 m steel hoarding panel gates. [2002 , Section 40 consent under the Gas Act 1976]

Status 3 This application 16. GA.0004 includes the construction of a permanent 3.5 m wide access road from the L1202 (local road) to the LVI facility and through manually operated gates (vehicular and pedestrian). The access road will be surfaced with topsoil sourced from within the compound [refer E.I.S chapter 4.3 and drawing DG 2101].

23.4.7 Conclusions Access Road

2. **I am satisfied that the details of development proposed for the Glengad LVI part of the site are clear in the drawings and as contained in the E.I.S and as further clarified in submissions to the OH.**
3. **I am satisfied that a permanent access roadway to the LVI site is required as an integral part of the pipeline development and I have no objections to the roadway as proposed.**
4. **The offshore pipeline construction is not part of the 16 GA.0004 application. I have sought and received clarification at the OH of the overlap between the tie-in of the offshore pipeline construction and the proposed development.**

23.4.8 Observers contention: Glengad Site

- (a) That the general construction works on site represent a commencement of this 16. GA.0004 development in advance of a decision by ABP i.e. the works on site are unauthorised development. I have no authority to examine this contention. **In my view, the contention is outside the jurisdiction of ABP at this point in time and should have been taken up with the Planning Authority Mayo Co Co within whose jurisdiction I believe issues of unauthorised development can be raised in the first instance. This position was made clear at the oral hearing. Evidence was also submitted that a Section 5 referral to Mayo Co Co in this regard had issued from An Taisce.**
- (b) The construction of the offshore pipeline which requires a construction footprint onshore above the HWM. Observers contend that those onshore works should require permission i.e. Observers contend that the temporary works onshore are unauthorised development. **I have no authority to examine whether there is unauthorised development or not on this site. In my view, the contention is outside the jurisdiction of ABP at this point in time and should have been taken up with the Planning Authority Mayo Co Co within whose jurisdiction I believe issues of unauthorised development can be raised in the first instance.**

23.4.9 Pipeline Overlap

In the case of the pipeline tie in, and the overlap issue, the situation is not so straightforward. Observers contention is that a part of the pipeline which is the subject of this 16.GA.0004 application is being constructed now as part of the offshore pipeline pull-in works and in advance of a decision to grant planning permission. In particular they refer to that part of the offshore pipeline above the high water mark which it is proposed to construct as part of the offshore pipeline pull in works in 2009. SEPIL have confirmed in evidence¹¹⁰ that the 2009 offshore pull-in works will include:

- (1) Laying the 20 inch gas pipe itself to a point onshore between chainage 83.40 and chainage 83.442.
- (2) Laying the outfall discharge pipe offshore and to a point onshore between chainage 83.40 and chainage 83.442.
- (3) Laying of the umbilical itself will not be carried out until 2010, however, the 2009 works will include insertion at cliff face of a sleeve pipe through which the umbilical will be pulled in 2010 and that the terminal point for the umbilical [and I assume, said sleeve pipe] will be chainage 83.478 m approx which is where the chamber connecting the umbilical offshore to onshore is located.

23.4.10 Inspectors conclusions regarding overlap with offshore pipe

1. I find that I have sufficient clarity of information available to enable me to assess the issues involved.
2. I find that the application before the Board is for an onshore upstream pipeline. I find that the S.I. Act 2006 requires that such a pipeline cannot be constructed until a permission has been granted by ABP under 182d on the Act. The relevant commencement of the pipeline in my view is at the intersection of that pipeline with the county boundary of the planning authority at HWM. In effect, the pipeline and the application should commence at approximately chainage 83.390.
3. I disagree with SEPIL who indicated in evidence that the application begins at chainage 83.40 which is identified as the top of the cliff face. I believe that SEPIL have made an error in that evidence. Otherwise there will be a section of the onshore upstream gas pipeline which requires a 182c permission from ABP and which is excluded from this application i.e. between chainage 83.39 and chainage 83.40 approximately.
4. I find that the application for permission should include the gas pipeline itself and associated works which include the umbilical, the outfall pipe commencing at the county boundary of the planning authority at the HWM. I again disagree with SEPIL regarding the extremity of the onshore umbilical and the extremity of the onshore outfall pipe. I believe the application for both should commence at the HWM chainage 83.39 approx.

23.4.11 Inspectors Recommendation

I recommend to the Board that SEPIL be requested to restate the extremity of the proposed development at HWM to include that section of development of the upstream gas onshore pipeline umbilical and outfall pipe between the county boundary and chainage 83.40.

¹¹⁰ [10th June, 15.02]

23.5 Status of the pipeline between chainage 83+390 and 83+442

As regards the issue of (1) the approximate length of pipe being laid onshore now as part of the offshore pull-in works to some point between chainage 83.40 (SEPIL definition of the onshore pipe starting point) and 83.442 or between chainage 83.39 (my definition of what should be the correct starting point for an onshore pipeline), and 83.442 and (2) the laying of a sleeve pipe now as part of the offshore pull-in works for the umbilical to approximately chainage 83.478m (3) the laying now of the outfall pipe offshore, and to a point between chainage 83.40 and chainage 83.442.

23.5.12 Inspectors Conclusions

I have no authority to assess or examine such construction works and any issues of compliance with the planning acts that may arise from such works. I note that the 2002 consent under Section 40 of the Gas Act 1976 was the subject of an E.I.A procedure. Accordingly I do not expect that an argument could be sustained that SEPIL or the regulating authority had managed to get around their obligation to have an appropriate E.I.A Assessment conducted before the project received approval and before construction took place.

In my view, such matters are not an issue for consideration of the Board when taking its decision on 16. GA.0004. In my view, such matters do not impede or constrain the Board from examining the 16.GA.0004 Application, and from examining the impact of the proposed development on the environment and the impact of the proposed development on the proper and sustainable development of the area.

In my view matters relating to unauthorised or alleged unauthorised development are matters to be considered elsewhere. In my view matters relating to construction work on site at Glengad are not constraints on ABP in examining and deciding on 16.GA.0004. In my view matters relating to the construction works on site at Glengad have this relevance to the 16.GA.0004 application. The need to identify the boundary and respective limits of each of the offshore development proposed which is being carried out under a Section 40 Gas Act 1976 Consent and this 16.GA.0004 application for the proposed onshore upstream gas pipeline. This has been done as outlined above. In my view in this regard, I have sufficient information available in the E.I.S., and together with additional information arising from the oral hearing to evaluate the impacts of the proposed development. That assessment of the proposed development is carried out in the various chapters of this report.

23.6 The terminal tie-in issues and the part constructed stone road

23.6.1 The facts stone road existing near terminal

1. A stone road exists on site between chainage 91.539 and chainage 92.573 approximately 1km long.
2. From site inspections it is clear that this construction of stone road is different in some respects from the details proposed in the 16.GA.0004 development. The E.I.S. Section 5.5.1.1 sets out the “stone road” method. Drawing No DG601 shows the typical cross section for peat land for both cSAC and non-cSAC These difference are:

(1) The stone road as constructed between chainage 92.36 and chainage 92.539 [i.e. closest to the terminal] is within a construction site [Terminal] is narrower than the proposed road in 16. GA.0004 by 2 – 3 metres and has a vertical alignment which is incomplete between chainage 92.5 and 92.539.

(2) The stone road as constructed between chainage 91.537 and chainage 92.36 is wider than the proposed road in 16 GA.0004 by 1 – 2 metres, being 10m- 11m wide now. Peat has been

side cast on the eastern side of the in situ road to a height of approximately 1m – 1.5m over the road, and this has revegetated.

(3) Some sheet piling has been used in sections at the side of this stone in situ road.

3. SEPIL have indicated that low permeability plugs have not yet been installed in this in situ road.¹¹¹

23.6.2 Assessment

In the case of the part stone road constructed, a question arises does this stone road prejudice consideration by ABP of the onshore pipeline. In my view the existence of a planning permission for the Terminal is a significant factor here. In my view also, the existence of a Section 40 Consent under the Gas Act 1976 for the pipeline along the route where the part stone road is now in situ, is a significant factor here.

Observers have made the point that in their opinion, while the Section 40 consent include the construction of a pipeline, the construction technology proposed had not included a stone road. It is outside my remit to review the Section 40 Consent. In my view the approach taken by ABP to questions raised [16.RL.2293] is a significant factor here. In relation to Question 7 ABP were requested to consider whether a road (part of 2002 consented scheme) was development. ABP at that time decided the road was development and was exempt development. As far as I am aware ABP has not been asked any questions relating to the existing stone road.

23.6.3 Inspectors Conclusions.

In view of the above, it is my opinion that the existence of the stone road does not prejudice ABP for examining the Applications before it, and taking whatever decision the Board may decide. As recommended below, SEPIL should be asked to re-state the details of the site regarding the pre-existing stone road and amend the Application for Permission accordingly.

In relation to the Derrybrien decision and the issue of whether ABP can consider granting planning permission for a pre existing piece of infrastructure my view is that the proposed development as now stated to an Bord Pleanála is incorrect, the site condition where the stone road exists should be amended by the applicant, at that stage the corrected application in its entirety becomes subject to an E.I.A by ABP. In my view and as outlined above ABP can carry out an EIA on the correctly stated site condition and can decide whether the proposed development is acceptable or not.

23.6.4 Inspectors Recommendation

The site of the proposed development has been incorrectly detailed in the E.I.S. between chainage 91.537 and chainage 92.539. ABP should therefore request SEPIL to amend the details of the proposed development accordingly. This revised information can then be assessed fully as part of the application for the proposed development.

23.7 The Status of Other Works

This section discusses the status of other works along the pipeline route which SEPIL indicated were carried out under previous permissions.¹¹²

¹¹¹ [DRN OH101]

¹¹² [DRN OH119]

23.7.1 Works reference 2 (a) and 2 (b) Compound at Rossport and adjacent field.

These two construction sites are not part of the site of the proposed development 16. GA.0004. SEPIL has indicated that a 2002 Section 40 (Gas Act) consent applies to these works and that full reinstatement is proposed for these sites. The Board has previously considered works on this compound site [Ref 16.RL.2293 question 1 and question 2]. At that time the Board considered the provision of a large construction compound on the site as development and as exempted development.¹¹³

23.7.2 Conclusions Compound at Rossport

I am satisfied that these two areas of land are not included in the site of the proposed development 16.GA.0004. The development, use and reinstatement of these two areas are matters that relate to the 2002 pipeline consent which was subject to an E.I.A, and as such, do not form part of the information that has to be considered as part of the evaluation of this development 16.GA.0004. Nevertheless, I am satisfied that full reinstatement of the site as indicated by SEPIL will be a satisfactory environmental outcome for the site, and will mitigate any residual impact on the environment that continues pending the reinstatement. I believe such residual impact is a matter for consideration here.

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¹¹³ [DRN OH119 DG0114]

23.7.3 Corridor Glenamoy Terminal outside current application. [Works Ref Number 3(a)].

This corridor now consists of a pipeline route in forestry which has been clear felled, and in which a bog mat timber road has been laid down. The corridor lies north of the L1202.¹¹⁴ The proposed pipeline route 16.GA.0004 will not use this corridor apart from a small section adjacent to the L1202. Immediately north of L1202 [This is shown on Plate 8 Compound Aghoos Road on DRN OH119] there is part of the proposed development [Compound SC8]. Also the 16.GA.0004 route crosses the corridor at right angles more or less at chainage 90.7 immediately behind compound SC 8. The Board have previously considered this development [No 16.RC.2293 Question 7] and decided that the laying of a wooden road between the compound at Bellagelly South and Sruwaddacon Bay is development and is exempted development.

The development, use and reinstatement of the corridor¹¹⁵ are matters that relate to the 2002 pipeline consent what is clear to me is that there is a continuing residual impact on the environment as a result of the works carried out on this corridor by SEPIL. The impact is both visual and physical in that the remains of a wooden mat road exists. The impact also affects drainage in the area. It is not clear who controls the site, what the respective roles of Coillte and SEPIL are at this point in time, nor is it clear what final reinstatement, if any, will be carried out.

23.7.4 Inspectors Conclusions and Recommendations

I believe it would be incompatible with the proper planning and sustainable development of the area to deal with the proposed development 16.GA.0004 without identifying how these impacts associated with the apparently abandoned 2002 consented pipeline are to be mitigated, and how that site will be reinstated if at all.

Accordingly I recommend that ABP seek clarification on what is proposed for the reinstatement of this site, who will be responsible for the reinstatement and under what consent/permission that work is proposed to be carried out.

23.7.5 Corridor Glenamoy Terminal within current application boundary.¹¹⁶

This corridor is a part of the proposed development and has been discussed above in the context of the stone road constructed there.

I am satisfied that any issues relating to this corridor can be dealt with in this application.

23.7.6 Compound (Aghoos Road) [Site 4 Doc No 119].

This compound is a part of the proposed development.

I am satisfied that any issues relating to this compound can be dealt with in this application

¹¹⁴ [DRN OH119 DG0114]

¹¹⁵ [Works 3a on DRH OH119]

¹¹⁶ [Site 36 DRN OH119]

Chapter 24 Protection of the Drinking Water Supply

24.1 Background

This chapter examines the facts relating to potential impact that the proposed development could have on drinking water in the area. Issues related to the protection of surface waters from pollution from the proposed development are considered separately in Chapter 43: Hydrology and Eco-Hydrology.

24.1.7 River Catchments

River catchments are shown on attached figure 15.3 taken from E.I.S. 2009.

This figure shows that the pipeline route travels through the following catchments:

1. Carrowmore lake: A section of the route immediately adjacent to the Terminal. In total I estimate about 300m of the route is in this catchment [and apart from 100m is largely within the Terminal site itself].
2. Lenamore River: This catchment drains into Sruwaddacon Bay.
3. Catchment South of Sruwaddacon Bay: This catchment slopes and drains into Sruwaddacon Bay.
4. Catchment North of Sruwaddacon Bay: This catchment slopes and drains into Sruwaddacon Bay.

In Section 4 of Appendix M5 of E.I.S SEPIL state that no surface water abstraction points have been identified along the proposed pipeline route.

24.1.8 Drinking Water Supplies

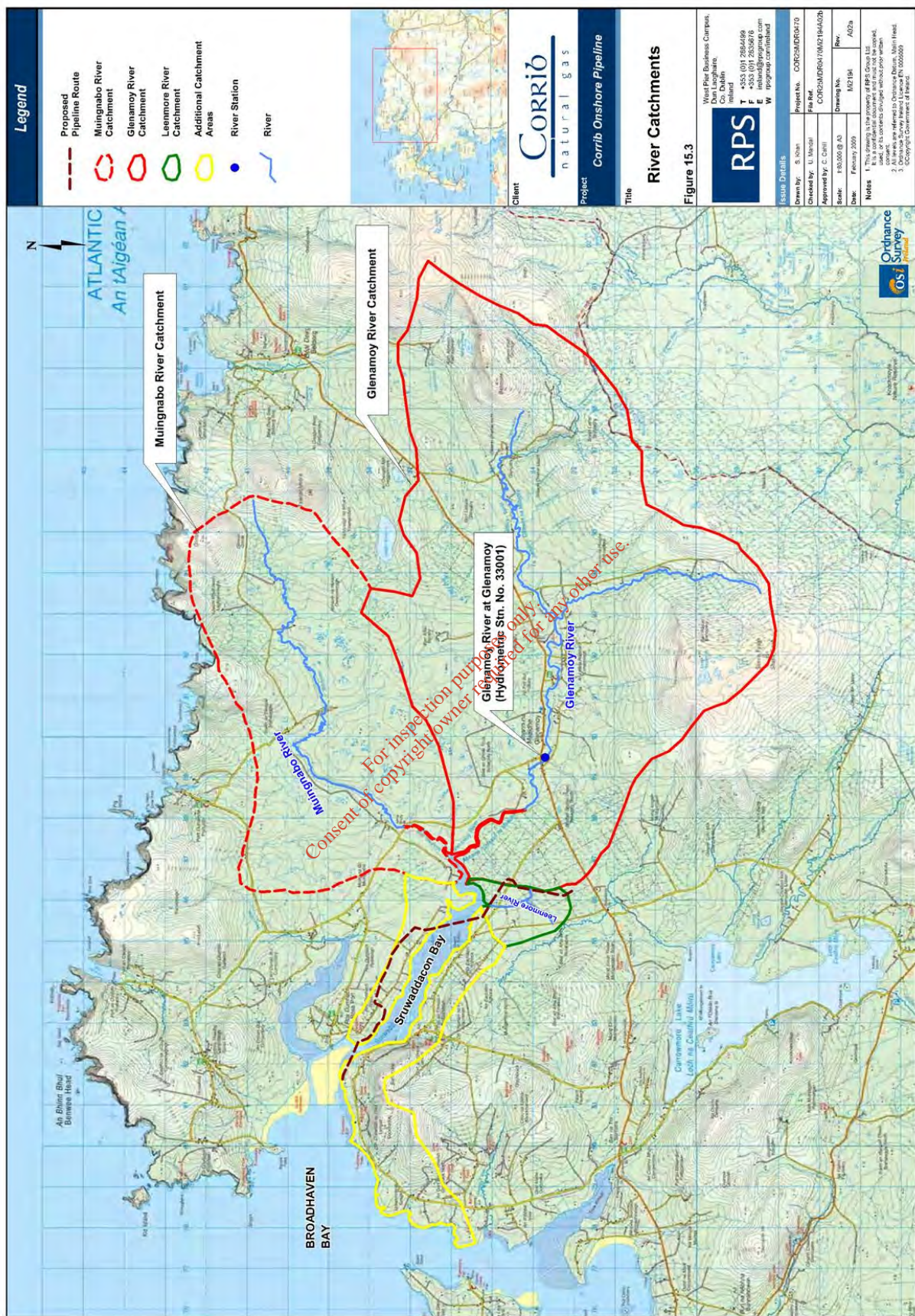
Carrowmore Lake is the source for Erris Regional Water Supply in the area. Mayo Co Co were requested to submit an Infrastructure Report showing the water supplies affected by the proposed development. DRN OH52 was submitted and shows the Pollatomais GWS which is supplied from the Erris Regional Water Supply Scheme.

It is the view of Mayo Co Co that the proposed development will not affect the Pollatomais GWS. DRN OH52 also shows the Rossport GWS which is a standalone scheme with its source close to the port at Rossport. The source is a private ground water source pumped to a reservoir for distribution in the Rossport area.

It is the view of Mayo Co Co that the proposed development and the works associated with the pipeline construction will not impact on or interfere with the Rossport G.W.S. The gas pipeline will cross the water main, however Mayo Co Co consider that with reasonable local arrangements that the level of inconvenience involved would not be significant.

24.2 Mayo Co Co Recommendations

Mayo Co Co in the Infrastructure Report recommends that there would be significant benefits to the local community if the existing water supply serving Glenamoy [part of Erris Regional Water Supply] were extended to serve Rossport area. Mayo Co Co recommended that the cost of this work could be borne by SEPIL. SEPIL made no submission and did not refer to this recommendation at the OH.



24.3 Other Issues

24.3.1 Other Ground Water

In Section 15.3.2 of E.I.S 2009 SEPIL discuss the potential impact of the proposed development of ground water along the proposed pipeline route (outside peatlands). SEPIL consider that on the basis of recorded ground water levels that the pipeline will not intersect groundwater along the route except at the trenchless crossings of the Bay and at certain times on the LVI site when water levels or tide level in that area are high. *“The impacts during the operational stage are deemed to have a temporary and imperceptible impact on local groundwater levels and groundwater flow in the area.”*

24.3.2 Observers Concerns

Considerable concern was expressed that the works would affect drinking water supplies. Concern was expressed regarding the impact of the Terminal construction on the water quality of Corrowmore Lake source for Erris Regional Water Supply Scheme. Test results were shown on slides showing elevated levels for aluminium tests in water quality results and these were related to works at the construction site of the Terminal.

24.3.3 Drinking Water Results Erris Regional Water Supply Scheme

Mayo Co Co were requested to submit 5 years water supply test results for the Carrowmore Lake supply. Mayo Co Co submitted results for 2005, 2006, 2007, 2008¹¹⁷ and results for Jan – April 2009¹¹⁸. I have examined these results and I found as follows:

- In 2005 the results were satisfactory and the tests for Aluminium were satisfactory.
- In 2006 the results were satisfactory and the tests for Aluminium were satisfactory. In December 2006 one Aluminium test while within the allowable threshold for Aluminium, the reading was elevated.
- In 2007 the test results show that aluminium levels (4 test results in all) exceeded the maximum permissible threshold for aluminium in Jan, March and December of 2008. The March and December levels were marginally over the permissible threshold for aluminium.
- In 2008 the results were satisfactory and the aluminium results were satisfactory,
- In 2009 the results presented for January to April are satisfactory.

In summary, the drinking water results of tests show that the Erris Regional Water Supply is satisfactory and apart from the aluminium levels which exceeded the maximum permissible threshold in 2007, the water supply has been certified throughout the period involved by the Public Analyst as chemically satisfactory and bacteriologically satisfactory over the years 2005, 2006, 2008, 2009 to April.

24.4 Inspectors Assessment

1. The main issue then concerns the potential impact on the Carrowmore Lake water source from the proposed 300m approx of pipeline construction within that catchment.

I note from information submitted at the OH that SEPIL do not propose any discharge location for surface water in that catchment area [DRN OH97 shows these discharge locations for surface water collected along the excavation].

I recommend that surface water from this section [chainage 92.2 to 92.56] shall be collected attenuated and taken through silt settlement ponds before being discharged, and that discharge

¹¹⁷ [DRN OH85]

¹¹⁸ [DRN OH90]

- shall be arranged to occur at DC11 into the Lenamore River Catchment i.e., the surface water collected from chainage 92.2 – 92.56 shall not discharge into the Carrowmore Lake catchment.
2. I recommend that prior to construction, the location of wells which serve as water supply sources shall be identified and that these wells shall be monitored before, during and after construction. I note that the extent of the piped network of the Rosspoint GWS and Pollatomais GWS are such that there may not be many such wells serving as individual water supply sources.
 3. As regards Mayo Co Co recommendation that SEPIL connect the Erris Regional Water Supply from Bellanaboy into the Rosspoint GWS and thus eliminate the use of the existing source at Rosspoint. It is unclear why this recommendation was made in this manner as a recommendation to the OH and not in the original submission by Mayo Co Co to ABP. I accept Mayo Co Co recommendation that there would be considerable benefit to the local community from such a connection. It is quite a long length and would involve significant cost and would also require agreement of the Rosspoint GWS to these arrangements. I therefore believe that it would not be appropriate that a condition be considered to give effect to the Mayo Co Co recommendation in any permission. There is much uncertainty in my mind regarding the recommendation and those from the local community in Rosspoint did not make any reference in their submissions to the recommendation from Mayo Co Co.
 4. It would be open to consider such a proposal where agreement had been established to the detail scheme and for any Community Gain funds that become available as part of any permission to be devoted by agreement of all concerned to such arrangement.

24.5 Inspectors Conclusion

1. I am satisfied that the proposed development has the potential to impact on the Carrowmore Lake Water Supply catchment during construction of the section between chainage 92+273 and chainage 92+573 approximately.
2. I am satisfied that the evidence provided by Mayo Co Co shows that the water quality in the Carrowmore Lake Water Supply is satisfactory and has been satisfactory during the majority of the construction period of the Terminal.
3. I am satisfied that it should be possible to manage the construction project for the proposed development so that there will not be an impact on the water quality of Carrowmore Lake Water Supply.

24.6 Inspectors Recommendation

In the event that the Board decide to grant a permission for the proposed development I recommend the following condition

SEPIL shall include in the EMP a detail method statement for construction in the chainage 92+273 to chainage 92+573 area and that such statement shall detail how it is proposed to manage the surface water during construction. The EMP shall be agreed by Mayo Co Co. Surface water from the construction project shall not discharge into the Carrowmore Lake Catchment.

Reason: To protect the Carrowmore Lake Water Supply

Chapter 25 Construction Methodology and Programme

25.1 Introduction

25.1.4 Construction methods and Construction details

A 12 month construction programme is prepared which includes mobilisation, construction testing and commissioning and reinstatement. SEPIL propose to establish a project monitoring committee comprising SEPIL, Mayo Co Co, NWRFB, Department of Environment Heritage and Local Government and Community representatives. Prior to construction surveys to include ground investigations, environmental surveys, archaeological testing and safety hazard identification are all proposed. Responsibility for Health & Safety during the construction project has been allocated to RPS (Project Supervisor Design Phase) and to the Construction Contractor (Project Supervisor Construction Phase).

The construction method to be used is:

- 1) The open cut technique known as the spread technique with temporary working area of 40m
- 2) Micro tunnelling across Sruwaddacon Bay at lower crossing 630m long (landfall end) and upper crossing 1000m long (terminal end) of Sruwaddacon Bay
- 3) A varied open cut technique known as the stone road method in all areas of Peat land, including the forestry section.
- 4) Increased working areas are used at road crossings, river and stream crossings and at estuary crossings and compounds.

25.1.5 Pipe Construction Summary

The pipes will be welded and weld tested on site. Pipes will be bent on site (or preformed or forged bends may be used) to form pipe changes in elevation or direction along the pipeline route. Pipes will be coated with electrical insulation and resistant material to corrosion and soil bacteria action. Pipe strings when welded and coated, are inspected and checked before being laid in long strings into the trench. The water outfall (250mm) and services (2No. 63mm ducts for fibre optic cable and copper cable) will be laid in the same trench as the gas pipeline. Three umbilicals will be laid in the trench (1No. 63mm, 2No. 81mm).

The pipe will be laid 1.2m (top of pipe) below agricultural land, and 1.6m (top of pipe) below watercourse river/stream bed level. The pipe will be laid on a layer of bedding material (sand, pea gravel or a layer of geotextile may be used as coating on pipe) 150mm thick.

The water outfall and services will be laid at a minimum separation distance of 500mm from the gas pipeline and the services umbilicals will be 1m minimum from the gas pipeline.

At crossings of roads/streams, a pre-installed section of pipe within a sleeve may be used and the pipeline string will be tied into these. A concrete slab will be laid above the pipeline for protection at these crossings.

The pipe when laid receives 150mm of cover using the bedding material. Marker posts are placed at field boundaries, road crossings etc., to mark the pipe route and coloured plastic film is placed in the backfill 300mm above the buried pipe/services pipe.

Reinstatement involves replacing top soil and land boundaries and will be carried out shortly after construction. In sensitive areas such as blanket bog reinstatement where practical will be carried out immediately after backfilling.

25.1.6 Specialised construction

Road Crossings/Track Crossings

RDx1, RDx2, RDx3, RDx4. The top of the pipe will be 1.6m minimum below road level and a reinforced concrete slab 150mm thick will be placed over the pipe and across the road crossing 500mm above the top of the pipe.

Stream Crossings (2No.) & River Crossings (Leenamore River)

It is proposed to intercept the streams/ Leenamore River upstream of the crossing, to install flume pipe/pipes temporarily to maintain the stream flow across the temporary working area. The gas pipeline and other services will be laid with a minimum cover of 1.6m to the bed level of the stream/river and a reinforced concrete slab 150mm thick will be placed 500mm above the gas pipeline. The stream/river beds will then be replaced and reinstated.

Specialised Construction Methods: (1) The Stone Road in Peatlands

The stone road method involves removal of turves whole 1mx2mx0.5m in size in intact bog and areas of bog designated cSAC's, protection of these turves on bog mats and keeping the turves moist for ultimate reinstatement over the area disturbed.

The stone road itself uses a 9m wide working area and the pipeline will be installed within that stone road. This method was apparently developed and used in the Mayo – Galway pipeline and in the area of intact bog in the Carrowmore Lake Complex cSAC, although the pipeline was laid beside the stone road in that scheme.

All surplus excavated peat will be removed. Otherwise in designated blanket bog and intact blanket bog areas (apart from the turves) excavated peat will be stored as required in compound areas not at the sides of the road with surplus peat being removed.

The stone road is constructed after the excavation of peat and where 0.5m of peat will have been left in situ. The stone will be selected to ensure it is pH balanced and chemically neutral within the bog. Peat plugs will be placed at intervals (as determined during construction) along the road to prevent the road acting as a preferential drainage channel.

The stone road will be 9m wide and will use normal working temporary way leave which is 40 metres wide. The same temporary working area will apply in intact blanket bog and in designated blanket bog areas.

It is proposed to use a layer of peat over the stone road beneath the turves when reinstating this area. The peat to be used is to be from intact blanket bog for use in areas of intact blanket bog reinstatement and from designated SAC blanket bog for use in areas of designated blanket bog reinstatement.

Specialised Construction Methods: (2) Sruwaddacon Bay Crossings

Figure 5.6 Trenchless Crossings as shown in Chapter 1 shows the typical installation of sleeve pipe and the stringing and installation of pipeline bundle.

It is proposed to bore a micro tunnel approx 2m dia using a method which will insert a sleeve pipe (now expected to be a concrete sleeve pipe) on both the lower crossing approx 600m long (landfall end) and upper crossing approx 1000m long Check Length (terminal end) in Sruwaddacon Bay.

Details are provided in chapter 5.5.2 of the E.I.S and in Appendix M4 Geotechnical Risk Register and Appendix S Information on Micro Tunnelling

It is stated that ground investigation and survey work have been carried out in 2007 and 2008 and that from the information gathered the expected ground conditions are sands and gravels over psammite bedrock with rock at both sides of the estuary. It has been concluded that the ground conditions encountered are well suited to micro-tunnelling.

Details of the boreholes are given on drawings DG0082 – 0083, 0084 in Appendix M1 of the EIS.

Information was provided at the Oral Hearing of Reference tunnel projects.¹¹⁹

There is discussion in Appendix S of the EIS concerning how and under what circumstances it may be necessary to open an intermediate pit(s) within the bay on each of the crossings. Such intermediate pit would require a pontoon floating and with a jack up platform. A pit would then be constructed (using sheet piles and dewatering) from the surface down to the tunnel to relieve whatever obstacle was encountered and which was impeding continuation of the tunnelling operation. It is anticipated that should such an intermediate pit be necessary, that the operation excavation and establishment of pit (1 week), and reinstatement (1 week) would take approximately three weeks per event. Such an intermediate pit is described as a worst case scenario. It is stated that the probability of such temporary intervention pit in the intertidal or subtidal area is low.

It is programmed that both tunnels will be constructed consecutively taking approx 8 weeks for lower crossing and 12 weeks for upper crossing.

Bentonite: An aqueous solution is proposed to be used in the tunnelling process for lubricating and cooling the drill shield and as an annular lubricating material between the sleeve pipe and the ground through which the sleeve pipe is pushed. This bentonite solution is returned from the drilling machine with the excavated materials and is separated in a recovery plant and reused. It is proposed to feed the bentonite at static pressure and to conduct a balance on usage/return quantities which will provide an alert in the event of a bentonite leak into the ground or a bentonite breakthrough into the bay.

It is now proposed that the lower bay crossing will be tunnelled from the western side (Glengad) although the E.I.S indicates that it may also be constructed from the east side. It is proposed that the upper crossing from Aghoos towards Rosspport will be from the south side although the E.I.S indicates this also could be tunnelled from the north side or from both sides depending on final decisions which will be taken prior to construction.

Landfall Valve Site Construction

It is anticipated that the offshore pipeline will be installed at the landfall in advance of the onshore pipeline. In fact I now believe the offshore pipe has been constructed.

It is expected that the pipe work and equipment for the landfall valve site will be fabricated off site and brought and assembled and tied into the offshore pipe and onshore pipe.

It is proposed to use a “geo” mat on the slopes at LVI to stabilise topsoil against erosion.

¹¹⁹ [DRN OH 48]

25.2 The Landfall Valve Installation & Pipeline at Glengad

25.2.1 Chainage 83.400 to Chainage 83.910

The area of the proposed development works at the LVI and extending to the Sruwaddacon Bay Lower crossing has a number of the issues;

1) Sand dunes/cSAC: (Glenaway Bog Complex 0500):

The pipeline and the LVI are located in grassland beside the sand dunes and south of the sand dunes. It is important that construction works do not extend beyond the fence-line as proposed.

2) Excavation at cliff face Glengad

SEPIL Information

Mr. Johnson in his evidence to the OH presented a summary of the Geotechnical assessment of the cliff at Glengad. He outlined for the boards attention the following.

- The cliff is 3 m – 4 m high formed of glacial soil with bedrock exposed at locations along the cliff
- The foreshore fronting the cliff comprises gravel and a cobbles area that represented a beach berm which the tide rarely covered as evidenced by vegetation at the base of the cliff, no evidence of wave undercutting and the line of seaweed at some distance from the base of the cliff.

Mr. Johnson carried out analysis on the likely regression of the cliff and concluded:

- a) It is concluded that there is no risk to the LVI from regression of the cliff in the lifetime of the pipeline.
- b) The set back distances recommended for the LVI temporary works should ensure no adverse loading on the cliff.

Mr. O'Donnell in his report Section 3.2.3.3 has considered this matter and his conclusions can be summarised as follows:

- a) The removal and changes to boulders on the beach has altered the coastline protection.
- b) The disturbance of the overburden at the cliff face will make it more susceptible to erosion
- c) Climate change could result in more severe storms over the design life of the pipeline

Mr. O'Donnell notes that the 40 m set back of the LVI exceeds the minimum recommended setback of 7 m for permanent works. Mr. O'Donnell accepts that the observational approach may be the most appropriate for the site which is in a cSAC. The observational approach will allow the erosion of the cliff to be monitored and would allow further protective measures to be implemented should this become necessary.

Inspectors Conclusion

I am satisfied with the consideration given to cliff face erosion by the applicant. I accept Mr. O'Donnells opinion that some form of natural coastal protection should be included in the works at the cliff face to prevent erosion. This matter also affects the foreshore as well as the cliff face.

The construction of the offshore pipeline pull in has involved a large excavation through the cliff at Glengad. The reinstatement of this cliff face has not been detailed. The Applicant does not expect the sand martin colony along this section of the cliff face to be able to use the restored site.

Inspectors Recommendation

1. In the event that the Board decide to grant a permission for the proposed development I recommend the following condition

SEPIL shall, as part of the EMP, set out a detail method statement for the reinstatement works to be implemented on the foreshore at the cliff face at Glengad. This shall be agreed with Mayo Co Co and DAFF

Reason: To protect the natural environment of the restored cliff face from erosion.

2. A drawing should be prepared detailing the heights of materials and elevation treatment of the reinstatement of this cliff face for approval by Mayo County Council.

Reason: To ensure that the restoration of the cliff face is constructed in appropriate materials and to a satisfactory standard.

3) Beach Reinstatement

The beach has been subject to major excavation and trench work during the construction of the offshore pipe. There will be further work on the beach associated with the Corrib Gas Field Development – an outfall drainage pipe down from the LVI itself, restoration of the cliff face after construction. There will also be further work in 2010 when it is proposed to lay the umbilical offshore pipe section. Observers raised issues that damage to the amenity of the beach was being done by the excavation works there which among other excavations involved removal of a large rock there. I have made a recommendation above regarding reinstatement at the base of the cliff and of the cliff face itself.

Conclusion

The beach is outside of the site relevant to this application and comes within the remit of the DAFF and the Foreshore Licence granted by DAFF for the works concerned.

Any restoration plan that is required should be agreed with the appropriate authority DAFF in respect of the Foreshore Licenced part of the overall site for the Corrib Gas Field Development.

4) Glenamoy Bog Complex cSAC (0500)

The Glenamoy Bog complex cSAC description (copy contained in Appendix 6) contains the following.

“This site is of immense ecological importance because of the presence of a number of EU Annex 1 habitats, including two priority habitats, blanket bog and machair. It supports populations of an Annex 2 fish species (*Salmo Salar*- Salmon), two three Annex 2 plant species (*Petalophyllum Ralfsii* – a liverwort, *Drepanocladus vernicosus* – a moss and *Saxifraga hirculus* – Marsh Saxifrage) and 6 Annex 1 Birds Directive species (*Branta leucopsis* – Barnacle Goose, *Hydrobates pelagicus* – Storm Petrel, *Falco columbarius* – Merlin, *Falco peregrines* – Peregrine Falcon, *Pluvialis apricaria* – Golden Plover and *Pyrrhocorax Pyrrhocorax* – Chough) It also has nationally important populations of other seabirds. Despite serious damage to parts of the site in recent years, large areas remain in good condition. Considerable archaeological interest is contained within the site, including the renowned Céide Fields. Furthermore, the site is of outstanding scenic value”.

The Glenmoy Bog Complex is a candidate SAC selected for active blanket bog and machair both priority habitats Annex 1, also for sea cliffs, wet heath, juniper scrub, transition mires, dystrophic lakes, and rynchosporion, all habitats Annex 1 [EU habitats directive]. This site is also selected for the following species Annex 2, Atlantic Salmon, the plant marsh saxifrage, the liverwort petalwort and the moss drepanaclodus vernicosus [protected under flora protection order 1999].

The landfall valve site and the pipeline site in Glengad are all within the Glenamoy Bog Complex cSAC. The landfall valve site adjoins and is an influence on the Blacksod Broadhaven Bay SPA.

The construction method proposed at Glengad is open trench excavation for the pipeline which will be buried right through coming in under the foreshore, and going out across Sruwaddacon Bay in the lower direct pipe micro tunnel. This will be quite invasive during construction, particularly at seaward side where the pipeline will tie into the offshore pipeline and also at Sruwaddacon Bay side where the launch pit complete with compound for the lower crossing of micro tunnel will start.

Mr. O'Sullivan in his report (Section 3.4.4 in Appendix 1) states that the loss of grassland at the Landfall Valve Installation and the road would not have a noticeable impact on natural heritage. He further states that the works would not have a significant impact on the ecological value or the natural heritage of the habitat and lands there.

I am satisfied with Mr. O'Sullivan's conclusion. I am satisfied that restoration and reinstatement after construction and commissioning can be achieved in such a manner as to minimize the residual impact of the works on the cSAC.

25.2.2 The Valve Compound and Impact on the Area

Initially as one looks at the proposed industrial type finished / design on the over ground fence, valve equipment and control equipment it appears that the design may be insensitive in a visually important landscape.

The L1202 South of Sruwaddacon Bay and around Glengad is designated as a scenic route and there are protected views from that route looking down from Glengad and looking across towards Broadhaven Bay (highly scenic views in the Mayo CDP 2008 - 2014). The CDP provides advice ... "New Development should only be considered where it can be demonstrated that it doesn't obstruct designated highly scenic vistas not alter or degrade the character of the surrounding landscape."

However, when one views the actual site from the Glengad L1202 the distance and the topography is such that development along the ground level can be seen to have little impact on the vista of the view. Similarly even more so when the site is viewed from the Ceathrú Thadhg side of Broadhaven Bay the distance is greater again and it can be seen that development along the ground level will have very little impact on the view from that side.

The applicant provided two models at the Oral Hearing showing the LVI area and showing both the access road and LVI area. It is proposed that natural regeneration of the laneway (permanent access roadway proposed for the LVI 3.5m wide from the L1202) be hastened by the use of gravel and peaty material under the guidance of a landscape architect and the project ecologist. The net affect expected is that while the road will be solid, grass and vegetation will obscure the roadway in the landscape.

Observers have objected to the construction of the roadway and the LVI compound in the SAC. ABP has considered this roadway (16.RL.2293 Question 10) and decided that the construction of the roadway was development and was not exempt development when this question arose. ABP also considered part of this roadway (PL.16.223463) and decided to grant a temporary planning permission for 5 years (expires 2012) for that part of the roadway from the L1202 to the edge of the SAC. The conditions attached to that permission sought to protect the ecology of the site at the temporary road.

Mr. O'Sullivan has considered the Landscape and Visual impact of the development in his report in (Section 4.5 in Appendix 1) Mr. O'Sullivan concludes that the small size of the proposed structures, their situation in a dished area below the natural line of slope to the bay; their colouring in neutral colours; and the grassing of the access road and surrounding slopes will work to ensure that the scale of the visual (negative) impact of the permanent above ground structures associated with the LVI is slight.

25.2.3 Inspectors Recommendations

The Access Road: I am satisfied that the proposed road access is acceptable I recommend that permission be granted for this road subject to conditions (1) Sufficient care and attention is taken in the final reinstatement of the road side margins and that the work is supervised by the project ecologist

Reason: To ensure that the integrity of the SAC is maintained in the reinstatement work

The following condition recommended by Mr. O'Sullivan be included. The Measures to mitigate the visual impact of the proposed development set out in Section 10 of the E.I.S. submitted with the application shall be implemented in full in the course of the development.

Reason: To protect the visual amenity and character of the area.

As regards the valve compound and equipment area proposed, I am satisfied with the pipe and valve arrangements as they are proposed to be constructed. Mr. Wright in his report (Appendix 3) has recommended that the security at LVI be reconsidered and be redesigned in accordance with 7.3 PD 8010-1, 2004. This matter is considered in more detail in Chapter 29 below which deals with safety at LVI.

25.3 The Micro-tunneling of the Lower Crossing

25.3.1 Chainage 83.91 to Chainage 84.54

1. The footprint of this temporary working area includes a wide area at the launching pit side and a wide area for compounds on both launching pit and reception pit sides. The footprint also includes a widened area of foreshore to allow possible working area for pontoon should an intermediate pit be required. I am satisfied that the footprint is not excessive and in the event that the tunneling can be achieved without an intermediate pit, then the intrusion and invasiveness of the tunneling will be very much reduced.
2. Intermediate pit On the basis of site investigations submitted [see (1)EIS 2009 Appendix M1 DG0082 as constructed boreholes (sheet 1 of 3) and (2) Borelog and photo of core 16A-07 as contained in the route selection geotechnical ground investigation report EIS 2009 Appendix M1-B] the micro tunnel will progress through gravel/sand for about 250m of the crossing then the remainder of the tunnel will be in rock. The applicant does not rule out a pit nevertheless it is considered unlikely that an intermediate pit will be required. It is considered by SEPIL that gravel/sand/rock are suitable ground conditions for use of the micro tunneling technique. Should it prove necessary to provide an intermediate pit(s) that work is time/season sensitive. The submission by NPWS indicates that tunneling work should be carried out between April and September.

A big factor concerning this lower micro tunnel may be the need to mobilise and transport all pipe sleeve tunneling equipment and gas pipe plus services and materials through Rosspoint should it be decided at the end of the detail design to construct the tunnel from that side of the bay. While there are strong indications now that the tunnel will be driven from Glengad side the Rosspoint launch of the tunnel is still a possibility. **In my view the tunnel should be constructed from the Glengad side as now seems likely this will reduce considerably the impact of traffic and construction at Rosspoint.** I believe the infra

structure L1202 and access at Glengad can handle the traffic and construction requirements much better and while there will be an impact on the local road users in Glengad Pollatomais that impact will be temporary .

The proposal to continue the tunnel as far as chainage 83.91 means the invasiveness of the pipeline in Sruwaddacon lower crossing is reduced and the impact on the SPA is minimal.

Should an intermediate pit be required, the turn-around time is estimated at 3 weeks from commencing opening up the pit to reinstating the pit. This seems very short duration. I am impressed with evidence given by Dr. Tim Jaguttis, a tunnel specialist adviser to SEPIL, that it is unlikely now that an intermediate intervention will become necessary. Also Dr. Jaguttis indicated that because a 2m diameter sleeve pipe is now likely that there are a number of manned interventions possible from within the tunnel before it will become necessary to open an intervention pit.

Conclusion

Should a pit or pits be necessary, then there will be impact on Sruwaddacon Bay on fish/water quality and on birds using that part of the bay. **I am satisfied however, on the basis of the type of technology being used, that such impact can be accepted in the overall scheme. The impact will slight and only for the duration of the intervention and temporary. There will be no ongoing residual impact.**

3. Bentonite Cooling Lubrication The tunnel will progress through sand, gravel and rock and bentonite solution will be used both as a lubricant between the rock gravel/sand and the sleeve pipe and also in a second circuit to the drilling head to cool and remove drilled out material. The bentonite solution will it is stated will be at approx static pressure.
4. Bentonite Breakthrough Mr. Ian Wilson, the Principal Scientist of Benthic Solutions to Marine Environmental Consultancy in his evidence to the Oral Hearing¹²⁰ indicated that a break out of Bentonite into the Bay would not have significant impact. In his evidence¹²¹ Mr. Wilson highlighted all Bentonite usage would be monitored through materials balance calculations and that pumping of Bentonite will cease if there is a loss of material into the formation (Refer to Section 11 Mitigation Measures).

In the event that the tunneling requires an intervention pit and/or in the event that a tunnel collapse allows a release of Bentonite into the Bay then there will be an environmental impact. The impact will extend for the duration of the intervention pit or break-through and will be dispersed by the tidal flow.

5. Scour In the event of an intervention pit being required in the lower crossing then up to 7.5m deep scour may be expected due to the strong ebb and flood tidal conditions. It has been indicated in Mr. Wilson's evidence that once these pits are removed that these scour areas

¹²⁰ (June 10th , 15.20)

¹²¹ [DRN OH22 Aquatic and Marine Environment]

will be refilled naturally by the movements of sediments in the Bay. Mr. O'Donnell has considered this in his report Appendix 2.

Appendix S in the E.I.S. provides details of the trenchless tunneling system proposed. The exact method will not be determined until the final design decisions have been made. Dr. Tim Jaguttis de la Motte & Partner GmbH consulting engineers tunnel design specialists answered questions regarding the technique at the Oral Hearing.¹²² SEPIL subsequently provided reference projects where pipe jacking techniques have been part of the project design.¹²³

Dr. Jaguttis indicated that the lower tunnel will take 60 days working 24 hours with a generator providing hydraulic powers (noise level 27 – 80 dB at 10m).

Observers pointed out that noise level is amplified by the shape of the bay and by the stage of the tide. An acoustic chamber will surround the generator.

Three crews will operate and normal working hours 7am - 7pm will be the means whereby activity and materials will be moved on to the site. 6 people will work on the site and cranes will continue to install pipes (3m) during the 24 hours.

Vibration can be caused by the drilling. The machine will have a diameter of 2m and the TBM will rotate very slowly. It is not expected that vibration will have any effect on buildings. Dr. Jaguttis indicated that vibrations dissipate in the ground. The TBM is not a high speed drill-type machine.

An example of a 4km trenchless (segmental lining technique) was quoted in Dr. Jaguttis reference projects but the technique is different to the technique proposed here. In 30 years of experience for Dr. Jaguttis' firm, evidence was given that only on one occasion was an intervention pit required. It was Dr. Jaguttis' view that intervention pits would not be required to cope with the ground conditions to be experienced on the site.

25.3.2 Inspectors Assessment of the Lower Tunnel Crossing

The large compound and the need for continuous 24 hour working during tunneling operations will give rise to significant impacts on noise, lighting, transport vehicles and vibrations. I have recommended below a series of conditions for inclusion in the Environment Management Plan to mitigate the impacts involved from noise, vibration and disturbance. These include noise screening at those locations identified to protect the amenity and reduce nuisance levels at adjacent

¹²² (June 4th, 18.46)

¹²³ [DRN OH48]

residences. These also include noise and vibration monitoring and a system for review or noise activity reduction which should be built into the conditions of the contractor responsible for the tunnel project and the other contractors working on this part of the site.

In the original 2002 pipeline scheme open cast trenching across Sruwaddacon Lower Estuary was proposed with possible rock blasting being required. This has now been replaced with a tunnel system proposed in the 2009 Scheme. This is a significant undertaking. I am satisfied that the technique is acceptable. I am also satisfied that it is unlikely that an intervention pit will be required.

It is clear that there will be a continuous impact from the tunnel boring operations. On balance, I am satisfied that with appropriate controls and standards being applied to the contractor that these impacts can be managed. The impacts will be temporary and will extend during the construction period estimated at 8 weeks for the lower tunnel.

25.4 Agricultural Area: Chainage 84.54 to Chainage 85.800

This section through agricultural grassland includes a large compound area at the East side of the lower crossing, and a further compound at Chainage 85.8 adjacent to the RDX1 road crossing. The works include a temporary way leave only required and temporary access roads from the Rossport village road L52453-25 to the pipeline at Chainage 85 and a short access road (temporary) from L52453-25 down to the bay.

In this section the temporary way leave requirement is for a 40m wide corridor plus additional areas required for the compounds and stringing area. The permanent way leave requirement is for a 14m wide corridor extending to 18m wide at bend locations. These widened sections of permanent way leave occur on the inside curve of bends for a distance of 50m either side of the bend, and the widened section is inside the bend. The DG0101 site location plan shows the detail.

The pipeline in this section will be laid down in low lying land along the side of the Sruwaddacon Bay before turning up and crossing L52453-25 at Chainage 85.7.

Construction in this section is by open trench (refer to DG 0604) typical working width of 40M (non peat land areas) and with a 300mm deep stone access track being provided along the side of the trench for construction and traffic purposes.

25.4.1 Proximity to Houses

In Appendix A (Book 1 of 3 Volume 2 of 2) there is a set of A3 drawings in which each house is numbered and a schedule sets out the distance from each house to the pipeline.

At the OH the Inspector requested that observers attempt to clarify on that drawing the locations of the observers own residences. This was requested so that such information as was available regarding the individuals impacted by the proposed development could be clarified for ABP. The exercise was not an exhaustive one and no verification of the information presented there has taken place.

In this section of the pipeline, there are 17 houses, (No's 7 to 24) and they vary from 6 m, 19 m, to 140 m and greater distances from the pipeline. The properties at 6 m and 19 m have been acquired and will be taken out of use as habitable dwellings for the duration of the operation of the gas pipeline by SEPIL. The minimum distance to houses other than house numbers 22 & 23 is 140m.

25.5 Inspectors Assessment

The construction methods in this section are conventional for gas pipeline in agricultural land areas. The issue of proximity of the houses is considered separately in this report. The single biggest impact of construction will be the mobilization of equipment and materials and finally the removal of excess materials and equipment through the residential and rural part of Rossport on the L52453-25.

The documents and E.I.S. set out clearly the construction proposed. The assessment of the traffic plan and haul route is contained in Chapter 44.

25.6 Chainage 85.8 to chainage 87.5 RDX2

This is the section where the pipeline enters Rossport Commonage. The Section consist of cut over and blanket bog (non designated). It is proposed to use the full 40m working width which will be fenced with security fencing. Turves will be removed and stored 0.5m thick from all areas of blanket bog (intact and eroding) otherwise peat will be excavated and replaced with stone i.e. the stone road method of construction. The gas pipe and umbilicals and outfall pipe will then be laid within the stone road. It is proposed that once constructed, the stone road in this area will be a haul road. The use of the stone road as a haul road will, accordingly, spare the local road L54325-25 (Sean Mhacaire Road) during the second half of the construction work. SEPIL clarified at the OH that the stone road method of construction will be used throughout the peat lands. The E.I.S Section.5.5.1.1 provides details together with cross section drawings DG 601 and supplementary details provided in the addendum to the E.I.S.¹²⁴ on how the peat plugs are to be detailed and placed along the stone road at transverse points and how reinstatement is proposed.

The drainage of the construction area will be a crucial factor to prevent wash off from the site entering Sruwaddacon Bay without adequate filtering and settlement. The details of the handling of surface water drainage have been supplied. These have been considered in Chapter 43 Hydrology & Eco-Hydrology in detail. I have recommended that the design of the surface water handling system for the pipeline route be increased to cater for a 1:100 year storm event. Refer to drawing reference Number 001¹²⁵ for details of the outlet discharges proposed for the surface water into Sruwaddacon Bay in this section of the pipeline.

25.6.1 Issues Raised by Observers: Insufficient Information

Insufficient information has been collected by SEPIL for the design. Insufficient information has been presented in E.I.S. regarding the topography of the sub peat ground levels.

1. DG 201 shows approx 30 peat probes and 10 shear vane tests were carried out along this section of the commonage.
2. DRG No 864-01-002, 861-01-003 sets out the geomorphological detailing of the section based on walk over survey and aerial photographs.
3. DRG No 864-01-006, 007 show long section details incorporating soil investigation details for the section.
4. Appendices M1 – M4 provide analysis and assessment on the data collected.
5. Document 46¹²⁶ contains data from site investigations carried out in 2002, 2004 and 2008.

¹²⁴ [DRN OH7]

¹²⁵ [DRN OH 97]

¹²⁶ [DRN OH46]

6. Documents 96 & 97¹²⁷ contain analysis and mapping of relative peat failure potential data submitted in response to questions by Mr. O'Donnell at OH.
7. In response to a question from NPWS, SEPIL submitted Doc 98¹²⁸ as additional information containing an assessment of the potential impact of a bog slide on the habitats in cSAC.
8. There was much discussion and questioning of SEPIL regarding the impact of the proposed development on the commonage at the OH. There was also much discussion and questioning of the stone road method of construction proposed.

25.6.2 Issue Raised by Observers: Treatment of Non-designated Blanket Bog

1. This area has been identified between chainage 86.6 to chainage 86.7 and from chainage 87.1 to chainage 87.4.
2. Construction detail similar to that proposed for the cSAC Blanket Bog section is proposed.
3. The line of the pipeline has been varied in this Section to avoid existing bog pools.
4. Mr. O'Sullivan in his report [Appendix 1 section 3.4.6] considers this issue and concludes that provided that peat stability aspects of the proposed development are satisfactory then the road construction method can be carried out without significant impact on the physical structure of the bog.
5. I am satisfied that the construction method proposed will mitigate the impact of the stone road on this section of the intact Blanket Bog.

25.6.3 Issue Raised by observers: Peat Stability

This issue was considered by Mr. O'Donnell in his report. [Appendix 2] This issue is dealt with in Chapter 36. It is considered that the proposed development can be carried out without causing peat instability.

25.6.4 Issue Raised by observers: Stone Road Method

This issue has been dealt with by Mr. O'Donnell in his report. [Appendix 2] This issue is dealt with in Chapter 37. The stone road method has been successfully developed to provide access and for pipeline construction and other construction in the peatlands.

25.6.5 Issue Raised by observers: Turf Cutting

Turf cutting is carried out near the existing roads. A considerable amount of turf cutting activity is evident along this section of the Commonage. This activity will be curtailed during construction within the working area of the site. Once reinstatement has been completed, turf cutting will not be allowed within the permanent way leave [20m wide] centered along the pipeline. During construction SEPIL will provide access across the working area to facilitate local land owners' use of the Commonage – turf cutting and animal grazing.

I am satisfied that the impact of the proposed works on turf cutting operations will be minimal. In considering the haul route and traffic plan in Chapter 44 I have indicated that no provision has been made in the traffic plan to facilitate turf storage on roadside margin which is the normal system used before transporting the turf to the houses. I have also indicated that the E.I.S. does not deal with these matters sensitively and indeed it does not deal with turf storage at all.

¹²⁷ [DRN OH96, OH97]

¹²⁸ [DRN OH98]

25.6.6 Issue Raised by Observers: Commonage Environment

Impact of the proposed development on the environment, habitats, flora and fauna of the Commonage. These are considered in Chapter 38. This issue has been considered by Mr. O'Sullivan in his report. [Appendix 1]

25.6.7 Inspectors Conclusions

1. I find that there is sufficient information provided in the E.I.S. together with the additional information supplied to the OH to enable SEPIL to carry out the design and to enable ABP to assess the impact of the proposed development on the environment.
2. I have inspected the existing partly constructed stone road through peat lands forestry plantation adjacent to the terminal, and I have also inspected the stone road method used at Glencullin on the Mayo – Galway BGE gas pipeline [part through peat land forestry plantation and part through peat land SAC].
3. The stone road method provides a very solid and stable basis for access and haulage and pipe laying in peat lands.
4. The stone road is different to traditional bog roads. The latter will normally be a type of floating stone road placed on top of wattles (timber, sally and willow branches typically). The stone road proposed will connect with the soil underlying the peat and a peat rock fill layer is proposed to be developed about .5m thick at the base of the stone road itself by leaving the 0.5m of peat at the base of the peat deposit and placing stone into that.

25.7 Chainage 87.5 RDX2 – chainage 88.52 within Glenamoy Bog Complex cSAC

This section is through cSAC Glenamoy Bog Complex. The construction proposed involves removal and saving of acrotelm turves 0.5m thick surface layer of the bog excavation and removal of peat as the stone road is being constructed, storage alongside the stone road of the turves on Bog mats, laying of pipeline umbilical and outfall pipe and cables within the stone road and finally reinstating the surface of the stone road with a regulation layer of peat and the turves laid in close pattern with a special edge detail of turve raised to help simulate the hydrological conditions of the existing peat lands in the cSAC.

The stone road itself will be placed on top of approx 0.5m peat which will be left in situ at the base of the peat excavation and transverse peat plugs will be inserted into the stone road to reduce the longitudinal permeability within the stone road. It is intended that restoration work will take place in this cSAC section at as early a time as possible to minimise the impact on vegetation and hydrological conditions.

Observers have raised issues regarding the impact of the proposed works on the cSAC. NPWS in their submission have also raised concerns about the potential impact that may arise from the proposed development. Mr. O'Sullivan in his report Appendix 1 has considered these matters. These impacts have been considered in Chapter 38 "Natural Environment" of this report and it is not proposed to repeat the consideration here.

1. The need to construct within the cSAC? SEPIL indicates that in order to increase the distance between the houses and the pipeline as recommended by Mr. Peter Cassells mediator the pipeline route has been chosen. The route through the cSAC has been chosen to run across the bog cSAC towards the edge of the designated area, and in fact the development will extend to 400 metres long within the lowland designated blanket bog itself, the remainder within the cSAC being through cut away or cut over lowland designated but not intact blanket bog.

2. The stone road method proposed has been used successfully on other pipelines, the Mayo – Galway at Glencullin upper has been inspected post construction (refer to appendix). **On the basis that improved construction methods (refer below) are used I am satisfied that the stone road method is viable and will provide a robust construction technique to create access along the route, provide stability support for the adjacent in situ peat through which the pipeline runs, and will provide a stable and satisfactory basis for constructing and long term support and containment for the gas pipeline.**

25.7.1 Sruwaddacon Bay Upper Crossing

The crossing itself is 1030m long. Tunnelling is proposed from south to north. Peat depth on northern compound site is between 0.51m and 1.55m deep. Peat depth on southern compound site is 3m deep [refer GES Borelog 008-07]. The tunnel will be approximately 3m deep at landfall each side of the bay and approximately 5m deep increasing to maximum approximately 6.3m below ground [MSL Approx] on the crossing. The tunnel for the most part will be located in overburden across under the bay. This overburden consists of sands, gravels, silts with some clay and cobbles and small boulders.

At each landfall, the tunnel will be through rock (psammite) just below the overburden/rock divide line approx. It is proposed to install a sleeve pipe (1.4m to 1.8m in EIS although 2m discussed at Oral Hearing) behind the tunnelling machine and then move the gas pipeline on rollers and pull it through the sleeve pipe.

It is considered by SEPIL that the design of the cutting head and the total thrusting force available will enable the tunnelling at the full length to be achieved. Mr Jaguttis, tunnelling specialist consultant provided reference projects where tunnels of similar diameter and length had been achieved.

It is anticipated that the crossing will be carried out in approximately 12 weeks. Appendix S provides information on micro tunnelling. The way leave requirement (temporary working area) will be 100m wide across the bay. A wider temporary shore access area is sought on the south side of the bay which may be required to give access to water craft in the event of one or more intermediary pits being required. The diameter of the sleeve pipeline will be decided finally when construction planning has been finalised and the tunnel system contractor is appointed.

25.7.2 Inspectors Assessment

Road access for the upper tunnel crossing equipment and materials is better than for the lower crossing being from the R314 onto the L1202. The establishment of the stringing area compound access for the tunnel and shore access will involve a large surface area all in deep peat and in close proximity to Sruwaddacon Bay. This is a critical issue for construction. From a planning point of view it is important to establish that the construction methodology proposed for this tunnel is feasible and that the auxiliary works of shore access and peat removal can be achieved as proposed, and will not cause environmental impacts other than those predicted.

From the details contained in the E.I.S. and in the supplementary reports provided, the developer is confident that these works can be executed without central intermediary, one or more, pits. **I think that is a reasonable conclusion. I also think it is reasonable to establish a wide temporary working area both across the bay, in the stringing area, and for the shore access (temporary)**

to provide for a situation which may arise whereby one or more intermediated pits become necessary.

The removal and deposition of surplus peat is considered separately elsewhere in this report in Chapter 40: Peat Deposition at Srahmore. Mr. O'Donnell in his report (Appendix 2) considers the issue of peat stability which is dealt with below in Chapter 36: Peat Stability.

The issue relating to the control and handling of bentonite used as a drilling/cooling fluid and as a lubricant is similar to that considered in the lower crossing. Similar conditions will be required to ensure that planning setup and quality assurance in the operation of the bentonite fluid handling do not cause impact to the water quality in the bay or to the environment along the pipeline route.

25.7.3 Inspectors Recommendations

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

The Environment Management Plan shall contain a method statement for the use and control of Bentonite during the tunnelling operations. The Results of the monitoring carried out on the Bentonite control system shall be provided to Mayo Co Co on a weekly basis and shall be reviewed by the monitoring committee.

Reason: To protect the water quality in Sruwaddacon Bay

25.8 Chainage 89.55 – chainage 92.56

1. This section of pipeline is South of Sruwaddacon Bay and through eroded peat lands some agricultural improved lands and wet grassland and peat lands in forestry.
2. SEPIL own the site on the shore and the temporary working area set out on the drawings for the tunnel construction and shore access. South of Sruwaddacon Bay is extensive.
3. In the analysis carried out at the request of Mr. O'Donnell¹²⁹ the section between chainage 91.500 and chainage 92.00 is identified as an area of high potential risk of peat slide.
4. An existing stone road has been constructed from chainage 91.4 to chainage 92.36 approximately. A small section between chainage 92.36 and 92.56 [the Terminal tie in point] also has a part stone road construction.
5. The pipeline crosses the Lenamore River, a large drain / stream, and a stream tributary of the Leenamore River as well as the L1202 all within this section.
6. The issues that have been raised regarding this section of the proposed development have been dealt with in Chapter 23: Boundaries of the Permission Sought, Chapter 36: Peat Stability, in Mr. O'Donnell's Report(Appendix 2), Chapter 38: Natural Environment and in Mr. O'Sullivan's Report (Appendix 1).

25.9 Construction Methodology Programme

1. The impacts of the proposed development are dominated by the impacts of the construction of the pipeline.
2. The programme for construction of the pipeline is set out in the E.I.S. Section 5.2 and on figure 5.1 below. The programme of work is set out for completion in 11 ½ months.

¹²⁹ [DRN OH 96, DRN OH97]

3. Working hours will normally extend from 7am to 7pm Monday to Friday, 7am to 4pm Saturdays. i.e. 68.5 hours per week.
4. NPWS in their submission¹³⁰ have requested that over wintering birds in Sruwaddacon Bay should be protected by avoidance of construction works affecting the bay between September and April. SEPIL plan both tunnel crossings during the period April – September which is satisfactory. The tunnel crossings proposed are sequential, indicating that a single set of tunnelling equipment and personnel will be used.
5. NPWS also in their submission¹³¹ indicate notification periods, a requirement for permissions to proceed to be obtained following submission of reports on archaeological findings along the route. These constraints appear in conflict with the tight programme as discussed below.
6. SEPIL have indicated that considerable pre-construction survey [E.I.S. Section 5.3] work is required before the final design and method statements for construction will be completed. SEPIL when questioned on how this would be achieved, submitted the EMP¹³² approved for the works at the landfall pull in for the offshore pipe. That EMP had been approved by DCENR and DAFF and includes details of how compliance with consent and licence conditions will be managed on the offshore, inshore and onshore works associated with the pipeline pull-in 2009 works. The issue however is that preconstruction for the proposed 16.GA.0004 development works activities commence at the start of the programme and weeks later the preparation of the temporary working area begins. Bearing in mind the large amount of additional on-site survey detail and the subsequent integration of that information into the final design and E.M.P. sufficient time has not been allowed to get agreement on the details. In my view, sufficient time has not been provided in the programme for pre-construction activities to be carried out.
7. Notwithstanding that the major impacts of the project will result from the construction works, the draft E.M.P for the onshore pipeline is not available as part of the documentation supporting this application.
8. SEPIL supplied some material to inform ABP of the methodology proposed (1) e.g. the offshore E.M.P.¹³³, (2) Environmental Management Framework¹³⁴, Casino Gas Field Framework Document, Environment Health & Safety Management System, (3) Environment Report¹³⁵ Casino Gas Field Project Australia. These are useful reference documents.
9. I note that within the E.M.P.¹³⁶ for the offshore – onshore pull – in works that a lot of responsibilities are clearly allocated for those works.
10. What I do not see clearly is the picture for the onshore pipeline and in particular how time will be allocated in the programme for the activities to be performed, and for the responsibilities to be discharged. It is one thing to have responsibilities allocate it is another thing to have sufficient time allocated to carry out those responsibilities.

¹³⁰ [DRN WS 4]

¹³¹ [DRN WS 4]

¹³² [DRN OH 99]

¹³³ [DRN OH 91]

¹³⁴ [DRN OH 68]

¹³⁵ [DRN OH 71]

¹³⁶ [DRN OH 99]

11. I note the detailed schedule of Materials/Equipment to be hauled to the onshore pipeline and the programme for that haulage [E.I.S. Appendix 1 of Appendix E].
12. I note that in regard to the local road network in Rosspoint that it is anticipated that preventative maintenance will be carried out on the road pavement before the onshore pipeline works intensifies [E.I.S. Appendix E Section 3.1.5, 3.1.6, 3.1.7]. This implies there will be overlap of road works and construction activity.

25.10 Inspectors Conclusion on Construction Programme

1. I am unhappy with the proposals and the programme provided. It is clear to me that the programme is so tight for the proposed development works on the pipeline that construction may start before the minimal road “preventative maintenance” works are completed. I refer also to evidence given at OH by SEPIL¹³⁷ where it is indicated that the “preferred” solution would be to have the preventative strengthening works carried out ahead of the pipeline construction. Mayo Co Co have indicated that the road works proposed will take 26 weeks.
2. I am not convinced that the programme can be achieved in 12 months. I believe that this programme is unrealistic. I believe it would be far more realistic to set a programme for construction over 24 months within which a significant amount of the construction itself could I believe, be achieved in 12 months. I believe the 24 month programme would allow adequate time for pre construction surveys and liaison activity with the various environmental, statutory, and local bodies involved, and the local landowners and community. There would also be adequate time for the preparation of an agreement to the E.M.P. and the implementation of such road improvement and strengthening measures as are required in advance of the construction. The 24 month programme would also provide a more realistic seasonal opportunity to cater for seasonal sensitive parts of the site. The extended programme would also allow for the likely weather induced delays that will inevitably arise on this coastal West of Ireland site with high average rainfall levels. The longer programme is in my view likely to be the programme in reality and will allow reinstatement to be carried out at the optimal time rather than according to a programme.

25.11 Recommendations

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

Based on the above analysis I recommend:

- 1) An E.M.P shall be agreed 8 weeks before commencement of the proposed onshore upstream pipeline. That the E.M.P shall contain among other matters, details of the pre construction surveys and method statements for construction, and shall detail how seasonally sensitive works are to be accommodated in the programme. The E.M.P shall contain details of the updated programme for the proposed works.

Reason: To ensure adequate time is provided for the agreement of the EMP and to protect the environment.

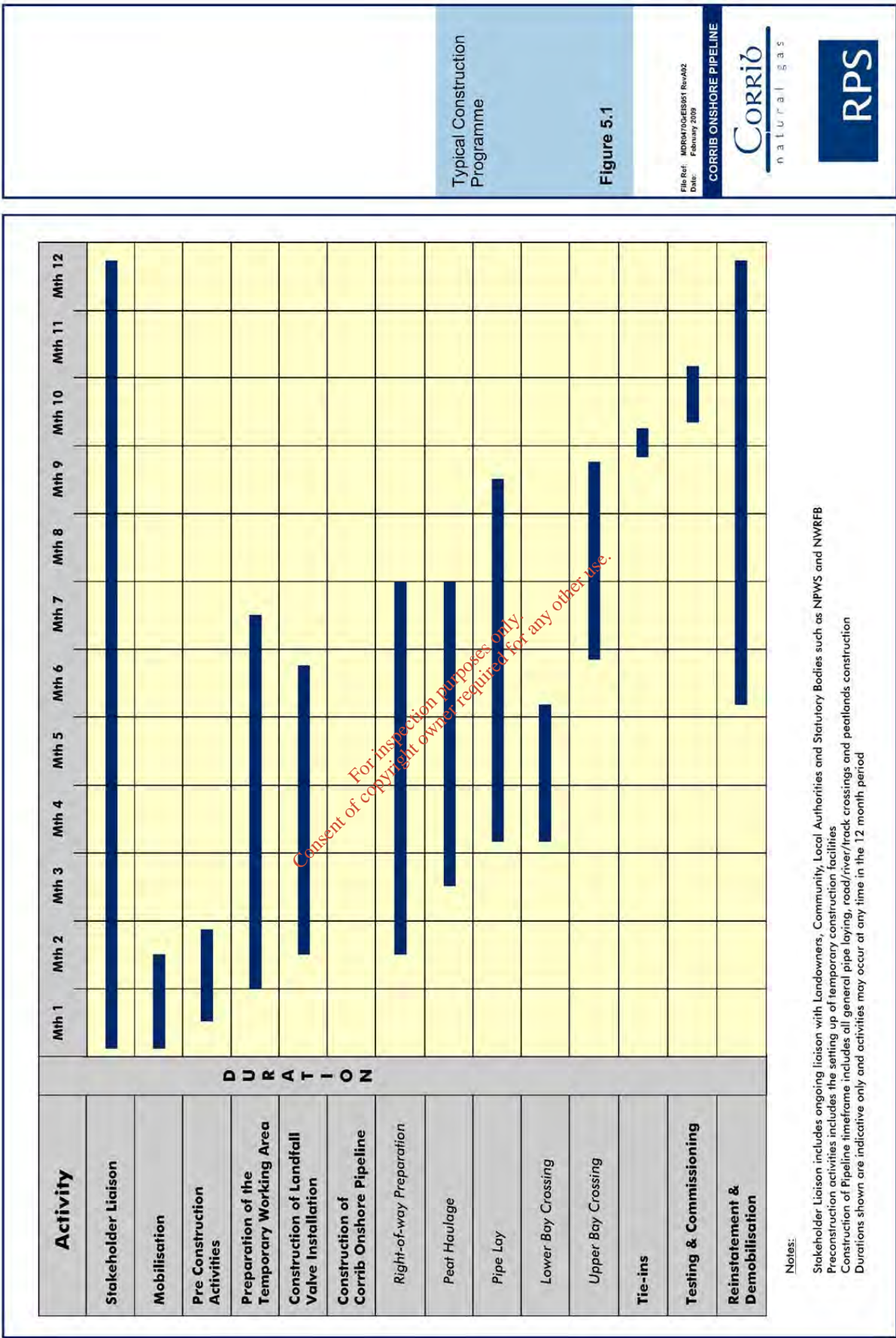
- 2) Prior to the commencement of the development, the roads comprising the haul route shall be improved and strengthened in accordance with an agreement to be entered into

¹³⁷ [DRN OH 17 Section 5.4]

with Mayo Co, which agreement shall include any other such works for the haul route as Mayo Co Co may require.

Reason : In the interests of Road Safety.

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Chapter 26 Security

26.1 Impact of Security Operations

1. This Corrib Gas Field Development Project is the subject of conflict between the developer SEPIL and third parties. The conflict is at times extreme as evidenced below. It is apparent that the conflict is supported by local groups and individuals at different levels, much of it in the form of objections, some conflict is in the form of passive resistance to the project, some conflict is in the form of very active and extreme resistance to the project. The third parties involved in the conflict are both from the locality and from outside the locality.
2. Video evidence of this conflict was presented at the OH [DRN OH43a] which showed extreme conflict between third parties and Gardaí who were policing activities related to construction works on the Corrib Gas Field Development.
3. Evidence was submitted detailing the circumstances that led up to the jailing of 5 local people for their opposition to what was then the proposed onshore pipeline project [2002 consented projected DRN OH53b – The Story of the Rossport 5].
4. In the course of site inspections at the landfall valve site at Glengad and at the terminal site at Bellanaboy, there was clear presence of a large force of security personnel and a large force of Garda personnel.
5. Evidence was given at OH of the impact at night of security activity at Glengad¹³⁸ and of the impact of security personnel conversations at Glengad which caused some disturbance to locals trying to sleep.¹³⁹
6. Evidence was given of the practice of using video and still camera photography by security personnel, and concern regarding how these images would/could be used, particularly concern was expressed at the photography of children using the beach near Glengad. SEPIL in evidence indicated that the use of this equipment was part of the security system to protect the property and equipment on the site, and for the purpose of safeguarding the personnel and workers on the site. While such matters raised relate to works [the offshore pipeline] and are outside of present 16.GA.0004 application. I feel nevertheless that it is important to set out a clear picture of the likely events that will ensue in the construction of the proposed pipeline should approval be granted.
7. The E.I.S. is not detailed with regard to security operations.
8. It is very clear that construction of the onshore pipeline if approved, will require a very high level of security, and that such security will extend for the full duration of the works along the site and will be required for 24 hours per day for the duration of the construction project.
9. It is clear also that additional night time security will be required from time to time.
10. SEPIL were requested at the OH to submit clarification of security activity on the site and to submit clarification of the need for generators/lighting to support the security

¹³⁸ [DRN OH 37]

¹³⁹ [Evidence 28/05/09 10.38]

activity along the route of the proposed works. SEPIL submitted DRN OH115 in response to this request.

26.2 Security Proposed

1. There are two aspects to security arrangements: (1) the security personnel and equipment deployed by SEPIL (2) the security of an Installation which is part of a National Grid of Infrastructure .

I do not propose to consider the Garda activity. This is an issue that I believe is outside of the matters which An Bord Pleanála has to consider in arriving at its decision on this application. Garda activity operates as provided by law and is not a matter to be regulated by the Planning Acts, or to be considered under the Planning Acts.

2. The E.I.S. in Section 5.4.3 Fencing indicates that 3m high linked palisade fence will be used and that fencing boundaries will be inspected regularly and maintained during the works. In Section 5.9.2. Lighting the E.I.S. indicates that lighting of temporary working areas and site compounds during periods of darkness will be minimised to that necessary for security and safety reasons. Where trenchless construction activities are located, there will be a requirement for 24 hour working and lighting.
3. In the additional information provided by SEPIL¹⁴⁰ to the OH, it is indicated that security staff will be present at the compound areas on a 24 hour basis, and if necessary, site patrols will be conducted on the area of the construction spread on a 24 hour basis.
4. It is further indicated that transport of security staff to and from site will be conducted by mini bus and will drop and collect a shift of workers at the same time. In evidence it was confirmed that shifts will not change during night time hours.
5. It is further indicated that lighting will be normally restricted to compound areas, and that generators will provide power for security lighting. Acoustic enclosures are proposed around plant such as generators working outside of normal hours and that additional enclosures will be applied if further mitigation is required.
6. The type of Lighting has been described and will use down ward lanterns with anti glare fittings EIS 5.9.2 & 11.7.5.

26.3 Inspectors Assessment: The security deployed by SEPIL

The information presented by observers regarding the confrontational situation that exists between SEPIL and those who oppose the development was quite shocking. While such confrontational activity is not taking place all the time, the security to cope with potential conflict and with protection of the site, and to ensure safety on site, is a necessary part the development of the Terminal and the landfall site pipe pull in works at Glengad. It can be assumed that confrontational activity is more likely to occur than not to occur on the construction of the proposed development.

I am satisfied that while the E.I.S contained very little information on security, the additional security activity profile provides information to enable an assessment to be made of the likely scale of the impact of the development on the environment. The impact of a background

¹⁴⁰ [DRN OH115]

level of security for the duration of the construction is in my view acceptable. This level of high security presence is reasonable and should be managed during construction, and I believe appropriate conditions can be set to control this aspect of the development.

In circumstances where the confrontational aspects of the opposition to the project have to be handled by security measure, the impact on the local environment will be significant in terms of disruption, traffic delays, noise, night activity, lights at night and the consequent unease and interference such events will have on the local community and on local work and normal daily activities.

One would think that should the proposed development be approved, that a mediation system could or should mitigate the impacts of such opposition, but from what I have heard, and from the evidence presented by observers, and certain responses by SEPIL, it seems clear to me that any such mediation while it should be initiated, and while it should be pursued as the first choice response to dealing with problems; it may well be unsuccessful.

26.4 Inspectors Conclusion

In all those circumstances therefore, I conclude as follows:

1. The proposed development will entail a level of security on the site 24 hours a day, that will, when not engaged in safeguarding the site from confrontational opposition, be acceptable and manageable in a way as to enable mitigation of the impact to an acceptable level.
2. There will likely be confrontational opposition, and at those times the impact of the security measures will be significant. A mediation system needs to be put in place to enable the local community not engaged in confrontational activity to be provided with as much mitigation as is possible to enable activity of the community to continue during such periods of confrontation.

I find that although the impacts of such events will be significant, that they are a necessary part of the proposed development in this case. I find that in a situation where this proposed development is approved in some form such security as is required would be a necessary part of the development.

3. In developing the final construction programme, sufficient time needs to be built in to allow SEPIL and the various contractors to operate as reasonable a regime on the construction activity, so that conflicts with normal local activity are eliminated as far as practicable. My assessment of the contract programme under construction is set out in chapter 25 Construction Methodology and Programme.

26.5 Inspectors Assessment: Security of National Grid Infrastructure

The Commission for Energy Regulations (CER) together with the Utility Regulator Electricity Gas Water in Northern Ireland have jointly published a paper entitled Common Arrangements for Gas (CAG). There is a copy of this paper in Appendix 7. The paper summarises a consultative process with Gas industry and contains an action programme for the Regulatory Authorities (RA). It is intended that an all island charter will be further developed by implementing regulations in both North & South.

Network Security and Network Security standards are aspects of the security of supply that will be dealt with in forthcoming regulation. Mr. Wright in his report has recommended that security of the LVI at Glengad be reviewed and that a higher level of security be adopted than is proposed by SEPIL in the proposed development as now set out in the EIS.

26.6 Inspectors Recommendation

In the event that ABP decide to grant a permission for this proposed development I recommend the following:

SEPIL shall propose a scheme for operation of liaison and mediation between SEPIL and the local community for the agreement of Mayo Co Co. That scheme shall provide for a “clearing house” liaison group comprising management representatives of SEPIL and representatives of the local community.

Reason: To reduce the impact of the proposed development on the community by providing a framework within which communication, feedback, complaints and response can be reviewed and dealt with on a regular weekly basis.

26.6.4 Inspectors Recommendation

In light of the CAG and in light of the impending regulation on Network Security and Network Security Standards and in the event that the Board decide to grant a permission for the proposed development I recommend the following condition

SEPIL shall comply with the security of Network Standards as determined by DCENR (or CER as appropriate in respect of the facilities at LVI in Glengad. DCENR will regulate the operation of the proposed development in the first instance (CER will eventually likely take over this regulation)

Reason: To ensure that this strategic infrastructure site meets national standards for such a facility.

Chapter 27 Safety Part 1- Pipeline Design & Codes of Practice

The next four chapters consider different aspects of the safety of the pipeline and pipeline design. This chapter considers the codes and pipeline design. The following are then considered separately - Quantified Risk Assessment (Chapter 28), The Landfall Valve Installation (Chapter 29), Summary and assessment of pipeline safety Chapter 30. A copy of the Advantica Report The Cassells Report and the Tag Report are available in Appendix 8.

27.1 Pipeline Design Codes of Practice

The design of the pipeline that is proposed to carry gas from the Corrib Well Field to the Terminal is a central issue in considerations of this proposed development. In particular the design of the onshore section of pipeline is relevant to 16.GA.0004. Mr. Nigel Wright – a Chartered Engineer, a Gas Consultant, has been appointed by ABP to assist in the examination and assessment of the technical issues related to the gas pipeline proposed. Mr. Wright has reported [copy in Appendix 3] and has issued his conclusions and recommendations. In what follows I rely substantially on Mr. Wright's expert opinion as set out in his report Chapter 2 "Design of Pipeline System" and Chapter 3 "Pipeline Standards". Both Mr. Wright and I have reviewed the codes in detail.

An extensive review of codes and standards has been undertaken. The codes and a brief explanation as to why each code was reviewed is set out overleaf.

SEPIL in the E.I.S have set out a clear code compliance document as required by TAG. Mr. Wright has reproduced this in his report. It is clear therefore what codes apply to the pipeline as designed by SEPIL.

DCENR and the Minister for Energy are responsible for pipeline safety. DCENR are the competent authority that controls all phases of the development of the Corrib Gas Field. This was confirmed by The Chief Technical Adviser to ABP in his letter of 11/05/2009

ABP has a responsibility to conduct a robust analysis of the proposed development including the design of the pipeline so that ABP can properly assess the impacts of the development. Accordingly, Mr. Wright's approach and the lines of questioning that were developed, sought to identify the clear details of design and details of code that applied to the proposed development. This has largely been achieved and the exceptions where sufficient details or clarification has not been obtained are set out below.

Codes Review

Code	Reason for Review
I.S. 328	TAG directed that I.S. 328 should be applied where it exceeded I.S. EN 14161.
I.S. EN 14161	TAG designated this as the primary code for design of Corrib pipeline.
PD 8010- Parts 1, 2, 3	TAG directed that PD8010 should also be applied where it exceeded I.S. EN 14161.
DNV OS – F101	SEPIL use this code for the offshore pipeline design and that part of the (offshore pipeline) onshore pipeline up to the downstream weld at the LVI.
IGEM / TD/ 1	Industry standard on which I.S. 328 & PD 8010 based. Published by Institute of Gas Engineers and Managers.
IGEM / TD / 2	Industry standard on which PD 8010 Part 3 based. Published by Institute of Gas Engineers and Managers.
Dutch standard (information on methodology)	SEPIL were asked to provide details of the Dutch standards that applied to a reference pipeline project SEPIL had put forward as similar to Corrib. [DRN OH 107].
AS 2885.1	Australian standard AS 2885.1 for gas pipeline design is referenced by I.S. 328 in Section 6.4 proximity requirements as being a suitable standard “Where it is impractical to comply with the above proximity requirements deviations from these requirements may be permitted provided they can be justified by a Quantitative Risk Assessment carried out in accordance with a recognised standard such as AS 2885.1”. (I.S. 328 Section 6.4)
UK standard HSE PADHI	<p>HSE methodology used as part of the UK planning system for development land use planning advice in the vicinity of hazard chemical installation or pipelines.</p> <p>In the UK planning authorities are obliged to consult HSE UK where development is proposed in proximity to gas pipelines. HSE have a computer model which generates zones [inner, middle, outer] along the pipelines. Depending on the sensitivity of the number of potential casualties that may be caused by failure of the pipeline and depending on the level of risk predicted for the pipeline to the proposed development HSE will “advise against” granting the permission or “will not advise against” such.</p> <p>The PADHI System is something similar to the advice provided by HSA in Ireland in relation to Sevesco Directive sites.</p> <p>Unfortunately gas pipelines are not covered by the Sevesco Directive and accordingly it is not possible to get this type of advice from the HSA regarding zones along the Corrib pipeline where development would be considered acceptable.</p>

27.2 SEPIL Design for pipeline

Appendix Q of the E.I.S provides detailed information on pipeline design, particularly in Appendix Q2 Onshore Pipeline Design Basis and Q4 Design Code Review Onshore Pipeline Section. A number of issues arise from the information contained in these Appendices.

1. There is a TAG requirement that IS EN 14161 is the primary code for the design to be supplemented by IS 328 and PD 8020 where the latter exceed the ISEN 14161 requirements.

On that part of the onshore pipeline between HWM and the downstream weld at LVI the pipe is being designed in accordance with DNV OS-F101 chainage 83 + 390 to chainage 83 + 470 approximately (inspectors estimation of chainages). The Chief Technical Adviser from DCENR had indicated in his evidence to the OH that DNV OS F101 could be supplemented by PD 8010 by agreement with TAG.

Mr. Wright has identified this and has recommended that TAG review the need for supplementary code requirements to this piece of pipeline. However TAG are not directly involved with this planning application. I therefore recommend that

- a) SEPIL clarify the code requirements and test pressure for this section of pipeline.
 - b) SEPIL provide confirmation that the design of this section of pipeline meets the TAG requirements.
2. The E.I.S. Appendix Q2 Section 2.5 sets out that testing of the onshore pipeline should be at 504 bar. However, the test on the section of pipeline referred to at 1 above is shown as 360.25 bar [DNV OS F 101, 2000]. Appendix Q9 Tables 2.2 and 435.4 bar [BS 8010]. Q9 does not make it explicit which is the test pressure that will apply to the offshore pipeline. It is not explicit either the extremity proposed for the 504 bar onshore pipeline test. It can be inferred that the pipeline from the downstream weld of the LVI will be tested at 504 bar (that is
 - 3.
 4. acceptable to Mr. Wright). It can be inferred that the part of the pipeline onshore and upstream of the LVI and including the LVI to the downstream weld will be tested with the offshore pipeline. It is not clear at what pressure that test will be carried out. What is clearly evident however is that a lower test pressure (than that for the onshore pipeline) is intended for that part of the onshore/offshore pipeline even though the design pressure for that pipeline is at 345 bar which is higher than applies to the onshore pipeline at 144 bar. Mr. Wright has identified this lack of clarity which SEPIL should put right by submitting full details of the extremity points and actual test pressures that will apply.
 5. Advantica Report

“Thus we consider that the fact that the Corrib pipeline has a design pressure outside the range of the existing codes does not automatically make the pipeline unsafe, provided that steps are taken to ensure that the resulting pipeline provides a level of safety as good as, or better, than a compliant pipeline.” [Advantica Report 6.1.1]

I.S. 328 and PD 8010 provide guidance tables for proximity distance plotted against pressure. The maximum pressure on these tables is 100 bar. The footnote to the tables indicates that higher pressures can be extrapolated from the tables to obtain the necessary proximity distances.

Advantica

“The use of Risk Assessment to justify reduced proximity distances is explicitly allowed in several codes including I.S. 328 which states that where it is impractical to comply with the proximity requirements, deviations may be justified by risk analysis”. [Advantica Report 6.3]

Mr. Wright has not been satisfied that the Quantified Risk Assessment (QRA) carried out for Corrib onshore pipeline has been based on site specific considerations. Mr. Wright has not been satisfied that the QRA carried out for Corrib has been based on a database of similar or relevant pipelines carrying untreated gas at high pressures. Mr. Wright has indicated that the generic QRA carried out, while he acknowledges that it meets criteria as per PD 8010, should have been supplemented by a Qualitative Analysis Risk. Such Qualitative Analysis of Risk would present a much clearer picture of the risk levels attaching to each part of the pipeline and would also have provided clear information on further mitigation of risk required.

27.3 Observers Concerns

1. The main concern is one of safety of the pipeline as designed.

The other concerns are

- The complexity of the design and the need to use a number of codes. Concern that one code does not cover all aspects of the design. Concern that one of the codes being used is I.S 328, clearly to be used for transmission pipelines (i.e. downstream) not upstream pipelines.
- The pressures are higher than pressures shown in the proximity tables in IS 328 and PD 8010 that the whole pipeline may be in fact experimental.
- The lack of clarity with regard to the distance from the pipeline and the distance affected by consequences of a rupture or hole in the pipeline.
- The LVI will limit the onshore pipeline pressure to 144 bar. The concern is that a small part of the onshore pipeline immediately upstream of the LVI may in certain circumstances contain the full well head pressure of 345 bar. That would pose significant risk to Glengad residents, to the L1202 and to users of lands and the beach in that area.
- H₂S may eventually become a factor and increase the rate of corrosion of the pipeline.
- The high technology required to achieve the design standards for the pipeline and also concern at the high technology required in the operation of the pipeline to maintain safety.
- The proposed development is at the limits of technological innovation with regard to pressure/distance for the tie back proposed to the onshore facilities.
- Observers stated that the collapse in the world financial markets came about because the financial sector was using QRA analysis. The risk of a collapse in the entire world market was considered to be negligible. Observers draw a parallel with the risk calculations for failure of the Corrib Gas Pipeline in the QRA submitted by SEPIL. This is considered by SEPIL to be a very low risk
- The specific risk due to the type of valve shut down system proposed for the LVI (known as HIPPS system).

27.4 Mr. Wrights findings in relation to Design & Codes

1. The operating pressures for the pipeline [90 – 110 bar] appear to have been set in order to produce at the maximum level of Three Hundred and Fifty Million Standard Cubic Feet of Gas per Day 350 MMSCFD in the early years of production.
2. At maximum production the well head pressure will decay over the first 3.5 years.
3. Mr. Wright recommends modelling be carried out so as to examine reduced output pressure below 100bar between Glengad and Terminal and model the economic impact of such pressure reduction. Mr. Wright estimates perhaps an 8.6% reduction in output for the early 3.5 years would be the outcome. This reduction in economic value of production in the early years of the well life could then be evaluated against any extra costs to increase safety at the pressures as now proposed for the onshore pipeline.
4. Mr. Wright considers that a temporary relief valve and vent stack could be built at Glengad to prevent the pipeline there from reaching 345 bar pressure. Such relief valve and vent stack could be removed after the first 4 years operation when well head pressure decays.
5. Mr. Wright recommends that increased security for the enclosure and to prevent unauthorised access, be designed into the LVI facility at Glengad in accordance with PD 8010 – Part 1 Section 7.3.
6. Mr. Wright recommends that strain monitoring equipment be fitted to the pipeline in areas of deep peat or unknown stability so that any movements can be monitored.
7. Mr. Wright recommends that I.S. 328 be considered by the relevant authorities responsible for developing, amending and adopting codes and that IS 328 be expanded so as to unify into a single code the requirements for an upstream gas pipeline. Such a recommendation is not relevant to this development. I consider that it is better to reflect this conclusion here however for the consideration of the appropriate bodies.
8. Mr. Wright recommends that TAG should re-examine that part of the pipeline design from HWM to the downstream weld on the LVI. It is proposed by SEPIL that this section be designed to DNV OS-F101 and TAG should review if any supplementary code requirements should apply.
9. Having examined the risk assessment carried out for this application Mr. Wright considered that an endorsement of Advantica's recommendation is justified, that consideration should be given by the Irish Government to establish a risk-based framework for decisions on proposed and existing major hazard pipelines and related infrastructure to ensure transparency and consistency of the decision making process. This recommendation is again not relevant to this proposed development. I consider that it is better to reflect this conclusion here for consideration of the appropriate authorities.
10. Mr. Wright considers that the design of the pipeline meets the basic requirements of the codes. However SEPIL needs to set a maximum operating pressure MAOP for the onshore pipeline system as required by the codes..
11. The onshore pipeline should be tested at 504 bar. The test pressure of the pipeline onshore but upstream of the LVI needs to be clarified.
12. Regarding CP system offshore/onshore design Mr. Wright requests that SEPIL provide additional information to support the proposed method and to support the reliability of

the system proposed over and above the isolation joint system as discussed in Advantica report. *“The overall pipeline design proposed for the CP system is considered acceptable with the exception of the decision not to use an insulation joint to separate the offshore and onshore sections. A factory built insulation joint installed at the landfall is considered to be best practice and cited in DNV RP B401 and ISO/CD 15589-2.”* [Advantica]

27.5 Inspectors Conclusions

1. The design codes for the pipeline are clear. IS 14161 supplemented by IS 328 and PD 8010.
2. Other Standards that are relevant to aspects of the analysis required are also clear. AS 2885.1, IGEM/TD1, IGEM/TD2, UK HSE PADHI system for land use planning advice.
3. From Mr. Wrights report *“The composite code approach based upon different parts of the Irish Standard IS EN 14161 supplemented by PD 8010 and IS 328, does cover the minimum requirements to design, construct and operate a safe pipeline for unprocessed gas.”*
4. The test requirement proposed for the gas pipe meets the requirements of the codes.
5. It is not clear which test pressure will be applied to that section of onshore pipeline upstream of the LVI downstream weld.
6. It is not clear which test pressure will be applied to the LVI itself.
7. Mr. Wrights recommendation that strain monitoring equipment be fitted to the pipeline in areas of deep peat needs to be referred back to SEPIL for a formal design review and response.
8. A maximum allowable operating pressure (MAOP) has not been established clearly in the design documentation contained in EIS and supplementary information provided by SEPIL.
9. The method proposed for Cathodic protection of the pipeline system between offshore/onshore pipelines needs to be justified by SEPIL.
10. SEPIL propose to operate the Corrib well field production at maximum output in the early years. This means the normal operating pressures will be higher in those years.
11. Mr. Wright has recommended that economic modelling be carried out by SEPIL to enable an assessment of the financial impact of reducing operating pressures in the first 3.5 - 5 years to be evaluated. While I can understand Mr. Wrights intention that issue is a matter for SEPIL to examine and decide at what rate of production and at what pressure it proposes to operate the onshore pipeline. The issue for ABP then is to assess the impact of the proposed development (including the pressure as proposed by SEPIL) on the Health & Safety of the area. A proposed development including design pressures has been proposed by SEPIL. It is this proposal which is now being examined and it is this proposal which has now to be deemed acceptable or unacceptable from all aspects including the Health & Safety of the Area.
12. The strength of the pipe itself and compliance of the pipe design with the codes is a straight forward issue. However the overall system of pipeline, landfall valve in the proposed location cannot be declared safe until those other elements of the system are examined. Chapter 28 examines the Quantified Risk Assessment submitted by SEPIL.

Chapter 28 Safety Part 2 - Quantified Risk Assessment Consequences of Failure

28.1 Introduction

Having looked at the codes and pipeline design in chapter 27, this chapter considers the analysis used in the assessment of the risk of failure of a gas pipeline and the analysis used to evaluate the consequences of failure of a pipeline. The next chapter 29 considers the landfall valve installation and finally chapter 30 pulls together the summation of pipeline safety assessment.

As set out by Mr. Wright in his report and as set out in the Advantica report there is no readymade Risk Based decision making framework for Ireland available to ABP. Accordingly it is necessary to discuss the system used by SEPIL and the context of other possible systems that are recognised for use in determination of risk and in the assessment of that risk against a standard.

28.1.5 Context for evaluating QRA on Very High Pressure (345 bar) and High Pressure (144 bar) pipelines

Where pipelines fall within code requirements, then compliance with the codes forms part of the acceptance criteria for pipeline design and risk assessment. Such is the situation for transmission pipelines and pipelines that operate at pressures of 100bar or below. The requirements for evaluating risks in pipelines at very high pressures (345 bar) and high pressures (144 bar) are only now being brought forward and both the industry and the standards authorities are only now beginning the work of defining codes and acceptable methodologies for evaluating risks and for assessing the safety of pipelines at these higher pressures. This can be seen from the very recent publication of the following standards:

IGEM institute of Gas Engineers and managers have produced IGEM/TD2, Document Number 1737 in February 2009 which deals with
“Application of pipeline risk assessment to proposed developments in the vicinity of high pressure natural gas pipelines”

British standards have produced PD 8010 Part 3 in December 2008 Code of practice for pipelines.
“Part 3 Steel pipelines on land – guide to the application of pipeline risk assessment to proposed developments in the vicinity of major accident hazard pipelines containing flammables.”

The work carried out on codes largely deals with downstream pipelines as there are many of these and the need for the codes to cover these downstream pipes and the conditions within which these pipelines operate are pressing on the industry and on the standards bodies. Thus the UK planning system together with the UK HSE have a system in place where models have been developed to predict the risk levels at different distances from all gas pipelines in the UK. During Mr. Wrights questioning SEPIL confirmed in evidence that the Corrib Gas upstream onshore pipeline is unique in Ireland and UK. Add to this context the fact that upstream pipelines which carry untreated natural gas are very rare on land and being rare it is likely to be some time before codes become available to deal specifically with the additional risk elements and the very high pressures at which operators want to operate these pipelines. Generally speaking that is the context within which ABP is being asked to assess the Quantified Risk Assessment submitted by SEPIL to support the design proposed for the onshore pipeline.

28.2 Qualitative Analysis of Risk

The following illustration is set out to further clarify the type of outcome required from a satisfactory analysis of risk. In the following tables the relevant categories for the Corrib Onshore Gas Pipeline are highlighted in yellow. This example is taken from the AS 2885.1 Australian pipeline design code Appendix F. Mr. Wright has presented this example in his report Section 9.1.

Step 1 Choose a severity class for the consequences of failure from the following table.

Severity Classes

	Severity class				
	Catastrophic	Major	Severe	Minor	Trivial
Dimension	Measures of severity				
People	Multiple fatalities result	Few fatalities; several people with life-threatening injuries	Injury or illness requiring hospital treatment	Injuries requiring first aid treatment	Minimal impact on health and safety
Supply	Long-term interruption of supply	Prolonged interruption; long-term restriction of supply	Short-term interruption; prolonged restriction of supply	Short-term interruption; restriction of supply but shortfall met from other sources	No impact; no restriction of pipeline supply
Environment (see Note)	Effects widespread; viability of ecosystems or species affected; permanent major changes	Major off-site impact; long-term severe effects; rectification difficult	Localized (<1 ha) and short-term (<2 y) effects, easily rectified	Effect very localized (<0.1 ha) and very short-term (weeks), minimal rectification	No effect; minor on-site effects rectified rapidly with negligible residual effect

NOTE: Significant environmental consequences may occur in locations that are relatively small and isolated.

Step 2 Assign a frequency of occurrence of each failure event from the following table.

Frequency Classes

Frequency class	Frequency description
Frequent	Expected to occur once per year or more

Occasional	May occur occasionally in the life of the pipeline
Unlikely	Unlikely to occur within the life of the pipeline, but possible
Remote	Not anticipated for this pipeline in this location
Hypothetical	Theoretically possible but has never occurred on a similar pipeline

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Step 3 Determine the risk rank based on the following risk matrix.

Risk Matrix

	Catastrophic	Major	Severe	Minor	Trivial
Frequent	Extreme	Extreme	High	Intermediate	Low
Occasional	Extreme	High	Intermediate	Low	Low
Unlikely	High	High	Intermediate	Low	Negligible
Remote	High	Intermediate	Low	Negligible	Negligible
Hypothetical	Intermediate	Low	Negligible	Negligible	Negligible

Step 4 Determine the acceptability of risk or select action required to further reduce risk.

Risk Treatment Actions

Risk Rank	Required Action
Extreme	Modify the threat, the frequency or the consequence so that the risk rank is reduced to 'intermediate' or lower For an in-service pipeline the risk shall be reduced immediately
High	Modify the threat, the frequency or the consequences so that the risk rank is reduced to Intermediate or lower For an in-service pipeline the risk shall be reduced as soon as possible, typically within a timescale of not more than a few weeks
Intermediate	Repeat threat identification and risk evaluation processes to verify and, where possible, quantify the risk estimation; determine the accuracy and uncertainty of the estimation. Where the risk rank is confirmed to be 'intermediate', if possible modify the threat, the frequency or the consequence to reduce the risk rank to 'low' or 'negligible' Where the risk rank cannot be reduced to 'low' or 'negligible', action shall be taken to – <ul style="list-style-type: none"> (b) remove threats, reduce frequencies and/or reduce severity of consequences to the extent practicable; and (c) demonstrate ALARP For an in-service pipeline, the reduction to 'low' or 'negligible' or demonstration of ALARP shall be completed as soon as possible; typically within a timescale of not more than a few months
Low	Determine the management plan for the threat to prevent occurrence and to monitor changes that could affect the classification
Negligible	Review at the next interval

In the above analysis which is illustrative only I have allocated a severity class of catastrophic and a frequency class of remote to the Corrib pipeline. As can be seen from the above analysis, Corrib Gas onshore pipeline has a risk rank of "intermediate" or "high" depending on whether multiple fatalities is considered less than or greater than 7 (which SEPIL say in their analysis is a worst case number of potential casualties). In either ranking, risk treatment actions are required. Modification of the threat, the frequency or the consequences is recommended so that the risk rank is reduced to

intermediate or lower. Even at intermediate risk rank, further modification of threat frequency or consequences is recommended.

The foregoing simple analysis presents a clear picture of how a qualitative analysis of the Corrib onshore gas pipeline risk ranking can be presented in the context of AS.2885.1 the Australian Pipeline Design. The reason for using the Australian Code for this example is that I.S. 328 states: ““Where it is impractical to comply with the above proximity requirements deviations from these requirements may be permitted provided they can be justified by a Quantitative Risk Assessment carried out in accordance with a recognised standard such as AS 2885.1”. (I.S. 328 Section 6.4)

28.3 SEPIL QRA (Quantified Risk Assessment)

SEPIL have set out the QRA methodology and results in E.I.S. Appendix Q7. The work involved is highly technical and involved the use of computer modelling software originally developed by British Gas. SEPIL used specialist subcontractors DNV and PIE to prepare the analysis and DNV prepared the report of the results. PIE generated failure frequencies for third party interference with the pipeline which was considered to be the critical failure mode to be considered. PIE conclude that “application of the PIE model indicates that the rupture frequency of the Corrib pipeline is approximately 200 times lower than that of an equivalent pipeline of standard wall thickness typical of those in the UK pipeline population”.

DNV in reporting the results have supplied transects showing the risk of fatality at different locations [on the pipeline (Rosspoint) and at the LVI] and at different distances from the pipeline at those locations. These are the individual risk per year of fatality. DNV also provide the societal risk and conclude in their report “The Societal Risk for the section of pipeline with the highest risk had a maximum in the order of 4×10^{-11} per year (100 bar) and 3×10^{-10} per year (144 bar) more than 5 orders of magnitude lower than the criterion line derived from experience in the UK natural gas pipelines (which is in the order of 1×10^{-4} and 1×10^{-5} per year)”.

Essentially SEPIL are presenting the case that the proposed pipeline is considerably safer than UK natural gas pipelines or BGE natural gas pipelines in Ireland. The SEPIL assessment of their QRA which concludes that the pipeline is safe is based on the QRA carried out by SEPIL. SEPIL also have included the following design elements in their QRA.

- 1) A very thick pipeline grade X70 carbon steel material is used.
- 2) The tunnels under Sruwaddacon Bay provide satisfactory construction mitigating risk against damage from currents there.
- 3) The Stone road method in peatlands provides satisfactory construction mitigating risk there against any ground movement.
- 4) LVI pressure limitation at Glengad which limits the pressure onshore to 144 bar is a reliable system.
- 5) Construction management will be employed to mitigate any risk from construction defects.
- 6) Testing of pipeline to 504 bar.
- 7) The Pipeline Integrity Management System (PIMS) that will mitigate any risks from operating threats.

28.3.1 Additional information provided at OH

A significant amount of additional information was obtained at the OH [DRN OH12*, OH45*, OH61, OH63*, OH64, OH75*, OH77*, OH79*, OH106*, OH107*, OH108, OH122*]. The * indicates the additional information with particular relevance to QRA assessment. This additional information has filled out the picture of the QRA analysis as originally presented by SEPIL in the E.I.S. Observers, notwithstanding the technicalities involved, have a good understanding of the QRA technique and observers clearly were able to interpret the information presented at OH and in

E.I.S. Questions by observers brought out further information on the actual analysis carried out on QRA for the Corrib Gas Pipeline.

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28.4 Mr. Wright's Report and Conclusions in relation to QRA

Mr. Wright prepared lines of questioning and carried out an examination of SEPILS QRA as set out in E.I.S. Mr. Wright subsequently undertook further questioning when additional information was provided by SEPIL to the OH. Mr. Wright has carried out a detailed assessment of the QRA in his report which I do not intend to cover again here. Mr. Wrights conclusions are quite technical. However I believe it is important that I collect his conclusions together and present them here before summarizing the issues in my assessment.

28.4.1 On QRA

- SEPIL DNV stated in their written submission that a QRA was not required for high-pressure transmission pipelines designed in accordance to IS328. In addition DNV has not carried out a QRA for the BGE pipeline to the West or any other pipeline in Ireland. The above comment is misleading. I.S. 328 does state that, where it is impractical to comply with the proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA). SEPIL have also specified the use of IS EN 14161 Annex A. This allows the hazard to be evaluated by either a QRA or Qualitative Analysis to illustrate the risk level for a pipeline that is transporting untreated gas where there is no database on comparable pipelines.
- DNV SEPIL confirmed that in the event of a pipeline rupture there would be a significant fireball lasting up to 30 seconds followed by a jet fire. The jet fire would continue to burn until the supply of gas was isolated. Also holes in the pipeline would only produce a jet fire.
- To quantify the risk to the population SEPIL DNV have used PD8010 – 3, which defines two methods of analysing the risk. These are Individual Risk and Societal Risk.
- The Individual Risk analysis is based upon the UK HSE methodology, which plots individual risk profile against distance away from the pipeline. These values can be compared to the PD 8010-3 defined levels of risk
- SEPIL used PD8010-3 to define the boundaries of Individual risk, which are above 1×10^{-5} intolerable, between 1×10^{-5} and 1×10^{-6} Tolerable (ALARP) and below 1×10^{-6} broadly acceptable.

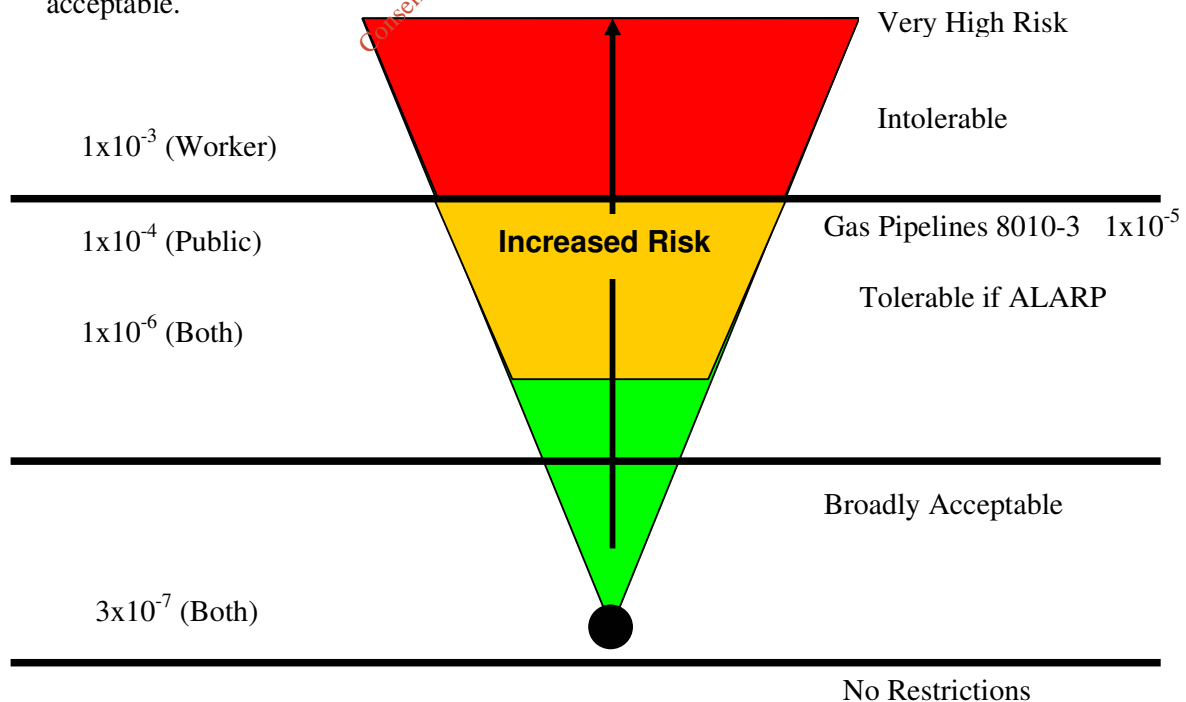


Figure 8: Relationship between risk and zone boundaries

- SEPIL DNV admitted that a site-specific risk QRA assessment could be undertaken by SEPIL but in this instance they decided to adopt a standard industry template to allow comparison with the PD8010 generic safety case
- The SEPIL's QRA is limited in that it does not fit reality. It is based around a series of artificial assumptions to fit a generic safety case of PD8010 –3 so that the figures can be compared to the risk criterion curve of 10 fatalities at Cumulative Failure Frequency of 1×10^{-5} .

28.4.2 On Thermal Radiation

- The UK HSE methodology assumes escaping people will be subjected to a thermal radiation level to produce 1000TDU giving a probability of 1% fatality if the person finds shelter within 30 Seconds walking at a speed of 2.5ms^{-1}
- Societal Risk is defined from a plot of Cumulative Frequency of Failure against Number of Casualties SEPIL have used the risk criterion curve from PD8010, which gives a value of 10 casualties at a frequency 1×10^{-5} . This curve assumes a thermal radiation level to give 1800TDU, which produces a probability of 50% casualties from the affected population.
- DNV SEPIL used the UK HSE model to predict the radiated heat from a fireball as a result of a rupture. Although DNV states in the EIS that the fireball model is based upon small-scale releases designed to predict the scale of fireballs from liquefied flammable gases. Hence the application of such a model to pipeline ruptures is somewhat uncertain. However during questioning Mr Crossthwaite of DNV defended the use of the model although admitted that the model has not been verified against pressures above 100bar. He also stated that DNV used extrapolation techniques to obtain the predictions at 144 bar and 345 bar. Mr Crossthwaite acknowledged there would be additional uncertainty with extrapolating the data but maintained the physics was well understood which permitted the extrapolation.

28.4.3 On Consequence Impact Maps

- From the modelling of thermal radiation SEPIL DNV produced to two sets of hazards distances, which have a consequence impact on the community. These are 'Building Burning Distance' and 'Escape Distance'.
- SEPIL DNV produced a set of Consequence Impact Maps illustrating contours of Building Burning Distances and Escape Distances along the whole length of the Corrib pipeline
- SEPIL predicted only rupture of the pipeline affects the dwellings, jet fires from holes have no effect
- At Glengad between 1 and 7 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 3 and 8 dwellings.
- At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.
- At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.
- At Ross Port – pipeline North Crossing point, between 4 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings
- There was a great deal of concern from the observers that there is no shelter from the thermal radiation either out to the commonage or down to the bay and therefore the model on fatalities and injury could underestimate the casualties because it assumes everyone will find shelter within 30seconds walking at 2.5ms^{-2} .

- Mr Crossthwaite estimated that without shelter the escape distances could be in the order of an extra 50m before the radiation level fell away. The population would continue to accumulate heat radiation damage during the period.

28.4.4 On Casualty Numbers

- SEPIL DNV estimated if there was a catastrophic failure anywhere on the onshore pipeline the maximum number of casualties is predict at seven fatalities at 144 bar pressure.

28.4.5 On Presentation of the QRA Analysis by SEPIL

- The SEPIL-DNV section on risk detailing failure rates and consequences was difficult to follow with multiple sub appendices and the PIE report inserted between two key DNV sections. The specific failure analysis should have been more prominent as part of the main report rather than placed at the end under Appendix VII. It would have been clearer to read the submission as a single document with the key results from the PIE analysis incorporated within the body to the report.

28.4.6 On Limitations of QRA provided by SEPIL

- Instead of performing a detailed site-specific failure analysis, SEPIL adopted a limited analysis, which is based upon generic pipeline failure databases from Europe EGIG and the UK – UKPOA used in PD8010-3. The limitations of using such databases is that the information is derived from pipelines transporting clean dry processed natural gas at pressures below 100 barg which does not fully reflect the potential Corrib pipeline failure mechanisms.
- In SEPIL's site – specific analysis it claimed that ruptures from Construction, Corrosion, Hot taps and other events will be mitigated by the measures taken by SEPIL to increase pipeline integrity.
- **SEPIL's site-specific analysis did not include potential methane hydrate problems at Glengad LVI or Internal corrosion from CO₂ and the 3rd Party intentional damage threat.**
- Without any evidence or data, SEPIL decided that since the pipeline is now going to be laid in a stone road the failure frequency for ground movement will be negligible i.e. falling below 1×10^{-8} and therefore eliminated from analysis.
- In the site-specific analysis SEPIL considered 3rd party interference as the only plausible mechanism for the pipeline to rupture and used the PIE analysis to predict the failure frequencies of 9.15×10^{-8} at 345 bar, reducing to 5.82×10^{-10} at 144 bar and 0 at 55bar.
- **All these values are below the accept values of 1×10^{-8} and should be classified as negligible but they had to be included otherwise the site-specific database would be empty.**
- When requested by the Inspector's team to include a figure for ground movement SEPIL selected the slope instability value of 9×10^{-8} from PD8010-3 which is well below the general ground movement value of 9×10^{-6}
- **SEPIL's site-specific failure analysis for an ultra high-pressure unprocessed CO₂ wet gas pipeline produces frequencies, which are well below the generic values used in Europe and the UK for lower pressure processed dry natural gas.**
- The European database EGIG only predicts ruptures from ground movement for pipelines with wall thicknesses over 15mm at a frequency of 1.56×10^{-5} , while the UK database UKPOA used in PD 8010-3 again predicts ruptures from ground movement and other events for pipelines with wall thicknesses over 15mm at a frequency of 2.18×10^{-6}

- During the Oral Hearing Shell admitted that it had not performed any full scale testing to verify any of the assumptions used in the PIE failure model. These cover the extrapolation of gouge and denting modelling for:-
 - Higher strength X70 material
 - Pipe wall thickness over 25mm thick
 - Pressures up to 345 bar
- SEPIL acknowledged that the Advantica prediction for probability of failure from 3rd party interference is 8.08 times higher than the PIE value and for frequency of failure the value is 14.4 times higher.
- PIE used a charpy value of 70 Joules for the toughness of the pipe material. However during the Hearing SEPIL stated that the temperature of the pipework at Glengad could drop to minus 20C and if a through wall defect occurred, the pipe could cool a further 23C from the cooling effect of the gas passing through the defect. At temperatures around minus 40C the steel is getting close to its brittle transition temperature, which may affect the PIE model predictions.
- Comdt Boyle in his submission to the Hearing presented information from University College London that the cooling effect from gas escaping through a defect could have lowered the toughness of the pipe at the Ghislenghien, Belgium, which experienced a gas rupture leading to a significant loss of life.
- The event that would lead to the very low temperatures at Glengad LVI would be opening the fully pressurised valves with the downstream pipework to the terminal depressurised. This event was not included in the risk analysis because it is classified as a rare event by SEPIL.
- SEPIL stated at 345bar the critical crack length for rupture is only 103mm, which is equivalent to 1/4 inch diameter hole.

28.4.7 On Increased Risk at Glengad

- The Advantica recommendation of reducing the downstream pressure from a potential 345 bar to 144bar was sound. However, the design of the Glengad LVI may have introduced a higher risk of failure into the Corrib downstream pipeline.
- The maximum individual risk per year to the Glengad residents at 246m away from the pipeline is 1×10^{-5} . This will arise if the LVI remains pressurised at this value for 1 year. At this risk the area would be in an ALARP condition where SEPIL would need to look at strategies to lower the risk. If this condition only occurs for a period of 10 days then the risk drops to around 5×10^{-7} , which is classified as broadly acceptable by PD8010-3.
- The individual risk to the Glengad residents drops to around 1×10^{-7} when the LVI is operated at a pressure of 144 barg, which is classified as no restrictions by PD8010-3.
- No societal Risk was calculated for the residents of Glengad

28.4.8 On Risk at Rossport

- The maximum individual risk per year to the Ross Port residents at 140m away from the downstream pipeline is around 7×10^{-11} , which is classified as no restrictions by PD8010-3.
- The Societal Risk to the residents of Ross Port is 5.82×10^{-10} Km/year and is well below the risk criterion line in PD8010-3 or IGEM/TD/2
- Adding the low failure frequency of 9×10^{-8} for ground movement does significantly alter the individual risk per year to the residents of Ross Port at 140m away from the pipeline with the yearly individual risk increasing to 1×10^{-8} , which is classified as no restrictions by PD8010-3.

It is noted that these low risks to the residents are predicted from a model, which only recognises rupture from 3rd party interference on thick wall pipe with an option of incorporating a low failure frequency due to ground movement.

28.4.9 On External Corrosion

Conclusion

As there is a difference of opinion between two respected bodies there must remain some doubt over whether the effectiveness of the CP system has been compromised by the lack of a landfall insulation joint. The PD8010-3 data, which indicates no risk, is based upon an onshore pipeline population with no offshore component. Therefore the 'No Risk' value cannot be automatically be adopted.

Recommendation

SEPIL should review their design of the CP system to ensure that it meets best practice stated in DNV RP B401 and ISO/CD 15589-2. Alternatively SEPIL need to demonstrate that manufacturing an insulation joint would jeopardise the safety of the pipeline at 345 bar

28.4.10 On Internal Corrosion

Recommendation

Since there are numerous parameters which can influence the corrosion rate including the amount of water, CO₂, temperature and flow regime, it is recommended that SEPIL include a frequency of failure from data bases with pipelines transporting CO₂ in the presence of gas and water. This would reveal the variation in managing the problem.

28.4.11 On Formation of Methane Hydrate

Recommendation

It is recommended that SEPIL include a frequency of failure for risks associated with Methane Hydrate from databases with pipelines transporting wet gas operating at high pressure and low temperatures where the hydrate is controlled by methanol. This would reveal the variation in managing the problem.

28.4.12 On Erosion

Recommendation

The risk of pipeline erosion wall thinning subtracting from the corrosion allowance of 1mm, especially at Glengad, has not been fully disclosed. In order that the Inspectors team can agree that this risk is negligible i.e. below 1×10^{-8} , further information needs to be disclosed on how the risk was mathematically discounted.

28.4.13 On Geotechnical Stability

Recommendation

The frequency 9×10^{-8} /Km year recommended by Mr O'Donnell and used in the subsequent analysis by SEPIL during the hearing should be adopted for all QRA's on the project as a lower band failure frequency for ground movement on the Corrib pipeline that could cause a rupture.

28.4.14 On Construction Defects

Conclusion

Given that there has been problems on the pipeline associated with construction quality then the figure presented in EIS Appendix Q7 – sub appendix VII Table 22 of 5×10^{-6} for pinhole and hole failure frequency is acceptable

28.4.15 On Estuary Mini-Tunnelling

Recommendation

SEPIL should publish a document, which looks at the health of the pipelines that have been installed over the last 20 years by these Micro- Tunnelling techniques.

28.4.16 On 3rd Party Intentional Damage

Recommendation

- SEPIL should reassess the security arrangements at Glengad LVI in light of its strategic importance to Ireland's secure supply of gas.
- SEPIL should include a value in a site specific QRA for the risk from 3rd party Intervention

28.4.17 On Umbilical Failure

Conclusion

Failure and any subsequent fire may cause disruption to gas production but is will not compromise the safety of the pipeline.

28.4.18 On Independent Competent Person

Conclusion

- Many events that could lead to a loss of product or complete rupture of the pipeline have not been included in a site-specific QRA but are covered by a Shell PIMS and management integrity plan. While the inspectors team recognises the critical importance of this strategy for the long-term health of the pipeline and the requirement for operational safety it does not negate the need to produce a comprehensive quantified risk assessment covering all events that could endanger the pipeline.

Recommendation

- SEPIL should resubmit a Quantified Risk Assessment covering all events all events that could endanger the pipeline.

Dept of Communication Energy and Natural Resources should recommend the appointment of an independent entity to monitor the long-term health of the onshore pipeline.

28.4.19 On Netherlands Study

Conclusion

The evidence collected from the NAM unprocessed gas pipelines does not have the detailed information related to QRA submissions and operational incidents to gain an accurate insight into the safety of a wet gas system in Ireland.

28.4.20 On Australian Standards

Recommendation

SEPIL should complete their Qualitative Risk Assessment to gain a wider perspective of the risks posed by this ultra high-pressure pipeline transporting unprocessed gas through a populated area.

28.5 Mr. O'Donnell's consideration of QRA analysis

Mr. O'Donnell, a geotechnical consultant, was appointed by ABP to advise on geotechnical aspects of the proposed development. Mr. O'Donnell in his report also considers the QRA carried out by SEPIL DNV in respect of the ground movement risks. Mr. O'Donnell notes that SEPIL DNV have assumed a negligible base frequency for failure due to ground movement with a zero frequency for rupture, hole or pinhole failure based on SEPIL's design [i.e. SEPIL argue the thick pipe and construction methodology proposed (stone road method, tunnels under bay) have reduced the risk to negligible]. Mr. O'Donnell in his report has considered potential sources of ground movement

- Coastal erosion at the Glengad site.
- Inundation and scouring from landslides at Dooncarton.
- Scour in the lower and upper channel crossings in Sruwaddacon Bay.
- Planar sliding of the stone road.
- Differential settlement of pipeline within the stone road.

Accordingly SEPIL were requested to submit risk transects that included ground movement and a frequency of failure rate of 9×10^{-8} per km per year was taken from PD 8010 [Table B 15 "where slope instability is negligible but might be affected by slope movement on adjacent areas"]. SEPIL DNV submitted the analysis in DRN OH75 which showed the risk transects with ground movement included.

Mr. O'Donnell in his report states that the results showed that even a negligible base failure rate [9×10^{-8}] can significantly increase the risk of fatalities from a pipeline rupture where even at 100m the risk increases by several orders of magnitude. Mr. O'Donnell accepts that the risk of ground movement is very low or negligible; however, it seems to him that it would be unconservative to apply a zero base failure frequency to the risk of ground movement in the QRA. SEPIL had used a zero failure frequency for ground movement in the QRA.

Mr. O'Donnell also states that the fact that the incident databases may not be representative of ground movement risks along the Corrib pipeline route could mean that the QRA may not be the most appropriate way of assessing the risks. He suggests a Qualitative Assessment.

28.6 Observers Submissions

1. The single most contentious issue relating to the proposed development is the safety of the pipeline. Observers indicated that they expect that all concerned at SEPIL and their advisers will set out to design a safe pipeline. However, failures do occur and observers are concerned that the local community will be at risk from such a failure should it occur on the Corrib Gas Pipeline.
2. Observers are unhappy at the use of QRA which they say is a mathematical technique and which has been discredited as a technique due to the collapse of the financial system worldwide where such a collapse was considered extremely unlikely. Observers draw parallel with the statements about the failure of the Corrib pipeline as being extremely unlikely.
3. Observers are concerned that the distance from the pipeline to safety exceeds the 140m and various figures were provided by observers suggesting a basis that a greater separation distance of 190m or 500m or 800m were justified for safety.
4. Observers are concerned that the risk of sabotage at LVI at Glengad could put the community there at risk and they asked was sabotage consideration included in QRA.

5. Observers are concerned that the LVI itself poses increased risk and that in the section of pipeline immediately upstream of the LVI, the pressure there could in certain circumstances, as established in Q&A by Mr. Wright, rise to 345 bar in that section of pipe.
6. Observers are concerned that aspects of the proposed development are outside of figures [pressures and proximity distances] provided in codes, and that consequently because of potential errors from extrapolation that the risk of failure of the pipeline may be higher than SEPIL consider in E.I.S. and QRA.
7. Observers are concerned that the local community are numbers in the calculations, and that because the numbers and density of local community is low within the danger zone of impact from pipeline failure that a design which poses a risk to them can be deemed acceptable. [The perception is that the casualty figures will be low, so further design work is not required to make system safe].
8. Observers are concerned that a number of codes are involved in the specification for the pipeline and that requirements to meet the standards of any particular code are as a result somewhat flexible i.e. they fear a low standard may be used to suit some part of the design.
9. Observers expressed confidence in the manner in which Advantica conducted their report with expertise and clarity. Observers are concerned that the proposed development is different to that assessed by Advantica, and that the LVI in particular was not assessed by Advantica. In that regard I should point out that Mr. Wright is an experienced Gas Engineer and his report provides expertise to ABP.
10. Observers have concerns that the LVI HIPPS system proposed is in some way unsuitable solution for the purpose. The basis for this contention is unclear.
11. Observers are very concerned that ground instability at Dooncarton or in Rossport Commonage will cause damage to the pipeline. Mr. O'Donnell has dealt with this in his report, and it has been dealt with in Chapter 34, Landslides at Dooncarton.
12. Observers are concerned that if a vapour cloud [mixed gas/air] develops following a rupture or leak and before ignition then an explosion would result on ignition with more significant impacts than considered in relation to the QRA which has only considered the immediate impacts from ignited ruptures and holes.
13. There is concern that people caught in the open in the event of a pipeline failure would not find shelter across the Bog or down towards the Bay.

28.7 The Inspectors Assessment

There are many issues that have been raised by observers. I am satisfied that the analysis of the safety of the pipeline and the analysis of the QRA have addressed all the issues raised. I am satisfied that Mr. Wright provided a very detailed examination of the project and the safety of the pipeline at OH and in his report and Mr. O'Donnell has considered QRA and ground movement in his report.

28.7.1 Is a QRA required?

Yes, IS 328 requires a QRA. TAG accepted the Advantica Report which had deemed the QRA the technique used in the analysis of the 2002 scheme as acceptable. Mr. Wright in his report confirms that a site specific QRA is required. Mr. Hanna Chief Technical Adviser DCENR confirmed that a QRA was required.

28.7.2 Is the QRA provided satisfactory?

It is unclear whether or not it is satisfactory. Mr. Wright in his conclusions indicates that a QRA based on a data base that is relevant and with a good amount of data from similar pipelines would

provide a level of analysis that would be acceptable. That has not been provided even though it was requested at OH. Alternately Mr. Wright concludes that a site specific analysis which could incorporate QRA and a Qualitative Analysis would provide a level of analysis that would be acceptable. That is not what has been provided in Appendix Q7.

DNV in evidence indicated that a site specific QRA could have been undertaken for Corrib, but that it was considered better to carry out a QRA to the PD8010 standard which was what was submitted in E.I.S.

1. QRA is a complicated analysis. An examination of the PIE analysis as contained in EIS Appendix Q7 and which only deals with one factor in the overall QRA i.e. “the failure frequency predictions due to third party interference for Corrib Pipeline” demonstrates this complexity. In table 5 page 46 comparison of the PIE values with similar values calculated by JP Kenny and Advantica show variation as pointed out in Mr. Wrights conclusions.
2. As demonstrated in the QRA analysis where the risk of ground movement is included in the analysis the individual risk even at 100 m from the pipeline, increases by several orders of magnitude as pointed out by Mr. O’Donnell in his conclusions.

28.7.3 Is there full clarity of the QRA?

Is there full clarity of the QRA as carried out for the Glengad (LVI), Rossport, Aghoos, Bellagelly South sections of pipeline? There is certainly not full clarity in the QRA. SEPILs position is that the worst case conditions have been evaluated in accordance with PD 8010. Nevertheless when all the documentation is taken together a lot of information was provided at OH. It is not at all clear how that information sits with the design information contained in the EIS. The QRA needs to cover analysis along the site on a site specific basis so that the analysis and its relevance to each part of the site and each of the risks of failure scenarios is transparent.

3. The QRA submitted uses frequency of failure rates taken from databases that are not fully representative of the types of risks associated with the Corrib Pipeline – In particular its databases do not include wet gas, high pressures, the fact that the pipe traverses a site which Mr. O’Donnell has assessed for 6 different ground movement threats to the pipeline, the specific operational complexities of the LVI, the reality on this project where third party intentional damage cannot be excluded from threats facing this pipeline. This has been pointed out by Mr. Wright in his conclusions.
4. The generic QRA performed in accordance with PD 8010 does not take the site specific conditions such as lack of shelter across the bog or down into the bay into account. As a result the consequences of failure may have been underestimated in the calculations. This has been pointed out by Mr. Wright in his report.
5. I am satisfied that the Quantified Risk Assessment methodology in itself can be an appropriate method for assessment of risk. I am satisfied that the method is used internationally and within the Industry for assessment of risk and the assessment of consequences of failure. I am not satisfied that the QRA provided by SEPIL gives sufficient transparency of relevance to the risks of failure that apply to the proposed development.

28.7.4 Are the Results of the QRA satisfactory?

As outlined in Section 28.3 above, SEPIL have stated that the highest societal risk is more than 5 orders of magnitude lower than the acceptable line [UK natural gas pipeline derived F/N curve]. Mr. Wright has indicated no societal risk was carried out for Glengad. Mr. Wright has indicated no societal risk was carried out for Glengad. Mr. Wright has also indicated that the database for thick walled pipes transporting wet untreated gas was not supplied. Mr. Wright has also indicated that the level of risk of the proposed development as per QRA is lower (well below) the generic values used in Europe and UK for lower pressure dry natural gas pipelines.

The Results of the QRA as presented by SEPIL therefore contain a level of uncertainty. I am not satisfied that a final determination to accept the pipeline or to reject the pipeline because of the risk it proposes can be made on the information provided.

6. I am satisfied that a fully transparent analysis would provide confidence in the assessment of the safety of the Corrib Gas Pipeline.

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28.8 Inspectors Conclusion: QRA

The QRA submitted does not provide the clarity and completeness required to conclude an assessment of the acceptability or otherwise of the risk to public safety that the pipeline poses.

In my view it would be unreasonable to reject the proposed development and recommend refusal of planning permission because the QRA lacks transparency and lacks completeness. My reasons are as follows:

- 1) SEPIL have carried out a QRA in accordance with PD 8010-3 and SEPIL are satisfied that the analysis carried out is sufficient and complies with the code. Mr. Wright has confirmed that the QRA has been carried out in accordance with the code.
- 2) SEPIL have indicated that site specific conditions can be included and a QRA can be prepared accordingly.
- 3) There is an absence of a risk based decision making system in Ireland and accordingly ABP need to find a framework within which to analyse the QRA.
- 4) TAG have addressed this by specifying codes for the design of the proposed pipeline. In my view however the limitations of the codes in respect of wet upstream gas and in respect of very high pressures need to be supplemented. There are two ways this can be done.
 - a) A site specific QRA with relevant database frequency of failure rates should be provided.
 - b) A qualitative analysis of risk should be provided.
- 5) In my view a determination on whether the level of risk posed by the pipeline is acceptable cannot be made because of uncertainties in the QRA supplied by SEPIL but these uncertainties can be resolved.

28.9 Recommendation

1. Prior to deciding on this application it is recommended that ABP request SEPIL to submit the information set out in the recommendation at the end of Chapter 30.

Reason: It is necessary that a fully integrated analysis of the design proposals and Quantified Risk assessment for the complete pipeline from Glengad to Bellagelly terminal be available for assessment.

Chapter 29 Landfall Valve Installation Adequacy of Proposed Installation

29.1 Background to decision to provide Landfall Valve Installation (LVI)

The following quotations set out a background for the SEPIL decision to provide an LVI at Glengad.

1. Advantica

“In order to determine the requirements for additional pressure control measures, it is recommended that as a first step, a full and technically thorough reliability analysis be carried out of the subsea pressure control and isolation systems specified in the field design. This analysis should not only consider the equipment reliability, but should include any potential human factors related to field shutdown. As part of this reliability assessment, the existing FMECA [Ref. 47] should be reviewed in order to highlight any failure modes relevant to loss of pressure control. These failure modes should then be analysed to ensure that all relevant failures have been captured. The arrival pressure at the terminal is expected to be around 110bar in normal operation, with a pressure protection system located at the terminal inlet to prevent damage to equipment and pipework within the terminal due to excess pressure. The upstream breakpoint for the pressure limitation is at the beach landing and it is probable that any system to be considered would be located at this point. It is not believed that pressure reduction would be required at this point, given the normal operation pressures (and it is not required by the relevant standards). However, some form of isolation over and above that currently planned (a locally operated isolation valve) appears to be appropriate and practical. Upgrading this valve to remote operation from the terminal is an example of one option that should be considered.

The selection of the appropriate option needs to follow a clear decision process and take into account the UKOPA decision framework described in the previous section.

Recommendation: A full and technically thorough reliability analysis should be carried out of the subsea pressure control and isolation systems specified in the field design to enable appropriate additional pressure control measures to be implemented and the effective limitation of the pressure in the onshore pipeline demonstrated.”

(Advantica Report, Section 5.5.2, Pages 47/48)

2. TAG

*“Limiting the pressure in the onshore section to pressures no greater than 144bar (equivalent to a design factor of 0.3, consistent with the design of pipelines passing through more densely populated suburban areas) is believed to be both practical and an effective measure to reduce risk (and will only be required in the early years of the life of the pipeline because the pressure in the gas wells will decline naturally as gas is extracted). **In view of the societal concerns, the level of uncertainty in the risk analysis, the extent of extrapolation of onshore pipe design codes beyond their normal range of application and mindful that the results of risk analysis are only one factor in the decision-making process, we believe that this measure should be taken and the pipeline revised accordingly.** We recommend that the pressure in the onshore pipeline should be limited to*

no greater than 144bar, with a design factor not exceeding 0.3, and the pipeline design revised accordingly.

Further work will be required to determine the most appropriate engineering solution to limiting the pressure in the onshore pipeline. The FMECA (Failure Mode, Effect and Criticality Analysis) carried out on the planned subsea systems for Shell could form the basis for the reliability analysis required. We recommend that a full and technically thorough reliability analysis should be carried out of the subsea pressure control and isolation systems specified in the field design to enable appropriate additional pressure control measures to be implemented and the effective limitation of the pressure in the onshore pipeline demonstrated.” (TAG Report, Page 4)

The following requirement is set out in IS EN 14161 for pressure control and overpressure protection:

3. IS EN 14161

“Provisions such as pressure control valves or automatic shutdown of pressurizing equipment shall be installed, or procedures implemented, if the operating pressure can exceed the maximum allowable operating pressure anywhere in the pipeline system. Such provisions or procedures shall prevent the operating pressure exceeding MAOP under normal steady-state conditions.

Overpressure protection, such as relief or source isolation valves, shall be provided if necessary to prevent incidental pressures exceeding the limits specified in 6.3.2.1 anywhere in the pipeline system.”

(EN 14161:2003, Section 5.4, Pages 11/12)

29.2 SEPIL: Design of LVI

The design of the Landfall Valve Installation (LVI) is detailed in Appendix Q3 of the E.I.S. An overview by SEPIL of the circumstances that brought about the requirement for pressure limitations on the onshore pipeline is set out in the E.I.S. The following is taken from the E.I.S.

“Flow is planned to be continuous in the pipeline with actual flow rate depending on gas offtake (sales) and any other restriction or requirements imposed by Bord Gáis Éireann, the downstream pipeline operator. In the event of a shutdown or sudden reduction in flow through the Terminal, the system intent is that the control room operator will reduce the flow of gas into the pipeline by closure of one or more wells and/or by choking back the wells to match inlet and outlet flow rate. If this is not done and the pipeline pressure at the Terminal rises an automated high-pressure alarm will send a signal to close all choke valves at the offshore wells. This is the first level of overpressure protection. If the pressure continues to rise a high-pressure alarm signal is automatically sent to close the low isolation valves on each of the offshore wells. This is the second level of overpressure protection. If despite this, the pressure in the pipeline continues to rise towards 144bar the landfall valve installation, which is independent of the Terminal and designed to be failsafe, will automatically close two high integrity isolation valves to shut the onshore pipeline off from the offshore pipeline and ensure the pressure in the onshore pipeline is limited to less than 144bar. This is the third level of overpressure protection.

Two principal methods of overpressure protection at the landfall were considered, mechanical or instrumented. Combinations of the two means of protection were also studied. Pressure safety valves connected to the pipeline and a plant relief system are commonly used mechanical means, whereas the instrumented option incorporates an instrumented sensing device that ultimately acts

to stop over pressurisation by closing a set of valves and isolate the source of overpressure from the low-pressure systems.

An instrumented system incorporating a High Integrity Pressure Protection System (HIPPS) was selected.

The HIPPS system was chosen for the following reasons:

- Although the first option of wellhead valve closure with a Single Actuated Beach Valve would satisfy the minimum requirements, it was felt that this solution did not have sufficient redundancy (e.g. it provided a third level of protection but with a reduced level of reliability) to sufficiently address concerns about high pressure in the pipeline.*
- Although the second option of wellhead valve closure with a Single Actuated Beach Valve and additional Pressure Safety Valve provided that third level of protection and reliability, the design of a pressure relief system would require additional flaring capacity in the system, whether in a dedicated flare or through the Terminal. This overpressure protection system was considered inferior to the selected option which provided a higher integrity third level of overpressure protection within the valve installation itself, and which did not require venting or flaring.”*

(Corrib Onshore Pipeline EIS, Chapter 3, Pages 3/14 and 3/15)

29.3 Reliability & Security of LVI

SEPIL provided expert evidence at OH. Mr. John Gurden Senior Project Manager with JP Kenny Ltd. presented the LVI design. Mr. Gurden clarified the following points regarding reliability and security at the LVI¹⁴¹:

“Access to the LVI will be from the local road L1202. Entry to the LVI site will be strictly controlled under the Gas Terminal Permit to work system with entrance to the LVI compound monitored by a security system”

“The LVI site will be monitored from the Gas Terminal Closed Circuit Television (CCTV)”

“To ensure a reliable electrical supply at the LVI, a battery back-up power supply will feed the essential services at the LVI; for example these include the shutdown system and the communications equipment”

“If the local electricity supply is not available for a prolonged period, then a portable diesel generator will be brought from the Gas Terminal to the LVI. This will provide back-up electrical power to the LVI until the ESB electrical supply is restored.

If there is no electricity available at the site after the back-up batteries have discharged, then the two LVI shutdown valves will close.”

Mr. Gurden concluded by stating *“the safety shutdown facilities at the LVI will reliably and independently limit the pressure of the onshore pipeline below its design pressure 144bar”.*

¹⁴¹ DRN OH 14

29.4 Observers Issues

A significant level of concern was expressed by observers in their submissions and at OH.

1. Concern for the safety of the population in the vicinity of the pipeline and LVI.
2. Concern that the LVI itself introduced increased risk over and above the normal risk from the pipeline.
3. The observers' concern is that if the previous HIPPS system (at wellhead Manifold Control I believe) was considered unsatisfactory how can the observers now have confidence in the HIPPS system proposed at LVI.
4. Advantica, while recommending pressure control at 144bar in their report, have not examined the LVI now proposed. Observers are concerned therefore that the technical appraisal of the current proposal will not have the benefit of Advantica expertise and experience.
5. Concern that because the LVI is easily overlooked, a breach of security of the installation is possible and could lead to damage of the LVI itself and risk to the community at Glengad.

29.5 Mr. Wright's Recommendations

Mr. Wright's analysis and the information sought and provided as part of Mr. Wright's examination of the project have proved extremely useful. Mr. Wright's report in full is contained in Appendix 3. In section 10 of that report Mr. Wright considers the LVI.

29.6 The Inspectors Conclusions regarding LVI

I accept Mr. Wright's Report and I make these conclusions relying substantially on Mr. Wright's report.

1. SEPIL have put forward a comprehensive proposal to limit the pressure in the onshore pipeline downstream of LVI in response to Advantica/TAG recommendations. The proposed pressure limitation protects the onshore pipeline downstream of the LVI.
2. **The LVI pressure control does not provide the same pressure limitation at Glengad itself. In fact the HIPPS system proposed may introduce increased risk for the Glengad site.** It is not clearly demonstrated in the information provided exactly how the risk calculations submitted apply to the Glengad site.
3. A site specific QRA is required for Glengad. This will enable risk levels at Glengad to be clearly identified for worst case condition.
4. In the event that ALARP¹⁴² applies to any part of the onshore pipeline at Glengad LVI or elsewhere then SEPIL should provide the analysis to justify the acceptance of ALARP risk levels and to detail further mitigation measures they propose to take to manage that risk.

¹⁴² ALARP – As Low As Reasonably Practicable Risk Level (see Glossary)

I note in this regard Annex A Safety Evaluation of Pipelines IS EN 14161 Paragraph A.2.:

*“Safety evaluations should **demonstrate** that the pipeline is designed, constructed and operated in accordance with the safety requirements of this European Standard.”*

Paragraph A.5.1:

“Hazard estimation should produce a measure of the level of effect on public safety from a particular hazard. Estimates may be expressed quantitatively or qualitatively and determined in frequency of occurrence, consequence, risk or a combination as appropriate for accomplishing the objectives of the safety analysis”.

I also note that SEPIL did indicate in evidence at OH that a site specific QRA could be carried out but that it had been decided to carry out the generic QRA to PD 8010.

5. Mr. Wright is an experienced gas engineer specialist. He has considered an alternative concept for ensuring that pressure at Glengad does not reach 345 bar. That alternative would involve a vent stack and relief valve at Glengad. SEPIL should be requested to discuss that concept and the reliability of the subsea valve system proposed at the wellhead and manifold offshore.
6. SEPIL in EIS indicated that consideration had been given to mechanical means of limiting the pressure in the onshore pipeline and to instrumentation means of limiting the pressure in the onshore pipeline. SEPIL state that the design of a pressure relief system had been considered. SEPIL state that it would have required additional flaring capacity in the system whether in a dedicated flare or through the terminal. SEPIL have concluded that the LVI system proposed will provide a higher level of integrity third level of overpressure protection within the valve installation itself and one which does not require venting or flaring.
7. Ultimately the choice as to which system to use, to reliably limit the pressure in the onshore pipeline, is for SEPIL to decide.
8. I note Advantica were not prescriptive in their report as to how SEPIL should limit the pressure. Advantica did however identify a simple upgrading of the original 2002 valve assembly proposed to a remotely operated valve at Glengad as one option that should be considered.
9. In my view ABP should not be in any way prescriptive. However Mr. Wrights alternative concept is important. SEPIL should be given an opportunity to respond and to set out again the reliability of the offshore well valve system and to provide more details of the design and the alternatives considered by SEPIL in arriving at the decision to install a HIPPS at the Landfall Valve Installation.
10. In the event that a straight pipe at Glengad provides increased safety for the population at Glengad then SEPIL should provide full justification for the proposed design as submitted.
11. The significant issue for the board to consider is the safety implication for the area as a result of the LVI configuration now proposed by SEPIL.

29.7 Inspectors Recommendations on pressure limitation on the onshore pipeline.

I recommend that ABP should request SEPIL to re examine design of the pressure limitation proposed at Glengad

1. SEPIL should discuss the concept of a vent at Glengad as a measure to protect against upstream pressure at landfall rising above a preset value. SEPIL should provide information on the reliability of the shut down subsea valve system proposed for the wellhead and manifold offshore
2. SEPIL should discuss the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and should provide full justification for the proposed design as submitted.

29.8 Security of Supply

The Commission for Energy Regulations (CER) together with the Utility Regulator Electricity Gas Water in Northern Ireland have jointly published a paper entitled Common Arrangements for Gas (CAG). There is a copy of this paper in Appendix 7. The paper summarises a consultative process with Gas industry and contains an action programme for the Regulatory Authorities (RA). It is intended that an all island charter will be further developed by implementing regulations in both North & South.

Network Security and Network Security standards are aspects of the security of supply that will be dealt with in forthcoming regulation. Mr. Wright has recommended that security of the LVI at Glengad be reviewed and that a higher level of security be adopted than is proposed by SEPIL in the proposed development as now set out in the EIS.

In light of the CAG and of the impending regulation on Network Security and Network Security Standards I recommend the following condition be applied to any permission for the proposed development.

29.8.1 Inspectors Recommendation on Security

SEPIL shall comply with the security of Network Standards as determined by DCENR (or CER as appropriate) in respect of the facilities at LVI in Glengad. DCENR will regulate the operation of the proposed development in the first instance (CER will eventually likely take over this regulation).

Reason: (1) In the interest of protecting the Health & Safety of the public.
(2) In the interest of protecting and securing supply.

Chapter 30 Safety Part 4: Summation of Pipeline Safety Assessment

30.1 Introduction

30.1.2 Information Provided by SEPIL

Mr. Wright has prepared the following table to summarise the information available (Mr. Wrights Table 5). Mr. Wright has included a column 9 adding 50 m to each escape distance to make an allowance in an attempt to approximate the distance at which a person would be safe. Mr. Wright has used the consequence impact maps (4 of which are attached) on which to base the data in the table.

I note that Mr. Crosswaite, who prepared the QRA, in evidence on behalf of SEPIL indicated he would not wish to hazard a guess at what this extra distance might be but it would be of the order of 50 m. I understand that the actual distance can be calculated. I believe this distance should be calculated by SEPIL.

30.2 Mr. Wrights Findings

- 1) SEPIL used PD8010-3 to define the boundaries of Individual risk, which are above 1×10^{-5} Intolerable, between 1×10^{-5} and 1×10^{-6} Tolerable (ALARP) and below 1×10^{-6} broadly acceptable.
- 2) The maximum individual risk per year to the Glengad residents at 246m away from the pipeline is 1×10^{-5} [Long term one year upset]. If this condition only occurs for a period of 10 days then the risk drops to around 5×10^{-6} which is classified as broadly acceptable by PD8010-3.
- 3) SEPIL have not provided societal risk for Glengad.
- 4) SEPIL predicted only rupture failures of the pipeline will affect dwellings, jet fires have no effect.
- 5) At Glengad between 1 and 7 dwellings would be affected by a rupture possibly rising to between 3 and 8 dwellings in certain circumstances (if no shelter is found).
- 6) The maximum individual risk per year to the Ross Port residents at 140m away from the downstream pipeline is around 7×10^{-11} , which is classified as no restrictions by PD8010-3.
- 7) Including a low failure frequency due to ground movement of 9×10^{-8} increases the individual risk to 1×10^{-8} at Rosspoint which is classified as no restrictions by PD 8010-3.
- 8) The Societal risk to the residents at Rosspoint is 5.82×10^{-10} per km/year and is well below the risk criterion line in PD 8010-3 and IGEN TD/2
- 9) At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected by pipeline rupture depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.
- 10) At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.
- 11) At Ross Port – pipeline North Crossing point, 4 dwellings could be affected by pipeline rupture depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings
- 12) Mr. Wright notes that the risks above quoted are predicted by a model which only recognises rupture from third party interference on thick wall pipe with an option of incorporating a low failure frequency due to ground movement.

TABLE 5 TYPE OF FAILURE – PRESSURE RELATIONSHIP TO BURNING / ESCAPE DISTANCES									
LOCATION	TYPE OF FAILURE	MAP REFERENCE	PRESSURE BAR	MAX BURNING DISTANCES (M)	MAX ESCAPE DISTANCE (M)	NEAREST DWELLING (M)	NO OF DWELLINGS AFFECTED	ADD 50M TO ESCAPE DISTANCE	NO OF DWELLINGS AFFECTED
GLENGAD LVI	31mm Hole	Area 1-1	100	57	70	246	0	120	0
		Area 1-2	144	67	81	246	0	131	0
		Area 1-5	345	103	126	246	0	176	0
	Rupture	Area 1-3	100	144	247	246	1	297	3
		Area 1-4	144	171	290	246	2	340	5
		Area 1-6	345	230	445	246	7	495	8
ROSS PORT PIPELINE BAY SIDE	31mm Hole	Area 2-1	100	57	70	140	0	120	0
		Area 2-2	144	67	81	140	0	131	0
	Rupture	Area 2-3	100	144	247	140	14	297	18
		Area 2-4	144	171	290	140	18	340	20
ROSS PORT PIPELINE BOG SIDE	31mm Hole	Area 3-1	100	57	70	140	0	120	0
		Area 3-2	144	67	81	140	0	131	0
	Rupture	Area 3-3	100	144	247	140	3	297	7
		Area 3-4	144	171	290	140	5	340	13
ROSS PORT PIPELINE NORTH CROSSING	31mm Hole	Area 4-1	100	57	70	259	0	120	0
		Area 4-2	144	67	81	259	0	131	0
	Rupture	Area 4-3	100	144	247	259	0	297	5
		Area 4-4	144	171	290	259	4	340	11

30.3 The Inspectors Assessment

1. DCENR through The Chief Technical Adviser advised the OH that TAG had completed its examination of the proposed development and that TAG had advised the Minister that there was no reason for the Minister not to approve the consent, under Section 40 of the Gas Act 1976, as far as the brief of TAG was concerned.
2. The Chief Technical Adviser also indicated that in those countries where the oil and gas industry was fully developed that the safety case for a pipeline would be available at the design stage. That process is not being followed in the case of the Corrib scheme. The detailed documentation required by DCENR in the Corrib scheme is related to the particular phase being approved at the time. DCENR will require safety case documentation when Corrib reaches phase 7 final commissioning and approval to begin production of gas. However DCENR expect that when responsibility for upstream pipeline is transferred to CER that the safety case requirement at design stage will then be applied.

3. Land use planning consideration

I find that advice is not available from HSA because gas pipelines are outside the remit of HSA. Accordingly ABP needs to establish an objective criteria for itself so that it can take an informed decision on the impact of the pipeline on potential development of adjacent lands. In my view the best way to do this is to request the applicant, SEPIL, to submit information based on the UK HSE model which will predict the inner zone (1×10^{-5}), middle zone (1×10^{-6}) and outer zone (0.3×10^{-6}) for the pipeline's entire route. These contours can then be used to assess the impact of the Corrib pipeline on the land use adjacent to the pipeline.

4. Pipeline Routing Considerations

- (a) I find that the 140m minimum distance from the pipelines to inhabited dwellings is a distance that in itself does not relate to a standard and just happens to be the distance to the nearest house after SEPIL have taken Houses number 22 and 23 out of service as habitable dwellings for the duration of the operating life of the pipeline.

- (b) I note again Advanticas opinion

“The most cautious approach would have been to estimate the maximum hazard range for the worst case event, so that in the highly unlikely event of a pipeline failure, the proximity distances would be sufficient to prevent any significant level of harm to residents or damage to property.”

- (c) I note that SEPIL in their design are satisfied that the route chosen does not pose a risk. SEPIL have pointed to the following factors in the overall design and operation of the pipeline to justify that the pipe is safe.

- 1) The thick pipeline with a design factor of 0.3
- 2) The tunnel system proposed under the bays
- 3) The stone road method

- 4) Construction management to ensure high standards of CP protection and weld and pipeline construction
- 5) The testing proposed for the pipeline
- 6) The integrity management plan for operation of the pipeline.

SEPIL have submitted a QRA which complies with PD 8010-3 to substantiate their view that the risk levels on this pipeline are very low and within acceptable standards.

- (d) I find however that part of the onshore pipeline has a design factor of 0.7, the offshore-onshore section from HWM to the downstream LVI.

5. Hazard Distance

SEPIL provided Consequence Impact Contours giving Building Burning Distance (BBD) and Escape Distance for the different pressures 100bar(Rossport and Glengad and Aghoos), 144bar (Rossport and Glengad and Aghoos)and 345bar [Glengad only].

These distances are useful and enable objective distances [in accordance with code] to be determined for locations where intensity of radiated heat reaches 25kW/m² in the case of BBD and 6kW/m² in the case of Escape Distance.

What is required in addition however is the distance from the pipeline to a safe location. SEPIL in evidence, did indicate that this could have been provided but that it was considered by them best to provide distances that were related to defined parameters in the codes – BBD and Escape Distance.

I recommend that SEPIL be requested to provide safe location distance contours for the complete pipeline.

6. I accept Mr. Wrights opinion that the Corrib pipeline is unique in Ireland, it is not the same as treated dry gas. I accept his opinion that there are additional factors over and above dry gas pipelines factors, as outlined in Section 8 of his report, which could give rise to failure in the Corrib pipeline. The factors discussed by him are external corrosion and CP system, internal corrosion, formation of methane hydrate, erosion, geotechnical stability of the pipeline, construction defects, estuary mini-tunnelling, 3rd party intentional damage, umbilical failure, long term management of the pipeline.
7. I am not satisfied on the basis of all the information to hand to complete my assessment of the safety of the pipeline. I am not satisfied to recommend or not to recommend at this point to ABP that the pipeline does or does not pose a risk to the health and safety of the public in the area.

8. I am satisfied that the further information required can be set out clearly and that receipt of the information will enable the assessment of the safety of the pipeline to be completed.
9. Risk Levels
- (a) The attached figure 6 is taken from the E.I.S. Appendix Q7 and shows an individual risk contour profile prepared by DNV for the pipeline at 100 bar. This is useful as it presents the risk levels that would normally apply at operating pressure or close to operating pressure. SEPIL have indicated that the pipeline will operate at between 90 bar and 110 bar over the first 3-4 years after which the well head pressure will begin to decay and operating pressures will reduce.
 - (b) I am satisfied that the risk levels presented by Mr. Wright in his conclusions can be referenced to the additional information provided in a submission at the OH¹⁴³.
 - (c) There is uncertainty in the information provided by SEPIL regarding risk levels at Glengad

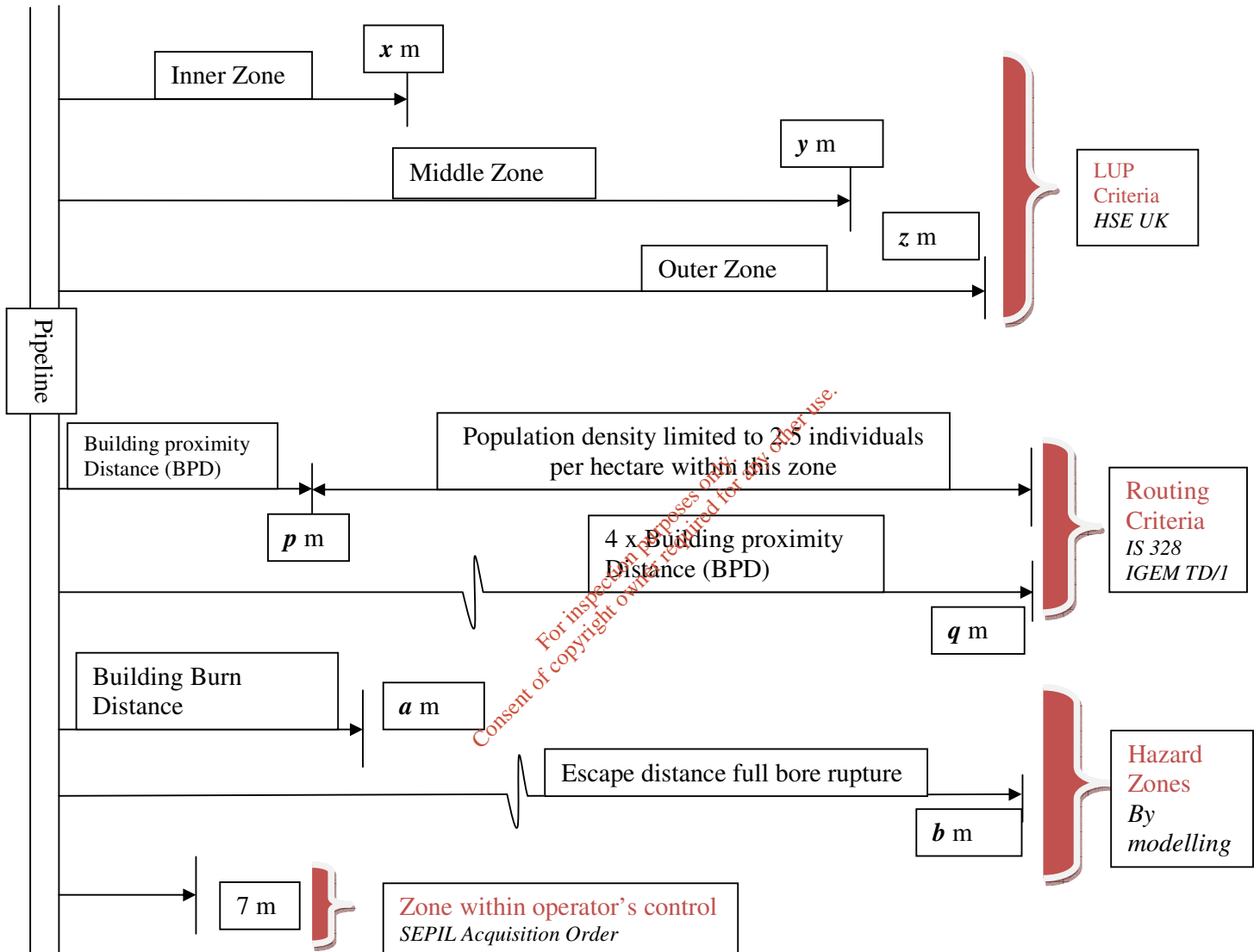
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¹⁴³ [DRN OH 75]

30.3.3 How should the safety of the pipeline be evaluated?

I have prepared the following diagram to illustrate the information and clarity required for the Corrib Gas Pipeline so that a fully informed decision can be made about the pipeline.¹⁴⁴

LUP zones versus BPD and Easements



The diagram illustrates a number of important and different systems of evaluating the consequence zone along gas pipelines. Each of the different systems provide guidance and a recognised method to assist decision making regarding the safety, risk, restrictions, consequences of failure along gas pipelines.

¹⁴⁴ IGEN use a similar type diagram in examples of how TD/2 & PD 8010 part 3 are applied.

30.4 Explanation: LUP versus BPD and Easements terms.

The following sets out how these terms are used within the Gas Industry.

30.4.1 Land Use Planning (LUP) Criteria

A land use planning advice system operates in the UK whereby a Planning Authority (PA) is obliged to refer to HSE UK for advice when applications for development in the vicinity of gas pipelines are made to the PA. The HSE use a model which calculates the inner zone, middle zone, outer zone lines giving the distance from the pipeline at which risk levels of 1×10^{-5} , 1×10^{-6} , 0.3×10^{-6} per km of pipeline per year exist. [HSE UK Risk Levels] The identification of such zones for the Corrib pipeline would be useful in determining the impact of the pipeline on the development potential of adjoining lands. It is my understanding that such contours could be provided by SEPIL using the same model. ABP would then have an objective method of reviewing the impact of the proposed pipeline on adjoining lands and whether or not the pipeline represented a potential sterilization of any lands or a status where planning considerations would advise against or would not advise against granting any planning permission for development in proximity to the pipeline. At the moment the situation is that SEPIL advise that there is no difficulty in development in proximity to the pipelines. SEPIL propose to acquire rights over land for a permanent way leave within which the landowner is restricted and cannot develop (14m wide in agricultural land and 20m wide in peat lands). At the moment Mayo Co Co does not have a policy for such development in proximity to gas pipelines.

Inspectors Conclusion

In my view in the absence of a risk based methodology in Ireland ABP should adopt an objective standard itself for risk levels in proximity to gas pipelines. I believe the UK HSE standard is acceptable and suitable and accordingly I recommend this to ABP that it be adopted for assessment of the Corrib Onshore Pipeline

30.4.2 Routing Criteria

This uses the building proximity distance (BPD). In the case of downstream processed gas these can be derived simply from Figure 2 in code IS 328:

“Minimum distance from normally occupied buildings of pipelines generally designed to operate at a design factor not exceeding 0.3 or steel sleeved”

This routing criterion has proved satisfactory when applied to pipelines below 100 bar pressure and pipelines carrying dry processed gas. While a footnote to figure 2 indicates that extrapolation of the figure can be used for higher pressures there is no clarity provided on how to factor in upstream gas which is wet and untreated. There is also the question of uncertainty using extrapolation to 144 bar and 345 bar from a figure prepared for maximum pressure of 100 bar. Advantica in their report and Mr. Wright in his report draw attention to this uncertainty. The building proximity distance requires a complex calculation that includes an element related to the frequency of failure risk.

It is worth noting that the use of BPD is long standing in the UK. A considerable degree of experience of many kilometers of treated gas pipelines, some in service over 30 years, has been built up. That database is not being questioned in this report. The issue for the Corrib Pipeline is that very few pipes carry wet gas onshore – in evidence it was accepted that there are no other such pipes in Ireland or the UK. As a result there is very little data to provide confidence that use of the codes, which were developed for treated dry downstream gas, is acceptable for decision making for the Corrib pipeline. The second issue of course is the very high pressure at which SEPIL wish to operate the Corrib pipeline.

Inspectors Conclusion

In my view there is a clear difference in opinion between SEPIL and Mr. Wright on what the proximity distance is for Corrib Onshore Pipeline. The issue of differences are three (1) The suitability of the Code IS 328 which seems to allow extrapolation of the Figure 2 from 100 bar up to 345 bar and indicates 3 m as the minimum distance from normally occupied buildings. (2) The fact that a thick pipe is being used seems to imply that certain failure modes can now be ignored in the analysis. (3) The untreated gas has more risks associated with failure than downstream treated and dry gas.

30.4.3 Hazard Zones

These are derived from the modelling carried out on the pipeline and on the failure conditions. Mr. Wright requested and received hazard zone contours for the pipeline.¹⁴⁵ Four hazard consequence maps are attached showing the worst case hazard lines for Glengad and for the Rossport houses.

Building Burn Distance can be calculated as a distance from the pipeline within which timber will absorb sufficient thermal radiation to spontaneously combust [25 kW/m^2] assuming a long exposure (of the order of one hour)

Escape Distance can be calculated as a distance from the pipeline where thermal radiation is at a level of 6 kW/m^2 and a person can move away from an event.

SEPIL was asked at the OH to supply these hazard lines for the pipeline. These were supplied¹⁴⁶ and they provide very useful information. These consequence maps, as SEPIL refer to them; provide clear pictures of the consequence of failure of the pipeline. It has to be noted however that a person is not necessarily safe at the escape distance. The escape distance represents a distance at which 6 kW/m^2 thermal radiation is absorbed.

One further hazard line is required as outlined above, that is the outer boundary hazard line. This line would indicate the distance from the pipeline at which a person would be considered safe.

Inspectors Conclusion

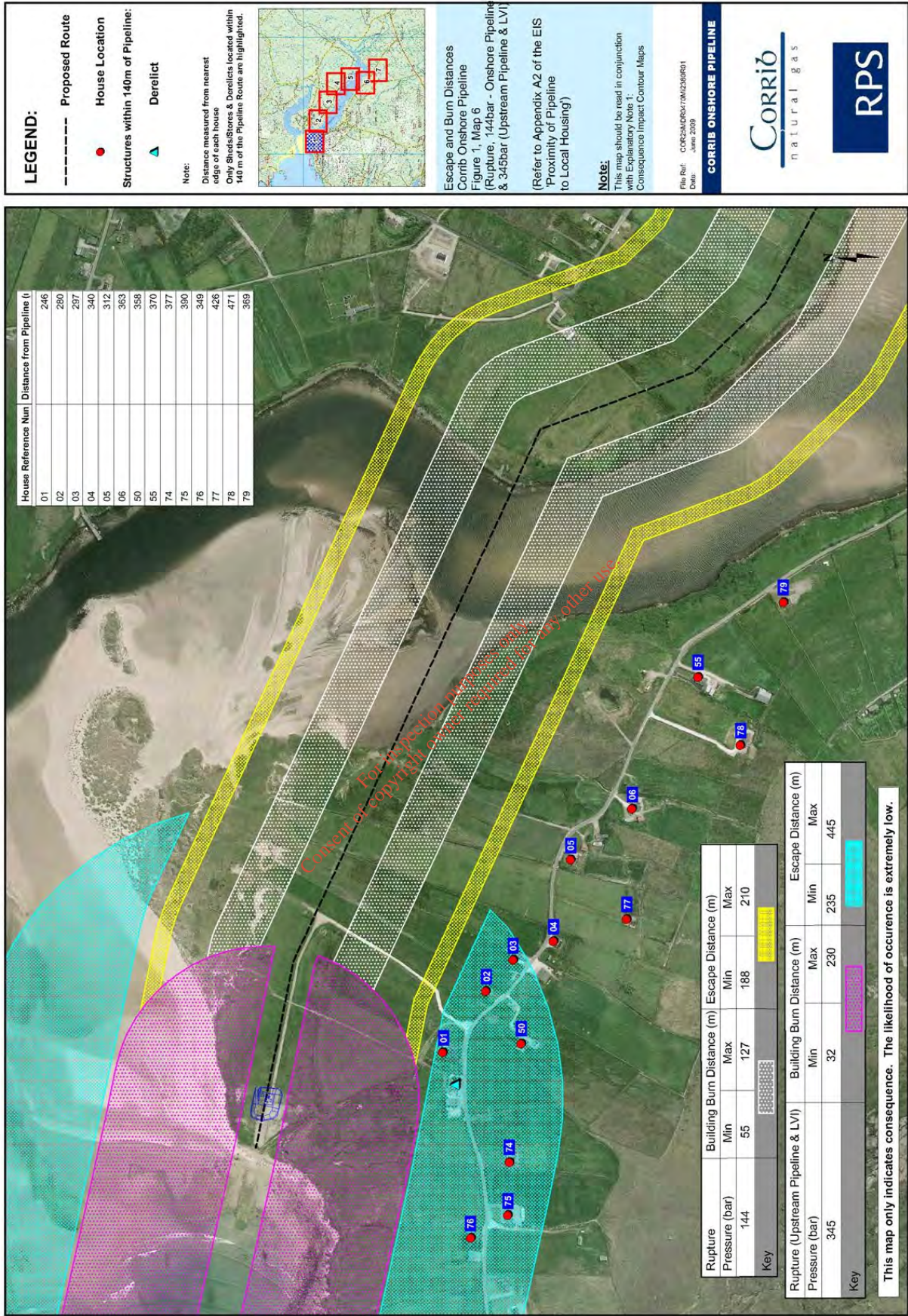
1. The hazard zones provided are very clear and useful in understanding the consequences of a failure in the pipeline.
2. The hazard contour maps do not show the distance from the pipeline at which a person would be safe. That can also be calculated. In my view SEPIL should be asked to supply this.
3. There is a strong argument from observers that the pipeline route is such that it introduces a risk to their safety and the safety of their homes from the proposed development.
4. The codes recognise different areas Type R (Rural < 2.5 per Ha) DF 0.72, Type S (Urban > 2.5 per Ha) DF 0.3, Type T (Central Towns and Cities) generally pressure limited to 16 bar. The codes then use the design factor to provide a greater margin of safety in more densely populated areas. SEPIL have a strong argument that the 0.3 design factor proposed for the pipeline in what is essentially a rural area (population < 2.5 per Ha) actually provides a high margin of safety in the pipeline design.

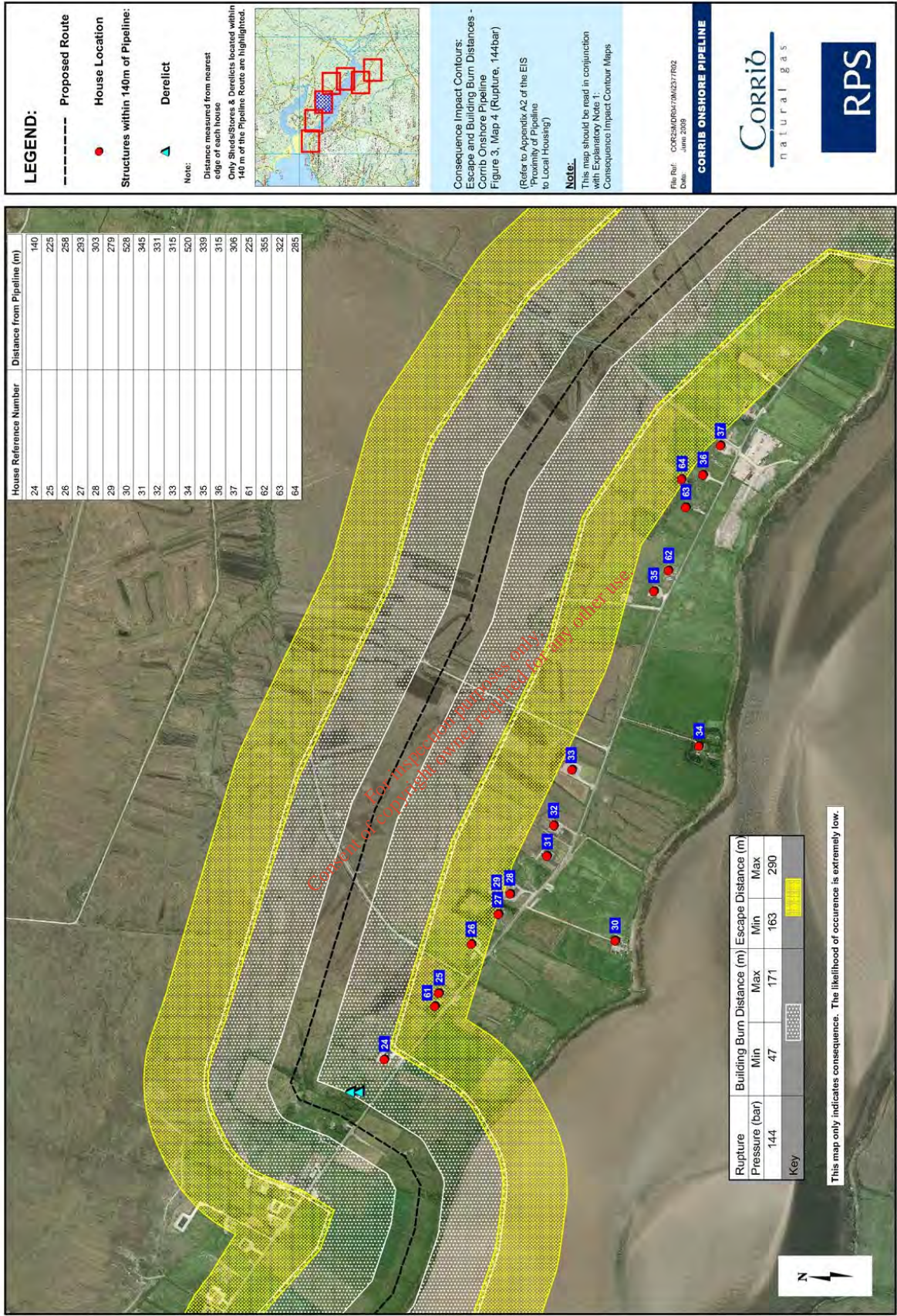
¹⁴⁵ [DRN OH 77, OH 108]

¹⁴⁶ [DRN OH 77, OH 108]

5. Advantica in their report indicated that the most conservative approach to design would be to establish the maximum hazard distances and then route the pipeline accordingly so that it did not pose a risk to the dwellings. They did accept that such an approach was only possible in remote areas.
6. In my view that is the standard that should be adopted for the Corrib Onshore Pipeline. I believe ABP should adopt that standard for this upstream onshore pipeline. Once that standard is clearly agreed then in my view routing and design (configuration controls and MAOP as well as design pressure) become very clear.
7. In the event that ABP accept point 6 I believe there is a reasonable possibility for SEPIL to reconfigure the pipeline at Glengad on the existing route to reduce the level of risk there to that acceptable standard. I also believe it will be possible to re-route the pipeline out of Rosspoint village to an alternative route that can meet the acceptable standard. I believe the route as proposed on the South of Sruwaddacon Bay will prove acceptable to that standard.

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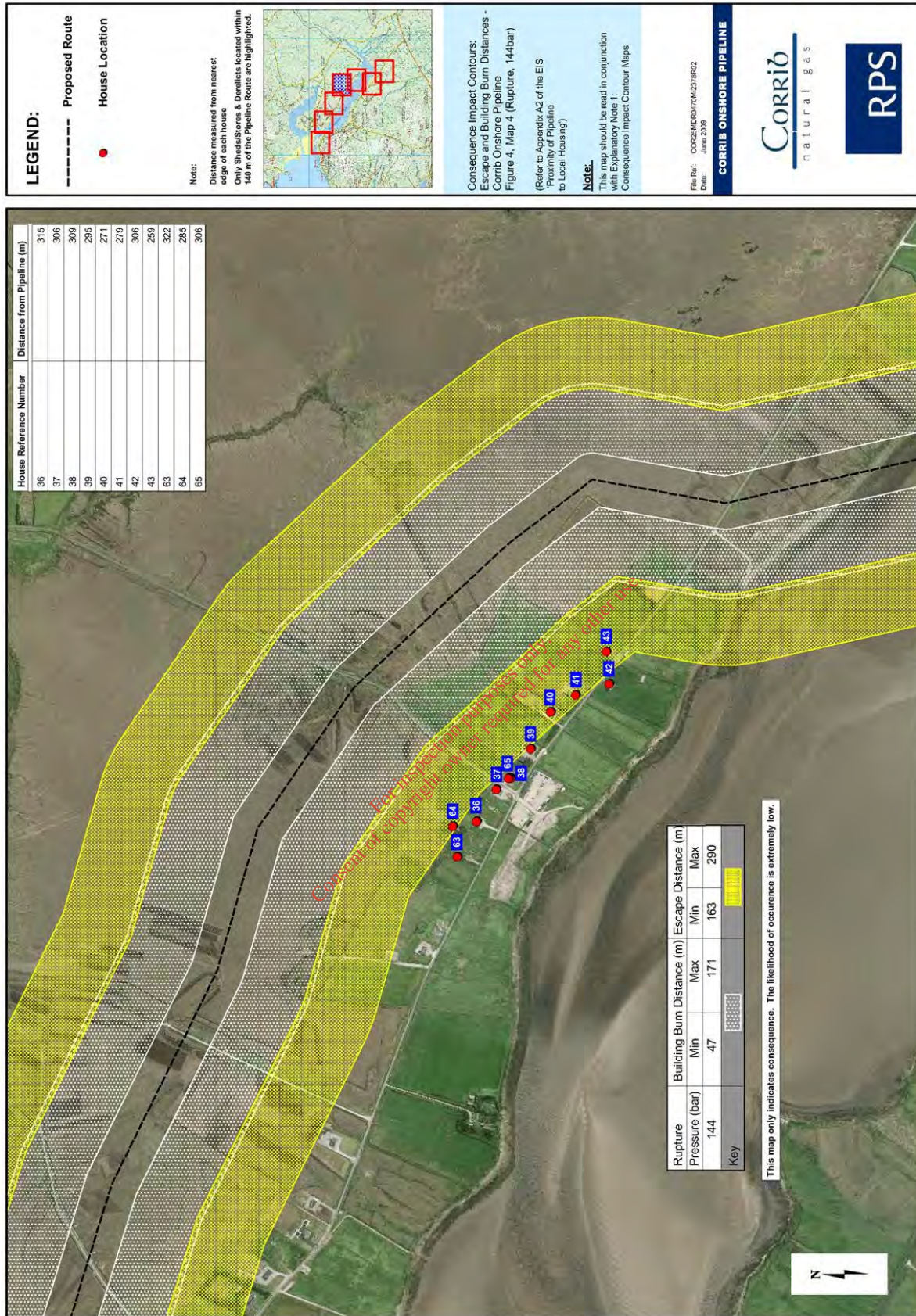
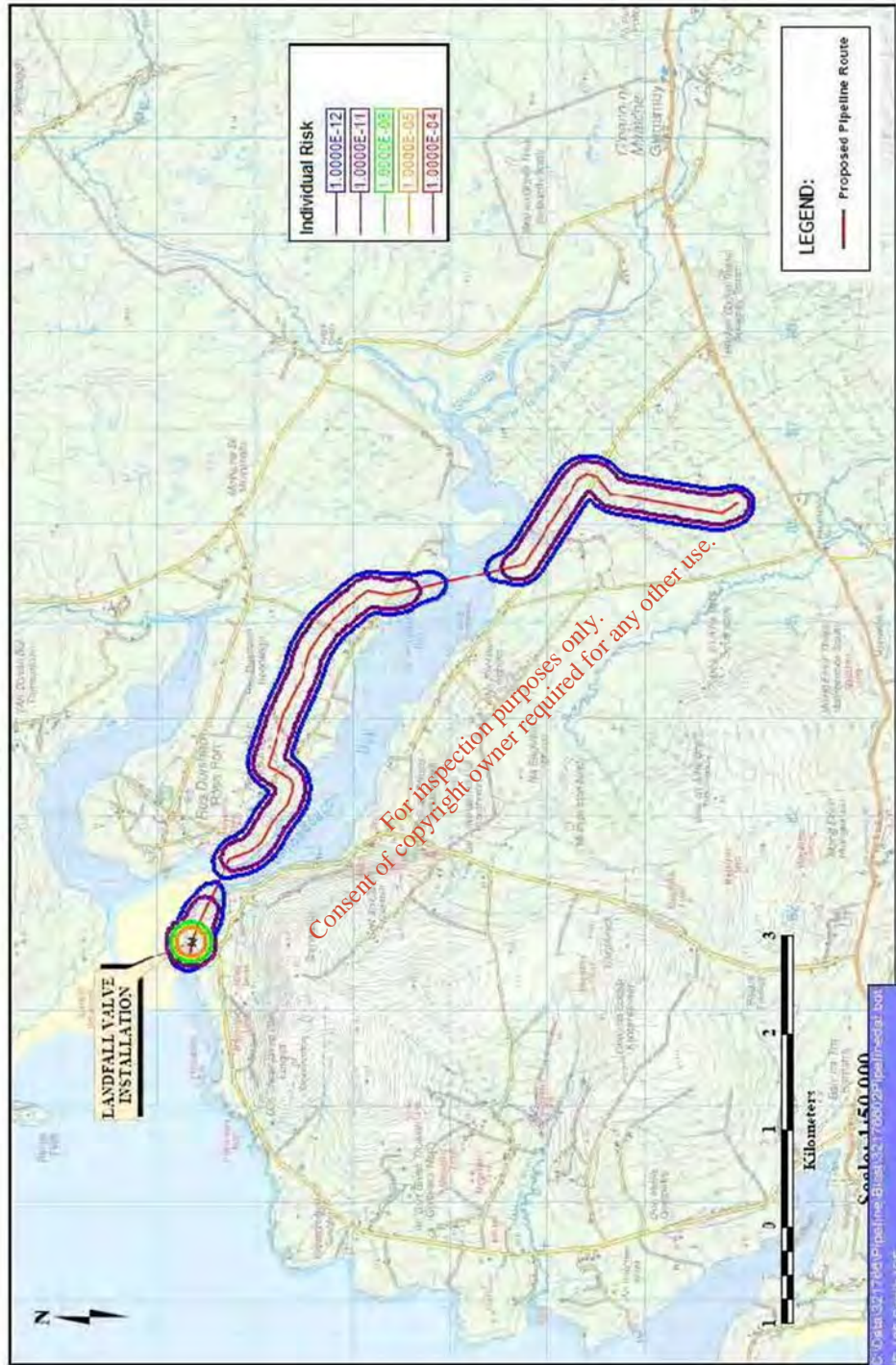


Figure 6 Individual Risk Contours (100bar, Corrib specific frequencies)



MANAGING RISK

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30.5 Inspectors Recommendations

30.5.1 Further Information Required

Prior to making a decision on this application it is recommended that ABP should seek further information from SEPIL as follows:

- a) Clarify the code requirements and pressure test requirements for the pipeline chainage 83 + 390 (HWM) approx to 83 + 470 (downstream weld at LVI)
- b) Provide confirmation that the design of this section of pipeline meets the requirements set down by TAG
- c) Provide an integrated set of design documentation in the form of a revised Appendix Q. The documentation to integrate the analysis provided in incidental and individual documents at the OH. The whole set to provide a transparency of the design for the complete pipeline from the HWM to terminal. This transparency to relate to the different site and design conditions along the pipeline and to relate to the codes. The design to include the analysis related to ground stability.
- d) A new QRA should be submitted which will present the analysis of risk at the different operating conditions and different locations along the pipeline route. The QRA should be site specific. The QRA should include ground movement and incorporate a database that matches the conditions of the proposed development. A sensitivity of the QRA is required which will demonstrate the range of risk that relates to any uncertainty in the database of failure frequencies for the various potential failure modes of the pipeline [for an upstream wet gas].
- e) Provide a qualitative assessment of risk, to be prepared for the different operating conditions and different locations along the pipeline route. This will provide a comprehensive assessment to include those events that cannot be easily defined mathematically.
- f) SEPIL need to submit analysis of the condition where the umbilical becomes severed and the control of the valves at the well is lost. SEPIL need to identify what conditions apply to the onshore pipeline and the risks involved in that circumstance.
- g) SEPIL should examine the concept of a vent at Glengad as a measure to protect against upstream pressure at landfall rising above a preset value. SEPIL should provide information on the reliability of the shut down subsea valve system proposed for the wellhead and manifold offshore.
- h) SEPIL should examine the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and should provide full justification for the proposed design as submitted.
- i) SEPIL should provide the hazard distances, BBD and escape distance in contours for the entire pipeline and the outer hazard line which should show the distance at which a person would be safe. A number of these have already been provided, the set of hazard maps should be completed as far as the terminal.
- j) SEPIL should provide a summary of the societal risk for Glengad.

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30.5.2 Recommendations to the Board

I make the following recommendations to the Board for consideration and decision.

1. I recommend that ABP adopt the UK HSE risk thresholds for assessment of the risks associated with Corrib Onshore Pipeline
Individual Risk Level above 1×10^{-5} intolerable
Individual Risk Level between 1×10^{-5} and 1×10^{-6} tolerable if ALARP is demonstrated.
Individual Risk Level below 1×10^{-6} broadly acceptable.

Justification

It is necessary to have a standard against which the risk levels of the proposed development can be assessed.

2. I recommend that ABP adopt a standard whereby no dwellings will fall within the hazard lines for the proposed development.

Justification

This is a high standard. This standard is justified in this instance. I am aware that the industry itself is conscious of the corporate responsibility to increase standards related to societal risk. Evidence (1) TD/2 (2009) and PD 8010 (Dec 2008) Recent standards. (2) UK HSE and UK pipeline modelling of land use planning zones. (3) Buncefield Incident Report (4) Dutch Standards are in process of being updated.

This standard will remove a threat that the proposed development poses to the dwellings of the local population. I do accept that the threat may be very low and unlikely to rise.

This is a remote area with low density population. The routing in proximity to a rural linear residential area should respect that area and should respect the reasonable expectations of that rural population that members of their families (or others) can in the future locate and live on that rural linear development on lands owned by the families involved subject to proper planning and sustainable development. The routing of this proposed development within the distance of hazard from dwellings when there are alternative routes available is not acceptable.

Implications

The implications of setting these standards will be as follows:

The UK HSE risk thresholds for gas pipelines appears to be the obvious standard to adopt, that standard will be recognised as an objective standard.

In the case of upstream pipeline if this standard applies in future it will become a design parameter for the Gas Field developer. Once a parameter like this provides some certainty I believe a developer of a gas field will be able to proceed to select the better option to bring the gas field into production that takes this parameter as well as others into account. In that way a final plan for development and the configuration will be put forward which the operator will know at least meets the routing criterion.

In the case of downstream pipelines in my view there are no implications. The experience of downstream pipelines operating for 30 years and longer is well established. Codes and tests of ruptures and test failures have been developed which provide confidence in the analysis and safety design used for these pipelines.

Chapter 31 Waste Generated

31.1 SEPIL Proposals for Waste Management

The E.I.S. contains information about wastes generated during construction of the proposed development. A description of the waste management proposed for the development is given in Section 11.7.4.2 of the E.I.S.

A licensed waste haulage company will be engaged and all wastes will be disposed of to an appropriately licensed facility. A project specific Waste Management Plan will form part of the Environmental Management Plan (EMP) for the construction of the proposed development. The following waste streams will arise from construction:

31.1.3 Non-hazardous solid wastes

Non-hazardous solid waste streams include surplus quantities of excavated peat (see Chapter 5 E.I.S. EMP 5.13.2 Section 5.5.1.1. and Volume 3 Peat Deposition at Srahmore Site and Appendix R), quantities of used stone and geo-textiles, green waste (from shrub clearance etc.), used welding rod ends, used grinder discs, waste packaging, pipe ends (short pieces remaining after tie-ins) and also 'food and domestic waste' from construction personnel. These wastes can be managed with minimum difficulty and potential for environmental impact. Paper/packaging from the x-ray films generated from radiographic examinations of pipe welds will be managed similarly to other non-hazardous solid wastes. Appendix R indicates there will be 68823 m³ of peat for disposal and 62200 m³ of stone for disposal.

31.1.4 Non-hazardous liquid wastes

Non-hazardous liquid wastes include sanitary waste (from portable lavatories/welfare facilities), water from washing/cleaning facilities, water run-off from the construction site, and water used during hydrostatic testing. Sanitary wastes are managed using contracted services to take this material away for disposal at a licensed facility. The quantities of sanitary wastes arising from the construction compounds will be directly related to the number of people on site.

Water run-off from the construction spread will be managed using basic settlement and filtration in drains and lagoons before discharge. Surface water management details were given at the Oral Hearing.¹⁴⁷ This water will be collected in a V-ditch system and taken through attenuation silt trap measures and silt control mechanism before final discharge.

Hydrostatic test water will be treated if necessary and disposed at a location to be agreed with the relevant authorities. The procedures for hydrostatic testing will be described in a method statement prior to it being undertaken. Hydrostatic tests on the pipeline will be carried out in one single test for the onshore pipeline involving approximately 1500 m³ of water sourced from the terminal. On completion of the test it is expected subject to agreement with the relevant agencies that the test water will be discharged through the outfall pipe 12.7 km offshore.¹⁴⁸

31.1.5 Hazardous wastes.

Hazardous waste streams include possible spillages of diesel (or other oil) and any associated contaminated ground. Wastes such as used absorbent granules, which will be carried with all construction plant, may only occur in the event of a spillage. This would typically involve the absorption of diesel or hydraulic fluids used in construction vehicles. There will be permanent and mobile bunded facilities for storage of materials such as diesel. Spent radio isotopes generated from

¹⁴⁷ [DRN OH116]

¹⁴⁸ [Evidence at the OH 16/6,11.49]

radiographic examinations of pipe welds will be retained by the specialist contractor and disposed of in accordance with the terms of their license from the Radiological Protection Institute.

1450 m³ of bentonite will be used and will be treated as a hazardous material. All hazardous waste will be handled by licensed contractors and ultimate disposal will be to a licensed facility as required. A Hazardous Substance Management Plan will be implemented as part of the EMP to prevent any spillages, as outlined in Sections 5.13.2 and 5.14 of the E.I.S. A Waste Management Plan will be incorporated into the Environment Management Plan for the Construction.

31.2 Mayo County Councils Recommendations on Waste

Mayo Co Co in their written submission to ABP¹⁴⁹ recommended the following conditions in respect of waste generated:

Condition No. 19 - All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following –

(d) 110% of the capacity of the largest tank or drum within the bunded area, or

(e) 25% of the total volume of substance which could be stored within the bunded area.

Reason: To prevent surface and ground water pollution.

Condition No. 20 - All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges from the areas.

Reason: To prevent surface and ground water pollution.

Condition No. 21 - The developer shall maintain on the sites for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials. The precise nature and extent of the kits shall be agreed in writing with the planning authority prior to commencement of development.

Reason: To prevent water pollution.

Waste Disposal

Condition No. 24 - No waste material, other than material being transferred to a licenced waste facility, generated on the sites during the construction phase shall be removed off the sites without the prior agreement of the planning authority.

Reason: To provide for the appropriate management of waste and in the interest of protecting the environment.

Condition No. 25 - Prior to commencement of development, the developer shall submit, and obtain the agreement of the planning authority to a plan containing details for the management of waste (and, in particular, recyclable materials) within the development, including the provision of facilities for the storage, separation and collection of waste and, in particular, recyclable materials, and for the ongoing operation of these facilities

Reason: To provide for the appropriate management of waste and, in particular, recyclable materials, in the interest of protecting the environment.

Condition No. 26 - Sanitary facilities shall be installed on the sites for the duration of the peat haulage and pipeline construction periods. All wastes generated from such facilities shall be disposed of off the sites. The facilities and method of disposal shall be to the requirements of the planning authority.

Reason: In the interest of public health.

¹⁴⁹ [DRN WS1]

Condition No. 31 - Before development commences on the sites, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, groundwater, dust and continuous noise. Such monitoring shall be carried out by the developer throughout the construction of the pipeline and LVI (to the date of commissioning of the pipeline and LVI). The monitoring plan shall, as a minimum, include-

- (a) A list of all monitoring locations,
- (b) Description and specification of equipment to be used,
- (c) The identity and qualifications of persons responsible for monitoring,
- (d) Parameters to be used,
- (e) Monitoring intervals,
- (f) Averaging times,
- (g) Proposal for the presentation of data,
- (h) Codes of practice to be used, and
- (i) Details of right of access to Mayo County Council appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee. Costs incurred by the planning authority in carrying out any necessary monitoring, monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.

Reason: In the interest of clarity, and the protection of the environment during the earth works and construction phase.

Mayo Co Co in their written submission to ABP¹⁵⁰ recommended the following conditions in respect of surface water discharges:

Condition No. 17 - All surface water discharges from the disturbed area of sites shall be channeled through settlement ponds. Prior to commencement of development, the developer shall agree with the planning authority precise details of a monitoring programme for the settlement ponds and their discharge and a maintenance programme for the ponds. Parameters to be monitored shall include –

- (b) Temperature,
- (c) Turbidity,
- (d) Dissolved oxygen,
- (e) Electrical conductivity,
- (f) Orthophosphate,
- (g) Total phosphorus,
- (h) Nitrate
- (i) Ammonia (as N),
- (j) Suspended solids

And any other parameter required by the planning authority. The frequency and methods of monitoring shall be agreed in advance of the operation of the settlement ponds with the planning authority. Any alterations to the agreed monitoring regime or maintenance programme shall be subject to agreement with the planning authority, following consultation with the Project Monitoring Committee.

Reason: In the interest of environmental protection and the proper planning and sustainable development of the area.

Condition No. 18 - Results shall be submitted to the planning authority on a fortnightly basis or at other such intervals specified by the planning authority (following consultation with the Project Monitoring Committee). All results shall be made available for public inspection within seven days of receipt.

Reason: To prevent water pollution.

¹⁵⁰ [DRN WS1]

31.3 Issues Raised by Observers

The following issues have been raised by observers;

- contamination of drinking water supply (Chapter 24 Protection of Drinking Water)
- contamination of surface waters (Chapter 43 Hydrology and Eco Hydrology)
- contamination of Estuary (Chapter 43)
- contamination of Marine waters (Chapter 43)
- environmental damage to flora and fauna from methanol spillages (Chapter 33 Umbilical)

These issues have been dealt with in the respective chapters. The peat deposition at Srahmore has been dealt with in Chapter 40 Peat Deposition Srahmore.

31.4 Inspectors Assessment

1. The E.I.S. is less than clear regarding the disposal of 62700 m³ of stone "...all wastes will be disposed of to an appropriately licensed facility..." (Section 11.7.4.4, of E.I.S. 2009). Appendix R also refers to "...stone will be left in place at the request of the landowner" (See Notes 7 attached to the table in Appendix R).
2. In evidence it was indicated that a balance of materials that could be re-used would be sought within the construction programme.
3. I believe it should be a requirement of any permission being considered for the project that the E.M.P. contain a method statement whereby the waste for disposal be minimized as part of the Waste Management Plan.
4. I also believe that stone for disposal should be the subject of a separate agreement with Mayo County Council and rather than be disposed, the stone should be reprocessed for re-use as part of that agreement, the location and function of re-use to be part of that agreement also.
5. I do not agree that stone be left in place at the request of the landowner. This would have the affect of patchwork reinstatement and would have a significant and long term impact on the visual environment. I therefore recommend that reinstatement of lands be fully carried out as part of the proposed works in accordance with details contained in the E.I.S. 2009.
6. I am satisfied with the proposals as outlined in the E.I.S. for management of waste generated during the construction project.
7. I am satisfied that the proposal to use the Environment Management Plan to detail the ongoing management of wastes is the appropriate way for this to be achieved.

31.5 Recommendations

In the event that the Board decide to grant a permission for the proposed development I recommend the following conditions

1. The surface water system for the construction site shall be redesigned to cater for a storm event of 1/100 year return frequency.
Reason: To prevent flooding the excavation works and to protect the water quality in Sruwaddacon Bay.
2. Conditions as proposed by the Mayo County Council submission:
Before development commences on the sites, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, groundwater, dust and continuous noise. Such monitoring shall be carried out by the developer throughout the construction of the pipeline and LVI (to the date of commissioning of the pipeline and LVI). The monitoring plan shall, as a minimum, include-
 - (a) A list of all monitoring locations,
 - (b) Description and specification of equipment to be used,
 - (c) The identity and qualifications of persons responsible for monitoring,

- (d) *Parameters to be used,*
- (e) *Monitoring intervals,*
- (f) *Averaging times,*
- (g) *Proposal for the presentation of data,*
- (h) *Codes of practice to be used, and*
- (i) *Details of right of access to Mayo County Council appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee. Costs incurred by the planning authority in carrying out any necessary monitoring, monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.*

Reason: In the interest of clarity, and the protection of the environment during the earth works and construction phase.

3. All surface waters to be discharged from the site shall be monitored for suspended solids and any other parameter at the required frequency as determined by Mayo Co Co the planning authority before discharge from the site.
4. Monitoring results shall be submitted on a weekly basis to the planning authority initially and this may be varied by agreement with the planning authority. The results shall be placed on public display by SEPIL within seven days of receipt of the results.
5. Prior to discharge all surface waters shall receive appropriate sedimentation and filtration. The details of sedimentation, filtration and attenuation proposals shall be agreed with the planning authority prior to commencement of the excavation. These details shall include maintenance routines for the sedimentation and filtration facilities.
6. The surface water from the construction site that lies within the Carrowmore Lake catchment shall be collected, attenuated and taken through silt settlement ponds before being discharged into the Leenamore River Catchment.
7. The detailed arrangements for management and monitoring the surface water referred to in Condition 6 shall be documented separately and agreed to in writing with Mayo Co Co.
8. The existing surface water system that serves the applicant's site and that discharges into the Carrowmore Lake Catchment shall be monitored initially on a daily basis and then at a frequency to be agreed with Mayo County Council for a full range of parameters to be agreed with Mayo County Council before commencement of construction works and continuing during the construction works. The results of the monitoring to be dealt with as at Condition 4 above

Reason: it is necessary to put in place a full monitoring programme and control system for the surface water discharge to prevent water pollution and to protect the drinking water supply source at Carrowmore Lake.

Liquid Wastes

All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following –

- (a) *110% of the capacity of the largest tank or drum within the bunded area, or*
- (b) *25% of the total volume of substance which could be stored within the bunded area.*

Reason: To prevent surface and ground water pollution.

All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges will cause pollution to ground waters.

Reason: To prevent surface and ground water pollution.

The developer shall maintain on the sites for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials. The precise nature and extent of the kits shall be agreed in writing with the planning authority prior to commencement of development.

Reason: To prevent water pollution.

Waste Disposal

- 1) The Applicant shall include a waste minimisation plan in the EMP for the solid waste emanating from the construction works site.
- 2) The Applicant shall enter into an agreement with Mayo Co Co regarding the disposal of the estimated 62,200m³ of stone from the site. The agreement shall provide for the storage and/or reprocessing if necessary of the stone for appropriate reuse.

Reason: To minimise waste arising from the proposed development.

No waste material, other than material being transferred to a licenced waste facility, generated on the sites during the construction phase shall be removed off the sites without the prior agreement of the planning authority.

Reason: To provide for the appropriate management of waste and in the interest of protecting the environment.

Prior to commencement of development, the developer shall submit, and obtain the agreement of the planning authority to a plan containing details for the management of waste (and, in particular, recyclable materials) within the development, including the provision of facilities for the storage, separation and collection of waste and, in particular, recyclable materials, and for the ongoing operation of these facilities

Reason: To provide for the appropriate management of waste and, in particular, recyclable materials, in the interest of protecting the environment.

Sanitary Waste Facilities and Management

- 1) Sanitary facilities shall be installed in the compounds and on the site of the construction works and on the site of the peat disposition area for the duration of the construction project. All waste generated from such facilities shall be disposed of by a licenced waste contractor to an appropriate approved treatment works. The facilities provided, the transportation of the sanitary waste and the disposal, shall be agreed with the planning authority, Mayo County Council.

Reason: In the interest of public health.

- 2) All sanitary facilities on site shall be managed effectively to ensure that no nuisance and no discharge or pollution arises from the use, operation transport and movement of these facilities to and from the site and what in operation on the site.

Reason: In the interest of public health

Chapter 32 Outfall Pipe

32.1 Overview

The composition and purpose of the outfall pipe is described in Section 4.3.3. of the E.I.S. as follows...

“A 254mm (10 inch) diameter water outfall pipeline made of High Density Polyethylene (HDPE) will be installed in the same trench as the onshore gas pipeline and services umbilical (see Figure 4.1 and Figure 4.3). The purpose of this pipeline is to transport treated surface water run-off from the process area of the Gas Terminal to a discharge location approximately 12.7km from the landfall in accordance with the terms of the Integrated Pollution Prevention and Control Licence for the Gas Terminal.”

Section 4.3.2. of the E.I.S. 2009 outlines that a services umbilical link between the Gas Terminal and the offshore subsea facilities will be installed with the onshore pipeline. The umbilical will contain water discharge lines to transport the treated water produced from the Gas Terminal for discharge at the subsea manifold. Figures 5.4, 4.1 and 4.3 in the E.I.S. 2009 show the relative position of the outfall pipe and umbilicals within the overall gas pipeline trench configuration. In the event that the water outfall pipe leaks, water will be released into the pipeline backfill material. Due to the limited flow within the outfall pipe the E.I.S. states that this effect will be very local and will have no adverse effect on the stability of any part of the pipeline system.

32.2 Issue of Contention

It is contended that SEPIL in making an application to ABP for the proposed development are manipulating the planning system in a manner that will deprive the members of the public from their right to participate in the process. The point relates to the discharge through the 10” outfall pipe from the terminal. The point being made is that changes to a configuration involving the outfall pipe should not take place except in accordance with procedures i.e. planning application process or IPPC application process and which processes would allow full public participation.

I cannot vouch for the following information but I present this historical information as background to the issue that now arises; Originally as I understand the situation this pipe was to take process water from the terminal and rainwater/surface water from the terminal and discharge these offshore. The foreshore license [2002 consent] specified that the discharge pipeline terminate not less than 12km from the landfall and outside any European Site. As I understand it, that configuration was the basis of the IPPC license granted for the Terminal. Circumstances have changed now and as I understand it, an agreement has been reached with Erris fishermen and accordingly an alteration to the original discharge configuration is now proposed to be adopted.

The facts now are;

1. 16.GA.0004 Application proposes the construction of that section of the 10” outfall discharge pipe that lies onshore which will discharge rainwater and surface water from the terminal site 12.7km offshore i.e. only the onshore part of that pipeline is relevant here.
2. 16.GA.0004 separately proposes that an umbilical core or cores will be used to discharge process water from the terminal site out to the wellhead. Only the onshore part of the umbilical is relevant here.
3. Any matters relating to the equipment at the terminal, and related to discharges from the terminal are matters that relate to the permission for the terminal and which relate to the IPPC license for the terminal. Such matters are not relevant here.
4. Where SEPIL want to make changes from the approved designs or licensed facilities it is a matter in the first instance for SEPIL to comply with legislative requirements and have such changes considered for approval or license accordingly.

5. Where an observer is of the opinion that SEPIL are not taking the correct course of action then the appropriate action for the observer is to approach the planning authority or the EPA and set out the position.
6. It is not a relevant matter for consideration here that a new IPPC license may be required before the proposed configuration of the outfall pipe and proposed discharge of process water through an umbilical core or cores as set out in 16.GA.0004 can be implemented.¹⁵¹
7. The facts of the proposed outfall pipe configuration are before ABP for decision. I am satisfied that the development proposed is clearly set out in Section 4.3.2. and Section 4.3.3. of the E.I.S. 2009.
8. As part of the proposed development there will be a surface water pipe collecting rainwater at the LVI and discharging out through the cliff face of the site through the High Water Mark and discharging in the foreshore.(Section 4.3.4 EIS 2009)
9. It is proposed to carry out a hydrostatic pressure test on the completed pipeline. It is proposed to source the water from the water supply at the Terminal. The evidence presented at the OH indicated that subject to agreement with the appropriate authorities it is likely that the outfall pipe will be used to discharge the test water at the discharge 12.7km offshore.

32.3 Inspectors Assessment

1. I have examined the proposals contained in E.I.S. and the supplementary information provided at OH. I am satisfied that there are likely to be minimal if any impacts on the environment that will arise as a result of the proposed outfall pipe. I am also satisfied that there will be no impact on the environment arising from the proposed surface water drainage pipe from the LVI.
2. I have no objection to the use of the outfall pipe for the discharge of the water from the hydrotest on the onshore pipeline.

32.4 Inspectors Recommendations

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

Outfall discharge

1. Any discharges through the outfall type shall be in accordance with the IPPC licence (P0738-01) granted by the EPA or any revision that may be granted to such licence.
Reason: To ensure that an adequate system of control will apply to any such discharges.
2. The surface water discharge pipe at the LVI shall not be used for any other purpose than the discharge of surface water from the LVI site.
Reason: To Protect the environment and to prevent any contamination from being discharged.

¹⁵¹ [DRN OH40 Page 5-6 as marked]

Chapter 33 Umbilical

33.1 Introduction

1. The umbilical runs from the Terminal to the wells offshore. There are three umbilical's onshore as far as the LVI where these are connected to one combined offshore umbilical.
2. Figure 4.3 in E.I.S. shows the details. Umbilical number 1 and umbilical number 2 are similar 81mm diameter, each contains 6 separate conduits, 2 methanol lines, 2 hydraulic lines and electrical cables. The third umbilical is smaller 62mm diameter and contains an electrical cable and two conduits. These conduits were apparently spare conduits originally, and now it is proposed that they will be used to bring produced water from the Terminal out to the wells offshore where the process water from the Terminal will be discharged.
3. The tubing carrying methanol, hydraulic fluid and produced water are super duplex stainless steel. The hydraulic fluid is water/mono ethylene mixture Castrol Transagua HT2 which will operate at pressures of 210 Bar and 610 Bar. The chemical supply line contains both corrosion inhibitor and methanol.
4. The umbilical is factory tested to one and a half times its design pressure. Samples have been burst tested, and a minimum of two times design pressure has been achieved.
5. A fibre optic control cable and an electrical control cable will also be laid between the Terminal and the LVI.
6. The offshore umbilical will be laid in 2010. As part of the 2009 offshore pipe pull in construction, a sleeve pipe for the umbilical will be laid onshore in 2009.

33.2 Issues Raised by Observers

- Concern regarding the laying of electrical cables alongside the gas pipeline.
- Concern regarding the high pressures in the umbilical conduits.
- Concerns regarding the change whereby it is now proposed to use the umbilical to discharge process water offshore at the subsea manifold.
- Concern regarding the environmental effects and hazard to the community from a methanol or ethylene glycol spillage.
- Concern regarding storage/corrosion of the umbilical cable itself to date.

33.3 SEPIL's Response

SEPIL in response to concerns raised made the following points:

- On the Galway - Dublin BGE pipeline one of the factors involved in Route Selection was the power lines with HT voltage at 110 KV. Such power lines parallel to gas pipelines could cause electromagnetic interference to Cathodic Protection [CP] protection system on the pipeline.
- SEPIL do not expect any effect on the CP system at Corrib because of the electrical cable being laid within the umbilical parallel to the gas main. This is because the voltage will be low 1 KV and the cables will be screened with metallic foil. The CP system will be checked regularly to ensure the protection is provided and working effectively.
- High pressure tests will be carried out on the umbilical cores. SEPIL indicated that a leak detection system will operate on the methanol lines. SEPIL indicated that in the unlikely event that all three umbilicals became severed and then a maximum 18.2 m³ spillage would occur. This is based on detection and shut down response of 1 hour. In such an event, the spillage would be mopped up once located, and would be biodegraded if the leak occurred on land or dispersed and diluted in water. SEPIL indicated that there would be some risk to ground water source in the vicinity of such leakage. It was indicated that methanol posed little or no risk in the marine environment.
- SEPIL indicated that the change in discharge method proposed for the process water from the Terminal came about as a result of an agreement with fishermen representatives.
- SEPIL indicated that a maximum spillage of 8.8 m³ of methanol could occur based on 1 hour detection and shut down. It was further indicated that each umbilical conduit can be shut down separately. That in the event of a methanol fire following a spill that at 35m distance a heat radiation level of 6kw/m² would be experienced. That is considered a safe radiation level for escape purposes. That in such an event the distance would reduce to 14m as the flow decays. This is expected to happen within a couple of minutes as the methanol is an incompressible liquid. [DRN OH49 Umbilical Leak was provided to OH by SEPIL as additional information].
- Concern regarding umbilical storage and corrosion. SEPIL provided DRN OH110 which summarised a technical paper on corrosion inhibition in gas pipelines. SEPIL have developed a technique and accuracy in injection technique which provides for inhibitor availability 99% of the time rather than the previously used method based on inhibitor efficiency. The summary paper indicated examples of low corrosion rates achieved using the inhibitor available methodology.

DRN OH114 submitted by SEPIL indicates that the maximum length of umbilical relates to the capacity of the laying vessel for size and weight. In the case of weight, the number of conduits within the umbilical determines the weight. It is considered that for Corrib type umbilical specification, 150km is the potential limit of length of umbilical possible. SEPIL indicated that the umbilical is stored in Norway for the Corrib project and SEPIL do not have concerns regarding corrosion of the cores during storage.

33.4 Inspectors Assessment

1. I am satisfied sufficient information is available in E.I.S. and in the additional information provided at the OH for the assessment.
2. I am satisfied that the tie back technology whereby umbilical control is provided for the operation of the wells and the injection of corrosion inhibitor and methanol into the gas stream at the wells has been used widely by Shell in tie backs to production platforms, and tie backs to land based Terminals. This is not a new or untested technology.
3. The umbilical itself is an integral part of the technology chosen for development of the Corrib Gas Field and in effect is an integral part of the operation of the onshore gas pipeline.
4. I am satisfied that in the answers provided, that SEPIL were able to address the concerns raised by the observers regarding the umbilical's.
5. Advantica is their report recommended "that a full technically thorough reliability analysis be carried out on the subsea pressure control and isolation systems specified in the field design" [Advantica Section 5.5.2]. SEPIL have indicated in the E.I.S. Appendix Q8 that this has been done.
6. Advantica also considered the umbilical in Section 4.8.3. and indicated that working procedures for the maintenance or repair of the umbilical are required. SEPIL have set out the response to Advantica's requirement in Appendix Q8. SEPIL also indicate that the exact location of the umbilicals will be recorded as constructed and that procedures for repair and maintenance of the umbilical will be described in detail in the PIMS.
7. Mr. Wright in his reports has considered the risks and potential of umbilical failure. He has concluded that in the event that failure of the umbilicals occur the subsequent methanol fire potential does not pose a threat to the integrity of the pipeline. In the event of the severance of all three umbilicals then the valves at the well head will close and production will cease. The risk therefore is one of loss of production rather than a risk that will compromise the integrity of the pipeline.
8. I am satisfied that failure of the umbilical and the potential resultant fire would disrupt production but not compromise the safety of the pipeline.
9. Mr. O'Donnell in his report recommends that the ability of the umbilicals to withstand settlement of the stone road needs to be verified. Mr. O'Donnell had obtained an analysis for the gas pipeline itself but the umbilical had not been covered by that analysis.

33.5 Inspectors Recommendations

In the event that the board decides to seek further information from the applicant I recommend the following:

1. SEPIL should be requested to submit design analysis for the umbilicals similar to that analysis carried out for the gas pipeline.
2. The analysis should consider the sensitivity of the stress in the umbilicals to different degrees of settlement of the stone road and to differential settlement along the stone road.

Chapter 34 Landslides at Dooncarton

34.1 Background

The landfall site at Glengad is north of the Barnacuille and Dooncarton mountains. On September 19th 2003 multiple landslides occurred following intense localised rainfall. The issue arises: What if any bearing has this recent event on the proposed development?

34.2 Observers Position

The 2003 landslides were a very real experience. Pictures of damage to houses, culverts and the washing out of deep ravines through a road and field, and extensive damage at graveyard on Pollatoma's side of Dooncarton were presented at OH. A video of the aftermath taken following the landslides was presented.¹⁵²

Observers expressed concerns:

1. That the proposed development would cause further disturbance and lead to landslides at Dooncarton.
2. That the rock excavation would cause vibrations and cause further landslides.
3. Faults in the geological rock formation could be affected and cause transmission of vibrations from excavation works / tunnelling works up to Dooncarton Mountain, this giving rise to further landslides.
4. In the event of a landslide, the debris could flow down onto the LVI and damage the pipe there, and thereby constitute a very real risk from the consequences of a rupture to the pipeline and for the local community.

34.3 SEPILs Position:

AGEC (Applied Ground Engineering Consultants) and RPS Consultants both contributed opinions on the likely impact of landslides on the pipeline. [DRN OH 11] provides a commentary on the landslides at Dooncarton 2003. In the E.I.S. Appendix M1 Section 4.2.3. RPS summarise their conclusion following assessment by them of 1m, 2m, 3m heights of debris failure on the mountain *"the analysis demonstrates that the movement determined at the locations of the buried pipelines will not jeopardise the integrity of the pipeline."*

SEPIL in evidence [4th June, 11.45] indicated that the risk of further landslides affecting the LVI were negligible because (1) the landslide had occurred (2) the direction of flow was known (3) the Tobin Report on the landslides had analysed the landslides and the risks of further landslides and (4) remedial works had been carried out to mitigate the effects of any future landslides.

34.3.6 Tobin's Report 2003¹⁵³

This report into the landslide event was carried out for Mayo Co Co. The report identified the cause as very intense rainfall – 80mm in less than 2 hours in a localised area which provided buoyancy and uplift to peat on steeply sloped mountain sides which then collapsed under the forces of the water and gravity. The rainfall event was estimated as having a return frequency of at least one in 100 years.

As well as the analysis of the landslide event of 2003 and the likely cause of that event, the Tobin Report assessed the risks of further landslides and the likely consequences of these. It determined

¹⁵² [DRN OH 81]

¹⁵³ Report on the landslides at Dooncarton, Glengad, Barnacuille and Pollatoma's County Mayo, Tobin 2003

protection and mitigation works and prioritised the works and made recommendations on long term protection works and precautionary measures.

The Tobin Report identified *“that extensive areas of blanket peat have been confirmed to have moved over the four week period following the initial event”*. On the basis of that statement, there is clearly potential for further landslides in the future. Mr. Conor O'Donnell Geotechnical Consultant to the Board has examined this issue. Mr. O'Donnell's Report is attached in Appendix 2.

34.4 Mr. O'Donnells Conclusions

34.4.1 On Potential damage to LVI and pipeline from landslide

Mr. O'Donnell agrees with the conclusions of RPS and AGECC:

1. That the LVI and the section of pipeline at Glengad is in a low risk zone with regard to potential impact of any further landslides on Dooncarton Mountain.
2. It is unlikely that a debris flow from a landslide would reach LVI or pipeline due to the topography of the area and due to the protection offered by the berms and drainage system at the base of the steep slopes on Dooncarton Mountain.
3. The main risk with regard to the LVI pipeline is limited to the potential for erosion and scour in the watercourses along the route of the pipeline and Mr. O'Donnell states that there are established design measures that can be implemented to protect the pipeline from this risk. i.e. the depth of the pipeline and protection by concrete slab over the pipeline.

34.4.2 On Potential impact of rock excavation works on the stability of slopes on Dooncarton

There is concern about the potential impact of rock excavation works on the stability of slopes on Dooncarton Mountain. Mr. O'Donnell agrees with RPS that vibrations from rock excavation and tunnelling are unlikely to have any significant effect on the destabilised material on the upper slopes of Dooncarton Mountain. Mr. O'Donnell considers that the destabilised material is on the upper slopes of Dooncarton Mountain at a distance of 850m – 1000m approx from the LVI site and launch pit. At this distance he believes that vibrations generated by rock breaking would be nominal and below any significant threshold that might cause movement of the slopes. Mr. O'Donnell points out that this is consistent with the assessment of Tobin Consulting Engineers who ruled out vibrations from traffic and rock breaking as a contributory factor for the landslides on Dooncarton Mountain in 2003.

34.5 Inspectors Assessment

1. *“The landslides (more than 40 occurred on Dooncarton) resulted in such flows of floodwater and overburden that it was fortunate that lives were not lost in the event”* – Tobin Report.
2. *“The exceptional conditions induced by the September 19th rainfall have lowered the threshold of weather conditions now likely to remobilise disturbed material on the mountain slopes”* – Tobin Report.
3. *“There remains therefore elevated residual risks of further landslides”* – Tobin Report.
4. I accept fully the degree of concern of the local residents that further landslides may occur.
5. I note that the Tobin Report has identified Low Risk Areas, Medium Risk Areas and High Risk Areas indicating the degree of risk to persons of injury or property damage from further landslides.
6. I note that the LVI site and pipeline route at Glengad are located in Low Risk zones.

7. I note that the reports indicate the 2003 event brought liquefied debris down onto the beach.
8. I note that Mr. O'Donnell agrees with the opinions of RPS and AGECE, and based on the detail analysis carried out by Tobins. That conclusion is that it is unlikely that debris flow from a landslide would reach the LVI or pipeline.
9. In particular I note agreement that the topography and drainage channels took debris down along streams away from the LVI site and pipeline route in the 2003 event.
10. I note that remedial works and berms have been carried out or installed by Mayo Co Co and OPW to mitigate the impacts of any future landslides.
11. I am satisfied with the expert evidence that the LVI and the pipeline are located in such topography and at such distance from the Dooncarton Mountains that the proposed development (the LVI and pipeline) is not at risk from further landslides on Dooncarton Mountain.
12. SEPIL confirmed in E.I.S. and in evidence in response to Mr. O'Donnell that no blasting of rock will take place in excavations at Glengad.
13. I accept Mr. O'Donnell's conclusion that there will be no impact from the rock excavation and tunnelling across Sruwaddacon Bay on the stability of the slopes on Dooncarton Mountain.
14. Mr. O'Donnell has recommended that vibration monitoring at 25m and 50m from the rock excavation and tunnelling works be carried out. I believe this should be carried out. This will provide information that will allay the concerns of local residents but more importantly it will provide control information for the excavation activity.
15. I also note evidence given by Mr. Tim Jagutis Tunnel Specialist Consultant that the tunnel boring machine vibrations will dissipate within a short distance from the construction of the tunnel itself. Mr. O'Donnell's recommendations regarding monitoring of vibrations will provide confirmatory information which should be made available to the local monitoring group.
16. I also note the topography proposed for the LVI itself. The pipeline and valves will be underground. Only the valve actuators will be above ground. The LVI compound is set down within a perimeter fence. SEPIL in evidence indicated that in the extreme situation where a debris flow did reach the LVI, that the actuators on the surface could be damaged. In such event, the valves would close and the integrity of the pipeline and valves would not be affected. Alternative actuators could be sourced and re-fitted.
17. My overall conclusion on this issue of Dooncarton Mountain and the landslide potential, is that the proposed development is satisfactory and that the proposed development does not pose a risk or exacerbate the risk of further landslides on the mountain.
18. However because of the very real consequences for Local Residents should there be further landslides I believe it must be clearly demonstrated by the applicant to the local residents that the control and monitoring of the construction works and the construction works themselves will be controlled so that there will be no vibrations or vibration effect at Dooncarton Mountains from the excavation or tunnelling works.

34.6 Inspectors Recommendation

In the event that ABP decide to grant permission for this development then I recommend that the following condition should be attached:

SEPIL should establish vibration monitoring at a distance of 25m and 50m from the rock excavation on the pipeline and at an appropriate location relative to the tunnels to monitor vibration emanating from the works. The results of the monitoring shall be made available to Mayo Co Co and should be available for the public at the Applicants offices at Belmullet on a weekly basis.

Reason: This is necessary to provide control information on the dissipation of vibration and to ensure there is no impact arising from such excavation works.

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Chapter 35 Sruwaddacon Bay Crossings

35.1 SEPIL proposals for the trenchless crossings

35.1.3 Lower crossing chainage 83+914 to 84+507

This crossing will likely be tunnelled from Glengad launch pit across under the Bay and under the mouth of Sruwaddacon channel at a varying depth of 3m min, as it comes onto land at Rosspoint 4m as it leaves land at Glengad and at greater depth in between. The actual final sleeve size is yet to be determined, but E.I.S. indicates 1.4m to 1.8m to facilitate “manned entry” and up to 2m diameter was discussed at OH. The tunnel is approximately 600m long.

A tunnel boring machine (TBM) is to be used to bore out in a directional shape, a tunnel through which concrete sleeve pipe is pushed using Bentonite mixture as lubricant. The pipe and umbilical assembly is then pulled through the sleeve and the void space is filled with grout. The section of pipe within the tunnel receives a pressure test on completion as well as a pressure test with the completed onshore pipeline.

A final decision on the type of sleeve pipe has yet to be taken.

In Appendix 5 of the E.I.S. details of the tunnelling methods are given. It is expected that based on the geophysical and the geotechnical data obtained in the areas of the crossings and based upon the development of micro tunnelling techniques, that intervention pits from the surface within Sruwaddacon Bay will not be required. Nevertheless details of an intervention pit have been provided and in additional information provided at OH details of the potential scour around such an intervention pit were provided.¹⁵⁴

Tunnelling will be continuous over the full 24 hour period. The lower tunnel will be constructed initially, followed by the upper tunnel.

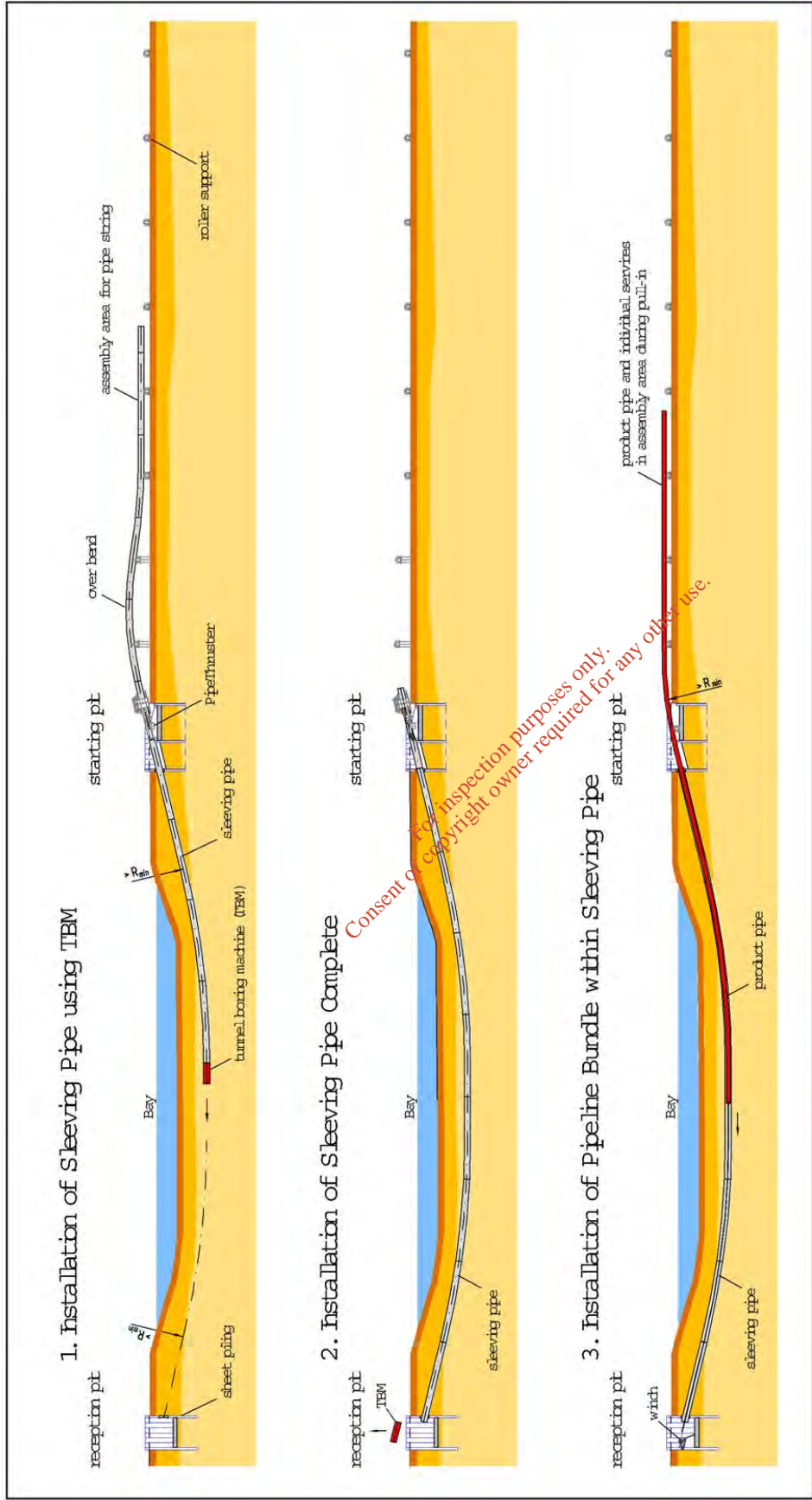
Mr. Wilson, a marine biologist and oceanographer, in his submissions indicated potential scour of 7.5m on the lower crossing. He outlined mitigation measures that could be adopted to prevent scour developing around the intervention pits and to provide for filling of any scour out after completion of the pits if such was required.

35.1.4 Upper crossing Chainage 88+517 to chainage 89+555

This tunnel is 1038 m long and initially in E.I.S. it was unclear if the tunnel techniques being considered by SEPIL would work at that distance. Evidence was provided by SEPIL at OH of reference projects where such lengths have been achieved in tunnels. Information regarding tunnel diameters of 2m and lengths from 855m to 2,535m was provided.¹⁵⁵ The type of sleeve has not yet been decided, but it is considered that a single tunnel bored from south of the bay is the likely option. An intervention pit is considered unlikely. Mr. Wilson in his evidence indicated that a scour maximum depth of 5m was modelled as the worst case scenario should an intervention pit be required on the upper crossing and that mitigation measures could be adopted to prevent or mitigate the scour.

¹⁵⁴ [DRN OH 67 and DRN OH 22]

¹⁵⁵ [DRN OH48]



CORRIB ONSHORE PIPELINE

CORRIB
natural gas

RPS

File Ref: COR20060470756A02
Date: February 2009

Trenchless Crossing
Outline of Direct Pipe Method
(source: de la Motte)

Figure 5.6

35.2 Observers Concerns

Observers raised issues related to 24 hour operation of the tunnelling process and noise disturbance levels arising from that, issues regarding influence of the tunnel boring machine and pipe thrusters for the sleeve pipe on ground stability at Dooncarton were raised, issues of potential scour from any Dooncarton landslide that might impact on the launch pit area or affect the pipe itself on the lower crossing were raised. An issue regarding how leaks in the tunnel would be detected and how the tunnel sleeve and pipeline assembly would be finished was raised. The issue regarding noise and disturbance is considered in Chapter 46.4 Noise. The landslide issues are dealt with in Mr. O'Donnell's report and in Chapter 34 of this report.

As regards leak detection, if a leak occurred in the tunnel SEPIL outlined that surface disturbance would reveal the leak. Details were provided at OH of the type of material that would be used to fill the sleeve pipe as a grout.¹⁵⁶ The sleeve pipe will be water proof, but will not contain gas under pressure.

35.3 Inspectors Assessment

1. The micro tunnel technique is an impressive technology. I am satisfied that the method has been reasonably well set out in the E.I.S. and in the additional information provided at the OH.
2. A model of the hydraulics of Sruwaddacon Bay has been developed and calibrated and this has been used to predict scour potential should intervention pits become necessary.
3. The impacts on Sruwaddacon Bay will, I believe, be minimal. I am satisfied that an intervention pit is unlikely, and that in the event that both tunnels can be completed without intervention pits, that will be a very satisfactory result from an environmental impact point of view.
4. The majority of the tunnels are in the foreshore area and will be the subject of a foreshore licence. However, the impacts on the environment of that part of the development are issues for consideration in 16.GA.0004 and 16.DA.0004.
5. The major issues relate to 24 hour working and controls on the disturbances caused by that and the possible breakthrough of the tunnel into the bay, either by intervention pit or collapse of the material above the tunnel and the resultant Bentonite spillage.
6. I expect that the 24 hour working will only be an issue for the lower crossing, as the upper crossing is a distance from residential receptors. The duration of the lower crossing is programmed at 8 weeks.
7. The use of the micro tunneling method of construction to cross Sruwaddacon Bay is itself the mitigation measure to reduce the impact of the proposed development on the Environment.
8. It is important that the E.M.P. includes a process whereby any issues that arise from disturbance caused at the tunnel operations can be reviewed and mitigated further as required.
9. Bentonite breakout has been dealt with separately.
10. I am satisfied with the proposals as set out in the E.I.S. Chapter 5 and in the Appendix 5 and in the additional information provided at the OH.

¹⁵⁶ [DRN OH 121]

11. I consider that the impact on the environment from the tunnels will be temporary during construction and will not be significant.

Mr. O'Donnell has considered the proposed tunneling methods and he has clarified the issue of potential scour particularly in the lower crossing. Mr. O'Donnell has accepted the mitigation measures for scour (at intervention pits) as set out by Mr. Wilson.

Mr. O'Sullivan has considered the impacts of the proposed tunnels on the Blacksod Broadhaven Bay SPA. He concludes that *"the works envisaged would not have a significant impact upon birds, fish, marine mammals or other flora or fauna or habitats in the Bay"*.

35.4 Inspectors Recommendations

In the event that ABP decide to grant a permission I recommend the following conditions:

1. The Applicant shall include in the Environment Management Plan details of noise and vibration monitoring proposed to control noise and vibration and the impact of rock excavation and tunnelling on the area.

Reason: To protect the amenity of the area.

2. The Applicant shall as part of the EMP set out for the agreement of the Planning Authority details of how issues arising from any disturbance or complaints related to 24 hour tunnelling operation are to be mitigated and managed.

Reason: To protect against nuisance in the area.

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Chapter 36 Peat Stability

This chapter deals with the issue of peat stability in Rossport Commonage along the South of Sruwaddacon Bay at Aghoos and through the forestry to the Terminal at Bellagelly South.

36.1 Introduction

This is a key area for assessment.

1. The proposed development will be located in peat lands from chainage 86+400 to chainage 88+542 in Rossport Commonage North of Sruwaddacon Bay.
2. The proposed development will be located in peat lands and peat lands with forestry plantation from chainage 89+4520 to chainage 92+456 South of Sruwaddacon Bay with the exception of a few fields of agricultural land at Leenamore River.
3. The peat depths vary along the route reaching 4.5 m to 5.44 m in Rossport Common [Refer DRG No 864-02-06 to 864-01-008] and 4.5m to 5.4m in Bellagelly South [Refer DRG No 864-01 – 008 to 864-01-010].
4. Mr. Conor O'Donnell geotechnical consultant with specialist experience of construction work on peat lands has been appointed by ABP and he has prepared his report on the proposed development related to ground movement and peat stability Appendix 2.
5. Before considering M. O'Donnell's report, it is worth reviewing briefly the information provided by SEPIL in E.I.S. and in additional information provided at OH.

36.2 SEPIL proposals submitted

1. SEPIL provide details of the construction proposed within the peat lands in Chapter 5. SEPIL provided details of the geotechnical investigation, the stone road method assessment, and Risk Register in Appendices M1 – M4.
2. The temporary working area will be 40m wide in peatlands with the stone road 9m wide. At the OH, clarification of the detail was provided – no side casting of peat is now proposed contrary to the original proposals contained in the E.I.S. and shown on the drawings. The turves will be cut from that part of the route in the cSAC and where the Blanket Bog is intact in the non designated peat lands. These turves will be stored on bog mats one layer only beside the stone road, and within the working area.
3. Additional details of the reinstatement of the turves was provided at OH. These details showed proposals for fitting together of turves and a detail to protect the edge and to reproduce hydrological surface condition similar to that in the undisturbed peat lands.
4. Details of the basis for the Surface Water Design and the outlet discharge points proposed were provided as additional information at the OH.¹⁵⁷
5. At Mr. O'Donnell's request, considerable additional analysis of peat stability under different load and failure mode scenarios were provided by SEPIL. Additional analysis was provided of the stress condition that would result within the pipeline itself should the stone road settle.
6. A qualitative analysis was also provided at Mr. O'Donnell's request of the sensitivity of different sections of the peat lands to failure under loading conditions and related to various parameters.

¹⁵⁷ [DRN OH97]

36.3 NPWS Submissions

1. NPWS raised a number of concerns related to the flush system near the working area in the cSAC. They also raised concerns regarding the stone road method itself and the detailing proposed for reinstatement of the turves. They raised concerns about the experience which SEPIL had referenced at the BGE pipeline Galway –Mayo at Glencullin where a stone road had been used in the construction of that pipeline and through Carrowmore Lake cSAC. NPWS are concerned at the slow recovery of peat lands at Glencullin.
2. Mr. O’Sullivan in his report Appendix 1, deals with the NPWS submission in detail, and with those issues. However, it is worth noting that both NPWS and Mr. O’Sullivan were concerned that Mr. O’Donnell in his report would verify the stability of the peat from the proposed development in the peat lands, otherwise a significant environmental impact would follow any bog movement, bog slide, bog burst or other form of peat failure that resulted from the construction of the proposed development.

36.4 Observers Submissions

1. Observers expressed concern in general that the proposed construction would lead to bog slide. In particular observers argued that sufficient information had not been obtained in the site investigations to enable a proper design to be prepared.
2. It was argued that the nature of the material beneath the bog was not clearly identified by the applicant, SEPIL.
3. It was argued that there may be a layer of dóib (peat with high clay content) or a hardpan underneath the peat, either of which posed a particular risk of bog movement,
4. The Dooncarton landslides in 2003 and the bog failure in 2008 at Aghoos road works were identified by observers as local experience of the hazards and potential risk of bog slide in the area.
5. The areas of deep peat were discussed and the issue of whether SEPIL had information on the topography underneath the peat as well as the topography of the surface of the peat was also raised. There was concern that the deep peat was underlain with a slope that could potentially direct bog slide down the drainage channels towards Sruwaddacon Bay and inundate the house(s) there, and the Bay itself.
6. Evidence was given from experience of working machinery in the bog that the proposed method of making the stone road would not be successful in deep peat.
7. There was concern at potential pollution from surface water discharging from the construction site.
8. There was concern that the reinstatement would not regenerate, and that the hydrology of the area would be changed to the detriment of the high quality environment that now existed.

36.5 Mr. O’Donnell’s Report

1. Mr. O’Donnell’s report deals with the issues involved. As outlined above, Mr. O’Donnell questioned SEPIL, and the experts AGECE, and he requested that additional analysis be submitted to clarify the details of the geotechnical proposals of the development.
2. It is not intended to go over the same ground as discussed in Mr. O’Donnell’s report, but to highlight his method which looked at the risks involved, then he looked at the potential modes of failure that could occur, and then he analysed the material and design information submitted by SEPIL before drawing his conclusions.

3. Mr. O'Donnell recites and draws together a long summary which he has extracted from the many SEPIL submissions and from the E.I.S. on how SEPIL and AGECE, their geotechnical advisers assess each different potential failure mode or condition.

36.5.5 Mr O'Donnell's Review and Comment

This is presented in Section 4.4 of his report and deals in turn with each potential mode of failure in the peat.

36.5.6 On planar sliding – undrained condition

This is perceived as the main risk of peat instability during construction.

1. Mr. O'Donnell concludes that notwithstanding the limited ground investigation in Blanket Bog in Rosspoint Commonage, that AGECE on behalf of SEPIL have carried out a comprehensive analysis of the peat slopes and blanket bogs along the alignment of the pipeline in the natural condition and under the surcharge of the turves stores beside the construction.
2. The level of analysis is commensurate with the geotechnical risks involved, and is consistent with the guideline recommended by the Scottish Forestry Commission for Risk Management of peat slips on the construction of low volume low cost roads over peat,
3. The particular approach used to assess interaction between different environmental factors is consistent with more advanced geotechnical risk assessment for managing the risk of peat stability that has been used in the construction of wind farms.
4. Mr. O'Donnell draws attention to the use of BS 6031 : 1981 design approach by AGECE on behalf of SEPIL and he points out that Eurocode 7 for Geotechnical Design uses a more conservative approach by applying a factor of 1.3 to live load. Mr. O'Donnell believes that given the uncertainties in the undrained shear strength determined by Shear Vane tests, that the more conservative approach should be used for design.

Mr. O'Donnell notes that while factors of safety over much of the pipeline (as analysed with the 10kPa surcharge) are greater than 1.5 that there are local areas with factors of safety of 1.3 and FOS of 1.0, the latter in a section of the route where a peat stone road has already been constructed [2002 consent chainage 91+400 to chainage 92+500 approx.].

Mr. O'Donnell has concern that AGECE / SEPIL do not include an area between chainage 90+900 and chainage 91+550 as an area of greater risk due to deep highly amorphous peat at that location. Mr. O'Donnell believes that the AGECE qualitative analysis has identified areas of greater risk. He believes that the analysis has not identified Section 15 chainage 90+870 – chainage 91+210 and Section 15 chainage 91+210 to chainage 91+470 where there are deep deposits of wet highly amorphous peat directly upstream of or adjacent to a defined watercourse. He considers these areas are higher risk areas of potential peat failure. Mr. O'Donnell believes there is a deficiency in the use of the risk mitigation measures as set out in the Risk Register. He feels that the risk register has the mitigation measures identified but he found that the measures seem not to have been applied to the known conditions existing along the route. He feels such risk mitigation has not been defined in respect of higher risk areas as could have been done by, for instance a decision could have been taken not to store turves along the sides in the high risk areas.

[I do note here however, that one change from proposals contained in E.I.S. has been made in the proposal as covered in the additional information submitted to the OH i.e. not to broadcast peat anywhere along the trench].

Mr. O'Donnell's overall conclusion is that with an experienced contractor, and with full supervision of an experienced geotechnical engineer, that the stone road can be safely constructed.

36.5.7 Planar siding drained conditions

Mr. O'Donnell outlines that this failure mode will generally be limited to areas where there is potential for a buildup of pore water pressures below the peat due to restricted drainage along preferential drainage paths in underlying granular soil and weathered rock during periods of heavy rainfall. The results of the analysis indicate that the long term stability of the peat should be adequate for 0 kpa and 10 kpa surcharge under hydrostatic groundwater conditions. The results indicate that the stability of the slopes will be governed by the undrained shear strength of the peat as considered by Mr. O'Donnell in the previous section.

Mr. O'Donnell considers that the risk of planar sliding in the drained condition would be relatively low and limited to the unconfined steeper slopes in relatively shallow peat at the boundary of the Blanket Bog near the valley for the Leenamore River. The risk of planar sliding down slope from the stone road can be significantly reduced if the temporary drainage system is designed to adequately handle the volume of surface run off anticipated during construction. Mr. O'Donnell states that given the potential risk of peat instability in some areas, it would be more conservative to design (the surface water handling) for a storm with a greater return period such as 50 or 100 year storm.

36.5.8 Bog Burst

Mr. O'Donnell identifies the areas where a risk of bog burst exists:

chainage 86+190 to chainage 86 +550

chainage 87+010 to chainage 83+380

chainage 87+940 to chainage 88+240

chainage 90+250 to chainage 92+050

These are areas where there is deep amorphous peat with very high moisture content. The risk would be more apparent in the following situations when excavation occurs where the peat is 4m – 5m deep, where machine cutting of peat has taken place, where there is a high water table, poor drainage, surface water, bog pools or where there is a water course down slope of the excavation. Mr. O'Donnell highlights the risk in those areas where the peat has been disturbed by machine cutting as requiring particular care.

Mr. O'Donnell's conclusions are that the accepted method of constructing stone roads – controlled development of peat below the depth of stable excavation in the peat - has been used extensively and successfully across blanket bogs in Ireland, and provided an experienced contractor is working under supervision of a geotechnical engineer with experience, then it should be possible to construct the road through the areas of deep peat without causing a bog burst.

36.5.9 Local shear failure

This risk is seen by Mr. O'Donnell as highest where the risk of bog burst is highest and with the experienced contractor and geotechnical supervision, this risk would be mitigated.

36.5.10 Planar sliding at base of stone road

This mode of failure relates to a condition where the stone road was constructed on a weak layer of very soft peat or sensitive clay. The risk would be highest immediately after constructing the road and possibly for 24 hours. After this time the material would consolidate and increase in shear strength under the weight of fill.

Mr. O'Donnell considers the risk of this mode of failure to be very low.

Mr. O'Donnell considers the highest loading on the stone road will be when the pipes are being laid. He considers that the risk of planar sliding after the pipes are laid is negligible.

36.5.11 Settlement of the Stone Road

Mr. O'Donnell requested additional analysis on settlement of the stone road and on resultant stress's on the pipeline following such settlement. A sensitivity analysis was also requested to show the impact of different settlements along the pipeline on the stress in the pipe. These were supplied. The submission showed that the resultant stress levels in the pipe were within the permissible stress allowable for the pipe.

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36.6 Inspectors Assessment

1. The proposed development in peat lands involves risks of peat instability.
2. I have examined the E.I.S. and the additional information provided at the OH. I am satisfied that sufficient information has been provided for assessment of peat stability.
3. The information provided in E.I.S. and in the additional information provided has been reviewed in depth by Mr. O'Donnell, an experienced geotechnical consultant who is familiar with the issues related to construction in peat lands.
4. Overall Mr. O'Donnell has established that analysis and risk assessment methods used in the application meet with the industry standards and are commensurate with the risk levels involved.
5. The greatest risk to peat instability is considered to be the planar sliding in undrained condition (short term/total stress).
6. The use of an experienced contractor under the supervision of a geotechnical engineer experienced in construction in peat lands, and the use of the methods proposed should ensure that the stone road can be constructed without causing peat instability.
7. Additional pre construction detail site investigations are required to verify design parameters and to underpin the preparation of detail method statements as proposed in the Risk Register for the proposed development.
8. It is considered that the greater risks of instability are in the early construction and installation stages of the stone road.
9. It is considered that the risks of peat instability after the pipe is laid are low.
10. The mitigation measures and the control and monitoring outlined in the E.I.S. and in the Risk Register should be carried out.
11. A more conservative approach to surface water design and handling should be taken to ensure that water does not build up and cause increased pore pressure in the peat which could then cause peat failure.
12. Mr. O'Donnell has concluded that SEPIL have now supplied a comprehensive body of information and analysis to assess the risk of ground movement along the route of the onshore gas pipeline.

However he has recommended that in the event that additional information is being sought from the applicant to enable the Board to reach a decision that the following information be requested to clarify the risks that have been identified in Mr. O'Donnells report:

“• Precise section by section details of the proposals for temporary peat storage and reinstatement outside the areas of intact bog, which take into account the condition of the surface layer of the peat and specifically identify where peat turves or remoulded peat will be stored on bog mats adjacent to the road.

• Details of the specific risk mitigation measures that would be proposed for each of Sections 1 to 18 in the qualitative assessment of relative peat failure potential, in particular noting where there would be limits on the storage of peat on bog mats adjacent to the stone road excavation and adopting a conservative approach to the assessment of peat stability.

- An assessment of the potential impact of the estimated stone road settlements on the umbilical pipeline and service ducts that will also be constructed within the stone road, including an assessment of the risks associated with failure due to rupture of the pipes.”

13. Mr. O'Donnell also identifies the deficiency he perceives in the QRA where ground movement was not included in the initial analysis. It was then supplied to the OH. Mr. O'Donnell recommends that this analysis be carried through into QRA in tandem with the requirements Mr. Wright may have for additional analysis

36.7 Inspectors Conclusions

1. I accept Mr. O'Donnells report and I am satisfied that he has carried out a detailed examination of Peat Stability in this proposal to develop this pipeline through peatlands.
2. I accept that the proposed development which includes extensive works in peat lands can be constructed successfully without generating peat instability.
3. The greatest risk of peat instability will occur in the construction of the stone road itself. Once the stone road is fully constructed the risk of peat instability is reduced.
4. The surface water handling along the route of the proposed development should be designed with conservative values for flood return period.
5. The risk of damage to the pipeline once laid from peat instability is low.
6. The risk register should be updated following the preconstruction site investigation and the risk mitigation measures should be applied conservatively to the detail method statements for construction.

36.8 Inspectors Recommendations

1. I recommend that ABP should accept the expert advice provided by Mr. O'Donnell Geotechnical consultant.
2. In the event that the Board decide to grant a permission for the proposed development I recommend the following condition
 - a) The pre-construction site investigations shall be carried out as provided in the EIS
 - b) Method statements for construction works in the peat lands shall be developed using conservative design values and applying conservatively the risk mitigation measures set out in the EIS risk register.
 - c) The work shall be supervised by an experienced Geotechnical Engineer with specific experience in peat lands construction. An experienced contractor with specific experience of construction in peat shall be used for the construction.

Reason: to protect against peat instability.

Chapter 37 Stone Road Method

37.1 Introduction

The basis of the construction method in peat lands is the proposed construction of a stone road. In this technique the peat will be excavated and replaced with stone. In areas of deep peat, a stone peat matrix will be formed below by pushing stone to refusal into the peat, approximately 2.5m to 3m deep. In all peat areas approx 0.5m of peat will be left in situ under the stone to act as an impervious layer and reduce the permeability of the stone road. Peat plugs are proposed at approx 50m centres (E.I.S.). In evidence at OH it was indicated that these plugs may be at varying centres depending on the conditions encountered during construction.

SEPIL have set out the details of the proposed stone road in the E.I.S. Section 5.5.1.1. and have shown detail cross sections on Figure 5.5 & DG 601. In evidence and in the addendum to the E.I.S.¹⁵⁸ further details were provided of turve reinstatement over the stone road on completion of the pipe laying operation. The E.I.S. Section 5.5.1.1. states that the stone road will not differ substantially from that method used on the Mayo – Galway BGE pipeline except that the pipeline will be laid within the stone road on the onshore pipeline where it was laid beside the road on the BGE pipeline. However in evidence given at OH and in details provided, there will be a number of differences with that BGE pipeline.

- Peat plugs at 50m.
- No side casting of peat now proposed on the onshore pipeline.
- Turves will be stored at the side of the intact and designated blanket bog section on mats one turve high only (3 high in Glencullin on BGE pipeline).
- The full width of temporary working area will be maintained through the sections of blanket bog and cSAC (a narrower width was used on the BGE line).
- More refined method of turve cutting and replacement is planned to give a better pattern and fit of turves when reinstated. A different edge detail is also proposed to provide a hydrological surface more like the original surface¹⁵⁹.

37.2 Observers Issues

1. The Acquisition Rights being sought were for a right of way whereas in effect, peat is being extracted and a road is proposed to be constructed. This is dealt with under Acquisition Order Issues Chapter 49 below.
2. The stone road will change the hydraulics of the area and drain the bog.
3. Insufficient information has been obtained in site investigations to underpin the proposed design of the stone road. Issues relating to stability of the stone road and issues relating to nature of subsoil under the peat were raised.
4. An issue that the stone road within the peat lands may not be stable and that movement would cause hazard to the pipeline, and hence risk to local community.
5. Concerns that the stone road would damage the natural environment [this has been dealt with in Mr. O’Sullivan’s report at Appendix 1, and in Chapter 38 Natural Environment below].

¹⁵⁸ [DRN OH 7]

¹⁵⁹ [Evidence 21st May, 12.37]

37.3 Discussion

Mr. O'Donnell has considered the stone road method of construction in his report. (Appendix 2)

Mr. O'Donnell's conclusions are:

- The compound construction will mirror the stone road construction with peat being excavated and stone being placed under the compounds. In the compounds the peat imperious 0.5m layer is proposed under the stone and peat plugs will be considered around the perimeter of the compound to prevent drainage of the adjoining peat.
- The stability of the peat has been considered in detail and Mr. O'Donnell accepts that the stone road method is a proven technique for providing access and for construction within peat lands.
- The additional analysis carried out by AGECE/SEPIL/J P Kenny has satisfied Mr. O'Donnell's requirements for analysis of various potential scenarios of settlement and planar failure of the stone road and pipeline. Mr. O'Donnell considers that based on the analysis carried out the risk of a pipeline rupture due to the settlement of the stone road should be very low to negligible.
- Mr. O'Donnell considers that the stone road can be safely constructed in peat lands without causing a peat failure with a number of provisos:
 - Additional ground investigations are required before construction to confirm design parameters and to enable detail construction method statements to be prepared.
 - Specifically additional site investigations in those areas identified as higher risk for peat failure is required.
 - Proof load testing on the stone road before pipe laying is required.
 - Full time experienced Geotechnical Engineer to supervise the works.
 - An experienced contractor with specific experience of similar construction in blanket bog.
 - Appropriate controls are placed on deposition of peat adjacent to areas with a relatively high risk of peat failure.
 - Peat turves are stored upslope from the completed stone road.
 - Additional provisos which basically set out that construction shall follow conservative design and that settlement analysis should be carried out for tolerance in umbilicals and related services.
 - That settlement of the rockfill should be monitored before installation of the pipeline.

37.4 NPWS Submissions refer to the stone road

While the NPWS submissions refer to the stone road, the substance of the submissions deals with the natural environment. Mr. O'Sullivan in his report considers the NPWS submission. Mr. O'Sullivan's recommendations on the natural environment are considered in the next chapter 38.

37.5 Inspectors Assessment

1. There was a point of confusion in the E.I.S. as initially submitted regarding whether side casting of peat was or was not proposed along the route. This has now been clarified; no side casting will be carried out.
2. I am satisfied that the stone road will provide a very solid road for access and as the ground structure to the pipeline. I believe that the technique is satisfactory for the purpose, and I

accept Mr. O'Donnell's opinion that it should be possible to construct the stone road safely without causing peat instability.

3. I am satisfied at the stone road proposals south of the bay while also recognising that deep peat and sloping ground together with water course locations in that section make the construction there somewhat of higher risk. I am satisfied that an appropriate condition regarding control of these works can be included in any permission being considered for this section of the pipeline.
4. The existing 1km of stone road that has been constructed already [2002 consent] poses particular problems, these are dealt with in Chapter 23 Boundaries of the permission sought. I do not propose to repeat the issues here except to note that ABP need to be satisfied that the Application for the proposed development has been properly set out in the E.I.S. and in the additional information provided at the OH. I am reasonably satisfied in that regard. However, as this 1km of the site is in fact different from that shown in the E.I.S. and the documents that were subject of the public notice of the scheme, I believe it best that SEPIL be requested to restate the application accordingly and give public notice of this restated scheme.

37.6 Inspectors Conclusions

1. I find the stone road method of construction proposed for peatlands is acceptable.
2. I am impressed by the improvements proposed in the method over and above the method used on the BGE Mayo- Galway pipeline.
 - The pipeline will be laid within the road itself.
 - The full working width will be used in the intact blanket bog and in the cSAC area.
 - No sidelaying of peat will be carried out.
 - Peat plugs will be used to reduce the permeability of the stone road.
 - An improved method of storing turves in one layer and keeping these moist is proposed.
 - The turve reinstatement detail is for a more tightly fitted surface and with an edge detail to make the hydrological conditions on the surface near to the original conditions.
3. The same detail construction is required at the compound areas as that for the stone road itself – the base layer of peat, the reinstatement, protection from ingress of excessive surface water.

37.7 Inspectors Recommendations

In the event that the Board decide to grant a permission for the proposed development I recommend the following condition be added to those in Chapter 36 above:

1. Prior to installation of the pipeline the settlement of the rockfill shall be carried out to validate the design assumptions and to demonstrate that settlement has largely been completed.
Reason: In the interest of protection for the environment.
- 2) Install stress gauges on the pipeline itself in critical areas of deep peat to monitor stress induced by any differential settlement that occurs during the design life of the pipeline.
Reason: In the interest of protection of the Health and Safety of the public

Chapter 38 Natural Environment cSACs

38.1 Natural Environment

38.1.12 Mr. O'Sullivan's report

Mr. Stephen O'Sullivan Senior Inspector was appointed by ABP to assist me in the assessment of these files and in the preparation of my report. Mr. O'Sullivan has examined in Section 3 of his report, the natural environment. In particular he has examined Chapters 12, 13, 14 and Appendices P, J, K and L of the E.I.S. Mr. O'Sullivan has reported with recommendations and Appendix 2 contains a copy of the report. It is not proposed to repeat the analysis carried out by Mr. O'Sullivan here.

38.1.13 SEPIL Documentation

The site has been outlined in Chapter 2. The route will potentially impact or intersect:

- The Blacksod/Broadhaven Bay SPA No37
- The Broadhaven Bay cSAC No472
- The Glenamoy Boy Complex cSAC No500

As noted by Mr. O'Sullivan the E.I.S. has been prepared with due regard to the requirements of the Habitats Directive and the EC (Natural Habitat) Regulations 1997 - 2005.

This section of SEPIL's E.I.S. has been prepared by specialists Ms. Eileen McCarthy a hydrogeologist and consultant, who is studying for a doctorate in wetland hydrology, Mr. Ian Wilson a marine biologist and oceanographer with extensive experience on environmental surveys for proposed marine infrastructure projects and Ms. Jenny Neff an ecologist, botanist and vegetation scientist with experience as a consultant ecologist. Ms. Neff has also conducted research projects including work on the National Vegetation Survey and work as ecologist on the Mayo National Park Feasibility Study Team.

Mr. O'Sullivan has reviewed the E.I.S. and the additional documentation submitted by SEPIL to the OH and in his report he discusses this review.

38.1.14 Department of Environment Heritage and Local Government Submissions

The DEHLG made a number of submissions and the NPWS participated extensively in the discussions on natural environment at the OH. Chapter 13 of this report contains my summary of DEHLG and NPWS submissions. Mr. O'Sullivan in his report discusses in some detail the issues raised.

I am satisfied that Mr. O'Sullivan has considered the issues involved. I wish to discuss further the following point:

- NPWS have concerns that the stone road method may have adverse impacts on the peat lands, intact blanket bog and cSAC designated blanket bog.

Experience from Glencullin

NPWS express particular concern arising out of the experience at Glencullin where the stone Road method was used. In the company of Mr. O'Sullivan and Mr. Wright I inspected Glencullin. There were four issues of note:

1. At Glencullin through the cSAC, the temporary working area was narrowed to limit the extent of incursion there. That now appears to have not been the best way to deal with minimising the impact because turves were stored on bog mats stacked 3 high. This has left

the area of what was under those bog mats with bare peat where foliage has not yet recovered.

2. The pipeline was not laid in the stone road, but in the peat beside the stone road.
3. The turve reinstatement is not a neat turve tiled area. Instead raveling of some turves has left unevenness.
4. The issue of most concern as I perceived it in NPWS submission, and in their evidence, was the surface cracking which has opened down slope and south of the stone road near where it enters the cSAC. On the day we inspected the site, it had been two years since the reinstatement of that part of the site. The cracks were there and are obviously being monitored regularly. A number of flushes at some distance to the west and downslope of that area are also being monitored regularly. It was reported to the OH that monitoring will continue for 15 years in that area.

My own observations are that where the cracking was located down slope and south of the stone road was also down slope of a considerable rise in ground level on the North side of the stone road at that point, and on our inspection, conditions were very wet and a lot of water was coming down from that high ground. The issue I take from that inspection is that the identification of existing hydraulic pathways within the peat is a critical part of the pre construction and during construction activity for the Geotechnical Supervisor and for the eco-hydrogeologist. I understand that it requires considerable experience to identify these and to manage and reinstate conditions post-construction.

38.2 Proposals for Rossport cSAC

The proposals for the Glenamoy Bog Complex cSAC (500) at Rossport are, as Mr. O'Sullivan has identified in his report, soundly based improvements on the Glencullin specification.

1. The working area will not be reduced. A single layer of turves will only be stored alongside the trench and reinstatement will be carried out in the cSAC at as early a time as practicable.
2. The pipeline is to be laid within the stone road itself in Rossport.
3. A practice is proposed that will involve more accurate turves being cut and placed to achieve a full cover and using hand work and edge detail. The Rossport reinstatement plan appears to address the issue that is apparent at Glencullin. In some of the reinstatement here turves edges are not abutting the next turve, or are ragged. Details of this extra attention to turve management are shown in the addendum to the E.I.S.¹⁶⁰

The topography of the route on the pipeline proposed is different to Glencullin. The pipeline is running along the ridge of the watershed in Rossport Common. In Glencullin part of the pipeline route lies across an area of rising ground and the cracks discussed above have opened down stream of that area.

I agree with Mr. O'Sullivan's conclusion that it is unlikely that the proposed development of the stone road would have a significant adverse impact on the blanket bog habitats. I also accept Mr. O'Sullivan's conclusion that it cannot be stated that it has been shown beyond a reasonable scientific doubt that no adverse impact on the intact blanket bog habitats will result from the proposed construction across that habitat. I can state however that the work carried out at Glencullin does demonstrate a substantial degree of mitigation of the impacts and a sound method for the construction of the stone road. The improvements proposed to that technique for the Corrib pipeline will, in my view, further mitigate the adverse impact of the stone road.

¹⁶⁰ [DRN OH7]

38.3 Inspectors Conclusions

1. I am satisfied that the construction methodology proposed in tunnelling under Sruwaddacon Bay and in using the stone road method into peatland represents substantial mitigation of the impacts of the proposed development on the Glenamoy Bog Complex cSAC and on the Blacksod/Broadhaven Bay SPA.
2. I accept Mr. O'Sullivan's report. I am satisfied that he has examined the issues likely to give rise to an adverse impact on the environment.
3. I accept Mr. O'Sullivan's conclusions as follows:
 - The proposed development will not have an adverse impact on the bog at significant distances beyond the proposed working area.
 - It cannot be stated beyond any reasonable scientific doubt that the negative impact which might arise from compaction and disturbance of the acrotelm in intact blanket bog or from uncovering a peat pipe would be fully mitigated although they probably would be.
 - If the proposed construction method can adequately maintain the hydrological regime and the stability of the ground then it can be stated with a sufficient degree of certainty that the development would not have an adverse impact at a significant distance beyond the proposed working area. [Inspectors note: Mr. O'Donnell in his report has concluded that it should be possible using comprehensive geotechnical engineering to install the stone road on the proposed pipeline without causing destabilization of the peat. This has been discussed in Chapter 36 and 37 above.
 - The construction methods and mitigation measures described in Section 13.5 should be adequate to avoid negative impacts on freshwater habitats in the area.
 - The likely residual impact of the development on freshwater ecology is minor to negligible with none on migratory salmonids or other Annex II species.
 - It is unlikely that the works at Glengad would have a significant adverse effect on the sand martin colony there.
 - The construction of the LVI would result in a permanent loss of a small area of grassland habitat of low ecological value.
 - The operational phase of the development would be unlikely to affect the fauna.
 - It is concluded that the development would not have a significant adverse impact on the animals and birds of the area.
 - The risk to natural heritage from pipeline failure would be of lesser concern than that for human health and safety. The restricted volumes and biodegradable nature of fluids which could be released are not considered to give rise to significant threat to flora or fauna along the route.
 - The SEPIL documentation provided a reasonably accurate and comprehensive description of the habitats along the pipeline route.
 - It is not considered that the works would have a significant impact on the ecological value or natural heritage value of the habitat of the agricultural lands along the route.
 - It is not considered that the works would have a significant impact upon birds, fish, marine mammals or other flora or fauna or habitats in the bay.
4. I am satisfied that subject to the mitigation measures proposed in the E.I.S. and in the additional documentation provided at OH that the proposed development can be constructed in a manner that will not impact significantly on the environment of the site.
5. There will be an impact at Glengad from the LVI compound that will be negative and slight on the Glenamoy Bog Complex cSAC.
6. There will be an impact at Rosspoint from the stone road construction and pipeline laying there on the cSAC Glenamoy Bog Complex. The impact will be negative local and there is more than a reasonable probability that the mitigation works and reinstatement there will work. I base that conclusion on Mr. O'Sullivan's analysis and report and on the example of work carried out at Glencullin.

38.4 Inspectors Recommendations

I recommend that Mr. O Sullivan's report be accepted. In the event that ABP decide to grant a permission for this development then I recommend the following conditions

1. Prior to commencement of construction the applicant shall carry out pre-construction site examination and investigation and baseline ecological surveys of the site at that time as proposed in the E.I.S.

Reason: To monitor faunal activity and to protect the natural heritage of the area.

2. On confirmation of the site conditions and following the completion of the detailed method statements for the construction work these shall be submitted for the written agreement of the National Parks and Wildlife Service.

Reason: To protect the natural heritage of the area.

All the construction work in the peatland and in the intact bog within the cSAC and in the section of intact bog in the non-designated peatland shall be supervised by an experienced geotechnical engineer who should liaise with the eco-hydro geologist to ensure that hydraulic paths in the peat are identified, marked and reinstated satisfactorily.

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Chapter 39 Habitats Directive Assessment

39.1 Assessment under Article 6

Mr. O'Sullivan has considered assessment under Article 6 of the Habitats Directive in his report in Sections 3.4.6, 3.4.7 and in Section 3.4 .8 his report considers the implications of the development for European sites. The site for this development has been described in Chapter 1 and includes a route which goes through:

The Glenamoy Bog Complex cSAC (No. 500)

The Blacksod/Broadhaven Bay SPA (No. 4037)

The Broadhaven Bay cSAC (No. 472) lies adjacent to the site

The map and site synopsis for these sites are contained in Appendix 6.

The conclusions that have been arrived at by Mr. O'Sullivan are (a) That given the extent of the potential impact and its location of the margin of the site in an area where the blanket bog habitat has been substantially altered by turf cutting and livestock grazing, this impact would not have an adverse impact on the integrity of Glenamoy Bog Complex cSAC. (b) It is not considered that the works would have a significant impact upon birds, fish, marine mammals, or other flora and fauna or habitats in the Bay. (c) The construction of the LVI would result in a permanent loss of a small area of grassland habitat of low ecological value. The DEHLG have submitted that because the possibility of adverse impacts from this project on the integrity of the Glenamoy Bog Complex cSAC it cannot be ruled out that Article 6(4) of the Habitats Directive would need to be applied.

Mr. O'Sullivan has concluded:

"after the appropriate assessment of the proposed development under Article 6 of the Habitats Directive that it would not adversely affect the integrity of the cSAC Glenamoy Bog Complex"

Mr. O'Sullivan has also considered whether it would be more appropriate to use the procedure contained in 6(4) of the habitats directive as recommended by NPWS. He makes the point that it is necessary to consider and assess the project before deciding whether the proposed development is likely or it is not likely to have a significant adverse impact on the integrity of a European designated site. That is a decision to be taken by the board on the basis of all the information before it.

In the event that the Board complete the assessment and decide that the proposed development is likely to have an adverse affect on the integrity of Glenamoy Bog Complex cSAC (No. 500) then it will be a consideration for the Board to decide whether Article 6(4) procedure is necessary and applicable in this case. Mr. O'Sullivan points out that it has not been shown that there are no alternatives to the proposed development. He also points out that the Active Blanket bog in cSAC is a priority habitat under Annex 1 of the directive.

Therefore only consideration relating to Human health and safety or considerations relating to beneficial consequences of primary importance to the environment would allow the project to be authorised in those circumstances (priority habitat, adverse impact on integrity of site.) Mr. O'Sullivan concludes that there is no evidence that the proposed pipeline is required for Human Health and safety or to provide beneficial consequences to the environment.

39.2 Inspectors Assessment

1. The DEHLG and the NPWS raised issues and participated extensively in the OH. The major issues raised related to the stone road method and the impact it would have on intact blanket bog, the issue regarding hydrology and eco-hydrology and the potential of the stone road to drain or change the natural hydraulic cycle at the flushes in the cSAC north of the construction works and the issue of the potential for a peat slide which could have a significant environmental impact.
2. Mr. O'Sullivan in his report has discussed the appropriate assessment (Page 35). He has distinguished between the adverse impact on the habitat and the adverse impact on the integrity of the cSAC Glenamoy Bog Complex (No. 500). He accepts there will be localised effects. He does not accept there will be an adverse impact on the integrity of the site.
3. SEPIL responded to DEHLG submissions. I am impressed with the stone road method for construction in peat lands. I am also impressed with the modification proposed for Corrib to the method used at Glencullin. I accept the position put forward by SEPIL that the location of the stone road on the watershed divide of two catchments and mitigation measures proposed, will reduce the risk and reduce the impact of the stone road on the peat lands near the working area including any impact on the two flush systems as raised by NPWS in their submission.
4. Mr. O'Donnell has examined the proposed development and has concluded that with adequate geotechnical engineering expertise it is in his opinion possible to construct the stone road without causing peat instability. The DEHLG and NPWS have not had the benefit of his Mr. O'Donnell's opinion.
5. I accept Mr. O'Sullivan's analysis that approximately 150m x 40m at the edge of the cSAC Glenamoy Bog Complex will be traversed by the pipeline construction but that the Glenamoy Bog Complex itself contains over 12,000ha.
6. I accept Mr. O'Sullivan's assessment that the integrity of the Glenamoy Bog Complex will not be adversely impacted by the proposed development.

39.3 Inspectors Recommendations

1. I recommend that ABP decide that the integrity of the cSAC Glenamoy Bog Complex will not be adversely affected by the proposed development under article 6(3) of the Habitats Directive.
2. I recommend that ABP decide that the integrity of the Blacksod/Broadhaven Bay SPA will not be adversely affected by the proposed development.

Chapter 40 Peat Deposition Srahmore

40.1 Background

It is proposed that 75,000 m³ of peat be transported and deposited in the Bord na Mona site at Srahmore. The peat will be taken from the Rossport Commonage site north of Sruwaddacon Bay and from the peat lands south of the Bay along the route at Aghoos and from the forestry area from Aghoos to Bellagelley South into the Terminal site. The peat will be deposited in existing bays where Bord na Mona had previously removed peat on an industrial basis at Srahmore. Those Bays had been prepared for use (and partly used) as part of the peat deposition works that took place as part of the construction of the Terminal at Bellagelley South. In that work the peat was of less bulk and drier than anticipated hence there is space in some Bays and full Bays available now capable of holding the excess peat that will arise from the onshore pipeline.

40.2 Mr. O'Sullivan's Assessment

Mr. O'Sullivan has examined the proposal for the peat deposition at Srahmore. Mr. O'Sullivan highlights in his report:

- A previous permission granted by ABP PL 16.207212 Oct 2004 for deposition of 450,000 m³ of peat from the Terminal site.
- A previous waste licence granted by EPA W0199-01 for the deposition of 450,000 m³.
- The Oweninny peat land works rehabilitation plan for which IPPC Licence was granted [No 505].
- The submission from NPWS expressing concern regarding deviation from the original intention to include that part of the site being used for deposition of peat in the peat lands restoration works for Oweninny lands.
- Bord na Mona made the submission to the OH regarding the proposed peat deposition. In that submission it was stated that a review of the stability of the deposited peat will take place after 5 years. At that time and depending on the outcome of said review B na M may decommission the drainage and allow re-wetting of the deposition site as was originally intended in the rehabilitation plan for the Oweninny lands.
- That there were not a lot of comments from observers regarding this aspect of the proposed development.

I note that there were some issues raised by observers regarding the deposition of the peat and potential for pollution of the run-off into the Munhin and Owenmore Rivers, and regarding the fact that rushes only, and not peatland species had regenerated on the previously deposited peat from the Terminal site. Mr. O'Sullivan has dealt with both issues in his report.

Mr. O'Sullivan's Report deals very fully with the assessment of the E.I.S. related to the peat deposition as Srahmore. There is very little I can add to that. The previous deposition of 450,000 m³ was well planned and very well completed and accordingly a thorough system has been developed for carrying out this deposition work. I am satisfied with the proposals for peat deposition and I endorse Mr. O'Sullivan's conclusions and recommendation as follows:

40.3 Inspectors Recommendations

In the event that ABP decide to grant a permission for this development I recommend the following conditions.

1. "The deposition of peat at the site at Srahmore authorised by this permission shall be carried out in accordance with the description of development provided in volume 3 of the

Environmental Impact Statement submitted with the application and all the mitigation measures described therein shall be carried out in full.

Reason: In order to clarify the scope of the authorised development and to protect the environment and amenities of the area”.

2. Before peat haulage commences, the developer shall obtain the agreement of the planning authority, with regard to the following –

- (a) Regular survey of the road surface along the haul route during the haulage and construction period. At minimum, a survey shall be carried out on a monthly basis during peat haulage during the remainder of the construction period.
- (b) Target tolerances for the road surfaces and response times for repairs.
- (c) Liaison with the Project Monitoring Committee.

In the event of target tolerances being exceeded and in the absence of necessary maintenance of the road surface, the planning authority (following consultation with the Project Monitoring Committee) may require the cessation of all haulage activities or construction traffic directly related to the development.

Reason: To ensure the proper maintenance of road surfaces during the construction and haulage periods in the interest of traffic safety.

3. (a) All vehicles leaving the construction areas of the sites shall pass through an appropriate wheel cleansing area. The details of wheel cleansing which shall include full wheel wash where appropriate shall be set out and agreed with the roads authority in the EMP.
- (b) The developer shall take all reasonable measures to ensure that no material shall leak or fall from vehicles transporting waste from the terminal site. Before haulage of waste commences, the developer shall obtain the agreement of the planning authority in relation to details of vehicles and methodologies to be used to ensure the prevention of such leakage.

Reason: In the interest of amenity, the proper planning and sustainable development of the area, and traffic safety.

4. The haul route and schedule of haulage for the construction phase of the development shall be clearly documented and published in a manner to be agreed with the planning authority. All HCV's and other commercial vehicles visiting the sites on a regular basis (twice a week or more), shall have a clear notice visible to the public identifying involvement with the development and the vehicle reference number identifying each such HGV.

Reason: In the interest of traffic management and to make provision for control and review of vehicles.

5. An independent safety audit on the upgraded haul route shall be carried out and agreed with the planning authority prior to the commencement of haulage of peat. The audit shall have regard to:
 - (a) The proposed 60 km/hr speed limit for HGV's.
 - (b) The spacing of HGV's in convoy.
 - (c) Pedestrian use of the haul route.
 - (d) School traffic at Pollatomais and the proposed stand down of haulage during pick-up and drop-off times at the school.
 - (e) The operational aspects of the Traffic Management Operatives.
 - (f) Vehicle break-down incident management.
 - (g) Emergencies and full access for emergency vehicles to the route at all times.

Reason: In the interest of traffic safety.

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Chapter 41 Other Issues Raised at OH

41.1 Emergency Planning Arrangements

The question of dealing with the emergency situation that would arise from a failure in the pipeline needs to be considered.

41.1.15 HSA Role in Emergency Planning

This matter was raised with the HSA in correspondence. What role will HSA have in relation to the preparation and adoption of an emergency plan for use in the event of a failure of the pipeline while in operation?

The HSA's response of 19th June 2009 indicated that they have no role in the preparation and adoption for use of an emergency plan in the event of a failure of the pipeline in operation. They further pointed out that as the COMAH Regulations do not apply to pipelines the emergency planning aspects of those regulations do not apply either. However the HSA pointed out that Section 11 of SHWW Act 2005 required all employers to prepare adequate plans and procedures to be followed in an emergency, including arranging the necessary contacts with the appropriate emergency services. No submission of these plans and procedures are required to be made to the HSA. The plans and procedures however may come to the notice of HSA inspectors during routine inspections and evidence would be required that the plans have been tested and rehearsed.

41.1.16 The issue was also raised with Mayo Co Co Fire Authority

In evidence the Chief Fire Officer (CFO) indicated Mayo Co Co have no role in the maintenance of the safety features of the pipeline in operation. That safety in operation is a matter regulated by DCENR. Regarding the preparation of an emergency plan, the CFO indicated that normally once the project has obtained all its permissions and permits then the Fire Service and the other emergency service agencies (HSE & Garda Síochána) would engage with the operator of the site and a site specific plan would be developed.¹⁶¹ That would cover all the areas- alert procedures, mobilisation procedures, access routes, predetermined attendance. The CFO indicated that he would envisage that a site specific emergency plan would be agreed with them and become part of the Appendices to the Major Emergency Plan for County Mayo and that a similar arrangement would be developed with the other emergency agencies (HSE, Garda Síochána).

41.1.17 Observers raised the issue with SEPIL

In evidence the Deputy Manager of the Terminal indicated that SEPIL were in discussion with the Fire Service and the HSE regarding the emergency plan for the Terminal. He indicated that the pipeline would be dealt with as an offsite emergency. He further stated that outline discussions have taken place with the Fire Service and HSE regarding the emergency plan for the pipeline. However, he agreed with the Chief Fire Officer for Mayo Co Co that detailed work on the emergency plan for the pipeline would only be carried out when the planning permission and other permits were in place. SEPIL indicated that it is normal that the emergency planning is not advanced until the project has been approved. Sepil indicated that they carry out exercises on emergency plan responses.¹⁶²

¹⁶¹ [Evidence 25th May 11.09]

¹⁶² [Evidence 5th June 14.57]

Evidence was given by Comdt Boyle on behalf of observers about the Ghislenghien Disaster in Belgium where 24 deaths occurred. The issue of speed of response and location of fire service and medical aid response was raised. It was stated that the rural area was not suited to a rapid response, specialist burn units would be required, etc.

Note From media information provided the Ghislenghien incident occurred on 30th July 2004. 24 People died, 120 people were injured after an extensive gas leak was ignited. This was a large diameter pipeline operating at below 80 bar.

41.1.18 SEPIL Proposals

SEPIL stated¹⁶³ that: *“An Emergency Response Plan is being developed in co-operation with the local and regional emergency services. The procedures will be in place before the commissioning of the pipeline and the main objectives and elements of the plan will be discussed with the local community.”*

SEPIL provided a series of documents to the OH which among other matters dealt with aspects of the approach that was being proposed by SEPIL to manage the risk and the emergency response to any incident.

Bow Tie Analysis

Typical examples of how this approach will be used for the Corrib Gas pipeline were presented. The Bow Tie analysis system provides a readily understandable visualisation of the relationships between the causes of accidents, the possible escalation of such events to a range of possible outcomes, the controls preventing the event from occurring and the preparedness measures in place to limit the consequences.

It was stated that when the analysis is carried through to an operating facility, the prevention and mitigation measures are linked to tasks, procedures, responsible individuals and competencies which ensure critical roles are identified, procedures are complete and safety critical equipment items are identified as such with defined performance standards.¹⁶⁴

Environmental Management Framework

SEPIL presented an example from the Casino Gas Field in Australia of how the operating company, SANTOS, use an emergency management framework for operating the facility. That document included a brief outline of emergency preparedness and incident and non conformance investigation correction and preventive action.¹⁶⁵

SEPIL also presented details of this report a SANTOS Report as a second example from the Casino Gas Field Development Environment Report. In Section 6.18 Hazard and Risk it states *“Due to statutory safety regulations and the petroleum pipeline industry’s diligences in Risk Assessment and Management, pipelines are a significantly low risk means of gas transporting”*.

¹⁶³ [DRN OH 13]

¹⁶⁴ [DRN OH 63]

¹⁶⁵ [DRN OH 68]

This section also summarises measures taken for the Casino Gas Field which are performed in accordance with the Australia Standards AS2885. It is interesting in these summaries that a qualitative risk assessment as per AS 2885 has been used.¹⁶⁶

SEPIL presented a third example from the Environmental Management Plan for Corrib. SEPIL presented documents at OH indicating the EMP structure and that the construction project will be operated in accordance with an approved Environment Management Plan.

These documents, while of some relevance to overall risk management on the pipeline, they do not provide much information by way of detail to consider under this heading of Emergency Planning.¹⁶⁷

41.1.1 The National Framework for Emergency Planning

A framework has been put in place for Major Emergency Management in Ireland (2006). That framework was put in place having been prepared under the aegis of an interdepartmental committee on Major Emergencies and the framework has been approved by government decision. In the framework there is recognition that there is a potential for more extreme emergencies which are beyond the normal response capability of the principal emergency services. Examples of such emergencies are recognised as follows:

- The Bettleguese ship disaster Bantry (1979)
- The Butlevant rail crash (1980)
- The Stardust fire (1981)
- The Cherryville rail crash (1983)
- The Air India disaster (1985)

A rupture and subsequent ignition of the gas pipeline would in my view be an equivalent type of emergency to these examples.

The following is a brief review of the relevant requirements for emergency planning as set out in the Framework Documents.

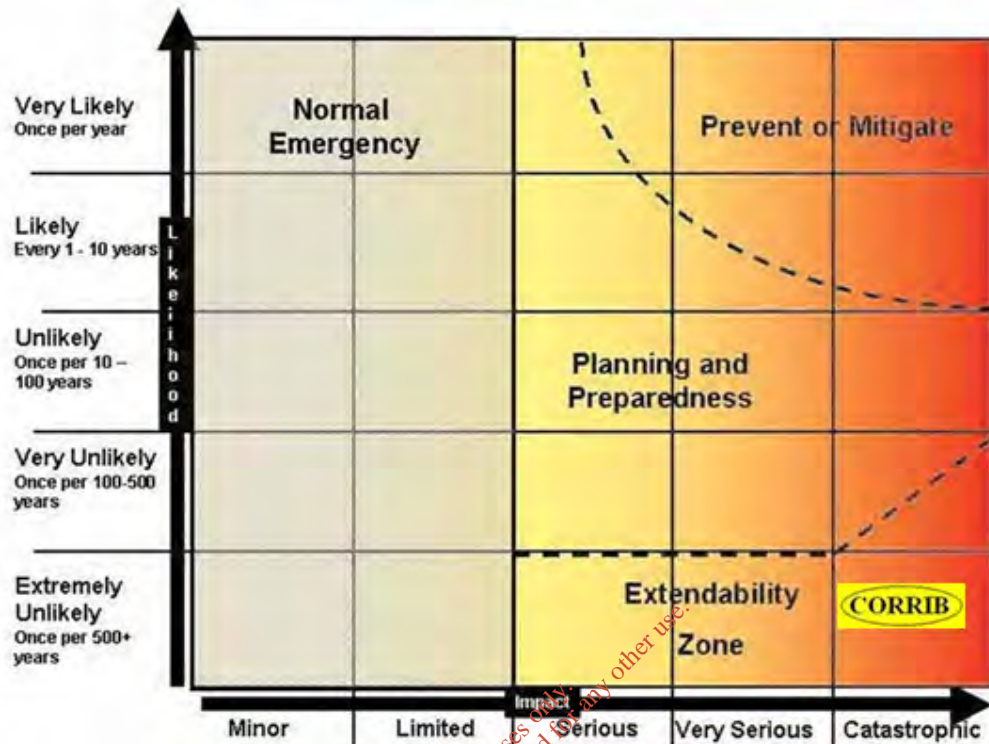
- (1) Each local authority should have as a specific sub plan of its major emergency plan, a plan for responding to severe weather emergencies.
- (2) Each principal Response Agency should review site and event-specific emergency plans for consistency with its Major Emergency Plans in conjunction with site and/or event emergency plan owners and appropriate regulatory bodies.
- (3) Each Principal Response Agency should initiate and document a major emergency development programme to ensure that it has all necessary arrangements, systems, people and resources in place to discharge the functions assigned to it.

The framework sets out how co-ordinated response is to be delivered and deals with local, regional and national response and co-ordination and such issues as aerial support where required.

¹⁶⁶ [DRN OH71]

¹⁶⁷ [DRN OH 99 and DRN OH 91]

The framework also provides a risk assessment guide for use by the Emergency Response Services in planning for emergencies. A Risk Matrix System is outlined so the severity of consequences of the emergency can be combined with the likelihood of the emergency.



[Figure 2.1(b) WORKING DRAFT GUIDANCE DOCUMENT 1, A GUIDE TO RISK ASSESSMENT IN MAJOR EMERGENCY MANAGEMENT]

“The prevention, control and mitigation measures that are already in place should be considered and recorded and, taking these into account, a decision made on the position for the hazard on the risk matrix.”

Based on information presented by SEPIL in the E.I.S. and in the additional information provided at the OH, a possible maximum number of 7 casualties is the estimate used by SEPIL in their analysis of a pipeline failure. SEPIL also indicate that the risk of failure on an annual basis at LVI would be 1×10^{-5} Chances per year i.e. once in approximately 100,000 years risk of failure.

To illustrate the use of the matrix I have marked the Risk Assessment into the major emergency planning risk matrix. The framework recommends that the interagency group comprising An Garda Síochána, HSE and Fire Authority shall carry out training exercises on emergency scenarios and including one scenario (extremely unlikely, catastrophic impact) which will provide a good basis for development of a robust All Hazards Major Emergency Plan.

41.2 Inspectors Assessment

1. One of the serious concerns among observers about this proposed development was this issue of how an emergency response would work and what preparedness was there for such an event.
2. In outlining the role and responsibilities of agencies and in detailing the responses of SEPIL above, I am satisfied that a clear picture has been established regarding who does what to prepare for such an emergency.
3. It would have been much more satisfactory had SEPIL available the full Bow-tie Analysis and Integrated Management System for operating the Corrib Gas Field, including the onshore pipeline. Unfortunately this analysis work and preparation of the PIMS is still work in progress.
4. Nevertheless, I was impressed by the example of the bow-tie analysis that a very comprehensive system is being put in place and the clarity of how the analysis will work was good. The analysis will work into the operation of the facility so that the prevention and mitigation measures are linked to tasks, procedures, responsible individuals and competencies which should ensure critical roles are identified, procedures are complete, and safety critical equipment items are identified as such with defined performance standards. As I said above, it would have been more satisfactory had SEPIL completed this analysis and had they available the full detail of the system.

41.2.2 Inspectors Conclusion Emergency Planning

The National Framework for Major Emergencies has been put in place and sets a high standard for preparedness for emergencies. The fact that this is an up to date framework and that independent audit of the framework have taken place, provides confidence that is required in regard to how a major emergency on this proposed development will be responded to by all the agencies. I am satisfied that a comprehensive emergency planning regime will apply to the proposed development.

41.3 Working Relationship SEPIL and Local Community

1. Notwithstanding the situation whereby on one side there are those who may continue to confront the proposed development, and on the other side that SEPIL have a determined plan to complete the Corrib Gas Field development, there is a need for the leadership in the local community and the management in SEPIL to have a system of machinery in place whereby the many issues that have to be dealt with can (1) be communicated, (2) provide feedback and suggestions, (3) be reviewed.
2. The Liaison officer for the proposed development is an essential position and I expect a busy post during any project as extensive as this proposed development. However, the Liaison Officer cannot provide either the time or the required level of communication, feedback and review required on his/her own.
3. The Project Monitoring Committee (PMC) established by Mayo Co Co to oversee the terminal construction under one of the conditions of the planning permission is an essential part of the control of the project. Nevertheless, it seems to me there is room for a group which has representatives of the community and representatives of SEPIL which could usefully be established to act as a clearing house for communication, feedback and review of the ongoing issues as they arise.
4. Such a system of clearing house direct contact between SEPIL and the local community can work. Indeed, such a system works well on many difficult projects, and in my own experience such a system can avoid legal confrontation and can resolve difficult issues by discussion and agreement where the leadership exists on both sides to make the system work.

5. Regardless of whether such a system of “clearing house” is possible, I believe that there is an obligation on the Applicant to provide good timely accurate information to the community on issues that will affect that community, I recommend that such a condition be attached to any permission that the Board may decide to grant for this development.
6. I accept that the community otherwise will find themselves being confronted with an activity unawares such as heavy slow moving equipment mobilisation etc.

41.3.3 Inspectors Recommendation

In the event that ABP decide to grant permission for this development I therefore recommend that SEPIL be requested to establish a group within the Project Monitoring Committee structure and reporting to the PMC and subject to the agreement of Mayo Co Co. The group would work to provide a local liaison function for communications feedback and review of ongoing issues on the construction site and haul route.

(a) Representatives of the local community who are prepared to represent their community to the best of their ability.

(b) Management of SEPIL who will be prepared to be responsive to issues of concern locally.

Reason : To establish a direct system of local liaison between the applicant and the local community

41.4 Environment Management Plan

SEPIL set out in the E.I.S. Section 18.2 details of an Environmental Management Plan (EMP) proposed to ensure optimal management of all activities. SEPIL outline the function of the EMP as follows

“The EMP will be used during the construction activities as a tool to manage and ensure compliance with all relevant environmental regulations and standards as well as the commitments set out in the E.I.S.”

SEPIL provided additional details of how the preparation of the EMP will take place once the project has received permission and all consents. The EMP will contain detail environmental method statements which will then be submitted to NPWS and NWRFB for agreement.¹⁶⁸ A copy of the approved EMP for the landfall, near-shore and off-shore pipeline works was submitted to OH¹⁶⁹ approved by DCENR and DAFF. This is a very substantial document. I have examined the document and I am satisfied the document provided is a reasonable example of the EMP described by SEPIL in the E.I.S. Section 18.2.

The example submitted contains method statements such as vehicle maintenance, bunding for oils, storage areas, waste handling including the names of the specific waste management contractors. It also provides details of the consents and conditions and the environmental conditions that are relevant to the site. The EMP submitted demonstrated a significant level of detail regarding the management of construction. I found the level of detail provided in that EMP was commensurate with the complexity and number of issues that have to be managed.

¹⁶⁸ [DRN OH99]

¹⁶⁹ [DRN OH91]

41.5 Inspectors Conclusions

1. The construction of the proposed development is a multi layered activity and requires detail planning at each stage. The Environment Management Plan process as proposed by SEPIL will in my view provide a substantial tool for managing the activities.
2. A Project Management Committee (PMC) is required to bring together the developer, the planning authority, the agencies involved and representatives of the local community to monitor the project.

41.6 Recommendations

In the event that ABP decide to grant a permission for this development I recommend the following conditions:

1. Prior to the commencement of the development an Environment Management Plan (EMP) shall be prepared for agreement with the planning authority Mayo Co Co. The plan shall contain details of all monitoring and reporting arrangements for the construction of the proposed development. The plan shall contain method statements for construction activities. The plan shall contain the traffic and transportation management plan details for the project. The plan shall contain details of emergency response to environmental or other emergency incident during the course of the construction works. The plan shall contain details of how liaison with the local community [including information being provided for the local community] will operate. The plan shall set out how complaints and issues arising within the local community can be raised, recorded and responded to by SEPIL and by the contractors working on the site. A register of complaints and issues raised shall be regularly reviewed by the Project Monitoring Committee (PMC).
2. Prior to commencement of development, the developer shall obtain the agreement of the planning authority for a monitoring plan to ensure that all mitigation measures proposed in the Environmental Impact Statement and Additional Information provided at the oral hearing for the Board relating to the protection of habitats, flora and fauna are carried out. Monitoring shall be carried out by a suitably qualified ecologist who shall liaise with the Project Monitoring Committee.

Reason: In the interest of protecting the environment.

3. The developer shall appoint a suitably qualified and experienced Environmental Officer for the period of the earthworks and construction phase. As part of his/her duties, the Environmental Officer shall liaise with the Project Monitoring Committee in relation to implementation of the required environmental monitoring, and shall be responsible for reporting to that committee and the planning authority –
 - (a) any malfunction of any environmental system,
 - (b) any occurrence with the potential for environmental pollution,
 - (c) any emergency

which could reasonably be expected to give rise to pollution of waters. The Environmental Officer shall maintain a record of any such occurrences and action taken; this record shall be available for public inspection at the developer's offices at Bangor Erris during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

4. Before development commences on the sites, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, ground water, dust and continuous noise. Such monitoring shall be carried out by the developer throughout the earthworks and construction phase. The monitoring plan shall, as a minimum, include –

- (a) A list of all monitoring locations,
- (b) Description and specification of equipment to be used,
- (c) The identity and qualifications of persons responsible for monitoring,
- (d) Parameters to be used,
- (e) Monitoring intervals,
- (f) Averaging times,
- (g) Proposal for the presentation of data,
- (h) Codes of practice to be used, and
- (i) Details of right of access to Mayo County Council appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee.

Costs incurred by the planning authority in carrying out any necessary monitoring, monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.

Reason: In the interest of clarity, and the protection of the environment during the earthworks and construction phase.

5. Prior to commencement of development, a Project Monitoring Committee (PMC) shall be established to monitor geotechnical risks as set out in the Geotechnical Risk Register or any further revision of the risk register following preconstruction site investigations, surface water run-off, drainage control, traffic management and road maintenance, implementation of the reinstatement plan and other environmental issues. The PMC shall comprise two representatives of the developer, two representatives of Mayo County Council, and an invitation shall be extended to the North West Regional Fisheries Board, the Department of the Environment, Heritage and Local Government (an NPWS representative), DCENR, EPA and Bord na Móna to provide one representative each for the committee. In addition, two representatives of the local community, selected in accordance with procedures to be agreed with the planning authority, shall be invited to serve on this committee. The PMC shall have the right to co-opt other members as required. The Mayo County Manager or his/her nominee shall chair the PMC.

Details of the mode of operation for the committee, including frequency of meetings, reporting and liaising arrangements with other persons and bodies, shall be agreed with the planning authority before development commences.

Reason: To ensure effective monitoring during construction in the interest of the proper planning and sustainable development of the area.

6. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an emergency plan has been prepared for the area between Glengad, Rosspoint, Aghoos and Ballinaboy. The plan shall have been agreed by HSE, Mayo Co Co and Gardaí and shall be in compliance with any requirements set down in the Major Emergency Plan for the area.

Reason: This condition is necessary to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area

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Chapter 42 Landscape and Visual Impact

42.1 Mr. O'Sullivan's Conclusions and Recommendations

Mr. Stephen O'Sullivan has examined this aspect of the development, and his report is attached at Appendix 1. Mr. O'Sullivan sets out his conclusion and recommendation as follows:

“4.6 Conclusions and recommendation

Having regard to the temporary nature of the visual impacts arising from the proposed works to construct the onshore pipeline, and the small extent of the visual impact arising from the permanent above ground structures which are proposed, it is concluded that the visual impact of the proposed development, while negative, would not seriously injure the visual amenity or the landscape character of the area, nor would they contravene the above policies of the development plan. It would not, therefore, render the development contrary to the proper planning or sustainable development of the area.

If a grant of permission is made, then condition requiring the implementation of the mitigation measures set out in Section 10 of the main E.I.S. should be attached, which may be worded as follows: -“

Mr. O'Sullivan's Recommendations

“The measures to mitigate the visual impact of the proposed development set out in Section 10 of the Environmental Impact Statement submitted with the application shall be implemented in full in the course of the development.

Reason: *To protect the visual amenity and character of the area.”*

42.2 Inspectors Conclusions

I have examined the proposals put forward by the Applicant. I have also inspected the site and viewed the LVI site from both L1202 and the road at Ceathrú Thadhg. I agree with Mr. O'Sullivan's assessment *“the small size of the proposed structures, their situation in a dished area below the natural line of the slope to the bay, their colouring in neutral colours, and the grassing of the access road and surrounding slopes will work to ensure that the scale of the visual impact of the permanent above ground structures associated with the LVI will be slight”.*

In the event that ABP decide to grant a permission, then I accept the condition as set out in Mr. O'Sullivan's Report and as repeated above as being important to protect the visual amenity and character of the area.

Chapter 43 Hydrology and Eco-Hydrology

43.1 Ground Water

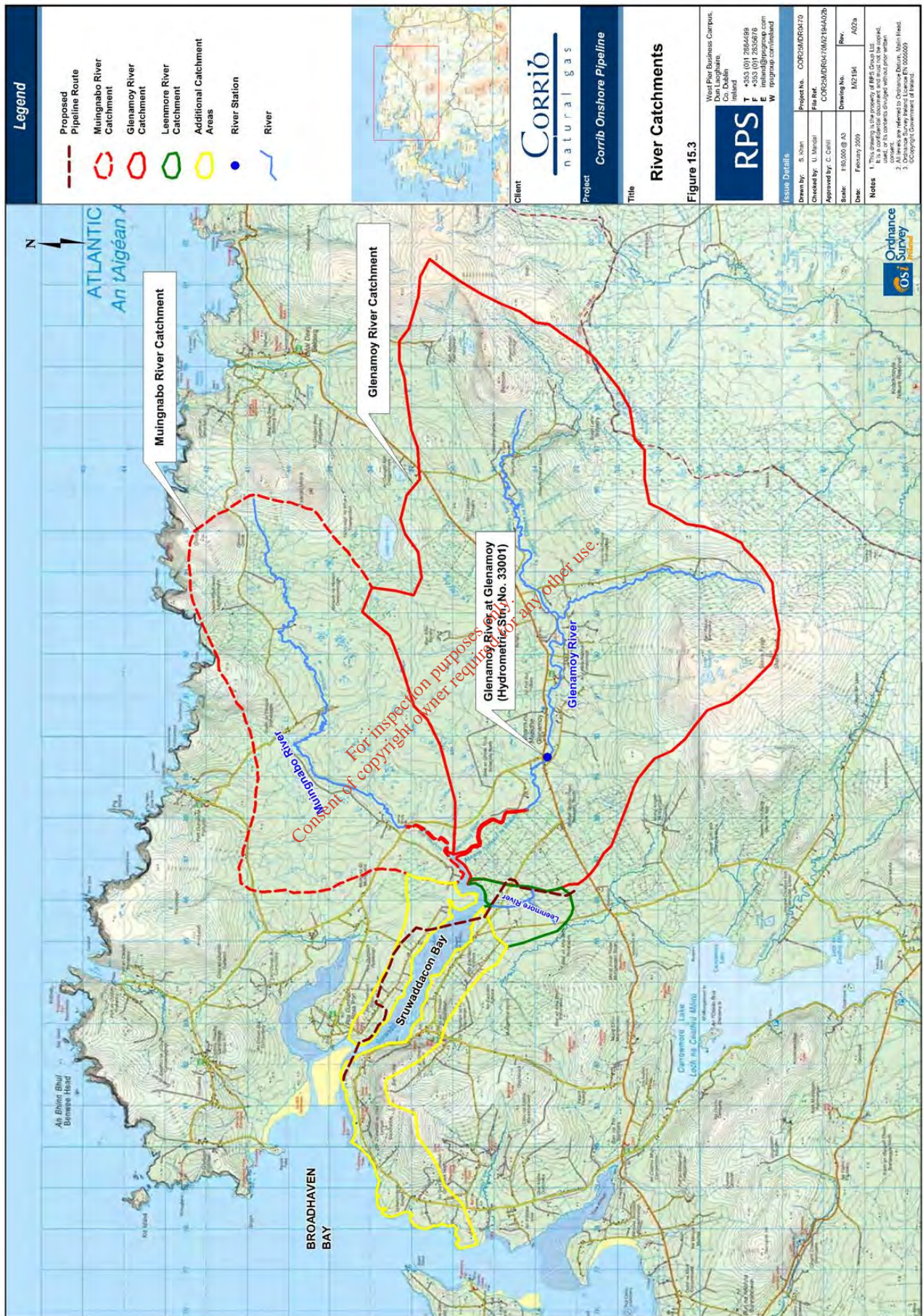
Chapter 15 of the E.I.S. contains details of the soils and geology that will be encountered by the proposed development. Table 15.1 describes the geology and Figure 15.1 shows bedrock geology. Figure 15.2 shows the subsoil geology.

“The GSI classify the groundwater in the underlying bedrock to be poor aquifer, which is generally unproductive except for local zones. Bedrock groundwater flow occurs predominantly through a limited and poorly connected network of fractures, fissures and joints” (EIS 15-13)

SEPIL has recorded ground water levels in monitoring wells along the northern shore of Sruwaddacon Bay and to the south of the Glenamoy River Estuary. Groundwater levels were manually monitored at the proposed LVI at Glengad where it is expected that ground water may rise slightly above the floor level of LVI during periods of high rainfall and elevated groundwater levels. Based on the recorded groundwater levels to date it is only expected that the pipeline will intersect groundwater at the trenchless crossings of Sruwaddacon Bay and at the LVI during high groundwater levels, outside of peatland areas. It is proposed to implement an accident spillage containment mitigation measure as part of the EMP to protect groundwater contamination during construction.

43.2 Hydrology

The hydrology of the existing environment is considered in Chapter 15.2. The pipeline route lies within the Sruwaddacon Bay water catchment areas. A section of the route lies within the terminal surface water drainage catchment. The E.I.S. sets out the potential impacts on hydrology as occurring during construction and that there will be no impacts on hydrology as a result of the operation of the onshore pipeline. The Appendix M5 indicates in Section 3.2 that no surface water abstraction points have been identified within the study area.



The potential impacts on flooding, drainage, water quality and amenity value have been considered, and mitigation measures have been proposed in Table 4 Appendix M5. The principal mitigation measures are:

- Selection of appropriate time and weather condition for stream crossings.
- Trenchless technique for tunneling across and under Sruwaddacon Bay.
- A series of construction methods in peat lands including a stone road with 0.5m peat layer left in situ underneath, and peat plugs to attempt to recreate the hydrological conditions of the peat lands.
- Sedimentation and filtration of surface run off before discharge of waters from the construction site.

In Appendix M5 Fig. 2 an extract from OPW Flood Hazard Maps does not show any flood prone points in the vicinity of the pipeline. The Muingnabo River Catchment lies to the North East of Sruwaddacon Bay and the Glenamoy River Catchment lies to the East of Sruwaddacon Bay. The E.I.S. considered the flooding in these catchments, and also considered the high tidal flood conditions in Sruwaddacon Bay. The pipeline will cross the Leenamoy River adjacent to where the river enters Sruwaddacon Bay. The pipeline crosses 2 streams in the forestry area south of the bay. The pipeline will also cross drainage channels/streams along its length.

43.3 Observers Concerns

Concerns were raised regarding landslides at Dooncarton and peat slip/bog burst. These are dealt with separately. Concerns were also expressed regarding the design of the proposed development with respect to ability to cope with the local rainfall conditions, concerns about the likely impacts on water quality from runoff of construction contaminated surface water, and concerns were raised about the long term impact of the stone road on the hydrology of the area.

43.4 Inspectors Assessment

1. I am satisfied that the hydrology of the area has been described and is adequately set out in the E.I.S and in the additional information provided by SEPIL at the OH.
2. I am satisfied that the details provided [Ref DG 702, DG 703] for the crossings under ditches and for the crossing under streams and rivers are adequate. The line of the gas pipe will be marked on either side of these crossings. The gas pipe will be 1.6m below bed level of the watercourse being crossed and a protective concrete slab will be placed above the gas pipe as a mitigation against the possibility of damage to the pipe by future drainage work on the river/stream or ditch as the case may be.
3. I am also satisfied that provided the measures proposed are adopted [i.e. (1) Timing of crossing of the streams to be chosen with attention to risk of flooding events, (2) Sufficient size to be provided in the temporary flume pipes used to convey the river flow while the construction work is taking place] that the construction of the crossings of river, streams and ditches should not contribute to flooding in those catchments.

43.4.4 Surface water management during construction

4. SEPIL provided additional information regarding SW management during construction in the form of a drawing showing the discharge locations for SW during construction [Doc 97] and details of the SW design basis [Doc 126]. A 10 year 24 hour storm event of 51mm rain has been used in the design based on local and Met Eireann rainfall data.
At one end of the pipeline at Dooncarton/Barnachuille a rainfall event of 80mm at least a 100 year return frequency rain storm event occurred on 19th September 2003 and gave rise

to the Dooncarton landslides which are considered elsewhere (Tobin Report on the landslides at Dooncarton, GSI report on landslides in County Mayo).

I believe that the surface water management system during construction is one of the vital components to ensure stability of the peat lands. I also believe siltation and settlement facilities to protect Sruwaddacon Bay from pollution should be designed to be adequate to cater for storm events

43.4.5 Inspectors assessment of proposed Storm Water Design

The risk of impacts from the construction works can be increased by high rainfall events or prolonged rainfall events. The Risk Register contained in the E.I.S. has identified consequence risks. The Risk Register also recognises the appropriate Risk Control Measures as follows:

- Plan / program for high rainfall events.
- Use conservative design parameters for the design storm event.
- Detailed method statement to be prepared with regard to dewatering and protection of works.

It is considered that these risk control measures have not followed through into the surface water drainage system proposed in the E.I.S. and regarding which system additional information on Rainfall Event Frequency was submitted at OH. The rainfall event proposed is considered a normal design expected event. It is considered that in this proposed development planning of the surface water handling should include design using a very large rainfall event 1: 100 year event is considered more appropriate for the site. Such an event would I believe meet the requirements of the E.I.S. Risk Control Measure as contained in the Risk Register Appendix M4, would be very conservative but more important a design for the surface water system based on a 1/100 year event would reduce the risks of peat instability and contamination of Sruwaddacon Bay.

43.4.6 Issue concerning stone road acting as a drain

This issue was raised by observers concerned that when constructed, the stone road would act as a preferential drainage path and effectively cause ground water table level to drop in the peat lands. Oral evidence was given that over the past number of years the profile of the Glenamoy Bog Complex behind Rosspoint has shrunk due to factors which were not discussed but presumably related to drainage works to facilitate peat harvesting. SEPIL supplied additional information at the OH in the form of an addendum to E.I.S which provided details of the peat plugs¹⁷⁰ proposed to reduce the permeability of the stone road itself.

The stone road is to be constructed in peat, leaving a 0.5m layer of peat into which the stone will be placed. This layer is intended as a restriction on permeability and flow of water at the base of the stone road. SEPIL also in the addendum, provided results of hydrometric monitoring on a stone road constructed along part of the route [part of the 2002 consented pipeline works which had commenced and were discontinued] near the terminal. This is shown in Figure 3.1 page 8 of Addendum¹⁷¹ where it states that the data shows there is limited drawdown of water level impacts on the peat adjacent to the stone road. SEPIL further point out that peat plugs have not yet been installed in that section of stone road.

The stone road has been developed as a technique in peat lands which provides a stable access route and which provides support for upslope peat retention, I have inspected that part of stone road constructed on the route of the proposed development near the terminal. I have seen the peat

¹⁷⁰ [Refer drawing No 86402007 in the addendum DRN OH7]

¹⁷¹ [DRN OH7]

adjacent to that road and it's condition – wet peat exhibiting soft movement underfoot, I have also visited the stone road at Glencullin on the Galway – Mayo pipeline. On the Galway – Mayo pipeline the construction practice was different to that proposed for Corrib in that the pipeline was laid beside the stone road not within it as is proposed for Corrib.

Mr. O'Donnell, Geotechnical Consultant, has also considered the proposed stone road method in his report [Appendix 2]. Mr. O'Donnell's focus is however on the stability of the stone road under variable loading conditions. He does however provide an expert opinion in Section 6.0 of his report as follows:

Stone Road – permeability of basal layer and transverse plugs:

“My opinion on the potential drainage effect of the stone road is that the transverse plugs and basal barrier layer, which will be made up of a matrix of rockfill mixed with remoulded peat will reduce the potential for drainage from the stone road. However, they are not an engineered low-permeability hydraulic barrier so there could be some preferential flow around the rockfill which would increase the permeability of the barriers/plugs, allowing some drainage to occur from the stone road. Drainage through the lower barrier layer of 0.5m deep peat would not be significant if the road was constructed on fine-grained cohesive soil.”

I am also satisfied with what I saw at Glencullin on the Mayo-Galway BGE pipeline which had been reinstated at least two years at the time of my inspection there. I expect that there will be an adverse impact on the peat lands hydrology from the stone road. I expect that the mitigation measures proposed will work to reduce that impact.

The stone road in Rossport Commonage runs along the divide of two catchments in the peat lands. The location of the road as chosen should further mitigate the impact. Mr. O'Sullivan in his report (Appendix 1) has considered in detail the impact on the natural environment and he has concluded that there will be an adverse impact on the peat lands from the proposed development, that the impact will be local and that the impact does not have an adverse affect on the integrity of the cSAC Glenamoy Bog Complex (No. 500)

43.5 Ecohydrogeology

43.5.1 SEPIL Submission

The Ecohydrogeology is considered where the development is routed through the peat lands. SEPIL proposals and their assessment of the impacts of the development are set out in Chapter 15.4. SEPIL conclude *“that the proposed development will have a minor negative impact on the hydrogeology of the protected habitats with some minor local changes to water levels and hydraulic gradients. In terms of ecohydrological residual impact however, the proposed development will have an imperceptible impact on the Annex 1 habitats present, which in this case is intact blanket bog.”*

SEPIL provided an addendum to the E.I.S. at the oral hearing where data was presented from further study of the two flush systems and vegetation to the north of the pipeline route in the Glenamoy Bog Complex cSAC. The assessment was carried out by Ecological Advisory and Consultancy Services (EACS) in association with Dr. John Conaghan.

It was concluded that *“provided run off and pollution and mitigation, together with measures to protect the integrity of the flush and its water supply are fully implemented then there should be no impacts on Flush 1 either during or post construction. No impact on Flush 2 is anticipated because of its separation from the proposed pipeline by the local catchment divide”*.

The addendum also contained supplementary information on ecohydrological and ecohydrogeological impact assessment of the proposed development. A summary was presented of study work and measurements taken at transects across sections of the peat lands. Conclusions were drawn regarding the movement of ground water in those parts of the site studied. The submission concludes that *“the conceptual hydrogeological model has been substantiated”...and...“that the mitigation measures proposed are appropriate and that the mitigation measures have been devised to maintain the hydrological regime and thereby the SAC”*.

The E.I.S. itself in Section 15.4.3 and in Table 15.4 presents a summary of the potential impacts and mitigation measures on peatlands. SEPIL have indicated that a major adverse impact will result from the excavation, the placement of stone road and site traffic and storage of peat material in lowland blanket bog.

43.5.2 Assessment and Conclusion

From an ecohydrogeological point of view a sufficient set of information has been presented in the E.I.S. and in the additional submission to the OH to enable an assessment to be carried out. I am impressed that the work carried out at Glencullin and the study ongoing there of long term impacts from the stone road method have informed the improvements proposed to the stone road method to be used for the Corrib pipeline. I am impressed with the improvements proposed to the overall stone road method itself and the improvements proposed in the surface reinstatement detail proposed for the blanket bog.

I believe that the supervision of the construction works by an ecologist and a hydrogeologist will provide expertise to identify issues such as peat pipes or other sub surface water paths in the peat. Overall I am satisfied with the level of mitigation proposed to reduce the impacts of the proposed development on the ecohydrological and ecohydrogeological support systems for the peat lands for the intact blanket bog and for the cSAC.

43.6 Recommendation

I am satisfied that provided the mitigation measures are implemented in full and provided the applicant SEPIL complies with the following conditions that the impact of the stone road on the hydrology of the peat lands can be mitigated to a slight draw down of the water table along the stone road.

In the event that the ABP decide to grant a permission I recommend the following conditions:

- (1) The mitigation measures proposed for the construction of the stone road in peat lands as set out in the E.I.S. Section 15.4.3 and in Tables 15.4 and 15.5 shall be implemented in full.
- (2) That particular attention be taken in the final detailing of the stone road where it approaches the estuary, the Leenamore river and the two streams and ditches to ensure that permeability barriers to restrict free drainage through the stone road itself are installed at those locations.
- (3) The construction detail for the compounds in the peat lands shall be similar to that used for the stone road.
Reason: To ensure that the impact of the stone road on hydrology of the peat lands is minimised.
- (4) That a conservative approach be taken to the S.W. drainage system which should be redesigned to cater for a 1/100 year event.

Reason: This will reduce the risk of surface water contributing to any peat instability. This will also reduce the risk of potential pollution arising in Sruwaddacon Bay or in the freshwater river and stream systems where the surface water will discharge.

- (5) All the construction work in the peat land and in the intact bog within the cSAC and in the section of intact bog in the non-designated peat land shall be supervised by an experienced geotechnical engineer who should liaise with the eco-hydro geologist to ensure that hydraulic paths in the peat are identified, marked and reinstated satisfactorily.

Reason: To ensure that the impact of the stone road on hydrology and eco hydrogeology of the peat lands is minimised.

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Chapter 44 Haul Routes and Traffic Plan

44.1 SEPIL Proposals

SEPIL has identified a Haul Route for the proposed development. They have also assessed the traffic on the existing network and they have estimated the traffic flows and peak period traffic flows at the junctions on the haul roads. The details are contained in Chapter 7 Traffic of the E.I.S. together with Appendix E which contains the Traffic Management Plan and Appendix F which contains the Traffic Impact Assessment. In Appendix R the quantities of peat and stone that will be hauled are estimated. The master plan for traffic on a monthly basis bringing together the predictions for haulage of materials and equipment inwards to the site and the personnel trips to and from the site and the predictions for haulage of materials and equipment outwards from the site are presented for the sections along the route in Appendix E. The E.I.S. also contains detailed traffic management proposals along the route. Consideration is given in the traffic assessment to combinations of traffic from the onshore pipeline and from other works on the overall scheme the Terminal construction and the support works onshore for the offshore pipe laying.

44.1.3 Conclusion regarding traffic plan proposed

I have considered the information provided in detail. I am satisfied that a comprehensive assessment of the traffic involved has been carried out. I am satisfied that a comprehensive assessment of the traffic carrying capacity of the existing road network to handle the volumes of traffic involved has been carried out. I am also satisfied that an adequate assessment of the peak hour volumes of traffic has been prepared for the junctions on the haul route.

44.2 Road widening/road straightening proposals

SEPIL outline in the E.I.S. that by agreement Mayo County Council will improve and strengthen the road network proposed at the haul route and that SEPIL will pay the cost of the works involved.

Mayo County Council were asked at the OH to provide details of the road improvements proposed. These were supplied in a report on infrastructure.¹⁷²

SEPIL were asked at OH to provide details of the assessments carried out by them of the roads along the haul route. SEPIL indicated that roadworks proposed were not part of the proposed development as such. SEPIL indicated that Mayo County Council would be carrying out strengthening and maintenance works and that Mayo County Council were responsible for assessing the improvements required and carrying out those improvements. SEPIL did however submit to the OH details of an assessment of the haul routes carried out by them in 2002 with a summary prepared in June 2009¹⁷³. [DRN OH95]

44.3 Routes: R313, R314, L1204

These routes will be used for bringing materials and personnel to the site and for stone haulage and peat haulage for disposal at Srahmore. These routes have been improved, widened and strengthened to support haulage on previous phases of the overall project – Terminal construction, including peat disposal (450,000 m³ which was deposited at Srahmore) and works connected with the offshore pipeline at Glengad.

¹⁷² [DRN OH52]

¹⁷³ [DRN OH95]

44.4 L1202

The local haul route to the Landfall at Glengad L1202 from its junction with R314 to the landfall valve site [L1202 -116 and L1202-45 Refer Drawing 2044-1352 Appendix E]. Mayo County Council has confirmed that strengthening (9.2km) and widening [5km part only] of this road is complete. The issue on this road is that due to difficulties in negotiating land acquisition for road widening, part of this road will not now be widened as was originally intended.

44.4.1 Environment

Removal of hedge rows and alleged inadequate handling of local ecology during the works by Mayo Co Co. Evidence by Mayo Co Co was that an environmental assessment of the road improvement had been carried out and that an ecologist had been employed to manage the ecological issues that arose and that ecology was handled adequately. While the works associated with the 2008 road improvements by Mayo Co Co [L1202] and the 2008/2009 offshore pipe pull in at Glengad by SEPIL{itself part of the 2002 consented scheme] have no direct bearing on this {GA0004} application. I am satisfied that a review of the issues raised by the local community does provide a relevant input to the assessment of the likely impacts of the proposed traffic haul route [L1202] on the environment and on the area.

44.4.2 Observers Submissions L1202

Evidence by observers was given at the OH of problems experienced by local users of this road due to the construction traffic associated with the offshore pipe construction at Glengad site. The issues raised are set out below.

44.4.3 Damage to Environment / Local Services

A road trench excavation (20m) collapsed causing bog slip which affected an ESB pole and caused loss of ESB services in the area.¹⁷⁴

44.4.4 Traffic conflict at school pick up times

The convoy system whereby up to 5 HGV's will move together to or from the landfall site has been used (for landfall, pull in works) and is proposed to be used again for the onshore pipeline. Evidence was given of conflicts when parents drop off and pick up children at school. Evidence was given of difficulties getting an agreed arrangement with SEPIL. SEPIL in the E.I.S. proposes managing traffic by arranging that operatives are on site before 8am, a maximum speed limit of 60km/hour on HGVs, a school warden system will be operated by SEPIL in co-operation with local school transport providers. SEPIL in evidence indicated that they were "standing by" the convoy system during pick up/drop off times, but this is not contained in E.I.S.

44.4.5 Speed of HGV's

60km/ hour is considered too fast by local people.

44.4.6 Lack of confidence in TM plan

Observers expressed that there was a lack of information about large/heavy loads/difficulty in communicating problems with SEPIL regarding traffic problems. Evidence was given that the local community is not confident that the plan as set out will be adhered to, that the dates of heavy load

¹⁷⁴ [DRN OH52 page 3 Bog Slip].

movements are not available, that when a complaint needs to be made that SEPIL want a lot of detail about the incident which may not always be available [number of HGV vehicle(s) etc]. SEPIL indicated in E.I.S. that an Environment Management Plan will be put in place, covering detailed aspects of all construction activity. In evidence SEPIL indicated that an environmental liaison officer is proposed for communication with local community. As regards movement of heavy loads, SEPIL indicated that problems had arisen in the past when notice had been given of such heavy load movements [the movement had been disrupted]. As a result it was not now proposed to give notice.

44.4.7 Noise / vibration / structural damage to buildings.

Evidence was given of vibration, damage, noise and problems for buildings [along the L1202] caused by the HGV traffic. Local concerns are that this will be more significant during the onshore pipeline construction works. SEPIL indicate in E.I.S. Section 9.5.2. that a structural survey would be carried out on any receptors deemed susceptible to vibration impacts. In evidence, SEPIL indicated¹⁷⁵ that vibration monitoring can be undertaken and that further mitigation measures in reduction in speed of HGV vehicles may be implemented on specific sections of the haul routes as appropriate.

44.4.8 Assessment L1202

The central issue here as presented by local community evidence, is the suitability of a local road, much of which is built on a peat sub soil, to act as a haul route for the onshore pipeline. The L1202 serves the Aghoos, Pollatomais and Glengad communities who now [due to the landfall offshore pull-in works] share the road with haulage convoys and some specially permitted larger loads from time to time. The onshore pipeline will place greater stress on this shared road, as the works involved and the haulages involved will be much greater than those for the offshore pipe pull-in.

Mayo Co Co have confirmed that 5km of this road has been both strengthened and widened to a width of 6 – 7m. Where agreement could not be reached, (4.24 km approx) then the existing width [4.5m] of road has been strengthened.

I have inspected the road. I have seen the narrow sections of road and the proximity of existing buildings to the road. I have also seen the large construction machinery on the site at Glengad and which was moved in along L1202. I am impressed by the evidence of the observers on the significance of the impact of the use of this road as a haul route already during the landfall construction works as commenced in 2008 and as continued in 2009 when the offshore pipe was brought onshore at Glengad.

44.5 L1203 from R314 to L5245-0

The route is 6m wide at present. The route is 6.25km long and it is proposed by Mayo Co Co to strengthen this road.

1. At the OH Mayo Co Co were requested to submit details of the proposed road strengthening on the Haul Route Network.
2. This was provided¹⁷⁶ and the document sets out the proposed strengthening of roads on the Haul Route. It is stated that as there are no plans to widen or realign the L1203, L5245, L52453-0, L52453-25, the works to maintain these roads will be carried out as part of the normal County Council Roadworks Programme.

¹⁷⁵ [DRN OH111]

¹⁷⁶ [DRN OH52]

3. At the OH SEPIL submitted a supplementary information document on the Haul Route Pavement Design as prepared by Tobin. This contains Appendices which provide details of the 2002 structural assessment carried out and further assessment of the pavement was carried out in 2009.
4. The L1203 is shown to have a width of 5.4m. Tobin's have set out that 5.5m wide would allow 2 HGVs to pass safely along a road. It is not proposed to widen the L1203.
5. A managed convoy system controlled by radio linked traffic management operatives is proposed accordingly as an alternative to road widening in the Rosspart area.

44.6 L5245-0, L52453-0, L52453-25

These are the roads leading from the junction on L1203 with L5245-0 into Rosspart and into the access points for the HGV's to compounds on the pipeline route, and into the stone road through Rosspart common which will act as a haul route within the site once it is constructed.

1. The L5245-0 is 4m-4.5m wide bog rampart road. This road has houses fronting directly onto it.
2. The L52453-0 is 3.0m wide bog rampart road with a house at either end, but no other houses fronting onto the road itself.
3. The L52453-25 is 3m to 4.5m wide, but really more at 3.5m wide than at 4.5m. This road has houses fronting onto it.
4. Standing on the L52453-0 road on the day of my inspection, a heavy vibration was apparent when 4x4 jeep passed by.
5. There are no lay byes sufficient to take a HGV. There are some areas where turf is stored and where a car can pull in to pass another car on L52453-0. These are unsuitable for HGV traffic.
6. There are many houses fronting onto the L42543-25 (Rosspart, Sean Mhachaire Road) and there are places where traffic can pull in front of these houses, but they are not lay byes as such.
7. SEPIL were requested at the Oral Hearing to submit details of the assessment carried out on the road structures serving Rosspart. This was initially deflected by SEPIL as having been carried out by Mayo Co Co, but when pressed on the issue, SEPIL submitted a document "Haul Road Pavement Design & Road Cross Section Supplementary Information" June 2009, and in evidence SEPIL indicated that they had assessed the capacity of the structure of the roads in Rosspart to carry the loads associated with the construction of the pipeline in 2002. The report submitted was prepared by Tobins Consulting Engineers.¹⁷⁷
8. The survey of L5245, (Barrthamh Road) L52453-0 (Leana Mhianaigh Rd) L52453-25 (Sean Mhacaire Road) using the Falling Weight Deflectometer System (FWD) was conducted in 2002 and showed extremely poor maximum deflections, very poor upper pavement conditions and a peat or soft subgrade on each of these roads.
9. The report submitted goes on to propose a structural strengthening of these roads to carry the loads for the construction work forms the basis of the infrastructure strengthening as proposed by Mayo Co Co.

¹⁷⁷ [DRN OH95]

10. Evidence was given by SEPIL that mobilisation of the earth working machinery and demobilisation had already been carried out successfully in 2005/2006 in connection with the onshore pipeline construction over the L52453-0 and L52453-25 roads.
11. SEPIL propose that the Rosspart roads will not be closed as such to facilitate the construction works. Some minor closure may be necessary they said in evidence, when road crossings are being installed, but even then it was indicated that a half and half construction on the road with a local by pass was possible to enable local people to use the roads (with delays) virtually all the time.
12. Approximately 45% of the project in length is proposed to be constructed with access for all construction purposes over the Rosspart road network.
13. The proposal to work with the existing road width only strengthened and with TMO control, a managed convoy system for HGV traffic and with the roads open to all traffic is not ideal by any standards. This proposal falls very short of the proposals which [it appears worked very well] were implemented on L1204, R313 and R314 for the construction traffic and peat haulage traffic associated with the terminal. This proposal falls very short also of the proposals implemented on L1202 where 5km of the road has been widened, and where 4.2km has a width of 4.5m and which road serves now the landfall pull-in works for the offshore pipe and which is proposed to serve the onshore pipeline construction above and with which I am satisfied will provide a workable haul route for that work, albeit with a managed convoy system in place to handle the narrow sections/
14. The local traffic on the Rosspart local road network is undoubtedly small. Figures supplied by Mr McAonghusa in his submission at the oral hearing shows 37 vehicle movements at the peak am hour, and 33 vehicle movements at the pm peak hour at the junction between L5245 and the L52453-0 roads. Mr McAonghusa's figures show that 8 vehicle movements in the peak am hour used the L52453-0 road, and 15 vehicle movements used that road in the peak pm hour.
15. The junction between L5245-0 (Barthamh Road) and L52453-0 (Leana Mhianaigh Road) is on top of an embankment between 2 and 2.5m over adjoining ground. There are no proposals for works by Mayo Co Co other than strengthening of the road surface at this junction.
16. The junction between L52453-0 (Leana Mhianaigh Road) and L52453-25 (Sean Mhacaire Road) will be widened by SEPIL for the duration of the proposed construction programme, and then reinstated to the present width. These widening temporary works are part of Application 16.GA.0004. The acquisition for the lands involved for the widening of this junction are not part of 16.DA.0004 Acquisition Act Application.
17. It is proposed that once the stone road has been constructed along the pipeline, that haulage will be carried out along the pipeline route. Such use of the stone road as a haul route will not take place in the cSAC section of the proposed development. At commencement of the works and for 3- 4 months, traffic will have to use the local road network as well as the site haul route. At the end of the pipe laying, the traffic will again have to use the local road network once reinstatement works reach a certain stage – I expect for 2 – 3 months. In all therefore, the local road in Rosspart L52453-25 (Sean Mhacaire Road) will carry construction traffic over 6 – 8 months of the 12 month construction period.
18. A stop – go system controlled by traffic management operatives (TMO) is proposed by SEPIL. One such operative will be located near the terminal entrance on R314 where convoys will pull in to a holding area along R314 and await instructions. Three further TMO's are proposed for the route at the L5245/L1203 junction, L52453-0 / L5245 junction and L52453-0 / L52453-25 junction. It has been estimated that local traffic could be delayed at the stop/go points by up to 6 minutes [Refer Appendix E Section 5.2.3.].

19. The E.I.S. Appendix E Section 5.2.3. also refers to the possible closure during working hours of the L52453-0 (Leana Mhianaigh Road) by agreement with Gardai and Mayo Co Co when intense construction activity is ongoing.
20. Mayo Co Co in their submission¹⁷⁸ outline that L1203 & L52453-0 (Leana Mhianaigh Road) are within, or border on cSAC [Glenamoy Bog Complex Site 0500]. They indicate that as road widening or any major civil works are not expected to take place during the upgrade of the road network in this area an E.I.S. is not required. An appropriate environmental and ecological assessment in consultation with NPWS will be carried out.
21. Mayo Co Co in their submission, and SEPIL in the E.I.S., fail to deal with the impact of any mishap on the haul route, such as a vehicle going over the edge of the road rampart or a partial collapse of the rampart due to convoy loading or a spillage from a vehicle of liquid or equipment, or materials. The environmental assessment and management of the Mayo Co Co road works are an indirect impact of the proposed development. They are in the first instance a matter for Mayo Co. Co. In that infrastructure report¹⁷⁹, it is stated that an appropriate environmental and ecological assessment in consultation with NPWS will be carried out prior to any works taking place.
22. Turf cutting, harvesting and haulage away are activities being carried out and which use L52453-0 (Leana Mhianaigh) and L52453-24 (Sean Mhacaire) roads for access. The sides of these roads are used now for temporary storage of turf before final transportation to the houses or point of sale of the turf. The E.I.S [Appendix F Section 3 Existing Environment] fails to provide an assessment of the impact of the works/haulage road traffic management proposals on these activities.
23. The E.I.S itself Section 7.5.4.1 to 7.5.4.3 considers the traffic impact on the road network surrounding /Sruwaddacon Bay i.e. route to Glengad L1202 & routes within Rossport L1203, L5245, L52453-0 (Leana Mhianaigh) L52453-25 (Sean Mhacaire). These sections of the E.I.S contain no information on the sensitivity to local users. In evidence when asked specific questions regarding normal local usage i.e. pedestrians, children moving from one house to another, cyclist activity, animal movements, SEPIL's response was that either the activity was not picked up in surveys, or that the activity was not observed over a number of years by SEPIL personnel in the area or that the activity was at a negligible level or that in the event, such activity took place then in the stop/go TMO controlled areas mostly such local use would be required to wait while the convoys cleared the road in question. It was stated on behalf of SEPIL that a give and take arrangement was required whereby sometimes local traffic would have to wait and sometimes SEPIL convoy would have to wait.
24. SEPIL's position was that the measures proposed i.e. convoy system, driver training and monitoring, traffic management operators and maintaining the local roads open with some delays for local traffic, and with a possible road closure during the day on (L52453-0 Leana Mhianaigh Road) that the measures proposed were adequate. It was indicated by SEPIL that all such impacts would only be for the duration of the construction process. There would be no impacts on local road usage, and no traffic implications for the local roads during the operational phase of the pipeline in service.
25. Local Services The E.I.S [Section 11.7.2 & 11.7.3] outlines in a general way the existing environment and utilities. In evidence¹⁸⁰ SEPIL indicated that preconstruction surveys will

¹⁷⁸ [DRN OH52 Page 6]

¹⁷⁹ [DRN OH52]

¹⁸⁰ [10th June S.13]

identify and mark/map the services, and that in particular, each road crossing will have a method statement for construction which will include the location of services and the diversion of services where required.

44.7 Inspectors Assessment: L5245-0, L52453-0 & L52453-25

1. The TM traffic plan taken together with the Mayo Co Co plan to strengthen the Haul Route in Rosspport does not provide an ideal basis for the use of the local road network in Rosspport are and a haul route on the L5245, L52453-0, L52453-25.
2. The TM plan is focused on the requirements of the applicant to move very large quantities of materials and special loads into/out of the Rosspport area in a timescale dictated by the works programme. The TM plan is not sensitive to the local use of these roads. The TM plan largely ignores the local user and local everyday requirements, and in my view the plan is less than ideal as a proper working plan for shared use of the local roads as a haul route. L5245, L52453-0, L52453-25 refer.
3. There are no proposals other than stop/go, give and take, regarding provisions for pedestrians in the area between RDX1, RDX2, RDX3 i.e. Rosspport [East village 25 houses] and Rosspport [West village – 23 houses] nearby where at times during the construction [my estimate 3 – 4 months at start of construction, and 2 – 3 months though less HGV's at the end of the construction reinstatement] HGV convoys up to 5 vehicles per convoy will use the narrow L52453-25 (Sean Mhacaire) Road.
4. I am satisfied that evidence given by observers in relation to L1202 and (1) conflict between convoy traffic and school pick up / drop off, and difficulties making arrangements for “standing by” of convoys during pick up, drop off, (2) difficulties regarding speed of HGV's, (3) and difficulties regarding the responsiveness of the TM plan in use on the L1202 to problems raised by local users, is evidence that can be used as a qualitative assessment of the likely impact of the TM plan being proposed for the onshore pipeline, on the local community in Rosspport. Notwithstanding the limited amount of local traffic using the Rosspport Road Network and in particular L5245, L52453-0 (Leana Mhiananigh) L52453-25 (Sean Mhachaire), I am satisfied the proposed development will have a significant impact on the local community, The plan and the mitigation measures proposed do not in my view mitigate this impact in an ideal manner.
5. An analysis of the structural strength of the L5245, L52453-0 (Leana Mhiananigh) and L52453-25 (Sean Mhachaire) was submitted to the OH¹⁸¹. The submission on infrastructure by Mayo Co Co presented a proposed strengthening of the existing road widths. These submissions also provide a theoretical basis and analysis to show that the strengthening proposed will carry the estimated loading involved from the haulage fleet over the duration of the construction works.
6. I have examined this analysis in detail. I note that the initial discussion of results of the tests [as contained in the Pavement Management Ltd. Revised traffic report attached to the Tobin report] recommends a 3T maximum vehicle load restriction on L52453-0 and L52459-25 road sections as the upper layers are exceptionally weak in their current (then in 2002) state. I note also that in the Table 2 summary of survey results for the 2009 structure survey that the PCI rating is poor for L52453-25 and very poor for L52453-0 and that the percentage contribution of load related distresses is 62% for L52453-25 and 63% for L52453-0. I understand this to mean that when distress conditions were measured on these roads in 2009 that 62% and 63% of the distress was caused by loads related wear.

¹⁸¹ [DRN OH95]

7. Mr. O'Donnell has examined the proposals submitted for strengthening the local roads in Rossport and concludes as follows: *“The proposed method of strengthening the pavement with a wet mix macadam regulating layer, steel geogrid reinforcement and double surface dressing would appear to be an acceptable method of strengthening pavement of local and regional roads over peat that has been used successfully elsewhere in Ireland. However, it appears to be a general empirical design based on experience rather than a site-specific analytical design based on the results of the Falling Weight Deflectometer results or other analysis along the haul route. It is also not clear from the information provided if the design would be applicable to narrow rampart roads on peat.*

The proposed overlay design will provide a significant improvement to the design and performance of the local and regional roads on peat along the haul route with improved ride quality and increased resistance to surface wear, cracking and formation of potholes under the concentrated wheel loads of the HGV. However, the overlay and upper level of steel reinforcement will not provide any basal reinforcement to increase in the subgrade strength of the road. Therefore, it may not be effective in preventing rutting due to yielding in the peat below the road or shear failure at the edges of the road particularly where the haul route is on narrow rampart roads with steep slopes close to the edge of the road, such as on the L52453-0 across the Rossport Commonage.

Maintenance work can be carried out to repair rutting with additional overlays. However, the weakened subgrade in these areas would be susceptible to progressive failure on subsequent loading and a more effective repair would probably involve excavation and replacement of the weakened soil with associated road widening.”

I am not satisfied that the strengthening of the existing width of L5245, L524530-0 (Leana Mhiananigh), L52453-25 (Sean Mhachaire), Roads is ideal for the proposed haulage arrangements as contained in the E.I.S and in other submissions by SEPIL at the OH.

8. The structural analysis was conducted in 2002 and again a second survey was carried out in 2009.¹⁸² No analysis has been submitted which would indicate that the bog rampart with the road surface strengthened, can adequately handle a 5 vehicle fully laden HGV convoy. No considerations are apparent regarding appropriate separation distances between these vehicles on these roads. No considerations are apparent regarding vibration levels tolerable on the bog ramparts and how these will relate to load and axle weights, riding surface and speed of vehicles. No considerations are apparent which assess differences along the bog road embankments. No considerations are apparent which consider in particular, how the embankment at the junction of L5245 and L52453-0 (Leana Mhianaigh) will be able to cope with the turning stresses imposed by HGV's at this junction. Attached in Appendix 7 is a copy of the road widening and strengthening proposals that were originally intended to be carried out on the roads in Rossport. DRN OH100 was submitted at OH and sets out the reason why a much less ideal set of works is now proposed on the Rossport roads. Land acquisition could not (or is expected not to be possible) be negotiated for the substantial road widening works that were proposed. These are shown on Drg No. 2044-1353 Rev. A taken from the 16.GA.0001 submission in 2008 a copy of which is contained in Appendix 7.
9. SEPIL accepts that differential settlement of the road may occur and that SEPIL will pay the costs of maintaining and repairing such settlement to Mayo Co Co.

¹⁸² [DRN OH95 and DRN OH100]

44.8 Inspectors Conclusions

44.8.9 R313 R314 L1204

I am satisfied that these routes are adequate for the traffic associated with the construction of the onshore pipeline. I am also satisfied that the junctions on these routes can adequately cope with the traffic associated with the onshore pipeline. I am also satisfied that the road widening and road strengthening that has been carried out on these roads provides a satisfactory road structure for the haulage and traffic associated with the proposed development.

44.8.10 Inspectors Conclusions L1202

- i. The widening and strengthening works that have been carried out are constructed to a satisfactory standard. There is one area that will need further strengthening at Pollatomais.
- ii. The convoy system proposed for HGV's is a workable system.
- iii. The proposed traffic management plan for L1202 is a workable plan and subject to approval of Mayo Co Co and Gardai.
- iv. The Traffic Management Plan should remain [as was presented in evidence by SEPIL] as a live plan being improved and updated in light of use of the plan, feedback from other users and to meet the requirements of SEPIL, Mayo Co Co, the Gardai and the local community.
- v. SEPIL should in co-operation with Mayo Co Co prepare and implement, as part of the Environmental Management Plan, an environmental monitoring and restoration plan to mitigate the impacts caused by the use of the L1202 as a haul route.
- vi. I find that the Traffic Management Plan needs additional measures to provide for better co-ordination between SEPIL and local use of the L1202.
- vii. SEPIL should provide full information to the local community regarding the use of the L1202 as a haul road, this should include hours working, arrangements and times for "standing by" at school drop off pick up times, information when large loads are being moved, details of contact liaison and details of how the liaison officer process for complaints will work.
- viii. SEPIL should arrange that a complete scheme of structural assessment of buildings and properties, fences, walls etc is carried out in advance of proposed onshore pipeline works.
- ix. In the event that ABP decide to grant a permission for this development I recommend SEPIL should pay a contribution by way of the Community Gain Condition set out in Chapter 48 to the local communities who will bear the impact of the use of this road L1202 for 12 months and possibly longer. Such contribution to be made to Mayo Co Co planning authority and to be distributed in a scheme to be agreed by Mayo Co Co, and as set out in the condition in Chapter 48.

44.8.11 Inspectors Conclusions L1203

- i. I am satisfied that this road, when strengthened, would manage the traffic associated with the construction of the onshore pipeline. I am also satisfied that subject to final agreement with Mayo Co Co, the Gardai concerning operation of the convoy system for HGV's that the junctions with R314 and L5245-0 are adequate to accommodate the traffic associated with the construction of the pipeline. I expect that there will be some maintenance required particularly along the left hand wheel track during the works but because of the existing road width at 5.4m I accept the proposals in respect of the L1203.
- ii. The loads travelling in convoy [up to 5 HGV's together] need to be considered in an assessment that should be carried out on Annie Brady's bridge, and the smaller culverts/bridges along this route. The assessment outcome and any necessary improvement works that need to be carried out on the bridge and other culverts should be agreed with Mayo Co Co.
- iii. The route for the HGV's convoy is 10 – 11km long within the area being controlled by traffic management operatives [TMO]. There are no lay bye's on the L1203, [L5245-0, and L52453-0 are dealt with below] and consequently a system of dealing with emergencies will be required. Such a system is not considered in the E.I.S. The AADT for the L1203 is 665 vehicles per day now, so any breakdown on L1203 will have a potential impact on safety on that road. The removal of such vehicles following breakdown could also prove difficult in the event that a fully laden HGV breaks down or that a special permit heavy goods transporting vehicle breaks down. However, in the case of L1203, I am satisfied that a breakdown system with response and safety requirements adequate for the situation can be put in place and in the event that ABP decide to grant a permission for this development an appropriate condition can be prepared.

44.8.12 Inspectors Conclusions L5245-0, L52453-0 & L52453-25

- i. There are clearly difficulties arising regarding the road works required to support the construction activity within Rosspport.
- ii. The preferred option and one with which I would agree was to widen and strengthen the local road network in Rosspport to provide a solid haul route with reasonable width and capable of handling the traffic involved in the construction project. That option has been set aside because it is expected that land dedication by local landowners of the lands required for the road widening will not now be possible.
- iii. An alternative is proposed – convoy system one way HGV control on the route using radio control and traffic management operators. In different circumstances if the route was shorter and the duration of the works was shorter and the quantities to be hauled were not so substantial it may be possible to accept these proposals. In the proposed development these details are not acceptable.

- iv. I am not satisfied that the proposed use of the haul road is satisfactory. Accordingly I make the following recommendation.

44.9 Inspectors Recommendation

I recommend that the applicant be requested to re-examine the proposed development and that part of the route from chainage 83+910 to chainage 89+550 and consider an alternate route for that part of the development.

The Reasons for this recommendation are:

1. The proposed development route through Rossport is unacceptable by virtue of the limitations on the existing road widths, the limitations of the capacity of the bog roads to carry the traffic involved, the expected limitations whereby it will not be possible to widen these roads.
2. The route is proposed to be operated by radio controlled traffic management operatives is long and this will give rise to excessive delays over a long construction period which is not considered an acceptable imposition on the local traffic using the road network at Rossport.
3. The accommodation for local pedestrian traffic in the rural residential area is considered deficient on the L52453-25 road.
4. No accommodation has been made for local custom and practice where road sides are used for turf storage on parts of the Rossport roads.
5. It is considered that alternative routing can be identified for this part of the proposed development.

Chapter 45 Route Selection

45.1 Criteria used in the Route Selection

“SEPIL’s objective of the route development process has been to find a suitable and feasible alternative route for the Corrib onshore pipeline as approved in 2002. The 2007- 2009 process concluded with the selection of a route that is considered by SEPIL to provide the best balance between community environmental and technical criteria”. Refer E.I.S. Section 3.4.1 Route Selection process.

The criteria used by RPS in 2007-2009 are as set out in Section 3.4.1.1. of the E.I.S. as follows:

1. Community Criteria: Maximise safety, minimise impacts on people, proximity to dwellings/public centres, planning land use, landowner consent and number of landowners/residents affected.
2. Environmental Criteria: Minimise impacts on wildlife and habitats, avoid impacts on archaeology and cultural heritage, minimise visual impact.
3. Technical Criteria: Pipeline construction and operation – (e.g. access, complexity and hazards associated with both onshore and offshore construction of pipeline), optimise pipeline design and operation, minimise length and distance to the offshore gas field, location of and access to landfall valve installation, impact on overall project programme and economic factors, these are aligned with 2001 non environmental criteria start and finish of pipeline and avoidance of possible or potentially difficult construction areas such as side sloped, solid rock strata, peat, complex river crossings etc.

45.2 Routes Examined

Routes are denominated by the following letters A, B, C, D, E, F, G, H. The land fall locations for each route are

A-Glengad B- Glengad C- Glengad D-Inver E- Inver North F-Portacloy G-Glinsk H-Garter Hill

The alternative landfall locations were examined in 2007. In all 8 routes were examined for the onshore pipeline. Section 3.4.1.4 outlines how the routes were shortlisted and sets out the reasons why routes A, B, C were shortlisted and why routes D,E,F,G,H were not chosen for further consideration. Variations A1 and C1 were added for consideration. Section 3.4.1.6. outlines how the final route selection route C1 was made and sets out reasons for that selection and reasons for not choosing the other corridors A, A1, B, C.

45.3 Background to the Route Selection process

45.3.13 Conditions in the 2002 consent to construct a pipeline

The 2002 Section 40 Gas Act 1976 consent to the construction of a pipeline had a condition (2) *“The pipeline route is to be fixed near inhabited buildings to ensure that a minimum proximity distance of 70m is achieved.”* Condition (22) required that *“...particular regard shall be had for the impacts of noise on properties within 100m of the working area...”*. [Copy of the Consent is contained in Appendix 7].

45.3.14 Advantica Report

The Advantica Safety Review of the onshore section of the proposed Corrib gas pipeline [the 2002 consented pipeline] 17/Jan/2006 says the following:

“In our opinion, the minimum acceptable proximity distance for the pipeline should have been considered further at these early stages, prior to finalising the pipeline route, particularly given the unusually high design pressure for an onshore pipeline, above the range for proximity distances given in the available standards. The most cautious approach would have been to estimate the

maximum hazard range for the worst case event, so that in the highly unlikely event of a pipeline failure, the proximity distances would be sufficient to prevent any significant level of harm to residents or damage to property. This approach, which has in Advantica's experience occasionally been adopted for high pressure pipeline projects, is rarely possible except in very remote areas with little population present. The technical justification for an appropriate minimum distance could have been agreed with the approving authorities and then used in the process of considering the routing options for the pipeline. This approach would have addressed many of the safety concerns expressed by local residents at later stages of the project".

Advantica Report January 2006

45.3.15 Cassells Report

The Cassells Report "Proposed Corrib Pipeline – Need for a comprehensive integrated solution" July 2006, contains the following recommendation concerning the pipeline route:

"7.2 Route of the Pipeline – Proximity to Houses: examination of possible options for re-routing the pipeline was not part of the remit of the Advantica safety review. However, Advantica did state "we are satisfied that the existing route was selected following a process that took the risk to the public into account. Bearing in mind the significant societal concerns, Advantica recommended limiting the pressure in the onshore section to pressures no greater than 144bar as an effective measure to reduce risk.

While implementation of the Advantica recommendations will make the pipeline safer, some local people are concerned about the proximity of the pipeline to certain houses. For the proposed route, the proximity of the pipeline to the nearest normally occupied house is approximately 70m. They also suggested that if Bord Gais was involved in the pipeline that it would provide added assurance that local concerns would be adequately dealt with. Bord Gais has successfully built all the pipelines around Ireland, including the pipeline through Mayo and Galway which is currently under construction.

- ***I am recommending therefore, that Shell modify the route of the pipeline in the vicinity of Rosspoint to address community concerns regarding proximity to housing.***
- ***I am also recommending that consideration be given to involving Bord Gais in the project."***

Cassells Report July 2006

45.3.16 Central Issue is Proximity to Housing

There is this central issue here in both Cassells Analysis "...to address community concerns regarding proximity to housing" and Advantica analysis "The technical justification for an appropriate minimum distance could have been agreed with the approving authorities and then used in the process of considering the routing options for the pipeline. This approach would have addressed many of the **safety concerns expressed by local residents** at later stages of the project".

45.3.17 TAG Recommendation

The Corrib Technical Advisory Group was established by the Minister for Marine Natural Resources in August 2005 to manage the Independent Safety Review (Advantica) for the onshore pipe and to design and implement a new inspection and monitoring regime for the project.

TAG in their report 27/01/2006 made recommendations over and above those contained in the Advantica Report in respect of the Corrib project. TAG designated that "... the primary pipeline design code was to be IS EN 14161, however, IS 328 and PD 8010 shall apply where they exceed IS EN 14161..."

45.4 SEPIL Proposals

- SEPIL in Section 3.2 of E.I.S for the development sets out the following:

“The need for the onshore pipeline route modification arose out of the project impasse experienced in 2005, when a small number of landowners and local residents who did not accept the Compulsory Acquisition Orders which had been issued for the proposed development, prevented SEPIL from accessing lands for the construction of the onshore pipeline. Aspects associated with the characteristics of the Corrib gas pipeline in this area had caused deep concern for sections of the local community. These concerns mainly related to the safety and integrity of the pipeline, and the risks it was perceived to pose for the community living near to it”.

- SEPIL were asked to submit a code compliance document to TAG demonstrating how the existing proposal (2002 Scheme then) complies with this designation.
- SEPIL in their letter 12/02/2009 which accompanied this 16.GA.0004 Application and E.I.S outlined in para 2.7 that *“...SEPIL has accepted the findings and recommendations of both Advantica and Cassells Reports, and has appointed RPS to identify and develop a modified onshore gas pipeline route in consultation with the public and other stakeholders...”*.
- SEPIL in their E.I.S Appendix Q4 provide a Design Code Review in response to the TAG requirements. This clearly shows 6.2 route selection as being carried out in accordance with the requirements of IS.EN14161.

45.5 Observers Submissions

Observers have raised the following points in relation to route selection:

- Proximity of housing was not used as a criteria for checking safety of the proposed route
- Bends in the pipeline are the least safe part of the pipeline; why has this new route so many bends in it
- There was not enough examination done by Shell on alternative options and the route looked to have been chosen based on the already decided LVI site and terminal.
- Advantica report approved a different route to that now proposed.
- The Qualitative Route Selection by RPS means that route chosen has no scientific basis.
- Glinsk and Corridor G should have been chosen as there would be no families and houses put in danger, there are no bay crossings and no on-land pipeline would exceed 144 bar
- In emergency the community could be trapped between pipeline and sea so this route through Rossport is less safe than the previous route.
- It was asked if Mayo County Council has the grounds or legal power to refuse this application on the basis that there is a safer route possible for the pipeline? [note presumably the intent of this submission was that ABP not Mayo Co Co have the legal power]

45.6 Discussion

Route selection has generally followed IS EN14161 requirements. That code provides “informative” information in Annex C and Annex D for pipeline route selection process, and examples of factors for routing considerations in Section 6.2 Route Selection.

45.6.1 ABP Pre Application Consultation Advice

The E.I.S itself provides minimal information regarding the ABP advice given to SEPIL in pre-application consultation at meeting held 21/01/2009 Refer 16.GC.0004:

- *“Public consultation process must be described in full.*
- *Robust route selection criteria should be detailed, including considerations of a technical or commercial nature.*

- *Any negative outcomes of a chosen route should be measured and compared with the original route.*
- *The E.I.S. must explain the additional planning criteria that have brought a reconsideration of the route previously granted consent by the Minister,*
- *The E.I.S. must explain the basis for the 140m separation distance of the pipeline from any dwelling...”*

In fact, no basis was provided for 140m. In evidence no real further clarification of how 140m was finally accepted was produced or discussed in response to questioning. The 140m was apparently the distance available when the route selection process concluded.

45.6.2 Further Information Received at OH

SEPIL in the document supplied to the OH¹⁸³ provided a clarification of the Route Development Process. In this document – Sheet 1 to Sheet 6 provides for evaluation of pipeline corridors in an iterative process. In evidence given at OH, SEPIL indicated that no weightings were attached or given to one criterion over another.

It is clear from evidence [OH 10.34, 16th June] that the Route Selection Process progressed as follows:

SEPIL evaluated the offshore routes to the potential landfall sites at Inver, Glengad, Garter, Hill, Portacloy, Glinsk and evaluated the onshore routes A, B, C, D, E, F, G, H. This stage confirmed that Glengad was the location for the landfall.

SEPIL then evaluated the options A, B, C and in addition A1, and C1, and the final evaluation culminated in C1 being chosen as the route.

The RPS work in 2007 confirmed Glengad as the Landfall location. Glengad had originally been chosen as the Landfall in the 2002 consent process.

Once that confirmation was decided by SEPIL the existing consent granted in 2002 for the Plan of Development and for the Consent to construct a pipeline and for a Foreshore Licence was relied upon by SEPIL for the continuation of works in 2009 which works included the offshore pipeline pull in onto the Glengad site and the construction of the offshore pipeline which I understand is now completed.

The Glengad location for Landfall was fixed before the 182c Application 16.GA.0004 was made.

In effect the Route Selection Process was to find a route between Glengad and the Terminal at Bellanaboy. That is the route selection process relevant to the 16.GA.0004 application

¹⁸³ [DRN OH104]

SEPIL confirmed in evidence that the Landfall itself is not part of this application. The Glengad location was confirmed¹⁸⁴ in Feb/March 2007, very early in the Route Selection process.

45.6.3 Further Discussion of the Route Development Process as presented at the OH

In evidence SEPIL indicated that no weightings were given to criteria used in the evaluations of alternative pipeline corridors, I disagree. As I discuss below, the community criteria considered are presented in a manner that does not in any way differentiate one route from another. In my view there appear to be no obvious weightings used, but in reality SEPIL had a weighting system. I believe the following sets out a fair interpretation of the information presented by SEPIL on route selection.

The Cassells Report July 2006 asked that “...community concerns regarding proximity to housing be addressed...”. The adoption of these recommendations by SEPIL is one of the main reasons behind this new planning application. However as I set out below the criteria related to community concerns played very little part in the final route selection.

45.6.4 Analysis of the Route Development Document submitted by SEPIL

The Route Development document submitted by SEPIL is set out on six sheets.¹⁸⁵

1. The route selection process relevant to 16.GA.0004 really only begins at Sheet 3. This is because the landfall location at Glengad was confirmed in early 2007¹⁸⁶.
2. In my view, Sheet 1 of the evaluation of alternative pipeline corridors does not deal adequately with the community criteria. For instance, all routes are given the same rating for *proximity to housing* [except Corridor G] even though there are differences between the routes i.e. a most central issue for the community is “weightless” in the evaluation. *Landowner consent* another issue of importance is “weightless” in the evaluation [corridor C getting a preferred status as the only variation]. On the other hand, under other general criteria, the headings *impact on project programme* refers “high impact due to market constraints for offshore barges, this can delay production start-up by up to two years – significant negative impact on project”. [Corridors DEFGH]. Again, under *schedule induced additional costs*, new landfall will result in deferral of current offshore contract and will result in major delay and additional costs [corridors DEFGH].

¹⁸⁴ [Evidence 16th June 10.49]

¹⁸⁵ [DRN OH104]

¹⁸⁶ [Evidence 16th June 10.49]

Prefared	Potential Constraints
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[illegible]

3. These constraints *impact on programme* and *induced additional costs* are quite correctly appearing in the evaluation of alternatives corridors Sheet 1. I accept that these “heavy weight” constraints should have been scheduled however I do not accept that the community criteria were given objectively the same consideration and treatment in the evaluation shown on sheet 1.
4. I accept that the environmental criteria Sheet 2 have been set out with reasonable consistency across the routes.
5. On Sheet 3 “*safety risk to people and community during operation*” this criterion is again “weightless” even though different risk levels would apply to each route, i.e. another important factor for the local community is not used objectively for route selection consideration and comparison. The “*number of affected residents*” as a criterion is again given “weightless” rating even though each route would have a different number and even though the code ISEN 14161 sets out a methodology for calculating the population density. ISEN 14161 has a method for calculating population density based on a corridor 400m wide centred on pipeline over 1.5km lengths of the pipeline to include the maximum number of buildings intended for human occupancy.
6. Again on sheet 3, a significant criteria under *other general criteria* is identified under “Risk of Delay to Project due to lengthy statutory process”, high risks are attributed to route A & C and *the impact on project programme* (Construction phase excluding third party interference). High risk to route C for the latter.
7. In evidence SEPIL indicated¹⁸⁷ that route C1 was added as a route and was considered because Route C itself involved significant crossing [three intervention pits and 2 tunneling technologies] of Sruwaddacon Bay. C1 was then derived and involved a means of crossing Sruwaddacon Bay with technical feasible methods that involved one tunneling method no intermediate pits. Sheet 4, Sheet 5 in the route evaluation process represent iterations of the Route Selection process which culminates on Sheet 6 where C1 was determined as the route selected.
8. In my view, a more objective assessment of Route C1 would have identified that the following community issues needed to be addressed in a fundamental manner in the final route being selected:
 - (a) Proximity of pipeline to houses.
 - (b) Safety of pipelines.
 - (c) Development potential of lands [family use].
 - (d) Landowner/shareholder acceptance of project.
9. Such issues were already established as having a high risk of delay associated with them in SEPILs previous attempt to construct the original 2002 route.

¹⁸⁷ [Ref 16th June 11.05]

Sheet 3

Corrib Onshore Pipeline

DRAFT Evaluation of Alternative Pipeline Routes (Landfall to Gas Processing Terminal) - Sheet 2

204th Anniversary: 2007

[illegible]

Young men

Please evaluate it as a peer review process. Comments and ratings on this special issue may change as reviews are further discussed.

Routes A, B and C are continuations of Corridors A, B and C evaluated for short listing. All roads evaluated here are taken to be of roadway width (aggressively) 40 - 60m wide.

Options that are no longer relevant to this stage of the House Development Process have been omitted for brevity.

45.7 Consideration of the Consequences of the Route selected

The following is a consideration of the proper planning and sustainable development of the area.

The Corrib Gas Field Development is a national priority for development. The discovery of this gas field and its development brings a number of important benefits to Ireland.

- A new source of gas to feed into the National Gas Grid network.
- The economic impetus for the extension of the National Gas Network to the West and to the towns and industry in the West region.
- An economic return to this country to be determined in accordance with government policy on the exploration and development of this gas field and the licence terms under which this Gas Field is to be developed.

This onshore upstream gas pipeline is the first such pipeline to be constructed in Ireland [and as was confirmed in evidence at OH, the first in both Ireland and UK].

Section 143 (1) (a) of P&D Act 2000 the Board shall have regard to the policies and objectives for the time being of the Government, a state authority etc.

In my view the 2002 consent of the Minister for Marine & Natural resources for the construction of a pipeline under S.40 of the Gas Act 1976 and which pipeline was routed to a landfall at Glengad is a matter that ABP shall have regard.

45.7.1 Separating Community Concerns from Planning Criteria

Below I separate community concerns from the planning criteria which must be considered in arriving at a decision on this application.

ABP Responsibilities

ABP must apply the criteria set down in 182D before making a decision on 16.GA.0004. In particular 182D (1) and 182D (10) clarify what the Board shall consider and have regard to in making its decision.

182D (1) *“Before making a decision in respect of a proposed development the subject of an application under section 182C, the Board shall consider—*

(a) the environmental impact statement submitted pursuant to section 182C(1) or (5), any submissions or observations made in accordance with section 182C(4), (8) or (9) and any other information furnished in accordance with section 182C(5) relating to—

(i) the likely consequences for proper planning and sustainable development in the area in which it is proposed to situate the proposed development of such development, and

(ii) the likely effects on the environment of the proposed development, and

(b) the report and any recommendations of a person conducting any oral hearing relating to the proposed development.”

182D (10) *“In considering under subsection (1) information furnished relating to the likely consequences for proper planning and sustainable development of a proposed development in the area in which it is proposed to situate such development, the Board shall have regard to—*

(a) the provisions of the development plan for the area,

(b) the provisions of any special amenity area order relating to the area,

(c) if the area or part of the area is a European site or an area prescribed for the purposes of section 10(2)(c), that fact,

(d) if the proposed development would have an effect on a European site or an area prescribed for the purposes of section 10(2)(c), that fact,

(e) the matters referred to in section 143, and

(f) the provisions of this Act and regulations under this Act where relevant.”

The fact that the community or some observers object to the proposed development, is not in itself an acceptable planning reason or sufficient justification for ABP to reject the route selected. It is however one of the issues to be considered. The fact, which I have discussed above, that SEPIL did not carry out a fully objective route selection process is not in itself sufficient justification for ABP to reject the route selected for the proposed development.

Alternatives to be considered in an E.I.S.

Schedule 6 P & D Regulations 2001 sets out the information to be contained in E.I.S. Subsection 1 (d) states:

“1 (d) An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment”

In *Volkmar Klohn Vs An Bord Pleanála* 2008/EHC 111 a case which involved a judicial review of the board decision PL 21.205540 the matter of alternatives considered by the developer was one of the items attached to the case. It was noted that Section 1 (d) sets a low threshold for an E.I.S. to pass and does not establish a very specific obligation. It was noted that there is no such requirement for the alternatives to be addressed under EIA carried out by the decision maker.

SEPIL Responsibilities

In a linear development project such as this onshore pipeline, there are many complex factors relating to the route selection and ABP is not, in my view, well placed to carry out the evaluation of each possible route. That is a matter for SEPIL the Applicant who can add up these complex factors and decide to select a route accordingly. In the development of the Corrib Gas Field there are additional factors on top of those related to the linear infrastructure

onshore pipeline development. These are the well field, its location, the landfall and the terminal locations, and factors relating to the timing of related consents, permissions and construction projects, as well as other factors related to the timing and availability of specialist equipment or contractors and of course the costs involved. All such matters are for the Applicant SEPIL to consider and then make its decision of route selection.

45.8 Inspectors Conclusion on Route Selection

1. Glengad as the landfall was confirmed by SEPIL following reconsideration by them of the options available in 2007.
2. SEPIL confirmed in evidence that the landfall itself is not part of this 16.GA.0004 application. In other words SEPIL believe the Glengad location for landfall has been established and is a constraint on ABP in considering 16.GA.0004.
3. In my view the proposed development must satisfy the same requirements in respect of the onshore pipeline at Glengad as elsewhere along the pipeline route.
4. The 2002 consents are significant considerations for the Board to have regard to as required under Section 143 of the P & D Act 2000.
5. The use of a more objective assessment would have placed the community concerns at the heart of the evaluation process. Had that been done then best practice and a more cautious approach [as outlined by Advantica] to route selection would have and should have been taken. In my view such an approach is still required. In my view the influence of such an approach on programme for the delivery of the Corrib Gas Field project could be highly positive as the community concerns regarding proximity to houses and regarding the consequences of a failure in the pipeline have been central to delay in the project to date.
6. In summary I find that SEPIL selected a route which suited the SEPIL criteria and which did actually respond to Cassell's recommendations. However I find that the response to Cassell's recommendations and the Route C1 that was selected did not allow any community criteria to influence the final decision. I believe this was a mistake on SEPIL'S part.

In my view the Route Selection process was not objective and did not reflect adequately the significant and justifiable community concerns.

45.8.1 Landfall and Glengad Pipeline Route to chainage 83 + 910

The selection of Glengad as the landfall site has been dealt with in Chapter 19 above.

The landfall is acceptable from a Natural Environment point of view (Chapter 38). The landfall is acceptable from a ground stability point of view (Chapters 34 and 38). The landfall is acceptable from a landscape and visual impact point of view (Chapter 42). There are issues that relate to the clarity of the information provided on the safety of the pipeline and the landfall valve installation which need to be resolved with the applicant. Pending clarification of those issues the acceptability of the landfall from a proper planning and sustainable development of the area perspective cannot be decided.

45.8.2 Section from Chainage 89+550 to Chainage 92+539

The acceptability of the route selected and the proposed development from the landfall to the lower Sruwaddacon Bay crossing is acceptable subject to the clarification of the safety assessment on that section of the route (Chapters 27-30).

45.8.3 Inspectors Conclusions on the Route in Rossport

This is the section from chainage 83 + 910 to chainage 89 + 550

An objective route assessment would have given greater consideration to the impact of this proposed development on the community.

The pipeline route through Rossport is unusual in layout where it has two right angle changes of direction and requires the removal of two houses from habitation in order to achieve 140m separation distance from existing inhabited dwellings.

I question this unusual layout. I question the removal of two houses from habitation over the lifetime of the pipeline in operation. I accept that one house may in any event be in such a condition that it is only marginally habitable. I question the need to craft a route like this when there are more direct alternatives available. I am not satisfied with the layout of the pipeline route from chainage 85+400 to chainage 88+300. The pipeline in this section is threaded through and around a linear rural housing area in a manner that has not been justified by the applicant other than that it can be constructed like this and that it is considered safe in accordance with the code of practice PD 8010-3. It has not been demonstrated how this proposed development can be considered in accordance with the proper planning and sustainable development of the area.

Mayo County Development Plan has the following objectives:

“2.2.6 DEVELOPMENT POLICY & OBJECTIVES FOR ALL TOWNS & VILLAGES

O/CSS-2.4 To encourage the sympathetic refurbishment, redevelopment and reuse of derelict, redundant and ruined buildings, and the appropriate development of infill or back-land sites within the built-up areas of towns, having regard to Village Design Statements/Development Frameworks, where prepared.”

“The strategic policies of the Council in relation to the Rural Villages are:

CSS-3.1 To strengthen the population base of the Rural Villages listed in Table 8, having regard to the availability of infrastructure and the principles of sustainability, by encouraging development of appropriate scale, size and design compatible with the intrinsic character, scale and amenities of the villages, so that they are sustained as a focus for rural population growth and service provision.”

Rossport is one of the villages mentioned.

“Structurally Weak Areas

In areas identified as Structurally Weak Areas on Map 5, it is the policy of the Council:

P/RH-5 To recognize the distinctive traditional settlement patterns that have evolved in the coastal areas of the County, in the form of small clusters such as clachans and linear groupings, and to strengthen such patterns through appropriately scaled ‘infill’ development, subject to good planning practice in matters such as site location, drainage and design requirements.”

The National Spatial Strategy in relation to Rural generated housing needs says the following:

“The NSS emphasised that as a general principle, subject to satisfying good planning practice in matters of site location, positioning on sites, design and the protection of environmentally sensitive

areas and areas of high landscape value, rural generated housing needs should be accommodated where they arise.”

I find the proposed development through the linear rural residential part of Rosspport is incompatible with the policy context and objectives of Mayo CDP and NSS guidelines regarding rural housing.

- a) The 140m in itself has not been justified or established relative to regulation or code requirements it has just happened to be 140m at the end of the route selection process. SEPIL believe that 3m is an acceptable distance in accordance with IS 328 Figure 2. SEPIL has indicated that the proximity is not a concern and that the proposed development really only affects an overall permanent way leave of 14m in agricultural lands and 20m in peat lands otherwise proximity to this pipeline is not a problem or is not a safety risk because of the very low risk of a leak or rupture occurring on this pipe.
- b) The N West of Mayo is relatively sparsely populated with large areas of peat bogs. I consider it unusual that the pipeline is routed through one of the residential areas and not through areas which are less densely populated. IS EN 14161 under Section 6.2.1.2 public safety states that “pipeline...should where practicable avoid built-up areas”.
- c) The road access proposed for Rosspport section of the pipeline north of Sruwaddacon Bay is unsatisfactory. SEPIL propose to conduct in-haulage of equipment and materials and out-haulage of significant quantities of peat for this heavy civil engineering construction over this inadequate local haul route L5245, L52453-0, L52453-25.
- d) There will in my view be a very significant impact on the community in Rosspport as a result of the proposed development during this construction. The impacts will be delay and disruption over at least a 12 month period. In considering the programme, it is my view that construction will extend over a longer period than the 12 months set out in the E.I.S. I expect that 24 months is a more realistic programme. This will allow for pre construction survey evaluation and preparation work as well as the authorisations required for the E.M.P. and aspects of the detail project construction plan. Then the construction work itself has seasonal constraints attached and unknown potential issues such as archaeology weather and disruption to the programme.
- e) Mayo Co Co have indicated themselves that the road strengthening works will take 26 weeks to complete.
- f) The impacts will be disruption, inconvenience, long delays, inadequate facilities for children pedestrians, particularly for the L52435-25 road which will in my view be used extensively for about 3-6 months of the 12 month contract but actually likely to be used over longer periods if as I expect the programme runs over a 24 month period. I am also unhappy with the extent of the road improvements that can be carried out by Mayo Co Co. This arises because Mayo Co Co have indicated that local land owners are not prepared to provide the land necessary for road widening [as was originally intended in the 2008 16.GA.0001 development as proposed at that time.]. It is now proposed to work within the existing road width and to construct a strong reinforced surface layer on top to protect the road. It is my belief that there will be difficulties that there may be some local collapse of the Bog Ramparts involved. I believe the proposal cannot be considered as a fully adequate proposal.
- g) The E.I.S. has not considered adequately how the local custom and practice of turf cutting, turf harvesting and turf storage at the roadside will be accommodated. These may be small items on the surface but the construction project will in my view interfere with these local custom and practices and inevitably such practices will have to be accommodated. The E.I.S. is silent on how that will be achieved. SEPIL have indicated that as part of the construction plan access will be provided for land owners to use the peat lands.

- h) The E.I.S. itself was silent in regard to the extent to which security of the proposed development would impact on the area. Some information was provided at the oral hearing¹⁸⁸ outlining the security profile of activity in connection with the proposed development. It is clear that in Rossport, there will be a significant impact on the area from lighting and generators, and security patrols which will extend throughout the construction project as may be required.
- i) There may also in my view be cost savings for the Applicant in routing the pipeline through Rossport¹⁸⁹. SEPIL indicated in evidence that the cost of the alternative routes for the onshore pipeline is a factor but is not a significant factor in terms of the overall cost of the Corrib Field Development, I understood that to mean that the cost of the onshore pipeline whichever route was chosen, would not make a significant difference to the overall economics of the project. Nevertheless the Rossport Route appears to have cost savings over other potential routes largely because of length and because routes through the peat lands elsewhere are considerably longer and routes through the bay are more expensive. I accept this issue regarding cost is far from being a clear picture.
- j) However, the influence of the programme was highlighted in both the Route Development Document¹⁹⁰ and in evidence on the economic evaluation of the overall Corrib Gas Field Development. It appears to me that SEPIL believe that the Rossport route can be more quickly achieved and thus can contribute more than other routes to bringing the Gas Field into production at the earliest possible time. I disagree with this. The local community issues such as development potential for family members on lands at Rossport, normal everyday activity on the roads in Rossport, custom & practice of turf harvesting and significant delays and disruption in road usage for local people over at least 12 months, and I believe longer, have not been addressed. There are other issues referred to in Chapter 30 safety, where clarification is required on proximity distances, hazard distances, a revised QRA that will take account of the difficulties in finding shelter across the Bog or down in the Bay.

In my view all these issues should have been addressed properly in the Route Selection. Had that been done it is my view that the Rossport Route would have been identified as route that would likely lead to delays in the realisation of the project. If these issues were addressed an objective route selection process would have resulted in an alternate route to Rossport being selected.

45.9 Recommendation

I recommend to ABP that the part of the route from chainage 83+910 to chainage 89+550 be rejected for the reasons outlined above, I further recommend that ABP seek a modification of the proposed development accordingly. I recommend that the applicant be requested to seek an alternative route for that part of the pipeline which meets the routing criteria which I have recommended to the Board in Chapter 30.

The Reasons for this recommendation are:

1. The proposed development route through Rossport is unacceptable by virtue of the limitations on the existing road widths, the limitations of the capacity of the bog roads to

¹⁸⁸ [DRN OH115]

¹⁸⁹ [DRN OH117 gives high level costings]

¹⁹⁰ [DRN OH104]

carry the traffic involved, the expected limitations whereby it will not be possible to widen these roads.

2. The route is proposed to be operated by radio controlled traffic management operatives is long and this will give rise to excessive delays over a long construction period which is not considered an acceptable imposition on the local traffic using the road network at Rossport.
3. The accommodation for local pedestrian and other non vehicle movements in the rural residential area is considered deficient on the L52453-25 road.
4. No accommodation has been made for local custom and practice where road sides are used for turf storage on parts of the Rossport roads.
5. It is considered that alternative routing can be identified for this part of the proposed development.
6. In the event of a pipeline failure the route is within the hazard distance of dwellings and that is considered to be an unacceptable standard for an upstream untreated gas pipeline.

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Chapter 46 E.I.S.

46.1 Introduction

In this report specific chapters deal with the specific impacts of the proposed development. In this chapter the other impacts that need to be assessed as part of the EIA are considered.

46.2 Mayo Co Co conclusion on the E.I.S.

In their submission to ABP Mayo Co Co have set out the following heading and conclusion:

“Environmental carrying capacity of the subject site and surrounding area, and the likely significant impact arising from the proposed development, if carried out.

The EIS identifies comprehensively potential environmental impacts arising from the development. Furthermore the EIS sets out in detail proposed mitigation and monitoring measures which when implemented will reduce or avoid potential impacts.

It is clear that the majority of impacts will occur during the construction phase of the development and these impacts are considered to be of a temporary, short-term nature.

Providing the mitigation measures set out in the EIS are carried out there will be no significant environmental impacts from the carrying out of the development.”

46.3 Archaeology, Architecture and Cultural Heritage

46.3.4 Archaeology

Archaeology seems to be a relatively minor issue for this development. Some archaeological finds have been made in the past in Rosport. The E.I.S mentions axe, arrowhead and wooden vessel finds recorded. The potential exists for a pre bog field system to be identified. The survey work reported in E.I.S. along the route has identified 20 potential archaeological sites for more investigation pre construction. An initial assessment of these has been conducted and mitigation measures are proposed to reduce the possible impact on those sites with archaeological potential.

It is proposed that pre construction archaeological testing will be carried out. Anything encountered will either be preserved in situ by design and / or preserved by record. In peat land it is expected that anything encountered will likely be fully excavated, archived and the results will be published. The E.I.S. in chapter 16 presents details of the Assessment of Archaeology, Architecture and Cultural Heritage, Appendix N and Appendix O (Marine Archaeology) present further details.

46.3.5 Observers’ submission on Archaeology

One of the observers Ms. Taylor in a submission outlines her belief that the many unidentified mounds in the Kilcommon area are potentially of great importance.

It is explained that these mounds can be divided into 3 categories: Sídheáns, Carragáns and Leachta.

Sídheáns are isolated banks left uncut in bogs as there is a long standing tradition that it is unlucky to interfere with these.

Carragáns are mounds of stone construction e.g. tombs, fulachta fiadh, collapsed famine dwellings.

Leachta are a collection of stones which were used to mark burial sites or the site of a memorable event.

46.3.6 Architecture

There are no protected structures within the area of temporary works. The location and terrain of the site for the proposed development is such that there will be minimal impact on the architecture of the area. The reconstruction of the cliff at Glengad, together with the reinstatement of field boundaries, road crossings, stream crossings and the Lenamore River crossing are the issues that need to be addressed from an architecture point of view. I am satisfied that there will not be any adverse impact on the area from an architectural point of view as a result of the construction of the proposed development.

46.3.7 Assessment

I have inspected the site. I am satisfied that the E.I.S. provides sufficient information for assessment. I am satisfied that from an archaeological point of view there is unlikely to be any significant impact from the proposed development. The proposed development will be supervised by an archaeologist and I am satisfied that the issues raised by Ms. Taylor can be dealt with in accordance with the mitigation measures set out in Section 16.6.4.

Recommendation Archaeology

In the event that ABP decide to grant a permission for this development then I recommend the following condition:

The mitigation measures outlined in Section 16.6.4. of the E.I.S. should be implemented in full.

Reason: To ensure that where archaeological material is uncovered that appropriate notification of DHELG takes place and that agreement is confirmed on the best way to preserve the material uncovered.

46.3.8 Marine Archaeology

Information is provided in Appendix O and in Section 16.6 of the E.I.S. detailing the survey investigations and work carried out by divers in examination of potential underwater sites for archaeological material. It has been concluded that no further archaeological measures will be necessary in advance of construction works commencing.

It is proposed to retain an experienced Marine Archaeologist for the duration of the relevant works, and in the event that an intervention pit(s) is required, an archaeological assessment of the site will be conducted ahead of the works.

The information provided provides confidence that archaeological material is unlikely to be disturbed. The Sruwaddacon Bay crossings are both to be tunneled from launch and reception pits located up on the land and not out in the Bay itself. The Leenamore River crossing area is the other area where material may be disturbed. I am satisfied that the impact of the proposed development on Marine Archaeology will be minimal. I am also satisfied that the supervision of an archaeologist as proposed will mitigate against archaeological material being lost should any artifacts be found during the works in the marine areas.

46.4 Noise

46.4.1 Noise

Noise will arise from (1) the construction stage (2) the operational stage. Noise is one factor which has the potential to cause disturbance in the area.

46.4.2 Construction Noise

The E.I.S. provides information on noise levels expected to be generated during the construction of the proposed development in Chapter 9 and in Appendix H. The plant and machinery sound power levels were taken from BS5228 "Noise & Vibration Control of Construction and Open Sites". Background and baseline noise levels were measured. Sensitive receptors including designated conservation sites were identified. The proposed haul route was imported into the noise prediction model.

Noise prediction modelling was undertaken, six sensitive receptors were used and the worst case scenario predicted noise levels at these receptors. This was assessed in the E.I.S.

"The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250Hz. A mechanism known as "A-weighting" has been adopted in order to account for this nonlinearity of the human ear."

"The parameter most commonly used for the assessment of noise impact is LAeq, which is defined as being the A-weighted equivalent continuous steady sound level during the sample period and effectively represents an average value."

[“Guidelines for the Treatment of Noise and Vibration in National Road Schemes” NRA 2004]

The assessment [E.I.S. Section 9.4.2] concludes that considering the existing low baseline noise levels, the perceived impact of noise will be significant to profound significant at a number of properties. The predicted daytime noise levels at receptors are Rosspart (Receptor C) 60 db Glengad (Receptor F) 55db Aghoos (Receptor E) 58db.

Noise Table Summary Day Time

Receptor	Existing Background Baseline L Aeq dB	Predicted Construction Level L Aeq dB	NRA Levels Deemed Acceptable L Aeq dB
C	47	60	60*
F	54	55	60*
E	43	58	60*

*NRA levels deemed acceptable

@ 60dB

NRA levels deemed acceptable

@ 70dB

Monday to Friday 19:00 to 22:00 Hours.

Sunday and Bank Holidays 8:00 to 16:30 Hours.

Monday to Friday 7:00 to 19:00 Hours

Saturday 08:00 to 16:30 Hours

Reference: NRA Noise & Vibration in National Road Schemes Guidelines for the Treatment of Noise.

The micro tunnel operation proposed for the lower and upper crossing of Sruwaddacon Bay will be continuous 24 hour operations. The noise levels predicted for receptors at Rosspart Receptor A is 43 dB, Aghoos Receptor E is 35 dB, Glengad Receptor F is 44dB.

Noise Table Summary Night Time

Receptor	Measured Baseline	Predicted noise at sensitive receptor L L	EPA Guidance (2)
	L Aeq dB	Aeq dB	L Aeq dB
A Rossport	43	43	45
E Aghoos	36	35	45
F Glengad	40	44	45

(2) EPA Guidance Note for Noise in Relation to Scheduled Activities.

Note: 1 Note the guidance figures quoted above from EPA relate to on site activities at licensed facilities (IPPC Licence). The situation is different on the Corrib Onshore Pipeline construction site. However the comparative figures are useful in this review.

Note: 2 EPA advise rigorous effort to avoid audible tones and impulsive noise at all sensitive locations particularly at night.

Note: 3 EPA advise that no tonal or impulse noise from the facility should be audible at night at any noise sensitive location.

46.4.3 Mitigation Measures

Mitigation measures are proposed to ensure noise from machinery and equipment is at “sound reduced” levels. Acoustic enclosures are proposed. A maximum speed limit is proposed for traffic HGV’s at 60 km/hr. Security will depend on the effort required to ensure the security of operations and to ensure that health and safety requirements are complied with for personnel engaged on the site and for members of the public. Security lighting will be required (generators) at the compounds and as required along the spread of the pipeline. Contractors will be obliged to supply generators that meet night time noise limits. The light fittings will provide downward light to minimise glare and light interference. Any plant such as pumps that are required to work outside normal working hours 7.00 – 19.00 Mon – Fri, and 8.00 – 16.30 Saturdays will be surrounded by acoustic enclosure.¹⁹¹

46.4.4 Noise during operation of the pipeline

Normal operation will not have any noise associated with such normal in service use of the pipeline. Inspectors of the pipeline walk over the route, or a helicopter will fly over at regular intervals, but these are considered minor noise issues of short duration and infrequent duration. The helicopter will be a new noise introduced into this rural area. Maintenance at the LVI every 5 years may involve construction plant, a heavy crane and up to 6 truck movements.

The LVI when it shuts down will require to be restarted and would produce a high tone noise for a maximum of 36 hours. The E.I.S predicts a noise level of 80db within the LVI compound for a maximum of 36 hours. [E.I.S. 9.2.3.5]. Additional information was produced at the OH in response to questions about the LVI noise levels.¹⁹² SEPIL in that document have set out revised predicted noise levels for the re-start of the LVI.

¹⁹¹ [DRN OH115 Security Activity Profile].

¹⁹² [DRN OH111]

46.4.5 Noise due to Restart of the LVI

Figures have been given for Glengad sensitive receptor F which indicate no noise impact at receptor F (daytime or night time) as a result of the restart of the LVI. As the receptor F location is nearest to the LVI it is indicated that other sensitive receptors further away will not be impacted by the LVI re-start. The difference between this additional information and that in the E.I.S. was explained. The 80db is the noise from an over ground valve. In the case of LVI it is proposed that the valves will be completely underground and as a result the noise level resulting from re-opening of the LVI valves is expected to be mitigated completely.

46.4.6 Observers Submissions

- Observers raised issues relating to the existing noise experienced on the L1202 road being used as a haul route for the offshore works at Glengad, i.e. Early morning HGV traffic movement and 24 hour haulage to Glengad.
- Observers raised issues relating to noise from works ongoing at Glengad in connection with the offshore pipe laying. The noise disturbed sleep of residents at Glengad. The security personnel discussions on the site disturbed residents at Glengad.
- Observers raised issues relating to the proposed tunnel works continuous over 24 hour period.
- Observers raised issues relating to noise that will be generated from gas flaring at the Terminal.
- Observers raised issues relating to the noise predicted for the LVI. When shut down, the LVI requires a 36 hour procedure to re- open fully the valves, and this operation could cause 80db noise high pitch over the 36 hours as set out in the E.I.S.
- Observers pointed out that because of the shape of Sruwaddacon Bay, and because of the different conditions of the tide that sound can be echoed upwards at certain stages of the tide and in certain weather conditions. This will give rise to increased impact of noise from the construction activity.

46.4.7 Inspectors Assessment of Noise

Traffic Noise Control

The Traffic Management Plan for the construction of the onshore pipeline is to be agreed with Mayo Co Co as part of the Environment Management Plan for the construction works. It will be important that the traffic management plan deals with all the issues, not just the normal working conditions. The problems will arise with traffic movements either at unsocial hours, or on a 24 hour basis. In evidence SEPIL indicated that transportation and equipment and materials for the tunneling operation would be carried out during the normal working day. Management of the transport fleet to ensure satisfactory truck maintenance /exhaust maintenance etc., and thereby reduce the impact of haulage traffic noise is an important control that needs to be enforced during construction. Notwithstanding any breakdown in communication between SEPIL and the local community, there is an obligation on SEPIL to have a good system of communication and liaison and feedback regarding the traffic plan. In order for this to work satisfactorily boundaries are required on the working hours and boundaries are required as to how exceptions to normal working hours will be handled, and how complaints are alleviated. Accordingly I recommend the following condition shall apply to any permission being considered

Recommendation Traffic Noise Control

The Traffic Management Plan covering all traffic movements associated with all aspects of the construction programme shall be as part of the Environment Management Plan for the construction of the onshore pipeline. The traffic plan shall be agreed with Mayo Co Co having consulted with

Gardai. The traffic plan shall include a system for providing detail community information on the plan and on traffic movements on a regular routine basis. The traffic plan shall include the process for approval by Mayo Co Co of traffic movements outside normal working hours 7.00 – 19.00 hrs Mon – Fri and 8.00 – 16.30 hrs Saturday, and shall detail in what exceptional circumstances such traffic movements can arise and can be considered for approval. The traffic plan shall also include a detailed process for logging complaints/problems re noise, vibration, hours of working, speed, other problems and shall detail how those complaints are to be resolved by SEPIL and reviewed by Mayo Co Co.

Reason: To protect the amenity of the area.

Tunnelling Noise Control

I expect there will be a significant noise impact arising from the tunnel operations. The rock breaking and pile driving operations to establish the shafts for the tunnel bore launch pit and the exit reception pit for the tunnel will be of relatively short duration I expect, but these activities will impact on local sensitive receptor sites. These operations, rock breaking and pile driving must be confined to normal working hours. The tunneling has been proposed as an alternative to open cast trenching which as originally proposed included blasting for removal of rock. I am satisfied that the information provided in E.I.S. and in the additional information provided at OH that there is enough information available to fully assess the impact of noise from the tunneling operations. I am satisfied that the noise levels can be maintained at acceptable levels provided that the mitigation measures contained in Section 9.5 are implemented in full.

Recommendation Tunnelling Noise Control

1. I recommend that the Environment Management Plan should contain a process whereby complaints that arise can be assessed, and where noise levels exceed those set out in the E.I.S. that further mitigation measures [including if necessary, changes to the working methods or hours of operation] can be achieved.

Reason: To minimise the potential impact of noise emanating from construction activities.

2. All rock breaker and pile driving operations are to be carried out between 8AM and 6pm Mon – Fri, 8AM – 4.30 pm Saturday.

Reason: To protect the amenity of the area

LVI Noise

The LVI re-start. It has now become clear why the E.I.S. has stated 36 hours @ 80db noise level and the further information submitted at the OH indicates no increase in impact of noise as a result of the re-start. Detail information management procedures need to be established so that the local community know precisely what to expect if and when the LVI shuts down or has to be restarted. I accept the information presented. I recommend the following condition should be applied.

Recommendation LVI Re-Opening

In the event that the LVI valve shuts, then all receptor residents shall be informed. The information to be provided shall include details of the time and duration of the start up of the valve installation, the mitigation measures that are being taken to limit the impact of noise and the monitoring arrangements that will be put in place for the duration of the valve re start up.

Reason: To provide the public with information regarding this event

46.4.8 Noise control at terminal during flaring of gas

This is not a matter that is any part of the onshore gas pipeline. It is a matter relating to the Terminal which has a separate planning permission and an IPPC licence. I therefore make no observations regarding this matter.

46.5 Vibration

46.5.1 Landslides Susceptibility due to Vibrations from the Proposed Development

The observers have expressed concerns regarding vibrations and the possible impact at Dooncarton - impact that may cause landslides.

Mr. O'Donnell's Report at Appendix 2 has considered this matter in detail. In the Chapter 34 Landslides at Dooncarton a summary and conclusion regarding the likely impact of the proposed development on further landslides at Dooncarton and the likely impact of further landslides at Dooncarton on the proposed pipeline are considered. These conclusions are that the proposed development will not impact on the stability of the Dooncarton Mountain. The other conclusion is that any future landslides that may occur at Dooncarton do not pose a risk for the pipeline.

46.5.2 Vibration Monitoring and Control

The E.I.S. in Section 9.5 outlines mitigation measures including structural survey work prior to construction work, monitoring of vibration levels at susceptible receptors and variation in the method and force of rock breaking and / or piling where required.

The proximity of houses to the proposed development is shown on the DRN OH105 which was submitted to the OH. This shows 10 houses within 200m of the pipeline. SEPIL has indicated that 3 of these [22, 23 and 47] will be either unoccupied [22, 23] or are presently owned by SEPIL [47]. The minimum distance from the centre line of the proposed pipeline to an inhabited dwelling is 140m [house number 24]. It is considered by Mr. O'Donnell that the vibrations from construction works will dissipate as distances from the construction site increases. Mr. O'Donnell has recommended using monitoring for vibration at 25m and at 50m from the tunneling operations to ensure that vibrations actually occurring during the construction of the tunnels are clearly identified. Mr. O'Donnell does not expect there will be any issue arising as a result of that monitoring but that it will provide a sufficient level of control on the operations.

I am satisfied that there is an adequate system proposed as part of the development for managing vibrations. I am satisfied that there will not be a significant impact on the environment from vibrations as a result of the construction works of the proposed development.

46.5.3 Observers Concerns

The observers have expressed concerns regarding vibrations and the possible impact of traffic vibration from the use of the Haul Route. In particular evidence was presented of alleged damage from heavy traffic to McEleney's house on the L1202 and evidence was given on behalf of McGraths public house that vibration had allegedly caused damage to that property as well (also beside the L1202). The issue of the suitability of the Haul Route (L1202) proposed due to the fact that a considerable length of the road being constructed on top of peat was raised.

In Chapter 44 Haul Routes and Traffic Plan the likely impact of the Traffic is discussed in detail. I have inspected the Haul routes proposed. I have seen the road widening and surfacing work completed to date. In particular I have seen the L1202 and I have noted the areas where the existing road width has not been increased and the area at McEleney's House which has not been surfaced. The road works carried out have been substantial. The condition of the L1202 with the exception of the area at McEleney's is good. I am satisfied that the L1202 can be used as a Haul Route subject to adequate controls detailed as set out in Chapter 44. I believe that arrangements and the use of the convoy system for heavy haulage vehicles is acceptable on the L1202. I believe that speed restrictions should be strictly enforced and monitored so that impacts will be mitigated. I am satisfied that vibrations should be monitored as required and that the Environment Management Plan is the appropriate place for details of monitoring of vibrations to be set out and agreed prior to the Haul Route being put into service for the proposed development. Refer to recommendation set out in Chapter 35.

46.5.4 Offshore Works and Haul Route Usage

I accept that there is a situation now regarding vibrations that is outside the remit of considerations of the proposed development and which refers to the current use of the L1202 as a haul route for the land fall works associated with the offshore pipeline construction and pull in works. I recognise that the local community would like that situation to be considered and addressed in this report however I have no remit to examine that situation and ABP in my view do not have any remit to examine that situation as part of the examination of the proposed development applications 16.GA.0004 and 16.DA.0004.

46.6 Material Assets

46.6.1 Property values and the impact of the proposed development on the development potential of lands

SEPIL argues that there is very little impact from the proposed development on property values because

- Planning policy will not permit development in SAC's, nor along the seaward side of the road at Rosspoint South of that road, nor in intact blanket bog areas which receive the same protection as if they were designated.
- Planning policy restricts the development of back lands and has site requirements regarding drainage and traffic safety.
- Planning policy restricts rural housing unless there is a clear demonstration that the applicant for planning permission has a family relationship or has a need to live in the area.

SEPIL accepts that the proposed development of the pipeline will place restrictions on development in the permanent wayleave which is 14m wide in non peat areas and 20m wide in peat lands.

SEPIL considered property values and drew a number of conclusions from its own examination of the market.

- The market for housing properties has softened in 2007 – 2008,
- Values in Mayo are similar to West of Ireland values.
- Values in the area of the proposed development are deemed of similar order. SEPIL believe this to be because while more remote locations tend to have lower values, the area of the proposed development has high amenity value with scenic views, sea views and proximity

to the sea which increases the value back up to the levels of values in county Mayo generally.

- Sales of sites for houses are restricted because of planning policy.
- Throughout 2007 – 2008 sale trends in the area of the proposed development show a number of properties remained unsold. This may have been as a result of the national trend, and in slowdown in property prices or because unrealistic price guides were set.
- SEPIL have indicated that the land use loss due to construction activities will be part of the compensation payable.

46.6.2 Mayo Co Co Planning Policy

1. Mayo Co Co indicated in evidence that there is not planning policy of restriction on development along the pipeline routes. It is the practice to notify BGE at present of such development along the BGE pipeline route on an informal basis. It would be proposed that a similar practice would pertain for the SEPIL onshore pipeline.
2. Mayo Co Co also indicated that there was no specific planning policy restricting development at Dooncarton where landslides occurred in 2003. Each case is considered on its merits under the policies set out in the County Development Plan 2008 – 2014.
3. The Mayo Co Development Plan 2008 – 2014 as amended, sets out a number of policies regarding rural housing.

A number of these are particularly relevant in considering the impact of the proposed development.

- Section 2.2.9 CDP indicates the council's support and recognition for the long tradition in Mayo of people living in the countryside outside towns and villages. The council's support will be positive in accordance with Sustainable Rural Housing Guidelines.
- In structurally weak rural areas [this includes the area of the proposed development] the policy will be to accommodate permanent residential development and to give particular special consideration to areas where population loss has been sustained since 1951. This policy is subject to good normal planning criteria being applied to the development [Policy P/RH -8].
- The council also has a policy to recognise traditional settlement patterns that have evolved in coastal areas (this includes linear groupings) and to strengthen such patterns through appropriately scaled "infill" development. Subject to normal good planning criteria [Policy P/RHP-9].

46.6.3 Observers concerns about the development potential of lands

1. Observers expressed concerns that the proposed development would impact on the community and on individual property values as follows:
 - Because of a fear for safety in the vicinity of the pipe, family members who traditionally have come home on holiday to visit the area will be less inclined to do so.
 - The market for houses in the area will be depressed because of the proximity of the proposed pipeline to them.
 - Family members in particular will not wish to obtain sites on the parents holdings to build, and there is a concern that where such a site is put forward for planning permission, that the planning authority will tend to refuse the site because of the pipeline.

2. One observer who owns a derelict house adjacent to the pipeline in Rosspart [on East side of house 22 and marked as derelict on Drg No 20 of 7 Appendix A] has applied to Mayo Co Co to reroof and refurbish the house and to install septic tank etc. The observer had concerns that (1) the refurbished house would be considerably less 45m than the 140m SEPIL had indicated in the planning application from the pipeline (2) that planning permission for the refurbishment and redevelopment of the house as proposed would be refused.

Ethel Corduff and Thomas Corduff

They own a property which has been derelict and is shell of a house without a roof. The building is located 45 m from the pipeline. A planning application has been lodged with Mayo Co Co to renovate the building and to install a septic tank. The issue was raised at the OH regarding what considerations had been given by SEPIL to the redevelopment of this property which the Corduff's now intend to renovate.

SEPIL in evidence indicated that they have no objection to the renovation of the property. SEPIL indicated that they are satisfied with the safety of the pipeline and the only restrictions that apply to lands are those that apply to the permanent way leave being acquired 14 m wide in agricultural land and 20 m wide in peatland.

I want to bring the proposal to renovate and the specific objection of Ethel & Thomas Corduff to the attention of the Board. I have dealt with proximity distances in my recommendations in Chapter 30 Safety

46.6.4 Inspectors Assessment

Property devaluation and impact on development potential of lands along the route.

1. One of the major issues relevant there is the safety of pipeline itself. This is dealt with fully in Chapter 27-30 and in Mr. Wright's Report Appendix 3.
2. Devaluation of property is a difficult issue to pin down. There are many other factors which affect the valuation of property at any one time such as general economic conditions, the price range being targeted, [this affects the size of the market demand], the age of the property and its condition and the potential for development, planning policy etc etc, where new proposed development will be properly finished and will comply with relevant standards and condition it is very difficult in my view to establish that property will be devalued merely because or as a direct result of the proposed development. Accordingly, I do not accept that as a general principle property will be devalued in the area because of this proposed development. In fact, the economic impact of the development, the investment initially, the employment provided will inevitably in my view provide a better market and more demand for property in the area than if this development did not take place.

I accept the argument by SEPIL that a lot of the route of the pipeline goes through cSAC (Glengad and Rosspart) or lies on the seaward side of the road [North of Sruwaddacon Bay on the south side of the road and south of Sruwaddacon Bay on the north side of the road] and as a result the proposed development will have no real impact on the development potential of those particular areas. I also note that the area through the forestry will be impacted, but compensation is the appropriate way to deal with that impact.

I do not accept that the proposed development will impact the property value or the development potential of lands at Glengad. The lands along the L1202 Glengad are sufficiently removed from the pipeline. I do not believe there will an impact on whether family members will decide to build or not on lands there. It is more likely that planning policy as contained in the CDP 2008 – 2014 will be the limiting factor on development potential of these lands.

I consider however in Rossport that the situation is different. In my view the policies in Mayo County Development Plan as outlined above are supportive of residential development as infill along the linear groupings of houses on this road. In particular to the north of this road I believe family members may be given favourable consideration for planning permission. Subject to the normal planning criteria for the road safety, satisfactory drainage, site size and satisfactory siting from a visual point of view I would expect if those criteria can be satisfied, that family members could have an expectation of favourable consideration under the County Development Plan Policies. I disagree with SEPIL therefore that there is very limited development potential of lands along the proposed route [E.I.S. Section 11.3.2.].

In my view the route selected in Rossport does have a significant impact on the development potential of lands in the vicinity of where the pipeline crosses L52453-25 and runs parallel to the L5243-25. A number of the existing dwellings and lands along the road that could provide for rural generated housing in the future are within the hazard lines of the pipeline should a failure occur.

I also disagree with SEPIL that there is no considered development potential in the roadside area where the proposed onshore pipeline crosses the local road linking Rossport Coast Road with the local village (RDX1).

I agree with SEPIL that there is little development potential in the roadside area on the south of the bay at Aghoos where the pipeline crosses L1202 because there is a cSAC peat lands on one side, and forestry on the other three sides of this crossing.

In my view SEPIL in threading the route through Rossport have done so without sensitivity to this impact on the landowners who have potential infill sites which could meet residential needs for themselves or members of their families in the vicinity of the RDX1 crossing in Rossport. In my view there is not the same development potential arising at RDX2, RDX3 and RDX 4 or at the Bog Road crossings within Rossport Commonage. Refer to the recommendations made in Chapter 45 Route Selection.

46.7 Services and Utilities

1. In regard to services/utilities SEPIL have indicated that power for machines and equipment will largely be provided by diesel engines and that management of the diesel will be included in the EMP.
2. The LVI will require an electricity power supply.
3. Water supply will generally be sourced from the Terminal for operations. Permission will be sought from Mayo Co Co where another water source is required for the construction of the proposed development.
4. SEPIL have indicated that in general, the working area will be unlit except for the compound areas and the tunnel operation which will be continuous over 24 hours. Local landowners and residents will be informed in advance of any works taking place that require lighting.
5. Waste has been dealt with separately in Chapter 31.
6. Construction materials are dealt with in Chapter 25 Construction Methodology. SEPIL indicated that the impact of services / utilities would be that of disturbance and minor disruption only when these services/ utilities are traversed by the pipeline.

I accept the position as set out by SEPIL in Rossport of utilities / services. I do not expect that there will be any significant impact on the environment or impact on the area. I expect that the various crossings can be planned and constructed in a manner which should give rise to reasonable and

minimum disruption. Accordingly I find that the proposed development is satisfactory in the matter of utilities.

46.8 Air Quality & Climate Impact

Details of background air quality for NO_x, SO₂, CO, Benzene, NO₂ and Pm₁₀ have been established using background data from EPA measurements at Kilkitt Co Monaghan. SEPIL have indicated that these results are from a rural location within the same zone D, defined in the Air Quality Standards Regulations [S1 271 of 2002], as the zone that is relevant to the site of the development. Sampling carried out by SEPIL at the Terminal site at Ballinaboy has verified that the figures obtained from the Kilkitt results are consistent with the test results from samples taken at Ballinaboy.

SEPIL have used the local assessment model in the Design Manual for Roads and Bridges for assessment of impacts on air from road transport. This method is recognised in the NRA Guidelines. SEPIL have set out meteorological conditions in the existing environment as follows:

Mean Annual Rainfall 1142mm
Mean Wind speed 13 knots
Prevailing wind is West to South West
Average 30 days with gales per year
Less than 5 days calm per year

The sensitive receptors are identified as houses at a distance of 250m (Glengad) and 140m to 330m Rosspart. Three schools in the area – two in Rosspart a considerable distance [78900m] from the pipeline route and haul route, and one school in Pollatomais which is beside the haul route L1202. The cSAC's at Glenamoy Bog Complex and Broadhaven Bay are beside the haul route. The pipeline traverses the cSAC at Glengad and also in Rosspart Common.

The results of the modelling are shown in Appendix G Table 1A.6. SEPIL consider the impacts of construction traffic on the local road network and proposed haul routes as ranging from moderate adverse to negligible. /there will be no impact on air quality during the operation of the pipeline.

46.8.1 Observers

The following issues were raised:

- The proposed development will impact on the pristine natural environment.
- The proposed development will increase the green house emissions and will impact on the environment.

46.8.2 Mayo County Council Condition Re: Dust

“23. Dust levels shall not exceed 350 mg/m² (TA Luft Air Quality Standard) per day averaged over thirty days when measured at the site boundaries. Any activity, which could reasonably be expected to exceed that dust level, and proposed mitigation measures, shall be notified to the planning authority and the project Monitoring committee in advance, and shall be made available to the general public by way of public advertisement.

Reason: In the interest of public health and residential amenity

46.8.3 Assessment

1. I am satisfied that sufficient information has been provided in the E.I.S. Chapter 8 and in Appendix Q to enable the impact of the proposed development to be assessed.
2. Dust from construction activity, dust from haulage of stone into the site, and peat out from the site along the haul route and dust from the deposition of peat at Srahmore are the areas where concerns may arise.
3. The peat deposition activity is covered separately in the E.I.S. Volume 3, Books 1,2,3. Mr. O'Sullivan in his report Appendix 1 has considered the proposed peat deposition at Srahmore. This is also considered in Chapter 40.
4. Peat deposition will be the subject of a Waste Licence from E.P.A.
5. I note that during the peat deposition activities in 2005, 2006, 2007, that there were a small number (3) of dust exceedances on the Waste Licence then in place. Appendix 9.1 and Appendix 11.1 in the Appendices related to the Srahmore peat deposition set out the details. Action was taken on site and within the licensing procedures and the dust exceedances were managed at that time.
6. I note inspection and cleaning is proposed with either manual or automated wheel washers and that road sweepers will be used to keep the roadways maintained from spillages.
7. I am satisfied that there will be minimal impact on air quality as a result of the proposed development. I am satisfied that the mitigation measures proposed for ensuring truck and haulage vehicles do not pull clay and stone material onto the haul route should work satisfactorily.

46.8.4 Recommendation

During construction and haulage, noise levels shall be kept to a minimum. Any activity that will result in a significant increase in the ambient noise levels, for example, piling or rock breaking, shall be notified to the Project Monitoring Committee in advance. Advance notice of the schedule of such activity shall be made available to the general public by way of public advertisement.

Reason: In the interest of public health and residential amenity.

Dust levels shall not exceed 350 mg/m² (TA Luft Air Quality Standard) per day averaged over thirty days when measured at the perimeter of Srahmore Peat deposition site R314 at L1202 at Glengad at L5245 Rosspart. Any activity, which could reasonably be expected to exceed that dust level, and proposed mitigation measures, shall be notified to the planning authority and the Project Monitoring Committee in advance, and shall be made available to the general public by way of public advertisement.

Reason: In the interest of public health and residential amenity.

46.9 Carbon Loss and Greenhouse Gas Emissions

The E.I.S. provides details of emissions which have the potential to cause climate change in Section 8.4.4.3 and Appendix G. Carbon loss from the peat excavation and deposition, and from drainage of peat lands as impacted by the proposed development have been estimated using methodology developed by the Scottish Parliament Methodology at 3,356 tons of CO² equivalent. Total greenhouse gas emissions for construction have been estimated at 17,270 tons of CO² equivalent. The main emissions are from the production of the steel for the pipeline (5956 tons) and transportation of materials (5230 tons).

I note some mitigation measures are proposed in managing the transport fleet – back loading peat when delivering stone to the site, reducing the idle time, and switching off engines when not in use for more than 5 minutes. SEPII indicate that there will be minimal impact on Ireland's Greenhouse Emissions nationally as the 17,270 tons of CO² equivalent is negligible in comparison to 63 million tons of CO² equivalent which is the national Kyoto target (i.e. 0.27%). below.

46.9.1 Conclusion

The carbon losses from the peat disturbance and the emissions of greenhouse gases are not likely to have any significant impact on environment.

46.10 Inspectors Conclusions on E.I.S.

The E.I.S has been considered in detail in the chapters of this report. I find that sufficient information has been provided to enable an assessment to be made of the proposed development with the following exceptions.

- 1) In Chapter 30 Safety of the pipeline I have set out the requirements for additional information that is required regarding issues of public safety and relating to the design information supplied with the application.
- 2) In Chapter 36 Peat Stability I have set out the requirements for additional information regarding issues of environmental protection and relating to the risk register and the construction information supplied with the application. While this information is requested it has been possible to conclude the assessment regarding peat stability with the information provided by the applicants. (Mr. O'Donnell has confirmed that he had sufficient information available.)
- 3) In Chapter 44 Traffic and Haul Route I have set out the requirements for the applicant to reconsider part of the route regarding issues of the protection of the amenities of the area and relating to an unsatisfactory road works proposal to support the development and unsatisfactory access route proposed for the development at Rosspoint and unsatisfactory proximity distances for the pipeline to the dwellings in Rosspoint.
- 4) In Chapter 45 Route Selection I have set out the requirements for the applicant to reconsider part of the Route at Rosspoint regarding issues of the proper and sustainable development of the area and which relate to an unsatisfactory impact of the proposed development on the rural linear residential development at Rosspoint.
- 5) In this Chapter I have set out the requirements for the applicant to reconsider part of the Route at Rosspoint regarding the issue of proper and sustainable development of the area and where the proposed development would have a significant impact of the future development potential of the rural linear residential area of Rosspoint.

46.11 Inspectors Recommendation on E.I.S.

I have assessed the information provided and I am not satisfied that the E.I.S. together with the additional information provided by the applicant is sufficient to enable me to make a firm recommendation on whether the proposed development will have or will not have a significant impact on the environment.

I recommend that the applicant be requested to submit the further information required as set out in this report.

Chapter 47 Legal Issues

47.1 Rights under the Aarhus Convention

Observers made the point that because of the high cost of court proceedings, and because the Planning and Development Strategic Infrastructure Act 2006 did not provide for an appeal of the decision of ABP that effectively the rights of the community under the Aarhus Convention were being infringed in this case. Mr. O'Sullivan in his report Section 2.0 has considered the legislation and provides advice for this case that:

"The requirement under Article 10a for members of the public to have access to a procedure to challenge the procedural and substantial legality of decisions, which arises from the Aarhus Convention, is met by the availability of judicial review procedures for the decision made by the Board".

Observers were provided with opportunity to make written submissions. The fact that the OH was convened by ABP provided observers with significant opportunity to examine the proposed development. In particular, where additional information was required by observers, and where the inspector was satisfied as regards the relevance of that information. Such information was sought from the Applicant.

A considerable amount of time was made available so that observers could question the expert witnesses who gave evidence on behalf of SEPIL. The fee established by the Board for the making of observations £50 could not be considered in any way excessive. Accordingly, in my view the examination of the proposed development by ABP could not be deemed to infringe the rights of members of the public to seek information to engage with the process, and to present submissions to ABP who are the competent authority to take the decisions in this case.

This is a matter for the Board to consider.

47.2 Environmental Impact Assessment by DCENR

The DCENR will assess the E.I.S. for the proposed development submitted to the Minister in accordance with Section 13A(1) Petroleum and Other Minerals Development Act 1960 as amended in S.1.93 of 1999. An Bord Pleanála will also assess the E.I.S. for the proposed development in accordance with the provisions of the Planning and Development Acts.

I see no conflict arising. In my view the two process's involved are separate. Each work within a different legislation framework and each assessment is carried out by the competent authority in accordance with the legislative requirement involved. I want to bring this to the attention of ABP.

47.3 Request to ABP to seek High Court ruling

There was a request made to ABP to seek a High Court decision or ruling on issues relating to the overlap of construction at Glengad with offshore works. This matter has been discussed in Chapter 23 Boundaries of Permission Sought.

In my view clarity in so far as is required for the purposes of examining the proposed development have been obtained. I have recommended that ABP request SEPIL to restate the extremity of the pipeline and other pipes associated with the proposed development at the HWM. In my view issues of concern if they refer to any alleged unauthorised development are in the first place issues to be addressed to the Planning Authority, Mayo Co Co.

I wish to bring the observers request to the attention of the Board.

47.4 Has SEPIL the capacity to seek CAO?

Issue: Has SEPIL within its Articles of Association and Memorandum of Agreement the capacity to compulsorily acquire lands.

The issue for ABP in considering an application under 182c by a person intending to carry out a strategic gas infrastructure development is that under 182c the application be accompanied by a certificate in relation to the pipeline provided under Section 20 of the Gas Amendment Act 2000, by the Minister for Communications Energy and Natural Resources. Such certificate was provided with the application for the proposed development.

The issue for ABP in considering an application for an Acquisition Order under Section 32(1A) of the Gas Act 1976 by a person is that:

“such person applies or has applied for a consent under Section 40 of this Act...”

SEPIL submitted a copy of a certification by the Minister for Communications Energy and Natural Resources that notice received by him on 8/8/2007 demonstrates a bona fide intention on the part of SEPIL to make an application for the Minister’s consent under Section 40 of the Gas Act. SEPIL in the letter of application confirm that separate but concurrent applications in respect of the onshore gas pipeline are being made to the Minister for Communications Energy and Natural Resources under Section 40 of the Gas Act 1976.

In my view the issue of whether SEPIL as a company with Articles of Association and a Memorandum of Agreement has or has not ability to seek to compulsorily acquire lands is not a relevant issue for consideration of the Board in deciding the application for an Acquisition Order. I bring this to the attention of the Board.

47.5 The Strategic Infrastructure Act should not apply

Issue: The original application for the onshore pipeline was in 2002 and so predated the Strategic Infrastructure Act as a result it was contended that the application should not be accepted by ABP under the Planning and Development Strategic Infrastructure Act 2006.

It is clear from the E.I.S. that SEPIL accepted the Advantica and Cassell’s recommendations and accordingly made alterations to the 2002 route. In effect a new proposed onshore upstream development has been put forward by SEPIL. It is clear from the Strategic Infrastructure Act that it is not possible to develop an upstream onshore gas pipeline without obtaining permission from ABP 182c(3). In my view it is as simple as that however I bring the issue raised by the observers to the attention of the Board.

47.6 Environmental Management Plan

SEPIL propose to prepare an EMP to manage the implementation of the proposed development.

47.6.2 Issue raised by Observers

The EMP has not been submitted as part of the EIS. The EMP as a significant plan and as a part of the proposed development should be subject to Environmental Impact Assessment and should have been submitted with the application for permission.

47.6.3 SEPILs position

SEPIL provided examples of the EMP process from the SANTOS documentation related to the CASINO field development off the coast of Australia¹⁹³. SEPIL provided a copy of the approved EMP for the Corrib Gas pipeline offshore pipe pull-in works at Glengad¹⁹⁴. SEPIL indicated that the EMP would not override the permissions or consents obtained. In effect the EMP was subsidiary to such permission and consents and that preparation of the EMP could only be completed when the permissions/consents are in place. SEPIL also indicated that should changes be required by them to any part of the proposed development and that such changes required planning permission or additional consent then such permission or consent would be sought.

47.6.4 Inspectors Assessment

I am satisfied that the EMP as proposed will provide a proper management structure for all the data involved. The data relates to the consents/permissions and data from the EIS and the mitigation measures committed as part of the EIS and data related to method statements and agreements (subsidiary to conditions on the permission and consents).

I accept the position outlined by SEPIL that if changes are proposed to the development that require planning permission then planning permission will be sought for such changes. I do not accept the position put forward that the EIA process is somehow incomplete because the EMP is not available at the assessment stage. In my view such an interpretation is a misunderstanding of the EMP and a misrepresentation of the EMP as proposed in the EIS. I recommend that the board reject this objection to the proposed development.

47.7 Other Legal issues regarding Acquisition order

A number of issues that have been discussed in Chapter 49 Acquisition Order are legal issues. It is not proposed to repeat these issues here.

¹⁹³ [DRN OH 68, DRN OH 71]

¹⁹⁴ [DRN OH 91, DRN OH 99]

Chapter 48 Community Gain

48.1 Introduction

The Planning and Development (Strategic Infrastructure) Act 2006 provides in Sections 182d (6) and (7) as follows:

“(6) Without prejudice to the generality of the foregoing power to attach conditions, the Board may attach to an approval under subsection (5)(a), (b) or (c) a condition requiring –

(a) the construction or the financing, in whole or in part, of the construction of a facility, or

(b) the provision or the financing, in whole or in part, of the provision of a service,

in the area in which the proposed development would be situated, being a facility or service that, in the opinion of the Board, would constitute a substantial gain to the community.”

“(7) A condition attached pursuant to subsection (6) shall not require such an amount of financial resources to be committed for the purposes of the condition being compiled with as would substantially deprive the person in whose favour the approval under this section operates of the benefits likely to accrue from the grant of the approval.”

48.2 Inspectors Assessment

The area in which the proposed development is located is an area which has a low density population base and lags behind the remainder of the country in economic terms. There are many services and facilities identified in the Cill Comáin Development Plan that could be provided by a Community Gain condition attaching to any permission that may be granted for this development.

This project has undoubtedly placed significant stress on the local communities of the area. The proposed development of an onshore pipeline will cause very considerable disturbance and disruption albeit for the temporary duration of the construction programme. It is considered that ABP should exercise its discretion and impose a condition which would constitute a substantial gain to the community.

48.3 Mr. O’Sullivan’s Recommendations

In order to examine this issue Mr. O’Sullivan as part of his brief considered what might be done and he has reported accordingly in Section 6.0 of his report. A copy of Mr. O’Sullivan’s complete report is in Appendix 1. Mr. O’Sullivan’s analysis is very reasonable and his recommendation is balanced between the requirements of the legislation [to be specific and not to be excessive] and the submission by the applicant regarding the social investment fund proposed by SEPIL. The condition recommended by Mr. O’Sullivan will amount to €8.35 million over 5 years including the €10,000 proposed for the Regional Arts Centre in Belmullet.

This is a significant community gain and in my view this investment in the local community will balance to a reasonable extent the disruption and disturbance caused by the proposed development and will constitute a substantial gain for the Community. In my view also SEPIL have demonstrated clearly that a contribution towards the community of a significant order such as recommended by Mr. O’Sullivan is acceptable. Accordingly, I accept the conditions put forward by Mr. O’Sullivan and recommend it to ABP.

48.4 Mayo County Council Recommendations

As regards the recommendations from Mayo Co Co that the water supply to Rosspport could be connected to the Erris supply and that SEPIL could make this investment as part of compensation

for disruption in the community. I do not recommend that any condition be attached to permission being given in that respect. It is still open to all the parties involved; Rossport GWS Trustees, Mayo Co Co and SEPIL to agree such works and it would be open that the social funding being provided as the Community Gain condition could be used for the project or to part grant aid the project as would be agreed. As regards the recommendations from Mayo Co Co that a charge of €1 be levied per m³ of peat to be hauled from the site of the proposed development to the deposition site at Srahmore, I believe this is unnecessary in light of the substantial community gain condition being proposed.

48.5 Recommendations

48.5.5 As Recommended by Mr. O'Sullivan

1. The developer shall establish a social investment programme for the benefit of the community in the area of the proposed development. The programme shall operate generally in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application subject to the requirements of this and other conditions of the approval.

The programme shall operate from the date on which works on foot of this approval commence for a period of 5 years, or until 3 years after the date on which the works on foot of this approval have been completed, whichever is the later. The developer shall provide €1,670,000 per annum to fund the programme. The money required under this condition shall be lodged to a specified bank account on the day on which the programme commences and then on or before the same date in each subsequent year. The money shall be disbursed in the form of scholarships and grants to local community groups.

Proposals for particular scholarships and grants under the programme shall be drawn up by the developer after consultation with a local advisory group constituted in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application. Monies shall not be paid for such scholarships and grants unless and until the relevant proposed has been approved in writing by the county council after the council has satisfied itself that the proposed expenditure is in keeping with the objects of the programme and would provide a substantial gain the community in the area in which the approved development is located. Accounts of payments to and from the social investment programme shall be submitted to the county council at least once every 12 months. If the county council does not consider that the payments into and out of the fund are in keeping with the requirements of this condition or the proper objects of the programme, it may issue a direction to the developer to do such things or make such payments as are reasonably necessary to remedy such deficiency.

Any money which remains in the specified bank account a year after the programme has ceased shall be transferred to the county council who shall thereafter have discretion to spend the remaining money on environmental improvements recreational and community amenities.

In the event of a dispute between the county council and the developer regarding any aspect of the funding or operation of the social investment programme or otherwise relating to compliance with this condition, the matter shall be referred to An Bord Pleanála for determination and the developer and the county council shall comply with that determination.

Reason: In order to ensure that the a substantial gain is provided for the local community in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

2. The developer shall make a contribution of €10,000 to the Regional Arts Centre at Belmullet in a form to be agreed with Mayo County Council.

Reason: To provide for community facilities in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

48.5.6 Inspectors Recommendations

1. I add the following which I recommend as a community gain condition that the Board should impose on any permission being granted. SEPIL shall implement a scheme for not less than two apprenticeships in co-operation with Fás, the National Training and Employment Authority, for the duration of the operation of the onshore pipeline. The apprenticeships shall be open to candidates from the study area in the first instance and shall only be filled with candidates from outside that area when suitable local candidates can not be identified.

Reason: It is considered reasonable that the Corrib Gas Field development shall provide skills and training for local young people on an ongoing basis.

2. The developer shall establish a social investment programme for the benefit of the community in the area of the proposed development. The programme shall operate generally in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application subject to the requirements of this and other conditions of the approval.

The programme shall operate from the date on which works on foot of this approval commence for a period of 5 years, or until 3 years after the date on which the works on foot of this approval have been completed, whichever is the later. The developer shall provide €1,670,000 per annum to fund the programme. The money required under this condition shall be lodged to a specified bank account on the day on which the programme commences and then on or before the same date in each subsequent year. The money shall be disbursed in the form of scholarships and grants to local community groups.

Proposals for particular scholarships and grants under the programme shall be drawn up by the developer after consultation with a local advisory group constituted in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application. Monies shall not be paid for such scholarships and grants unless and until the relevant proposed has been approved in writing by the county council after the council has satisfied itself that the proposed expenditure is in keeping with the objects of the programme and would provide a substantial gain the community in the area in which the approved development is located. Accounts of payments to and from the social investment programme shall be submitted to the county council at least once every 12 months. If the county council does not consider that the payments into and out of the fund are in keeping with the requirements of this condition or the proper objects of the programme, it may issue a direction to the developer to do such things or make such payments as are reasonably necessary to remedy such deficiency.

Any money which remains in the specified bank account a year after the programme has ceased shall be transferred to the county council who shall thereafter have discretion to spend the remaining money on environmental improvements recreational and community amenities.

In the event of a dispute between the county council and the developer regarding any aspect of the funding or operation of the social investment programme or otherwise relating to compliance with this condition, the matter shall be referred to An Bord Pleanála for determination and the developer and the county council shall comply with that determination.

Reason: In order to ensure that the a substantial gain is provided for the local community in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

3. The developer shall make a contribution of €10,000 to the Regional Arts Centre at Belmullet in a form to be agreed with Mayo County Council.

Reason: To provide for community facilities in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

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Chapter 49 Acquisition Order Issues

49.1 Related CAO Application [PL 16.DA.0004]

An order “Corrib Onshore Pipeline Acquisition Order 2009” has been applied for under the Gas Act 1976 (as amended) for the compulsory acquisition of the lands required for construction of the proposed onshore upstream pipeline File Reference Number 16.DA.0004. The following documents have been submitted:

- A Draft Order
- Master Maps 1 – 3 [3 no in all].
- A Book of Reference
- A Specification
- Statement of the nature of right over lands which SEPIL seeks to acquire.
- E.I.S.
- Additional Information submitted at the OH

The maps show the entire route of the proposed pipeline and each of the 30 plots of land involved. The maps show the HWM at each estuary and at the beach at Glengad. The lands to be acquired are shown in red “Relevant Lands” and green “Deviation Limits” and extend to the HWM. The Book of Reference sets out the Relevant Lands and Deviation Limits that are to be acquired under the order.

In column 2 of the Book of Reference the following is shown, “A right over land/way leave” for the width and length and area required in each plot coloured red for the relevant lands. In column 3 of the Book of Reference the following is shown, the area of land for each plot coloured green and the townland for the location and description of lands within the deviation limits. The E.I.S. and the additional documents submitted at the OH set out the details of the proposed development.

49.2 Submission Ms Muller WL (2)027

Ms Muller was represented by Mr. Michael O'Donnell Senior Counsel and Mr. Brian Harrington Solicitor. Mr. O'Donnell presented the objections.

49.2.7 Constitutional Property Rights vs Common Good.

The argument is that the Acquisition by Compulsory Order infringes the property rights of Ms Muller in a manner that is not in accordance with the principle of common good because SEPIL is a commercial entity and the acquisition is to support a commercial activity.

Section 32 of the Gas Act 1976 sets out that a person may apply to the appropriate Minister [now ABP] for an order to acquire compulsorily any land or right over land which is required by such person in connection with the construction or operation of a pipeline for which such person applies for a consent under S.39A or S.40 of the Gas Act 1976.

The letter of application to ABP by SEPIL contains copy of the notification from DCENR that the Minister certifies that SEPIL in their letter of 08/08/2007 demonstrated a bona fide intention to make an application under S.40 of the Gas Act 1976. **It is not a matter for ABP to decide whether the legislation has been adopted in the interests of the common good. That is a**

matter for the Oireachtas to decide and for the Courts to confirm if required. I find therefore that this objection is not sustainable.

49.2.8 Issue: Three Separate CAOs are required

It was argued that SEPIL has three partners and that consequently three separate Acquisition Orders should have been made to ABP. This is not the case. SEPIL has the benefit of the ministerial certification outlined above and it is SEPIL who have the standing to apply for the CPO Orders. Accordingly I find this objection is not sustainable.

49.2.9 Justification of Extent of Lands Required

The argument was made that SEPIL had not justified the extent of the lands being included in the Acquisition Order. I note that in the letter of application SEPIL have in Section 1.4 to 1.13 provided an overview of the compulsory acquisition order requirements, and the purpose of acquiring the lands concerned. I note that in the E.I.S. Section 3.2 SEPIL presents the need for the development. In particular, the third paragraph sets out the circumstances which have given rise to the application for this route – “deep concerns of the local community” – “risks the local community perceived” – and the consequent project review which produced the revised route which is the subject of the acquisition order.

I note that in the E.I.S Chapter 5, SEPIL have set out in some detail the construction requirements including the Typical Cross Section requirements for construction and temporary working area in Blanket Bog.

In evidence SEPIL were requested to clarify the need for such an extensive area of lands as set out in the Acquisition Order.¹⁹⁵ SEPIL indicated that the deviation limits in the commonage were required to provide for the possibility that archaeology features may be encountered and a route deviation may be required to avoid such features. Evidence was also given about the need for extra width at road crossings and river crossings and where compounds are required, and for tunneling operations.

The construction of the pipeline is a heavy engineering project. I am conscious that in the construction of the Galway Mayo BGE pipeline that the temporary working area was reduced in the cSAC. The outcome from that appears to have been that the restricted width led to increased stacking of turves alongside the stone road and consequent compaction and slower recovery of vegetation on the peat beside the stone road. It is not proposed to reduce the working width in the Rossport common and I accept that is a well based change in specification from that used on the Mayo Galway pipeline.

I have examined the proposed land take for temporary working and there is no location where I feel an excess of land has been included. I am satisfied that SEPIL have provided reasonable justification for the land requirements as set out in the Compulsory Acquisition Order. I am satisfied that the details of the requirements are clearly set out in the documents. I find therefore that this objection cannot be sustained.

¹⁹⁵ [Figure 5.4 and Figure 5.5]

¹⁹⁶ [Evidence 17th June 10.58]

49.2.10 The lands it is contended must be suitable for the purpose of laying the onshore pipeline.

I find that the lands at Glengad are suitable for the purpose of the proposed development. I also find that the lands at Aghoos and Bellagelly South are suitable for the purpose of the proposed development. I find however that the route through lands in Rossport is not acceptable for the purpose of the proposed development.

This is because the layout of Rossport is a linear low density village population of approximately 150 people spread over 3.75 km which has a long bay on one side of the village and a larger peat land area on the other side. The configuration of these natural features and the method proposed to gain access to the construction site itself across bog rampart roads are not in my view compatible with the routing of a pipeline which requires a significant construction activity for 12 months and probably much longer through the area. The unsuitability of the route in Rossport lands and the pipeline route is demonstrated very clearly by examining the actual shape of this route which has two bends, (each turning through 90°) and which requires the removal of two houses from being used for habitation in order that the pipeline can thread through the linear grouping of houses. The pipeline runs along the linear residential area and in the event of a pipeline failure the hazard lines for the pipeline extend to dwellings in the area.

The unsuitability of this route on the north side of the Sruwaddacon Bay is discussed fully in Chapter 45 Route Selection and in Chapter 44 Haul Route and Traffic Plan in Chapter 46 which discusses aspects of the E.I.S. and in Chapter 30 safety. **Accordingly I accept this objection in so far as the lands in Rossport on the north side of Sruwaddacon Bay are concerned. I accept this objection therefore in respect of Ms. Mullers interest in Rossport Commonage Plot WL (2) 027.**

49.2.11 The Way Leave sought

The issue of why land is not being acquired outright and why land for construction purposes is not being acquired temporarily were raised. The contention on behalf of Ms Muller was that acquisition of a “way leave for the pipe” as set out in the Acquisition Order is an insufficient acquisition to perform all the necessary works required in connection with the proposed development. It was contended that the temporary works area would be required for at least longer than 12 months and possibly up to two/three years. It was contended that the removal of peat and its disposal was in effect not possible when a way leave only was being sought.

SEPIL in response were quite satisfied that the Acquisition Order sought was sufficient for them to construct the pipeline. SEPIL further pointed out that all pipelines involved disposal of surplus material. In this case 75000m³ peat altogether, 22,000m³ from the Rossport Commonage in total,¹⁹⁷ and that the Acquisition Order sought included the right to place the stone road and pipeline in the lands concerned and provided for the disposal of the surplus material.

I note Schedule 2 Section 1(b) of the 1976 Gas Act sets out the requirements that an Acquisition Order application should be accompanied by:

“..Such plan or plans specifications and other documents as will show clearly the situation and area of land to which the Order sought is to apply whether in relation to a right over land or in relation to any other stated or interest in the land.....etc.” It should also be noted that the Gas Act includes rights to acquire substrata.

¹⁹⁷ [Evidence 17th June 15.30pm]

In evidence SEPIL confirmed that the specification summarises the works as set out in detail in the E.I.S.¹⁹⁸ The specification at point 4 refers to the construction of a stone road where necessary, and at point 5 refers to the removal of all surplus material on completion of the works.

I am satisfied that the Plans provided and the Book of Reference set out clearly the lands in question. I am also satisfied that the draft order, the statement of the nature of the right over land which SEPIL seeks to acquire, and the specification set out the extent of the proposed works and the extent of the rights over the relevant lands and deviation limits that are being sought in the Acquisition Order. **I am therefore satisfied that the information provided in the Acquisition Order is in line with the rights being sought by SEPIL. I am also satisfied that rights over relevant lands and Deviation Limits sought in the Order are necessary for the construction of the proposed works. Accordingly I find this objection is not sustainable.**

49.2.12 The public interest

Mr. O'Donnell stated that for ABP to confirm the acquisition order it must be satisfied that the proposed development is in the public interest. I note that Section 32 5(a) of the 1976 Gas Act requires that where the Acquisition Order applies to lands held by certain public authorities including a local authority "... an Acquisition Order be so made only if the Minister [now ABP] is satisfied that the making of the Order is in the public interest"....

Such is the case here in respect of plot WL (2) 025, WL (2) 026, WL (2) 027 where the County Council of the County of Mayo (1) is listed on Page 7 and Page 18 of the Book of Reference as persons who enjoy the right over relevant lands and (2) is listed as owners or reputed owners of lands within the Deviation Limits.

Consideration of the wider public interest

1. Mayo Co Co in their letter to ABP dated 7th April 2009 provide an overall considered view in Section 20 of that letter. It is the Mayo Co Co considered view that the proposed development should be granted permission by ABP subject to conditions.
2. Mayo Co Co in their letter of 7th April 2009 do not make reference to the Acquisition Order.
3. The development of the Corrib Gas Field is being carried out and supported by National, Regional and Planning Authority Policy [Refer Chapters 5,6,7 of this report].

While it is not directly relevant to this application for an Acquisition Order, The proposal by SEPIL in 2008 (16.DA.0001 subsequently withdrawn) was for a route through the Commonage with only a marginal difference to that as set out in the 2009 scheme. Mayo Co Co in their submission on that 2008 file had no objection to the acquisition order at that time. I believe it is reasonable therefore to conclude that Mayo Co Co have no objection to the acquisition order as now proposed.

Consideration of the local public interest

Sepil have failed to demonstrate in respect of that part of the route within Rosspport north of Sruwaddacon Bay that they have selected a route which objectively balances these issues

- (a) the need for the pipeline against the alternative routes available
- (b) the impact of the route on the local community,
- (c) the likely impact on the programme for the proposed development of selecting a route through Rosspport,
- (d) the need for a robust traffic and transportation plan and road haul network for the project,
- (e) clear information on the impact of the proposed development on the development potential and development needs of the local community,
- (f) the proper planning and development of the area.
- (g) A satisfactory distance between the pipeline and the dwellings in the Rosspport area

¹⁹⁸ [Evidence 17th June 11.20]

Accordingly in respect of that part of the route and in respect of that part of the Acquisition Order of lands north of Sruwaddacon Bay is clearly not in the interest of the public within the local community.

SEPIL have failed to demonstrate that adequate access to that route for the purpose of constructing the proposed development in Rosspport can be maintained without causing significant disruption to the local community over a prolonged period. Accordingly the construction of the pipeline through Rosspport is not in the interest of the public within the local community.

In my view it is not just a question of balancing the wider interest against the local interest in this case. I believe the wider public interest can be served by an alternative route and without compromising the local interest. That is what I have recommended. It is now for ABP to decide whether or not the proposed development is in the public interest.

Recommendation

I recommend that ABP do not confirm that part of the acquisition order that relates to construction of the proposed development North of Sruwaddacon Bay in Rosspport. Accordingly I recommend that ABP do not confirm the Acquisition Order in Rosspport plots WL (2) 007 to WL (2) 027 inclusive as numbered in the Book of Reference and as shown on the master maps for the Acquisition Order.

Reasons:

1. Alternative Routes are available
2. The significant impact that the proposed development would have on the proper planning and development of the Rosspport Area
3. The lack of clarity in the E.I.S. regarding the impact of the proposed development on the reasonable development needs of the local community.
4. The lack of a robust traffic, transportation and Haul Route Network for access to the proposed route at Rosspport. The underestimation in the E.I.S. of the programme and the duration of the construction project in Rosspport.
5. The Proximity of the pipeline to the houses is such that in the event of a pipeline failure the dwellings are within the hazard zone of the pipeline.

49.2.13 Deviation Limits

The issue whether the deviation limits actually implies that a further area outside these limits is sterilised or affected.¹⁹⁹

The question was raised that in the event that the pipe was laid at the boundary of the deviation limits, then an area of lands outside the deviation limits [and outside of the rights over land being sought in the Acquisition Order] would be affected by the development. SEPIL in evidence clarified that such an event could not happen that in case such event were to occur then a different new CAO Application would be required. Accordingly this objection is not sustainable.

49.2.14 Foreshore

The issue regarding inclusion of foreshore within the Acquisition Order and Compulsory Acquisition Rights over lands being sought from Minister for Agriculture, Fisheries and Food.

Plot WL(2) 027 Commonage. The Book of Reference [WL(2) 027] Page 10 seeks to acquire rights over relevant lands and deviation limits from the Minister for Agriculture Fisheries & Food. It was submitted that part of the lands in this application for an Acquisition Order extended over the

¹⁹⁹ [Evidence 19th June 15.10].

foreshore. This was confirmed by SEPIL in evidence [17th June 15.38] that temporary shore access may be required as a working area. SEPIL indicated that a foreshore licence application and a Section 40 Approval under the Gas Acts were concurrent applications and that all these applications were accompanied by the E.I.S.

It was submitted that an inferior body cannot acquire state lands. It was submitted that ABP cannot compel Minister for Agriculture Fisheries and Food to grant those rights sought in the Acquisition Order. This is really a legal question. The map shows that approximately a 250m wide area of land meets the HWM and rights are sought over these lands. Rights are not sought outside the HWM itself in the Foreshore.

The Department of Agriculture Fisheries & Food in their letter of 24th April 2009 have acknowledged receipt of correspondence concerning the Acquisition Order 2009. They have made no other submission.

I note however in a letter of 24th June 2008 that ...*"this department does not object to the proposed new route on the foreshore within Sruwaddacon Estuary"*. The 2008 letter referred to the 2008 16.GA.0001 and 16.DA.0001 applications and contained proviso regarding the timing of construction in the bay and was made without prejudice and independent of the full consideration of any foreshore licence application by that Department.

The Board should I believe be aware that in 2008 the Department of Agriculture Fisheries & Food did not object to a pipeline route and proposed development quite similar to that proposed in the 2009 16.DA.0004 Application.

On this issue it is my view that DAFF and such land ownership, share ownership rights as DAFF enjoy on the Commonage, can be included in the Acquisition Order. It is a matter for the Courts to decide in due course on the legality issue if a case is brought before the Courts for decision. It is a matter for the Board to consider whether they wish to refer the matter to the High Court in advance of determining the Board's own decision i.e. High Court to determine whether ABP have the right to confirm an acquisition order in respect of land or rights over lands owned by DAFF. **It is my recommendation that the Board should proceed to decide the issues involved and confirm or not confirm the CAO as they consider fit.**

49.2.15 The Commonage Agreement

The Commonage Agreement under the REPS Scheme / Farm Plan Scheme and conflict between the requirements of that agreement and the use of the lands as set out by SEPIL in the proposed development

It was submitted that SEPIL purchased a share in the Rosspoint Commonage and that in so doing SEPIL became bound by the terms of the Rosspoint Commonage Framework Plan.²⁰⁰ The Commonage Framework Plan for Rosdoagh contains objectives to reduce damage to a minimum and to revegetate exposed peat. Restoration measures in the framework plan include restriction on use of electric fencing for cattle, restrictions on drainage and leveling and restrictions on extension of existing quarry boundary.

This is a legal argument that seeks to place an obligation on ABP to uphold the framework plan as part of the assessment of this application for an Acquisition Order. SEPIL's position is that they have not entered into this Commonage framework agreement, that the agreement is related to the REPS Scheme and that there is no obligation on an owner to comply with the plan. The plan is not signed by any landowner.

²⁰⁰ [DRN OH 28, DRN OH 62d].

In my view this is a matter of little significance to the consideration by ABP of this Application. I do not accept that ABP should in any way be restricted in deciding on the Acquisition Order by the existence of this Commonage Framework Plan. There are far more significant aspects of the impact of the proposed development on the environment to be considered by the Board in taking its decision, than the Farm Plan Scheme for designated areas and Commonages or than the specification for REPS planners in the preparation of REPS 4 plans. The farm plan scheme and the REPS 4 plan scheme are part of a “tool box” of measures for the agricultural sector being implemented in order to achieve better land use and land management and conservation within designated areas. ABP has a more fundamental task to assess whether the proposed development itself will have a significant impact on the integrity of the designated conservation areas. **I find that the issue of the Commonage Framework Plan is not an issue that should in any way influence or restrict the decision of the Board on this Acquisition Order Application. Accordingly I find this objection not sustainable.**

49.3 Kieran Mc Donnell & Sheila Mc Donnell objection Plot WL (2)027

49.3.1 No consultation, mediation or meetings re the project.

SEPIL indicated in evidence the extent of the consultation undertaken and the existence of a local office in Belmullet. Details are presented in Chapter 2 of the E.I.S. and Appendix D. It would be best practice that meetings with landowners should take place in advance of an Acquisition Order Application. This may not always work out, however, where landowners are not living in the locality or for other reasons.

In my view the real issue here is that notice was given to the Mc Donnell's and they have the opportunity as a result of such notice to state their objection to the Acquisition Order. This they have done and now ABP can consider the objection. **I do not agree that a failure to consult, mediate, or have a meeting with the landowner is sufficient reason on its own for the Board to refuse to confirm the Order. I therefore do not accept this objection.**

49.3.2 Alleged dumping of cars in Commonage

By members of the monitoring committee. This is not a relevant issue for consideration relative to the Acquisition Order.

49.3.3 Roads unfit for construction traffic in Rossport

I accept this objection. I refer to the analysis carried out in chapter 44 under haul routes and traffic plan.

49.3.4 Turf cutting

This is a statement only and raises no particular objection to the proposed development.

49.3.5 Bad feeling caused by the project.

The point being made is that because of fear, people are afraid to voice their opinion about the Corrib Gas Project. This is again a statement and raises no particular objection to the proposed project.

49.3.6 Tourism

Tourism potentially offers greater benefits financially and environmentally (implied than the Corrib Gas Project).

This is a broad policy question should tourism development be pursued rather than the development of natural resources for best financial and environmental result. Such questions are appropriate to considerations related to the adoption of Mayo Co Development Plan. They are also relevant to the considerations on the confirmation or otherwise of the Acquisition Order. National Policy, Regional Policy and Mayo Co Development Plan Policy have set out clearly that the development of the Corrib Gas Field is an objective. An Bord Pleanála has to have regard to these policies. **In my view the development of the Tourist Industry in the area will only be impacted by the onshore pipeline for the duration of the construction project. During the construction period there will be visual disruption of the beautiful vistas and scenery in the area and some traffic disruption. The impacts will be slight and temporary. Thereafter there will in my view be no impact on the Tourism development or Tourism potential of the area. Accordingly I do not accept this objection.**

49.3.7 National Policy on Natural Resources should be reconsidered

Section 143 of the P&D Act 2000 requires that the Board shall have regard to policies and objectives of Government, State Authorities, Planning Authorities, the Minister and any other body which is a public authority whose functions may have a bearing on the proper planning and sustainable development of the area. Section 143 also requires the Board to have regard to the national interest and the national spatial strategy and regional planning guidelines in force.

It is a matter for government to decide and change national policy on the development of natural gas resources. At present, the national, regional and local policy have set out clearly that the development of the Corrib Gas Field is a common objective. This objection is I believe not relevant to the consideration of this Acquisition order and I find it is not sustainable.

49.3.8 No objection to gas provided it is clean etc.

This is a statement and does not contain any particular objection to the Acquisition Order.

49.4 Ms Eveleen Mc Grath objection WL (2)17 and WL (2)027

49.4.1 No proper consultation

Refer to my comments on the same issue in the McDonnell objection above.

49.4.2 Raw gas, no smell, through Rosspoint.

The safety for all insurmountable. Bord Gais advertisements “if you smell gas, ring Emergency Services immediately” – what has happened to H & S in all of this? Raw gas no smell, fear will prevent family members from visiting the area.

The issue of safety has been considered in Chapters 27-30. Pending clarification from SEPIL on aspects of the QRA and on details relating to safety of the pipeline I am not in a position to finalise my recommendation on safety until such clarification has been received and considered.

Regarding the above issue, SEPIL in evidence stated that this matter of refining gas at sea is outside the remit of considerations relating to the current application. The other aspects of the Corrib Gas

Field Development [the decision regarding the location of the terminal/refinery in this instance, the decision that the Gas Field is to be developed in a Tie Back to shore system relate to other consent or planning permission applications.

I note that ABP did consider and did grant planning permission for the terminal/refinery at Bellanaboy. Such objections (as above) relate to the overall project configuration and relate to the terminal/refinery location. ABP is in my view confined to considerations relating to the onshore pipeline when dealing with this Acquisition Order. I do not consider the aspect of this objection which relates to the original decision by Enterprise Energy Ireland Ltd, to develop this Gas Field as an offshore well field tied back to onshore terminal treatment facilities, to be a valid objection in relation to the proposed development of an onshore pipeline. Accordingly I reject this objection.

49.4.3 Dangerous condition of roads L52453-25, L5245-0

I have set out in Chapter 44 Haul Route and Traffic Plan my considerations regarding these roads. I accept this objection to the Acquisition Order.

49.4.4 Glenamoy Bog Complex cSAC at Glengad is being ignored by SEPIL

The issue here is, I believe, an objection to the Acquisition Order because the pipeline will be constructed within a cSAC at Glengad. The issue was considered in detail by Mr. O'Sullivan Senior Inspector who is assisting with examination of these applications. Mr. O'Sullivan's Report is contained in Appendix 1. This is an issue which is considered under Chapter 38 Natural Environment and Chapter 39 Habitats Directive above. **The conclusion of Mr. O'Sullivan's consideration and my own conclusion is that the construction of the pipeline at the Glenamoy Bog Complex cSAC will not cause significant impact on the cSAC. Accordingly I find this objection is not sustainable.**

49.5 Objection of Ethel & Thomas Corduff²⁰¹ No plot number refers

This objection is in the form of a letter and an attachment to the letter which covers a range of issues under headings. It appears the Corduff's are landowners in the vicinity of the proposed pipeline. It appears also that the Corduff wider family has ownership of Rosspoint Commonage now owned by a brother (brother-in-law) of the Corduff's.

In evidence Mr. John Monaghan 2mncod9] on behalf of Ms Ethel Corduff and Mr. Thomas Corduff, confirmed that the property itself is not included in the Acquisition Order. This objection was also presented at the OH [refer evidence 26th May 17.36 taken out of sequence with Acquisition Act issues to facilitate the Corduff's who live in England].

I have considered the Corduff's situation separately under 16.GA.0004 and as they are not directly affected by the Acquisition Order I consider the objection raised by them is not relevant to consideration by the Board on this 16.DA.0004 application. I find therefore that this objection is not sustainable in respect of the Acquisition Order.

49.6 Vincent Mc Grath and others objections WL (2)027

In the paragraph headed "Objections, Observations and Representations", this objection refers to Plot WL026 and areas and lengths of way leave are given. The figures given and the plot No do not relate to the actual figures given and plot numbers in the 16.DA.0004 Application. I suspect what has happened is that a copy of the objection may have been taken from 16.DA.0001 which was withdrawn by SEPIL in 2008. The Map Reference No Section Map 3 is also not related to the lands in the Townland of Rosdoagh to which the paragraph refers.

²⁰¹ [Evidence 17th June 16.06]

Nevertheless, I intend proceeding to deal with the objection on the basis that it should [and was intended] to refer to Plot WL(2)027 and that while inaccurate references are made within the objection that it is a valid objection by landowners affected by this Acquisition Order. **ABP need to satisfy themselves that this objection is a valid objection notwithstanding the errors in the wording of the objection.**

Paragraph 1 . 16.DA.0004 is said to be not admissible in law by virtue of Gas Act 1976 Section 32. This is argued below.

Paragraph 2,3,4 Argue that SEPIL does not have the rights and powers to make an application for an Acquisition Order.

The point at issue is that the Gas (Amendment) Act of 2000 in Subsection 20 (3) excludes those rights and powers.

“The provision of the principal Act mentioned in Sub-section (2) are Sections 26,27 and 31, Section 32 (other than sub-section (1) or Sub-section (1A) (inserted by this section) Section 33 and the Second Schedule”

SEPIL in evidence accepted that the observer was correct in setting out that Section 20 does not apply to Section 32 1A in empowering a “*Relevant Person*” in that regard.²⁰² SEPIL then set out that the position is that Section 32 1(A) as inserted by the Gas (Interim) (Regulations) Act 2002, grants the powers to “*a person*”. SEPIL argued therefore that they are conferred by the Gas Act 1976 with the right to make the application for an Acquisition Order.

This is a legal question. I accept the position as set out by SEPIL. The power to apply for an order to compulsorily acquire land or right over land derives from Section 32 (1A) of the 1976 Gas Act. SEPIL by virtue of the Certificate under Section 40 of the Gas Act are a person who can make this application for an Acquisition order.

I accept that it is confusing that Section 32 (1A) has been put in place in a somewhat iterative manner being initially inserted by Section 20 (5) of the Gas Amendment Act 2000 then substituted by Regulation 2 of the European Communities (Internal Market for Natural Gas) Compulsory Acquisition Regulations 2001 and subsequently substituted by Section 23 (1) g (i) of the Gas (Interim) (Regulation) Act 2002.

The iterative manner of putting Section 32 (1A) in place does give rise to confusion. I am satisfied however that the power is there. I expect that the Board will satisfy itself on the matter and clarify the issue with the legal advisor to the Board.

Paragraph 5

There are a number of points raised as follows:

- a) **The Application does not include a draft order. The Second Schedule of the Gas Act 1976 requires that an application for an Acquisition Order shall be accompanied by a draft of the Order applied for [Refer Section 1 (a) of Schedule 2 Gas Act 1976].**

A draft order has been submitted with application 16.DA.0004.

- b) **The Application does not contain a statement of the nature of the estate or interest in land or right over land which SEPIL seeks to acquire. This is a requirement of Section 1 (c) of the Second Schedule of the 1976 Gas Act.**

²⁰² [Evidence 17th June 16.37].

A statement has been provided with the Application 16.DA.0004. I am satisfied that the statement is clear and that it sets out the lands as marked in red on the Master Maps 3 no in all, that it identifies that the rights are to be acquired compulsorily, and that the rights over land is that required for construction and operation of a natural gas pipeline,. I am also satisfied that the Deviation Limits being sought are clearly set out and marked in green on the Maps and that the rights being sought are clearly set out for those lands.

- c) **The documents do not delineate the limits within which it may be necessary to construct the pipeline outside the Corridor. This is a requirement as set out in Section 1 (b) (1) of Schedule 2.**

I am satisfied that the documents submitted show the “Relevant Lands” in red which constitutes the permanent way leave applied for, and that the “deviation limits” green within which the “Relevant lands” may be relocated are also clearly set out and the document marked. The “Specification” sets out that the construction works to be carried out within the corridor or within the deviation limits will include a series of construction activities as set out. The issue of construction outside the corridor applied for was also raised and discussed above under objections raised on behalf of Ms. Muller. SEPIL have indicated that construction outside the deviation limits or acquisition of rights outside the deviation limits is not being sought and would in any case require a new Acquisition Order.

- d) **The Book of Reference does not show those persons entitled to enjoy a right over land and all persons who have rights have not been served with notice in writing containing the particulars as set out in Article 3 (3) of the Second Schedule.**

The Book of Reference appears to contain the names of 17 of those listed on the Schedule of Landowners attached to this objection. The four names from the schedule of landowners that do not appear to be listed on the Book of Reference are Mr. Tony o Gorman Rosspport South, Mr. Gerard Mc Grath Rosspport South, Legal Rep of Ms Katie Corduff Rosspport North, Laurence Coyle Glengad.

In evidence there was discussion regarding difficulties in identifying ownership where previous owners were now deceased. SEPIL indicated at the OH [Evidence 17th June 17.03] that it was prepared to amend and update the Book of Reference where landowners who were not listed, approached them with the necessary information.

Article 10 of the Second Schedule of the Gas Act 1976 provides that SEPIL can apply in writing to ABP to seek to amend the Book of Reference. Article 10 (4) sets out that where ABP corrects or amends a Book of Reference such amendment or the reasons for the amendment are not grounds on which the legality of the Book of Reference may be questioned.

SEPIL have made one submission of amendment to the Acquisition Order (refer below) but that amendment does not affect the objection being considered here.

This objection sets out the names and addresses of persons who claim ownership of the Commonage. SEPIL is evidence [17th June 16.43] indicated that the Act provides for compensation to be assessed and paid to those whose interests become clear after the submission of the application for the Acquisition Order.

No evidence was provided at the OH to support this objection or to clarify the exact persons who were excluded from the Book of Reference.

I consider it is in order to proceed on the basis of the present Book of Reference to decide on the Acquisition Order.

Should there be other persons who either have an interest, or who have inherited an interest, and where such interest is not shown on the Book of Reference, there is a means whereby that interest can be dealt with as set out in Section 10 of Schedule 2 of the Gas Act 1976. Accordingly I find that this objection is not sustainable.

Paragraph 6

This paragraph seeks an oral hearing, but also refers to the Acquisition of a Right of Way at RDX2 and RDX3.

The Acquisition Order does not seek to acquire an existing right of way at any point along the route, nor indeed at RDX2 nor at RDX3.

Paragraphs 7 & 8

These paragraphs are requests to the Board seeking information regarding meetings (7) and information regarding decisions on the Acquisition Order (8).

As regards meetings etc., the file 16.DA.0004 contains information regarding site inspections carried out by the inspector and by the assistants appointed in the course of examining the file. It is a matter for the Board itself to consider how to respond to these requests.

Paragraph 9

The E.I.S. that accompanies the application is not in conformity with the law and is inadequate for the proper consideration of the application.

I have considered the E.I.S. in chapter 46. I have recommended that additional information is required before this application can be decided.

Paragraph 10

Contains an extensive list of issues of objection, each such issue has been dealt with in other parts of the report, and I do not intend repeating my findings on those issues here.

Paragraph 11

The Acquisition Order is premature. The paragraph here refers to “public notice on 13th May 2008” which it says “being a date after the initiation of the Subject Application”.

Clearly this is mistaken, as the Acquisition Order Application is dated 9th February 2009. A letter was submitted by RPS on the 12th of February 2009 enclosing a copy of notices published in the Irish Times and Western People on 10th February 2009. **This objection does not make any sense and I find that it is not sustainable.**

49.7 Objection by Rossport Solidarity Camp: No plot number refers

The project is not a strategic project in the national interest. Section 182c Sections 1(c), 2(a) and 9 set out clearly that an application for an upstream gas pipeline is required to be made under the S.I Act 2006. Section 215a of the P&D Acts 2000 – 2006 as inserted by Section 37 of the S.I. Act 2006, sets out in Section (1) the transfer of functions under the Gas Act 1976 to An Bord Pleanala.

The arguments being put forward in this objection that SEPIL'S interests are not the public interest, and that this development is not in the national interests, are arguments against the terms of the S.I. Act 2006 itself. The argument that the natural resources are being handed over to a private consortium is not a matter that comes within the jurisdiction of ABP. This policy is a matter for Government to determine. ABP is obliged to have regard to Government policy in carrying out its assessment of the application before it, and in making a decision on those applications.

The argument that there are a number of factors that must be satisfied in order for the state to be able to interfere with citizen's property rights is an argument that really needs to be taken to the Courts, and is not an argument that can in my view be considered by ABP in assessing and deciding this case.

Legislation in the form of the Planning & Development Acts, in particular the S.I. Act 2006 has provided that the proposed development cannot proceed without a permission which ABP has been empowered to consider and decide. Furthermore, legislation has transferred to ABP the powers necessary to assess and decide whether to confirm or otherwise acquisition orders under the Gas Acts.

Accordingly, I believe this whole objection is not sustainable, as it seeks to require ABP to decide issues that ABP is clearly not empowered to consider or decide issues with regard to citizens property rights and issues regarding interpretation of what legislation is or is not in the National Interest.

49.8 Issue raised re John Mc Grath (Pat) WL (2)17 and WL (2)027

This issue was raised by Eveleen Mc Grath that John Mc Grath (Pat) owns a right to lands where it is indicated that Pat Mc Grath (Pat) is the owner.

SEPIL in evidence²⁰³ given by Mr. Wilson, referred to WL(2)17 page 5 of the Book of Reference where John McGrath (Pat) is listed. Mr. Wilson believes that entry is correct. Mr. Wilson believes Mr. John McGrath (Pat) is Ms Eveleen Mc Grath's father. SEPIL also in evidence again given by Mr. Wilson to the OH, referred to the Commonage WL(2)027 page 9 of the Book of Reference where Pat McGrath (Pat) is listed. Mr. Wilson believes Pat McGrath(Pat) to be Mr. John McGrath (Pat's) father. Mr. Wilson believes that the listing of Pat McGrath (Pat) to be correct where it is listed. Mr.s Mary E McGrath is listed as the occupier of the WL(2)027 share. Mr. Wilson believes Mr.s Mary E McGrath to be the mother of Eveleen McGrath. **In the circumstances, SEPIL have indicated a clear knowledge of who the people involved are, and I accept the evidence given by my Mr. Wilson that Pat McGrath (Pat) is correctly stated (on the basis of the best information available) to be the owner of the shareholding.**

49.9 Mr. Brendan Philbin Objection Plot Number WL (2)027

(a) The proposed development would be a hazard to public health.

The issue of safety of the pipeline is not fully clarified in the E.I.S. I have recommended that additional information be obtained from SEPIL to clarify this matter and to enable the assessment of the safety to be determined.

(b) Agricultural and Residential activities will be disrupted

Undoubtedly the construction of the pipeline will cause disruption in the area generally. Such disruption will be of a temporary nature and on the south side of the Sruwaddacon Bay I am satisfied that the construction impacts can be managed as set out in the E.I.S and in the supplementary information provided.

²⁰³ [Evidence 17th June 16.59]

In relation to the construction activity proposed on the north side of Sruwaddacon Bay and within Rosspport, it is my recommendation that the pipeline should not be constructed within Rosspport for the reasons outlined in Chapters 45 Route Selection and Chapter 44 Haul Route and Traffic Plan above.

(c) Detrimental to high scenic value of the Rosspport area.

I do not agree with this objection because the pipeline will be buried and the lands affected during the construction activity will be reinstated. Mr. O'Sullivan has considered the Landscape and Visual Impact of the Development in his report in Appendix 1 and this matter is also summarised in Chapter 42 above. It is not considered that the Proposed Development will have any significant impact on the Visual quality of the landscape. **The scenic value will be affected for a temporary period during construction, but that is all. I find this objection is not sustainable.**

(d) Traffic – a hazard to public health.

I accept aspects of this objection in respect of the proposed development within Rosspport. I have outlined separately above in chapter 44 Haul Route and Traffic Plan the problems related to the haul road proposed within Rosspport and the traffic management plans proposed. I find that part of this objection related to the roads in Rosspport sustainable.

(e) Detrimental to tourist value of area.

I do not accept this objection. The pipeline will be buried and the lands will be fully restored, the visual impact will be minimal and will relate only to the above ground installation at the LVI. **In my view the proposed development will not impact on the tourism potential or value placed on the area by tourist visitors to the area in any other way. I find this objection unsustainable.**

(f) Pollution – local drinking water.

This issue has been dealt with in chapter 24 Protection of Drinking Water. There was discussion at the Oral Hearing about the pollution of the local water supply. Test results were presented by one observer related to aluminium levels in the Carrowmore Lake water supply being in excess of the maximum admissible concentrations. Mayo Co Co on request supplied water quality test results carried out by the HSE on the Carrowmore Lake Supply over 5 years 2005-2009. In my examination of these results I found that there were four results in 2007 where the Aluminium levels exceeded the maximum permissible drinking water concentrations as prescribed by EU drinking water Directive.

Otherwise the water supply results for the Carrowmore Lake Supply were satisfactory and were so certified by the public analyst. Mayo Co Co have recommended that as part of compensatory works for disruption caused in Rosspport that a new connection be laid from Erris Regional Water Supply Scheme (The Carrowmore Lake Supply) to replace the Rosspport Group Water Scheme existing ground water source. While no direct evidence was given regarding the reasons for replacement of Rosspport GWS this is considered in Chapter 24 and also considered in chapter 48 Community Gain. I do not rule out such a connection however I believe that it is not appropriate that ABP should impose such conditions here. I find that this objection is not sustainable.

(g) The sequestration of private land for SEPIL's planned pipeline is not lawfully possible.

It is not a matter for me to determine or advise the board on what is or is not lawfully possible. That is a matter for the Courts to decide. What can be said however is that the Gas Act 1976 as amended provides the basis for SEPIL to make an Acquisition Order application to ABP for rights over lands. The rights are being sought to enable SEPIL to construct the proposed

development. The Strategic Infrastructure Act provides that ABP are empowered to consider such applications and decide whether or not to confirm the Acquisition Order. Any challenges to the legality of an Acquisition Order, should the Board decide to confirm the Order, are matters for the Courts to decide.

(h) Inchoate – uncertainty of SEPIL’s proposal as being just begun or undeveloped.

There is very little information provided on exactly what the objection intended here. I have recommended to ABP that additional information should be requested from SEPIL. In effect then I do accept that there are uncertainties in relation to the application as submitted.

(i) SEPILs application to ABP is misconceived in law

This is a similar issue to (g) above and relates to the legality of the application. In the absence of clarification which is not provided, it is not possible to identify what exactly is the objection intended here.

(j) Conflict with historical use of area.

An issue with the proposed development is that it will bring a modern sophisticated technology into a local rural area where traditional values and where a traditional way of life has (and still is to an extent) been the normal routine.

Modern technology is part of the way of life now, and the planning issue involved here is “can an onshore pipeline development be permitted including the confirmation of the associated Acquisition Order, without compromising the history or cultural essence and natural heritage of the area”. I believe the history of the area, be that cultural, historic, architectural history, environment flora & fauna, archaeological history should not be impacted upon in a significant and negative manner as part of the proposed development.

These matters have been considered separately in more detail in this report. The E.I.S. itself has been considered in Chapter 46. Mr O Sullivan in his report considers the impact on Natural Heritage and the environment. While there is undoubtedly a significant change involved in use of the route as proposed by the development. **I do not accept that the proposed development will be in conflict with the historic use of the area. I do accept that the proposed development is not in accordance with the proper planning and sustainable development of the area in Rosport.**

(k) Devaluation of properties in the area

SEPIL set out in the E.I.S. Chapter 6 an analysis of the community and social economic impact of the proposed development. A study area consisting of the electoral districts of Knocklower, Muignabo, Glenamoy, Knockadatt and Barroosky is considered, the local vicinity of the proposed onshore gas pipeline is considered in Section 6.3.11 of the E.I.S. The residual impact of the project is considered in Section 6.6 where the E.I.S. states “overall it is predicted that the proposed development will have a significant and positive impact on the local regional and national economy”.

In Chapter 11 of the E.I.S. Material Assets Section 11.3.2.1 property values are considered. In this section it is stated that property values in the study area would be roughly in line with other rural areas in Co Mayo and the West of Ireland in general. It further states that any diminution in value because of distance from centres of population would be more or less balanced out because of pleasant views in the area, and advantages of proximity to the sea, mountains, coastline etc. It goes on to refer to the fall off in property values from late 2006 because of a softening in the market.

The E.I.S also considers the impact of planning policy on the development of new sites and the owner occupied conditions that are generally applied to permissions in the rural areas. While it is not stated, I expect this objection is concerned at some negative impact perceived on property values related to the concern for safety at proximity to this gas pipeline, Mayo Co Co in evidence, indicated that there is not a policy in the CDP which restricts development on lands in close proximity to gas pipelines in the county. Further Mayo Co Co indicated that in the case of proposed development, the planning applications are referred on an informal basis to BGE where such developments are close to the gas pipeline.

It is open to BGE to make comments to the planning authority which will then consider such comments when making its decision. SEPIL indicated in evidence that in the normal course of events, it would not object to development close to the pipeline. The permanent way leave of the pipeline will of course be restricted, and development of same will not be allowed. The restrictions proposed on the permanent way leave are set out in Section 4 of the Draft Acquisition Order. SEPIL indicated in evidence that compensation would be paid to the landowners involved in relation to the compulsory acquisition and all aspects of same.

Assessment

Devaluation of property as a result of the development is a complex issue with many factors involved including the size of the market for the property in the area, and planning policy in the area. I am of the view that improvements in the local economy and the regional economy will result from the Corrib Gas Field development. **I also believe that the routing of the pipeline needs to be decided sensitively in proximity to settlements where there is a legitimate expectation among landowners/house owners, based on a positive planning policy in favor of such local community people, that members of their family/community will be able to locate and live in that locality on lands adjacent to their homes and in their ownership. Such sensitivity has not been shown in routing the pipeline through Rossport. I have dealt with this issue in chapter 46 E.I.S. I do not accept that property will be devalued by the proposed development.**

(l) Pipeline would infringe on established property rights.

The very nature of a compulsory Acquisition Order is such that it does infringe on established property rights. Overall however, this is not the issue that should be the critical issue in arriving at a decision to confirm the order or not. **I accept that the order will infringe on the established property rights if it is confirmed. In this regard compensation is the way in which recompense is made to the landowner concerned. I find this objection is not sustainable for that reason.**

(m) Impact negatively on biodiversity of area.

I accept that there will be an impact on the local biodiversity during construction. I am satisfied that the impacts have been considered and set out in the E.I.S. and in the supplementary information received at the OH. **I am satisfied that the impacts will be temporary and that the biodiversity of the area will recover over time. Accordingly I do not accept this objection.**

49.10 Proposed Amendment to Acquisition Order by SEPIL

SEPIL in evidence indicated that they no longer require that compound shown as compound No 5 in Rossport Commonage. As the compound is in the cSAC, SEPIL have decided not to use that area. Consequently SEPIL have submitted an amended map²⁰⁴ for that area, showing what is now required. There were no issues raised by observers at the Oral Hearing regarding this change.

²⁰⁴ [DRN OH 133]

I accept this change, and accordingly I recommend that this change be made to the draft order being considered by ABP.

49.10.1 Recommendation on the SEPIL amendment to the CAO

I recommend that the Compulsory Acquisition Order be amended as follows:

The CAO Map 2 of 3 be amended as set out by SEPIL on the amended drawing Fig. 4.0 Rev A03 submitted at the OH which shows and dimensions the amended site boundaries for the temporary working area at and adjacent to chainage 87+535 in Rossport Common. There is no change in the area of permanent way leave proposed to be acquired at that location. DRN OH 133 2 drawings in all refer to this change.

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49.11 Inspectors Conclusion and Recommendation on Acquisition Order

- 1. In respect of plots WL(2) 001 to WL(2) 006 inclusive and plots WL (2) 028 to WL(2) 030 inclusive. It is not possible to recommend or not to recommend confirmation of the acquisition order sought by the applicant pending clarification of those issues set out in Chapter 30 Safety of the Pipeline.**
- 2. In respect of plots WL (2) 007 to WL(2) 027 inclusive and including WL (2) 025A I recommend to ABP that the acquisition order not be accepted for that part of the route and the lands which are sought in Rossport.**

Reasons:

- 1) I consider the proposed development is unsatisfactory between chainage 83+910 and 89+550.**
- 2) The traffic plan and haul route proposed and the limitations to the road works proposed to support the construction project are not satisfactory.**
- 3) The construction of the project as set out in the E.I.S. and in the additional information provided at OH would have a significant and unacceptable impact on the local community over a prolonged construction period. The programme is expected to exceed that set out in the E.I.S. The proposed development would not be in accordance with the proper and sustainable development of the area.**
- 4) It is proposed to construct the pipeline in proximity to the dwellings and within the distance of the hazard lines should the pipeline fail. This is considered unacceptable for an upstream untreated gas pipeline.**

Chapter 50 Conclusions 182c Application

This chapter gathers together the more important conclusions that I have reached in the course of examining these files. The conclusions are presented with my overall conclusion first followed by a chapter by chapter listing of conclusions.

50.1 Overall Conclusion: File 16.GA.0004

1. The proposed development is a major piece of infrastructure and the examination of E.I.S. and examination of the details of the additional information provided to the Board present a clear picture of the inadequacies of the documentation of the proposed development. The examination presents a clear picture of inadequacies in the configuration and route. These are detailed throughout the report.
2. It is considered that with changes to the configuration and change to part of the route and with the transparent documentation to match the amended scheme that it would be probable that a satisfactory permission could be approved by the Board for this development.
3. The amendments sought are set out in the recommendation to the Board.
4. It will be necessary that a revised E.I.S. will be required and that will have to be assessed fully. The Board will have to consider re opening the Oral Hearing.
5. There will be implications for the applicant that will arise if the Board agrees with my recommendation. These will arise in respect of other permissions and other consents being sought at the same time as this application is being considered. However those implications are not relevant in my view to the matters to be considered by the Board.
- 6.
7. There is insufficient information provided and there are uncertainties regarding some information provided with this application.
8. The main points relate to
 - Insufficient clarity with regard to the boundaries of the permission sought at Glengad.
 - Insufficient definition of the site near the terminal.
 - Insufficient clarity with regard to the discontinued works from the 2002 route.
 - Insufficient clarity, transparency and completeness in the design and analysis provided for the pipeline itself and for the LVI at Glengad.
 - Insufficient justification of the QRA provided as to the relevance of the database figures used for a wet untreated gas pipeline at very high pressure.
 - Insufficient clarity in the QRA with regard to inclusion of site specific conditions relating to availability of shelter on the bog or in the bay.
9. Part of the route through Rosspoint is unsatisfactory. The main reasons are:
 - Limitation on the extent of road improvement works to support the construction traffic due to expected difficulties (or known difficulties) with land negotiations.
 - A consequent inadequate Traffic Plan and Haul Route proposal.
 - An underestimated programme for construction.
 - In the event of pipeline failure the route is within the hazard distance from a number of dwellings in Rosspoint.
 - I believe alternative routes are available which would not have the above limitations.
 - The Route Proposed will have a significant impact on the Rosspoint Area and on local custom and practice and is not in accordance with the proper planning and development of the area.

10. I conclude the best way forward is that ABP seek additional information as recommended and to seek a modification of the route.

11. I conclude that a refusal of permission at this stage would be premature for the following reasons:

- I believe alternative part routes can be identified by the applicant to re-route the pipeline out of Rosspoint.
- I believe that provided ABP can accept the standards set out in my Recommendations for Risk Levels and Routing Distances there is a reasonable to good probability that the applicant can reconfigure the part route and the pressure controls of the proposed development to provide an overall better proposal and one that would not have the deficiencies evident in the current proposal.
- There are good grounds for pursuing the further information as I believe much of the proposed development, when properly clarified, is likely to be acceptable.
- The Strategic Infrastructure Act provides ABP with wide powers under 182C (5) and 182D (5) to enable the Board to deal with developments such as this proposed development where there are significant additional factors involved over and above normal planning criteria. In this case the technology involved is complex, the pipeline is unique in Ireland and the UK, The Gas Development of Offshore Resources is only beginning in this country, there are other parts of the overall development which the Board have already considered and will have to consider as the Board take in the wide view they have to take of the proposed development.

12. I conclude that, by seeking the additional information and the re-routing, the Board's decision will bring a degree of transparency together with clarity certainty and confidence to bear on the assessment of the proposed development.

50.2 Inspectors Conclusions 182 C

The following are key conclusions presented chapter by chapter, these conclusions support my overall conclusions above.

Chapter 4 Local Planning Policy

Mayo County Council supports the proposed development and subject to those matters about which it asked for ABP to satisfy itself, Mayo County Council recommends that ABP grant this permission for the proposed development.

Mayo County Council intends to carry out extensive road works on the Haul Routes to facilitate this development. The work will be subject to agreement between SEPIL and Mayo Co Co. Sepil have agreed to pay the costs of the road works involved.

Chapter 5 Regional Planning Policy

It is clear that the Western Region Planning Guidelines support the development of the Corrib Gas Field and that the potential of the proposed gas field is seen a major benefit to the region.

Chapter 6 National Planning Policy

National Policy for the Energy Sector is well developed. Energy supply is a vital component within the National Economy. The security of energy supply is identified as a critical National Interest. National Policy is to strengthen the physical infrastructure links with UK and also strengthen the agreements with UK and European Energy Markets. National Policy is to ensure a diversity of energy sources and to move towards high efficiency use of energy. As regards Gas infrastructure, significant investment is provided in the period of the plan for BGE Galway Mayo Pipeline to

connect to the Corrib Gas Field and to bring Natural Gas to towns in the west. It is expected that gas usage will increase by 6.5% per annum up to 2013.

The White Paper sets out a target of 50% for Gas contribution to Electricity Generation by 2020. This is to be achieved by bringing increased renewable energy sources on stream up to 2020. In absence of this increased renewable energy, Gas, on a business as usual basis would be the energy source for 70% of electricity generation by 2020. Having diverse sources of secure energy supply into the future is central to National Policy. It is clear that bringing the Corrib Gas Field into production and connecting the supply from Corrib into the National Gas Network is a Government priority and has been a Government priority for some considerable time.

Chapter 12 DCENR Submission

1. The Minister for Energy is responsible for the safety of the upstream onshore gas pipeline.
2. DCENR have decided what standards are to be used in the design construction and commissioning of the pipeline.
3. A safety case procedure will be implemented by DCENR at the appropriate phase of the overall consents process.
4. TAG has completed its examination of the proposed development and has advised the Minister that there is no reason as far as the remit of TAG is concerned, subject to conditions, why the Minister should not give consent for the construction of the pipeline.
5. DCENR have an independent verification process in place for the project including Health and Safety, verification of design, construction, installation, commissioning and maintenance of the production facilities.
6. The security of the LVI is a matter for SEPIL.
7. DCENR are proposing legislation which if enacted by the Oireachtas will transfer control and regulation of the upstream pipeline to CER.
8. In the approvals process for development an E.I.S. is required to be submitted to DCENR with a plan seeking approval for working of petroleum under the Petroleum and Other Minerals Development Act 1960. The Minister decides whether the proposed pipeline would or would not be likely to have significant effects on the environment.

Chapter 13 DEHLG and NPWS Submission

- (1) It is accepted that any archaeological material or issues can be dealt with by licensed archaeologist on site and through consultation and by obtaining permissions as may be required from NPWS.
- (2) NPWS have concerns that the stone road method may have adverse impacts on the peat lands, intact blanket bog and cSAC designated blanket bog.
- (3) DEHLG and NPWS believe it may be best to use the procedure contained in Article 6(4) of the Habitats Directive.
- (4) NPWS have concerns regarding the success of the stone road and reinstatement work carried out at Glencullin on the BGE Mayo-Galway gas pipeline. Monitoring of this site is ongoing.

Construction work in Sruwaddacon Bay SPA is seasonally sensitive and in particular the tunneling works should be carried out in the April to September period.

Chapter 14 EPA and HSA submissions

EPA

In my view, sufficient latitude was given at OH for all relevant matters to be considered and discussed and for questions relating to matters of relevance to be raised with the applicant. In my view, this report, together with the details presented by the applicant in the E.I.S. and the additional

information presented at the OH, all this taken with the submissions of the prescribed bodies and the submissions of the observers provides sufficient information for ABP to evaluate the likely consequences for proper and sustainable development in the area and the likely effects of the proposed development on the environment. I do not recommend that ABP seek any further advice from EPA other than that contained in the letter of 01/05/09 from EPA to ABP

HSA

- (1) The safety of the pipeline is considered in Chapters 27-30.
- (2) The LVI is considered in Chapter 29.
- (3) Chapter 27 Pipeline Design and Codes of Practice and Chapter 28 QRA consequences of failure and Chapter 20 Regulation of the Pipeline in Operation consider the issues related to pipeline rupture and pipeline management long term.
- (4) It is very clear that HSA does not have a remit to provide advice to the Board in respect of the gas pipeline.
- (5) In relation to the points raised by the observers relative to the HSA, I am satisfied that the issues were raised, that they were considered at OH and that this report which includes a detailed report from Mr. Nigel Wright, Gas Pipeline Consultant, together with the information presented by SEPIL in the E.I.S. 2009, and in supplementary information given to the OH, all that plus the submissions by the observers provides me with sufficient information and provides ABP with sufficient information to enable the Board to take a decision in respect of the proposed development.

I am satisfied that no useful purpose would be served by recalling the OH to enable HSA to be questioned. I expect that such exercise would merely confirm the position of HSA which is clearly set out in their letter of 19/06/2009. I therefore recommend that ABP consider the matters at issue as presented in this report.

Chapter 15 Observers Submissions

These are dealt with through out the report on a chapter by chapter basis and Community Concerns in Chapter 17 contains a summary of the points extracted from Observers Submissions

Chapter 16 Other Issues

Challenge to Mr. O Sullivan

It is outside my remit to review the reports prepared by Mr. O Sullivan for the Board in these cases. That is a matter for the Board itself to consider. In my view Mr. Sweetman is at liberty to disagree with Mr. O Sullivan's reports on these files. Mr. Sweetman did not conduct the examination of the files for ABP; Mr. O Sullivan did conduct the examination and prepared his reports accordingly.

The proposed development 16.GA.0004 is a new Planning Application for Development under the S1 Act 2006. In my view Mr. O Sullivan's familiarity with the site has some advantage. Mr. O Sullivan in this instance will be making his report to me. It will then be a matter for me to prepare my report to the Board in light of all the information including Mr. O Sullivan's report. This objection is a matter for the Board to consider.

Indicative Costs of the Project

1. The costs are indicative so it is necessary to use the figures with care.
2. SEPIL indicate the cost of the onshore pipeline itself is not significant in the overall cost of developing the Corrib Gas Field.
3. The programme for achieving the completion of the connection of the Corrib Gas Field to the Terminal has a significant impact on the overall outcome of the development. The scheme net present value is indicated on Route Selection data sheets as being influenced by any delay in programme.
4. The length of the pipeline is a factor in the costs involved.

5. The costs through the peat lands are significantly higher than through agricultural lands.
6. The costs through the bay are more significantly higher again than through agricultural lands.

Chapter 17 Community Issues

This Chapter needs to be reviewed in full as the many issues dealt with do not lend themselves to shortened conclusions

Chapter 21 Extensification of the Well Field Development

In my view, this is a relevant consideration for ABP. While the ongoing regulation of the operation of this onshore pipeline is not a matter for ABP, I believe it is necessary that ABP be satisfied that during the operational life of the pipeline, that health and safety issues and the risks to the public are adequately regulated. I believe it is also necessary that ABP can be satisfied now that the integrity of the pipeline will be protected. Chapter 20 above considers the regulatory system for the operation of the pipeline.

I am satisfied that the integrity of this onshore upstream pipeline can be protected from any risk that may arise from extensification by the use of a suitable condition in the event that the Board decide to grant a permission for the proposed development whether this extensification of use of the Corrib Gas onshore pipeline, arises by way of new Corrib Gas Field wells, or whether the extensification arises from new gas fields outside the Corrib field itself.

Chapter 22 Project Splitting

In summary I find that the objection of project splitting is not well founded. The original approval to the Corrib Field Plan of Development in 2002 included an EIA procedure. The present application for the proposed development includes an E.I.S. which will be assessed by ABP. In relation to matters under construction on site I find that these are outside of my remit and they are not in my view relevant considerations for ABP in arriving at a decision on 16.GA.0004.

Chapter 23 Boundaries of Permission

Access Road

1. I am satisfied that the details of development proposed for the Glengad LVI part of the site are clear in the drawings and as contained in the E.I.S and as further clarified in submissions to the OH.
2. I am satisfied that a permanent access roadway to the LVI site is required as an integral part of the pipeline development and I have no objections to the roadway as proposed.
3. The offshore pipeline construction is not part of the 16 GA.0004 application. I have sought and received clarification at the OH of the overlap between the tie-in of the offshore pipeline construction and the proposed development.

Unauthorised Development

In my view, the contention is outside the jurisdiction of ABP at this point in time and should have been taken up with the Planning Authority Mayo Co Co within whose jurisdiction I believe issues of unauthorised development can be raised in the first instance. This position was made clear at the oral hearing. Evidence was also submitted that a Section 5 referral to Mayo Co Co in this regard had issued from An Taisce.

Overlap of Onshore Pipeline with Offshore Pipeline

1. I find that I have sufficient clarity of information available to enable me to assess the issues involved.
2. I find that the application before the Board is for an onshore upstream pipeline. I find that the S.I. Act 2006 requires that such a pipeline cannot be constructed until permission has been granted by ABP under 182d on the Act. The relevant commencement of the pipeline in my view is at the intersection of that pipeline with the county boundary of the planning authority at HWM. In effect, the pipeline and the application should commence at approximately chainage 83.390.
3. **I disagree with SEPIL who indicated in evidence that the application begins at chainage 83.40 which is identified as the top of the cliff face. I believe that SEPIL have made an error in that evidence. Otherwise there will be a section of the onshore upstream gas pipeline which requires a 182c permission from ABP and which is excluded from this application i.e. between chainage 83.39 and chainage 83.40 approximately.**
4. I find that the application for permission should include the gas pipeline itself and associated works which include the umbilical, the outfall pipe commencing at the county boundary of the planning authority at the HWM. I again disagree with SEPIL regarding the extremity of the onshore umbilical and the extremity of the onshore outfall pipe. I believe the application for both should commence at the HWM chainage 83.39 approx.

Regarding the piece of Offshore Pipe laid onshore

I have no authority to assess or examine such construction works and any issues of compliance with the planning acts that may arise from such works. I note that the 2002 consent under Section 40 of the Gas Act 1976 was the subject of an E.I.A procedure. Accordingly I do not expect that an argument could be sustained that SEPIL or the regulating authority had managed to get around their obligation to have an appropriate E.I.A Assessment conducted before the project received approval and before construction took place.

In my view, such matters are not an issue for consideration of the Board when taking its decision on 16. GA.0004. In my view, such matters do not impede or constrain the Board from examining the 16.GA.0004 Application, and from examining the impact of the proposed development on the environment and the impact of the proposed development on the proper and sustainable development of the area.

In my view matters relating to unauthorised or alleged unauthorised development are matters to be considered elsewhere. In my view matters relating to construction work on site at Glengad are not constraints on ABP in examining and deciding on 16.GA.0004. In my view matters relating to the construction works on site at Glengad have this relevance to the 16.GA.0004 application. The need to identify the boundary and respective limits of each of the offshore development proposed which is being carried out under a Section 40 Gas Act 1976 Consent and this 16.GA.0004 application for the proposed onshore upstream gas pipeline. This has been done as outlined above. In my view in this regard, I have sufficient information available in the E.I.S., and together with additional information arising from the oral hearing to evaluate the impacts of the proposed development. That assessment of the proposed development is carried out in the various chapters of this report.

Stone Road existing at Terminal end

In view of the above, it is my opinion that the existence of the stone road does not prejudice ABP from examining the Applications before it, and taking whatever decision the Board may decide. As recommended below, SEPIL should be asked to re-state the details of the site regarding the pre-existing stone road and amend the Application for Permission accordingly.

In relation to the Derrybrien decision and the issue of whether ABP can consider granting planning permission for a pre existing piece of infrastructure my view is that the proposed development as now stated to an Bord Pleanála is incorrect, the site condition where the stone road exists should be amended by the applicant, at that stage the corrected application in its entirety becomes subject to an E.I.A by ABP. In my view and as outlined above ABP can carry out an EIA on the correctly stated site condition and can decide whether the proposed development is acceptable or not.

Compound at Rossport

I am satisfied that these two areas of land are not included in the site of the proposed development 16.GA.0004. The development, use and reinstatement of these two areas are matters that relate to the 2002 pipeline consent which was subject to an E.I.A, and as such, do not form part of the information that has to be considered as part of the evaluation of this development 16.GA.0004. Nevertheless, I am satisfied that full reinstatement of the site as indicated by SEPIL will be a satisfactory environmental outcome for the site, and will mitigate any residual impact on the environment that continues pending the reinstatement. I believe such residual impact is a matter for consideration here.

Corridor Glenamoy outside boundary of site of proposed development

The development, use and reinstatement of the corridor²⁰⁵ are matters that relate to the 2002 pipeline consent what is clear to me is that there is a continuing residual impact on the environment as a result of the works carried out on this corridor by SEPIL. The impact is both visual and physical in that the remains of a wooden mat road exist. The impact also affects drainage in the area. It is not clear who controls the site, what the respective roles of Coillte and SEPIL are at this point in time, nor is it clear what final reinstatement, if any, will be carried out.

Chapter 24 Protection of Drinking Water

1. I am satisfied that the proposed development has the potential to impact on the Carrowmore Lake Water Supply catchment during construction of the section between chainage 92+273 and chainage 92+573 approximately.
2. I am satisfied that the evidence provided by Mayo Co Co shows that the water quality in the Carrowmore Lake Water Supply is satisfactory and has been satisfactory during the majority of the construction period of the Terminal.
3. I am satisfied that it should be possible to manage the construction project for the proposed development so that there will not be an impact on the water quality of Carrowmore Lake Water Supply.

Chapter 25 Construction Methodology

cSAC Glengad

I am satisfied with Mr. O Sullivan's conclusion. I am satisfied that restoration and reinstatement after construction and commissioning can be achieved in such a manner as to minimize the residual impact of the works on the cSAC.

cSAC Stone Road

1. On the basis that improved construction methods are used I am satisfied that the stone road method is viable and will provide a robust construction technique to create access along the route, provide stability support for the adjacent in situ peat through which the pipeline runs, and will provide a stable and satisfactory basis for constructing and long term support and containment for the gas pipeline.

²⁰⁵ [Works 3a on DRH OH119]

Construction Programme

1. I am unhappy with the proposals and the programme provided. It is clear to me that the programme is so tight for the proposed development works on the pipeline that construction may start before the minimal road “preventative maintenance” works are completed. I refer also to evidence given at OH by SEPIL²⁰⁶ where it is indicated that the “preferred” solution would be to have the preventative strengthening works carried out ahead of the pipeline construction. Mayo Co Co has indicated that the road works proposed will take 26 weeks.
2. I am not convinced that the programme can be achieved in 12 months. I believe that this programme is unrealistic. I believe it would be far more realistic to set a programme for construction over 24 months within which a significant amount of the construction itself could I believe, be achieved in 12 months. I believe the 24 month programme would allow adequate time for pre construction surveys and liaison activity with the various environmental, statutory, and local bodies involved, and the local landowners and community. There would also be adequate time for the preparation of an agreement to the E.M.P. and the implementation of such road improvement and strengthening measures as are required in advance of the construction. The 24 month programme would also provide a more realistic seasonal opportunity to cater for seasonal sensitive parts of the site. The extended programme would also allow for the likely weather induced delays that will inevitably arise on this coastal West of Ireland site with high average rainfall levels. The longer programme is in my view likely to be the programme in reality and will allow reinstatement to be carried out at the optimal time rather than according to a programme.

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Chapter 26 Security

In all those circumstances therefore, I conclude as follows:

1. The proposed development will entail a level of security on the site 24 hours a day, that will, when not engaged in safeguarding the site from confrontational opposition, be acceptable and manageable in a way as to enable mitigation of the impact to an acceptable level.
2. There will likely be confrontational opposition, and at those times the impact of the security measures will be significant. A mediation system needs to be put in place to enable the local community not engaged in confrontational activity to be provided with as much mitigation as is possible to enable activity of the community to continue during such periods of confrontation.

²⁰⁶ [DRN OH 17 Section 5.4]

I find that although the impacts of such events will be significant, that they are a necessary part of the proposed development in this case. I find that in a situation where this proposed development is approved in some form such security as is required would be a necessary part of the development.

3. In developing the final construction programme, sufficient time needs to be built in to allow SEPIL and the various contractors to operate as reasonable a regime on the construction activity, so that conflicts with normal local activity are eliminated as far as practicable. My assessment of the contract programme under construction is set out in chapter 25 Construction Methodology and Programme.

Chapter 27 Pipeline Design and Codes

1. The design codes for the pipeline are clear. IS 14161 supplemented by IS 328 and PD 8010.
2. Other Standards that are relevant to aspects of the analysis required are also clear. AS 2885.1, IGEM/TD1, IGEM/TD2, UK HSE PADHI system for land use planning advice.
3. From Mr. Wrights report *“The composite code approach based upon different parts of the Irish Standard IS EN 14161 supplemented by PD 8010 and IS 328, does cover the minimum requirements to design, construct and operate a safe pipeline for unprocessed gas.”*
4. The test requirement proposed for the gas pipe meets the requirements of the codes.
5. It is not clear which test pressure will be applied to that section of onshore pipeline upstream of the LVI downstream weld.
6. It is not clear which test pressure will be applied to the LVI itself.
7. Mr. Wrights recommendation that strain monitoring equipment be fitted to the pipeline in areas of deep peat needs to be referred back to SEPIL for a formal design review and response.
8. A maximum allowable operating pressure (MAOP) has not been established clearly in the design documentation contained in EIS and supplementary information provided by SEPIL.
9. The method proposed for cathodic protection of the pipeline system between offshore/onshore pipelines needs to be justified by SEPIL.
10. SEPIL propose to operate the Corrib wellhead production at maximum output in the early years. This means the normal operating pressures will be higher in those years.
11. Mr. Wright has recommended that economic modelling be carried out by SEPIL to enable an assessment of the financial impact of reducing operating pressures in the first 3.5 - 5 years to be evaluated. While I can understand Mr. Wrights intention that issue is a matter for SEPIL to examine and decide at what rate of production and at what pressure it proposes to operate the onshore pipeline. The issue for ABP then is to assess the impact of the proposed development (including the pressure as proposed by SEPIL) on the Health & Safety of the area. A proposed development including design pressures has been proposed by SEPIL. It is this proposal which is now being examined and it is this proposal which has now to be deemed acceptable or unacceptable from all aspects including the Health & Safety of the Area.
12. The strength of the pipe itself and compliance of the pipe design with the codes is a straight forward issue. However the overall system of pipeline, landfall valve in the proposed location cannot be declared safe until those other elements of the system are examined. Chapter 28 examines the Quantified Risk Assessment submitted by SEPIL.

Quantified Risk Assessment

The QRA submitted does not provide the clarity and completeness required to conclude an assessment of the acceptability or otherwise of the risk to public safety that the pipeline poses.

In my view it would be unreasonable to reject the proposed development and recommend refusal of planning permission because the QRA lacks transparency and lacks completeness. My reasons are as follows:

- 1) SEPIL have carried out a QRA in accordance with PD 8010-3 and SEPIL are satisfied that the analysis carried out is sufficient and complies with the code. Mr. Wright has confirmed that the QRA has been carried out in accordance with the code.
- 2) SEPIL have indicated that site specific conditions can be included and a QRA can be prepared accordingly.

- 3) There is an absence of a risk based decision making system in Ireland and accordingly ABP need to find a framework within which to analyse the QRA.
- 4) TAG have addressed this by specifying codes for the design of the proposed pipeline. In my view however the limitations of the codes in respect of wet upstream gas and in respect of very high pressures need to be supplemented. There are two ways this can be done.
 - a) A site specific QRA with relevant database frequency of failure rates should be provided.
 - b) A qualitative analysis of risk should be provided.
- 5) In my view a determination on whether the level of risk posed by the pipeline is acceptable cannot be made because of uncertainties in the QRA supplied by SEPIL but it is possible to resolve these uncertainties

Chapter 29 Landfall Valve Installation

I accept Mr. Wrights Report and I make these conclusions relying substantially on Mr. Wright's report.

1. SEPIL have put forward a comprehensive proposal to limit the pressure in the onshore pipeline downstream of LVI in response to Advantica/TAG recommendations. The proposed pressure limitation protects the onshore pipeline downstream of the LVI.
2. **The LVI pressure control does not provide the same pressure limitation at Glengad itself. In fact the HIPPS system proposed may introduce increased risk for the Glengad site.** It is not clearly demonstrated in the information provided exactly how the risk calculations submitted apply to the Glengad site.
3. A site specific QRA is required for Glengad. This will enable risk levels at Glengad to be clearly identified for worst case condition.
4. In the event that ALARP²⁰⁷ applies to any part of the onshore pipeline at Glengad LVI or elsewhere then SEPIL should provide the analysis to justify the acceptance of ALARP risk levels and to detail further mitigation measures they propose to take to manage that risk.

I note in this regard Annex A Safety Evaluation of Pipelines IS EN 14161 Paragraph A.2.:
*"Safety evaluations should **demonstrate** that the pipeline is designed, constructed and operated in accordance with the safety requirements of this European Standard."*

Paragraph A.5.1:

*"**Hazard estimation should produce a measure of the level of effect on public safety** from a particular hazard. Estimates may be expressed quantitatively or qualitatively and determined in frequency of occurrence, consequence, risk or a combination as appropriate for accomplishing the objectives of the safety analysis".*

I also note that SEPIL did indicate in evidence at OH that a site specific QRA could be carried out but that it had been decided to carry out the generic QRA to PD 8010.

5. Mr. Wright is an experienced gas engineer specialist. He has considered an alternative concept for ensuring that pressure at Glengad does not reach 345 bar. That alternative would involve a vent stack and relief valve at Glengad. SEPIL should be requested to discuss that concept and the reliability of the subsea valve system proposed at the wellhead and manifold offshore.

²⁰⁷ ALARP – As Low As Reasonably Practicable Risk Level (see Glossary)

6. SEPIL in EIS indicated that consideration had been given to mechanical means of limiting the pressure in the onshore pipeline and to instrumentation means of limiting the pressure in the onshore pipeline. SEPIL state that the design of a pressure relief system had been considered. SEPIL state that it would have required additional flaring capacity in the system whether in a dedicated flare or through the terminal. SEPIL have concluded that the LVI system proposed will provide a higher level of integrity third level of overpressure protection within the valve installation itself and one which does not require venting or flaring.
7. Ultimately the choice as to which system to use, to reliably limit the pressure in the onshore pipeline, is for SEPIL to decide.
8. I note Advantica were not prescriptive in their report as to how SEPIL should limit the pressure. Advantica did however identify a simple upgrading of the original 2002 valve assembly proposed to a remotely operated valve at Glengad as one option that should be considered.
9. In my view ABP should not be in any way prescriptive. However Mr. Wright's alternative concept is important. SEPIL should be given an opportunity to respond and to set out again the reliability of the offshore well valve system and to provide more details of the design and the alternatives considered by SEPIL in arriving at the decision to install a HIPPS at the Landfall Valve Installation.
10. In the event that a straight pipe at Glengad provides increased safety for the population at Glengad then SEPIL should provide full justification for the proposed design as submitted.
11. The significant issue for the board to consider is the safety implication for the area as a result of the LVI configuration now proposed by SEPIL.

Chapter 30 Safety Summary

Risk based decision making:

In my view in the absence of a risk based methodology in Ireland ABP should adopt an objective standard itself for risk levels in proximity to gas pipelines. I believe the UK HSE standard is acceptable and suitable and accordingly I recommend this to ABP that it be adopted for assessment of the Corrib Onshore Pipeline

Routing Distances

In my view there is a clear difference in opinion between SEPIL and Mr. Wright on what the proximity distance is for Corrib Onshore Pipeline. The issue of differences are three (1) The suitability of the Code IS 328 which seems to allow extrapolation of the Figure 2 from 100 bar up to 345 bar and indicates 3 m as the minimum distance from normally occupied buildings. (2) The fact that a thick pipe is being used seems to imply that certain failure modes can now be ignored in the analysis. (3) The untreated gas has more risks associated with failure than downstream treated and dry gas.

Hazard Distances

1. The hazard zones provided are very clear and useful in understanding the consequences of a failure in the pipeline.
2. The hazard contour maps do not show the distance from the pipeline at which a person would be safe. That can also be calculated. In my view SEPIL should be asked to supply this.

3. There is a strong argument from observers that the pipeline route is such that it introduces a risk to their safety and the safety of their homes from the proposed development.
4. The codes recognise different areas Type R (Rural < 2.5 per Ha) DF 0.72, Type S (Urban > 2.5 per Ha) DF 0.3, Type T (Central Towns and Cities) generally pressure limited to 16 bar. The codes then use the design factor to provide a greater margin of safety in more densely populated areas. SEPIL have a strong argument that the 0.3 design factor proposed for the pipeline in what is essentially a rural area (population < 2.5 per Ha) actually provides a high margin of safety in the pipeline design.
5. **Advantica in their report indicated that the most conservative approach to design would be to establish the maximum hazard distances and then route the pipeline accordingly so that it did not pose a risk to the dwellings. They did accept that such an approach was only possible in remote areas.**
6. In my view **that is the standard that should be adopted for the Corrib Onshore Pipeline.** I believe ABP should adopt that standard for this upstream onshore pipeline. Once that standard is clearly agreed then in my view routing and design (configuration controls and MAOP as well as design pressure) become very clear.
7. In the event that ABP accept point 6 I believe there is a reasonable possibility for SEPIL to reconfigure the pipeline at Glengad on the existing route to reduce the level of risk there to that acceptable standard. I also believe it will be possible to re-route the pipeline out of Rosspoint village to an alternative route that can meet the acceptable standard. I believe the route as proposed on the South of Sruwaddacon Bay will prove acceptable to that standard.

Chapter 36 Peat Stability

1. I accept Mr. O'Donnell's report and I am satisfied that he has carried out a detailed examination of Peat Stability in this proposal to develop this pipeline through peatland.
2. I accept that the proposed development which includes extensive works in peat lands can be constructed successfully without generating peat instability.
3. The greatest risk of peat instability will occur in the construction of the stone road itself. Once the stone road is fully constructed the risk of peat instability is reduced.
4. The surface water handling along the route of the proposed development should be designed with conservative values for flood return period.
5. The risk of damage to the pipeline once laid from peat instability is low.
6. The risk register should be updated following the preconstruction site investigation and the risk mitigation measures should be applied conservatively to the detail method statements for construction.

Chapter 37 Stone Road Method

1. I find the stone road method of construction proposed for peatland is acceptable.
2. I am impressed by the improvements proposed in the method over and above the method used on the BGE Mayo- Galway pipeline.
 - The pipeline will be laid within the road itself
 - The full working width will be used in the intact blanket bog and in the cSAC area.
 - No side casting of peat will be carried out.
 - Peat plugs will be used to reduce the permeability of the stone road.
 - An improved method of storing turves in one layer and keeping these moist is proposed.
 - The turve reinstatement detail is for a more tightly fitted surface and with an edge detail to make the hydrological conditions on the surface near to the original conditions.

3. The same detail construction is required at the compound areas as that for the stone road itself – the base layer of peat, the reinstatement, protection from ingress of excessive surface water.

Chapter 38 Natural Environment

1. I am satisfied that the construction methodology proposed in tunnelling under Sruwaddacon Bay and in using the stone road method into peatland represents substantial mitigation of the impacts of the proposed development on the Glenamoy Bog Complex cSAC and on the Blacksod/Broadhaven Bay SPA.
2. I accept Mr. O Sullivan's report. I am satisfied that he has examined the issues likely to give rise to an adverse impact on the environment.
3. I accept Mr. O Sullivan's conclusions as follows:
 - The proposed development will not have an adverse impact on the bog at significant distances beyond the proposed working area.
 - It cannot be stated beyond any reasonable scientific doubt that the negative impact which might arise from compaction and disturbance of the acrotelm in intact blanket bog or from uncovering a peat pipe would be fully mitigated although they probably would be.
 - If the proposed construction method can adequately maintain the hydrological regime and the stability of the ground then it can be stated with a sufficient degree of certainty that the development would not have an adverse impact at a significant distance beyond the proposed working area. [Inspectors note: Mr. O Donnell in his report has concluded that it should be possible using comprehensive geotechnical engineering to install the stone road on the proposed pipeline without causing destabilization of the peat. This has been discussed in Chapter 36 and 37 above.
 - The construction methods and mitigation measures described in Section 13.5 should be adequate to avoid negative impacts on freshwater habitats in the area.
 - The likely residual impact of the development on freshwater ecology is minor to negligible with none on migratory salmonids or other Annex II species.
 - It is unlikely that the works at Glengad would have a significant adverse effect on the sand martin colony there.
 - The construction of the LVI would result in a permanent loss of a small area of grassland habitat of low ecological value.
 - The operational phase of the development would be unlikely to affect the fauna.
 - It is concluded that the development would not have a significant adverse impact on the animals and birds of the area.
 - The risk to natural heritage from pipeline failure would be of lesser concern than that for human health and safety. The restricted volumes and biodegradable nature of fluids which could be released are not considered to give rise to significant threat to flora or fauna along the route.
 - The SEPIL documentation provided a reasonably accurate and comprehensive description of the habitats along the pipeline route.
 - It is not considered that the works would have a significant impact on the ecological value or natural heritage value of the habitat of the agricultural lands along the route.
 - It is not considered that the works would have a significant impact upon birds, fish, marine mammals or other flora or fauna or habitats in the bay.
4. I am satisfied that subject to the mitigation measures proposed in the E.I.S. and in the additional documentation provided at OH that the proposed development can be constructed in a manner that will not impact significantly on the environment of the site.

5. There will be an impact at Glengad from the LVI compound that will be negative and slight on the Glenamoy Bog Complex cSAC.
6. There will be an impact at Rosspoint from the stone road construction and pipeline laying there on the cSAC Glenamoy Bog Complex. The impact will be negative local and there is more than a reasonable probability that the mitigation works and reinstatement there will work. I base that conclusion on Mr. O'Sullivan's analysis and report and on the example of work carried out at Glencullin.

Chapter 41 Other Issues

Emergency Planning

The National Framework for Major Emergencies has been put in place and sets a high standard for preparedness for emergencies. The fact that this is an up to date framework and that independent audit of the framework have taken place, provides confidence that is required in regard to how a major emergency on this proposed development will be responded to by all the agencies. I am satisfied that a comprehensive emergency planning regime will apply to the proposed development.

Working Relations SEPIL and Local Community

Notwithstanding the situation whereby on one side there are those who may continue to confront the proposed development, and on the other side that SEPIL have a determined plan to complete the Corrib Gas Field development, there is a need for the leadership in the local community and the management in SEPIL to have a system of machinery in place whereby the many issues that have to be dealt with can (1) be communicated, (2) provide feedback and suggestions, (3) be reviewed.

The Liaison officer for the proposed development is an essential position and I expect a busy post during any project as extensive as this proposed development. However, the Liaison Officer cannot provide either the time or the required level of communication, feedback and review required on his/her own.

The Project Monitoring Committee (PMC) established by Mayo Co Co to oversee the terminal construction under one of the conditions of the planning permission is an essential part of the control of the project. Nevertheless, it seems to me there is room for a group which has representatives of the community and representatives of SEPIL which could usefully be established to act as a clearing house for communication, feedback and review of the ongoing issues as they arise.

Such a system of clearing house direct contact between SEPIL and the local community can work. Indeed, such a system works well on many difficult projects, and in my own experience such a system can avoid legal confrontation and can resolve difficult issues by discussion and agreement where the leadership exists on both sides to make the system work.

Regardless of whether such a system of "clearing house" is possible, I believe that there is an obligation on the Applicant to provide good timely accurate information to the community on issues that will affect that community, I recommend that such a condition be attached to any permission that the Board may decide to grant for this development.

I accept that the community otherwise will find themselves being confronted with an activity unawares such as heavy slow moving equipment mobilisation etc.

Conclusions Environment Management Plan

1. The construction of the proposed development is a multi layered activity and requires detail planning at each stage. The Environment Management Plan process as proposed by SEPIL will in my view provide a substantial tool for managing the activities.
2. A Project Management Committee (PMC) is required to bring together the developer, the planning authority, the agencies involved and representatives of the local community to monitor the project.

Chapter 44 Traffic Plan and Haul Routes

Conclusions L1202

1. The widening and strengthening works that have been carried out are constructed to a satisfactory standard. There is one area that will need further strengthening at Pollatomais.
2. The convoy system proposed for HGV's is a workable system.
3. The proposed traffic management plan for L1202 is a workable plan and subject to approval of Mayo Co Co and Gardai.
4. The Traffic Management Plan should remain [as was presented in evidence by SEPIL] as a live plan being improved and updated in light of use of the plan, feedback from other users and to meet the requirements of SEPIL, Mayo Co Co, the Gardai and the local community.
5. SEPIL should in co-operation with Mayo Co Co prepare and implement, as part of the Environmental Management Plan, an environmental monitoring and restoration plan to mitigate the impacts caused by the use of the L1202 as a haul route.
6. I find that the Traffic Management Plan needs additional measures to provide for better co-ordination between SEPIL and local use of the L1202.
7. SEPIL should provide full information to the local community regarding the use of the L1202 as a haul road, this should include hours working, arrangements and times for "standing by" at school drop off/pick up times, information when large loads are being moved, details of contact liaison and details of how the liaison officer process for complaints will work.
8. SEPIL should arrange that a complete scheme of structural assessment of buildings and properties, fences, walls etc is carried out in advance of proposed onshore pipeline works.
9. In the event that ABP decide to grant permission for this development I recommend SEPIL should pay a contribution by way of the Community Gain Condition set out in Chapter 48 to the local communities who will bear the impact of the use of this road L1202 for 12 months and possibly longer. Such contribution to be made to Mayo Co Co planning authority and to be distributed in a scheme to be agreed by Mayo Co Co, and as set out in the condition in Chapter 48.

Conclusions L1203

1. I am satisfied that this road, when strengthened, would manage the traffic associated with the construction of the onshore pipeline. I am also satisfied that subject to final agreement with Mayo Co Co, the Gardai concerning operation of the convoy system for HGV's that the junctions with R314 and L5245-0 are adequate to accommodate the traffic associated with the construction of the pipeline. I expect that there will be some maintenance required particularly along the left hand wheel track during the works but because of the existing road width at 5.4m I accept the proposals in respect of the L1203.

2. The loads travelling in convoy [up to 5 HGV's together] need to be considered in an assessment that should be carried out on Annie Brady's bridge, and the smaller culverts/bridges along this route. The assessment outcome and any necessary improvement works that need to be carried out on the bridge and other culverts should be agreed with Mayo Co Co.
3. The route for the HGV's convoy is 10 – 11km long within the area being controlled by traffic management operatives [TMO]. There are no lay bye's on the L1203, [L5245-0, and L52453-0 are dealt with below] and consequently a system of dealing with emergencies will be required. Such a system is not considered in the E.I.S. The AADT for the L1203 is 665 vehicles per day now, so any breakdown on L1203 will have a potential impact on safety on that road. The removal of such vehicles following breakdown could also prove difficult in the event that a fully laden HGV breaks down or that a special permit heavy goods transporting vehicle breaks down. However, in the case of L1203, I am satisfied that a breakdown system with response and safety requirements adequate for the situation can be put in place and in the event that ABP decide to grant a permission for this development an appropriate condition can be prepared.

Conclusions R313 R314 L1204

I am satisfied that these routes are adequate for the traffic associated with the construction of the onshore pipeline. I am also satisfied that the junctions on these routes can adequately cope with the traffic associated with the onshore pipeline. I am also satisfied that the road widening and road strengthening that has been carried out on these roads provides a satisfactory road structure for the haulage and traffic associated with the proposed development.

Conclusions L5245-0 L52453-0, L52453-25

1. There are clearly difficulties arising regarding the road works required to support the construction activity within Rosspore.
2. The preferred option and one with which I would agree was to widen and strengthen the local road network in Rosspore to provide a solid haul route with reasonable width and capable of handling the traffic involved in the construction project. That option has been set aside because it is expected that land dedication by local landowners of the lands required for the road widening will not now be possible.
3. An alternative is proposed – convoy system one way HGV control on the route using radio control and traffic management operators. In different circumstances if the route was shorter and the duration of the works was shorter and the quantities to be hauled were not so substantial it may be possible to accept these proposals. In the proposed development these details are not acceptable.
4. I am not satisfied however that the proposed use of the haul road is satisfactory.

Chapter 45 Route Selection

1. Glengad as the landfall was confirmed by SEPIL following reconsideration by them of the options available in 2007.

2. SEPIL confirmed in evidence that the landfall itself is not part of this 16.GA.0004 application. In other words SEPIL believe the Glengad location for landfall has been established and is a constraint on ABP in considering 16.GA.0004.
3. In my view the proposed development must satisfy the same requirements in respect of the onshore pipeline at Glengad as elsewhere along the pipeline route.
4. The 2002 consents are significant considerations for the Board to have regard to as required under Section 143 of the P & D Act 2000.
5. The use of a more objective assessment by SEPIL in Route Selection would have placed the community concerns at the heart of the evaluation process. Had that been done then best practice and a more cautious approach [as outlined by Advantica] to route selection would have and should have been taken. In my view such an approach is still required. In my view the influence of such an approach on programme for the delivery of the Corrib Gas Field project could be highly positive as the community concerns regarding proximity to houses and regarding the consequences of a failure in the pipeline have been central to delay in the project to date.
6. In summary I find that SEPIL selected a route which suited the SEPIL criteria and which did actually respond to Cassell's recommendations. However I find that the response to Cassell's recommendations and the Route C1 that was selected did not allow any community criteria to influence the final decision. I believe this was a mistake on SEPIL'S part.

In my view the Route Selection process was not objective and did not reflect adequately the significant and justifiable community concerns or the proper planning and sustainable development of the area.

Route at Glengad to Lower Tunnel

The landfall is acceptable from a Natural Environment point of view (Chapter 38). The landfall is acceptable from a ground stability point of view (Chapters 34 and 38). The landfall is acceptable from a landscape and visual impact point of view (Chapter 42). There are issues that relate to the clarity of the information provided on the safety of the pipeline and the landfall valve installation which need to be resolved with the applicant. Pending clarification of those issues the acceptability of the landfall from a proper planning and sustainable development of the area perspective cannot be decided.

The route selected and the proposed development from the landfall to the lower Sruwaddacon Bay crossing is acceptable subject to the clarification of the safety assessment as set out for that section of the route (Chapters 27-30).

Route in Rosspoint

This is the section from chainage 83 + 910 to chainage 89 + 55

An objective route assessment would have given greater consideration to the impact of this proposed development on the community.

The pipeline route through Rosspoint is unusual in layout where it has two right angle changes of direction and requires the removal of two houses from habitation in order to achieve 140m separation distance from existing inhabited dwellings.

I question this unusual layout. I question the removal of two houses from habitation over the lifetime of the pipeline in operation. I accept that one house may in any event be in such a condition that it is only marginally habitable. I question the need to craft a route like this when there are more direct alternatives available. I am not satisfied with the layout of the pipeline route from chainage 85+400 to chainage 88+300. The pipeline in this section is threaded through and around a linear rural housing area in a manner that has not been justified by the applicant other than that it can be constructed like this and that it is considered safe in accordance with the code of practice PD 8010-3. It has not been demonstrated how this proposed development can be considered in accordance with the proper planning and sustainable development of the area.

I find the proposed development through the linear rural residential part of Rossport is incompatible with the policy context and objectives of Mayo CDP and NSS guidelines regarding rural housing.

- a) The 140m in itself has not been justified or established relative to regulation or code requirements it has just happened to be 140m at the end of the route selection process. SEPIL believe that 3m is an acceptable distance in accordance with IS 328 Figure 2. SEPIL has indicated that the proximity is not a concern and that the proposed development really only affects an overall permanent way leave of 14m in agricultural lands and 20m in peat lands otherwise proximity to this pipeline is not a problem or is not a safety risk because of the very low risk of a leak or rupture occurring on this pipe.
- b) The N West of Mayo is relatively sparsely populated with large areas of peat bogs. I consider it unusual that the pipeline is routed through one of the residential areas and not through areas which are less densely populated. IS EN 14161 under Section 6.2.1.2 public safety states that “pipeline...should where practicable avoid built-up areas”.
- c) The road access proposed for Rossport section of the pipeline north of Sruwaddacon Bay is unsatisfactory. SEPIL propose to conduct in-haulage of equipment and materials and out-haulage of significant quantities of peat for this heavy civil engineering construction over this inadequate local road network and proposed haul route L5245, L52453-0, L52453-25.
- d) There will in my view be a very significant impact on the community in Rossport as a result of the proposed development during this construction. The impacts will be delay and disruption over at least a 12-month period. In considering the programme, it is my view that construction will extend over a longer period than the 12 months set out in the E.I.S. I expect that 24 months is a more realistic programme. This will allow for pre construction survey evaluation and preparation work as well as the authorisations required for the E.M.P. and aspects of the detail project construction plan. Then the construction work itself will have seasonal constraints attached and unknown potential issues such as archaeology weather and disruption to the programme.
- e) Mayo Co Co has indicated themselves that the road strengthening works will take 26 weeks to complete.
- f) The impacts will be disruption, inconvenience, long delays, inadequate facilities for children pedestrians, particularly for the L52435-25 road which will in my view be used extensively for about 3-6 months of the 12 month contract but actually likely to be used over longer periods if as I expect the programme runs over a 24 month period. I am also unhappy with the extent of the road improvements that can be carried out by Mayo Co Co. This arises because Mayo Co Co have indicated that local land owners are not prepared to provide the land necessary for road widening [as was originally intended in the 2008 16.GA.0001 development as proposed at that time copy in Appendix 7]. It is now proposed to work within the existing road width and to construct a strong reinforced surface layer on top to protect the road. It is my belief that there will be difficulties that there may be some local

collapse of the Bog Ramparts involved. I believe the proposal cannot be considered as a fully adequate proposal.

- g) The E.I.S. has not considered adequately how the local custom and practice of turf cutting, turf harvesting and turf storage at the roadside will be accommodated. These may be small items on the surface but the construction project will in my view interfere with these local custom and practices and inevitably such practices will have to be accommodated. The E.I.S. is silent on how that will be achieved. SEPIL have indicated that as part of the construction plan access will be provided for land owners to use the peat lands.
- h) The E.I.S. itself was silent in regard to the extent to which security of the proposed development would impact on the area. Some information was provided at the oral hearing²⁰⁸ outlining the security profile of activity in connection with the proposed development. It is clear that in Rosspoint, there will be a significant impact on the area from lighting and generators, and security patrols which will extend throughout the construction project as may be required.
- i) There may also in my view be cost savings for the Applicant in routing the pipeline through Rosspoint²⁰⁹. SEPIL indicated in evidence that the cost of the alternative routes for the onshore pipeline is a factor but is not a significant factor in terms of the overall cost of the Corrib Field Development, I understood that to mean that the cost of the onshore pipeline whichever route was chosen, would not make a significant difference to the overall economics of the project. Nevertheless the Rosspoint Route appears to have cost savings over other potential routes largely because of length and because routes through the peat lands elsewhere are considerably longer and routes through the bay are more expensive. I accept this issue regarding cost is far from being a clear picture.
- j) However, the influence of the programme was highlighted in both the Route Development Document²¹⁰ and in evidence on the economic evaluation of the overall Corrib Gas Field Development. It appears to me that SEPIL believe that the Rosspoint route can be more quickly achieved and thus can contribute more than other routes to bringing the Gas Field into production at the earliest possible time. I disagree with this. The local community issues such as development potential for family members on lands at Rosspoint, normal everyday activity on the roads in Rosspoint, custom & practice of turf harvesting and significant delays and disruption in road usage for local people over at least 12 months, and I believe longer, have not been addressed. There are other issues referred to in Chapter 30 safety, where clarification is required on proximity distances, hazard distances, a revised QRA that will take account of the difficulties in finding shelter across the Bog or down in the Bay.

In my view all these issues should have been addressed properly in the Route Selection. Had that been done it is my view that the Rosspoint Route would have been identified as a route that would likely lead to delays in the realisation of the project. If these issues were addressed an objective route selection process would have resulted in an alternate route to Rosspoint being selected.

Chapter 46 E.I.S.

²⁰⁸ [DRN OH115]

²⁰⁹ [DRN OH117 gives high level costings]

²¹⁰ [DRN OH104]

The E.I.S has been considered in detail in the chapters of this report. I find that sufficient information has been provided to enable an assessment to be made of the proposed development with the following exceptions.

- 1) In Chapter 30 Safety of the pipeline I have set out the requirements for additional information that is required regarding issues of public safety and relating to the design information supplied with the application.
- 2) In Chapter 36 Peat Stability I have set out the requirements for additional information regarding issues of environmental protection and relating to the risk register and the construction information supplied with the application. While this information is requested it has been possible to conclude the assessment regarding peat stability with the information provided by the applicants.
- 3) In Chapter 44 Traffic and Haul Route I have set out the requirements for the applicant to reconsider part of the route regarding issues of the protection of the amenities of the area and relating to an unsatisfactory road works proposal to support the development and unsatisfactory access route proposed for the development at Rosspoint.
- 4) In Chapter 45 Route Selection I have set out the requirements for the applicant to reconsider part of the Route at Rosspoint regarding issues of the proper and sustainable development of the area and which relate to an unsatisfactory impact of the proposed development on the rural linear residential development at Rosspoint.
- 5) In this Chapter I have set out the requirements for the applicant to reconsider part of the Route at Rosspoint regarding the issue of proper and sustainable development of the area and where the proposed development would have a significant impact of the future development potential of the rural linear residential area of Rosspoint.

Chapter 47 Legal Issues

There are a number of these issues that have been discussed in Chapter 47 and a number have been discussed in Chapter 49 Acquisition Order. These need to be read in full as brief conclusions are not a useful way of reviewing these issues.

Chapter 49 Acquisition Order

3. **In respect of plots WL(2) 001 to WL(2) 006 inclusive and plots WL (2) 028 to WL(2) 030 inclusive. It is not possible to recommend or not to recommend confirmation of the acquisition order sought by the applicant pending clarification of those issues set out in Chapter 30 Safety of the Pipeline.**
4. **In respect of plots WL (2) 007 to WL(2) 027 inclusive and including WL (2) 025A I recommend to ABP that the acquisition order not be accepted for that part of the route and the lands which are sought in Rosspoint.**

Reasons:

- 5) **I consider the proposed development is unsatisfactory between chainage 83+910 and 89+550.**
- 6) **The traffic plan and haul route proposed and the limitations to the road works proposed to support the construction project are not satisfactory.**
- 7) **The construction of the project as set out in the E.I.S. and in the additional information provided at OH would have a significant and unacceptable impact on the local community over a prolonged construction period. The programme is**

expected to exceed that set out in the E.I.S. The proposed development would not be in accordance with the proper and sustainable development of the area.

- 8) It is proposed to construct the pipeline in proximity to the dwellings and within the distance of the hazard lines should the pipeline fail. This is considered unacceptable for an upstream untreated gas pipeline.

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Chapter 51 Recommendations 182c Application

This chapter gathers together the more important recommendations from the assessment carried out of the individual issues involved. These are set out below for quick reference. **It is important to note that in certain cases the recommendation really needs to be read in the context of the discussion that leads up to the recommendation.**

In the event, that the Board accept my recommendation which seeks a modification of the route and further information from the applicant I have set out the details of that further information required and the standards which should underpin the route modification.

I have examined the proposed development and I have conducted the Oral Hearing. I have received the advice and support of Mr. Stephen O'Sullivan Senior Planning Inspector, Mr. Conor O'Donnell geotechnical consultant and Mr. Nigel Wright Gas Specialist Consultant. I have prepared as detailed a report as possible on the issues involved in this application.

It is my considered opinion that ABP should decide

- 1) To seek further information from the applicant as set out.
- 2) To seek a modification of the route from that originally proposed by the applicant.
- 3) To provide a direction that the Risk Levels as set out be used as the standard against which this development will be assessed.
- 4) To provide a direction that the routing distance standard that will be used to assess this upstream untreated gas pipeline will be as set out.
- 5) To provide a direction that subject to the satisfactory modifications to the proposed development and subject to the satisfactory assessment of the revised E.I.S that the Board is of the provisional view that it would be appropriate to approve the proposed development as modified .

In the event that ABP decide to refuse the permission for this development I have provided details of where I consider there are deficiencies in the development as now proposed.

In the event that ABP decide to grant permission for this development I have provided draft conditions for attachment to such permission.

51.1 Inspectors Recommendation

51.1.2 Further information required

- a) Clarify the code requirements and pressure test requirements for the pipeline chainage 83 + 390 (HWM) approx to 83 + 470 (downstream weld at LVI)
- b) Provide confirmation that the design of this section of pipeline meets the requirements set down by TAG
- c) Provide an integrated set of design documentation in the form of a revised Appendix Q. The documentation to integrate the analysis provided in incidental and individual documents at the OH. The whole set to provide a transparency of the design for the complete pipeline from the HWM to terminal. This transparency to relate to the different site and design conditions along the pipeline and to relate to the codes. The design to include the analysis related to ground stability.

- d) A new QRA should be submitted which will present the analysis of risk at the different operating conditions and different locations along the pipeline route. The QRA should be site specific. The QRA should include ground movement and incorporate a database that matches the conditions of the proposed development. A sensitivity of the QRA is required which will demonstrate the range of risk that relates to any uncertainty in the database of failure frequencies for the various potential failure modes of the pipeline [for an upstream wet gas].
- e) Provide a qualitative assessment of risk, to be prepared for the different operating conditions and different locations along the pipeline route. This will provide a comprehensive assessment to include those events that cannot be easily defined mathematically.
- f) SEPIL need to submit analysis of the condition where the umbilical becomes severed and the control of the valves at the well is lost. SEPIL need to identify what conditions apply to the onshore pipeline and the risks involved in that circumstance.
- g) SEPIL should examine the concept of a vent at Glengad as a measure to protect against upstream pressure at landfall rising above a preset value. SEPIL should provide information on the reliability of the shut down subsea valve system proposed for the wellhead and manifold offshore.
- h) SEPIL should examine the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and should provide full justification for the proposed design as submitted.
- i) SEPIL should provide the hazard distances, BDD and escape distance in contours for the entire pipeline and the outer hazard line which should show the distance at which a person would be safe. A number of these have already been provided, the set of hazard maps should be completed as far as the terminal.
- j) SEPIL should provide a summary of the societal risk for Glengad.

51.1.3 Further information not essential but required

The following information should also be requested notwithstanding that Mr. O'Donnell has been able to complete his analysis.

- Precise section by section details of the proposals for temporary peat storage and reinstatement outside the areas of intact bog, which take into account the condition of the surface layer of the peat and specifically identify where peat turves or remoulded peat will be stored on bog mats adjacent to the road.
- Details of the specific risk mitigation measures that would be proposed for each of Sections 1 to 18 in the qualitative assessment of relative peat failure potential, in particular noting where there would be limits on the storage of peat on bog mats adjacent to the stone road excavation and adopting a conservative approach to the assessment of peat stability.
- An assessment of the potential impact of the estimated stone road settlements on the umbilical pipeline and service ducts that will also be constructed within the stone road, including an assessment of the risks associated with failure due to rupture of the pipes.

51.1.4 Clarification of the permission being sought

Boundary of Onshore Pipeline Glengad: I recommend to the Board that SEPIL be requested to restate the extremity of the proposed development at HWM to include that section of development of the upstream gas onshore pipeline umbilical and outfall pipe between the county boundary and chainage 83.40.

23.6.4 Stone Road Existing at Terminal end: The site of the proposed development has been incorrectly detailed in the E.I.S. between chainage 91.537 and chainage 92.539. ABP should therefore request SEPIL to amend the details of the proposed development accordingly. This revised information can then be assessed fully as part of the application for the proposed development.

23.7.4 Corridor at Glenamoy outside of site of proposed development

I believe it would be incompatible with the proper planning and sustainable development of the area to deal with the proposed development 16.GA.0004 without identifying how these impacts associated with the apparently abandoned 2002 consented pipeline are to be mitigated, and how that site will be reinstated if at all. The Board will need to consider the justification for doing this. In my view this is an issue related directly to the impact of the proposed development and as such it should be considered and a satisfactory reinstatement should be sought to mitigate the impact. Accordingly I recommend that ABP seek clarification on what is proposed for the reinstatement of this site, who will be responsible for the reinstatement and under what consent/permission that work is proposed to be carried out.

51.1.5 Modification of Route

I recommend that the Board should seek a modification of the development.

I recommend that the modification be sought as further information under 185C (5) (b).

I recommend that the Board request the applicant to submit a modified route for the development between chainage 83+900 and chainage 89+550.

51.1.6 Risk and Hazard distances to be specified

The modified route shall provide appropriate hazard distances between the pipeline and inhabited dwellings. The appropriate distance shall be set out and justified in any revised route such that a person at the appropriate distance would be safe in the event of a failure of the pipeline.

I further recommend that the Board advise the applicant that the risk assessment of the proposed development and any revision of the proposed development will be assessed in accordance with risk threshold as set down below.

51.1.7 A direction from the Board is sought for the following

Risk Assessment Threshold

1. I recommend that ABP adopt the UK HSE risk thresholds for assessment of the risks associated with Corrib Onshore Pipeline
Individual Risk Level above 1×10^{-5} intolerable
Individual Risk Level between 1×10^{-5} and 1×10^{-6} tolerable if ALARP is demonstrated.
Individual Risk Level below 1×10^{-6} broadly acceptable.

Routing Distances for Proximity to Houses

2. I recommend that ABP adopt a standard for the Corrib upstream untreated gas pipeline that the Routing distance for proximity to dwelling shall not be less than the hazard distance for the pipeline in event of a pipeline failure. The hazard distance to be calculated such that a person at that distance from the pipeline would be safe in the event of a failure of the pipeline.

51.1.8 Provisional View of Board

I further recommend that the Board advise the applicant that it is provisionally of the view that were certain alterations made to the proposed development as set out above points 51.3.2 to 51.3.5 that it would be appropriate to approve the proposed development as modified subject to the completion of the assessment of the revised environmental impact statement and that that revised E.I.S. proved satisfactory.

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51.2 If ABP decide to refuse the permission for this development

This is a decision I do not recommend. The following are the significant deficiencies of the application.

- 1) The design documentation for the pipeline and the QRA analysis provided with the application does not present a complete, transparent and adequate demonstration that the pipeline does not pose an unacceptable risk to the public.
- 2) That part of the route between chainage 83+910 and 85+550 is considered unacceptable by virtue of the following.
 - a) The limitations on the road improvement works for which an arrangement is proposed by the applicant with Mayo Co Co to support the construction of the pipeline in Rossport.
 - b) The unacceptable Traffic Plan and Haul Route proposal which involves convoys of 5 HGVs travelling over narrow bog rampart and bog roads partly through a rural residential area and which will involve excessive delays for road users over a long construction period and which does not provide satisfactory arrangements for non vehicle traffic and pedestrians using these roads.
 - c) The proposal to route the pipeline at a proximity distance from dwellings which is within the hazard range of the pipeline should a failure occur is unsatisfactory.
 - d) The proposed route would have a significant impact on the local community and on local custom and practice and is considered not to be in the interests of proper planning and development of the area by virtue of such impact.
- 3) I have assessed the information provided and I am not satisfied that the E.I.S. together with the additional information provided by the applicant is sufficient to enable me to make a firm recommendation on whether the proposed development will have or will not have a significant impact on the environment.
- 4) The application is incorrect in the presentation of the site at the Terminal end of the route where a part stone road already exists. It is also considered that a part of the route which is onshore has been excluded from the application at Glengad between 83+390 and 83+400.

51.3 If ABP decide to grant the permission for this development

In the event that ABP decide to grant the permission then the draft conditions are set out in Appendix 7. I do not recommend that ABP decide to grant permission because as I have outlined in my report insufficient information is available to complete the assessment and because that part of the route in Rossport is unsatisfactory.

The difficulty in framing the conditions

I want to draw the Boards attention to the fact that I have drawn up the 57 Conditions to respond to the requirements for conditions to provide planning control on the proposed development in the event that ABP decide to grant permission for this development. I have reviewed the conditions as proposed by Mayo Co Co and I have framed what I considered the relevant conditions required to satisfy the Planning Authority's requirements and to satisfy regulation of those parts of the development where I had a clear understanding of what the level of control should be for the

proposed development. I have also reviewed the suggestions of the applicant with regard to the Mayo Co Co recommendations. As I do not believe the development as set out is satisfactory to receive permission it has been difficult framing the conditions. For example I have not framed any conditions with specific relevance to the detail of the operation of the Haul Route in Rosspart. Neither have I been able to consider what conditions if any should be attached to control aspects of pipeline pressure or operation in the interests of health and safety.

I have included the 57 conditions in Appendix 7 and I can only consider these conditions as draft pending the clarification of the further information that I have requested ABP to seek from the applicant. I have not edited the conditions into a final conclusive set and I wish to bring the Boards attention to that fact.

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51.4 182 C Recommendations

The following more significant recommendations have been set down on a chapter by chapter basis for quick reference. It is important to note that in certain cases the recommendation really needs to be read in the context of the discussion that leads up to the recommendation. There are no recommendations contained in chapters 1-chapter 16.

Chapter 17 Community Issues

17.13.3 Working Relationship SEPIL and the Community

7. In the event that ABP decide to grant permission for this development I therefore recommend that SEPIL be requested to establish a group within the Project Monitoring Committee structure and reporting to the PMC and subject to the agreement of Mayo Co Co. The group would work to provide a local liaison function for communications feedback and review of ongoing issues on the construction site.

(a) Representatives of the local community who are prepared to represent their community to the best of their ability.

(b) Management of SEPIL who will be prepared to be responsive to issues of concern locally.

Reason : To establish a direct system of local liaison between the applicant and the local community

17.14 Privacy of the Community

Accordingly I recommend that SEPIL be conditioned on any permission that is to be considered for the proposed development, to establish a system whereby all photography and video footage taken by SEPIL employees, contractors, anyone associated with the proposed development, be controlled. The system and method of control shall be set out in the EMP for agreement with Mayo Co Co . SEPIL shall pay to Mayo Co Co the costs involved in putting in position a person who will verify that the control system for images is working properly and that a system for destroying such images is put in place. These costs to be part of the Section 47 agreement between SEPIL and Mayo Co Co. While this condition will be onerous on all concerned, the uncontrolled use of photo and image footage would not be an acceptable impact of the proposed development.

Reason: To manage and protect the privacy of the local community from any unnecessary impact from photo or video imagery.

20.8 Regulation System

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

4. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as the construction, testing and commissioning of the pipeline, the Landfall Valve Installation and the equipment and ancillary facilities to the pipeline have been completed to the satisfaction of the competent authority DCENR and have been certified accordingly by the DCENR. A copy of that certification by DCENR to be issued to Mayo Co Co Planning Authority 14 days before the pipeline commences operating.

Reason: 1. In order to ensure that before the pipeline becomes operational that the completed development has been properly certified by the competent Authority.

2. In the interests of protecting the Health and Safety of the Public.

5. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an emergency plan has been prepared for the area between Glengad, Rosspoint, Aghoos and Ballinaboy. The plan shall have been agreed by HSE, Mayo Co Co and Gardaí and shall be in compliance with any requirements set down in the Major Emergency Plan for the area.

Reason: In order to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area.

6. Prior to the commencement of the operation of the pipeline SEPIL shall obtain the agreement of the Planning Authority for a plan for the control of traffic close to the terminal close to the LVI and in the vicinity of the route of the pipeline for use in the event of a major accident.

Reason: In the interest of Health & Safety.

21.4 Intensification of the Well Field

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

3. The use of the onshore pipeline shall be confined to the transportation of natural gas from the Corrib Gas Field as set out in the details of the EIS submitted on 12th February 2009.

Reason: To ensure proper regulation of the development and to protect the integrity of the onshore pipeline.

4. Any proposal to connect additional gas fields to the onshore pipeline shall be the subject of planning permission.

Reason: To protect the integrity of the onshore pipeline.

23.4.6 Boundary of Onshore Pipeline Glengad: I recommend to the Board that SEPIL be requested to restate the extremity of the proposed development at HWM to include that section of development of the upstream gas onshore pipeline umbilical and outfall pipe between the county boundary and chainage 83.40.

23.6.4 Stone Road Existing at Terminal end: The site of the proposed development has been incorrectly detailed in the E.I.S. between chainage 91.537 and chainage 92.539. ABP should therefore request SEPIL to amend the details of the proposed development accordingly. This revised information can then be assessed fully as part of the application for the proposed development.

23.7.4 Corridor at Glenamoy outside site of proposed development

I believe it would be incompatible with the proper planning and sustainable development of the area to deal with the proposed development 16.GA.0004 without identifying how these impacts

associated with the apparently abandoned 2002 consented pipeline are to be mitigated, and how that site will be reinstated if at all.

Accordingly I recommend that ABP seek clarification on what is proposed for the reinstatement of this site, who will be responsible for the reinstatement and under what consent/permission that work is proposed to be carried out.

24.6 Protection of Drinking Water

In the event that the Board decide to grant a permission for the proposed development I recommend the following condition

SEPIL shall include in the EMP a detail method statement for construction in the chainage 92+273 to chainage 92+573 area and that such statement shall detail how it is proposed to manage the surface water during construction. The EMP shall be agreed by Mayo Co Co. Surface water from the construction project shall not discharge into the Carrowmore Lake Catchment.

Reason: To protect the Carrowmore Lake Water Supply

25.2.1 Excavation through cliff face at Glengad

In the event that the Board decide to grant a permission for the proposed development I recommend the following conditions

1. SEPIL shall, as part of the EMP, set out a detail method statement for the reinstatement works to be implemented on the foreshore at the cliff face at Glengad. This shall be agreed with Mayo Co Co and DAFF

Reason: To protect the natural environment of the restored cliff face from erosion.

2. A drawing should be prepared detailing the heights of materials and elevation treatment of the reinstatement of this cliff face for approval by Mayo County Council.

Reason: To ensure that the restoration of the cliff face is constructed in appropriate materials and to a satisfactory standard

25.2.3 Access Road Glengad

The Access Road: I am satisfied that the proposed road access is acceptable I recommend that permission be granted for this road subject to conditions (1) Sufficient care and attention is taken in the final reinstatement of the road side margins and that the work is supervised by the project ecologist

Reason: To ensure that the integrity of the SAC is maintained in the reinstatement work

(2)The following condition recommended by Mr. O Sullivan be included i.e. The Measures to mitigate the visual impact of the proposed development set out in Section 10 of the E.I.S. submitted with the application shall be implemented in full in the course of the development.

Reason: To protect the visual amenity and character of the area.

25.7.3 Bentonite In the event that the Board decide to grant a permission for the proposed development I recommend the following condition

The Environment Management Plan shall contain a method statement for the use and control of Bentonite during the tunnelling operations. The Results of the monitoring carried out on the Bentonite control system shall be provided to Mayo Co Co on a weekly basis and shall be reviewed by the monitoring committee.

Reason: To protect the water quality in Sruwaddacon Bay

25.11 Construction Programme:

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

Based on the above analysis I recommend:

- 1) An E.M.P shall be agreed 8 weeks before commencement of the proposed onshore upstream pipeline. That the E.M.P shall contain among other matters, details of the pre construction surveys and method statements for construction, and shall detail how seasonally sensitive works are to be accommodated in the programme. The E.M.P shall contain details of the updated programme for the proposed works.

Reason: To ensure adequate time is provided for the agreement of the EMP and to protect the environment.

- 2) Prior to the commencement haulage on any section of the haul route, the roads comprising that section of the haul route shall be improved and strengthened in accordance with an agreement to be entered into with Mayo Co, which agreement shall include any other such works for the haul route as Mayo Co may require.

Reason : In the interests of Road Safety.

26.6.1 Security:

In light of the CAG and in light of the impending regulation on Network Security and Network Security Standards and in the event that the Board decide to grant a permission for the proposed development I recommend the following condition

SEPIL shall comply with the security of Network Standards as determined by DCENR (or CER as appropriate in respect of the facilities at LVI in Glengad. DCENR will regulate the operation of the proposed development in the first instance and CER will eventually likely take over this regulation)

Reason: To ensure that this strategic infrastructure site meets national standards for such a facility.

28.9 Quantified Risk Assessment

2. Prior to deciding on this application it is recommended that ABP request SEPIL to submit the information set out in the recommendation at the end of Chapter 30.

Reason: It is necessary that a fully integrated analysis of the design proposals and Quantified Risk assessment for the complete pipeline from Glengad to Bellagelly terminal be available for assessment.

29.7 LVI at Glengad

I recommend that ABP should request SEPIL to re examine design of the pressure limitation proposed at Glengad

3. SEPIL should discuss the concept of a vent at Glengad as a measure to protect against upstream pressure at landfall rising above a preset value. SEPIL should provide information on the reliability of the shut down subsea valve system proposed for the wellhead and manifold offshore
4. SEPIL should discuss the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and should provide full justification for the proposed design as submitted.

Chapter 30.5.1 Safety Summation of the pipeline safety assessment

Prior to making a decision on this application it is recommended that ABP should seek further information from SEPIL as follows:

- k) Clarify the code requirements and pressure test requirements for the pipeline chainage 83 + 390 (HWM) approx to 83 + 470 (downstream weld at LVI)

- l) Provide confirmation that the design of this section of pipeline meets the requirements set down by TAG
- m) Provide an integrated set of design documentation in the form of a revised Appendix Q. The documentation to integrate the analysis provided in incidental and individual documents at the OH. The whole set to provide a transparency of the design for the complete pipeline from the HWM to terminal. This transparency to relate to the different site and design conditions along the pipeline and to relate to the codes. The design to include the analysis related to ground stability.
- n) A new QRA should be submitted which will present the analysis of risk at the different operating conditions and different locations along the pipeline route. The QRA should be site specific. The QRA should include ground movement and incorporate a database that matches the conditions of the proposed development. A sensitivity of the QRA is required which will demonstrate the range of risk that relates to any uncertainty in the database of failure frequencies for the various potential failure modes of the pipeline [for an upstream wet gas].
- o) Provide a qualitative assessment of risk, to be prepared for the different operating conditions and different locations along the pipeline route. This will provide a comprehensive assessment to include those events that cannot be easily defined mathematically.
- p) SEPIL need to submit analysis of the condition where the umbilical becomes severed and the control of the valves at the well is lost. SEPIL need to identify what conditions apply to the onshore pipeline and the risks involved in that circumstance.
- q) SEPIL should examine the concept of a vent at Glengad as a measure to protect against upstream pressure at landfall rising above a preset value. SEPIL should provide information on the reliability of the shut down subsea valve system proposed for the wellhead and manifold offshore.
- r) SEPIL should examine the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and should provide full justification for the proposed design as submitted.
- s) SEPIL should provide the hazard distances, BBD and escape distance in contours for the entire pipeline and the outer hazard line which should show the distance at which a person would be safe. A number of these have already been provided, the set of hazard maps should be completed as far as the terminal.
- t) SEPIL should provide a summary of the societal risk for Glengad.

30.5.2 Recommendations for a Board Direction

I make the following recommendations to the Board for consideration and decision.

3. I recommend that ABP adopt the UK HSE risk thresholds for assessment of the risks associated with Corrib Onshore Pipeline
 - Individual Risk Level above 1×10^{-5} intolerable
 - Individual Risk Level between 1×10^{-5} and 1×10^{-6} tolerable if ALARP is demonstrated.

Individual Risk Level below 1×10^{-6} broadly acceptable.

Justification

It is necessary to have a standard against which the risk levels of the proposed development can be assessed.

4. I recommend that ABP adopt a standard whereby no dwellings will fall within the hazard lines for the proposed development.

Justification

This is a high standard. This standard is justified in this instance. I am aware that the industry itself is conscious of the corporate responsibility to increase standards related to societal risk. Evidence (1) TD/2 (2009) and PD 8010 (Dec 2008) Recent standards. (2) UK HSE and UK pipeline modelling of land use planning zones. (3) Buncefield Incident Report (4) Dutch Standards are in process of being updated.

This standard will remove a threat that the proposed development poses to the dwellings of the local population. I do accept that the threat may be very low and unlikely to rise.

This is a remote area with low density population. The routing in proximity to a rural linear residential area should respect that area and should respect the reasonable expectations of that rural population that members of their families (or others) can in the future locate and live on that rural linear development on lands owned by the families involved subject to proper planning and sustainable development. The routing of this proposed development within the distance of hazard from dwellings when there are alternative routes available is not acceptable.

Implications

The implications of setting these standards will be as follows.

The UK HSE risk thresholds for gas pipelines appears to be the obvious standard to adopt, that standard will be recognised as an objective standard.

In the case of upstream pipeline if this standard applies in future it will become a design parameter for the gas Field developer. Once a parameter like this provides some certainty I believe a developer of a gas field will be able to proceed to select the better option to bring the gas field into production that takes this parameter as well as others into account. In that way a final plan for development and the configuration will be put forward which the operator will know at least meets the routing criterion.

In the case of downstream pipelines in my view there are no implications. The experience of downstream pipelines operating for 30 years and longer is well established. Codes and tests of ruptures and test failures have been developed which provide confidence in the analysis and safety design used for these pipelines.

31.5 Waste

In the event that the Board decide to grant a permission for the proposed development I recommend the following conditions

9. The surface water system for the construction site shall be redesigned to cater for a storm event of 1/100 year return frequency.
Reason: To prevent flooding the excavation works and to protect the water quality in Sruwaddacon Bay.

10. Conditions as proposed by the Mayo County Council submission:

Before development commences on the sites, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, groundwater, dust and continuous noise. Such monitoring shall be carried out by the developer throughout the construction of the pipeline and LVI (to the date of commissioning of the pipeline and LVI). The monitoring plan shall, as a minimum, include-

- (j) *A list of all monitoring locations,*
- (k) *Description and specification of equipment to be used,*
- (l) *The identity and qualifications of persons responsible for monitoring,*
- (m) *Parameters to be used,*
- (n) *Monitoring intervals,*
- (o) *Averaging times,*
- (p) *Proposal for the presentation of data,*
- (q) *Codes of practice to be used, and*
- (r) *Details of right of access to Mayo County Council appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee. Costs incurred by the planning authority in carrying out any necessary monitoring, monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.*

Reason: In the interest of clarity, and the protection of the environment during the earth works and construction phase.

11. All surface waters to be discharged from the site shall be monitored for suspended solids and any other parameter at the required frequency as determined by Mayo Co Co the planning authority before discharge from the site.
12. Monitoring results shall be submitted on a weekly basis to the planning authority initially and this may be varied by agreement with the planning authority. The results shall be placed on public display by SEPIL within seven days of receipt of the results.
13. Prior to discharge all surface waters shall receive appropriate sedimentation and filtration. The details of sedimentation, filtration and attenuation proposals shall be agreed with the planning authority prior to commencement of the excavation. These details shall include maintenance routines for the sedimentation and filtration facilities.
14. The surface water from the construction site that lies within the Carrowmore Lake catchment shall be collected, attenuated and taken through silt settlement ponds before being discharged into the Leenamore River Catchment.
15. The detailed arrangements for management and monitoring the surface water referred to in Condition 6 shall be documented separately and agreed to in writing with Mayo Co Co.
16. The existing surface water system that serves the applicant's site and that discharges into the Carrowmore Lake Catchment shall be monitored initially on a daily basis and then at a frequency to be agreed with Mayo County Council for a full range of parameters to be agreed with Mayo County Council before commencement of construction works and continuing during the construction works. The results of the monitoring to be dealt with as at Condition 4 above

Reason: it is necessary to put in place a full monitoring programme and control system for the surface water discharge to prevent water pollution and to protect the drinking water supply source at Carrowmore Lake.

Liquid Wastes

All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following –

- (a) *110% of the capacity of the largest tank or drum within the bunded area, or*
- (b) *25% of the total volume of substance which could be stored within the bunded area.*

Reason: To prevent surface and ground water pollution.

All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges will cause pollution to ground waters.

Reason: To prevent surface and ground water pollution.

The developer shall maintain on the sites for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials. The precise nature and extent

of the kits shall be agreed in writing with the planning authority prior to commencement of development.

Reason: To prevent water pollution.

Waste Disposal

- 3) The Applicant shall include a waste minimisation plan in the EMP for the solid waste emanating from the construction works site.
- 4) The Applicant shall enter into an agreement with Mayo Co Co regarding the disposal of the estimated 62,200m³ of stone from the site. The agreement shall provide for the storage and/or reprocessing if necessary of the stone for appropriate reuse.

Reason: To minimise waste arising from the proposed development.

No waste material, other than material being transferred to a licenced waste facility, generated on the sites during the construction phase shall be removed off the sites without the prior agreement of the planning authority.

Reason: To provide for the appropriate management of waste and in the interest of protecting the environment.

Prior to commencement of development, the developer shall submit, and obtain the agreement of the planning authority to a plan containing details for the management of waste (and, in particular, recyclable materials) within the development, including the provision of facilities for the storage, separation and collection of waste and, in particular, recyclable materials, and for the ongoing operation of these facilities

Reason: To provide for the appropriate management of waste and, in particular, recyclable materials, in the interest of protecting the environment.

Sanitary Waste Facilities and Management

- 3) Sanitary facilities shall be installed in the compounds and on the site of the construction works and on the site of the peat disposition area for the duration of the construction project. All waste generated from such facilities shall be disposed of by a licenced waste contractor to an appropriate approved treatment works. The facilities provided, the transportation of the sanitary waste and the disposal, shall be agreed with the planning authority, Mayo County Council.

Reason: In the interest of public health.

- 4) All sanitary facilities on site shall be managed effectively to ensure that no nuisance and no discharge or pollution arises from the use, operation transport and movement of these facilities to and from the site and what in operation on the site.

Reason: In the interest of public health

32.4 Outfall Pipe

In the event that the Board decide to grant permission for the proposed development I recommend the following condition

Outfall discharge

3. Any discharges through the outfall type shall be in accordance with the IPPC licence (P0738-01) granted by the EPA or any revision that may be granted to such licence.

Reason: To ensure that an adequate system of control will apply to any such discharges.

4. The surface water discharge pipe at the LVI shall not be used for any other purpose than the discharge of surface water from the LVI site.

Reason: To Protect the environment and to prevent any contamination from being discharged.

33.5 Umbilical

In the event that the board decides to seek further information from the applicant I recommend the following:

3. SEPIL should be requested to submit design analysis for the umbilicals similar to that analysis carried out for the gas pipeline.
4. The analysis should consider the sensitivity of the stress in the umbilicals to different degrees of settlement of the stone road and to differential settlement along the stone road.

34.6 Landslides at Dooncarton

In the event that ABP decide to grant permission for this development then I recommend that the following condition should be attached:

SEPIL should establish vibration monitoring at a distance of 25m and 50m from the rock excavation on the pipeline and at an appropriate location relative to the tunnels to monitor vibration emanating from the works. The results of the monitoring shall be made available to Mayo Co Co and should be available for the public at the Applicants offices at Belmullet on a weekly basis.

Reason: This is necessary to provide control information on the dissipation of vibration and to ensure there is no impact arising from such excavation works.

35.4 Sruwaddacon Bay Crossings

In the event that ABP decide to grant a permission I recommend the following conditions:

3. The Applicant shall include in the Environment Management Plan details of noise and vibration monitoring proposed to control noise and vibration and the impact of rock excavation and tunnelling on the area.

Reason: To protect the amenity of the area.

4. The Applicant shall as part of the EMP set out for the agreement of the Planning Authority details of how issues arising from any disturbance or complaints related to 24 hour tunnelling operation are to be mitigated and managed.

Reason: To protect against nuisance in the area.

36.8 Peat Stability

3. I recommend that ABP should accept the expert advice provided by Mr. O'Donnell Geotechnical consultant.
4. Mr. O'Donnell has concluded that SEPIL have now supplied a comprehensive body of information and analysis to assess the risk of ground movement along the route of the onshore gas pipeline.

However he has recommended that in the event that additional information is being sought from the applicant to enable the Board to reach a decision that the following information be requested to clarify the risks that have been identified in Mr. O'Donnells report:

“• Precise section by section details of the proposals for temporary peat storage and reinstatement outside the areas of intact bog, which take into account the condition of the surface layer of the peat and specifically identify where peat turves or remoulded peat will be stored on bog mats adjacent to the road.

• Details of the specific risk mitigation measures that would be proposed for each of Sections 1 to 18 in the qualitative assessment of relative peat failure potential, in particular noting where there would be limits on the storage of peat on bog mats adjacent to the stone road excavation and adopting a conservative approach to the assessment of peat stability.

• An assessment of the potential impact of the estimated stone road settlements on the umbilical pipeline and service ducts that will also be constructed within the stone road, including an assessment of the risks associated with failure due to rupture of the pipes.”

5. In the event that the Board decide to grant a permission for the proposed development I recommend the following condition
- d) The pre-construction site investigations shall be carried out as provided in the EIS
 - e) Method statements for construction works in the peat lands shall be developed using conservative design values and applying conservatively the risk mitigation measures set out in the EIS risk register or as may be set out in any revision of the risk register during the construction of the project.
 - f) The work shall be supervised by an experienced Geotechnical Engineer with specific experience in peat lands construction. An experienced contractor with specific experience of construction in peat shall be used for the construction.

37.7 StoneRoadMethod

In the event that the Board decide to grant a permission for the proposed development I recommend the following condition be added to those in Chapter 36 above:

1. Prior to installation of the pipeline the settlement of the rockfill shall be carried out to validate the design assumptions and to demonstrate that settlement has largely been completed.

Reason: In the interest of protection for the environment.

- 3) Install stress gauges on the pipeline itself in critical areas of deep peat to monitor stress induced by any differential settlement that occurs during the design life of the pipeline.

Reason: In the interest of protection of the Health and Safety of the public

38.4 NaturalEnvironment

I recommend that Mr. O Sullivan's report be accepted. In the event that ABP decide to grant a permission for this development then I recommend the following conditions

3. Prior to commencement of construction the applicant shall carry out pre-construction site examination and investigation and baseline ecological surveys of the site at that time as proposed in the E.I.S.

Reason: To monitor faunal activity and to protect the natural heritage of the area.

4. On confirmation of the site conditions and following the completion of the detailed method statements for the construction work these shall be submitted for the written agreement of the National Parks and Wildlife Service.

Reason: To protect the natural heritage of the area.

All the construction work in the peatland and in the intact bog within the cSAC and in the section of intact bog in the non-designated peatland shall be supervised by an experienced geotechnical engineer who should liaise with the eco-hydro geologist to ensure that hydraulic paths in the peat are identified, marked and reinstated satisfactorily.

Reason: to protect the environment

39.3HabitatDirectiveAssessment

3. I recommend that ABP decide that the integrity of the cSAC Glenamoy Bog Complex will not be adversely affected by the proposed development under article 6(3) of the Habitats Directive.
4. I recommend that ABP decide that the integrity of the Blacksod/Broadhaven Bay SPA will not be adversely affected by the proposed development

40.3 Peat Deposition

In the event that ABP decide to grant a permission for this development I recommend the following conditions.

6. "The deposition of peat at the site at Srahmore authorised by this permission shall be carried out in accordance with the description of development provided in volume 3 of the Environmental Impact Statement submitted with the application and all the mitigation measures described therein shall be carried out in full.

Reason: In order to clarify the scope of the authorised development and to protect the environment and amenities of the area .

7. Before peat haulage commences, the developer shall obtain the agreement of the planning authority, with regard to the following –
 - (a) Regular survey of the road surface along the haul route during the haulage and construction period. At minimum, a survey shall be carried out on a monthly basis during peat haulage during the remainder of the construction period.
 - (b) Target tolerances for the road surfaces and response times for repairs.
 - (c) Liaison with the Project Monitoring Committee.

In the event of target tolerances being exceeded and in the absence of necessary maintenance of the road surface, the planning authority (following consultation with the Project Monitoring Committee) may require the cessation of all haulage activities or construction traffic directly related to the development.

Reason: To ensure the proper maintenance of road surfaces during the construction and haulage periods in the interest of traffic safety.

8.
 - (a) All vehicles leaving the construction areas of the sites shall pass through an appropriate wheel cleansing area. The details of wheel cleansing which shall include full wheel wash where appropriate shall be set out and agrees with the roads authority in the EMP.
 - (b) The developer shall take all reasonable measures to ensure that no material shall leak or fall from vehicles transporting waste from the terminal site. Before haulage of waste commences, the developer shall obtain the agreement of the planning authority in relation to details of vehicles and methodologies to be used to ensure the prevention of such leakage.

Reason: In the interest of amenity, the proper planning and sustainable development of the area, and traffic safety.

9. The haul route and schedule of haulage for the construction phase of the development shall be clearly documented and published in a manner to be agreed with the planning authority. All HCV's and other commercial vehicles visiting the sites on a regular basis (twice a week or more), shall have a clear notice visible to the public identifying involvement with the development and the vehicle reference number identifying each such HGV.

Reason: In the interest of traffic management and to make provision for control and review of vehicles.

10. An independent safety audit on the upgraded haul route shall be carried out and agreed with the planning authority prior to the commencement of haulage of peat. The audit shall have regard to:
 - (h) The proposed 60 km/hr speed limit for HGV's.
 - (i) The spacing of HGV's in convoy.
 - (j) Pedestrian use of the haul route.
 - (k) School traffic at Pollatomais and the proposed stand down of haulage during pick-up and drop-off times at the school.
 - (l) The operational aspects of the Traffic Management Operatives.
 - (m) Vehicle break-down incident management.
 - (n) Emergencies and full access for emergency vehicles to the route at all times.

Reason: In the interest of traffic safety.

41.3.3 In the event that ABP decide to grant permission for this development I therefore recommend that SEPIL be requested to establish a group within the Project Monitoring Committee structure and reporting to the PMC and subject to the agreement of Mayo Co Co. The group would work to provide a local liaison function for communications feedback and review of ongoing issues on the construction site and haul route.

(a) Representatives of the local community who are prepared to represent their community to the best of their ability.

(b) Management of SEPIL who will be prepared to be responsive to issues of concern locally.

Reason : To establish a direct system of local liaison between the applicant and the local community

41.6 Environment Management Plan

In the event that ABP decide to grant permission for this development I recommend the following conditions:

7. Prior to the commencement of the development an Environment Management Plan (EMP) shall be prepared for agreement with the planning authority Mayo Co Co. The plan shall contain details of all monitoring and reporting arrangements for the construction of the proposed development. The plan shall contain method statements for construction activities. The plan shall contain the traffic and transportation management plan details for the project. The plan shall contain details of emergency response to environmental or other emergency incident during the course of the construction works. The plan shall contain details of how liaison with

the local community [including information being provided for the local community] will operate. The plan shall set out how complaints and issues arising within the local community can be raised, recorded and responded to by SEPIL and by the contractors working on the site. A register of complaints and issues raised shall be regularly reviewed by the Project Monitoring Committee (PMC).

8. Prior to commencement of development, the developer shall obtain the agreement of the planning authority for a monitoring plan to ensure that all mitigation measures proposed in the Environmental Impact Statement and Additional Information provided at the oral hearing for the Board relating to the protection of habitats, flora and fauna are carried out. Monitoring shall be carried out by a suitably qualified ecologist who shall liaise with the Project Monitoring Committee.

Reason: In the interest of protecting the environment.

9. The developer shall appoint a suitably qualified and experienced Environmental Officer for the period of the earthworks and construction phase. As part of his/her duties, the Environmental Officer shall liaise with the Project Monitoring Committee in relation to implementation of the required environmental monitoring, and shall be responsible for reporting to that committee and the planning authority –

- (a) any malfunction of any environmental system,
- (b) any occurrence with the potential for environmental pollution,
- (c) any emergency

which could reasonably be expected to give rise to pollution of waters. The Environmental Officer shall maintain a record of any such occurrences and action taken; this record shall be available for public inspection at the developer's offices at Bangor Erris during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

10. Before development commences on the sites, the developer shall obtain the agreement of the planning authority for a monitoring plan in relation to surface water, ground water, dust and continuous noise. Such monitoring shall be carried out by the developer throughout the earthworks and construction phase. The monitoring plan shall, as a minimum, include –

- (a) A list of all monitoring locations,
- (b) Description and specification of equipment to be used,
- (c) The identity and qualifications of persons responsible for monitoring,
- (d) Parameters to be used,
- (e) Monitoring intervals,
- (f) Averaging times,
- (g) Proposal for the presentation of data,
- (h) Codes of practice to be used, and
- (i) Details of right of access to Mayo County Council appointed staff to carry out environmental monitoring checks as required, or as requested by the Project Monitoring Committee.

Costs incurred by the planning authority in carrying out any necessary monitoring, monitoring checks, inspections and environmental audits, shall be reimbursed by the developer.

Reason: In the interest of clarity, and the protection of the environment during the earthworks and construction phase.

11. Prior to commencement of development, a Project Monitoring Committee (PMC) shall be established to monitor geotechnical risks as set out in the Geotechnical Risk Register or any further revision of the risk register following preconstruction site investigations, surface water run-off, drainage control, traffic management and road maintenance, implementation of the reinstatement plan and other environmental issues. The PMC shall comprise two representatives of the developer, two representatives of Mayo County Council, and an invitation shall be extended to the North West Regional Fisheries Board, the Department of the Environment, Heritage and Local Government (an NPWS representative), DCENR, EPA and Bord na Móna to provide one representative each for the committee. In addition, two representatives of the local community, selected in accordance with procedures to be agreed with the planning authority, shall be invited to serve on this committee. The PMC shall have the right to co-opt other members as required. The Mayo County Manager or his/her nominee shall chair the PMC.

Details of the mode of operation for the committee, including frequency of meetings, reporting and liaising arrangements with other persons and bodies, shall be agreed with the planning authority before development commences.

Reason: To ensure effective monitoring during construction in the interest of the proper planning and sustainable development of the area.

12. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an emergency plan has been prepared for the area between Glengad, Rosspoint, Aghoos and Ballinaboy. The plan shall have been agreed by HSE, Mayo Co Co and Gardaí and shall be in compliance with any requirements set down in the Major Emergency Plan for the area.

Reason: This condition is necessary to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area

42.1 Landscape and Visual Impact

Mr. O'Sullivan's Recommendation

"The measures to mitigate the visual impact of the proposed development set out in Section 10 of the Environmental Impact Statement submitted with the application shall be implemented in full in the course of the development."

Reason: To protect the visual amenity and character of the area."

43.4.4 Hydrology

I am satisfied that provided the mitigation measures are implemented in full and provided the applicant SEPIL complies with the following conditions that the impact of the stone road on the hydrology of the peat lands can be mitigated to a slight draw down of the water table along the stone road.

In the event that the ABP decide to grant a permission I recommend the following conditions:

- (4) The mitigation measures proposed for the construction of the stone road in peat lands as set out in the E.I.S. Section 15.4.3 and in Tables 15.4 and 15.5 shall be implemented in full.
- (5) That particular attention be taken in the final detailing of the stone road where it approaches the estuary, the Leenamore river and the two streams and ditches to ensure that permeability barriers to restrict free drainage through the stone road itself are installed at those locations.
- (6) The construction detail for the compounds in the peat lands shall be similar to that used for the stone road.

Reason: To ensure that the impact of the stone road on hydrology of the peat lands is minimised.

- (4) That a conservative approach be taken to the S.W. drainage system which should be redesigned to cater for a 1/100 year event.

Reason: This will reduce the risk of surface water contributing to any peat instability. This will also reduce the risk of potential pollution arising in Sruwaddacon Bay or in the freshwater river and stream systems where the surface water will discharge.

- (5) All the construction work in the peat land and in the intact bog within the cSAC and in the section of intact bog in the non-designated peat land shall be supervised by an experienced geotechnical engineer who should liaise with the eco-hydro geologist to ensure that hydraulic paths in the peat are identified, marked and reinstated satisfactorily.

Reason: To ensure that the impact of the stone road on hydrology and eco hydrogeology of the peat lands is minimised.

44Traffic Plan and Haul Route

44.9Route in Rossport

I recommend to ABP that the part of the route from chainage 83+910 to chainage 89+550 be rejected for the reasons outlined above, I further recommend that ABP seek a modification of the proposed development accordingly. I recommend that the applicant be requested to seek an alternative route for that part of the pipeline which meets the routing criteria which I have recommended to the Board in Chapter 30.

The Reasons for this recommendation are:

6. The proposed development route through Rossport is unacceptable by virtue of the limitations on the existing road widths, the limitations of the capacity of the bog roads to carry the traffic involved, the expected limitations whereby it will not be possible to widen these roads.
7. The route is proposed to be operated by radio controlled traffic management operatives is long and this will give rise to excessive delays over a long construction period which is not considered an acceptable imposition on the local traffic using the road network at Rossport.
8. The accommodation for local pedestrian and other non vehicle movements in the rural residential area is considered deficient on the L52453-25 road.
9. No accommodation has been made for local custom and practice where road sides are used for turf storage on parts of the Rossport roads.

10. It is considered that alternative routing can be identified for this part of the proposed development.
11. In the event of a pipeline failure the route is within the hazard distance of dwellings and that is considered to be an unacceptable standard for an upstream untreated gas pipeline.

46.11 Recommendations on the E.I.S.

I have assessed the information provided and I am not satisfied that the E.I.S. together with the additional information provided by the applicant is sufficient to enable me to make a firm recommendation on whether the proposed development will have or will not have a significant impact on the environment.

I recommend that the applicant be requested to submit the further information required.

Chapter 48 Community Gain

3. I add the following which I recommend as a community gain condition that the Board should impose on any permission being granted. SEPIL shall implement a scheme for not less than two apprenticeships in co-operation with Fás, the National Training and Employment Authority, for the duration of the operation of the onshore pipeline. The apprenticeships shall be open to candidates from the study area in the first instance and shall only be filled with candidates from outside that area when suitable local candidates can not be identified.

Reason: It is considered reasonable that the Corrib Gas Field development shall provide skills and training for local young people on an ongoing basis.

As Recommended by Mr. O'Sullivan

4. The developer shall establish a social investment programme for the benefit of the community in the area of the proposed development. The programme shall operate generally in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application subject to the requirements of this and other conditions of the approval.

The programme shall operate from the date on which works on foot of this approval commence for a period of 5 years, or until 3 years after the date on which the works on foot of this approval have been completed, whichever is the later. The developer shall provide €1,670,000 per annum to fund the programme. The money required under this condition shall be lodged to a specified bank account on the day on which the programme commences and then on or before the same date in each subsequent year. The money shall be disbursed in the form of scholarships and grants to local community groups.

Proposals for particular scholarships and grants under the programme shall be drawn up by the developer after consultation with a local advisory group constituted in the manner described in section 6.5 of the main volume of the environmental impact statement

submitted with application. Monies shall not be paid for such scholarships and grants unless and until the relevant proposed has been approved in writing by the county council after the council has satisfied itself that the proposed expenditure is in keeping with the objects of the programme and would provide a substantial gain the community in the area in which the approved development is located. Accounts of payments to and from the social investment programme shall be submitted to the county council at least once every 12 months. If the county council does not consider that the payments into and out of the fund are in keeping with the requirements of this condition or the proper objects of the programme, it may issue a direction to the developer to do such things or make such payments as are reasonably necessary to remedy such deficiency.

Any money which remains in the specified bank account a year after the programme has ceased shall be transferred to the county council who shall thereafter have discretion to spend the remaining money on environmental improvements recreational and community amenities.

In the event of a dispute between the county council and the developer regarding any aspect of the funding or operation of the social investment programme or otherwise relating to compliance with this condition, the matter shall be referred to An Bord Pleanala for determination and the developer and the county council shall comply with that determination.

Reason: In order to ensure that the a substantial gain is provided for the local community in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

5. The developer shall make a contribution of €10,000 to the Regional Arts Centre at Belmullet in a form to be agreed with Mayo County Council.

Reason: To provide for community facilities in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

Conclusions and Recommendations Acquisition Order

5. In respect of plots WL(2) 001 to WL(2) 006 inclusive and plots WL (2) 028 to WL(2) 030 inclusive. It is not possible to recommend or not to recommend confirmation of the acquisition order sought by the applicant pending clarification of those issues set out in Chapter 30 Safety of the Pipeline.
6. In respect of plots WL (2) 007 to WL(2) 027 inclusive and including WL (2) 025A I recommend to ABP that the acquisition order not be accepted for that part of the route and the lands which are sought in Rossport.

Reasons:

- 9) I consider the proposed development is unsatisfactory between chainage 83+910 and 89+550.

- 10) The traffic plan and haul route proposed and the limitations to the road works proposed to support the construction project are not satisfactory.

- 11) The construction of the project as set out in the E.I.S. and in the additional information provided at OH would have a significant and unacceptable impact on the local community over a prolonged construction period. The programme is expected to exceed that set out in the E.I.S.
- 12) It is proposed to construct the pipeline in proximity to the dwellings and within the distance of the hazard lines should the pipeline fail. This is considered unacceptable for an upstream untreated gas pipeline.

End Of Report

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Schedule of Appendices

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Appendix 4	Written Submissions Received <ul style="list-style-type: none"> • Part 1: Submissions RE:16.GA.0004 • Part 2: Submissions RE:16.DA.0004
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Appendix 7	Further Supporting Documentation Draft Conditions
Appendix 8	TAG, Cassells and Advantica Reports

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Glossary of Terms

<u>Abbreviation</u>	<u>Term</u>
16.DA.0004	The Application for an Acquisition Order before the ABP under section 32 (1A) of the Gas Act 1996
16.GA.0001	An application for an onshore pipeline by SEPIL for Corrib gas field which was withdrawn
16.GA.004	The Application before the ABP for permission under 182C of the Strategic Infrastructure Act 2006 for an upstream onshore pipeline
3 LPP Coating	Three Layer Polypropylene Coating
AADT	Average Annual Daily Traffic
ABP	An Bord Pleanála
ALARP	As Low as Reasonably Practicable. A Risk level that is between intolerable risk level and the tolerable risk level and where it can be demonstrated that the costs of reducing the risk further are disproportionate to the benefit derived. Such Risk is tolerable (ALARP)
BGE	Bord Gáis Éireann
BPD	Building Proximity Distance
CAO	Compulsory Acquisition Order
CCTV	Closed Circuit Television
CDP	County Development Plan
CER	Commission for Energy Regulation
COMAH	Control of major accident hazards regulations
CP	Cathodic Protection
CS	Closing Statements
cSAC	Candidate Special Area of Conservation
DAFF	Department of Agriculture, Fisheries and Food
DCENR	Department of Communications, Energy and Natural Resources
DEHLG	Department of the Environment, Heritage and Local Government.
DOMNR	Department of Marine and Natural Resources (Now DCENR)
DRN	Document Reference Number relates to the documents submitted to the Oral Hearing
E.I.S. 2001	The EIS prepared by RSK in October 2001 and submitted by Enterprise Energy Ireland Ltd to the Minister for Marine and Natural Resources together with the Section 40 Application for approval to construct a pipeline which was subsequently approved by the Minister on
E.I.S. 2009	The Environmental Impact Statement submitted by SEPIL to ABP with Applications 16.GA.0004 and 16.DA.0004
EACS	Ecological Advisory and Consultancy Services
EGIG	European Gas pipeline Incident data Group
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
Evidence at OH, 16/6, 11.49	A reference to evidence presented orally at the Oral Hearing on the 16 th of June at 11.49am
FEA	Finite Element Analysis
FMECA	Failure Mode, Effects, and Criticality Analysis
FOS	Factor Of Safety
FWD	Falling Weight Deflectometer System
GDP	Gross Domestic Product
GSI	Geological Survey of Ireland
GWS	Group Water Scheme
HDPE	High Density Poly Ethylene
HGV	Heavy Goods Vehicle
HIPPS	High Integrity Pressure Protection System

HSA	Health and Safety Authority
HSE	Health Service Executive
HT Voltage	High Tension Voltage
HWM	High Water Mark
IBEC	Irish Business and Employers Confederation
IGEM	Institution of Gas Engineers and Managers
IP	Intelligent Pig
IPPC	Integrated Pollution Prevention and Control
KOIL	Keane Offshore Integrity
KP	Kilometre Point
kV	kilo-Volts (Unit of voltage)
LNG	Liquid Natural Gas
LUP	Land Use Plan
LVI	Landfall Valve Installation
Machair	Flat sandy plains on the North and West Coasts
MAOP	Maximum Allowable Operating Pressure
Mayo Co Co	Mayo County Council
MDPE	Medium Density Poly Ethylene
NACE	The National Association of Corrosion Engineers
NDP	National Development Plan
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NSS	National Spatial Strategy
NWRFB	North Western Regional Fisheries Board
OH	Oral Hearing
OPW	Office of Public Works
P&D	Planning and Development
PA	Planning Authority
PAD	Petroleum Affairs Division Department of Communications, Energy and Natural Resources
PAD	Petroleum Affairs Division
PIMS	pipeline integrity management system
PMC	Project Monitoring Committee
POD	Plan of Development
Proximity Distance	Minimum distance permissible between the pipeline and any normally occupied building or traffic route as derived by figure 5 & 6 TD/1 definition. Figures 5 & 6 equate with figure 1 & 2 in 1S 328.
QRA	Quantified Risk Assessment
RDX1	Road Crossing 1
ROV	Remotely operated underwater vehicle
RPG	Regional Planning Guidelines
SCR	Selective Catalytic Reactors
SEA	Strategic Environmental Assessment
SEPIL	Shell E&P Ireland Limited
SI Act 2006	Strategic Infrastructure Act....
SPA	Special Protected Area
SW	Surface Water
SWSOS	South West Scotland Onshore System
TAG	Technical Advisory Group with the DCENR
TBM	Tunnel Boring Machine
TDU	Thermal Dose Units
TMO	Traffic Management Operatives
TMP	Traffic Management Plan
UKOPA	United Kingdom Onshore Pipeline Operators' Association
WS	Written Submissions

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An Bord Pleanála Ref.: 16. GA0004

Report on certain aspects of the application for
approval under Section 182C of the Planning and
Development Acts 2000-2006 for the onshore
upstream gas pipeline facility relating to the Corrib
Gas Field Project, Co Mayo

Stephen O'Sullivan,
Senior Planning Inspector

1.0 Introduction

1.1 Brief of assignment

This report was prepared in response to the instructions in the brief of assignment approved by An Bord Pleanála on 20th April 2009 in relation to the application for approval under section 182C of the Planning and Development Acts 2000-2007 by Shell E&P Ireland Ltd. for an onshore, upstream gas pipeline facility to serve the overall Corrib Gas Field Project. It was prepared following my inspection of the site, a review of the environmental impact statement submitted with the application, other documents and submissions made in relation to the application and attendance at the oral hearing upon it. It is submitted to Mr Martin Nolan, the person appointed pursuant to section 182D(1)(a) of the acts to conduct the oral hearing and make a report and recommendation on the application to the board.

1.2 Contents

The report is laid out as follows –

- Section 2 Legislation and other consents relevant to the proposed development
- Section 3 Impact of the proposed pipeline on natural heritage
- Section 4 Impact of the proposed pipeline on the landscape
- Section 5 The proposed peat deposition at Srahmore
- Section 6 Possible contribution for community gain
- Section 7 Summary of conclusions

2.0 Legislation and other consents relevant to the proposed development

2.1 European legislation

2.1.1 The Environmental Impact Assessment Regime

The following European legislation is relevant:

Directive 85/337/EEC

Adopted in July 1985 to be implemented by the member states by July 1988

This directive has been amended twice, by –

Directive 97/11/EC

Adopted in March 1997 to be implemented by the member states by March 1999

This amended the initial directive in numerous ways in order to ensure it was applied in a harmonized and effective manner. It refers to the types of project requiring EIA, the factors to be assessed, the thresholds or criteria for deciding when EIA was required; the information required in an EIS; scoping for an EIS; transboundary consultation; and public consultation and information.

Directive 2003/35/EC

Adopted in May 2003 and to be implemented by member states by June 2005

This directive was adopted to provide for participation in decision making on environmental matters by the public, including non-governmental organizations, and access to procedures to challenge those decisions. It sought to give effect to the provisions of the Aarhus Convention, which would not otherwise have a direct effect under European or Irish law.

Some provisions of the EIA directive, as amended, are worth noting –

The preamble recognizes–

... that the best environmental policy consists in preventing the creation of pollution or nuisances, rather than subsequently trying to counteract their effects;

... the need to take effects on the environment into account at the earliest possible stage in all the technical planning and decision making processes

and

... that development consent for public and private projects which are likely to have significant effects on the environment should be granted only after prior assessment of the likely significant effects of those projects has been carried out

Article 2(1) states –

Member states shall adopt all necessary measures to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size, location are made subject to a requirement for development consent and an assessment with regard to their effects.

Article 10a was inserted by the 2003 directive. It states –

Member states shall ensure that, in accordance with the relevant national legal system, members of the public

- a) having a sufficient interest, or alternatively*
- b) maintaining the impairment of a right ...*

have access to a review procedure before a court of law or another independent or impartial body established by law to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive.

...

Any such procedure shall be fair, equitable, timely and not prohibitively expensive.

The directive is implemented in various pieces of Irish legislation depending on the code under which a development consent is being given. The Irish provisions relevant to the planning system are in Part X of the Planning and Development Acts 2000-2006 and Part 10 and Schedules 5, 6, and 7 of the Planning and Development Regulations 2001-2007. The judgement of the High Court in Cairde Chill an Disirt Teo. vs. An Bord Pleanála 2009 IEHC 76 indicated that the requirement for a review procedure in Article 10a of the directive may be met by the previously established rules for judicial review.

The judgment of the High Court in Volkmar Klohn vs. An Bord Pleanála, 2008 IEHC 111 described the difference between an EIS – which is a document submitted by an applicant, and EIA – which is an ongoing exercise undertaken by the decision maker. The EIS is there to launch a process that will attract comment and submissions from other parties. A great deal of information can be accumulated between the lodging of the EIS and the final decision by a planning authority or the board. Thus the EIS intended to be comprehensive in its scope, but is rarely definitive in its conclusions. The requirement in paragraph 1(d) of Schedule 6 of the 2001 regulations (that an EIS contain an outline of the main alternatives studied by a developer and an indication of the main reasons for his or her choice) sets a very low threshold for an EIS to pass and does not establish a very specific obligation. It is noted that there is no such requirement for the alternatives to be addressed in the EIA carried out by the decision maker.

The judgment of the European Court of Justice in Commission vs. Ireland Case C-215/06 (the Derrybrien case) stated that Ireland had failed to comply with the requirements of the EIA directive because Irish legislation allows for retrospective permission to be granted for a development that requires an EIA under the directive; that such a permission would have the same effect as a permission preceding the

carrying out of development, and it can be given in non-exceptional circumstances; while the directive requires projects which would have a significant effect on the environment to be identified and made subject to an assessment and a development consent before they are carried out.

I would there advise as follows regarding the implications of the law on environmental impact assessment for the current case –

- The requirement under Article 10a for members of the public to have access to a procedure to challenge the procedural or substantial legality of decisions, which arises from the Aarhus convention, is met by the availability of the judicial review procedure for the decision on an application made by the board.
- Environmental impact assessment is a process carried out by a consent authority (in this case the board) and is to be distinguished from the requirement on an applicant to submit information in the form of an environmental impact statement. The former can be based on information obtained from several sources which may remedy defects in the statement submitted with any application. The directive and subsequent Irish legislation requires an applicant to provide information about alternatives to the proposed development in an EIS, but the level of consideration that must be given to the topic is rather low. No such requirement to consider alternatives is placed upon the consent authority in its carrying out of an environmental impact assessment.
- The regime established by the legislation requires the environmental impact of projects to be assessed before consent for them is granted. The board is precluded from granting retrospective permission for works which fall within the scope of the directive where the works were carried out before an environmental impact assessment was carried out.

2.1.2 The Habitats and Birds Directives

Directive 92/43/EEC was adopted on 21st May 1992 with a deadline for implementation in May 1994, and amended on various occasions up to 20th December 2006. This directive, known as the Habitats Directive, concerns the conservation of habitats and of wild fauna and flora.

The preamble to the directive state *inter alia* that in view of the threat to certain types of natural habitat it is necessary for them to be defined as having priority in order to favour the early implementation of measures to conserve them; and that it is necessary to designate special areas of conservation to create a coherent European ecological network in order to ensure the restoration or maintenance of natural habitats of Community interest

Article 6 of the directive deals with sites which are designated as special areas of conservation or sites whose designation as such is proposed. It also refers to sites which are classified as Special Protection Areas under Article 4 of the Birds Directive (79/403/EEC).

Article 6 (3) reads -

Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) of the directive reads -

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

Blanket bogs are designated as a habitat of community interest in Annex I of the directive. Active blanket bogs and machair are designated as a priority habitats. Atlantic Salmon is designated as a species of community interest in Annex II.

The directive was addressed to the member states and was to be implemented within two years of its adoption.

The decision of the European Court of Justice in C-127/02 (the Waddenzee case) held that, under article 6(3) of the Habitats Directive, an appropriate assessment of the implications for a site of a project requires all aspects of the project that can, by themselves or in combination with other plans or projects, affect the site's conservation objectives, must be identified in the light of the best scientific knowledge in the field. A national consent authority can only authorise a project only if it has made certain that the project will not adversely effect the integrity of site, which is the case where no reasonable scientific doubt remains as to the absence of such effects.

The directive was implemented in Irish law mainly through the EC (Natural Habitats) Regulations 1997 -2005. Article 27 of those regulations requires planning authorities to consider planning application, and the board to consider appeals on such an application, in a manner consistent with the Habitats Directive. It states that an environmental impact assessment properly carried out shall be an appropriate assessment for the purposes of the regulations. The regulations do not refer to the

consent procedure set out in sections 182C & 182D of the Planning and Development Acts 2000-2007. However the board is required by section 182D(10)(c&d) of the acts when considering an application under that procedure to have regard to the presence of a European site (which would include candidate SACs and SPAs) and the effect of a development upon it. In any event, even in the absence of any national legislation on the topic, the habitats directive would be binding directly on An Bord Pleanála as it is an emanation of a state to which the directive was addressed.

Obligations under the Ramsar Convention do not have direct effect under Irish or European Law. Compliance with them depends upon the Birds Directive and subsequent legislation.

The above directives are addressed to the member states. An Bord Pleanála is regarded as ‘emanation of a member state’ and so the directives are binding upon it in certain circumstances. Members of the public may therefore rely on the provisions of directives in court proceedings against the board even if those provisions have not been properly transposed into national law, provided the date for the implementation of the directive has passed and that the relevant provisions are clear, precise and unconditional.

As the development proposed in this case is not concerned with the management of a European site, but is likely to have a significant effect on an cSAC, then Article 6 of the Habitats Directive would apply to the consideration of the current application. The matter is considered at section 3.4.7 below.

2.2 National legislation

2.2.1 The Various Statutory Controls on the Corrib Gas Project

The overall proposal to exploit the Corrib natural gas deposit is subject to control under several different statutory regimes. Licences and consents have been granted under some of those regimes, others will be required before the overall scheme is implemented. They can be summarised as follows –

- Under section 13 of the Petroleum and Other Minerals Development Act 1960, the Minister for the Marine and Natural Resources granted the applicant a lease on the Corrib gas field. Under the terms of that lease the applicant submitted a plan of development for the gas field to the Minister for the Marine and Natural Resources which the Minister approved subject to conditions on 15th April 2002. The conditions on the approval of the plan of development included those which referred to the impact of the overall development on the environment.
- Under section 3(1) of the Foreshore Act 1933, the Minister for the Marine and Natural Resources granted a licence on 17th May 2002 to the applicant to the applicant to lay a gas pipeline on the foreshore. Conditions attached to the licence included those which referred to the impact of the pipeline on the environment. The area to which this licence refers is similar, but does not entirely correspond with, the area required to carry out the development

proposed in the current application. A new foreshore licence would therefore be required before that development could be carried out.

- Under section 40 of the Gas Act 1976, as amended, the Minister for the Marine and Natural Resources gave consent on 15th April 2002 for a gas pipeline from landfall to the terminal at Bellanaboy, Co. Mayo. The route of the pipeline to which this consent refers is similar, but does not entirely correspond with, that proposed in the current application. A new consent under the Gas Acts would therefore be required before that development could be carried out.
- The Environmental Protection Agency issued an Integrated Pollution Prevention and Control Licence to Shell E&P Ireland Ltd. on 12th November 2007 for the operation of a gas refinery and large combustion plant at Bellanaboy, Co. Mayo. The conditions attached to the licence prescribe emission limits for the licensed activities, including those for emissions to the sea which would involve operation of the pipeline proposed in this application.
- The Environmental Protection Agency issued a Waste Licence to Bord na Móna Energy Limited on 29th October 2004 for the placement of 450,000m³ of waste peat excavated from the site of the gas terminal at Bellanaboy at Srahmore, Co. Mayo. The conditions attached to the licence control the operation of the waste facility and set limits for emissions from it. They also specify that the licence refers only to peat extracted from the site of the Bellanaboy terminal, and so a new waste licence would be required before the placement of peat from the site of the proposed development could be carried out.
- Planning permission was also granted by the board for the gas terminal at Bellanaboy and the waste deposition facility at Srahmore by the board under PL16. 207212.

The exploitation of the gas field is therefore subject to something akin to the 'statutory maze' referred to in the judgement of the court in O'Connell vs. the EPA. The separation of the environmental control imposed on projects into different consents provided by different public bodies was considered in the case of Murphy vs. An Bord Pleanála and was found to be acceptable, at least in the context of European legislation on Environmental Impact Assessment. The judgement in that case cited the desirability under a split regime to avoid duplicating the responsibilities of public agencies. It follows from this objective that control of any particular aspect of should be exercised by the agency whose expertise and statutory powers are best suited to it, and that another agency should not attempt to replicate control of that aspect of development. This approach reduces the likelihood of contradictory standards being imposed in respect of the same issue, and avoids wasteful effort and expenditure. It does not follow from this objective, however, that the board in its consideration of this application should not have regard to the powers and duties of other public bodies involved in regulating the project. The question is probably best dealt with by bearing in mind the purposes set down in legislation for each of the statutory codes which has a bearing on the overall Corrib project. In the first instance a summary of the relevant provisions of the planning code may be helpful.

2.2.2 The regime under planning legislation

The application for approval for a strategic gas infrastructure development which is before the board has been made under section 182C of the Planning and Development Acts 2000-2006. It should be noted that the application, like any other planning application, is concerned with a proposed development. A development is comprised of works to land and a **change** in the use of land, as laid down in section 3 of the acts. A development is an event which occurs over a relatively short period of time. When the works have been completed and the use of the land has changed, the development has finished. Development should therefore be distinguished from an activity or the continuation of a use which is already established on the land. Any approval consequent to this application would therefore control the development of an upstream gas pipeline, rather than its operation.

The board is under a statutory duty to consider and decide the application. Under section 182D(5) of the acts the board may decide to approve the proposed development, modify and approve it, approve it in part only, attach conditions to any approval, or refuse to approve the proposed development.

Before its decision on the application the board is required by section 182D(1) of the acts to consider the information presented to it in the EIS and in the submissions/observations made on the application which relate to the proper planning and sustainable development of the area and the likely effects on the environment of the area, as well as to the report and recommendations of the person who conducted the oral hearing. Under section 182D(10) this consideration shall have regard to the provisions of the development plan, to the prescription of any part of the area as a European site and whether the proposed development would have an effect on such a prescribed site, and to provisions of the planning acts and subsequent regulations.

Under section 143(1) of the acts the board has a general duty in its performance of its functions to have regard to the policies and objections of the government, of the Minister for the Environment, Heritage and Local Government, of the planning authority or of any other public body whose functions may have a bearing of the proper planning and sustainable development of area; to the national interest and the effect of the board's performance of its functions on important strategic economic or social issues, and the National Spatial Strategy and any regional planning guidelines.

There is a general duty on any public body to consider all relevant matters and disregard irrelevant matters when making decisions. The planning legislation is quite specific as to the matters which the board must consider when determining the application. The basic criteria are –

- the likely consequences for the proper planning and sustainable development of the area of the proposed development, and
- the likely effects on the environment of the proposed development.

In considering what the those likely consequences and effects would be the board must have regard to –

- The policies of the Government, of the Minister for the Environment Heritage and Local Government, of Mayo County Council, and of any other public authority where relevant to the proper planning and sustainable development of the area.
- The national interest and issues of strategic economic or social importance to the State
- The presence of prescribed European sites (Special Protection Areas and candidate Special Areas of Conservation) and any effects on such sites arising from the development.
- The provisions of the planning acts and regulations, of the National Spatial Strategy, of the regional planning guidelines and of the county development plan.
- The information contained in the Environmental Impact Statement and the observations duly made on the application
- The report and recommendation of the person conducting the oral hearing.

Given the detail with which the legislation outlines the relevant considerations for the present application, it would appear to me that a cautious approach should be adopted to accepting other considerations which are not specified as being relevant to the board's decision, in order to avoid it tainted by irrelevant considerations. Before another topic was introduced to the assessment and recommendation which would be placed before the board, it should be clear that it is a topic that relates clearly to the proper planning and sustainable development of the area or the likely effects on the environment. However these are nevertheless broad concepts.

2.2.3 The relationship between the Waste Licensing and IPCC regimes and planning control

Section 182C does not specify what implications for the consideration of an application for approval under that section arise from the necessity for associated activities to have a waste licence under the Waste Management Act 1996 or an Integrated Pollution Prevention Control Licence under the Environmental Protection Agency Act, 1992 and the Protection of the Environment Act, 2003. However the provisions which apply to ordinary planning applications and appeals can be extrapolated to section 182C applications. Thus section 57(3) of the Waste Management Act 1996, as amended by the Planning and Development Act 2000, specifies that the board may not impose conditions to control emissions from the operation of a waste activity which is subject to licence, but may conclude that a development is unacceptable on environmental grounds notwithstanding that the associated activity would be subject to a waste licence. Similarly section 99F of the Environmental Protection Agency Act 1992, as inserted by the Protection of the Environment Act 2003, prevents the board from placing conditions on a planning

permission which seek to control emission from an activity that is subject to an IPCC licence, but may conclude that the development is unacceptable on environmental grounds.

It is therefore unlikely that conditions could be attached to any permission issued on foot of the current application to control emissions from the operation of the refinery through the proposed pipeline, or from the deposition of peat at Srahmore, such issues being better suited to the competence of the EPA.

It is noted that the EPA did not provide substantial comments to the board on the current application, other than to cite conditions on the IPCC licence which referred to notification to the agency of the quantity of gas to be held in the pipeline, the pressure under which it was to be operated, and the detail of arrangements for the elimination of the gas inventory in the pipeline in the event of an emergency.

The legal responsibility to comply with the requirement of an waste licence or an IPCC licence rests with the person carrying out the licensed activity. The board cannot assume that the person will not comply with those requirement or take upon itself responsibility to ensure such compliance, although it would be proper to ensure than any conditions or modifications which the board itself imposed on the proposed development did not frustrate compliance with the licences.

2.2.4 The approval of the plan of development and consent under the Gas Acts

The approval by the Minister for the Marine and Natural Resources of a plan of development for the Corrib gas field was made under the terms of petroleum lease, itself made pursuant to the Petroleum and Other Minerals Development Act, 1960. The long title of that act states its purposes to include the vesting in the minister of all property in petroleum existing in its natural condition in strata and to make further and better provision for the working and development of such petroleum. Section 13 empowers the minister to grant petroleum leases where he considers this to be in the public interest. The granting of a lease and the subsequent approval of the plan of development can therefore be taken as indicating that the exploitation of the Corrib gas field in accordance with the approved plan is in keeping with government policy relating to the use of the state's mineral resources. Similarly, the long title of the Gas Act 1976 states its purpose as an act to make provision with respect to gas supply. A consent granted under section 40 of that act would indicate that the consented pipeline was in keeping with government policy with on gas supply network. These would be material considerations for the current application by virtue of section 143(1) of the Planning and Development Acts 2000-2006. It is not open to the board to question or judge government policy on energy or any other issue, and it should not attempt to second guess the relevant government department on the question of compliance with national energy policy. However the board does have a duty under law and the expertise to consider the effect of any particular development on the environment, and this duty cannot be delegated or restricted by the actions of a government department.

The petroleum lease and the consent to the plan of development given by the Minister for the Marine and Natural Resources, and any consent given under the Gas Acts, are thus relevant to the consideration of the current application in that they indicate that the proposed development is part of an overall scheme which is in keeping with

government energy policy. However those documents do not relieve or alter the board of its duty to assess and control the impact of the proposed development on the environment.

2.2.5 The foreshore licence

The foreshore licence was granted pursuant to the Foreshore Act, 1933, the purpose of which is stated to be, in its long title, to make provision for the granting of leases and licences in respect of foreshore belonging to the state. The system allows for the control of the use and occupation of land which is owned by the state. The granting of a foreshore licence to facilitate the proposed development would therefore indicate that the applicant had the requisite legal interest in land to carry out that part of the development which would impinge on the foreshore. It would not relieve or alter the board of its duty to assess and control the impact of the proposed development on the environment.

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3.0 Impact of the Proposed Pipeline on Natural Heritage

3.1 Environmental Impact Statement

Summary of Sections 12, 13, 14 & Appendices P, J, K & L

3.1.1 Preface to sections 12 to 15

The preface notes that Sruwaddacon Bay is part of the Blacksod Bay/Broadhaven SPA (site code 004037) and the Glemamoy Bog Complex SAC (site code 00500). The route of the proposed pipeline also traverses an onshore part of the latter cSAC. Of the qualifying habitats and species in Annexes I and II of the Habitats Directive, blanket bog and atlantic salmon are recorded in the vicinity of the proposed works, while golden plover occasionally feeds on the inter-tidal area and may nest of the bog. Sruwaddacon Bay also borders the Broadhaven Bay SAC (site code 472), which hosts a significant amount of the national population of ringed plover, a species listed in Annex I of the Birds Directive. The EIS has therefore been prepared with due regard to the requirements of the Habitats Directive and the EC (Natural Habitat) Regulations 1997-2005.

3.1.2 Section 12 *Terrestrial Ecology*.

The methodology for the preparation of this section of the EIS is stated to have included vegetation and faunal surveys; habitat mapping; and collection of data on presence of protected habitats and species with particular attention to habitats listed in Annex 1 of the Habitats Directive. Information for previous surveys and consultations carried out in connection with the Corrib Gas Field development has informed this EIS. Walkover field surveys to map habitats were carried out between July and September 2007 and in 2008.

Description of the Environment

The route of the pipeline meet land at Glengad at a low cliff of glacial till adjacent to a sand martin colony. The route runs east through an area of improved grassland. It avoids the dune system to the north. It continues through an area of wet grassland and salt marsh before reaching the shore of Sruwaddacon Bay. There is little vegetation in the intertidal sand and mud flats within the route corridor. The route reaches the opposite side of the bay at a rocky shoreline with an abundance of seaweed and thence through an area where salt marsh is developing. Above this there is an eroding bank of peat and gravel. The route then runs parallel to the shore through grassland. It crosses the road along the coast and runs through grassland on its northern side. It then enters an area of cutover bog which is described as a complex mixture of older and more recent cutover bog with a mosaic of vegetation types. It runs through an area of intact blanket bog for a distance of 80m between chainages 86.600 and 86.680, and another such area between chainages 87.120 and 87.350 (120m). There is a small system of bog pools to the south of the route at this point. The route then runs through cutover bog until the road crossing RDX2 after which it enters the cSAC. It traverses cutover bog, eroded bog and then intact blanket bog between chainages 88.000 to 88.150. There is evidence of grazing pressure and erosion here and it is debatable whether it constitutes priority habitat active blanket bog. From here to RDX3 at chainage 88.250 the route runs through eroded, then cutover bog. The route crosses the public road. The route of the pipeline continues to the northern shore of the bay through scrub and a narrow fringe of saltmarsh. On the opposite

shore the route crosses an intact fringe salt marsh before entering degraded and eroding bog, then a small inlet with fringe salt marsh. It crosses a public road before entering a conifer plantation adjoining an area of high quality blanket bog. Of the total route of 9.2km, 550m crosses intact blanket bog of which 150m is within the cSAC..

With regard to vertebrate fauna, evidence was found of otters along both shores of Sruwaddacon Bay. Evidence of badger activity was found, particularly to the south of the bay, and one potential sett would be effected by the route of the pipeline. A bat survey recorded activity by three species – the soprano pipistrelle, Leisler's Bat and Daubenton's bat. Signs of other vertebrate species were recorded, including brown rats, foxes, rabbits, hare, pine marten and red deer, and frog. Aquatic bird surveys during the summer of 2007 and previously recorded 32 species in Sruwaddacon Bay, with 43 species recorded the following winter which included over wintering Light Bellied Brent Geese, a species listed in Annex 2 of the Birds Directive. Terrestrial bird surveys recorded 47 species, including Bar Tailed Godwit, Chough, Curlew, Common and Arctic Tern, Golden Plover, Great Northern Diver, hen Harrier, Little Tern, Red Throated Diver, Sandwich Tern, Little Egret, Black Headed Gull, herring Gull and Redshank. Sand martins were recorded at Glengad in two sub-colonies on either side of the pipeline route.

Impact of the development

The impact of the construction phase of the development on grassland will include temporary loss of habitat and habitat disruption which are categorised as temporary, localised and moderate. The potential impact of construction on blanket bog would arise from compaction, which would cause a loss of oxygen around the roots of vegetation, interference with drainage and chemical imbalance due to imported materials. All these could result in a loss or change in characteristic blanket bog vegetation. The potential impacts are categorised as direct, localised and moderate. Salt marshes may be disturbed. It is particularly vulnerable due to the friable nature of the substrate and the low coherence of the vegetative layer. The potential impacts are categorised as direct, temporary, localised and moderate. No potential impact on the designated conservation sites outside the working area is predicted. The construction of the development should not effect protected species which, in the blanket bog, would occur in wetter areas which the pipeline route avoids. Fauna in the area may be effected by disturbance and loss of breeding and foraging areas. Mortality of common species may occur. The impacts are categorised as localised, temporary and slight to moderate. Two disused badger setts would be removed by experts under licence. Temporary negative impacts may occur on bird species due to habitat loss/degradation and disturbance during construction. No impact is predicted on Brent Geese as their feeding areas are removed from the pipeline route. The construction of the LVI would result in a permanent loss of a small area of grassland of low ecological value. No impact on the adjacent sand martin colony is predicted. The operational phase of the development would not have an impact on natural heritage.

Mitigation measures to protect habitats will include fencing to protect the dune system at Glengad; and the storage of topsoil in grassland to allow the reinstatement of those areas without pollution of the native gene pool. In areas of blanket bogs the living layer of peat will be lifted and stored as turves. The turves will be stored and irrigated

to ensure their viability and will be reinstated without delay after construction has completed in those areas. Inert plugs will be placed at 50m intervals along the stone road facilitating construction over bog to avoid it acting as a preferential drainage path. Enough peat will be left below the stone road to avoid it enabling drainage along the mineral soils below. Compaction will be avoided through the minimisation of vehicle movements and the use of low ground pressure vehicles to set out the site and stone road. Imported stone will be compatible with the surrounding pH values. After construction the route will be fenced to prevent grazing while the reinstated turves knit together and the regeneration of the bog will be monitored. Similar mitigation measures will be used for construction in designated cutover and eroding bog, but not where such habitats are not designated. Turves will also be removed, stored and reinstated after construction in salt marsh. The storage will be on a single layer on bog mats regularly irrigated with sea water. If an intermediate pit is required for tunnelling under the bay, the area disturbed will be kept as small as possible and excavated gravel or shingle will be stored and reinstated as closely as possible to their original profile. There will be no incursion into the developing salt marsh north and sand dunes to the north of the estuary crossing at Glengad. Standard mitigation measures will be used to protect fauna including the limitation of the season during which trees and vegetation are disturbed and the reinstatement of habitats. A preconstruction survey along the route will be carried out to identify holts for otters and setts for badgers. If any require removal this will be done outside the breeding season by zoological experts under licence from the National Parks and Wildlife Service. Any environmentally hazardous materials will be carefully stored during construction to avoid pollution. An exclusion zone will be defined above and behind the sandmartin colony at Glengad. A programme will be put in place after construction to monitor the regeneration of sensitive habitats at the landfall at Glengad, at nearby Annex 1 habitats there, the shore lines and intertidal areas of Sruwaddacon Bay, in the SAC and at other areas with intact blanket bog.

The residual impact of the development on grassland will be slight in the short term and neutral in the long term. The residual impact on bog will be moderate in the short and medium term as those habitats will take longer to recover. In the long term the residual impacts will be neutral or imperceptible. It is considered that blanket bog vegetation should recover within a few years, given the careful storage and reinstatement of turves in line with best practice and the experience with the works on the Bord Gais pipeline at Upper Glencullin. 2 years after construction there are signs that the use of construction techniques measures to those herein proposed in the Bord will result in successful regeneration of bog. The proposed pipeline will run along the margins of the cSAC and will cross intact blanket bog for a distance of only 150m there. No significant impact on the integrity of the Glenamoy Bog Complex SAC is predicted in the longer term. The impact on salt marsh will be slight to moderate in the long term reducing to neutral or imperceptible in the long term. The impacts on fauna and birds will be neutral to imperceptible in the long term.

3.1.3 Section 13 *Freshwater Ecology*

The methodology used in the preparation of this section of the EIS involved a desk study of all available data and reports along the route of the pipeline, consultation with relevant authorities and a survey of the rivers and streams along the proposed route in September 2007 and January 2008. The route crosses Sruwaddacon Bay twice and three streams. Another stream will lie within the temporary working area.

Sruwaddacon Bay and the Glenamoy and Muingnabo Rivers which drain into it are part of the Glenamoy Bog Complex SAC are of major ecological significance due to the presence of spawning grounds for Atlantic Salmon, a species listed in Annex II of the Habitats Directive. The watercourses are also significant for seatrout. The streams which the pipeline route would directly effect are rated as of low ecological significance. The freshwater pearl mussel has not been reported in the area. The operational phase of the development will not impact upon freshwater ecology. The construction of the pipeline under the bay will be by trenchless micro-tunnelling which may require an intermediate pit in the bay. The stream crossings would be constructed by an open cut method. The potential impact from construction would arise from the release of suspended solids, the release of contaminants, phosphate mobilization associated with tree felling and the temporary disruption of habitats. The area of tree felling is relatively small (3ha) and is not immediately adjacent to watercourses. Mitigation measures involving sediment control, avoidance of works during high rainfall and the use of brush mats on machine routes will control risk of this impact. The release of suspended solids would be unlikely to affect adult salmonids travelling upstream but may have a negative effect on smolts. The potential disruption to habitats can be described as minor to negligible and can be adequately addressed by measures including diversion of stream flows through flume pipes at stream crossings. Settlement and filtration measures when dewatering trenches would substantially reduce the release of suspended solids, while appropriate storage methods would address the risk of the release of contaminants. It is not considered necessary to control the season at which works are carried out in the bay or at stream crossings. The likely residual impact of the development on freshwater ecology minor to negligible, with none on migratory salmonids or other Annex II species.

3.1.5 Section 14 Marine Environment.

This section describes Sruwaddacon Bay as a dynamic ecosystem providing a transitional zone between the freshwater riverine flow and the fully marine environment of Broadhaven Bay. The majority of the bay is dominated by marine sands with a defined channel meandering the length of the estuary from the confluence of the Glenamoy and Munignabo rivers. The sand flats are frequently exposed at low tide. An extensive description of the environment of the bay is provided which refers to areas outside the functional area of the planning authority and so outside the part of the pipeline which requires permission from An Bord Pleanála. Potential impacts are identified in relation to loss/change of sediment habitat; change in water quality and sediment load; noise pollution; and the risk of emissions of pollutants and waste. Mitigation measures would include the use of a micro tunnelling method to cross the bay; the maintenance of the main channel through the bay; and the monitoring of the use of Bentonite. The residual impact on habitats, flora and fauna are predicted to be imperceptible over the short term. If an intermediate pit is required to facilitate the micro tunnelling process, this may effect the hydrodynamic regime of the bay. This impact would be mitigated by minimising the size of the pit and infilling any scoured area which occurred around it. Most of any such area would refill naturally after construction and the residential impact is predicted to be insignificant.

3.1.7 Appendix P

This appendix is described as a report on the **appropriate assessment of the onshore pipeline under Article 6 of the Habitats Directive**. It states that the pipeline would traverse the cSAC at the Glenamoy Bog Complex for a distance of 2.9km comprising–

- 630m at Glengad through grassland, marsh and salt marsh
- 430m in the upper crossing of Sruwaddacon Bay
- 800m through blanket bog including 150m of intact blanket bog at Rosspoint Commonage
- 1,000m at the upper crossing of Sruwaddacon Bay
- 40m at the crossing of the Leenamore River

The crossings of the bay and the Leenamore River also lie within the Blacksod Bay/Broadhaven SPA.

The cSAC has an area of 12,902ha. Its conservation objectives and qualifying habitats and species are inferred from the site synopsis. The only qualifying habitat under Annex 1 of the directive in the vicinity of the pipeline route is blanket bog. Rhynchosporion depressions were not recorded there. The only Annex II species occurring is atlantic salmon. The golden plover is the only bird species recorded in the vicinity for which the site qualifies under Annex I of the Birds Directive.

The proposed works at Glengad in the cSAC would involve a conventional spread technique for excavation, pipe laying and restoration. The would last for an estimated 6 months and will required a temporary land take of approximately 5ha and a permanent land take of 0.16ha. No other permanent landtake is proposed. Those at Rosspoint would involve the stone road construction method with turving. They would last 1 to 2 months and would involve a temporary landtake of 3.24ha. The bay crossings would take 4 to 6 months and would involve trenchless tunnelling, with the possibility of an intervention pit that would be require a month's work. The crossing of the Leenamore would last 2 days and occupy 0.16ha, and would involve turving of salt marsh and piping of the river. The only long term loss of habitat would be the grassland that currently stands at the site of the Landfall Valve Installation at Glengad and the road to it.

The works in the designated blanket bog will involve the preservation as turves of the upper 0.5m of disturbed bog, the installation of a stone road within which the pipeline would be laid, and the replacement of the turves. Peat plugs would be inserted in the road every 50m and a layer of peat would be left below the stone road to avoid drainage which would effect the hydrology of the bog. The bog which would be disturbed in the cSAC has already been significantly effected by turf cutting and grazing, apart from a stretch some 150m long. There are indications that recovery is progressing at bog subjected to similar construction techniques at Upper Glencillin.

The launch and reception pits for the tunnelling under the bay will be set back from the shores of the bay and will not effect the habitats there. The insertion of an intervention pit may cause scour in the bay, but this would not have significant ecological effects given the dynamic nature of flow in the bay and the low population

of macro-invertebrates there and thus is limited usefulness as a feeding ground for other fauna.

Good construction practice will mitigate the risk of pollution of the bay or bog during construction or operation of the pipeline.

Thus there will be no significant effect on the designated European sites from the development.

3.1.8 Appendix J

It includes the detailed survey results and reports upon which section 12 of the EIS is based. Reports on the monitoring of the route of the gas pipeline built in blanket bog at Upper Glencullin state that the reinstated turves are regenerating, but that substantial areas of bare peat remain on the areas to the side upon which they were stored during construction. There is no evidence of a significant impact on the bog adjacent to the working area of that project.

3.1.9 Appendices K and L

They include the detailed survey results and reports upon which sections 13 and 14 of the EIS are based.

3.1.10 Addendum to the EIS

The applicant submitted an addendum to the EIS to the oral hearing. It includes a report on the flush systems located approximately 500m north east of the pipeline route in the cSAC at Rosspoint Commonage. It states that the flora recorded there support the classification of the habitat as poor fen and flush which do not correspond to any Annex I habitat. It also includes a report on the impact of the development on eco-hydrology which states that the conceptual model of the bog used in the EIS has been confirmed by various surveys showing that the movement of water at depth in the bog is minimal. Monitoring results from a previously constructed stone road at the Bellanaboy terminal site indicate that its construction had only a limited impact of the water table of the adjoining peat. The flush systems to the north east of the route in the cSAC are described as fed by surface water.

3.2 Applicant's submission to the oral hearing

3.2.1 Submission regarding terrestrial ecology by Ms Jenny Neff, 21st May 2009

Ms Neff outlined her qualifications and experience as a ecologist, with particular expertise in blanket bog habitats and ecological impact assessment, and stated that she had been project ecologist for the Corrib Gas Project since 2002. An assessment was presented which was stated to be based on desk studies; habitat vegetation and faunal surveys; and consultations with relevant statutory agencies.

A description of the habitats along the pipeline route was given from the landfall at Glengad to the terminal at Bellanaboy. The landfall occurs at a low cliff of glacial till which has been excavated and reinstated. The area to the east of the landfall is

comprised of improved or marshy grassland of low ecological value, although approximately 630m of this section of the route is in the cSAC. The area to the north of the pipeline route at Glengad contains sand dune systems but not any *machair* habitats are the dunes or of siliceous material. The marshy grassland along the pipeline route merges into a small area of salt marsh on the western side of the lower crossing. To the east of the lower crossing the pipeline route passes through improved and rushy grassland.

The pipeline route traverses blanket bog habitats in Rossport Commonage. Blanket bog is an habitat listed under Annex 1 of the Habitats Directive. If the blanket bog is active, i.e. if it supports a significant area of vegetation that is normally peat forming, then it is a priority habitat. Mosses in general are key to peat formation, sphagnum species particularly so. Habitats derived from blanket bog include cutover bog, whose characteristics vary according to the extent and method of turf cutting to which it has been subjected, and eroding bog, which is characterised by bare peat surfaces. Eroding bog is most frequently encountered where intensive livestock grazing has resulted in surface vegetation damage and compaction around roots. The pipeline route through the section of Rossport Commonage which is not an cSAC to the west of RDX2 passes through two sections of intact blanket bog, for a distance of 80m and then 230m. There is a pool system to the south of the route, but no rhynchosporion habitat was recorded. There are a few discrete surface water pools within the working area of the pipeline route, but again they do not correspond to rhynchosporion habitat, and were dry during the survey of July 2008. Otherwise there are extensive areas of cutover and eroding bog on this section of the route, including the area upon which a site compound is proposed. The commonage to the east of RDX2 to RDX3 is part of the cSAC. 150m of the pipeline route in this area passes through intact blanket bog, which could not be described as active due to the surface damage, exposed tussocks and active erosion which has compromised the condition of the bog. The working area is generally contiguous with the boundary of the cSAC, in order to avoid habitat fragmentation. The route from RDX3 to the upper crossing of the bay is outside the cSAC and crosses heavily cutover bog. South of the bay the route traverses eroding bog, then crosses the Leenamore River over a small tidal inlet fringed by salt marsh. Further east the route crosses an area of intact blanket bog for a distance of c.190m. This area of bog is approximately 7ha. It is recovering from past overgrazing. The applicant will manage this area to allow the recovery process to continue. The remainder of the route to the terminal at Bellanaboy passes mainly through coniferous forestry plantations.

In all bog habitats in the cSAC, and in intact bog habitats outside it, turves will be excavated and replaced once the stone road and pipeline have been installed. The proposed works can be distinguished from those carried out for the Bord Gáis pipeline at Upper Glencullin because the working width will be 40m avoiding the need to stack turves, and those turves will be restored manually rather than mechanically. Furthermore the proposed pipeline will be located at the edge of an cSAC where drainage and turf cutting have already impacted on the site. The re-vegetation of turves at Glencullin which were stored on the top layer is encouraging, as is the absence of measurable vegetation change immediately outside the effected area. Thus potential impacts on intact blanket bog vegetation traversed by the pipeline area expected to be direct, localised and temporary.

Salt marsh is an Annex 1 habitat, but is not a qualifying habitat for the Glenmoy Bog Complex cSAC. In the works at the salt marsh at the Leenamore River crossing turves will be removed, stored and subsequently reinstated, thus conserving flora and invertebrate species. Even if some turves are lost, salt marsh species are extremely robust and will re-establish on disturbed substrate. The potential impact on salt marsh during construction is expected to be direct, temporary, localised and moderate.

The submission refers to mitigation measures set out in chapter 12 and Appendix J1 of the EIS regarding the impact of the development on fauna. The most likely impact on birds is from disturbance, however, this impact is not likely to be significant. In relation to the Sand Martin colony at Glengad, it is stated that no burrows were recorded in 2002 in the subsequently excavated cliff face. 48 active burrows were recorded in 2008 indicating that adjacent construction activity had no apparent effect on breeding or population size, and there is nothing to suggest that the proposed works would do so.

The pipeline would cross two European sites: the upper and lower crossing of Sruwaddacon Bay are within the Blacksod Bay/Broadhaven Special Protection Area (site code 4037) and the Glenamoy Bog Complex CSAC (site code 500), while approximately 630m of the pipeline route at Glengad, 800m at Rossport and 40m at the Leenamore River are within the CSAC. An expert opinion is given that the development will not affect the integrity of either site.

The submission referred to detailed issues raised in the written observations on the development made by Mayo County Council and the National Parks and Wildlife Service as they relate to the natural environment. It is argued that none of the intact sections of blanket bog can be considered 'active' due to the low cover of bryophytes, surface damage and the presence of bare peat. The hydrological assessment shows that the key functions of the part of the cSAC which the pipeline route traverses have already been severely impaired. The flora at the bog pools adjacent to the pipeline route do not correspond to the Annex I habitat of *Depressions on peat substrates of the Rhynchosporion*. Scattered individual plant of the Juniper were found, but these could not be held to comprise the Annex I habitat of Juniper heath formation. The plant species in the flushes to the north and north east of the pipeline route in the cSAC reflect low pH and low nutrient conditions and give no indication that they were fed by base rich groundwater. No measurable change was recorded in the vegetation of the flushes adjacent to the pipeline at Upper Glencullin. The habitat mapping provided in the EIS of a corridor of 100m is standard for a linear development such as a pipeline. The reinstatement at Glencullin is at an early stage and a monitoring programme of 15 years is in place. The conservation objectives for the European sites was deduced from the species lists on the Natura 2000 Data Sheet and the site synopses. No compensatory measures are proposed as it is not considered that there will be a significant negative impact on the integrity of the sites, but there is an opportunity at Aghoos to allow 7ha of eroded blanket bog, which is owned by the applicant and which adjoins the cSAC, to regenerate. Bird count data indicate that the number of Ringed Plover in Sruwaddacon Bay is normally low. The launch and reception pits for the crossing of the bay will be set back from the high water mark by between 125m and 30m. There is no machair habitat at Glengad. The dune system near the pipeline route does not have the proportion of shell fragments characteristic of that habitat, with a higher proportion of silaceous sands. The erection of netting

over the reinstated cliff face at Glengad was a reasonable measure to avoid re-colonisation where burrows would subsequently be disturbed. It is not possible to put mitigation measures in place for smaller mammals such as hedgehogs and pygmy shrews. The ecological surveys carried out at Aghoos and on the flushes to the north east of the pipeline route in the cSAC in May 2009 did not affect the conclusions stated in the EIS regarding the impact of the development on the natural environment. The peatland deposition at Srahmore will result in the establishment in poor fen or wet grassland habitats which will improve the biodiversity of the area compared to the existing bare peat.

The submission concludes by stating that adequate information has been gathered to allow an assessment that the development will not have a significant impact on habitats or species or on the Glenamoy Bog Complex CSAC or the Blacksod Bay/Broadhaven SPA.

3.2.2 Submission regarding marine ecology by Mr Ian Wilson, 21st May 2009

Mr Wilson outlined his qualifications and experience as a marine environmental scientist. Mr Wilson was commissioned by the applicant to produce the marine environmental for the Corrib Onshore EIS. The area of the marine assessment is everything below the high water mark. The assessment was based on geomorphological, ecological and oceanographic surveys of Sruwaddacon Bay, as described in the EIS.

The existing environment of Sruwaddacon Bay is described as an enclosed tidal estuary which ranges from almost fully freshwater to almost fully marine conditions. The main extent of the bay is shallow and is exposed during low water, through which a meandering channel runs with a depth between 0.6 and 4m beneath low water level. A hydrodynamical model of the bay indicates that the tidal flow in the bay is asymmetrical, with the ebb cycle running between 43 and 88 minutes longer than the flood, with a maximum flow of around 2.5 to 3 knots close to the mouth of the bay. The strong flows and the exposure to air and freshwater limit the abundance of marine invertebrates, with less than 837 individuals per m² recorded in the main sand areas, compared to 2,850 individuals per m² recorded off Belmullet in Broadhaven Bay. Sruwaddacon. Rocks on the fringe of the bay are covered with fucoid algae and support a moderate population of small gammerid crustaceans and some molluscs whose biomass would be approximately an order of magnitude larger than that in the softer sediments in the bay. The physical and chemical properties of the sediments in the bay are consistent with the hydrodynamic observations, with high energy sands in the central part of the bay, grading to coarser sediments up on the foreshore and within small inlets. Whales and dolphins were recorded in Broadhaven Bay, but not in Sruwaddacon Bay. There have been occasional sightings of seals in the bay. A small oyster culturing licence is established in the central part of Sruwaddacon Bay close to Pollatomish. No other commercial fisheries exist in the bay. Assessments by the Central Fisheries Board in 2006 and 2008 indicated a low level of abundance of resident fish, which is less than in other estuaries because of the strong flooding, non-deposition flow regime. Migrating Atlantic salmon were recorded, with adult salmon moving upstream from June to September and smolts going downstream from between March and May.

The marine sections of the proposed pipeline are the lower crossing of the bay, which would have a span of 600m through a shall shelving sandy bay into a weathered psammite bedrock on the eastern shore; the upper crossing with a span of c900m through marine or silty sands and mixed sediments on the shore lines; and a small embayment at the mouth of the Leenamore River. All marine sections are in the Glenamoy Bog Complex cSAC and the Blacksod Bay/Broadhaven Special Protection Area, and include inter-tidal sand flats, salt marsh and estuarine habitats which are listed in Annex I of the Habitats Directive but which are not listed as qualifying habitats for this cSAC. The only qualifying marine Annex II species lists for the cSAC is Atlantic Salmon.

The proposed construction method involves micro-tunnelling for the crossings of the bay and an open trench at the mouth of the Leenamore River. An intervention pit may be required if there are difficulties during tunnelling, necessitating a temporary jetty in the upper part of the bay. The tunnel boring machine would revolve at 2-3 rpm and would produce little or no noise in the marine environment. Potential impacts on the marine environment may arise from releases of the drilling fluid (bentonite) and the loss of surface habitat along at the Leenamore River. The construction of an intervention pit could have a potential impacts on the marine environment arising from noise and disturbance around the pit and jetty, from an increase in suspended sediment load, from potential spills from vessels, from the obstruction of flow in the main channel, from the scour of surrounding sediments, and from a change in the channel course. The impact of scour would vary according to the location of any intervention pit relative to main channel in the bay. The impact was modelled for a worst case scenario, with scour footprints of up to 5,700m² to a depth of 7.5m on the lower crossing and 1,600m² and to a depth of 5m on the upper crossing. The scour would distribute sediment immediately outside the scour footprint with a localised increase in suspended solids close to the structure. The scour is expected to be temporary and will naturally infill on removal of the pit.

Measures to mitigate the potential impacts will include –

- the monitoring of bentonite usage through materials balance calculations during drilling with pumping to cease if there is any loss. The impact of any emission will therefore be imperceptible and temporary.
- The surface sediments at the Leenamore River will be reinstated in a manner similar their original condition on completion of construction so that any impacts will be moderate and temporary.

Measures to mitigate the impact of a surface intervention pit will involve –

- Works will be supervised by marine environmental scientists.
- In areas of stronger flow the impact of scour will be reduced by protecting the surface sediments with sandbags of concrete matressing.
- Backfilling any scoured areas
- Maintaining the flow within the main channel to minimise interruption of fish migration.
- The construction will not commence while noise sensitive marine mammals are in close proximity

- Surface sediments disturbed at the temporary jetty will be reinstated in a manner similar their original condition on completion of construction so that any impacts will be slight and temporary.

In conclusion, the microtunnelling will avoid a significant impact on the marine environment of Sruwaddacon Bay. A surface intervention pit would effect a relatively small area of the bay by virtue of scour. However the changes would be temporary and of low significance, as the scoured area would naturally fill and the disturbed sediments have a low abundance of invetebrate fauna, and the areas which would be most physically effected by scour from a pit would be outside the foraging area for birds. There will be no effect on marine mammals or migrating fish from tunnelling, and any effect from an intervention pit can be minimised by the specified mitigation measures. It is concluded that the proposed onshore gas pipeline can be constructed and operated without a significant impact on the marine environment.

3.2.3 Submission regarding eco-hydrology by Eileen McCarthy

Ms Eileen McCarthy made a submission to the oral hearing on eco-hydrology/eco-hydrogeology. She outlined her qualifications in Earth Science and Hydrogeology, and her experience in assessing development in peatland habitats. The assessment presented by the applicant is based on desk studies, site walkovers, the results of boreholes and piezometers and the development of a conceptual hydrological model.

The route of the proposed pipeline through Rossport Commonage is close to the topographic divide between two surface water catchments. Two bog pool complexes were recorded in the vicinity, one within the cSAC approximately 250m east south-east of route; and another approximately south of the route in the non-cSAC part of the commonage. Both are perched systems which depend on rainwater for their water supply. The complex of bog pools to the north-east of the pipeline route within the cSAC will not be effected as they are in a separate catchment. The large pools in the non-cSAC section of the commonage will be avoided by the route of the pipeline. Two flushes were identified approximately 200m north-east of the pipeline within the cSAC. The source of water to these flushes is near surface flow. The route is within the catchment of one of the flushes, but surface water flow towards it will be maintained during construction.

The peat along the pipeline route was found to conform to the simple two-layer model of an upper acrotelm with high permeability and a lower catotelm of humified peat with low permeability. Rainfall drains through the upper layer in line with topography. However the two layer model would not apply in areas of cutover or eroded bog where the upper layer has been removed or damaged. The proposed stone road construction could create rapid vertical drainage or increased longitudinal or lateral flows which require mitigation by design.

The proposed mitigation measures will aim to maintain the principal hydrological flows in the acrotelm and the reinstated turve surface will be contoured to maintain the existing water flow. Long term drainage pathways to the flush north-east of the pipeline route which is in the cSAC will be preserved by the construction reinstatement. The risk of the pipeline route acting as a drainage pathway will be mitigated by the construction of peat plugs along the route and the maintenance of

saturation conditions along the pipeline. The stone road will be comprised of a silaceous material with a similar, slightly acidic pH as the peat. In contrast to the previous works at Glencullin, the turves will be stored in a single layer on bog mats and reinstated by hand in a patchwork array with any gaps filled by hand. Turves will be used to construct slightly elevated 'wings' across the route to block flows of surface water along the edge of the reinstated surface. There are no groundwater fed flushes along the pipeline route.

It is stated that it can be concluded beyond a scientific doubt that the integrity of the European sites and the habitats along the route will not be adversely effected by the development.

3.2.5 Responses to questions by the applicant

In response to questioning by Mr Conor O'Donnell on **3rd June 2009** Mr Turlough Johnson stated that dewatering of the trench may have to occur locally during construction.

The applicant submitted details on **4th June 2009** regarding the a leak from the umbilical pipe. The umbilical would be tested to 1.5 design pressure and would be protected from interference by cover. It would be regularly inspected and a leak detection system would be in place. In the event of a leak, up to 18,200 litres of fluid could escape, consisting of 3,300l of water, 6,400l of a glycol/water mix, and 8,800m of methanol. The latter fluids would be biodegrade. They are not classified as dangerously eco-toxic and would not bioaccumulate.

In response to questioning by Mr Cornelius King on **9th June 2009** the applicant stated that a leak of methanol from the pipeline could result in a maximum release of 18,200 litres, and that it would consist of biodegradable substance. The hydraulic fluid in the pipeline would be a mixture of water and glycol and would also be readily biodegradable.

The applicant made a submission to the Oral Hearing on **11th June 2009** which was stated to be a response to the submission from the Department of the Environment, Heritage and Local Government. Ms Jenny Neff stated that the working area would cover only 0.6h of intact blanket bog in the cSAC (150m of route length by a working width of 40m) which corresponds to only 0.028% of the total area of the cSAC of 12,901ha. The electrical conductivity profile within the flushes is similar to that elsewhere in the bog and does not imply that the flushes are fed by groundwater. The stone road construction method will also mitigate effect on subsurface flow due to the installation of the peat plugs and basal impedance layer. The bog pool complex to the north east of the pipeline route in the cSAC is 180m distant and is on higher land. It is a rainwater fed system and so would not be effected by the development. The department's conclusion that the rhynchosporion depressions are found in the vicinity of the pipeline in the cSAC is disputed. Walkover surveys of the site did not reveal any indications of bogholes or peat pipes. The location of the route near the catchment divide would militate against the formation of peat pipes there. If they area encountered during construction cross drains will be installed to ensure continuity of flow. The proposed peat plugs will consist of matrix of peat and stone and will not include clay. Turves will be stored in a single layer only, in contrast to the practice at Glencullin. The cutting head of the tunnelling equipment beneath the bay would

revolve slowly and would not emit noise or vibration that would significantly effect marine fauna. The ECJ cases cited by the department concerned projects which would have a far more profound impact on European sites than the proposed pipeline and so do not provide relevant precedents.

Mr Ian Wilson submitted the tidal action was the main determinant of sedimentation rates in Sruwaddacon Bay, and that levels were in balance over time and unlikely to vary by more than 2m. It was reasonably certain, therefore, that the pipeline under the bay would not be exposed.

A submission was made regarding the Srahmore peat deposition site. It stated that the waste licence and the planning permission for deposition there issued by the EPA and the board respectively in October 2004 superseded the rehabilitation measures for Srahmore approved under the IPPC licence for the overall works at Oweninny, of which the Srahmore site comprises no more than 2% of the total area. The current proposal accords with that previously approved in 2004. It does not seek to reinstate a bog habitat. Nevertheless it would provide for re-vegetation and re-colonisation of a bare cutaway bog by certain species and so would improve biodiversity in the area.

A copy of a map showing the route of the gas pipeline in the context of the landcover of the cSAC at Glenamoy prepared under the EU's CORINE programme was submitted by the applicant. It shows the route crossing the south-western margins of the site, through an area described in the CORINE database as exploited lowland bog. The rest database was cited to the effect the overall area of the site over 12,000ha of which 17% was covered by exploited bog and 65% by intact bog.

The applicant responded to questions put by the DOEHLG by referring to information previously submitted. It also stated that the Habitats Directive was applied by Irish law by Articles 14 - 16 and 31 of the EC (Natural Habitats) Regulations 1997 and by sections 182D(10)(c-d) of the Planning and Development Acts 2000-2006.

3.2.6 Closing submission

The applicant stated that the development would not have a significant adverse effect on the European sites and that the information submitted by the applicant was adequate to demonstrate this beyond a reasonable scientific doubt. Article 6(4) of the Habitats Directive did not, therefore, apply. In any event there was an alternative to the present proposal which was the pipeline route to which the 2002 ministerial consent referred.

3.3 Other observations and submissions

3.3.1 Submissions from the Department of the Environment, Heritage and Local Government

The submission from the DOEHLG to the Oral Hearing on 26th May 2009 was based on its written observation to the board. Its content relating to natural heritage can be summarised as follows –

Concern was expressed regarding the cumulative impact of the onshore pipeline and the associated gas terminal and the alteration of the bog rehabilitation programme of

the Srahmore peat deposition site. The impact of the proposed pipeline may be significantly greater than expressed in the EIS and may constitute an adverse impact on the integrity of the cSAC.

The pipeline route traverses 5.7km of peatland, including 800m of lowland blanket bog in the cSAC. Blanket bog is an Annex 1 habitat under the Habitats Directive, and is a priority habitat if active. Depressions on peat substrates of the *Rhynchosporion* are also Annex 1 habitats. The EIS did not contain adequate information on rhynchosporion depressions or Juniper habitats, or on the flush system to the north east of the pipeline route in the cSAC. The development is likely to have an impact on the cSAC due to the excavation of the trench for the pipeline, the removal of peat and the insertion of stone. The impact is likely to extend beyond the immediate pipeline route due to interference to water movement systems from works and permanent structures, and thus to desiccation, shrinking and tearing of the bog. Peat instability or collapse is stated in the reports to be a high risk. It is therefore the view of the Department of the Environment, Heritage and Local Government that the possibility of adverse impacts from this project on the integrity of the cSAC cannot be ruled out and that the provisions of Article 6(4) of the Habitats Directive would need to be applied. If consent is granted no carbonate rock material should be used in construction in the peatland and a peatland geotechnical expert should be employed during construction and a monitoring and contingency programme should be agreed with the department regarding peat stability and erosion.

The potential impact of the development on adjacent areas of the cSAC has not been adequately addressed and the habitats there have not been adequately mapped. Those habitats include flushes, head water streams, bog pools and rhynchosporion depressions, blanket bog, including active blanket bog, and juniper habitat. The deposition of peat at Srahmore would not constitute a blanket bog habitat recreation measure. The proposed gas pipeline would have a permanent drainage impact on the habitats outside the cSAC which include intact blanket bog and a system of bog pools which are rhynchosporion depressions within 10-20m of the pipeline wayleave. The pool system is likely to be effected by the works and permanent road through peat collapse, drainage and desiccation. The side casting of considerable quantities of peat destroys vegetation and presents a risk of siltation. The Habitats Directive requires Ireland to maintain the blanket bog habitat resource in favourable conservation status, which means that there should be no diminution of the geographic range nor in the extents of any Annex I habitat.

The evidence from the Upper Glencullin cSAC is that the proposed development is likely to have a permanent impact on the blanket bog habitat. Significant negative impacts have arisen in there including tension cracks adjacent to the pipeline route there which is a significant negative impact which may increase in scale and intensity. The drainage effect will result in the loss of characteristic bog vegetation. There is also a reduction in groundwater flows reaching one of the two flushes in the bog.

The department has information on the broad conservation aims and objectives for the cSAC. Typical species and habitat structure and function are required to be conserved.

Sruwaddacon Bay is part of the Blacksod Bay/Broadhaven SPA. The proposed development has the potential to effect birds through direct disturbance or indirectly through its effect on sediment distribution. The mitigation measures set out in the EIS should be fully implemented. The impact of noise from tunnelling on marine species should be addressed.

The department made a written submission to the hearing in response to the addendum to the EIS submitted by the applicant. It includes a study investigating whether the flushes north east of the pipeline route in the cSAC were fed by surface water or ground water. On the basis of vegetation and electrical conductivity recorded there it was concluded that it was possible the part of the flush system may be fed by groundwater but further field investigation would be required to determine the from whence the flush systems are enriched by water. The submission states that the insufficient data has been submitted to determine the impact of the development on bog pools and flushes. It states that the bog pools are Annex I habitat dystrophic lakes and the rhynchosporion depressions occur along the pipeline route in the cSAC. Peat pipes need to be located and mapped to determine potential drainage routes and impact on subsurface hydrology. Further information is required on the composition of the peat plugs. The replacement of turves will not prevent surface water infiltration and their storage on the bog for three months is likely to damage vegetation underneath.

The department made a written submission to the hearing, indicating that European Court of Justice rulings indicated the even small areas could not be discounted in considering the integrity of a Natura 2000 and provided copies of cases C209/02 and C418/04, and C127/02 (the Waddenzee case). The part of the submission which referred to discussions between the department and the European Commission were formally withdrawn at the hearing.

In response to **questioning** the department commented –

That alterations to surface drainage could effect the deep structure of a bog

There are rhynchosporion depressions and dystrophic lake systems in the vicinity of the pipeline route

The proposed mitigation measures of storing turves in a single layer; watering them; and reinstating by hand in an offset pattern would be beneficial but have not been shown to ensure successful reinstatement of the bog. The issue of whether the pipeline route would be outside the catchment of the bog pools is not the only factor to be considered as to whether or not the development would have an adverse impact on that pool system.

It would be for the applicant to determine a method of finding peat pipes in the bog which was not destructive of habitat there

Peat loses its fibrous structure when its excavated and so it would be difficult for it to act as a plug in the stone road

To be active, a bog habitat does not have to be pristine

Having regard to the decisions of the ECJ in cases C-127/02, C-209/02, C-418/04, any impact on a designated site should be regarded as significant under the terms of Article 6 of the Habitats Directive. There is no 'de minimis' rule. The cumulative effect of small scale incursions into a European site could have a very significant adverse effect.

The **closing statement** from the department Services referred to the Waddenzee judgment of the European Court of Justice as authority for the standard against which to judge the possibility of adverse effects on European sites under article 6 of the Habitats Directive, which is that the competent authority has to conclude beyond reasonable scientific doubt that such effects will be absent before authorising a project under article 6(3) of the directive. On this standard the possibility of adverse effects on the integrity of the Glenamoy Bog Complex cSAC cannot be ruled out. The proposed development will traverse priority habitat. It would involve physical intrusion and removal of habitat from the site. The proposed construction technique and mitigation measures are innovative and unproven and their impact on ecology and hydrology is uncertain, in the absence of any data from another Natura 2000 site. The procedure set out in article 6(4) of the directive should therefore be applied, and consideration should be given to the possibility of alternatives to the development; to whether there are imperative reasons of over-riding public interest to proceed with the development as proposed; to the provision of compensatory measures; and to obtaining the opinion of the European Commission.

3.3.2 Mayo County Council

The council made a submission to the oral hearing which was based on its written observation to the board. *Inter alia*, it stated the planning authority is satisfied that it has been shown beyond reasonable scientific doubt that the development would not have a significant adverse effect on the European sites, but the board should satisfy itself that the stone road construction method would not affect the blanket bog; that adequate survey information had been submitted; that an appropriate assessment was carried out and that an environmental management plan was prepared.

3.3.4 Other observers

Submissions to the oral hearing from observers raised concerns with the impact of the development on the natural environment which were similar to those raised in some of the written observations on the application. They arose particularly in relation to –

- The removal of intact blanket bog would inevitably have an impact on the cSAC. The proposed stone road would interfere with the hydrology of the bog.
- Breaches of environmental legislation protecting the European sites, in particular the Habitats Directive, the Birds Directive and the EC (Natural Habitat) Regulations. Under Habitats Directive, as interpreted in the case of Commission vs. Ireland in the ECJ (C418/04) national authorities can only authorise projects in European site where no reasonable scientific doubt exists as to the absence of an adverse effect on the integrity of the site in compliance

with the precautionary principle in Article 174.2 of the EC Treaty and the decision of the ECJ in C/127-02. Article 6(4) of the directive only applies if there is no alternative to the project and an over-riding public interest in its execution. A grant of permission would also be contrary to the Ramsar and Aarhus Conventions and the EIA directive amended in 2003.

- The Environmental Impact Assessment for the project was inadequate and does not comply with the EIA directive. The overall Corrib Gas scheme has been subject to project splitting. The submitted EIS did not contain adequate baseline information on the environment. It was asserted that survey work carried out by the applicant on Rossport commonage was in breach of a court order. The Environmental Impact Statement was inadequate as it did not consider the impact of works at Glengad which have been carried out and the indirect impact of road improvement works which are required by the proposed project. Permission cannot be retrospectively granted for development which is subject to the EIA directive, as decided by the ECJ in C-215/06.
- Mitigation measures cannot be determined after consent has been given for a project, and so cannot be the subject of a condition on a permission, as set out in circular PD5/08.
- Concern was expressed regarding the impact of development on shellfish; and brent geese and sand martins at Glengad, as well as on cetaceans.

3.4 Assessment

3.4.1 Terrestrial and Avian Fauna

The surveys carried out by the applicant on the route on the proposed pipeline onshore recorded evidence of various faunal species that would be of particular ecological interest, including otters, badgers, frogs and three species of bat (soprano pipistrelle, Leisler's and Daubenton's). Numerous bird species were also recorded, including the sand martin colony at Glengad, although the bird life in Sruwaddacon Bay is restricted for such an inter-tidal area and it is not part of the Special Protection Area at Broadhaven Bay. The operational phase of the development would be unlikely to effect fauna. The works required to carry out the development could give rise to disturbance that would impact upon faunal species. However the works would be limited in duration and extent, and standard mitigation measures would be carried out to limit such impacts. These measures are outlined in the submitted environmental impact statement. Furthermore any works which would directly impinge upon protected species would be subject to the specific controls set out in the wildlife acts. The sand martin colony at Glengad inhabits burrows in low cliffs of till, an undifferentiated material which would be capable of reinstatement without significant alterations in its character. It is also the most widespread overburden material in the county. The proposed works would affect only a proportion of the cliffs. The sand martin, as a migratory bird, could not be regarded as incapable of tolerating any disturbance. It is not likely, therefore, that the works at Glengad would be likely to have a significant adverse effect on the colony of sand martins there. Having regard

to the foregoing, it is not concluded that the development would not have a significant adverse impact on animals and birds in the area.

3.4.2 Impact of pipeline failure on natural heritage

The impact of a failure in the gas pipe on natural heritage would be adverse and serious. However its impact on human health and safety would be a greater concern in this regard. The additional impact on natural heritage would not add significantly to the adversity of the consequences of such a failure. The applicant has submitted information regarding the volume and chemical characteristics of fluid that could be released during a rupture of the umbilical, as well as measures that would render such a rupture unlikely. Given their restricted volume (18.2m³) and biodegradable nature, the fluids which could be released are not considered to give rise to a significant threat to flora or fauna along the route.

3.4.3 Submitted description of habitats

After inspection of the site, it is considered that the information contained in the submitted environmental impact statement, and the subsequent addendum presented by the applicant at the oral hearing, provided a reasonably accurate and comprehensive description of the habitats located along the pipeline route.

3.4.4 Agricultural lands

A significant proportion of the proposed works along the route of the onshore gas pipeline would take place on improved agricultural or wet grassland at Glengad, and at Rosspoint from the landfall of the lower crossing of the bay to the edge of the commonage. The habitats that would be disturbed by works in those areas are widespread and are not of particular ecological interest, notwithstanding that the grassland at Glengad is within the cSAC. They would be capable of being restored after the proposed works within a reasonably short period. The loss of the grassland at the Landfall Valve installation and the road would not have a noticeable impact on natural heritage. It is not considered, therefore, that those works would have a significant impact on the ecological value or natural heritage of the habitats and lands there.

3.4.5 Sruwaddacon Bay

The proposed works would involve tunnelling under the bay. The proposed method of tunnelling would involve a slow rotating drill head that would give rise to only low levels of noise and vibration that would not be likely to have a significant impact on marine mammals. The launch and reception pits for both the upper and lower crossings would be set back by between by a minimum of 35m from the shores of the bay and would not directly impinge upon the habitats there. The lubricant used for drilling would be an inert clay which, if a restricted quantity escaped during works, would not have a significant impact on the chemical characteristics of the surrounding water. It is not considered, therefore, that the works envisaged would have a significant impact upon birds, fish, marine mammals or other flora or fauna or habitats in the bay.

A greater possibility of impact might arise if there was a need to sink an intervention pit in the bay during tunnelling. This would arise from the possibility of direct loss of habitat, disturbance, scour, the release of suspended solids and obstruction of migratory species. There would also be disturbance from the anchoring to the shore of the floating pier that would be needed to service vessels involved in inserting the pit. The survey information regarding the oceanography and ecology of the bay indicated that it was a dynamic and rather harsh environment. The pattern of tidal and freshwater flows limited the macro-invertebrate population and thus the feeding potential for wading birds. It also gives rise to a variable pattern of deposition and sedimentation within the bay. Migration of salmon occurs through the bay, but not spawning. Given these characteristics of the receiving environment, the ecological community within the bay would be robust and unlikely to be suffer a significant adverse impact from the insertion of an intervention pit. Any alterations to the conditions in the bay from such a pit would be likely to be restored within a very short period after the completion of the works.

The works proposed to allow the crossing of the Leenamore River would involve disturbance to small areas of salt marsh along the fringes of the bay. While salt marsh is a habitat listed in Annex I of the Habitats Directive, it is not a qualifying habitat for the Glenamoy Bog Complex cSAC. This is unsurprising as the extent of salt marsh here is very small. The significance of the residual risk of loss of this habitat (after the proposed turving and reinstatement) is correspondingly small and would not be relevant to the conservation objectives of the European site.

3.4.6 Bog habitats

Blanket bog habitats on the pipeline route

A substantial part of the route of the proposed pipeline runs through blanket bog habitats, amounting to c3.4km or 37% of the length of the onshore pipeline. Most of this part of the pipeline route runs parallel to the northern shore and Sruwaddacon Bay and coast road. It includes a shorter stretch by the southern shore of the bay after the upper crossing. It skirts the area along the shore where residential and agricultural use have replaced blanket bog, and runs through the area where peat harvesting and grazing has had a significant impact on the ecological characteristics of the remaining bog. Thus most of the bog traversed by the pipeline route can be properly characterised as cutover or eroding bog. The EIS states that 6% or c450m of the route crosses 'intact' blanket bog. This occurs in three discrete parts of the route which are set further back from the road and tracks into the bog than the adjoining cutover and eroded peatland.

The applicant submitted at the oral hearing that none of the areas of intact bog, including the one in the cSAC, could not be regarded as 'active' blanket bog as grazing by livestock and the impact on hydrology of nearby turf cutting would restrict the extent to which they supported peat formation. The Department of Environment, Heritage and Local Government, however, made the point that blanket bog did not have to be pristine to be regarded as active. There was also disagreement as to whether bog pools in the vicinity of the pipeline route would qualify as the Annex 1 habitat *rhynchosporion depressions on peat substrates*, and whether the flushes to the north-east of the route in the cSAC are fed by ground water or surface water flows.

The analysis of the impact of the development set out in the EIS and the applicant's submissions is based on the model of blanket bog under which it is comprised of a saturated catotelm layer of peat that inhibits drainage, and the upper acrotelm which contains the living matter and allows drainage across the surface of the bog. That model is considered to be reasonable and in keeping with the observations made on site. The EIS cited the previous construction of a gas pipeline by Bord Gáis Éireann in blanket bog at Upper Glencullin to demonstrate the likely success of the construction method and mitigation measures proposed in the application.

Potential impact on blanket bog habitat

The development would have the potential to effect the blanket bog habitats which it would cross through the removal of peat during construction and its possible replacement with material of a different chemical composition; through alteration of the bog's deep structure and drainage characteristics; and through disturbance and compaction of the acrotelm; and.

Hydrology and deep structure of blanket bog

The applicant has clarified that the material from which the stone road is constructed will be of a similar chemical composition and acidity to the surrounding peat. This would be adequate to avoid adverse impact in this regard.

The maintenance of the hydrology of the bog is essential to protecting its ecological character. This arises both from the dependence of the biological processes which generate and sustain the typical floristic community on saturation, and because of the direct damage that would be caused to the habitat by failures in ground stability. The removal on catotelm peat would not amount to a significant negative impact on natural heritage in itself, provided it could be replaced by a material which would maintain the drainage characteristics of the bog, and so protect its structure and the biological processes which occur in the acrotelm. The laying of the pipeline in a stone road with lateral peat plugs, over a basal layer of peat, is intended to do so. After a review of the reports on the progress of the regeneration of the bog at Glencullin and an inspection of that site, it is considered that the experience there provides empirical evidence that the proposed stone road construction method allows for pipelines to be laid in bog without degrading the fundamental structure of the blanket bog and causing extensive dessication of peatland on higher and lower ground in the vicinity. However the inspector should therefore satisfy himself, after advice from Mr O'Donnell, that the proposed construction method would be adequate to maintain the hydrology and ground stability in the blanket bog that the pipeline would cross before concluding that it would not have a serious negative impact on the ecological character of that bog.

The applicant has mapped and submitted information on the topography of the area around the route of the pipeline. The submitted details are accurate in that they show that the route generally follows a local ridgeline in the bog. Surface and ground water flows downhill and the flows accumulate. Therefore, on the assumption that the proposed construction method can maintain the stability and the drainage characteristics of the blanket bog, it is unlikely that the pipeline would have a significant impact on the flushes to the north east of its route in the cSAC, whether they are fed by ground water or surface water flows, or on any pools that were large enough to constitute dystrophic lakes or ponds in the vicinity. The issue of peat pipes

in the bog was raised in the EIS and in the oral hearing. The provision of cross flow across the stone road is feasible and can maintain the function of any peat pipes which are encountered during the carrying out of the development. The route of the pipeline avoids directly impinging on the bog pools. As reasonable measures have been proposed to maintain ground saturation and surface water flow, the development is not likely to affect those pools, whether or not they should be classified as a *rhynchosporion* habitat separately from the surrounding bog.

Impact on the acrotelm

The mitigation measures to address concerns about the disturbance of surface layer of intact blanket bog habitat include the removal, storage and reinstatement of turves to allow the acrotelm to regenerate over the stone road. The proposed mitigation measures conform to description of the structure of blanket bog contained in the EIS. The previous experience with similar mitigation measures at Upper Glencullin indicates that the replacement of stored turves can allow the regeneration of the acrotelm above the stone road and pipeline. However it also shows that such regeneration is not assured and can be inhibited by the development of preferential surface drainage routes, and that blanket bog is vulnerable to compaction due to storage of turves along the side of the working area. The applicant proposes additional mitigation measures in this case to address these issues, including the storage of turves in a single layer which will be wetted, and reinstating the turves by hand in a transverse pattern, with slightly raised 'wings' along the edge of the restored area to avoid the erosion of the reinstated acrotelm by surface water flow.

The revised construction methods proposed to address the concerns regarding the impact on ecology of the pipeline at Glencullin are reasonable and are soundly based in the description of the structure of blanket bog contained in the EIS and the experience of regeneration of habitat after the previous works. It is therefore considered that they are likely to be successful by allowing the regeneration of the acrotelm of the bog over the stone road containing the pipeline, and thus ensuring that the extent and quality of the blanket bog habitats in the area of the proposed pipeline was not diminished by its construction.

Conclusion

The conceptual model of the physical structure and ecological function of blanket bog proposed by the applicant, as well as its description of as the potential impact of the development and the likely efficacy of the proposed mitigation measures, are all soundly based on the empirical observations reported in the environmental impact statement and are in keeping with those which I made on inspection. In particular the previous example of the pipeline construction at Glencullin illustrates that the stone road construction method can be carried out without significant impact on the physical structure of blanket bog. Therefore, if the inspector is satisfied that the construction method proposed in this case would be adequate to maintain the stability of the blanket bog through which the pipeline would pass, then it can be concluded that the proposed development will not have an adverse impact on the bog at significant distances beyond the proposed working area. The same conclusion can be stated with regard to the impact of the development on areas of cutover and eroding bog whose acrotelm have already been significantly modified by anthropogenic activity. Furthermore, the situation of the pipeline route at the edge of the blanket bog would avoid the possibility of fragmentation of the habitat. It is therefore

unlikely that the development will have an adverse, long term impact on the ecological value of the blanket bog habitats through which it would pass.

Nevertheless, while persuasive arguments have been advanced to support the mitigation measures proposed to remedy the adverse impact which might arise from disturbance and compaction on the acrotelm of intact areas of blanket bog, or those might arise if a peat pipe is encountered during construction, their usefulness of those measures has not been demonstrated by any previous development carried out in a blanket bog habitat. Therefore it cannot be stated beyond any reasonable scientific doubt that the negative impact which might arise from compaction and disturbance of the acrotelm in intact blanket bog or from uncovering a peat pipe would be fully mitigated, although they probably would be. In this regard, the technical advice of the Department of Environment, Heritage and Local Government is preferred to that of the ecological experts who appeared on behalf of the applicant. An attempt to resolve this residual doubt by seeking further information would not be helpful, as gaining conclusive information on the matter would necessitate invasive investigations in the bog that would themselves give rise to the same risk of damage to the bog.

It is therefore concluded that it has been demonstrated that it is unlikely that the development would have a significant adverse impact on the blanket bog habitats which it would traverse. If the proposed construction method can adequately maintain the hydrological regime and the stability of the ground, then it can be stated with a sufficient degree of certainty that the development would not have an adverse impact at a significant distance beyond the proposed working area. However, as the measures proposed to mitigate the localised impact of the construction have not been demonstrated in previous projects, notwithstanding their sound conceptual justification, it cannot be stated that it has been shown beyond a reasonable scientific doubt that no adverse impact on the intact blanket bog habitats which it would cross.

3.4.7 Other habitats

The route of the proposed pipeline crosses lands that have been subject to coniferous forestry plantation from chainage 90.4 to the site of the terminal at Bellanaboy. Although much of this area retains peat soil, it is not considered to be of significant ecological value. The main concern regarding development here is that adequate measures are taken, including the provision of settlement ponds, to avoid the mobilization of disturbed peat was not released into surface water bodies. The construction methods and mitigation measures described in section 13.5 should be adequate to avoid negative effects on freshwater habitats in the area.

3.4.8 Implications of the development for European sites

European sites

Sruwaddacon Bay is part of the Special Protection Area at Broadhaven Bay, site code 000472. For the reasons stated at section 3.4.5 above, it has been concluded that the development will not have an adverse effect on birds in the bay, and so it would not have a significant adverse impact on the conservation objectives of that European site.

Part of the proposed development would be within the candidate Special Area of Conservation at the Glenamoy Bog Complex, site code 000500. According to the site

synopsis the cSAC was selected for the following Annex I habitats: active blanket bog; machair (both of which are priority habitats); sea cliffs; wet heath; Juniper scrub; transition mires; dystrophic lakes; and rhynchosporion depressions on peat substrates. It was also selected for the following Annex II species: Atlantic salmon; marsh saxifrage; liverwort petalwort; and *drepanocladus vernicosus*.

Appropriate assessment

The legislation on such sites is reviewed at section 2.1.2 above. It is undisputed that the development is a project which is not directly connected with or necessary for the management of the site (i.e. the cSAC) and that it is likely to have a significant effect thereon. In the first instance, therefore, the Habitats Directive requires that it be subject to an appropriate assessment of its implications for the conservation objectives of the site. Secondly, the board, as the national consent authority, could only authorise the proposed pipeline if it has ascertained that it will not adversely effect the integrity of the site concerned.

The information submitted in the EIS and subsequently during the course of the environmental impact assessment of the project included extensive details on the physical and ecological characteristics of the existing environment within the cSAC and the works proposed there. The potential impact of the development, the proposed mitigation measures and the likely residual effects on species and habitats within the site were described by persons with appropriate technical expertise. Adequate information and technical advice is therefore available to allow an appropriate assessment under the habitats directive to be made.

Impact on the integrity of the cSAC

The Waddenzee decision of the European Court of Justice (C-127/02) establishes that, for a national consent authority to ascertain that a project will not adversely effect the integrity of a site, no reasonable scientific doubt should remain as to the absence of such effects. In this case, a doubt remains that the development may have some effect on the habitat in the cSAC because the mitigation measures proposed by the applicant have not been proven in previous projects in similar habitats. However, it does not follow from this conclusion that reasonable scientific doubt remains concerning the impact of the proposed project on the integrity of the site. The remaining doubt concerns the possibility that the construction of the pipeline would have localised effects on that part of intact blanket bog which it crosses in the cSAC. The relevant area of intact blanket bog would be small, measuring some 150m by 40m, and is at the edge of the site. The possible adverse impact there would not be of sufficient intensity or physical extent to impinge upon the integrity of a site of a scale of the Glenamoy Bog Complex, which is over 12,000ha in area. This context is illustrated by the extract from the CORINE landcover database submitted to the oral hearing, which shows the pipeline route crossing a very small, marginal area of the site which is characterised as exploited lowland bog, while some 65% of the site, or c8,330ha, as intact blanket bog. The possible localised impact of the pipeline is considered unlikely to be of long term significance, as the proposed mitigation measures will probably ensure the re-vegetation and regeneration of the designated blanket bog through which it would pass. I would therefore advise it should be concluded after the appropriate assessment of the proposed project under article 6 of the habitats directive that it would not adversely effect the integrity of the cSAC at the Glenamoy Bog Complex.

Position of the Department of Environment, Heritage and Local Government

This conclusion does not agree with the advice on the interpretation of the Habitats Directive provided by the DOEHLG. That advice rests on the premise that any significant physical intrusion of the blanket bog habitat should be regarded as an adversely affecting the integrity of the European site unless it has been proven otherwise by the results of monitoring of similar works elsewhere in a designated blanket bog site, otherwise the procedures set out in article 6(4) of the directive should apply. This approach is simple and coherent, and would preclude the possibility of the an approval for the development being subsequent challenge by the EC Commission under the directive. The board should give it serious consideration. Nevertheless, I do not agree with it, for the reasons set out below.

The department's position elides two separate concepts described in article 6(3) – that of a development *likely to have a significant effect* on the site, and that of a development where it has not been *ascertained that it will not adversely effect the integrity of the site*. If the directive was to make the consent procedure for any significant development *likely to have a significant effect* subject to the requirements of article 6(4) then it could have done so explicitly. This would render superfluous the role of national consent authorities in the carrying out or review of an appropriate assessment of any project. The directive does not do so, and a duty remains on the board to ascertain itself whether the proposed development will not have an adverse impact on the integrity of the site.

The requirement to address the possibility of an adverse impact on the integrity of the site implies that a possible impact should be considered in relation to the site as a whole. Thus that the extent of the impact of a habitat that is subject to a conservation objective of the site is relevant to the assessment of the importance of the impact on that habitat which a project might have.

The department is a prescribed body for the purposes of applications for approval under section 182C of the planning acts with particular expertise in relation to ecology and its advice in that regard should be given particular weight, as recommended in the previous section of this report. However it has no particular authority in relation to the interpretation of laws, nor in the assessment of the overall impact of a development on the proper planning and sustainable development of the area. The department, in its submissions in the oral hearing, argued that the directive did not allow projects in a European site to be exempt from the operation of article 6(4) on the basis of their small scale or limited impact, because the cumulative impact of many such small projects could well be substantial and adversely effect the integrity of the site. Therefore all proposed physical interventions in the site should be approached in a similar way under article 6 of the directive. However this argument fails to have regard to the particular role and expertise of the board in distinguishing between different types of proposed development, their likely cumulative impact and their contribution to the wider goals of public policy. The gas pipeline proposed under this application is a piece of infrastructure which will facilitate a specific project which is in keeping with the policies of the government and the provisions of the development plan. There is no prospect of a series of such pipelines being built in the Glenamoy Bog Complex, as no other such project is envisaged in either national or local policy. A grant of approval in this case would

not establish a precedent for a permissive approach on the matter. The impact of the proposed pipeline would not exacerbate the nature or extent of the impact of any other development affecting the site. Its cumulative impact would be no more than the sum of its impact and that of any other project. There is no reason or justification to take into account effects on the European site that would not arise either directly or indirectly from the development which is actually proposed, but which are ascribed to some sort of categorical imperative that a consent might create. The decisions of the European Court of Justice cited by the department do not appear to support its position in this regard.

Conclusion

It is therefore concluded that European and national legislation places a requirement on the board as a national consent authority to consider, after an appropriate assessment in view of the site's conservation objectives, whether a project would adversely effect the integrity of a site. It would not be in keeping with the provisions of the article 6 of the Habitats Directive to apply the procedures in article 6(4) to every case that would be likely to have a significant effect on the site until such consideration was completed. In its consideration that board should have regard to the extent of the direct and indirect impacts of the development on the site as a whole, but can distinguish between projects on the basis of the likelihood of a cumulation of impacts from similar projects and their status in relation to public policy. Following this approach, the board may ascertain that the proposed development would not adversely affect the integrity of the cSAC at the Glenamoy Bog Complex Conclusion for the reasons described above.

In the alternative

If this advice is not accepted and it is concluded that the absence of adverse impacts on the integrity of the European sites in the area cannot be ascertained, I would advise as follows regarding the application of article 6(4) of the Habitats Directive –

- It has not been shown that there are no alternative solutions to the proposed pipeline. In particular, the applicant submitted that the route of the pipeline authorised under the section 40 of the Gas Act 1976 in 2002 would be a viable alternative that would not impinge upon the cSAC or on human health and safety.
- The cSAC at the Glenamoy Bog Complex bog complex hosts active blanket bog, which is a priority habitat under Annex II of the directive. Therefore the only considerations that would allow the project to be authorised would be those relating to human health and safety, or to beneficial consequences of primary importance for the environment. There is no evidence that the proposed pipeline is required for human health or safety or to provide beneficial consequences for the environment. Approval on the basis of other considerations of over-riding public importance would require the consent of the European Commission. The procedure for planning appeals set down in the EC(Natural Habitats) Regulations, 1997 is that a request for any such consent would be transmitted by the DoEHLG.
- The applicant proposed to set aside an area of 7ha of eroding blanket bog at Aghoos just outside the boundaries of the cSAC to allow it to regenerate to

intact or active status. On initial appraisal it appears that the scale and nature of this measure might be considered an appropriate compensatory measure in relation to the impact of the development on the cSAC.

3.5 Conclusion and recommendation

On the assumption that the proposed construction method can maintain the stability of the blanket bog which the pipeline would cross, the proposed development would not have a significant negative impact on flora, fauna or habitats in the area. There is a residual possibility that the development would have localised negative impacts on a small area of peatland within the cSAC at the Glenamoy Bog Complex. However given the extent of the potential impact, and its location at the margin of the site in an area where the blanket bog habitat has been substantially altered by turf cutting and livestock grazing, this impact would not have an adverse impact on the integrity of the site concerned. The impact of the development on natural heritage would not, therefore, require a refusal of permission or substantial alterations. If approval is granted then the following condition should be attached –

All mitigation measures described in section 12, 13 and 14 of main volume of the submitted environmental impact statement, in the addendum to that statement and in the submissions from the applicant to the oral hearing, shall be carried out in full during the course of development. Prior to the commencement of any works with the candidate Special Area of Conservation at the Glenamoy Bog Complex, the developer shall submitted and obtained the written agreement of the National Parks and Wildlife Service to detailed method statements for those works.

Reason: In order to protect the natural heritage of the area

4.0 Impact of the Proposed Pipeline on the Landscape

4.1 Environmental Impact Statement

Section 10 of the EIS is entitled *Landscape and Visual Impact Assessment*. The landscape in the area is characterised as gently undulating grassland which is extremely open due to the lack of topographical features or tall vegetation, with extensive views over the coast and bays. Its quality is assessed as 'very attractive'. The zone of visual influence around the site is mapped. It includes areas categorised in the county development plan as part of the North Coast Plateau and the North West Coastal Bog. The local road L1202 and the Regional Road R314 are designated as scenic routes. Protected views over Sruwaddacon Bay are also designated. The Landfall Valve Installation and the 0.5m high markers will be the only above ground elements of the pipeline. A strip of forestry will be cleared. From two points along the L1202 this will create a visual impact that is described as moderate negative and of low magnitude. Construction works will have a temporary visual impact arising from vegetation removal, ground disturbance, storage of plant and materials, and traffic movements. The visual impact is assessed as substantial negative, but temporary. Mitigation measures will include the retention of existing vegetation and earth banks on field boundaries, the reinstatement of the pipeline route using vegetation similar to existing, and the reinstatement of the rocky shoreline using natural/recovered rocks. Tree or shrub planting would be inappropriate in this open landscape. The access laneway to the LVI at Dooncarton should be allowed to regenerate naturally, to be hastened by the use of gravel and peaty material. Green fencing should be used during construction. After construction and reinstatement views for properties will be returned and the LVI will not be a prominent feature in the landscape. No significant residual landscape or visual impacts are predicted.

Appendix I provides details of the locations from which visual impact was assessed. Photomontages of the development in 6 views are provided in appendix A.

4.2 Submissions from the applicant

A submission from the applicant regarding landscape and visual impact was made by Mr Raymond Holbeach to the Oral Hearing on 20th May 2009.

Mr Holbeach outlines his qualifications and experience as a landscape architect. The landscape in the area is described as dramatic and scenic due to the juxtaposition of rounded uplands and the coast. The L1202 to the south of Sruwaddacon Bay is designated in the 2009 county development plan as a scenic route, with three scenic views over the bay designated for protection. The only above-ground facility to be provided is the landfall valve installation. It would be located at a reduced ground level in an expansive landscape, and will be a new but non-prominent feature. The unplanted strip within the coniferous forestry required for the pipeline would have no significant visual impact. After the revegetation of the route the operational phase of the development will not have a significant visual impact. The construction phase of the development will have a high level of change in the landscape. Mitigation measures will include screening of views from a number of directions towards the construction and the use of green protection fencing. The access road to the LVI at Glengad should be allowed to revegetate. No significant residual landscape or visual impacts are predicted from the development.

The applicant also submitted two architectural models of the proposed Landfall Valve Installation.

4.3 Other submissions

Mayo County Council made a submission to the oral hearing which was based on its written observation to the board. *Inter alia*, it stated that the development would have a temporary impact on the landscape, but its permanent visual impact would be minimal. Nevertheless the board should satisfy itself that the reasons advanced for not placing the Landfall Valve Installation underground are reasonable.

The impact of the development on the landscape was raised by parties who made written submissions to the board or those who participated in the oral hearing, but the issue did not attract a significant level of detailed comment.

4.4 Development plan

Policies PEH-LC 1 & 2 of the Mayo County Development Plan 2008-2014 seek to protect the character of the landscape in county Mayo and to facilitate appropriate development. Policy PEH-VP 1 is to ensure that development does not does not adversely interfere with designated views and prospects and the amenities of places and features of natural beauty or interest when viewed from the public realm. Views from the L1202 across Sruwaddacon Bay are so designated.

4.5 Assessment

The construction phase of the development will involve a significant negative impact on the visual amenities and rural character of the area. This impact would be reduced by some of the proposed mitigation measures, notably the screening of the working area in views from adjacent houses, but would remain considerable. However it would be a temporary impact would for the most part cease once the works had finished. It would be further diminished by the proper reinstatement of the route of the pipeline in accordance with the details set out in the environmental impact statement.

The only permanent visual impact associated with the onshore pipeline would be that emanating from the Landfall Valve Installation (LVI) at Glengad. The above ground elements of that installation, including the instrument cabin, the wire meshes over the valve actuators and the perimeter fence, would be up to 2.8m in height and would appear as small, industrial type features. However they would be located in a dished area set down c3m from the prevailing ground level, with a stock proof fence 1.35m high around the higher edged of the dished area. The slopes of the dished area and the surface of the access road would be grassed. Given its location in an extensive, open landscape with very limited screening from vegetation or other structures, the LVI will necessarily be visible from a wide area. The actual structures themselves would appear as incongruous elements in a rural and scenic landscape (apart from the stock proof fence, which would be similar to other such fences in the vicinity), and whatever visual impact they have would be negative. However the small size of the proposed structures; their situation in a dished area below the natural line of the slope

to the bay; their colouring in neutral colours; and the grassing of the access road and surrounding slopes will work to ensure that the scale of the visual impact of the permanent above ground structures associated with the LVI was slight. Lighting associated with the LVI could cause light pollution if it were left on for substantial periods, however section 4.3.4 of main EIS states that this will not be the case.

4.6 Conclusion and recommendation

Having regard to the temporary nature of the visual impacts arising from the proposed works to construct the onshore pipeline, and the small extent of the visual impact arising from the permanent above ground structures which area proposed, it is concluded that the visual impact of the proposed development, while negative, would not seriously injure the visual amenity or the landscape character of the area, nor would they contravene the above policies of the development plan. It would not, therefore, render the development contrary to the proper planning or sustainable development of the area.

If a grant of permission is made, then condition requiring the implementation of the mitigation measures set out in section 10 of the main EIS should be attached, which may be worded as follows –

The measures to mitigate the visual impact of the proposed development set out in section 10 of the environmental impact statement submitted with the application shall be implemented in full in the course of the development.

Reason: To protect the visual amenity and character of the area.

5.0 The Proposed Peat Deposition at Srahmore

5.1 Volume 3 of the environmental impact statement

Volume 3 of the environmental impact statement submitted with the application refers specifically to the Srahmore site and the proposed deposition of peat there

Section 1 of volume 3 of the EIS provides an introduction. It states that the site is owned by Bord na Mona and has been operated as a peat deposition site in accordance with the planning permission granted by An Bord Pleanála under Ref. PL16. 207212 in October 2004 and the waste licence granted by the EPA under Ref. W0199-01. 448,000m³ of peat excavated from the site of the terminal at Bellanaboy was deposited at Srahmore between 2005 and 2007. It is now proposed to deposit a further 75,000m³ from the route of the onshore gas pipeline project. The different source of the peat and its additional volume mean that the proposed deposition is outside the terms of the existing licence and permission. The site restoration works authorised under that permission and licence superceded the references to the Srahmore site in the rehabilitation plan for the Oweninny Peatland Works for which an IPPC licence was granted by the EPA (No. 505).

Section 2 provides a description of the development. It states that void space exists in the part of the site designated for the reception of peat from the Bellanaboy site in bays 1, 6 and 7 and in part of bay 2. The hardstand reception area of 5,112m² installed for the previous deposition remains in place, as does drainage infrastructure including 5 settlement ponds and a perimeter swale. The proposed works will involve the transport of peat to the site by road haulage vehicle; unloading it onto the hardstand reception area; then loading it onto low ground bearing pressure trailers; the trailers will then be driven to the deposition area along elevated internal haul roads consisting of spine roads of rockfill laid on a geotextile mat, with adjacent timber mat roads as required for the shaping and filling of peat. The deposited peat will be graded and shaped to ensure that water can drain freely to toe drains. A final cross fall of 1:35.5 from the centre of the peat in any bay is required to enhance drainage. The maximum depth of the peat at the centre of a bay would be 2m. Based on the volumes of previously deposited peat, there should be adequate space in bays 1, 2 and 6 for the proposed deposition. Additional space is available in bay 7 if required. An average 1,000m³ of peat would be deposited each day, using 12 trailers. Operation would be for 12 hours a day. The existing drainage system will be used. Temporary buildings and facilities will be required, including a wheelwash, weighbridge, a mobile fuel tank and a bunded lubricant oil storage facility. Operations would continue for a 3 to 4 month period. Temporary structures and facilities would be removed within 6 month of the completion of deposition.

Section 3 describes the site operating infrastructure.

Section 4 describes alternatives to the development. It states that the site provided an effective and sustainable solution to the deposition of peat from the Bellanaboy site upon which landforms have revegetated successfully and from which no deleterious matter was released to the surrounding environment. Use of either of the two licensed landfill sites in the county would require greater haul distances and would use

capacity needed for municipal waste. The excavated peat would be too wet for use as fuel in power stations, and too humified for use in horticulture. Direct transfer of peat from road haulage vehicles onto the deposition area would require the construction of an extensive internal road network that would alter the physical characteristics of the site to a much greater degree than the deposition method proposed.

Section 5 refers to human beings. It notes that there are c40 houses in the vicinity of the site along the regional road R313 to the north, and another 30 along the county road to the south, with no houses immediately to the west of the site towards the Muhnin River. No significant impacts on human beings from the proposed peat deposition are predicted.

Section 6 is entitled terrestrial ecology. The overall site is characterised as forming part of an area of industrial peat production with a footprint of over 1,000ha dominated by cutover bog. The particular areas upon which it is now proposed to deposit peat has bare peat surfaces or dry heath vegetation. Wet grassland vegetation dominated by rushes has become established on areas where peat was deposited between 2005 and 2007. The dominant habitats are considered to be of low ecological value. The Srahmore peat deposition site is stated to provide a unique opportunity to study the long term stabilisation and re-vegetation of deposited peat. The immediate impact of the proposed deposition will be minimal, with bare peat covering bare peat. Re-vegetation of the site will be a positive effect in the medium term. There will be no impact on designated sites in the vicinity. Mitigation measures to protect frogs and other fauna during works are described. The long term impact of the development on ecology is predicted to be positive, with the emergence of wet grassland habitat with greater biodiversity than the existing bare peat. Once the peat is entirely stabilized there may be an opportunity for re-wetting to allow peatland habitats of greater ecological value to form.

Section 7 refers to aquatic ecology. The main drain on the site is approximately 950m long and flows into the Muhnin River, which is an outlet of Carrowmore Lake, via a settlement lagoon. The Muhnin River then enters the Owenmore, which empties into Tullaghan Bay. The drainage channels within the site are considered to be of low ecological value, but the watercourses in the surrounding area are of international value due to the presence of species listed in Annex II of the Habitats Directive, including salmon and lamprey species and their role in linking Tullaghan Bay and Carrowmore Lake which are European sites, although the Muhnin and Owenmore Rivers and not themselves designated as such. However there are no spawning grounds for salmon below the site. There is a potential impact upon important aquatic ecology from the release of suspended or pollution of watercourses during deposition. The use of the existing drainage infrastructure on the site, including the perimeter swale, sedimentation ponds and the overflow area, as well as oil traps and spillage kits, will mitigate such potential impacts. The topography of the site, which is saucer shaped and surrounded by higher fields, reduces the likelihood of lateral displacement of deposited peat. Once the deposited peat has stabilized and re-vegetated, there would be little potential for a long term impact on aquatic ecology. The naturalization of drainage channels and sedimentation ponds to sedge and/or reedswamp habitats would made a positive contribution to biodiversity. The predicted residual impact of the development on aquatic ecology is negligible.

Section 8 is entitled Soils and Geology. The bedrock underlying the site is described as psammite, a metamorphosed sedimentary rock. In the area where peat deposition is proposed the bedrock forms a saucer shape and is overlain by clayey gravelly sand for depths varying from 2.5m to over 30m below ground level. A thin layer of bare peat remained on the site after industrial harvesting from the 1960's onward. The bedrock and subsoil were tested and found to have low levels of permeability. The water table is below the peat layer in the overburden, with groundwater flow predominantly to the west. The aquifer potential and groundwater vulnerability are also characterised as low. An assessment of the areas upon which peat from the Bellanaboy site has been deposited showed no signs of instability, either within the deposition area, on its perimeter or in the drainage network. It is concluded that there is very little risk of mass flow of peat into adjoining watercourses. The potential impact of the development on the shallow soil and geology in the area is considered to be low. Mitigation measures will include limiting works during unsuitable weather and utilising the existing site drainage infrastructure. The stability of each peat deposition mound and the quality of groundwater and surface water runoff will require monitoring during and after deposition. It is envisaged that drainage and re-vegetation will ensure that the mounds are completely stabilized after 5 years. No residual impact is forecast.

Section 9 is entitled hydrology and drainage. It notes that the site is in the catchment area of the Owenmore River which empties into Tullaghan Bay. The Muhnin river runs to within 750m of the site. It is a tributary of the Owenmore and flows out of Carrowmore Lake to the north. The main drain from the site empties into the Muhnin. During peat harvesting the worked area at Srahmore was divided into a series of bays, divided by linear high fields which represent the natural level bog. They are generally 2m above the level of the bays before subsequent peat deposition. The drainage infrastructure already installed captures and treats all rainwater falling on the site and controls its discharge. A toe drain has been excavated at the edge of each bay adjacent to the high field, which drains to a perimeter swale with 5 settlement ponds to treat water before it is discharged to the Muhnin River. The volume of the drainage system provides adequate retention time to allow sediment to fall out of suspension. It is designed to cater for a rainfall event of 31mm, stated to be a 1 in 100 year storm. If such rainfall is exceeded, a contingency exists for the swale to discharge to an overflow area on the site, rather than allowing insufficiently treated effluent to enter water courses in the vicinity. Thus there would be no uncontrolled discharge to surface waters. Monitoring of discharge under the terms of the waste licence for the peat deposition indicated isolated exceedences of the limits set for suspended solids in 2005 and 2007, but measurements from the Muhnin River above and below the outfall points demonstrated that there was no significant effect on the levels of suspended solids in the river. To correct the emission, which was of a fine clay, part of the perimeter swale was lined, after which there was a high compliance with the emissions limit in the licence. The main potential impact of the development on hydrology is considered to be the release of solid matter into surface water bodies. The drainage infrastructure on the site has demonstrated that it can effectively mitigate this impact and no significant residual impact is predicted.

Section 10 deals with effluent. Waste water from the canteen and toilet on the site will be collected and removed from the site by an approved contractor. Run off from the hardstand reception area will be drained via a settlement tank, oil trap before

outfall to one of the settlement ponds. Oil spill kits will be kept on site. No residual impact from foul effluent or from spills of oil or lubricant is predicted.

Section 11 deals with air quality. There is a potential impact from the development on air quality arising from emission of dust or of particulate matter, NO₂, SO₂ or benzene from vehicles and machinery. However the high moisture content of the peat means that it is unlikely that significant amounts of dust would be emitted during or after deposition. However internal road surfaces will be sprayed and trailers carrying fine materials will be sheeted for as long as possible to avoid dust emissions from those sources. The monitoring of dust emissions from the previous deposition on the site recorded 3 exceedances from 35 measurements in 2005, but after corrective measures none were recorded in 2007. The number of vehicles and machines operated on the site would be low (12 tractors, 2 loading shovels, 10 excavators and 2 dozers) and would not be likely to give rise to significant emissions. Thus no significant impact on air quality is predicted to arise from the development.

Section 12 deals with noise. It states that the development would be unlikely to have a significant impact on the nearest sensitive receptors and would not exceed the limits set down in the previous waste licence.

Section 13 deals with visual impact. It includes photomontages of the development. Given the low lying nature of the site, the limited depth of the proposed peat deposition and its re-vegetation within a reasonably short period of time, no significant effects were predicted in this regard.

Section 14 deals with climate. As the peat removed from the onshore gas pipeline route will be deposited again at Srahmore, carbon loss to the atmosphere will be negligible.

Section 15 deals with cultural heritage. No significant impact in this regard is predicted.

Section 16 deals with material assets and traffic. Approximately 100 deliveries of peat a day are expected during deposition, using rigid 4-axle tipper trucks with a capacity of 10m³. It has been demonstrated in the previous deposition at Srahmore that the road network in the vicinity of Srahmore can accommodate this level of traffic.

Section 17 is entitled interaction of impacts and cumulative impacts. It does not contain significant new information.

Section 18 refers to the environmental management system described in appendix 18.1 of the Srahmore EIS. It states that Bord na Mona will be responsible for compliance with waste licence and planning permission for the site. The EMS provides for incident reporting and investigation; identifying roles and responsibilities for staff at the site; ensuring proper training and competence of those staff; and document control and record keeping.

Various appendices to the Srahmore EIS are included in volume 3 of book 3. They include a programme for the rehabilitation of the peat deposition area, as proposed in

2005. It provides for the re-colonization of the area by vegetation, primarily rushes of the species *Juncus effusus*. Drains serving the overflow area may be blocked up, allowing a peatland habitat to form, but those in the deposition area will need to be maintained to ensure ground stability. Copies of annual reports of emissions monitoring under the waste licence are provided, as well as those of EPA site inspections and of the EMS described at section 18 of the main EIS for Srahmore.

5.2 Applicant's submission to the oral hearing

A submission from applicant regarding the Srahmore peat deposition site was made by Mr Aiden McGee to Oral Hearing on 20th May 2009. It can be summarised as follows -

Mr McGee described his qualifications as an engineer and his position as head of technical services at Bord Na Mona Energy who own the Srahmore Peat Deposition site. The harvesting of peat from the site to fuel the power station at Bellacorrick ceased in 2004. A plan for the rehabilitation of the site was approved by the EPA in 2003, however this was superseded by another rehabilitation plan approved under a planning permission granted by the board for the gas terminal at Bellanaboy and under a waste licence issued by the EPA in October 2004. 448,000m³ of peat from Bellanaboy has been deposited at that site. It is proposed to deposit another 75,000m³ of peat excavated from the route of the Corrib onshore gas pipeline within the area at Srahmore for which peat deposition was already approved. Space for the proposed deposition remained after the previous deposition because of the conservative design assumptions of the original project and the fact that the peat previously accepted was better drained than anticipated. The enabling infrastructure for peat deposition exists at the site, including an access road, administration area, parking, lighting and a wheel dip. Temporary facilities such as a wheel wash and a weighbridge can be re-installed. An extensive water management infrastructure is in place and can control, manage and treat all water draining from the site to appropriate standard. An environmental management system and environmental monitoring are in place on the site. Deposition will involve transport of peat to the site by road haulage trucks, where it would be loaded onto low ground bearing pressure trailers on the hardstand. Those trailers will be towed by tractors along internal haul roads and timber mat roads to the deposition area, where the peat will be deposited by side tipping. Excavators will place the peat in its final place in the deposition bay and grade it to facilitate surface water runoff. The deposited peat will be monitored to ensure there is no potential for peat entrainment or mobilisation. This stabilization phase will be complete within 5 years. Peat deposited between 2005-2007 is currently revegetating successfully. Drainage from the peat cannot be impeded during the stabilization phase, but subsequent re-wetting to enhance growth of peat forming vegetation will be considered. It was stated that the Srahmore site was ideally placed to accept and store peat from the on-shore pipeline development in a controlled and managed manner.

5.3 Other submissions

The proposal to deposit an additional 75,000m³ of peat at the Srahmore site did not attract a significant level of comment from the parties who made written submissions to the board or those who participated in the oral hearing. The Department of the

Environment, Heritage and Local Government expressed reservations about the departure from the rehabilitation plan approved under the IPPC licence for the Oweninny Peatland Works which the use of the Srahmore site for peat deposition represents. It also stated that the maintenance of the drainage infrastructure at Srahmore required to ensure the stability of the deposited peat meant that the site would not provide an opportunity for peatland habitats to regenerate. Rather dry heath habitats dominated by rushes would develop at Srahmore. Therefore the proposed rehabilitation of the peat deposition site could not be regarded as a compensatory measure for the proposed disturbance of blanket bog along the route of the pipeline.

5.4 Assessment

5.4.1 Adequacy of the EIS

Volume 3 of the submitted EIS adequately describes the receiving environment at Srahmore and the physical characteristics of the development. It provides an acceptable description of the consideration of alternatives to the deposition of peat there. The description of the likely impact of the development on the environment with regard to the landscape, traffic, air quality, noise, surface water drainage, natural and cultural heritage, as well as the inter-relationship between those issues, was reasonably based on an extrapolation of the empirical data collected in relation to the previous peat deposition at the site. The proposed mitigation measures under those headings and their likely impact were adequately described. A non-technical summary is included in book 1 of volume 3. The relevant part of the environmental impact statement therefore provides the information required under Irish and European legislation with regard to the proposed deposition of peat from the onshore pipeline project at Srahmore.

5.4.2 The principle of the proposed deposition

The site at Srahmore consists of an area that was subject to the harvesting of peat on an industrial scale. The natural heritage and visual character of that site were already profoundly altered by that harvesting before peat deposition occurred there in between 2005 and 2007, leaving an extensive surface of bare peat. The deposition of 448,000m³ of peat from the construction of the terminal at Bellanaboy has established the use of the site at Srahmore. No extensification of the previously authorised use is proposed, although the intensity of the deposition on the site and the source of the peat to be deposited is to be amended. Upon inspection of the site, it was noted that there was adequate void space in the deposition bays to accommodate additional peat in line with the projections given in the EIS, with further void space to allow for a significant margin of error in the calculation of the volume of peat that would need to be permanently removed during the laying of the onshore gas pipeline. The infrastructure required for the acceptance and deposition of peat at the site, and for the stabilization and drainage of the peat deposition bays, already exists. Srahmore is within reasonable proximity to the route of the proposed onshore gas pipeline. Transport between that site and Srahmore would be made easier by the fact that the road infrastructure between Srahmore and Bellanaboy has been upgraded to facilitate vehicular movements of the type and volume that would be generated by peat deposition. Section 4 of volume 3 of the EIS provides a reasonable account of the most likely alternatives to the proposed deposition of peat at Srahmore, and provides

cogent reasons as to why they would be less preferable to the current proposal. The topography of the site, which lies in a slight depression in an otherwise relatively flat landscape, ameliorates the visual impact of peat deposition and the impact of any instability of the deposited material. It is therefore considered that the principle of the deposition of 75,000m³ of peat excavated from the route of the onshore gas pipeline at Srahmore is acceptable.

5.4.3 Impact on the surrounding area

A larger amount of peat than that proposed has already been deposited at Srahmore. The deposition was monitored and the results were submitted in book 2 of volume 3 of the EIS. The impact of the proposed additional deposition on the environment and the surrounding area can therefore be predicted with a satisfactory degree of certainty. The previous experience of deposition indicates that the access and drainage infrastructure provided on the Srahmore site are adequate to ensure a reasonable level of stability for the deposited peat and to avoid the pollution of surface waters in the area, and thus to protect freshwater ecology in the area. The monitoring results indicated that there was a temporary problem in relation to the recording of dust emissions, but this appears to have been successfully addressed, as were supervisory issues regarding the control of the surface water drainage system. Otherwise monitoring results regarding noise, effluent and air quality were satisfactory. As the proposed deposition would be carried out in a similar manner, albeit at a reduced scale, and relies on the same site infrastructure as the previous activity, it is considered that it would be unlikely to have a negative impact in those regards. Given the flat and low lying nature of the site in the landscape and the relatively shallow depth of the peat deposited in the bays (less than 2m), the visual impact of the previous peat deposition at Srahmore was limited. The impact of the proposed additional deposition would be negligible.

5.4.4 Impact on natural heritage

There was some discussion at the oral hearing and in the written submissions regarding the impact of the deposition at Srahmore on terrestrial ecology. The existing bare peat surface is a degraded habitat of low ecological value. The submission from the National Parks and Wildlife Service expressed concern regarding the deviation from the original intention to include the site in the peatland restoration works for the Oweninny lands which was set down in a rehabilitation plan under a previous IPPC licence. However that plan has already been superseded by planning permission granted by the board for the gas terminal at Bellanaboy and the associated peat deposition at Srahmore, and the waste licence granted by the EPA for the latter. Those acts do not fall to be reconsidered in the current application. The current proposal will result in the replacement of bare cutover peat with deposited, disaggregated peat in an area that will be subject to ongoing drainage management. This resulting area will, to judge by the situation in the area previously subject to deposition, become colonised fairly rapidly by rushes and will develop into a wet grassland habitat. This will allow for an increase in local biodiversity compared to bare peat, providing a minor improvement in terms of natural heritage. However this improvement would not equate to the recreation of ecologically important peatland habitats, and could not be considered to compensate for any significant damage to blanket bogs habitats elsewhere. The applicant raised the possibility that, pending a review of the stability of the deposited peat after 5 years, the drainage infrastructure might be decommissioned to allow for the re-wetting of the site and thus the

regeneration of a peatland habitat there. However no commitment was made in that regard. Furthermore a pre-mature dismantling of the drainage infrastructure would give rise to a risk of damage to salmonid rivers at the Owenmore and Muhnin River, and would thus have a severe negative impact on natural heritage. While provision should therefore be made for future consideration of re-wetting of the site at Srahmore, it should not form part of the current assessment of the project. Its impact on natural heritage should therefore be regarded as minor.

5.5 Conclusions and recommendations

The environmental impact statement submitted with the application provide adequate information in relation to the proposed peat deposition at Srahmore. The site at Srahmore is generally suitable for the proposed deposition, and it would not have a significant negative impact on the surrounding area and environment. The proposed works at Srahmore would have a minor net benefit in terms of natural heritage. This element of the development proposed in the current application would therefore be in keeping with the proper planning and sustainable development of the area.

The proposed peat deposition at Srahmore would require a waste licence from the EPA which would control emissions from the activity. Any condition in this regard on a permission under the planning acts would therefore be superfluous and without effect. Volume 3 of the EIS provided a comprehensive description of the proposed works and mitigation measures, and it is recommended that a condition reflecting such be attached to any grant of permission on the current application, which could be worded as follows –

The deposition of peat at the site at Srahmore authorised by this permission shall be carried out in accordance with the description of development provided in volume 3 of the environmental impact statement submitted with the application and all the mitigation measures described therein shall be carried out in full.

Reason: In order to clarify the scope of the authorised development and to protect the environment and amenities of the area

6.0 Possible contribution for community gain

6.1 Legislative provision

Section 182D (6) of the Planning and Development Acts 2000-2006 states that where the board grants approval for a application under section 182C it may attach a condition requiring –

(a) the construction or the financing, in whole or in part, of the construction of a facility, or

(b) the provision or the financing, in whole or in part, of the provision of a service,

in the area in which the proposed development would be situated, being a facility or service that, in the opinion of the Board, would constitute a substantial gain to the community.

Section 182D (7) states that –

A condition attached pursuant to subsection (6) shall not require such an amount of financial resources to be committed for the purposes of the condition being complied with as would substantially deprive the person in whose favour the approval under this section operates of the benefits likely to accrue from the grant of the approval.

The question therefore arises in the consideration of the current application as to whether it would be appropriate to attach such a condition onto any grant of approval which the board may make, and what the form such a condition might take.

6.2 Environmental Impact Statement

Section 6 of the EIS is entitled *Community and Socio Economics*. There is discussion of the definition of ‘community’, but it is stated that this section of the EIS addresses the impact on the resident, working and visiting populations of the study area which is comprised of the five electoral divisions containing the parish of Kilcommon. The settlements in proximity to the development are identified as Glengad/Pollatomish, Rosspoint, Bellanaboy and Aghoos, and there are other dwellings scattered along the coast roads and elsewhere. The population of the area declined by 10.8% between 1996 and 2006 to 1,899, while the numbers at work grew by 20% to 545. 18% of those were involved in farming, fishing and forestry in 2006. An unemployment rate of 23% was recorded in the census of that year. The 2007 National Deprivation Index indicated that there was a long term and unchanging pattern of relative material deprivation in the area. Most of the area is a category C Gaeltacht. Less than 44% of the population are daily speakers of Irish. Tourist attractions in the area are primarily focussed on daytime attractions generally derived from the area’s topography, landscape and natural resources. The potential socio-economic and community impact of the construction phase of the development is described. There would be no impact of demography as the portion of the workforce from outside the area will travel from their existing residences. Construction of the overall project will generate 800 jobs at its peak with up to 120 jobs related to the onshore pipeline, mostly construction related, which would be available to local persons. There would also be indirect benefits to local business, including builders’ suppliers, caterers and providers

of accommodation. There would also be impacts in terms of traffic, noise, severance of landholdings and landscape which are assessed elsewhere in the EIS. These impacts will be transient and are not considered significant. The construction should not affect the linguistic heritage of the area. The impact of the construction phase of development would therefore be slight to moderate and negative. The operation phase of the overall Corrib development would generate some 55 jobs directly and 76 indirectly and so would have a slight positive impact.

Community Gain

The upgrading of local roads associated with the project will provide a benefit for tourism, while a structured community investment programme will provide short-medium- and long-term community gain. The Corrib Natural Gas Social Investment Programme was funded on a voluntary basis by the applicant and consisted of a local grants programme and a scholarship programme. A number of one-off grants have provided €450,000 to various community based projects including grants to Béal am Mhuirthead GAA Club and the Glenamoy community Angling Association. The scholarship programme was operated by local secondary schools which provides €4,000 per annum to 10 students. In January 2009 the applicant, after consultation an advisory group with representatives of local development agencies (the county council, the enterprise board, the Council for the West, LEADER and Udaras na Gaeltachta) launched an investment fund for Erris which is intended to operate for the life of the overall Corrib project. Phase 1 of the project will run until 2012 and will have a budget of €5m to be spent through a grants programme and a scholarship scheme.

Residual Impacts

The residual impacts of the operational phase of the development will be significant and positive in terms of employment with a slight negative impact arising from general disturbance and inconvenience. The social investment programme will be a positive impact of the development. The operational phase of the development will not have any significant likely impacts on population. There will be a significant positive impact on employment. The supply of gas will have a positive economic effect for the country as a whole. Failure to carry out the proposed development would not have any profound, irreversible or life-threatening consequences in terms of population and employment change.

6.3 Submission from the applicant

The submission from the applicant regarding **socio-economic issues** by Mr Des Cox to the oral hearing on 21st May 2009 referred to community investment.

It was stated that the applicant was carrying out a community investment programme which seeks to contribute to the long term economic, social, environmental and cultural development of Kilcommon and the wider Erris area by providing financial assistance and advice. €5 million has been committed to a grants fund over its first three years. Advice on the application of the fund is provided by a panel which includes representatives of Udaras na Gaeltachta, LEADER, the Council for the West, the county enterprise board and the county council. The applicant has also been subject to various contributions and levies under the planning permission for the

Bellanaboy terminal. The investment must be considered a significant community gain.

6.4 Other submissions

Mayo County Council made a submission stating that a planning condition requiring a contribution for community gain similar to that imposed by condition no. 42 of the permission granted by the board under PL16. 207212 would be appropriate. At the oral hearing the council indicated that it did not have proposals to spend any such contributions on specific facilities or services.

Positive comments were made in written submissions to the board by a local sports club and another party about the benefits of the applicant's community investment programme. Those observers did not attend the hearings.

Other observers made written and oral submissions which were critical of previous and proposed contributions by the applicant. It was asserted that they were socially divisive and disruptive of community relations, and have the effect of inhibiting the expression of concerns regarding the proposed development and participation in decision making procedures.

6.5 Assessment

This competence given to the board under section 182D(6) of the planning acts is not be regarded to a tax raising power. The board has neither the expertise nor the democratic mandate to impose financial levies to supplement social expenditure by other, more suitable public bodies. A levy under section 182D(6) should not displace any other obligations on a person carrying out development, whether that be the compensation due for a property acquired or for any civil tort, or financial contributions towards physical infrastructure directly required to facilitate the development (or works in lieu of such). What the relevant section of the acts does allow is for an approval from the board to require some generalised benefit to the community which would most be effected by the development, even where the benefit provided is not directly related to the development which has been approved.

The operational phase of the proposed development is not envisaged to involve significant disruption to the local community. However the works required to carry out the proposed development would be likely to give rise to significant levels of disruption during construction as described in various sections of the submitted EIS. It is therefore concluded that it would be appropriate in this case that a condition be imposed that would provide a countervailing benefit for the community that would suffer such temporary disruption. However the objects of such a condition, the amount of the contribution and its administration would need consideration.

Section 182D (6) requires the board to form an opinion that the service or facility to be funded would constitute a substantial gain to the community. Clearly, therefore, the board must know what that service or facility would actually be. There is no provision for the board to delegate its role in this regard to another body by imposing a condition requiring funding for an unspecified purpose which someone else would decide upon. Thus the county council's recommendation of a levy of €1 per m³ of waste peat towards environmental, recreational and community amenities to be

subsequently determined by the council could not be imposed under section 182D(6), although the recommended grant of €10,000 to the Belmullet Arts Centre could be. The only other service which was described with any degree of specificity in the information submitted to the board in connection with this application was the social investment programme which the applicant proposes to operate on a voluntary basis. The ends of this programme were set out to a reasonable level of detail and include a scholarship fund and a series of grants to community based projects. The latter were described by typical examples of individual payments rather than by a comprehensive list of proposed recipients. Nevertheless the description given of the social investment programme is adequate to demonstrate that it would constitute a substantial gain to the community, and therefore that it could reasonably be the subject of a condition under section 182D (6).

With regard to the appropriate amount of a contribution under such a condition, it is noted that section 182D (7) requires that it should not be so great as to substantially deprive the applicant of the benefit of any approval. Given the projected value of the natural gas resource with the proposed pipeline would allow to be exploited, it is not conceivable that such deprivation would be a concern in this case. The funding of the social investment described by the applicant would be €5m over three years, as stated in evidence from the applicant to the oral hearing. The population of the district electoral divisions containing the parish of Kilcommon was 1,899 at the 2006 census, while the CSO estimate the disposable income per person in Co. Mayo in 2006 as €18,336. A fund providing €1.67 million per annum to the area would therefore be equivalent to 4.8% of the pre-existing disposable income in the area. This would be a substantial benefit. It probably represents the maximum amount of temporary income which could be absorbed into a small area without distorting its existing economic or social structure, although the expenditure from the fund would provide benefits for an area wider than the immediate parish. Funding of €1.67m over a period of 5 years would provide mitigation for the disruption caused to the local community from the construction associated with the proposed pipeline. A period of 5 years would encompass sufficient time for building works and subsequent reinstatement, and would also provide sufficient time for the funding to be properly applied. The applicant may decide to continue the social investment programme beyond that period. However the compulsion implied in making the programme the subject of a condition on a planning approval should not be extended indefinitely beyond the period during which the construction works would disrupt the local community.

The EIS lays out a method of dispersing funds involving consultation by the applicant with specified local statutory bodies. The method implies that the applicant would retain ultimate control over the disbursement of funds. If the programme is to be the subject of a condition on a planning approval, it would be appropriate for the county council to supervise the disbursement as they remain responsible for the enforcement of such conditions under section 182D(11)(c) of the planning acts.

6.6 Conclusions and recommendation

The carrying out of the works required to construct the proposed onshore pipeline would give rise to disruption to the local community and would justify the imposition of a condition under section 182D(6) of the Planning and Development Acts 2000-2006. The contribution to the Belmullet Arts Centre recommended by the county

council and the social investment programme described by the applicant would constitute substantial gains to the local community. The level of funding required would not deprive the applicant of the benefit of any approval and would not be likely to disrupt the social or economic structure of the area. It is therefore recommended that any approval issued on foot of the current application include conditions as follows –

The developer shall establish a social investment programme for the benefit of the community in the area of the proposed development. The programme shall operate generally in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application subject to the requirements of this and other conditions of the approval.

The programme shall operate from the date on which works on foot of this approval commence for a period of 5 years, or until 3 years after the date on which the works on foot of this approval have been completed, whichever is the later. The developer shall provide €1,670,000 per annum to fund the programme. The money required under this condition shall be lodged to a specified bank account on the day on which the programme commences and then on or before the same date in each subsequent year. The money shall be disbursed in the form of scholarships and grants to local community groups.

Proposals for particular scholarships and grants under the programme shall be drawn up by the developer after consultation with a local advisory group constituted in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application. Monies shall not be paid for such scholarships and grants unless and until the relevant proposed has been approved in writing by the county council after the council has satisfied itself that the proposed expenditure is in keeping with the objects of the programme and would provide a substantial gain the community in the area in which the approved development is located. Accounts of payments to and from the social investment programme shall be submitted to the county council at least once every 12 months. If the county council does not consider that the payments into and out of the fund are in keeping with the requirements of this condition or the proper objects of the programme, it may issue a direction to the developer to do such things or make such payments as are reasonably necessary to remedy such deficiency.

Any money which remains in the specified bank account a year after the programme has ceased shall be transferred to the county council who shall thereafter have discretion to spend the remaining money on environmental improvements recreational and community amenities.

In the event of a dispute between the county council and the developer regarding any aspect of the funding or operation of the social investment programme or otherwise relating to compliance with this condition, the matter shall be referred to An Bord Pleanála for determination and the developer and the county council shall comply with that determination.

Reason: In order to ensure that the a substantial gain is provided for the local community in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

The developer shall make a contribution of €10,000 to the Regional Arts Centre at Belmullet in a form to be agreed with Mayo County Council.

Reason: To provide for community facilities in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

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7.0 Summary of conclusions

7.1 Conclusions

The conclusions of the report can be summarised as follows -

- Following the decision of the High Court in *Cairde Chill an Disirt vs. ABP*, the requirements of Article 10A of the EIA directive and of the Aarhus Convention regarding the review of environmental decision making are met by the judicial review procedure established in Irish law.
- Following the decision of the High Court in *Klohn vs. ABP*, the requirement for environmental impact statements to consider alternatives to the proposed development do not impose an onerous duty, and there is no requirement for the decision making body carrying out the environmental impact assessment to consider alternatives.
- Following the decision of the European Court of Justice decision in the *Derrybrien* case, the board may not grant permission for a development which should be made subject to an where such development occurred before the environmental impact assessment was carried out.
- The board is required to consider the current application in a manner consistent with the Habitats and Birds Directive, whether or not national legislation applying the provisions of the directive to the application procedure in sections 182C and 182D of the Planning and Development Acts 2000-2006 has been made. The site is likely to have a significant effect on the cSAC at the Glenamoy Bog Complex (*the site*) but is not concerned with its management. Therefore article 6 of the Habitats Directive applies, and the board is required to ensure that the development is subject to an appropriate assessment of its implications for the site's conservation objectives, and may only approve the development if it ascertains that it will not effect the integrity of the site. Following the *Waddenzee* judgment of the European Court of Justice, that latter conclusion requires that the latter conclusion be beyond reasonable scientific doubt.
- The overall Corrib gas project is subject to control under several legislative codes. Various parts of it requires a lease under the Petroleum and Other Minerals Development Act, 1960, consent under the Gas Acts, a licence under the Foreshore Acts, 1933, an IPPC licence and a waste licence from the EPA. It is desirable to avoid duplicating the responsibilities of various public agencies under this regime and control of any particular aspect of the overall project should be exercised by the agency whose expertise and powers are best suited to that control. The material considerations for an application for approval under 182C of the planning acts are set out in reasonable detail in the acts.
- By analogy with the situation governing permissions granted under section 37 of the planning acts, it is unlikely that the board could impose conditions on

any approval on foot of the current application which sought to control emissions from an activity that would be subject to an IPPC or waste licence.

- The petroleum lease and consent to the plan of development for the Corrib gas project issued by the Minister for the Marine and Natural Resources indicates that the overall project is in keeping with government energy policy, while a consent under the gas acts would indicate that the pipeline was in keeping with government policy on the development of the country's gas pipeline infrastructure. A foreshore licence would indicate that a licensee had sufficient legal interests in the foreshore to carry out the licensed works.
- The impact of the construction of the proposed pipeline on birds and animals in the area would not have a significant adverse effect on natural heritage, provided the mitigation measures set out in the EIS and the requirement of wildlife legislation are complied with.
- The impact of the construction of the proposed pipeline, including the landfill valve installation and the access road to it, in the grassland at Glengad and Rosspoint and the coniferous forestry plantations south of the upper crossing of Sruwaddacon Bay through which it would pass would not have a significant adverse impact on natural heritage. The prevention of emissions of suspended solids into surface water during construction by the settlement ponds and filtration described in the EIS would be adequate to protect freshwater ecology during construction of the proposed pipeline.
- The proposed tunnelling under Sruwaddacon Bay would not effect the marine environment or species there subject to the carrying out of the mitigation measures set out in the EIS, the insertion of a intervention pit on the bay should not have a significant adverse impact on the species or habitats in the bay.
- On the assumption that the proposed construction method can maintain the stability of the blanket bog which the pipeline would cross, the proposed development would not have a significant negative impact blanket bog habitats. There is a residual, but unlikely possibility that the development would have localised negative impacts on intact blanket bogs as the proposed mitigation measures have not been demonstrated by a previous similar development in a blanket bog.
- Only a small area of peatland within the cSAC at the Glenamoy Bog Complex would be affected by the residual possibility of damage to the acrotelm of intact blanket bog. However given the extent of the potential impact, and its location at the margin of the site in an area where the blanket bog habitat has been substantially altered by turf cutting and livestock grazing, this impact would not have an adverse impact on the integrity of the site concerned. The impact of the development on natural heritage would not, therefore, require a refusal of permission or substantial alterations.
- The proposed development would not seriously injure the visual amenity or rural character of the area due to the temporary nature of the impact associated

with construction and the small extent of the visual impact of the above ground structures required for the operation of the pipeline. The development would not contravene the policies of the development regarding protection of the landscape and designated views.

- Volume 3 of environmental impact statement submitted with the application provides adequate information in relation to the proposed peat deposition at Srahmore. The site at Srahmore is generally suitable for the proposed deposition, and it would not have a significant negative impact on the surrounding area and environment. The proposed works at Srahmore would have a minor net benefit in terms of natural heritage. This element of the development proposed in the current application would therefore be in keeping with the proper planning and sustainable development of the area.
- The carrying out of the works required to construct the proposed onshore pipeline would give rise to disruption to the local community and would justify the imposition of a condition under section 182D(6) of the Planning and Development Acts 2000-2006. The contribution to the Belmullet Arts Centre recommended by the county council and the social investment programme described by the applicant would constitute substantial gains to the local community. The level of funding required would not deprive the applicant of the benefit of any approval and would not be likely to disrupt the social or economic structure of the area. It would therefore be appropriate that they be the subject to a condition attached to any approval issued on foot of the current application.

7.2 Recommendation

A refusal of permission or substantial modification of the development proposed in the current application would not be required as a result of its impact on natural heritage or the landscape or the impact of the proposed peat deposition at Srahmore, provided the mitigation measures described in the environmental impact statement and the applicant's submissions at the oral hearing were carried out in full. It would be appropriate to impose a condition on any approval requiring a contribution for community gain similar to that proposed by the applicant in its social investment programme.

The following conditions should be attached to any grant of approval for the proposed development.

1. All mitigation measures described in section 12, 13 and 14 of main volume of the submitted environmental impact statement, in the addendum to that statement and in the submissions from the applicant to the oral hearing, shall be carried out in full during the course of development. Prior to the commencement of any works with the candidate Special Area of Conservation at the Glenamoy Bog Complex, the developer shall submitted and obtained the

written agreement of the National Parks and Wildlife Service to detailed method statements for those works.

Reason: In order to protect the natural heritage of the area

2. The measures to mitigate the visual impact of the proposed development set out in section 10 of the environmental impact statement submitted with the application shall be implemented in full in the course of the development.

Reason: To protect the visual amenity and character of the area.

3. The deposition of peat at the site at Srahmore authorised by this permission shall be carried out in accordance with the description of development provided in volume 3 of the environmental impact statement submitted with the application and all the mitigation measures described therein shall be carried out in full.

Reason: In order to clarify the scope of the authorised development and to protect the environment and amenities of the area

4. The developer shall establish a social investment programme for the benefit of the community in the area of the proposed development. The programme shall operate generally in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application subject to the requirements of this and other conditions of the approval.

The programme shall operate from the date on which works on foot of this approval commence for a period of 5 years, or until 3 years after the date on which the works on foot of this approval have been completed, whichever is the later. The developer shall provide €1,670,000 per annum to fund the programme. The money required under this condition shall be lodged to a specified bank account on the day on which the programme commences and then on or before the same date in each subsequent year. The money shall be disbursed in the form of scholarships and grants to local community groups.

Proposals for particular scholarships and grants under the programme shall be drawn up by the developer after consultation with a local advisory group constituted in the manner described in section 6.5 of the main volume of the environmental impact statement submitted with application. Monies shall not be paid for such scholarships and grants unless and until the relevant proposal has been approved in writing by the county council after the council has satisfied itself that the proposed expenditure is in keeping with the objects of the programme and would provide a substantial gain the community in the area in which the approved development is located. Accounts of payments to and from the social investment programme shall be submitted to the county council at least once every 12 months. If the county council does not consider that the payments into and out of the fund are in keeping with the requirements of this condition or the proper objects of the programme, it may issue a direction to the

developer to do such things or make such payments as are reasonably necessary to remedy such deficiency.

Any money which remains in the specified bank account a year after the programme has ceased shall be transferred to the county council who shall thereafter have discretion to spend the remaining money on environmental improvements recreational and community amenities.

In the event of a dispute between the county council and the developer regarding any aspect of the funding or operation of the social investment programme or otherwise relating to compliance with this condition, the matter shall be referred to An Bord Pleanala for determination and the developer and the county council shall comply with that determination.

Reason: In order to ensure that the a substantial gain is provided for the local community in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

5. The developer shall make a contribution of €10,000 to the Regional Arts Centre at Belmullet in a form to be agreed with Mayo County Council.

Reason: To provide for community facilities in accordance with section 182D (6) of the Planning and Development Acts 2000-2006

Stephen J. O'Sullivan
Senior Planning Inspector
19th August 2009

SEPIL Corrib Onshore Gas Pipeline Oral Hearing May – June 2009 Report on Pipeline Design and Safety

Mr Nigel Wright:- Assisting the Inspector

Report Number 143

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EXECUTIVE SUMMARY

Mr Nigel Wright has produced this report in the role of assisting the inspector in examining the design, construction and safety issues of the SEPIL Corrib onshore gas transmission pipeline and its associated umbilical. Although this report has been written as a 'stand alone' document, it is recommended that it be read in conjunction with the Inspectors Report The Advantica Report forms a baseline for evaluating the information presented in the Environmental Impact Statement. (EIS) submitted by SEPIL and subsequent material disclosed at the Oral Hearing held at Bellmullet during May – June 2009. Geotechnical aspects of peat stability and the stability of the pipeline buried in the proposed stone road are not covered in this report but are presented separately in Mr Conor O'Donnell's report

SEPIL and Mr Hanna Chief Technical Advisor – Dept of Communication Energy and Natural Resources accepted that the design and operation of the Corrib pipeline is unique when compared to other onshore gas transmission pipelines operating in Ireland and the UK. The uniqueness of the Corrib pipeline can be appreciated when the comparison is made to conventional gas transmission pipelines operating on dry processed gas at pressures below 100 barg. The uniqueness arises because the Corrib Pipeline operates at potentially ultra high pressure of 345 barg upstream of Glengad LVI and 144 barg downstream to the Bellanaboy Terminal. It conveys wet gas, with the risk of methane hydrate formation and the gas contains CO₂, which when combined with water forms corrosive carbolic acid. The pipeline incorporates a high pressure-limiting (HIPPS) device at Glengad LVI to prevent the majority of the pipeline exceeding 144 barg. The uniqueness of the design and operation of the Corrib onshore pipeline has meant that additional issues need to be addressed in the areas of; Specifications and Codes of Practice, Design, Pipeline Safety and subsequent Quantified Risk Analysis

Specifications and Codes of Practice The composite code approach based upon different parts of the Irish Standard IS EN 14161 supplemented by PD 8010 and IS 328, does cover the minimum requirements to design, construct and operate a safe pipeline for unprocessed gas. However using a combination of codes is not considered good practice and lacks the holistic approach necessary for continued improvement in the industry. *Recommendation:- The relevant agencies should form a working group to revise I.S 328 to include best practice to cater for this design of pipeline transporting untreated gas in a downstream environment.*

The section of onshore pipeline from the high water mark to the outlet from the HIPPS at Glengad, is covered by the offshore standard DnV OS- F101, but is not covered by any of the supplementary codes. *Recommendation: TAG should re-examine this section of onshore pipeline and review if any supplementary codes are required.*

Pipeline Design The design of the pipeline meets the basic requirements of the codes. However, SEPIL needs to set a Maximum Allowable Operating Pressure (MAOP) for the Onshore Pipeline System as required by the codes.

SEPIL accepted that leaking valves could allow pressures upstream of the HIPPS system to rise to 345 barg and downstream pressures to increase to 144 barg. These design pressures were used in all of the subsequent safety studies. SEPIL stated that if the main isolation valve leaked they would flare gas at Bellanaboy to stop the pressure exceeding 144 barg in the downstream pipeline. The claim that all of the onshore pipeline will be tested to 504 barg is confusing since this will increase the stress in the pipe upstream from Glengad LVI to beyond 100% of SMYS instead of the planned 90%, which is outside of the code DnV OS- F101.

Risk - Prediction of Frequency of Failure SEPIL stated in their written submission that a QRA was not required for high-pressure transmission pipelines designed in accordance to IS328. The above comment is misleading. I.S. 328 does state that where it is impractical to comply with the proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA). Therefore performing a QRA to identify the Individual and Societal risk to the local population was fully justified..

Recommendation:-This report endorses Advantica's recommendation that consideration should be given by the Irish Government to establish a risk-based framework for decisions on proposed and existing major hazard pipelines and related infrastructure to ensure transparency and consistency of the decision making process

The choice of a pipeline population failure database is critical to the level of risk predicted by the QRA. In their submission SEPIL used pipeline populations transporting dry natural gas, which could not be fully relied upon to quantify the risks arising from transporting wet untreated gas. This strategy does not reflect the potential Corrib pipeline failure mechanisms and could distort the risk levels predicted by the QRA. SEPIL further modified the generic pipeline failure databases by considering 3rd party interference as the only plausible mechanism for the pipeline to rupture and used the PIE analysis to predict the failure frequencies of 9.15E-08 at 345 barg, reducing to 5.82E-10 at 144 barg and 0 at 55barg. In SEPIL's analysis it claimed that ruptures from Construction, Corrosion, Hot taps and other events will be mitigated by the measures taken by SEPIL to increase pipeline integrity. The analysis also did not include potential methane hydrate problems or Internal corrosion from CO₂ and the 3rd Party intentional damage threat. Without any evidence or data, SEPIL decided that since the pipeline is now going to be laid in a stone road the failure frequency for ground movement will be negligible and therefore eliminated from analysis. When requested by the Inspector's team to include a figure for ground movement SEPIL selected the slope instability value of 9E-08 from PD8010-3 which is well below the general ground movement value of 9E-06.

Many events that could lead to a loss of product or complete rupture of the pipeline have not been included in SEPIL's QRA because they are covered by Shell's PIMS and management integrity plan. While I recognises the critical importance of this strategy for the operational safety of the pipeline, it does not negate the need to produce a comprehensive site specific quantified risk assessment. SEPIL's modified failure analysis for an ultra high-pressure unprocessed CO₂ wet gas pipeline produces frequencies, are well below the generic values used in Europe and the UK for lower pressure processed dry natural gas. Also the evidence collected from the visit to the Dutch NAM unprocessed gas pipelines does not have the detailed information related to QRA submissions and operational incidents to gain an accurate insight into the safety of a wet gas system in Ireland.

Recommendation:- SEPIL should repeat the QRA with a detailed site-specific failure analysis, which incorporates a database that matches the conditions on the Corrib onshore pipeline. That is a pipeline population transporting wet untreated gas. In addition, SEPIL should perform a comprehensive Qualitative Risk Assessment to capture those events that cannot easily be defined mathematically.

Dept of Communication Energy and Natural Resources should recommend the appointment of an independent entity to monitor the long-term safety of the onshore pipeline because of the risk associated with Human Factors when operating a safety critical PIMS system over many years.

Risk - Modelling 3rd party Damage Shell have not performed any full scale testing to verify any of the assumptions used in the PIE failure model. These cover the extrapolation of gouge and dent modelling for higher strength X70 material, pipe wall thickness over 25mm and pressures up to 345barg. SEPIL acknowledged that the Advantica prediction for probability of failure from 3rd party interference is 8.08 times higher than the PIE value and for frequency of failure the value is 14.4 times higher.

SEPIL stated at 345barg the critical crack length for rupture is only 103mm, which is equivalent to 1/4 inch diameter hole. PIE used a charpy value of 70 Joules for the toughness of the pipe material. However during the Hearing SEPIL stated that the temperature of the pipework at Glengad could drop to minus 20C and if a through wall defect occurred, the pipe could cool a further 23C from the cooling effect of the gas passing through the defect.

At temperatures of around minus 40C may affect the PIE model predictions since the toughness value maybe be lower.

Safety - Risk to the Residents SEPIL's QRA is based series of artificial assumptions and it does not fit the actual situation at Glengad or Ross Port. SEPIL admitted that a site-specific QRA assessment could be undertaken but in this instance they decided to adopt a standard industry template to allow comparison with the PD8010 generic safety case. SEPIL confirmed that in the event of a pipeline rupture there would be a significant fireball lasting up to 30 seconds followed by a jet fire. The jet fire would continue to burn until the supply of gas was isolated. SEPIL used the UK HSE model to predict the radiated heat from a fireball as a result of a rupture. SEPIL admitted that the model has not been verified against pressures above 100bar and therefore had to use extrapolation techniques to obtain the predictions at 144 barg and 345 barg. SEPIL acknowledged there would be additional uncertainty with extrapolating the data but maintained the physics was well understood which permitted the extrapolation. From the modelling of thermal radiation, SEPIL produced a set of Consequence Impact Maps illustrating contours of Building Burning Distances and Escape Distances along the whole length of the Corrib pipeline. SEPIL predicted only rupture of the pipeline affects the dwellings; jet fires from holes have no effect

- At Glengad between 1 and 7 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 3 and 8 dwellings.
- At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.
- At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.
- At Ross Port – pipeline North Crossing point, between 4 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings

There was a great deal of concern from the observers that there is NO shelter from the thermal radiation either out to the commonage or down to the bay at Ross Port and therefore the model on fatalities and injury could underestimate the casualties. SEPIL estimated that without shelter the escape distances could be in the order of an extra 50m before the radiation level fell away, SEPIL estimated if there was a catastrophic failure anywhere on the onshore pipeline the maximum number of casualties is predict at seven fatalities at 144 bar pressure.

The maximum individual risk per year to the Glengad residents at 246m away from the pipeline is 1E-05. This will arise if the LVI remains pressurised at 345barg for 1 year. At this level of risk, the area would be in an ALARP condition where SEPIL would need to look at strategies to lower the risk. If this condition only occurs for a period of 10 days then the risk drops to around 5E-07, which is classified as broadly acceptable by PD8010-3. The individual risk to the Glengad residents drops to around 1E-07 when the LVI is operated at a pressure of 144 barg, which is classified as no restrictions by PD8010-3. No societal Risk was calculated for the residents of Glengad

The maximum individual risk per year to the Ross Port residents at 140m away from the downstream pipeline is around 7E-11, which is classified as no restrictions by PD8010-3. The Societal Risk to the residents of Ross Port is 5.82E-10 Km/year and is well below the risk criterion line in PD8010-3. Adding the low failure frequency of 9E-08 for ground movement does significantly alter the individual risk per year to the residents of Ross Port at 140m away from the pipeline with the yearly individual risk increasing to 1E-08, which still classified as no restrictions by PD8010-3.

It is noted that these low risks to the residents are predicted from a model, which only recognises rupture from 3rd party interference on thick wall pipe with an option of incorporating a low failure frequency due to ground movement.

Glengad LVI – Safety Risk. The Advantica recommendation of reducing the downstream pressure from a potential 345 barg to 144barg was sound. However, the design of the Glengad LVI may have introduced a higher risk of failure into the Corrib downstream pipeline. The present design of Glengad LVI produces the following undesirable risks:-

If there is leakage past the subsea valves, the pressure at Glengad LVI could still rise to 345 barg upstream of the HIPPS system. At this pressure 8 dwellings would be affected at Glengad from a rupture assuming no shelter for the occupants. If the pressure of 345 barg is present for 1 year, Glengad has the highest individual risk to the population at around 7E-05 around the LVI site and 1E-05 at the nearest dwelling 246m away. These risk figures are considered conservative since only a limited QRA was performed by SEPIL, which ignored the threats from internal corrosion, methane hydrate and 3rd party intentional damage. The security at Glengad LVI is also considered to be inadequate for such a strategic gas import facility

Recommendation:- SEPIL should examine the design of Glengad to include a temporary relief valve and vent stack to prevent the pipeline reaching 345 barg. The equipment would be dismantled after 4 years as the well pressure falls. This would allow the removal of the HIPPS system and simplify the layout of the plant to a single remotely operated 20in valve with a small-bore bypass. The removal of the HIPPS would eliminate the potential threat of erosion on the tees and bends and allow a vent point to prevent the pressure rising above 100 barg. Lowering the pressure at Glengad would dramatically reduce the risks to the residents and eliminate the chance of 8 dwelling suffering fatalities around Glengad. After 4 years the relief valve could be isolated and the stack removed. The minor temporary intrusion of the vent stack and the remote chance it will be used will be offset by dramatically increasing the safety for the Glengad and Ross Port residents. The diameter of the vent stack would cater for a small amount of seepage past the valves. However, if the umbilical is damaged and only the Sub Surface Safety Valve (SSSV) at the well and the HIPPS at the LVI automatically close, then the HIPPS has a major role as a back up if the SSSV fails to close or partially closes. A vent stack in these circumstances would not be recommended. SEPIL needs to clarify this scenario.

SEPIL should modify the design of Glengad LVI to include security arrangements that are normally associated with major gas import and storage installations in the UK.

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1 INTRODUCTION

Mr Nigel Wright has produced this report in the role of assisting the inspector in examining the design, construction and safety issues of the SEPIL Corrib onshore gas transmission pipeline and its associated umbilical. Although this report has been written as a 'stand alone' document, it is recommended that it be read in conjunction with the Inspectors Report ¹

The Advantica Report² forms a baseline for evaluating the information presented in the Environmental Impact Statement³ (EIS) submitted by SEPIL and subsequent material disclosed at the Oral Hearing held at Bellmullet during May – June 2009

Geotechnical aspects of peat stability and the stability of the pipeline buried in the proposed stone road are not covered in this report but are presented separately in Mr Conor O Donnell's report⁴

During the Oral Hearing both Mr Hanna⁵ and SEPIL accepted that this pipeline was unique when compared to other onshore gas transmission pipelines in Ireland or the UK. This strongly influences the acceptance of historical data when assessing the design and safety cases submitted by SEPIL. The report concentrates on the lack of historical clarity in the information submitted in order to arrive at a sensible conclusion concerning the design and safety of this pipeline.

2 DESIGN OF PIPELINE SYSTEM

Conventional downstream gas transmission pipes, covered by Code of Practice I.S 328⁶, convey dry natural gas at pressures no higher than 100 barg after the gas has been treated at the reception terminal. These terminals are often located at the landfall site where the gas is treated to remove condensates, water, particles and treated to meet the national gas specification.

Corrib gas is being transported directly from the subsea wells to the terminal located 9.2km from the landfall. Therefore it is classified as an upstream pipeline but operating in a downstream environment of human dwellings.

This arrangement is very unusual and therefore classified as 'Unique' due to the following operating conditions:-

- Operates at potentially ultra high pressure (345 barg) from the high water mark to the inlet of the High Integrity Pressure Protection System (HIPPS) at Glengad Landfall Valve Installation (LVI) and 144 barg from Glengad LVI to the Bellanaboy Terminal. These pressures are outside the 100 barg limit of I.S 328 Code of Practice.

¹ Inspectors Report Oral Hearing SEPIL Corrib Onshore pipeline Application 16GA0004 / 16DA0004

² Advantica Report R8391 Independent Safety Review of the onshore Section of the Proposed Corrib Gas Pipeline 17 Jan 2006

³ Corrib Onshore Pipeline Environmental Impact Statement SEPIL -RPS Feb 2009

⁴ Mr Conor O Donnell Geo- Technical Specialist assisting the Inspector

⁵ Mr Hanna Chief technical Advisor – Dept of Communication Energy and Natural Resources

⁶ I.S. 328 Code of Practice for Gas transmission Pipelines and Pipeline installations Dublin National Standards Authority of Ireland 2003

- Conveys wet gas, which needs to be treated to stop the formation of methane hydrate at cold sections of the pipeline. The formation of methane hydrate in a gas transmission pipeline is considered to be highly dangerous.
- Conveys CO₂ which when combined with water cause carboic acid to be formed within the pipeline. This is corrosive with the exact corrosion rate dependant upon the operating temperature of the pipeline.
- The pipeline incorporates a HIPPS or high pressure-limiting device at Glengad LVI to prevent the majority of the pipeline exceeding 144 barg.

Therefore the main aim of this section of this examination was to obtain information and evidence that reduces the perceived risk of designing, building and operating such a unique pipeline system located in a downstream environment.

2.1 Gas Constituents

The EIS⁷ and submissions at the Oral Hearing confirmed that the gas is predominately methane (93%) with higher hydrocarbons, condensate and CO₂. The gas is saturated with water, which condenses out as the pressure decays during transportation and this will combine with small quantities of produced free water.

The water within the pipeline will combine with the CO₂ to form carboic acid, which is corrosive and therefore the corrosion has to be controlled by injecting corrosion inhibitor into the gas at the well head. The water will also combine with the gas to form methane hydrate. Injecting methanol into the gas at the wellhead prevents the hydrate formation. Both the methanol and the inhibitor are conveyed to the wellhead via the umbilical.

It is stated in the EIS Appendix Q5 sub appendix A3.3 that the production of H₂S is not expected. This is an important statement since the presence of H₂S would have serious consequences for the integrity of the pipeline

It is stated in the EIS that the production of sand is not expected, which removes the risk of erosion. However in the EIS⁸ and during the hearing SEPIL did admit that erosion damage was possible because of the use of proppants to fracture the wells to increase gas production. SEPIL's mitigation against excessive erosion is to set a limit of three proppant producing wells per 1mm of corrosion allowance. At present only one well has been identified as requiring fracturing by the use of proppant. This is discussed further in Section 8.4

⁷ EIS Appendix Q1 Offshore Pipeline Design Basis Table 4-6 Product Analysis

⁸ Appendix Q5 Pipeline Integrity Management Scheme (PIMS) Appendix A Integrity Reference Plan section A3.3 Integrity Control Activities Pg 48

2.2 Route

The route of the pipeline is described below and shown in Figure 1.



FIGURE 1 PROPOSED ROUTE CORRIB ONSHORE PIPELINE

The route of the onshore pipeline officially starts at the high water point at Glengad. The exact starting position of the pipeline and the entry point to the (HIPPS) at the Glengad LVI marks the extend of the onshore pipeline which could potentially see 345 bar. The starting and finishing points of this pipeline were extensively discussed at the hearing and are reported in the Inspectors Report.

From the outlet of the HIPPS at Glengad LVI, the pipeline has a maximum pressure of 144 bar. The route traverses the headland for approximately 640m and then crosses the estuary near the mouth of Sruwaddacon Bay. The crossing is approximately 430m long and will be crossed by directional drilling and micro tunnelling a 600m conduit for the pipeline, see Section 2.6

At the Ross Port side of the bay the route turns and follows the bay shoreline for approximately 1.1km. The pipeline then turns 90° North and crosses the local road and hamlet of Ross Port for a distance of 350m. The route then turns 90° South Easterly and follows the line of the bay through cut over and intact blanket bog for approximately 2.6km. The route then turns 45° for 1km and re crosses the bay again using a long micro tunnel. The pipeline is turned and routed through 0.9km of blanket bog then turns into an area of forested bog for a distance of 2km to reach Bellanaboy Terminal. The total length of the pipeline is approximately 9.2km

2.3 Basis of the Current Design

Originally the pipeline had been rated 345 barg throughout its entire length. However the Advantica report recommended that the pipeline pressure should be reduced to 144 barg. This recommendation has resulted in the redesign of the Glengad LVI to include a HIPPS, which limits the pressure downstream from the HIPPS to 144barg

Advantica's argument for reducing the pressure was based upon the following

- Concerns by expressed by members of the public regarding safety of the pipeline operating at a design pressure of 345 barg, which is much higher than conventional gas transmission pipelines.
- Proximity of the pipeline to housing and the consequences of a pipeline failure.
- Pipeline transporting untreated gas not accounted for in the design code.
- The original route crossed areas of deep peat and the pipeline would be laid in unstable ground

The revised design of the onshore pipeline is given below in Table 1

TABLE 1 ONSHORE PIPELINE DESIGN DETAILS	
Pipe Diameter	20 in
Wall thickness	27.1mm
Corrosion Allowance	1.0
Pipe Material Grade	X70
Pipe Material Yield Stress	485 MPa
Maximum Flow Rate	350MMSCFD
Normal shut-in pressure at Wellhead at start of field life	345 barg
Normal operating pressure at Wellhead at start of field life	272 barg
Maximum Pipeline Pressure – upstream of HIPPS	345 barg
Maximum Pressure – downstream of HIPPS	144 barg
Normal Pipeline Operating Pressure at start of field life	90-110 barg
Hydraulic test pressure	504 barg
Pipeline Design Factor	0.3
Maximum Design Temperature	50°C
Minimum Design Temperature from LVI to 1km downstream	-20°C
Minimum Design Temperature at the HIPPS loop	-26°C
Minimum Design Temperature from 1km downstream to Terminal	-10°C
Internal coating	None
External Coating	3 layer polypropylene

The pipeline is design for a 20-year life. The question was asked during the Hearing if there were any plans to extend the life of the field or accept new gas from 3rd party fields. SEPIL replied no to the above questions

Selecting a maximum pressure of 144 bar would allow the design factor to be reduced to 0.3. However during questioning at the Oral Hearing Mr Basford⁹ SEPIL stated that the pressure of 144barg was selected to satisfy the maximum flow rate of 350MMSCFD allowing for the maximum pressure drops occurring in the pipeline and terminal processing plant. This maximises the gas output and hence revenue in the early years and limits the amount of compression fuel required to lift the pressure back to the Bord Gas transmission pressure of 85barg.

Table 2 below shows the 1st 5 years of gas production taken from EIS¹⁰

TABLE 2 PIPELINE FLOW AND PRESSURES – TIME PROFILE			
TIME YEARS	FLOW (MMSCFD)	MANIFOLD PRESSURE BARG	TERMINAL PRESSURE BARG
1.5	350	223	110
1.75	350	211	110
2.0	350	187	110
2.25	350	166	110
2.5	350	154	110
2.75	332	138	110
3.0	350	161	110
3.25	350	148	94
3.50	332	134	110
3.75	311	131	89
4	289	107	66
5	229	94	64

⁹ Evidence from Mr S Basford Deputy Terminal Manage

¹⁰ Appendix Q1 Offshore pipeline Design Basis Table 4.4 pg 10 of 22

The pressure time profile for the pipeline is also given below in Figure 2

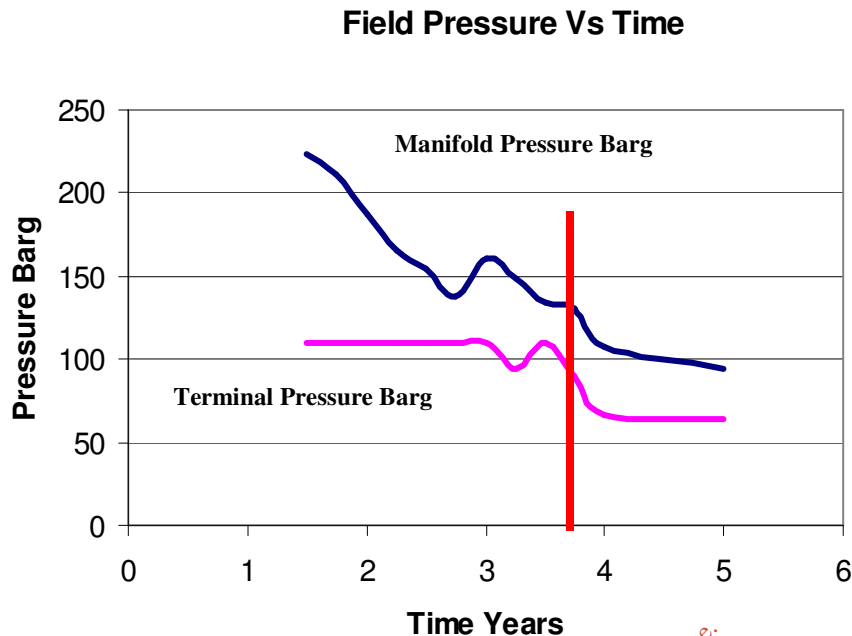


FIGURE 2 PRESSURE VS TIME PROFILE FOR CORRIB GAS FIELD (PLOTTED FROM TABLE 2)

Figure 2 shows the early gas pressures from the 1st year to the 5th year. Up to year 3, the high pressure is controlled by the subsea choke giving a constant 110barg at the terminal. Thereafter the pressure at LVI and the terminal is control by the falling well pressure and the pressure drop in the pipe.

Therefore it could be argued that the pressure set at the subsea chokes and the maximum pressure at LVI is governed by fiscal considerations. During the questioning at the hearing it was put to Mr Basford SEPIL that the flow could be reduced to allow the subsea chokes to be set to a lower pressure in the early years to give a maximum pressure of 100 barg at LVI. This would reduce the burn and escape distances around Ross Port. Mr Basford refuted the suggestion stating the maximum gas flow has already been promised!

If the pressure between LVI and the Terminal was reduced to 100barg by resetting the choke valves and the HIPPS settings, then the flow in turn would be reduced from 350 mmscfd to around 320 mmscfd. This represents a loss in gas flow of only 8.6% over 3.5 years and increased revenue over say years 3 onwards

2.3.1 Recommendation

To increase safety, early gas pressure could be choked back and the HIPPS reset to give a maximum pipeline pressure of 100bar at Glengad and the downstream pipeline. Flow and Economic modelling should be performed on this scenario. This would quantify the loss in early payback revenue against decreases in burn and escape distances at Ross Port. This reduction in revenue should be balanced against future earnings and any extra costs required to increase the safety at Ross Port and Glengad.

2.4 Offshore Installation - Subsea Trees and Manifold

The basic configuration of the offshore field is 8 subsea wells feeding in to a central manifold. Each well will be controlled by its own subsea tree. Each tree will have a choke valve to control the flow and hence the pressure. The tree will also have wing valves and a master valve to isolate the flow from the well. In addition, if the tree becomes damaged and needs to be replaced the well will have a Surface Controlled Subsurface Safety Valve to isolate the tree from the well.

The trees are hydraulically controlled via a subsea umbilical. The umbilical will also carry methanol and corrosion inhibitor to suppress methane hydrate and corrosion as the gas leaves the tree. From the tree the gas flows into a manifold where it is collected and discharged into a single 20in diameter subsea pipeline that will run from the Corrib Field to Glengad LVI

2.5 Glengad Landfall Valve Installation

The Advantica report recommended that the pipeline be divided into two pressure regimes. This would be achieved by the installation of a HIPPS system at Glengad. Under this proposal the well chokes and the pipeline pressure drop would control maximum gas pressure upstream of the HIPPS. If the line pressure increased beyond 144barg then the HIPPS system would be activated and isolate the pipeline downstream from the HIPPS to the Terminal. This allows this HIPPS downstream section to be rated as a Class 2 Suburban Pipeline with a design factor of 0.3 (as defined in Code of Practice I.S.328-2003).

Under this design the Glengad LVI becomes a critical component in the safety case of the pipeline. The location of Glengad is shown in Figure 3



FIGURE 3 LOCATION OF THE GLENGAD LVI AND PIPELINE ROUTE

2.5.1 Design of Glengad LVI

The onshore section of the Corrib Gas pipeline is defined as starting from the high water mark to the inlet of the Glengad LVI as shown in Figure 3

The Glengad LVI (described in a SEPIIL Statement made by J. Gurden¹¹) contains two gas flow paths as shown in Figure 4. The first path is a continuation of the 20in gas pipeline. Within the LVI compound, a 20in Mainline Isolation Valve (V1) normally isolates the outlet of the gas pipeline. This valve is only opened for pipeline pigging operations to clean and inspect the line. SEPIIL stated at the Hearing that operational pigging to remove liquids is not anticipated.

Under normal operations the gas flow follows the 2nd path, which is via a 16in bypass around the 20in valve. The bypass contains the HIPPS system. The HIPPS contains two automatic closure valves, which receive their closure signals from three pressure transmitters located downstream from the valves. The voting system on the signals is contained in an electronic logic solver. The whole system is SIL 3 rated. The system is failsafe and can also be remotely activated from the terminal control room.

During the Hearing it was revealed that the HIPPS valves were Axial Flow Mokveld valves. This type of HIPPS system is now being widely used throughout the gas industry and has a good reliability record.

It was also disclosed at the Hearing that the pipe section containing the 20in main isolation valve would be constructed from a corrosion resistant Duplex alloy because the efficiency of the inhibitor is severely reduced in a dead end section when the valve is closed.

During the hearing SEPIIL confirmed there was no odorant added to the gas at this stage of the process. Therefore any gas escape will not be detected by smell. Following questioning by the observers SEPIIL did confirm that gas escaping at a high pressure would make a significant noise and on buried pipe the ground cover would be probably be disturbed, depending upon the size of the leak.

During the hearing it was confirmed that gas would not be vented at Glengad under normal operations. However in the EIS¹² it states that during isolation of the 16in loop, the LSSIV isolation valves will have double block and bleed facilities. Therefore in the event of leakage past the first sealing face the gas is bled to atmosphere to prevent pressurising the second sealing face. Under these circumstances gas will be vented in the area of the LVI. This is confirmed in the EIS¹³, which states that a Zone 2 hazardous area exists and extends to the edge of the lower area within the LVI compound.

The LVI will normally be unmanned except when maintenance or valve isolation work is being performed. Discussion took place within the Hearing on workers safety within the LVI compound with respect to EU Directive¹⁴ 1999/92/EC – S.I. No 299 of 2007 Working in An Explosive Atmosphere. This discussion led to the involvement of the Health & Safety Authority (HAS) in the planning application over the safety of the

¹¹ SEPIIL Statement - Inspectors submission Doc No14 submitted by John Gurden on 20 May 09

¹² EIS Appendix Q3 Landfall Installation Design Overview – Section 4.2 Pg 11

¹³ EIS Appendix Q3 Landfall Installation Design Overview – Section 5 Pg 13

¹⁴ EU Directive 1999/92/EC – S.I 299 of 2007 Presence Of Explosive Atmosphere in Place of Work

workers at Glengad. The inspector has written to the HAS concerning various safety issues related to the current application. The HAS declined to attend the Hearing but submitted a document¹⁵ outlining their strategy over the safety issues raised by the inspector. This area is covered more thoroughly in the Inspectors Report.

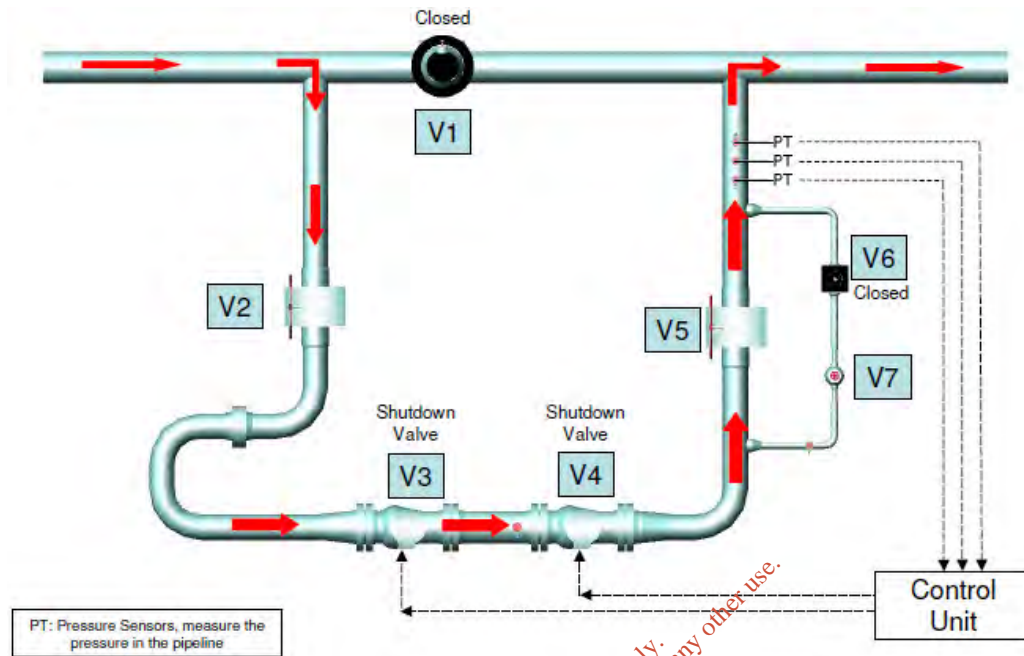


FIGURE 4 BASIC FLOW DIAGRAM AND VALVE ARRANGEMENT OF GLENGAD LVI

2.5.2 Leakage Past Valves

During the questioning on the Glengad Design an extensive and prolonged discussion took place with SEPIL (J.P.Kenny) Mr J Gurden and SEPIL Mr S Basford over potential damage to the valve sealing faces from hard particles during commissioning and operation of the pipeline. SEPIL accepted that a closed choke valve may not seal and valves sealing faces could be damaged by hard particles in the gas stream. It was established in Section 2.1 that the elimination of all hard particles was not feasible especially with the use of proppants.

The gas industry is fully aware of valve sealing problems, which is why on critical valve installations a double block and bled arrangement is specified. This arrangement is present on the HIPPS loop Landfall Shutdown Spool Isolation Valves (LSSIV) (shown in Fig 4 as valves V2 & V5) and on the Landfall Restart Spool Isolation Valve (LRSIV), (shown in Fig 4 as valve V6) but is not specified on the Landfall Main isolation Valve (shown in Fig 4 as valve V1). If fitted to V1 there would be a chance that a constant bleed of gas would occur at LVI, which could change the zone rating. Therefore it is possible for High Pressure (HP) gas to bleed past a scored sealing face on valve V1.

The valve leakage scenario was accepted by SEPIL.

¹⁵ HAS Letter to AN Bord Pleanala - Onshore Upstream Gas Pipeline facilities relating to Corrib Field Project 19 June 09

2.5.3 Maximum Pipeline Pressures

During the Hearing it was essential to establish what was the maximum pressure that could occur in each section of the pipeline i.e. before the HIPPS and after the HIPPS. This is required to calculate the Maximum Burning and Escape Distances for the population living near Glengad and Ross Port.

There are two potential over pressure scenarios discussed at the hearing and these are outlined below: -.

Pipeline Upstream of HIPPS

The 1st scenario outlined at the Hearing was that processing of the gas had stopped at the Bellanaboy Terminal due to a technical problem, which in turn stopped the gas from being exported to the BGE system.. Subsequently the HP gas in the closed wells leaked past the choke and scored valves in the subsea system.

At the early years the shut in pressure of the well would be 345 barg. Therefore the pressure at Glengad LVI upstream from the HIPPS over a period of time could rise to 345 barg. This was accepted by SEPIL and 345Barg forms the safety case pressure for Glengad

Pipeline Downstream of HIPPS

The 2nd scenario was again no export from the terminal and 345 barg leaking past the main isolation valve with the HIPPS system tripped and closed. With no export and a leaking main valve at Glengad the pressure in the downstream would continue to climb despite the HIPPS system being closed.

SEPIL accepted this scenario and stated they would use the main flare or rig up a temporary flare at the Bellanaboy Terminal to ensure the pressure in the pipeline did not rise above 144 barg. Therefore SEPIL accepted that 144 Barg forms the safety case pressure for Ross Port and the pipeline down to the terminal

The above pressure limits were key points in the safety debate and forced SEPIL to submit their burning distances and escape distances for Glengad and Ross Port – see section 5.5

SEPIL presented additional information at the Hearing on the Potential and Effect of Passing Valves¹⁶ This give an assumed leakage rate of 1m³/day based upon ISO 5028 rate D. What is not clear from the submission is how the leakage from a scored valve equates to rate D'. Using rate D leakage SEPIL argue that it would take many months or even years for the leakage to give rise to the full pressure ratings. However despite this SEPIL still rate the pipes at 345 barg and 144 barg design pressure so the safety case assumptions still stand.

A temporary relieve valve and vent stack could be build at Glengad to prevent the pipeline from reaching the potentially high 345barg pressure. This would be dismantled after four years as the well pressure decays, see Section10

¹⁶ SPIL Submission Potential and Effect of Passing Valves Inspectors Doc No 64 - 8 June 09

2.5.4 Glengad Security

The security basically consists of an outer stock fence and an inner 2.8m security fence with low-level site lighting. The lighting will normally be switch off unless access is required at night. The site will also be equipped with security CCTV.

The security at Glengad was seen as a major issue by some of the Observers and the Inspectorate team. Security is an important issue since this it is the main unmanned above ground facility in the Corrib pipeline system with easy access to the public and is the gateway to a significant amount of gas feeding into the Irish national system.

During the Hearing Observers made the comparison with similar gas import installations in the UK, which contained double electric fences and armed police. The risk posed by a lack of tight security is discussed in the Risk Analysis Section 8.7 3rd Party Intentional Damage.

Recommendation

It is recommended that the design of Glengad be modified to include security arrangements that are normally associated with major gas import and storage installations in the UK.

2.6 Sruwaddacon Bay Crossings

There are two buried pipeline crossings across the Sruwaddacon Bay. The upper crossing is approximately 600m long and the lower crossing 1000m long.

The strategy for crossing the bay is to use a trenchless pipe tunnelling method called 'Direct Pipe'. This is a combination of directional drilling using a Tunnel Boring Machine (TBM) at the front of a sleeving pipe and 'Pipe Jacking' which provides the forward thrust. The sleeving pipe is gripped by a collar and hydraulically pushed forward on a device called a Pipe Thruster. This is described in EIS Appendix S¹⁷ and was presented at the Hearing by Mr T Jaguttis on Behalf of SEPIL. The process is shown below in Figure 5.

The hole drilled by the tunnelling machine is slightly larger than the planned 1.4m to 1.8m diameter sleeve pipe and the resulting 20mm – 50mm thick annulus between pipe and soil is filled with Bentonite. This prevents the collapse of the excavated hole and acts as a lubricant for the sleeve pipe. Once the sleeve has been installed then the bundle carrying the 20in diameter gas pipe, umbilicals and water pipes can be fed through the sleeve pipe on a roller carrier assembly – see figure 6. The whole sleeve pipe is then filled with grout.

In the EIS submission Table 2 of Appendix S showed the maximum length of tunnelling to date is 930m, which is short of the 2nd proposed crossing. However later data¹⁸ submitted detailed other jobs such as a 2m sleeve installed 1050m across River Ems in Leer Germany. Risks involved in the construction of the crossing are discussed in Section 8.6.1

¹⁷ EIS Appendix S Method Statement on Direct Pipe Technique De la Motte & Partner

¹⁸ SEPIL submission Inspectors Doc No 48 submitted 4 June 09

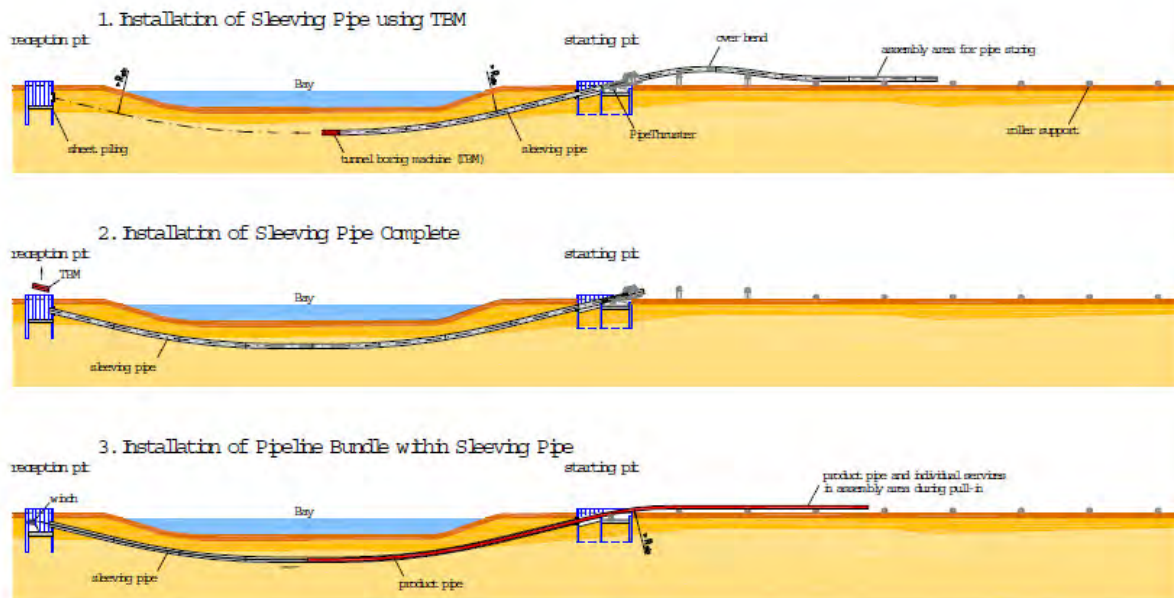


FIGURE 5 SHOWS THE DIRECT PIPE METHOD INSTALLING THE SLEEVE PIPE AND BUNDLE

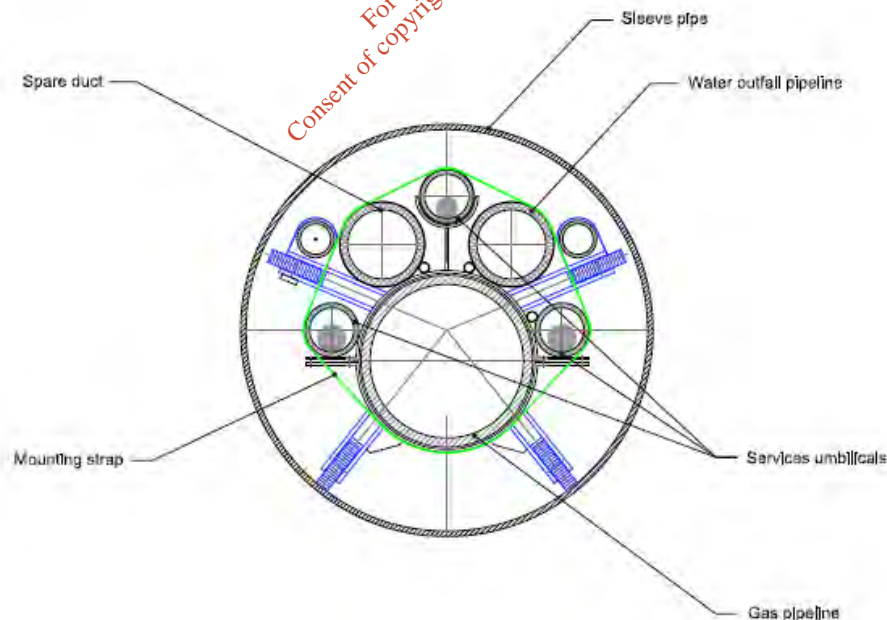


FIGURE 6 SHOWING GAS PIPE IN BUNDLE ARRANGEMENT INSIDE SLEEVE PIPE

2.7 Pipeline Construction in the Stone Road

One of the main challenges of the of the pipeline construction project is to develop a method of laying a thick wall heavy 20in diameter pipe with the associated service umbilicals in the peat bog without :-

- Endangering men and equipment during the trenching and backfill operations.
- Overstressing the pipe by ground movement caused by peat instability.
- Causing associated peat instability in areas surrounding the pipe leading to landslides.
- Destroying the delicate habitat of the peat bog .

The Advantica Report¹⁹ draws attention to the uncertainty surrounding the soil properties of the peat and its stability. This in turn impacts on the ground movement analysis and the imposed additional strain on the pipeline.

In the latest SEPIL EIS submission Appendix M²⁰ and Mr Turlough Johnston's submission to the Hearing,²¹ - it is proposed to build a stone road through the peat bogs. The stone road would then be used to facilitate the construction of the pipeline with the 20in diameter gas pipeline and services buried in the road. This is a novel concept similar to that used by BGE except that they buried to gas pipeline adjacent to the stone road.

One of the main concerns is the construction of the stone road in areas of deep peat. At these locations the road will not extend down to the mineral soil but rest on a matrix of boulders and peat. Boulders/ rocks will be forced into the peat by an excavator to create the matrix.

One of Advantica's recommendations in this area was to consider the long term monitoring of the pipeline in areas of peat. It is considered that this recommendation is still valid in areas of deep peat where the road is not supported by the mineral soil. During the hearing Mr Johnson was asked to consider the use of vibrating wire strain gauges to monitor the long-term strain in the pipeline. These gauges are extensively used in civil engineering for long term strain monitoring of bridges. Mr Johnson dismissed the proposal stating they would be unsuitable in this application. However in mining subsidence areas pipelines have been successfully fitted with protected vibrating gauges for over 20 years. This would be a better solution than using GPS plates since the direct stain on the pipe is being monitored.

All the issues concerning the geotechnical stability of the peat and pipeline will be covered in Conner O Donnell's report in his role of assisting the inspector

Recommendation – SEPIL should fit strain-monitoring equipment to the pipeline in areas of deep peat or known areas of peat instability

¹⁹ Advantica Report R8391 Independent Safety Review Chapter 4.3.3 Ground Movement

²⁰ EIS Vol2 Book 5 Appendix M Soils and Geology – Peat Stability Assessment & Stone Road Construction

²¹ SEPIL Submission by Turlough Johnson Geotechnical Issues – Inspectors ref No 11 – 20 may 09

2.8 Services

A number of umbilicals, electrical and instrument cables and an outfall water pipe will be laid from the Bellanaboy Terminal to Glengad LVI. Offshore, the umbilicals and other the other services will be assembled into a conduit pipe and piggy backed on to the main gas line to the wellheads. At Glengad the offshore umbilicals and services will be connected to the onshore portion.

Onshore the services will be laid alongside the pipeline as shown in Figure 7 as described in the EIS Chapter 4²² & Appendix Q2 Onshore Pipeline Design Basis Chapter 9 and statement submitted by SEPIL Mr J Purvis²³

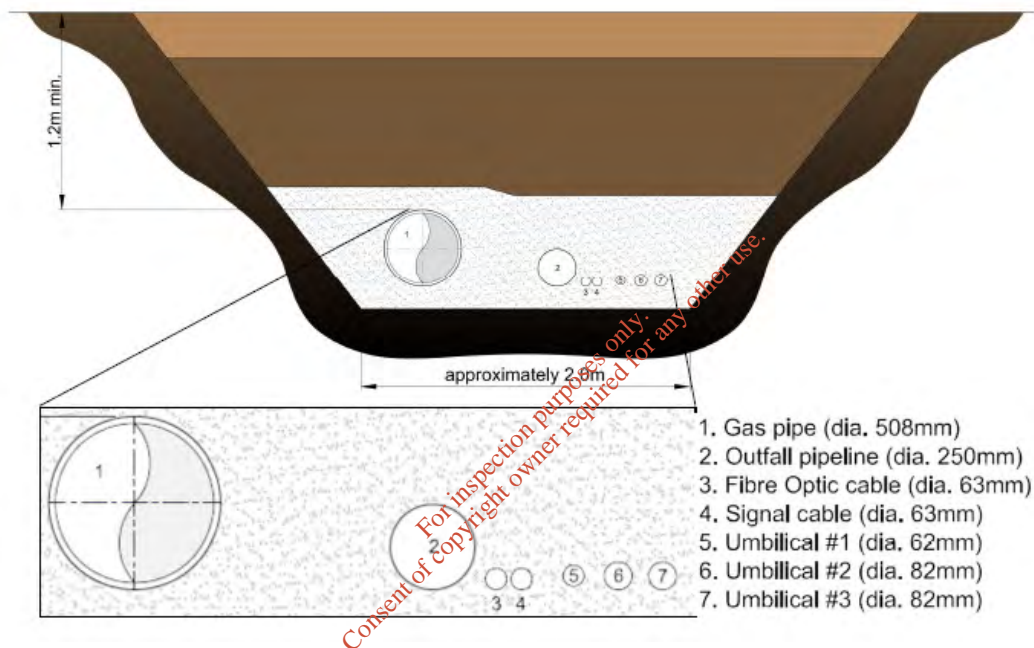


FIGURE 7 SHOWING ARRANGEMENT OF UMBILICAL AND SERVICES IN THE TRENCH

Three umbilicals will transport a number of fluids and electrical cables as given below:-

- Methanol containing a corrosion inhibitor to suppress methane hydrate and corrosion in the pipeline at the wellheads and at Glengad
- Ethylene Glycol based hydraulic fluid to power the actuated valves at the wellheads and control certain valves at Glengad
- Produced water disposal to the manifold
- Electrical Power supply cables
- Communication cables

²² EIS Chapter 4.3.2 – figure 4.1

²³ Submission Pipeline Integrity – John Purvis Inspectors Doc No 13 20 may 09

Alongside the three umbilicals will be a 254 mm diameter HDPE outfall water pipe carrying treated surface drainage water from the terminal to a suitable offshore outfall location.

Also alongside will be a Fibre Optics cable and another electrical cable

The main safety risk from the umbilicals is damage resulting in a fire or pollution. Damage to the umbilical also affects the actuation of certain valves but SEPIL states that this will not compromise safety. This is discussed in Section 8.8

2.9 Design Conclusions

- SEPIL and Mr Hanna Chief technical Advisor – Dept of Communication Energy and Natural Resources accepted that the design and operation of the Corrib pipeline is unique when compared to other onshore gas transmission pipelines.
- The difference or uniqueness of the Corrib pipeline can be appreciated when the comparison is made to conventional gas transmission pipe operating on dry processed gas at pressures below 100 barg The uniqueness arises because:-
 - The Corrib Pipeline operates at potentially ultra high pressure of 345 barg at Glengad and 144 barg from Glengad LVI to the Bellanaboy Terminal.
 - The Corrib Pipeline conveys wet gas, which needs to be treated to stop the formation of methane hydrate, which is considered to be highly dangerous.
 - The Corrib Pipeline conveys CO₂ which when combined with water forms corrosive carbolic acid within the pipeline..
 - The Corrib Pipeline incorporates a HIPPS, which is a high pressure-limiting device at Glengad LVI to prevent the majority of the pipeline exceeding 144 barg.
- SEPIL accepted that hard particles within the gas stream, especially proppants, could damage valve sealing faces causing valves with no block and bleed facility to leak.
- SEPIL accepted that leaking valves could allow pressures upstream of the HIPPS system to rise to 345barg. This is the design pressure of this section of the pipeline and will be used in all safety studies.
- SEPIL accepted that a leaking main isolation valve could allow pressures downstream of the HIPPS system to rise to 144barg. This is the design pressure of this section of the pipeline and will be used in all safety studies.
- SEPIL stated that they would flare gas at Bellanaboy to maintain the pressure at 144 bar in the pipeline downstream of the HIPPS

2.10 Design Recommendations

It is recommended that:-

- Flow and Economic modelling should be performed on the scenario that the early gas flow could be choked back and the LVI settings reduced to lower the pressure to below 100 barg between Glengad and the Terminal.
- The design of Glengad should be modified to include security arrangements that are normally associated with major gas import and storage installations in the UK.
- SEPIL should examine the design of Glengad to include a temporary relief valve and vent stack to prevent the pipeline reaching 345 barg. The equipment would be dismantled after 4 years as the well pressure falls.
- Strain-monitoring equipment should be fitted to the pipeline in areas of deep peat or known areas of peat instability

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3 PIPELINE STANDARDS AND CODES OF PRACTICE FOR DESIGN, CONSTRUCTION AND OPERATION

This section of my report covers the adoption of Standards and Codes of Practices for the design, construction and operation of the Corrib onshore high-pressure transmission pipeline. As the Advantica report points out²⁴ these documents are reviewed and revised in the light of experience and legislation to ensure best practice is built in to all new pipeline projects.

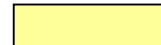
Advantica in their report recommended that the pipeline be reclassified as a class 2 suburban pipeline and the design code should be revised inline with PD8010²⁵ Alternatively Shell proposed to base the revised pipeline design on the Irish Standard IS EN 14161²⁶ supplemented by PD 8010 and IS 328. Technical Advisory Group (TAG) recommended²⁷ the implementation of the Shell recommendation.

Table 3 is based upon the EIS J.P.Kenny Report on Design Code Review²⁸ and shows how the main standard had to be supplemented with additional documents to cover all the requirements of the onshore Corrib pipeline

The adopted codes are coloured green



The codes that are supplements to the adopted code are coloured yellow



The main problem with this approach is that it has required a number of codes to be blended together to form a composite code to cover all aspects of a complicated pipeline designed as an upstream pipeline but operated as a downstream pipeline.

The onshore pipeline from the high water mark to the downstream pipework from the HIPPS at Glengad is covered by the offshore standard DnV OS- F101²⁹ and not by EN 14161. This standard has been adopted for this short length of pipe without any of the supplements previously mentioned for EN 14161. It is noted that TAG has made no recommendations for supplementary codes for this section of the onshore line.

²⁴ Advantica Report R8391 Independent Safety Review Chapter 6.1 Selection of Design Codes and Comparison with International Standards

²⁵ PD 8010 - 1 Code of Practice for Pipelines – Part 1 Steel pipelines on land London British Standards Institute 2004

²⁶ IS EN 14161 Petroleum and Natural Gas Industries – Pipeline Transportation System (ISO 13623:2000 Modified)

²⁷ Report of the Corrib Technical Advisory Group to Minister Dempsey – 27 January 2006

²⁸ EIS Vol 3 Appendix Q4 Design Code Review – Onshore Pipeline – J.P. Kenny Report dated 26/1/07

²⁹ DnV OS-F101 Submarine Pipeline Systems (DnV 2000)

3.1 Design Construction and Operation

3.1.1 Calculation of Stresses

I agree with SEPIL that I.S. 328. (Sections 6.2 –6.5) replaces Annex B³⁰. The requirement to have a 0.3 design factor is well below the recommendation of Annex B table B2, which specifies a design factors between 0.45 and 0.77 for an E fluid

3.1.2 Overpressure and MAOP

It is noted that the EIS quotes a Normal Operating pressure of 90-110 barg and a Design pressure of 144 barg. The codes requires SEPIL to set a MAOP for the Onshore Pipeline System and this may be the setting of the HIPPS but SEPIL should clarify its position on the value of the MAOP.

The Recommended Standard EN 14161 defines MOAP as the maximum pressure at which the pipeline system is allowed to be operated. Shown below is the different way each standard uses the MAOP to control the overpressure.

EN 14161 section 5.4 prohibits overpressure safety devices from exceeding Maximum Allowable Operating Pressure (MAOP).

PD8010-1 Normal Operations - Section 6.2.1.3 states that under Normal Operations the MAOP should not exceed the internal design pressure and pressure rating for the components used.

PD8010-1 Overpressure - Section 6.2.1.5 states any Incidental pressure and the MOAP must not exceed the design pressure by 10%. Incidental pressure is the sum of the operational pressure, surge pressure, relief pressure or other pressure variations from normal operations. N.B In the UK the incidental pressure is equal to the safe operating limit defined in the Pipeline Safety Regulations

3.1.3 Pressure Test Requirements

SEPIL has submitted a report from J.P.Kenny³¹ on Pressure Test Requirements, which is included in the EIS Vol 3 Appendix Q9

The report compares the various pressure test requirements from the four specifications detailed in this section. There is a wide variation in test pressures

DnV OS- F101 covers the offshore section but also the short onshore section to Glengad. The thickness of this pipeline varies between 21mm – 27.1mm offshore and 27.1mm onshore. For the offshore pipe at 96% SMYS on the thin wall section gives a test pressure requirement of 360.25Barg. While onshore at the thicker section with 90% SMYS requires a test pressure of 425.4 barg.

³⁰ I.S. EN14161- ISO 13623 Annex B Supplementary Requirements for Public Safety of Pipelines for category D and E fluids on land

³¹ EIS Vol 3 Appendix Q9 J.P.Kenny Onshore Hydrostatic Pressure Testing Report 23 May 2007

For the remainder of the Onshore Pipeline IS 328 pressure test requirements have been adopted. SEPIL are proposing to test the pipe at 101%SMYS, which requires a test pressure of 504 Barg. This is a significant increase over the minimum requirements of IS 328, which is twice the maximum working pressure producing a test pressure of 288Barg.

Glengad potentially will see the highest pressure in the whole of the onshore pipe system at 345barg. Therefore it would be prudent to bring the test pressure in line with the IS 328 requirements and test the entire onshore Pipeline at 504 Barg.

It was stated on numerous occasions that the entire onshore pipeline would be tested at 504 barg. The inspector's team found this statement confusing because the onshore section upstream from Glengad will exceed the specified SMYS in the code. Testing to 504barg would produce a pipe stress of 106.6%SMYS instead of 90%

3.1.4 Security

The EIS recommends that Security should be designed to EN 14161 Section 7.3 This section is extremely sparse on detail. A better guide for security is PD 8010 –1 Section 7.3 . This states the likelihood of any uncontrolled access, which could interfere with the operation of the site, should be taken in to account. This will ensure that SEPIL take full account of the potential security issues at Glengad.

3.2 Standards:- Public Safety

3.2.1 Standard - IS EN 14161.

The EIS argues (Appendix Q4 Section 5.2) since TAG recommended the adoption of I.S. 328, (which is only relevant to natural gas) that the Corrib gas be reclassified as Category D Fluid. The Corrib gas contains ethane and therefore should be classified as Category E Fluid (highest risk) by IS EN 14161 and therefore recommends that ISO 13623 Annex A³² is adopted.

In my report I have interpreted the TAG instruction as a dispensation to use a Category D specification (I.S. 328) on a Category E fluid. This is different to the interpretation adopted by SEPIL in their EIS, which claims the gas is a Category D fluid. Despite the differences of interpretation, SEPIL still quote Annex A (reserved for Category E fluids) as the adopted code in EN14161 supplemented by I.S. 328.

Annex A requires that a safety evaluation should be performed consisting of :-

- Hazard Identification
 - Design, Construction and operator error
 - Material or Component failure
 - Degradation due to corrosion or erosion – loss of pipe wall
 - Third party activity
 - Natural hazards

³² I.S. EN14161- ISO 13623 Annex A Safety Evaluation of Pipelines

The operator is obliged to eliminate or reduce hazards to Tolerable levels

- Hazard Estimation
The standard allows the hazard to be evaluated by either a Quantitative or Qualitative Analysis to produce a Failure Frequency and a Consequence Analysis. **Therefore under Annex A SEPIL could have produced a Qualitative Analysis to widen the scope of how the risks were evaluated.**
- Risk Calculation
The risk can be calculated either as Individual or Societal Risk
The standard states that the completeness and the accuracy of the calculated risks should be stated and the **uncertainties and assumptions tested**

Standard ISO 13623 has a general statement (Section 6.2.1.2 Public Safety) that where practicable pipelines carrying natural gas should avoid built up areas or areas with frequent human activity.

3.2.2 Standard - I.S. 328

I.S. 328 Section 6.2 divides the area surrounding the pipeline into three Area Type Classifications.

- Type R Rural Areas – population density not exceeding 2.5 persons per hectare
- Type S Intermediate Area between R and T – population density exceeds 2.5 persons per hectare
- Type T Central Area of Towns and Cities

The Corrib pipeline has been designated Type S by SEPIL and has a design factor of 0.3 which is the requirement of Section 6.3 Table 2

I.S. 328 Section 6.4 Proximity Requirements allows Figure 2 to be used to calculate proximity distance from the nearest building to the pipeline. From Figure 2 using a design factor of 0.3 the nearest building would be 3m away from the pipeline.

Figure 2 in I.S. 328 has not been adopted by SEPIL as they have opted for a QRA submission instead. This obviously recognises that the Corrib pipeline is different from the processed gas database used to construct Figure 2. The standard does state that where it is impractical to comply with the above proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA) carried out in accordance with a recognised standard such as AS 2885.1³³. This Australian standard allows both a Quantitative Risk Assessment (QRA) and a Qualitative Analysis, which is discussed further in Section 9

3.2.3 PD 8010-3 :2009 and IGEM/TD/2

There is a growing recognition in the UK and Europe that a more detailed QRA is required for certain high risk pipelines who's operating parameters or locations do not

³³ Australian Standard A2885-1 Pipelines – Gas and Liquid Petroleum – Design and Construction

fit the norm. Two new standards have been recently published in the UK to satisfy the need to perform a structured QRA. These are IGEM /TD/2³⁴ and PD8010-3 :2009³⁵

IGEM/TD/2 is a supplement to the well-respected IGEM/TD/1³⁶, which I.S. 328 is based upon. PD8010-3 :2009 is a supplement to PD 8010 – 1. Both standards have methodologies for calculating Individual and Societal Risks. TD/2 only covers dry natural gas while PD8010 covers five fluids one of which is non-toxic single-phase natural gas. Although the risk profiles of each code are slightly different (see Section 4.2) there are many similarities between the codes.

The PD 8010-3 code was used by SEPIL to perform the QRA and its Individual and Societal Risk Criteria were used as the benchmark for acceptable risk. This is discussed in detail in Section 4.2.

Conclusion

- The composite code approach based upon different parts of the Irish Standard IS EN 14161 supplemented by PD 8010 and IS 328, does cover the minimum requirements to design, construct and operate a safe pipeline for unprocessed gas.
- However the use of various codes to cover a specific pipeline design is not considered good practice and lacks the holistic approach necessary for continued improvement in the industry.
- The section of onshore pipeline from the high water mark to the downstream pipework from the HIPPS at Glengad covered by the offshore standard DnV OS- F101, is not covered by any supplementary codes
- The Published Document PD8010 – 3:2009 standard QRA definitions of failure events is considered too restrictive for an unprocessed natural gas pipeline.
- The definition of Societal and Individual Risk acceptance levels meets the requirements to examine the safety of the Corrib Onshore Pipeline.
- The claim that all of the onshore pipeline will be tested to 504 barg is confusing since this will increase the stress in the pipe upstream from Glengad LVI to over a 100% of SMYS instead of the planned 90%, which is outside of the code DnV OS- F101.

Recommendation

- With the possibility of further offshore gas fields being developed in Irish waters, the relevant agencies should form a working group to revise I.S 328 to include best practice to cater for this unique design of pipeline transporting untreated gas in a downstream environment.

³⁴ IGEM /TD/2 Application of Pipeline Risk Assessment to Proposed Developments in the vicinity of High pressure Natural gas Pipelines – Communication 1737 - 2008

³⁵ PD8010-3 :2009 Code of Practice for Pipelines – Guide to the Application of Pipeline Risk Assessment to Proposed Developments in the Vicinity of Major hazard Pipelines.

³⁶ IGEM/TD/1 – Edition 5 Steel Pipelines And There Associated Installations for High Pressure gas Transmission – Communication 1735 – 2008

- TAG should re- examine the section of onshore pipeline from the high water mark to the downstream pipework from the HIPPS at Glengad, covered by the offshore standard DnV OS- F101, and review if any supplementary codes are required.
- SEPIL needs to set a MAOP for the Onshore Pipeline System.
- PD 8010 –1 Section 7.3 should be the adopted code for security.
- Under Annex A, SEPIL should produce a Qualitative Analysis to widen the scope on how ‘other’ risks are evaluated, as distinct from the QRA which was dominated by 3rd party damage.

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TABLE 3 PIPELINE SUMMARY DESIGN CODES WITH SUPPLEMENTS			
REMARKS	I.S. EN 14161	I.S. 328	PD8010
Accepted No Comment	Scope Sections 1/2/3		Section 7.7.1 Boundary between pipe & terminal
General			
Accepted No Comment	Health Safety & Environment Section 4.1- 4.3		Section 4.3.1 reference BS EN 14001 Environmental Management
Accepted No Comment	Competence / Compliance Section 4.2- 4.3		
Accepted No Comment	Records Section 4.4		Section 4.4 Design / Construction/ Commissioning Assurance Flow Chart
Pipeline System Design			
Accepted No Comment	System Definition Section 5.1		
see comments 3.2.1 Adopt Fluid E	Categorisation of Fluids Section 5.2	Code only applies to single phase natural gas	
Accepted No Comment	Hydraulic Analysis Section 5.3		
See comments 3.1.2	Pressure Control / overpressure protection Section 5.4		
Accepted No Comment	Requirements of Operation & Maintenance Section 5.5		
see comments 3.2.1 - 3.2.2. - 3.2.3 Annex A Delete Annex B	Public Safety & protection of Environment Section 5.6	Sections 6.2 to 6.5	Use of 8010-3 to perform QRA
Pipeline Design			
Accepted No Comment	Design Principles Section 6.1		
Accepted No Comment	Route Selection Section 6.2		
See comments 3.1.1 - 3.2.1 - 3.2.2. 3.2.3	Public Safety Section 6.2.1.2 – Annex A Delete Annex B	Sections 6.2 to 6.5	Use of 8010-3 to perform QRA
Accepted No Comment	Loads Section 6.3		

REMARKS	I.S. EN 14161	I.S. 328	PD8010
Accepted No Comment	Strength Requirements Section 6.4		
Accepted No Comment	Calculation of stresses		
Accepted No Comment	– hoop stress due to fluid pressure	Sections 6.2 to 6.5	Section 6.2.2.2 Straight pipe under external load
Accepted No Comment	Other Stresses Section 6.4.1.2		Section 6.4.2.3 Longitudinal stresses Section 6.4.2.4 Shear stresses
Accepted No Comment	Strength Criteria		
Accepted No Comment	General Section 6.4.2.1		
Accepted No Comment	Yielding Section 6.4.2.2	Sections 6.3 & 6.5	Section 6.4.3.2 Allowable equivalent stress
Accepted No Comment	Buckling Section 6.4.2.3		Section 6.4.4 Buckling
Accepted No Comment	Fatigue Section 6.4.2.4		Section 6.4.6 Fatigue
Accepted No Comment	Ovality Section 6.4.2.5		Section 6.4.4.2 Ovality Calculations
Accepted No Comment	Stability Section 6.5		
Accepted No Comment	Pipeline spanning Section 6.6		
Comments in 3.1.3	Pressure test requirements Section 6.7	SEPIL Document JPK Report 05 2377 01 P 3 020	
Accepted No Comment	Other Activities Section 6.8		
Accepted No Comment	Crossings and Encroachment Section 6.9	Section 6.9 Pipe Cover & Impact Protection Fig 3 Acceptable Forms of additional Protection for Pipelines	Section 6 trenchless technology
Accepted No Comment	Adverse Ground Bed Conditions Section 6.10		
Accepted No Comment	Section Isolation valves Section 6.11		
Accepted No Comment	Integrity Monitoring Section 6.12		
Accepted No Comment	Design for Pigging Section 6.13		
Accepted No Comment	Fabricated Components Section 6.14		
Accepted No Comment	Attachment of Supports & Anchors Section 6.15		
	Offshore Risers Section 6.16		

REMARKS	I.S. EN 14161	I.S. 328	PD8010
Design of Stations and terminals			
Accepted No Comment	Selection of Location Section 7.1		
Accepted No Comment	Layout Section 7.2		
Comments 3.1.4	Security Section 7.3		
Accepted No Comment	Standby Section 7.4		
Accepted No Comment	Environment Section 7.5		
Accepted No Comment	Buildings Section 7.6		
Accepted No Comment	Equipment		Section 7.6 Equipment
Accepted No Comment	Piping		Section 7.7.1 Piping
Accepted No Comment	Emergency Shutdown System Section 7.9		
Accepted No Comment	Electrical Section 7.10	Section 16.3 Earthing / Bonding	
Accepted No Comment	Storage and Working Tankage Section 7.11		
Accepted No Comment	Heating and Cooling station Section 7.12		
Accepted No Comment	Metering & pressure control Stations Section 7.13		
Accepted No Comment	Monitoring & communication systems Section 7.14		
Materials & Coating			
Accepted No Comment	General Material requirements Section 8.1		
Accepted No Comment	Linepipe Section 8.2		Sections 8.2.6 fatigue
Accepted No Comment	Components Section 8.3		Section 10.12.6 factory Bends
Accepted No Comment	Coatings Section 8.4		
Corrosion Management			
Accepted No Comment	General Section 9.1		

REMARKS	I.S. EN 14161	I.S. 328	PD8010
Accepted No Comment	Internal Corrosivity Evaluation Section 9.2		
Accepted No Comment	Internal Corrosion Mitigation Section 9.3		
Accepted No Comment	External Corrosion Evaluation Section 9.4		
Accepted No Comment	External Corrosion Mitigation Section 9.5		
Accepted No Comment	Monitoring Programmes & Methods Section 9.6		
Accepted No Comment	Evaluation of monitoring & Inspection Results Section 9.7		
see comments 3.2.1 - 3.2.2. 3.2.3	Annex A		
see comments 3.1.1- 3.2.1 - 3.2.2. 3.2.3	Annex B	Section 6.2. 6.3.6.4.6.5	
Accepted No Comment	Annex C		
Accepted No Comment	Annex D		

4 PIPELINE SAFETY - REPRESENTATION OF RISK TO THE COMMUNITY

Historically the risk to the community has been expressed as permitted proximity distances from the pipeline to dwellings and public buildings as specified in I.S. 328.

In the case of the Corrib pipeline operating at 144 bar, a proximity distance of 3m can not be justified. This clearly demonstrates the problem of using a code of practice, which was written for a pipeline transporting a different product. The I.S. 328 proximity distance is a complex parameter taking into account consequences and frequency of failure. The code was based upon dry natural gas being transported at pressures less than 100 bar. In these circumstances 3rd party damage is the main risk and therefore a pipeline with a design factor of 0.3 and a wall thickness greater than 11.91mm is unlikely to fail.

The Risk Analysis by DNV is given in EIS Vol 3 Appendix Q7.³⁷

Mr Crossthwaite stated in his written submission³⁸ that a QRA was not required for high-pressure transmission pipelines designed in accordance to IS328. In addition DNV has not carried out a QRA for the BGE pipeline to the West or any other pipeline in Ireland. These pipelines had a diameter of 914mm and operated at a pressure of 85 barg with predicted failure frequency and consequences higher than that for the proposed Corrib Pipeline.

The above comment is misleading. I.S. 328 does state that where it is impractical to comply with the above proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA). SEPIL have also specified the use of IS EN 14161 Annex A. This allows the hazard to be evaluated by either a QRA or Qualitative Analysis to illustrate the risk level. It was argued in Section 2 and agreed by all parties that this pipeline was unique. Therefore using historical databases for dry natural gas could not be fully relied upon to quantify the risks arising from transporting wet untreated gas in a peat bog environment.

The difference between a Quantitative Risk Assessment and a Qualitative Analysis is defined by the amount and accuracy of the pipeline failure data that will be used in the analysis.

A QRA is always the preferred method as long as there are significant amounts of statistical data from a large pipeline population operating in a similar environment and transporting a similar product. The benefit of a QRA is that it produces mathematical data such as 'Frequency of Failure' and 'Number of Casualties Expected'

If this information is not available, then a Qualitative Analysis (QA) should be employed. Instead of obtaining hard statistical values the QA uses broader terms such as 'Likelihood of Failure' against 'Likely Consequences of Failure' The information used to form an opinion is subjective and collected in broad terms such as Low, Medium or High. However this type of analysis is very informative where the information about the pipeline is sparse.

³⁷ EIS Vol 3 Appendix Q7 - DNV Report 32217602 Quantified Risk Analysis for the Corrib Onshore Pipeline – 3 Jan 2009

³⁸ SEPIL Submission by Mr Crossthwaite – Inspectors Ref No 12- 20 May 09

SEPIL opted to use a QRA to define risk to the population at Glengad and Ross Port

4.1 Thermal Radiation and Effects

Fatal injury is assumed where people are in the open or in buildings that are located within the flame envelope of a fireball or jet fire. Outside the flame envelope the effects are dependant on direct thermal radiation from the flame to the exposed person or building

Thermal radiation is calculated from the energy of the burning material. Usually energy from a fireball is calculated from the View Factor method, which assumes a surface emissive power from the flame.

The thermal radiation effect at distances from the failure is expressed as the number of Thermal Dose Units (TDU), where:-

$$1 \text{ TDU} = (W)^{4/3} \times \text{time}$$

$W = \text{Flux} = \text{Intensity of thermal radiation (kWm}^{-2}\text{)}$

Time = seconds

Experimental and historical data indicates that thermal radiation dose levels can have different effects within a population depending upon individual tolerance. From the data the radiation dose that will cause a significant likelihood of fatal injury in an average population is 1800 TDU.

Alternatively a more cautious approach can be adopted using 1000 to 1050 TDU, which assumes 1% lethality for the Dangerous Dose, which is equivalent to 6kWm^{-2}

The Individual and Societal Risk based criteria use different values for the Dangerous Dose. The UK HSE Land Use Planning (LUP) Zones for individual are based upon 1000 TDU, shown in Figure 8. Both IGEM/TD/2 and PD8010-3 adopt the HSE method for their Individual Risk Analysis.

For Societal Risk, the IGEM/TD/2 and PD8010-3 models are based upon the 1800TDU dangerous dose. The PD 8010 –3 and IGEM/TD/2 failure criterion envelopes are given in Figures 9 & 10 respectively.

The UK HSE define Dangerous Dose as causing:-

- Severe distress to almost everyone in the area.
- A substantial fraction of the population requiring medical treatment.
- Some people being seriously injured requiring prolonged treatment.
- High – susceptibility of people being killed.

In the original J. P Kenny QRA model³⁹ quoted in the Advantica Appendix D4.1, the model uses the 1000 TDU for the Individual Risk calculations based upon exposure to flux greater than 6kWm^{-2} . Advantica's approach involved summing the varying

³⁹ Corrib Field Development Project: Onshore Pipeline Quantified Risk Assessment (Rev F) JP Kenny April 2005

radiation dose received over the event time to determine whether this exceeds the dangerous dose criteria of 1800TDU.

The EIS DNV modelling of QRA – Appendix 7 also uses the dangerous dose criteria of 1000TDU for Individual Risk and 1800TDU for Societal Risk

4.2 Risk Tolerability Criteria

Risk tolerability criteria are used in several EU countries including the UK, Netherlands and Belgium for making decisions on potential developments in the vicinity of major hazard facilities. Ireland does not have a regime in place for such risk-based decision-making.

Two recent UK Codes Of Practice have been written to aid the analysis of risk from a gas pipeline. These are IGEM/TD/2 for single-phase natural gas and PD8010-3 covering five different fluids. TAG has recommended the use of PD8010 and SEPIL has adopted this standard for its QRA.

The QRA can represent risk to the community in two ways:-

- An individual risk
- A societal risk

4.2.1 Individual Risk

Individual Risk is defined in PD8010-3 as a measure of the frequency at which an individual at a specific distance from a pipeline is expected to sustain a specified level of harm from the realization of specific hazards

Both IGEM/TD/2 and PD8010-3 use the UK HSE Land Use Planning (LUP) Zones to define individual risk. The zones define three areas:-

- Inner Zone which is immediately adjacent to the pipe
- Middle Zone which applies to significant development
- Outer zone which applies to vulnerable or very large populations

The boundaries between these zones are defined by individual risk. The UK HSE has determined the criteria for individual risk levels based upon historical risk of death. However the HSE risk figure for the inner boundary of 1×10^{-4} is a general risk level for any hazard involving a dangerous process and normally does not apply to gas pipeline which uses the lower value of 1×10^{-5}

The boundaries between the zones are therefore defined as follows:-

- Boundary between Inner and Middle zone based upon the GREATER OF
 - An individual risk (1×10^{-5}) per year of dangerous dose or worse to the average householder
 - The pipeline BPD
- Boundary between Middle and Outer zone
 - An individual risk (1×10^{-6}) per year of dangerous dose or worse to the average householder
- Boundary between Outer zone and no restrictions based upon the LESSER OF
 - An individual risk (0.3×10^{-6}) per year of dangerous dose or worse to the average householder
 - Notified outer zone distance

The relationship between risk and zone boundaries is shown below in Figure 8

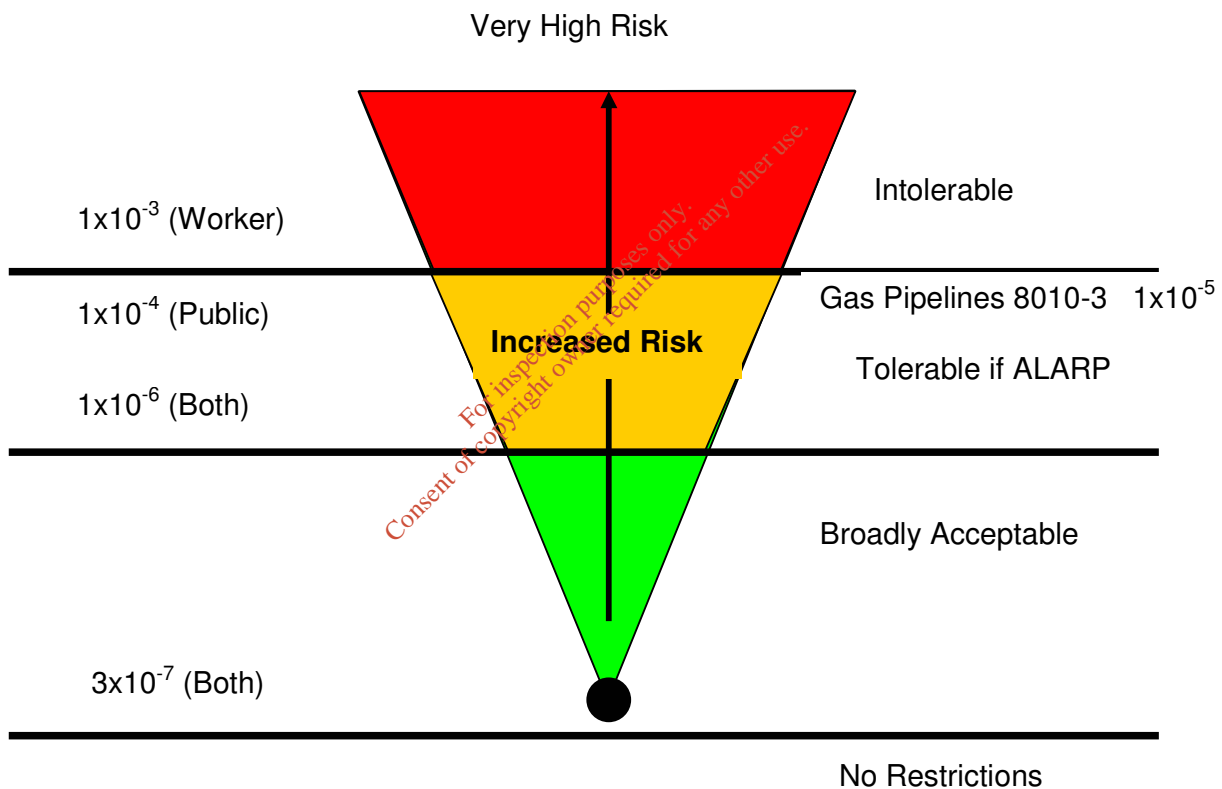


FIGURE 8 RELATIONSHIP BETWEEN RISK AND ZONE BOUNDARIES

A detailed advice document has been issued by the UK HSE on planning matters related to developments near hazardous facilities, called Planning Acceptance for Development near Hazardous Installations, (PADHI)⁴⁰

⁴⁰ UK HSE Planning Advice for Developments near Hazardous Installations

4.2.2 Individual Risk Assessment

The individual risk contours form lines parallel to the pipeline axis. The distance from a pipeline at which a particular level of risk occurs depends upon the:-

- Pipeline diameter
- Operating pressure
- Failure mode
- Frequency of failure

The failure modes used in the SEPIL submission for Risk are:

- Rupture – Resulting in a fire ball and then a jet fire
- Hole - Resulting in a Jet fire from a 31mm diameter hole
- Pin Hole - Resulting in a Jet fire from a 12mm diameter hole

The failure frequency depends upon a number of factors and forms one of the key areas of the SEPIL submission. This topic is extensively discussed in Section 6

4.2.3 Societal Risk

Societal Risk is a measure of the relationship between the frequency of an incident and the consequence i.e. the resulting number of casualties. The hazards associated with high-pressure natural gas pipelines tend to be high consequence – low frequency events. Therefore Societal Risk is generally the determining measure for the acceptability of pipeline risk.

In the Advantica Report Section 3.3 Pg 11 – Advantica recommended that the Societal Risk should have also been calculated as well as the individual risk. This has now been performed in the EIS submission. Appendix Q7. DNV has performed a QRA's for individual and societal risk at various pressures

The QRA relates cumulative frequency of failure to the consequence of the failure (Number of casualties) and this is compared to an industry risk envelope as described in PD8010-3

The acceptance criterion for Societal Risk in PD8010-3 is given in EIS Appendix Q7 and shown below in Figure 9

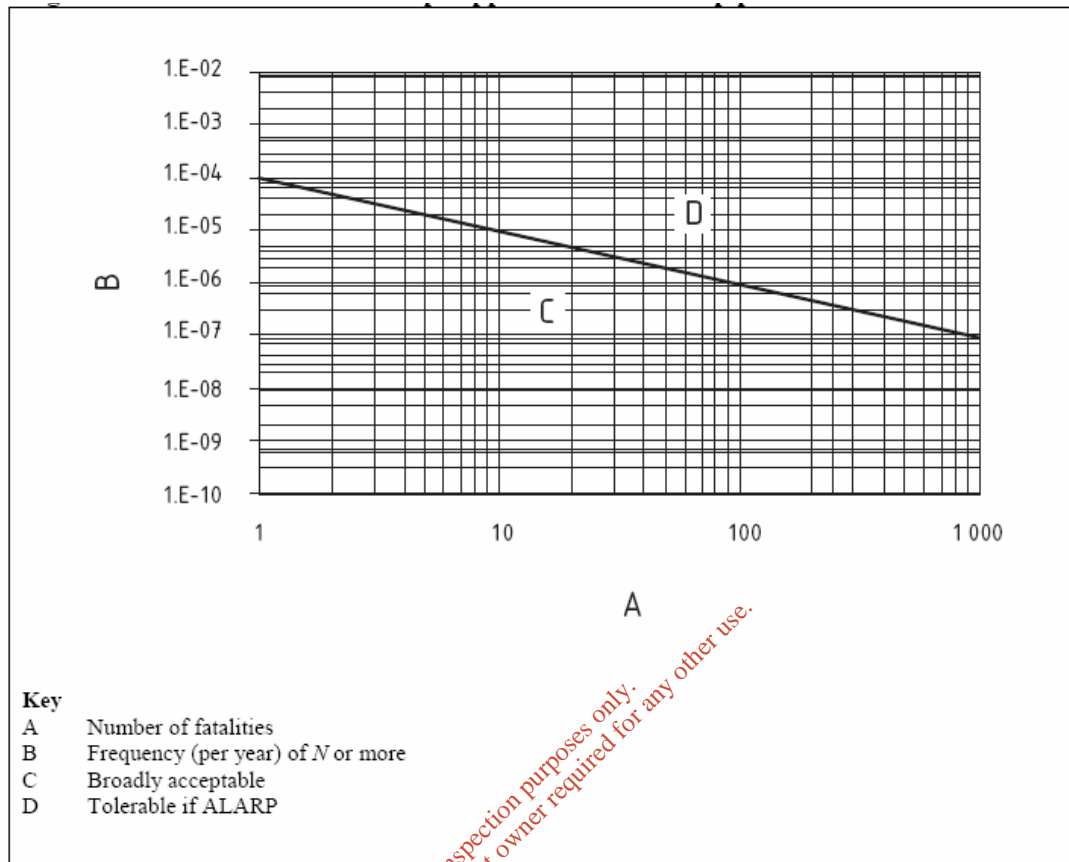


FIGURE 9 PD8010-3 SOCIETAL RISK F/N DIAGRAMME & RISK CRITERION LINE

Figure 9 shows a graph of Frequency of Failure/ Year (B) against the No of Casualties (A). This is known as a F/N diagramme.

The acceptable criterion line runs from 1 casualty at frequency 1E-04 /year through 10 casualties at frequency 1E-05 /year to 100 casualties at frequency 1E-06 /year. The line is applicable to assessments using 1800 Thermal Dose Units (TDU) The area below the line (C) is considered broadly acceptable whereas the area above the line (D) is considered ALARP.

An alternative risk envelope is published in IGEM/TD/2 specifically for natural gas this is shown in Figure 10

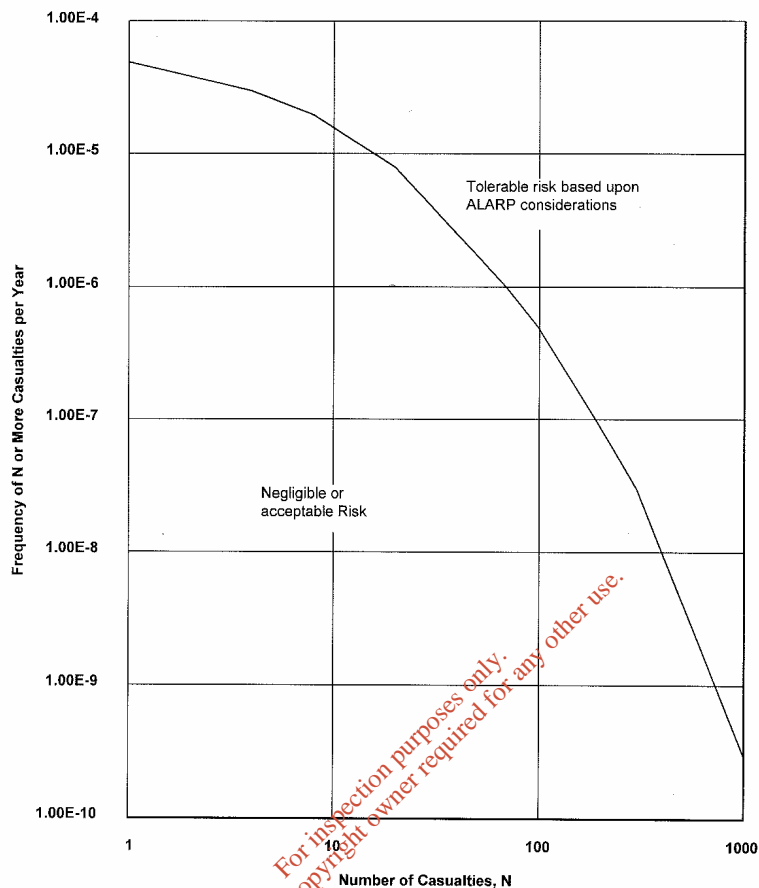


FIGURE 10 IGEM/ TD/2 SOCIETAL RISK CRITERION

To construct a site-specific societal risk F/N curve the maximum distance over which the worst-case event could affect the population in the vicinity should be determined. This distance is known as the Site Interaction Distance. PD8010-3 uses a standard interaction distance of 1km while IGEM/TD/2 uses 1.6km. These distances were selected by SEPIL for their analysis

The accident scenarios, which are relevant to each section of pipe, are listed. This will allow the accumulative failure frequency to be calculated. The number of fatalities depends upon the population density within site interaction distance. IGEM/TD/2 uses 2.5 persons per hectare for Rural Sites or 3 people per house.

5 CONSEQUENCES OF FAILURE FROM THE ONSHORE PIPELINE

5.1 The Failure Event

The Advantica report states that pipe failure at high pressure leads to a turbulent and complex gas release. For buried pipes the overlaying soil will be ejected and a crater will be formed. At the start of the release, a highly turbulent mushroom shaped cap is formed, which increases in height above the release point due to the gas momentum and buoyancy. This mushroom plume is fed by gas and entrained air producing a potentially explosive mixture. Ignition can occur at any time during the release. A transient fireball will form if ignition occurs immediately on or shortly after rupture. The duration of the fireball will be around 30 seconds after which it burns out leaving a quasi-steady state jet fire. The duration of the jet fire will depend upon the amount of gas stored in the pipeline or the time it takes for the pipeline operator to isolate the flow.

The EIS Appendix 7 – Sub Appendix IV Consequence Analysis, confirms the above description of events

During the Hearing Comdt Patrick Boyle submitted a document⁴¹ detailing the gas pipe explosion at Ghislenghien on behalf of Pobail Chill Chomain.

The document details the pipeline failure in Ghislenghien Belgium in 2004. In fact the incident involved two adjacent pipelines, one 1000mm diameter carrying 1.6mcm/hour at 80 bar and the other 900mm diameter carrying 1.0mcm/hour again at 80 bar. The pipeline incident was thought to have occurred through 3rd party damage. The ensuing explosion and fire burned and melted everything within a 400m radius and caused 24 deaths and 155 injuries⁴². A view of the fire is given in Figure 11



**FIGURE 11 SHOWING PIPELINE FIRE AT GHISLENGHIEN BELGIUM
SUBMITTED BY COMDT BOYLE AT THE HEARING**

⁴¹ Comdt Patrick Boyle Submission on Explosion at Ghislenghien – Inspectors Ref No 35a – 27 May 09

⁴² Gas International Corporate Social Responsibility – Challenges and Opportunities Pg 10 – June 2009

The submission also presented a list of other gas explosions from around the world

The purpose of this submission was to demonstrate to the Inspector the potential damage a high-pressure gas fire could have on a community. In addition it raised the point of availability of emergency services in Mayo to tackle such an incident

Comdt Boyle disputed the safe distance of 140m and concluded that a distance of 500m was more realistic given the weight of evidence in his submission

5.2 Failure Event Modelling

The Advantica Report Section 5, gives a graphic account of the mechanisms associated with a high-pressure pipeline rupture. It is important to understand these mechanisms to ensure the modelling predictions are accurate. The prediction of the number of casualties from a pipeline failure is based upon a series of mathematical models backed up by full-scale tests and historical failure data. Different organisations use different models so there will be differences between results although these should not be significant

5.2.1 Advantica PIPESAFE Model

The Software package Advantica used in their report (Appendix D1.1.2 Pg 89), to determine the risk and consequences is called PIPESAFE. This package contains a range of mathematical models to calculate Individual and Societal Risk. The software has been extensively validated against both small and large-scale experiments.

The main elements of a pipeline failure considered in PIPESAFE are:-

- Failure cause
- Failure frequency
- Failure mode
- Gas Outflow
- Dispersion
- Ignition
- Thermal radiation
- Thermal effects

Knowledge and models are combined in a logical manner to calculate casualty probability and risk.

Advantica have validated the model from full-scale pipeline failures at Spadeadam and from two full-scale experiments conducted in Canada. The experiments involved the deliberate rupture of a 914mm diameter natural gas pipeline, 76Km long operating at a pressure of 60barg. Advantica report states that during the test that flame heights of over 500m were recorded.

PIPESAFE has also been validated against data collected from actual incidents. This compared building ignition times, burn areas surrounding the failure and injuries to people.

5.2.2 SEPIL – UK HSE Fireball Model / DNV PHAST Jet Model

As well as Advantica, the UK HSE has a fireball model followed by either a jet or trench fire. Since details of Advantica model are not published then DNV used the UK HSE model for the SEPIL submission. In the EIS Appendix Q7 – sub Appendix IV DNV states that the fireball model is based upon small-scale releases design to predict the scale of fireball from liquefied flammable gases. Hence the application of such a model to pipeline ruptures is somewhat uncertain!

Jet fires have been modelled in PHAST using the DNV recommended option.

The fireball and jet fire models were then used to determine the thermal flux at various distances. It is assumed that people will try to escape from the radiation at a speed of 2.5ms^{-1} and find shelter within 30 seconds. This assumption is used to convert the thermal radiation levels into a thermal dose. **The assumption has limitations since there is no shelter in the commonage or down to the bay at Ross Port.**

This limits the subsequent DNV assumption, which is that 1800TDU is considered to be 50% fatality so the outer edge of the boundary represents a maximum of 50% since many people will find shelter within 30 Seconds.

5.3 Cross Examination of Mr. Crossthwaite on DNV Modelling

The Inspectors team asked Mr. Crossthwaite a series of questions about the accuracy of the model used to predict consequences of a failure. A summary of certain questions and answers is given below.

- From the video if the failure on the screen was at 345 barg representing upstream of LVI, what would be the size of fire ball.
Answer:- I cant give that data but it is available from the computer. However we work off heat radiation predictions not size of the fireball.
- Have you modelled a fireball at 345 barg.
Answer:- the pipelined was modelled with a pressure of 345 bar producing a fire ball.
- Have you performed any experimental work to verify the model predictions at 345barg.
Answer:- No experimental work has been performed at this pressure but model is used by UK HSE for actual incidents and found that its predictions are conservative -
- So the model has not been verified at 345 bar
Answer:- The information has been extrapolated from lower pressure data
- Will there be some error in the extrapolation –
Answer:- Yes there will be some error

- There will then be a zone of uncertainty with the answers from the extrapolation
Answer:- Yes but we are confident of the accuracy of the predictions
- What is the max pressure the model has been verified at.
Answer:- not sure what the maximum pressure the UK HSE model has been verified at but it has at been used for natural gas pipelines at a 100 bar but it has not been verified at a pressure of 345 bar
- Has Shell looked at heat radiation measurements from fireballs at 345 bar
Answer:- No Shell has not looked at Natural Gas pipe failures at 345 bar and nor has Advantica.
- Does the science of heat radiation at these high pressures have an area of uncertainty
Answer:- No the physics of the event is well understood which allows extrapolation
- What is the error due to extrapolation
Answer:- It is valid to extrapolate existing data to 345 but accept may be some error
- What is the maximum pressure Advantica have tested pipelines to failure.
Answer:- believed to be 150 bar

5.4 Cross Examination of Mr Crossthwaite on QRA Consequence Predictions

Following the presentation of the QRA results by Mr Crossthwaite, the Inspector's Team and the Observers asked a series of questions. This produced a significant amount of new information concerning the risk consequences and low failure frequency.

To illustrate key points of a pipeline rupture, the Inspectors Team showed an Advantica video with the permission of Advantica. This video was taken at Advantica's Test facility at Spadeadam. The video showed a large diameter pipe being instrumented before being pressurised with gas. A defect was then initiated in the pipe and the pipe failed with a dramatic fireball engulfing a significant distance around the pipe.

Mr Crossthwaite SEPIL during his submission was asked by the Inspectors Team to explain the hazard to the community when a pipe rupture occurs. He stated that :

- An initial fireball will occur and last for a period of 30 Seconds followed by a jet fire
- The effect of the population will vary from fatalities to no permanent injury away from the fire.
- It is assumed that between the two extremes that people will move away from the fireball or jet fire. While moving away they will accumulate thermal radiation. If the level of accumulated thermal radiation exceeds 1000TDU, then there will a possibility of people being fatally injured.

- Buildings will burn at radiation levels above 25kWm^{-2} . The exact time to spontaneously burn depends upon the radiation level and time exposed at that level
- Escape Distance is based upon the assumption that people will move away from the fire within 30 Seconds at a speed of 2.5ms^{-1} until they find shelter. ($2.5 \times 30 = 75\text{m}$) PD8010-3, states they will find shelter within 75m in Rural areas and 50m in Suburban areas
- Mr Crossthwaite then quoted the burning and escape distances from EIS Appendix 7 Table 3 shown below in Table 4

TABLE 4 BURNING AND ESCAPE DISTANCES FROM EIS APPENDIX Q7 – TABLE 3		
PRESSURE BARG	BUILDING BURNING DISTANCE M	ESCAPE DISTANCE M
144	171	223
345	230	333

- It was pointed out to Mr Crossthwaite that these distances were greater than the 140m that SEPIL had allowed for in the EIS
Answer:- the reply was YES
- Mr Crossthwaite was questioned what is 2.5ms^{-1} in everyday terms
Answer:- he replied a 'Fast Walk'.
- What happens if they don't find shelter .
Answer:- people keep accumulating thermal radiation until the level of radiation falls away with distance
- Do you have a contour plot of burning distances and escape distances for the dwellings.
Answer:- NO (This was later supplied see section 6.5)
- Where is the safe shelter in Ross Port out on the common
Answer:- Can't answer specifically – However later under observers questions he stated a ditch would be safe.

Under Cross examination from Observer Mr Monaghan – summary of certain points

- How long would it take for a building to ignite subject to thermal radiation
Answer:- For thermal radiation levels of 25kWm^{-2} about 1 hour
- Escape distances – explain exactly what does this mean because this is of concern for the people in Ross Port Glengad and Aughoose, because we have been told that these distances assumes shelter.
Answer:- The escape distance shown on the map is a point from which if a person moves at 2.5ms^{-1} for 30 seconds they will accumulate heat and at the end of the duration predicted fatality probability is 1%. It is assumed that people can gain shelter within that distance

- If you don't receive shelter after 75m what happens to you?
Answer:- If you carry on without shelter moving away from the pipeline you carry on accumulating heat and the longer you keep accumulating heat the slightly higher percentage fatality there will be.
- So should you not have figured out where shelter is and worked backwards
Answer:- I sympathise with that and in a specific assessment then that is what I think really ought to be done but to comply with PD8010 methodology then 30seconds at 2.5ms^{-1} is the specified way of doing it. So in order to compare like with like and criterion with criterion we use the method in PD8010.
- If there was no shelter how far away do you have to be to be safe
Answer:- If we are talking about fatality level it is not much greater than shown on the map – in the order of 50m but I would not like to hazard a guess.
- Would it be fair to say that you don't have a full grasp of the consequence areas from a rupture on the Corrib gas pipeline.
Answer:- The full implications of the consequences have not been calculated and have not been expressed in the EIS, because that is to do with risk. But if it was a requirement of PD8010 to calculate consequence distances then it would have been done. Because everything is based upon risk it is not necessary to do that.
- If there was a catastrophic failure anywhere on the pipeline what would be the maximum number of fatalities
Answer:- The maximum number of casualties for the onshore pipeline is predict at seven fatalities at 144 bar pressure.

There was a great deal of concern from the observers that there is NO shelter from the thermal radiation either out to the commonage or down to the bay and therefore the model on fatalities and injury could underestimate the casualties.

I believe that SEPIL's QRA is limited in that it does not fit reality. It is based around a series of artificial assumptions to fit a generic safety case of PD8010 –3 so that the figures can be compared to the risk criterion curve of 10 fatalities at Cumulative Failure Frequency of $1\text{xE-}05$

In further questioning Mr Crossthwaite stated that a site-specific risk QRA assessment could be undertaken by SEPIL but in this instance they decided to adopt a standard industry template for the reasons given above

5.5 Consequence Impact Contours Maps

SEPIL were requested to draw a set of contours along the route of the pipeline from Glengad to the Bellanaboy Terminal showing burning and escape distances⁴³ for various types of failures and pressures.

Ruptures:- On the maps the building burning distance is shown as a white contour where a wooded building is expected to ignite during the event. The escape distance is shown as a yellow contour where people are assumed to walk at 2.5ms^{-1} for 30

⁴³ SEPIL Explanatory note 1 : Consequence Impact Contour Map Inspectors Ref No 77 – 9 June 09

seconds before finding shelter receiving a dose of 1000TDU. The maps show maximum and minimum distances, which are dependant upon the orientation of the release.

Holes:- two holes sizes were used 12mm and 32mm diameter . The inner distance is the building burn distance with a heat radiation level of 25kWm^{-2} for 1 hour while the outer distance termed the escape distance has a heat radiation level of 6kWm^{-2} or 1000TDU. The maximum and minimum ranges correspond to the maximum and minimum hole size.

The pipeline route has been set with the proposed distance of 140m between pipe and the nearest dwelling. The route is divided into 7 areas as explained in EIS Appendix A2

Maps have been produced for the following case studies:-

- Map 1 (area 1 Glengad) - Pressure 100barg – Failure 12mm & 31mm Holes
- Map 2 (area 1 Glengad) - Pressure 144barg – Failure 12mm & 31mm Holes
- Map 3 (area 1 Glengad) - Pressure 100barg – Failure Rupture
- Map 4 (area 1 Glengad) - Pressure 144barg – Failure Rupture
- Map 5 (area 1 Glengad) - Pressure 345/144barg – Failure 12mm & 31mm Holes
- Map 6 (area 1 Glengad) - Pressure 345/144barg – Failure Rupture
- Map 1 (area 2 Ross Port - Pipe bay side) - Pressure 100barg – Failure 12mm & 31mm Holes
- Map 2 (area 2 Ross Port - Pipe bay side) - Pressure 144barg – Failure 12mm & 31mm Holes
- Map 3 (area 2 Ross Port – Pipe bay side) - Pressure 100barg – Failure Rupture
- Map 4 (area 2 Ross Port – Pipe bay side) - Pressure 144barg – Failure Rupture
- Map 1 (area 3 Ross Port – Pipe bog side) - Pressure 100barg – Failure 12mm & 31mm Holes
- Map 2 (area 3 Ross Port – Pipe bog side) - Pressure 144barg – Failure 12mm & 31mm Holes
- Map 3 (area 3 Ross Port – Pipe bog side) - Pressure 100barg – Failure Rupture
- Map 4 (area 3 Ross Port – Pipe bog side) - Pressure 144barg – Failure Rupture
- Map 1 (area 4 Ross Port – Pipe North Crossing) - Pressure 100barg – Failure 12mm & 31mm Holes
- Map 2 (area 4 Ross Port – Pipe North Crossing) - Pressure 144barg – Failure 12mm & 31mm Holes
- Map 3 (area 4 Ross Port – Pipe North Crossing) - Pressure 100barg – Failure Rupture

- Map 4 (area 4 Ross Port – Pipe North Crossing) - Pressure 144barg – Failure Rupture

The affected dwellings are shown in

- Figure 12 - Glengad Map 1-6 Rupture 345 barg
- Figure 13 – Ross Port pipeline bay – side Map 2-4 Rupture 144 barg
- Figure 14 – Ross Port pipeline bog – side Map 3-4 Rupture 144 barg
- Figure 15 – Ross Port pipeline North Crossing Map 4-4 Rupture 144 barg

The burning and escape distances are summarised in Table 5 together with the number of dwelling affected. The 50m estimate by Mr Crossthwaite to allow for no shelter has also been added to the table together with the increase in the number of dwellings affected.

From Table 5 the following can be summarised

- Only rupture of the pipeline affects the dwellings, jet fires from holes have no effect
- At Glengad between 1 and 7 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 3 and 8 dwellings.
- At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.
- At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.
- At Ross Port – pipeline North Crossing point, between 4 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings

TABLE 5 TYPE OF FAILURE – PRESSURE RELATIONSHIP TO BURNING / ESCAPE DISTANCES

LOCATION	TYPE OF FAILURE	MAP REFERENCE	PRESSURE BAR	MAX BURNING DISTANCES (M)	MAX ESCAPE DISTANCE (M)	NEAREST DWELLING (M)	NO OF DWELLINGS AFFECTED	ADD 50M TO ESCAPE DISTANCE	NO OF DWELLINGS AFFECTED
GLENGAD LVI	31mm Hole	Area 1-1	100	57	70	246	0	120	0
		Area 1-2	144	67	81	246	0	131	0
		Area 1-5	345	103	126	246	0	176	0
	Rupture	Area 1-3	100	144	247	246	1	297	3
		Area 1-4	144	171	290	246	2	340	5
		Area 1-6	345	230	445	246	7	495	8
ROSS PORT PIPELINE BAY SIDE	31mm Hole	Area 2-1	100	57	70	140	0	120	0
		Area 2-2	144	67	81	140	0	131	0
	Rupture	Area 2-3	100	144	247	140	14	297	18
		Area 2-4	144	171	290	140	18	340	20
ROSS PORT PIPELINE BOG SIDE	31mm Hole	Area 3-1	100	57	70	140	0	120	0
		Area 3-2	144	67	81	140	0	131	0
	Rupture	Area 3-3	100	144	247	140	3	297	7
		Area 3-4	144	171	290	140	5	340	13
ROSS PORT PIPELINE NORTH CROSSING	31mm Hole	Area 4-1	100	57	70	259	0	120	0
		Area 4-2	144	67	81	259	0	131	0
	Rupture	Area 4-3	100	144	247	259	0	297	5
		Area 4-4	144	171	290	259	4	340	11

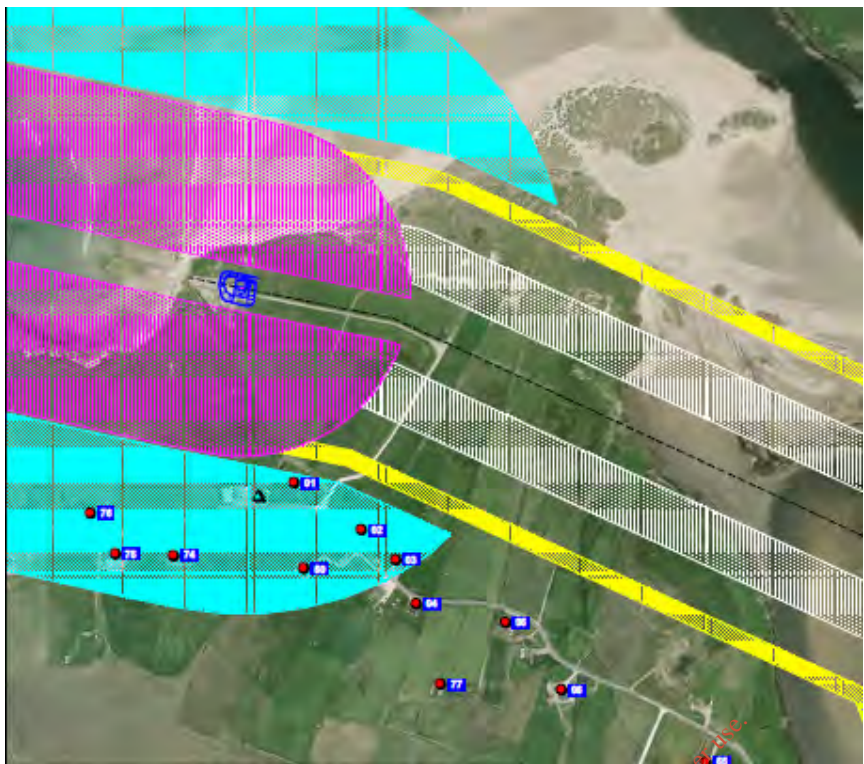


FIGURE 12 GLENGAD LVI - MAP 1-6 RUPTURE AT 345 BARG SHOWING BURN AND ESCAPE DISTANCES

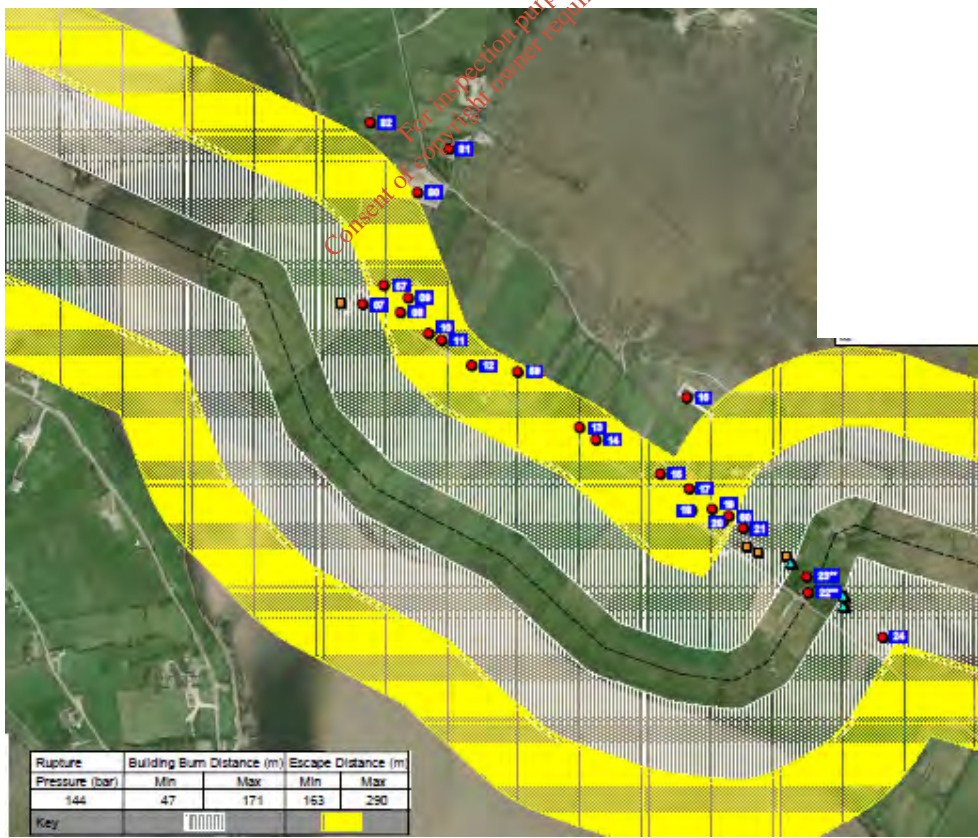


FIGURE 13 ROSS PORT PIPELINE BAY SIDE - MAP 2.4 RUPTURE AT 144 BARG SHOWING BURN AND ESCAPE DISTANCES

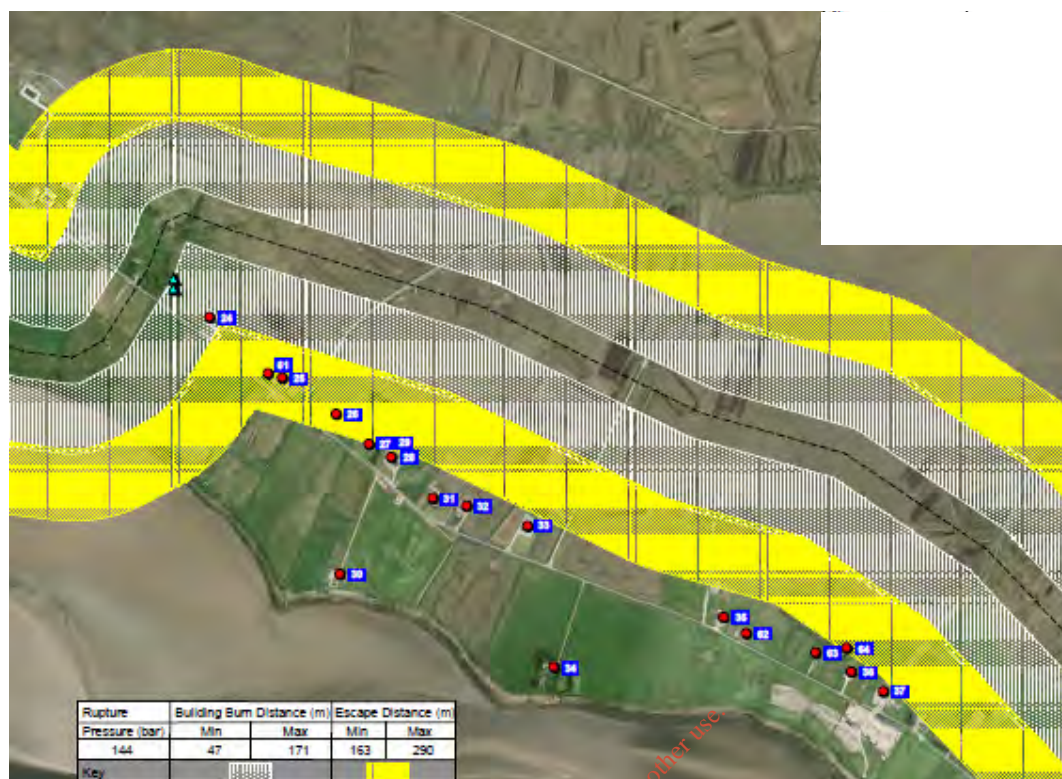


FIGURE 14 ROSS PORT PIPELINE BOG SIDE - MAP 3.4 RUPTURE AT 144 BARG SHOWING BURN AND ESCAPE DISTANCES

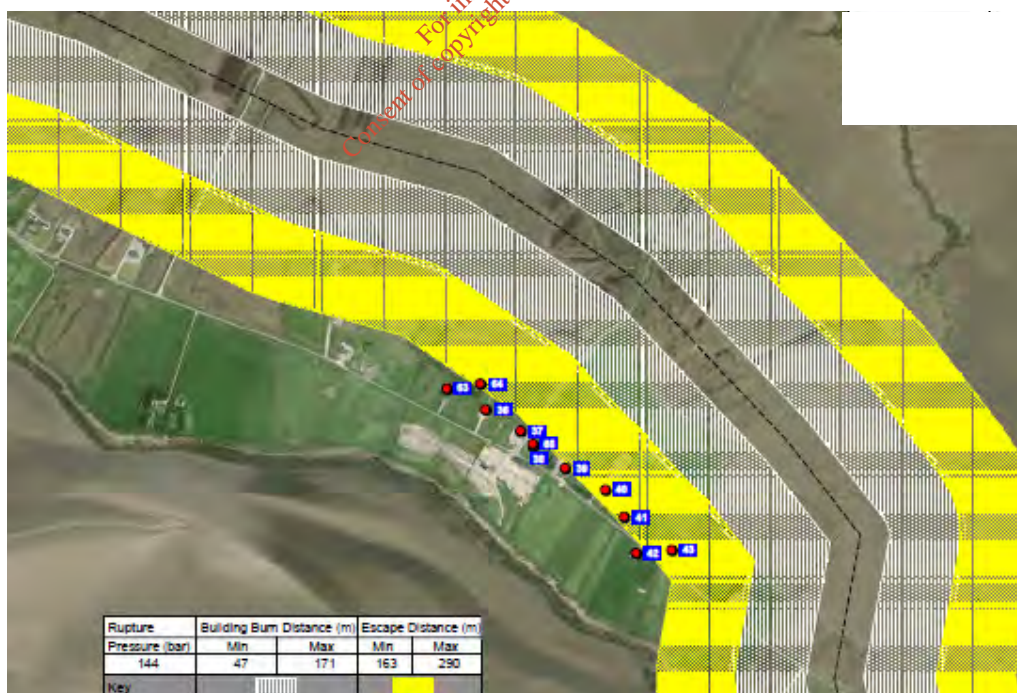


FIGURE 15 ROSS PORT PIPELINE NORTH BAY SIDE - MAP 4.4 RUPTURE AT 144 BARG SHOWING BURN AND ESCAPE DISTANCES

5.6 Concluding Comments

- SEPIIL DNV stated in their written submission that a QRA was not required for high-pressure transmission pipelines designed in accordance to IS328. In addition DNV has not carried out a QRA for the BGE pipeline to the West or any other pipeline in Ireland. The above comment is misleading. I.S. 328 does state that where it is impractical to comply with the proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA). SEPIIL have also specified the use of IS EN 14161 Annex A. This allows the hazard to be evaluated by either a QRA or Qualitative Analysis to illustrate the risk level for a pipeline that is transporting untreated gas where there is no database on comparable pipelines.
- DNV SEPIIL confirmed that in the event of a pipeline rupture there would be a significant fireball lasting up to 30 seconds followed by a jet fire. The jet fire would continue to burn until the supply of gas was isolated. Also holes in the pipeline would only produce a jet fire.
- To quantify the risk to the population SEPIIL DNV have used PD8010 – 3, which defines two methods of analysing the risk. These are Individual Risk and Societal Risk.
- The Individual Risk analysis is based upon the UK HSE methodology, which plots individual risk profile against distance away from the pipeline. These values can be compared to the PD8010-3 defined levels of risk
- SEPIIL used PD8010-3 to define the boundaries of Individual risk, which are above 1×10^{-5} Intolerable, between 1×10^{-5} and 1×10^{-6} Tolerable (ALARP) and below 1×10^{-6} broadly acceptable.
- The UK HSE methodology assumes escaping people will be subjected to a thermal radiation level to produce 1000TDU giving a probability of 1% fatality if the person finds shelter within 30 Seconds walking at a speed of 2.5 ms^{-1}
- Societal Risk is defined from a plot of Cumulative Frequency of Failure against Number of Casualties SEPIIL have used the risk criterion curve from PD8010, which gives a value of 10 casualties at a frequency 1×10^{-5} . This curve assumes a thermal radiation level to give 1800TDU, which produces a probability of 50% casualties from the affected population.
- DNV SEPIIL used the UK HSE model to predict the radiated heat from a fireball as a result of a rupture. Although DNV states in the EIS that the fireball model is based upon small-scale releases designed to predict the scale of fireballs from liquefied flammable gases. Hence the application of such a model to pipeline ruptures is somewhat uncertain. However during questioning Mr Crossthwaite of DNV defended the use of the model although admitted that the model has not been verified against pressures above 100bar. He also stated that DNV used extrapolation techniques to obtain the predictions at 144 barg and 345 barg. Mr Crossthwaite acknowledged there would be additional uncertainty with extrapolating the data but maintained the physics was well understood which permitted the extrapolation.

- From the modelling of thermal radiation SEPIL DNV produced two sets of hazards distances, which have a consequence impact on the community. These are 'Building Burning Distance' and 'Escape Distance'.
- SEPIL DNV produced a set of Consequence Impact Maps illustrating contours of Building Burning Distances and Escape Distances along the whole length of the Corrib pipeline
- SEPIL predicted only rupture of the pipeline affects the dwellings, jet fires from holes have no effect
- At Glengad between 1 and 7 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 3 and 8 dwellings.
- At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.
- At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.
- At Ross Port – pipeline North Crossing point, between 4 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings
- There was a great deal of concern from the observers that there is NO shelter from the thermal radiation either out to the commonage or down to the bay and therefore the model on fatalities and injury could underestimate the casualties because it assumes everyone will find shelter within 30 seconds walking at 2.5ms^{-2} .
- Mr Crossthwaite estimated that without shelter the escape distances could be in the order of an extra 50m before the radiation level fell away, The population would continue to accumulate heat radiation damage during the period.
- SEPIL DNV estimated if there was a catastrophic failure anywhere on the onshore pipeline the maximum number of casualties is predicted at seven fatalities at 144 bar pressure.
- The SEPIL's QRA is limited in that it does not fit reality. It is based around a series of artificial assumptions to fit a generic safety case of PD8010 –3 so that the figures can be compared to the risk criterion curve of 10 fatalities at Cumulative Failure Frequency of 1×10^{-5}
- SEPIL DNV admitted that a site-specific risk QRA assessment could be undertaken by SEPIL but in this instance they decided to adopt a standard industry template to allow comparison with the PD8010 generic safety case

6 FREQUENCY OF PIPE FAILURE

The Frequency of Failure is defined below

The frequency of failure = Probability of failure x incident rate for a given population of pipelines

Therefore it is important to select a pipeline database, which closely matches the condition of the Corrib pipeline. The ideal database for the Corrib pipeline would include the following failure mechanism as detailed below

- 3rd party damage or interference
- Construction Defects
 - Fatigue of weld or construction defects
 - Coatings
 - Estuary Crossings
- Ground Movement
- External Corrosion
 - Coatings
 - CP management
- Internal Corrosion
 - Incorrect flow of inhibitor
 - Non uniform distribution of inhibitor
- Damage or Loss of Control from the formation of Methane Hydrate
- Erosion
- Umbilical Failure
- Intentional 3rd Party Damage
- Failure in Pipeline Management
 - Pipe Integrity Management System

During the examination of the consequences of pipeline failure it was concluded that risk assessment was limited by adopting the generic template in PD8010-3 instead of performing a site-specific analysis. The limitations of such a strategy is again clearly demonstrated by SEPIL's adoption of standard databases derived from pipelines transporting clean dry processed natural gas at pressures below 100 barg which do not fully reflect the potential Corrib pipeline failure mechanisms.

SEPIL selected two published databases for its QRA analysis. The are:-

- European Gas Pipeline Incident Data Group⁴⁴ (EGIG)
- UKOPA Pipeline Fault database⁴⁵ used in PD8010-3

The use of these databases is discussed below:-

⁴⁴ EGIG European Gas Pipeline Data Group 6th Report 1974-2004 Gas Pipeline Incidents EGIG 05.R.0002

⁴⁵ UKOPA United Kingdom Onshore Pipeline Operators Association Pipeline Product Loss Incidents 1962-2004 published 2005

6.1 EGIG Database

The EGIG database shown below is given in the EIS Appendix Q7 – sub Appendix II Table 11

TABLE 6 EGIG DATABASE - FAILURE FREQUENCIES						
FAILURE MODE	BASE FREQUENCY / KM YEAR	SOURCE	PROBABILITY RUPTURE / HOLE / PIN HOLE	RUPTURE FREQUENCY / KM YEAR	HOLE FREQUENCY / KM YEAR	PINHOLE FREQUENCY / KM YEAR
3 rd Party Interference	Negligible	EGIG database indicates no failure for pipe wall thicknesses above 15mm		0	0	0
Construction Material failure	1E-05	Pipelines constructed after 1984	0/0.5/0.5	0	5E-06	5E-06
Corrosion	1E-05	Pipelines constructed after 1994	0/0/1	0	0	1E-05
Ground Movement	2.3E-05	Pipelines 20in Diameter	0.68/0.16/0.16	1.56E-05	3.68E-06	3.68E-06
Hot tap made in Error	7E-06	Pipelines 20in Diameter	0/0/1	0	0	7E-06
Other & Unknown	2.5E-05		0/0.15/0.85	0	3.7E-06	2.13E-05
Total	7.5E-05			1.56E-05	1.24E-05	4.69E-05

The total failure frequencies from the EGIG data base are:-

- Ruptures - 1.56E-05
- Holes - 1.24E-05
- Pin Holes - 4.69E-05

The database shows Pin Holes with jet fires are the more likely failure mode followed by Ruptures

This database reinforces the message that thick wall pipe above 15mm is very difficult to rupture or damage so the only remaining failure mode is ground movement.

Initially SEPIL removed ground movement in their version of a site-specific analysis. But later during the Hearing this figure was included in a revised QRA requested by the Inspectors team was issued as discussed in Sections 7.3 and 8.5.

Mr O Donnell's Report for the Inspector examines in detail the ground movement failure frequency in the EGIG database, which is dominated by landslides and flooding.

6.2 PD8010-3 UK Pipeline Operators Association (UKPOA) Database

The PD8010-3 database shown below is given in the EIS Appendix Q7 – sub Appendix II Table 12 and labelled PD8010-3 – Pg 24

TABLE 7 - PD8010-3 (UKPOA) DATABASE - FAILURE FREQUENCIES						
FAILURE MODE	BASE FREQUENCY / KM YEAR	SOURCE	PROBABILITY RUPTURE / HOLE / PIN HOLE	RUPTURE FREQUENCY / KM YEAR	HOLE FREQUENCY / KM YEAR	PIN HOLE FREQUENCY / KM YEAR
3 rd Party Interference	Negligible	PD8010 database indicates no failure for pipe wall thicknesses above 15mm		0	0	0
Construction Material failure	4.8E-06	Pipe wall thicknesses above 15mm reduced by factor 5	0/0.5/0.5	0	2.4E-06	2.4E-06
External Corrosion	Negligible	PD8010 database indicates no failure for pipe wall thicknesses above 15mm		0	0	0
Internal Corrosion	3E-06	Based on UK pipeline data	0/0/1	0	0	3E-06
Ground Movement	2.1E-07	UK background rate	01/0/0	2.1E-07	0	0
Other & Unknown	7.3E-05	Based on UK pipeline data	0.027/0.26/0.71	1.97 E-06	1.9E-05	5.2E-05
Total	8.10E-05			2.18E-06	2.14E-05	5.74E-05

The total failure frequencies from the UKPOA data base are:-

- Ruptures - 2.18E-06
- Holes - 2.14E-05
- Pin Holes - 5.74E-05

Again the database shows Pin Holes with jet fires are the more likely failure mode but unlike the EGIG database Holes are the 2nd most likely failure mode.

Again the database reinforces the message that thick wall pipe above 15mm is very difficult to rupture and only ground movement and others contribute to rupture .

6.3 Further Analysis by PIE

Although the databases submitted showed there was negligible probability of 3rd party interference causing rupture, SEPIL commissioned PIE to undertake a further site-specific analysis into failure frequency from 3rd party interference. The PIE analysis is detailed in Appendix Q7 Sub Appendix III

Advantica have developed a pipeline failure prediction model for 3rd party damage called FFREQ. This model combines historical UK gas industry data on the frequency and severity of damage (using gouge and dent parameters) with a structural model that determines the severity of the damage required to cause failure in a specific pipeline. This model allows the influence on key pipeline parameters such as: diameter, wall thickness, strength and toughness on the failure probability to be quantified.

Advantica is currently preparing the FFREQ software for release to UKPOA members and the damage data distributions are currently being updated to include data from the current UKPOA Pipeline Fault Database. At the time of writing the reports for the EIS, these packages were not available to analyse the Corrib pipeline and so the PIE model was used to determine the failure frequencies for 3rd party damage.

The PIE model is a reconstruction of the existing FFREQ model. It uses the original gouge and dent failure model and gouge and dent damage probability distributions for the prediction of leak and rupture frequencies using UKPOA database.

PIE states that their model predictions compare well with the FFREQ predictions for frequency of failure.

From the PIE model and using the UKPOA database the following failure probabilities and frequencies are predicted for the Corrib Onshore Pipeline taken from EIS Appendix Q sub Appendix III Table 3 page 43. These are given below in Table 8 for pipeline pressures of 345barg and 144barg

TABLE 8 - PIE 3 RD PARTY DAMAGE FAILURE PREDICTIONS FOR THE CORRIB ONSHORE PIPELINE			
PREDICTIONS		OPERATING PRESSURE BARG	
		345	144
Probability of Failure	Leak	5.83E-5	4.53E-06
	Rupture	1.08E-04	6.86E-07
	Total	1.66E-04	5.22E-06
Failure Frequency Km.yrs	Leak	4.95E-08	3.85E-09
	Rupture	9.15E-08	5.82E-10
	Total	1.41E-07	4.43E-09

The PIE predictions for the frequency of failures is compared to the Advantica predictions in Table 9 below – From EIS Appendix Q sub Appendix III Table 5 page 46

TABLE 9 PIE AND ADVANTICA 3RD PARTY DAMAGE FAILURE PREDICTIONS FOR THE CORRIB ONSHORE PIPELINE AT 345 BARG			
PREDICTIONS FOR 345BARG OPERATING PRESSURE OF		PIE	ADVANTICA
Probability of Failure	Leak	5.83E-5	2.50E-04
	Rupture	1.08E-04	8.70E-04
	Total	1.66E-04	1.12E-03
Failure Frequency Km.yrs	Leak	4.95E-08	3.75E-07
	Rupture	9.15E-08	1.31E-06
	Total	1.41E-07	1.69E-06

It is noted from Table 9 that the Advantica prediction for probability of failure is 8.08 times higher than the PIE value and for frequency of failure the value is 14.4 times higher.

The PIE admits that their predicted failure frequencies are lower than those predicted by Advantica's updated FFREQ failure model. The PIE model predictions compared well with FFREQ predictions when used on standard gas transmission pipe having diameters between 200mm – 1000mm, wall thicknesses of 5 – 19mm and an operating pressure of between 40-90 barg. However PIE state that the Corrib pipeline is different having a greater wall thickness and operating at a much higher pressures.

During the hearing SEPIL admitted that extrapolation of experimental data had to be made to cover the design of the Corrib pipeline. These included

- Gouge / dent data for X70 grade pipe
- Gouge / dent data for pipe wall thicknesses over 25mm thick

6.3.1 Pipeline Fracture Toughness Related Frequency of Failure

The Advantica report Section 4.4 Pg 19 discussed an area of concern, which was the specification of Charpy impact energy levels. Best practice requires that these are derived from a fracture control plan. Such a plan will consider both fracture initiation and propagation. No formal plan had been produced but the SEPIL stated that the material toughness levels were based upon the recommendation of DNV-OS-F101. Advantica checked the required toughness using its FRACPROP model, which concluded that the Charpy toughness would be sufficient to ensure crack arrest.

However since the issue of the Advantica Report, SEPIL have redesigned the pipeline to include the Glengad LVI facility, which can operate at very low temperatures thus reducing the Charpy impact strengths.

The PIE report based their failure frequency on Charpy values of 70 Joules and added a comment (EIS Appendix Q7 sub Appendix III Pg 43) that the possibility of the material cooling when gas is escaping through a crack has been acknowledged and research programmes have been proposed but these have not been supported by the industry.

The cooling arises from the Joule – Thompson effect that predicts that the gas will cool as the gas depressurises when escaping through a defect in a pressurised pipe. This point was made in Comdt Boyle's submission to the Hearing. In his submission he refers to the investigation in to the Ghislenghien pipeline rupture and the analysis carried out by the Chemical Engineering Dept, University College London⁴⁶. The paper describes how a Computational Fluid Dynamics (CFD) model was used to describe events related to gas escaping through a defect and the prediction of significant cooling around the defect, which could lower the toughness of the steel and contribute towards the pipelines catastrophic failure.

At the Hearing the above events were extensively explored during the questioning of Mr Crossthwaite, Mr Patterson and Mr Barker on the 5th June. Key summary points from this discussion are summarised below:-

- Have Shell carried out a fracture control plan according to Advantica's Report
Answer S Patterson:- Shell, have conducted fracture initiation and fracture arrest tests in the laboratory
- Have SEPIL done an full-scale ductile fracture tests on a full-scale Corrib pipeline at any pressure
Answer:- No
- Have you done any ductile fracture propagation testing
Answer:- Performed required testing to the DNV code for the pipeline material which is crack opening displacement testing and ductile tearing in the laboratory
- What are the key parameters that control ductile fracture.
Answer:- Energy of the gas controlled by the gas pressure and the toughness of the steel
- Just to confirm you have not performed any full scale testing at 345 barg
Answer:- That's correct
- What sort of defect size would cause a running fracture at 345barg
Answer:- Don't have that answer to hand. (This is given by PIE in Appendix Q sub Appendix III table 4 as critical length 103mm equivalent hole diameter 6.7mm -1/4inch)
- Have you looked at the cooling effect by the gas escaping through a defect thereby lowering of the pipeline temperature and hence toughness giving a higher potential for the pipeline to fail.
Answer:-Peter Barclay We have considered the cooling effect and have

⁴⁶ Haroun Mahgerefteh et al An Analysis of the Gas Pipeline Explosion at Ghislenghien Belgium

analysed this using two methods. The 1st was a simulation using a recognised code called BLOWDOWN from Imperial College and looked at cooling as the gas goes through the thickness of the pipe which would result in a temperature drop of 22C from the temp of the gas. The other evidence is from a European test site where they released gas at 60barg through a flange again observed around 24C in cooling.

- If you take that cooling rate from 60barg to 345barg what temperature do you get

Answer:- Don't expect the temperature to drop any further due to gas reaching choke velocity in the defect

- Does a drop of minus 23C take the pipeline at Glengad close to its brittle transition temperature.

Answer:- The minimum temperature of the gas is 6C so the gas would leave the defect at minus 14C

- What is the lowest working temperature of steel and we would have to add the minus 23C to that temperature

Answer S Patterson :- Charpy testing has been performed down to minus 40C which will allow the pipeline to work at minus 20C

- So can we take the 6C gas temperature as the lowest working temperature of the steel

Answer:- The 6C is the lowest temperature of the sea which will cool the gas. However if LVI is closed then the valves reopened, the temperature will drop. A temperature-monitoring device at LVI will ensure that the temperature does not fall below minus 20C. This event is classified as an exceptional when the LVI valves are opened to a depressurised downstream pipeline.

- This risk associated with this event of the downstream pipeline operating at minus 20C at full pressure behind the valves, if we get a defect under these conditions then we need to add the minus 23C giving a defect temperature of minus 43C. This may cause a rupture because it is below the brittle transition temperature. This scenario does not appear in the QRA.

Answer:- Mr Crossthwaite It is not included because it is such an exceptional event

- You stated you would include all events with probability above E-08. Does this mean you have analysed this event and it is below that threshold

Answer:- We don't put in any events below E-08

- But your 3rd part interference is all above E-08 for pressure of 144barg, which you put in the QRA

Answer:- Yes but if we did not put a figure in we would have nothing in the QRA because everything would be negligible!.

- Then you would defaulted to a Qualitative Analysis which would have given you better flexibility to interpret the events which are difficult mathematically to analyse. It is this very situation that IS 328 recognises that allows a default to the Australian Standard which has a section on Qualitative Analysis

Answer:- We were trying to use the PD8010 and IGEM TD/2 Generic QRA template

- **SEPIL Question to the Inspectors team:-** You seem to be concentrating on these rare events what is the purpose
Answer by N Wright Inspectors team We have established that the QRA is one of the critical parameters in your design submission because you stated that consequences of failure are balanced out by the low frequency of failure. Therefore the QRA takes a central position in your design and safety submission.
- **The inspector Intervenes:-** We are probing the QRA because we are seeking clarity in the QRA because you are attributing 3rd party failure as the only failure mode to consider. There is concern over a number of factors where you have control over such as construction, welding, corrosion, pipeline design and testing but these are all defaulted out of the QRA. The risk analysis is solely concentrating on the one area you have no control of which is 3rd party interference. What are the factors you have control of and what are the chances of it failing.
- **Mr Keane SEPIL Advocate replies:-** Inspector other parameters have been used when calculating the frequency of Holes and Pin Holes.
- **Questioning is resumed by N,Wright.** It was the rupture data we were concentrating on since this was the area of concern for the consequences.
- On all the events discussed have you all the databases which you have analysed and shown then to be below E-08
Answer Mr Crossthwaite:- For ruptures the only failure modes looked at were ground movement and pipeline 3rd party interference because the databases shows that these are the only events that cause rupture.
- Who analysed the potential failure resulting from the other events such as:- Pipeline fracture , 3rd party for intentional damage , external coatings , CP management, methane hydrate, internal corrosion , construction, tunnelling across the bay and human failure in management processes (which are often the most frequent cause of accidents).
Answer:- We only looked at failure modes that appear in the 8010-3 and UKPOA databases
- Who looked at these other events within Shell
Answer:- These failures are associated with the operation of the pipeline and the management systems which are not covered in the standard method of performing a QRA in a normal gas pipelines.

6.4 SEPIL's Site Specific Failure Frequency for Ruptures

The SEPIL submission on failure consequences detailed in Section 5 concluded that rupture of the pipeline was the only failure mechanism, which could cause fatalities. Therefore the analysis on the frequency of failures has concentrated on ruptures.

In the EIS Appendix Q sub Appendix VII Table 22 Pg 75 SEPIL presents SEPIL's limited site specific analysis

In this analysis it claims ruptures from Construction, Corrosion, Hot taps and other events will be mitigated by the measures taken by SEPIL to increase pipeline integrity.

Also without any evidence or data, SEPIL decided that since the pipeline is now going to be laid in a stone road the failure frequency for ground movement will be negligible i.e. falling below 1×10^{-8} .

In this site-specific analysis no mention is made of the potential methane hydrate problems at Glengad LVI or the 3rd Party intentional damage threat.

Therefore the only way the Corrib pipeline can rupture is through 3rd Party Interference, which is extremely remote for a thick wall pipe as shown below in Table 10 using the PIE analysis.

TABLE 10 CORRIB ONSHORE PIPELINE FREQUENCY OF FAILURE PREDICTIONS FOR A RUPTURE PER KM YEAR-			
OPERATING PRESSURE BARG			
345	144	100	55
9.15E-08	5.82E-10	5.35E-11	0

6.5 Conclusions

- The SEPIL-DNV section on risk detailing failure rates and consequences was difficult to follow with multiple sub appendices and the PIE report inserted between two key DNV sections. The specific failure analysis should have been more prominent as part of the main report rather than placed at the end under Appendix VII. It would have been clearer to read the submission as a single document with the key results from the PIE analysis incorporated within the body to the report.
- Instead of performing a detailed site-specific failure analysis, SEPIL adopted a limited analysis, which is based upon generic pipeline failure databases from Europe EGIG and the UK – UKPOA used in PD8010-3. The limitations of using such databases is that the information is derived from pipelines transporting clean dry processed natural gas at pressures below 100 barg which does not fully reflect the potential Corrib pipeline failure mechanisms.
- In SEPIL's site –specific analysis it claimed that ruptures from Construction, Corrosion, Hot taps and other events will be mitigated by the measures taken by SEPIL to increase pipeline integrity.
- SEPIL's site-specific analysis did not include potential methane hydrate problems at Glengad LVI or Internal corrosion from CO₂ and the 3rd Party intentional damage threat.
- Without any evidence or data, SEPIL decided that since the pipeline is now going to be laid in a stone road the failure frequency for ground movement will be negligible i.e. falling below 1E-08 and therefore eliminated from analysis.
- In the site-specific analysis SEPIL considered 3rd party interference as the only plausible mechanism for the pipeline to rupture and used the PIE analysis to predict the failure frequencies of 9.15E-08 at 345 barg, reducing to 5.82E-10 at 144 barg and 0 at 55barg.
- All these values are below the accept values of 1E-08 and should be classified as negligible but they had to be included otherwise the site-specific database would be empty.
- When requested by the Inspector's team to include a figure for ground movement SEPIL selected the slope instability value of 9E-08 from PD8010-3 which is well below the general ground movement value of 9E-06
- SEPIL's site-specific failure analysis for an ultra high-pressure unprocessed CO₂ wet gas pipeline produces frequencies, which are well below the generic values used in Europe and the UK for lower pressure processed dry natural gas.
- The European database EGIG only predicts ruptures from ground movement for pipelines with wall thicknesses over 15mm at a frequency of 1.56E-05, while the UK database UKPOA used in 8010-3 again predicts ruptures from ground movement and other events for pipelines with wall thicknesses over 15mm at a frequency of 2.18E-06

- During the Oral Hearing Shell admitted that it had not performed any full scale testing to verify any of the assumptions used in the PIE failure model. These cover the extrapolation of gouge and denting modelling for:-
 - Higher strength X70 material
 - Pipe wall thickness over 25mm thick
 - Pressures up to 345barg
- SEPIL acknowledged that the Advantica prediction for probability of failure from 3rd party interference is 8.08 times higher than the PIE value and for frequency of failure the value is 14.4 times higher.
- PIE used a charpy value of 70 Joules for the toughness of the pipe material. However during the Hearing SEPIL stated that the temperature of the pipework at Glengad could drop to minus 20C and if a through wall defect occurred, the pipe could cool a further 23C from the cooling effect of the gas passing through the defect. At temperatures around minus 40C the steel is getting close to its brittle transition temperature, which may affect the PIE model predictions.
- Comdt Boyle in his submission to the Hearing presented information from University College London that the cooling effect from gas escaping through a defect could have lowered the toughness of the pipe at the Ghislenghien, Belgium, which experienced a gas rupture leading to a significant loss of life.
- The event that led to the very low temperatures at Glengad LVI was opening the fully pressurised valves with the downstream pipework to the terminal depressurised. This event was not included in the risk analysis because it is classified as a rare event by SEPIL.
- SEPIL stated at 345barg the critical crack length for rupture is only 103mm, which is equivalent to 1/4 inch diameter hole.
- The Advantica recommendation of reducing the downstream pressure from a potential 345 barg to 144barg was sound. However, the design of the Glengad LVI may have introduced a higher risk of failure into the Corrib downstream pipeline.

6.6 Recommendations

SEPIL should repeat the QRA with a detailed site-specific failure analysis, which incorporates a database that matches the conditions on the Corrib onshore pipeline. That is a pipeline population transporting wet untreated gas. In addition, SEPIL should perform a comprehensive Qualitative Risk Assessment to capture those events that can't easily be defined mathematically.

7 SEPIL'S QUANTIFIED RISK SUBMISSIONS

Mr Crossthwaite of DNV Energy presented the details of the QRA at the Hearing on behalf of SEPIL. The submission by DNV is given in EIS Vol 3 Appendix Q7

7.1 Individual Risk

The fatalities on Individual Risk were calculated assuming the residents spent 93% of their time indoors and it was assumed that the people outdoors would seek shelter indoors. The observers vigorously contested this point. – See Section 5.4

The Individual Risk Transects were calculated from the Frequencies of Failure submitted in EIS's Appendix Q7 sub Appendix VII limited site-specific analysis Table 22 and the Consequences were determined according to Appendix IV

7.1.1 Risk Transect Glengad LVI working at 345barg/144barg

Risk Transects given below in Figure16 show risk of fatality when the LVI is at 345barg/144barg for periods of 1year and 10 days (EIS Appendix IV Figure 23). The EIS states that the nearest dwelling was 246m away from Glengad, which would be in the ALARP Zone 1E-05 at the extreme condition of 345barg/144Barg for 1 year.

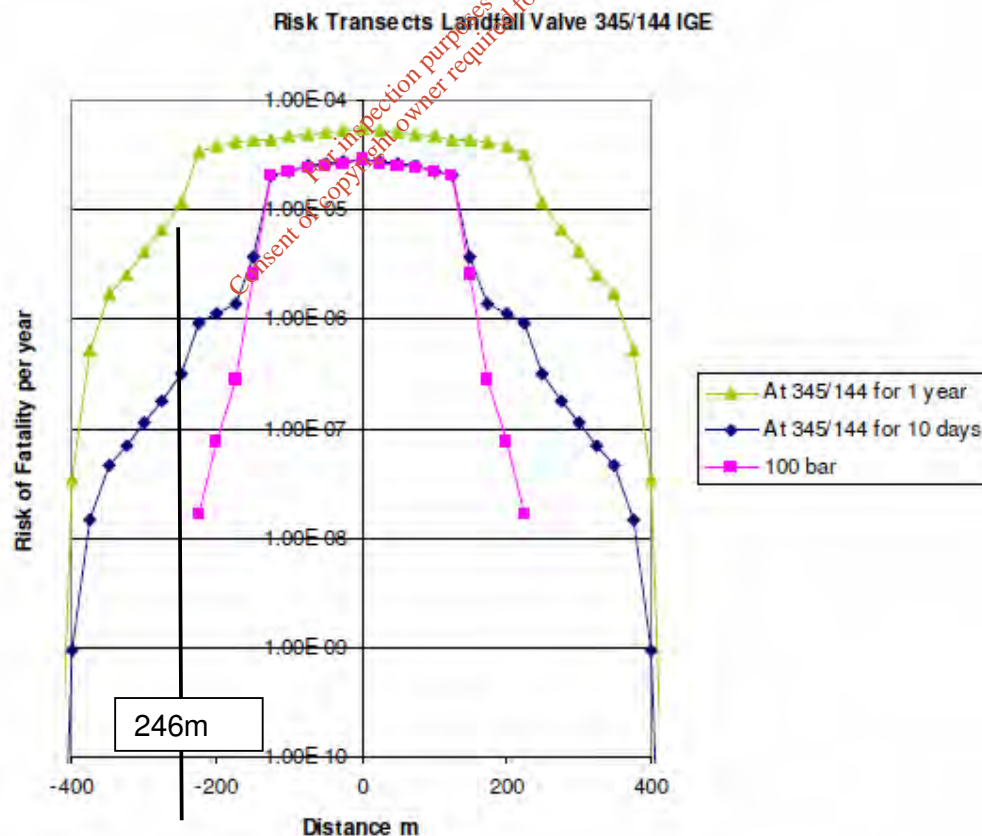


FIGURE 16 INDIVIDUAL RISK TRANSECTS 345BARG/144BARG FOR RESIDENTS AT GLENGAD LVI

7.1.2 Risk Transect Glengad LVI working at 144barg

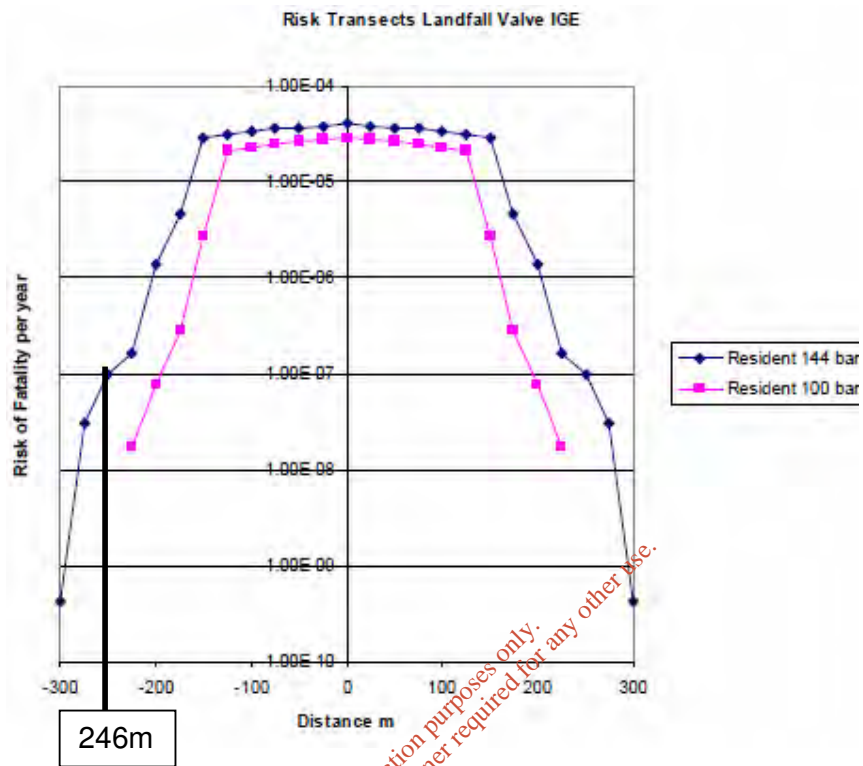


FIGURE 17 INDIVIDUAL RISK TRANSECTS 144BARG FOR RESIDENTS AT GLENGAD LVI

Figure 17 (EIS Appendix Q Section 4 Figure 5), shows the risk to the residents at Glengad when the LVI is at 144 barg. The risk at the nearest dwelling drops to 1E-07, which is broadly acceptable.

7.1.3 Risk Transects For Residents Along The Pipeline At 144barg

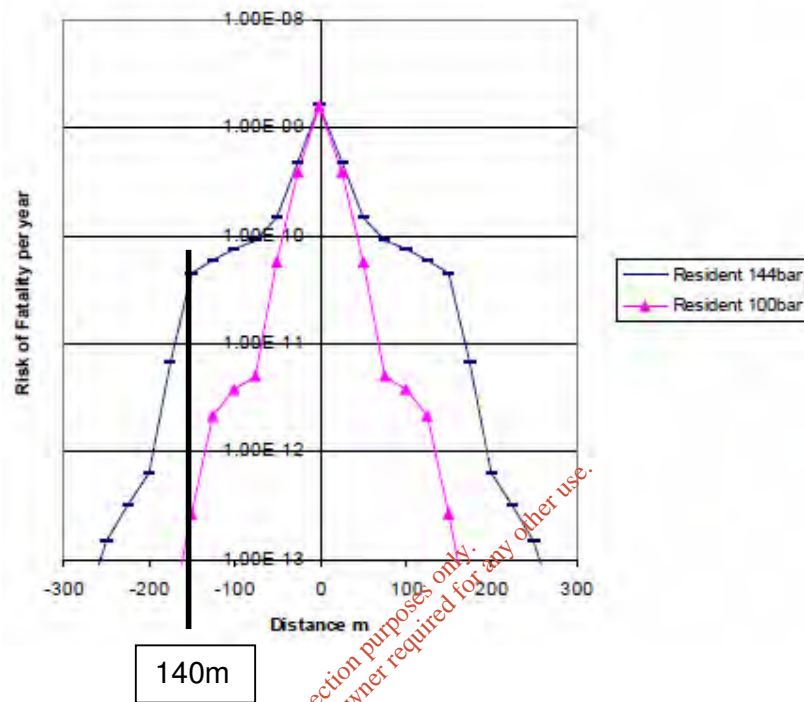


FIGURE 18 INDIVIDUAL RISK TRANSECTS 144BARG FOR RESIDENTS ALONG THE PIPELINE AT ROSS PORT

Figure 18 (EIS Appendix Q Section 4 Figure 4), shows Individual risk transects when the pipeline is at 144barg for residences along the pipeline at Ross Port

The EIS states that the nearest dwelling is 140m away from the pipeline with a failure frequency of 5.0 E-11 for a 144 bar pressure.

7.2 Societal Risk

There has been no societal risk performed for residents at Glengad.

For Residents at Ross Port Figure 19 (EIS Appendix Q Section 4 Figure 7) shows the Societal risk for a 1km length which is well below the acceptance criterion of PD8010-3

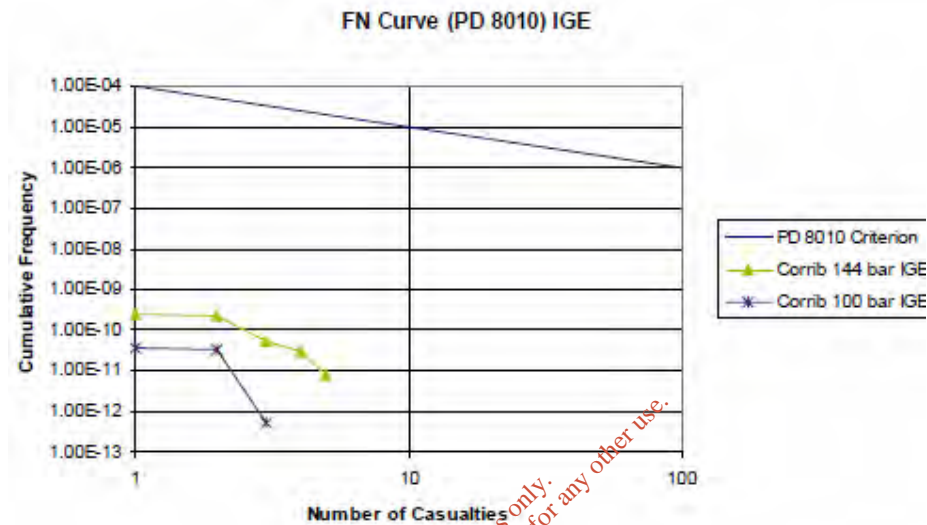


FIGURE 19 SOCIETAL RISK AT ROSS PORT FOR 1KM LENGTH – PD8010-3

For Residents at Ross Port Figure 20 (EIS Appendix Q Section 4 Figure 8) shows the Societal risk for a 1.6km length which is well below the acceptance criterion of IGEM/TD/2

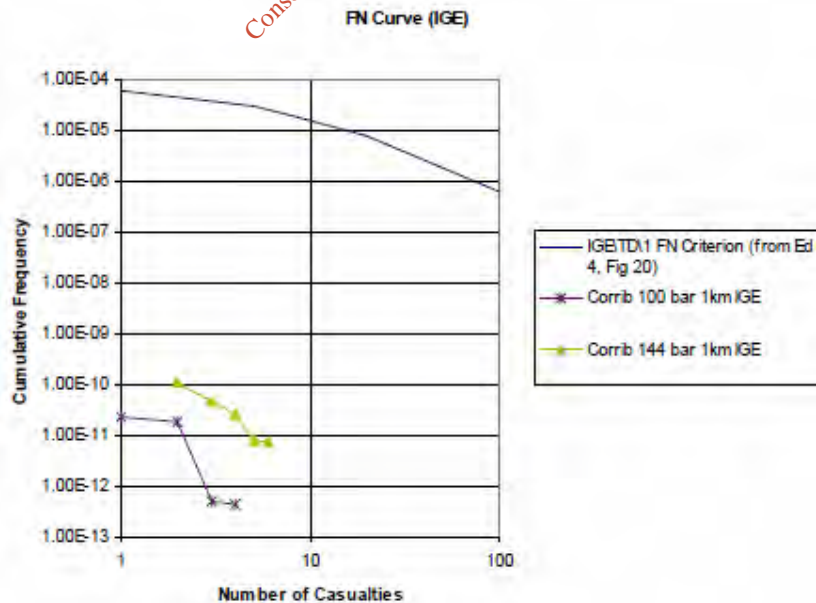


FIGURE 20 SOCIETAL RISK AT ROSS PORT FOR 1.6KM LENGTH – IGEM/TD/2

7.3 Revised Risk Submissions to Include Ground Movement

Following the presentation on ground movement by Turlough Johnson and cross-examination by Mr O Donnell, the inspector's team asked SEPIL to recalculate the site-specific failure frequencies by including ground movement.

SEPIL examined four case studies and the resultant Individual Risk Transects for the Glengad LVI and the pipeline are detailed below. The distance to Glengad LVI is 246m and to the residents of the pipeline 140m.

7.3.1 Normal Operations LVI and Pipeline at 100 barg

For normal operations the pipeline pressure is assumed to be 100 barg. A failure frequency of $9\text{E-}08$ was adopted for ground movement. This relates to slope instability given in 8010-3 Table B.15 and is orders of magnitude below the general ground movement frequency of $9\text{E-}06$ or the EGIG frequency of $1.56\text{E-}05$.

Figure 21 below (Supplementary information presented at the Oral Hearing⁴⁷)

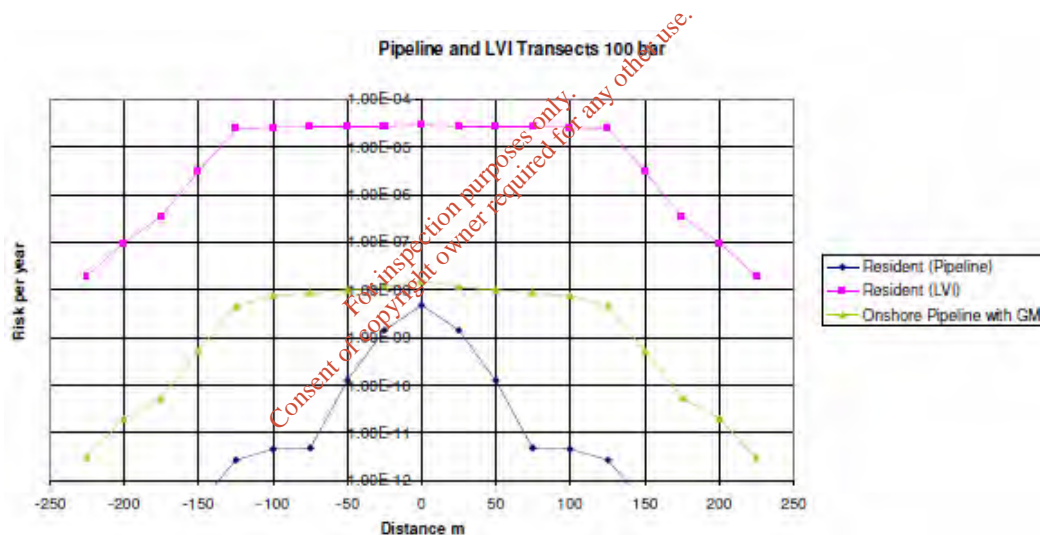


FIGURE 21 NORMAL OPERATIONS INDIVIDUAL RISK TRANSECTS 100 BARG

Figure 21 shows the 100barg risk to the Glengad residents (Red $1\text{E-}08$) and the risk to the Ross Port residents (Blue $5\text{E-}12$) and (Green with ground movement $1\text{E-}09$)

⁴⁷ SEPIL Supplementary Information on Risk Frequencies Incorporating Ground Movement Presented at the Oral Hearing 9 June 2009 Inspectors Ref No 77

7.3.2 Case 1 LVI and Pipeline at 144 barg

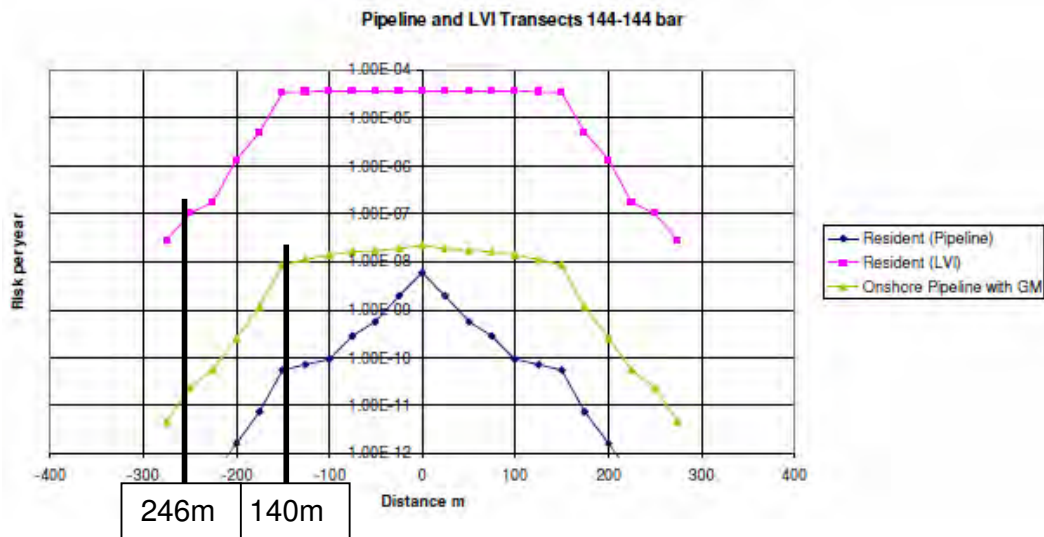


FIGURE 22 CASE 1 INDIVIDUAL RISK TRANSECTS 144 BARG

Figure 22 shows the 144 barg risk to the Glengad residents (Red 1E-07) and the risk to the Ross Port residents (Blue 8E-11) and (Green with ground movement 1E-08)

7.3.3 Case 2 LVI 185 / Pipeline 144

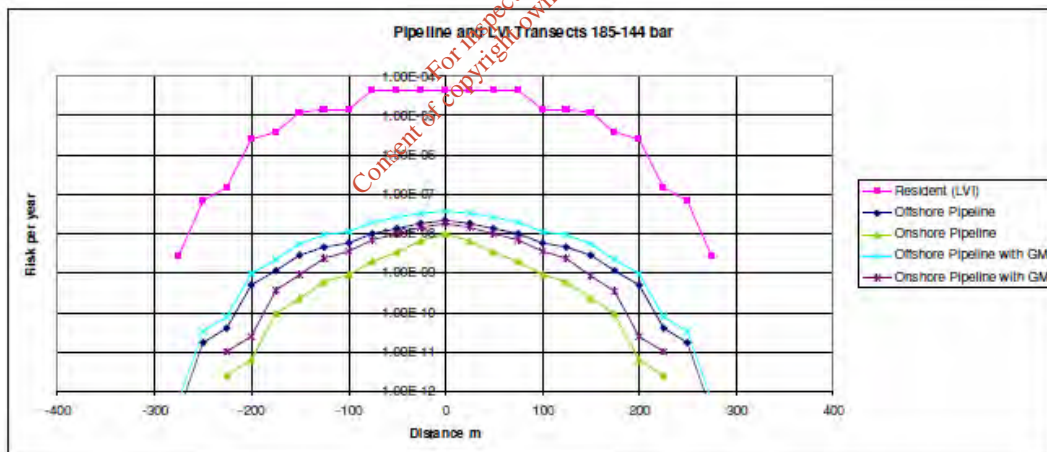


FIGURE 23 CASE 2 INDIVIDUAL RISK TRANSECTS 185 LVI / 144 BARG PIPELINE

Figure 23 shows the 185 barg risk to the Glengad residents (Red 1E-07) and the risk to the Ross Port residents (green 5E-10) and (purple with ground movement 1E-09)

7.3.4 Case 3 LVI 345 / Pipeline 144

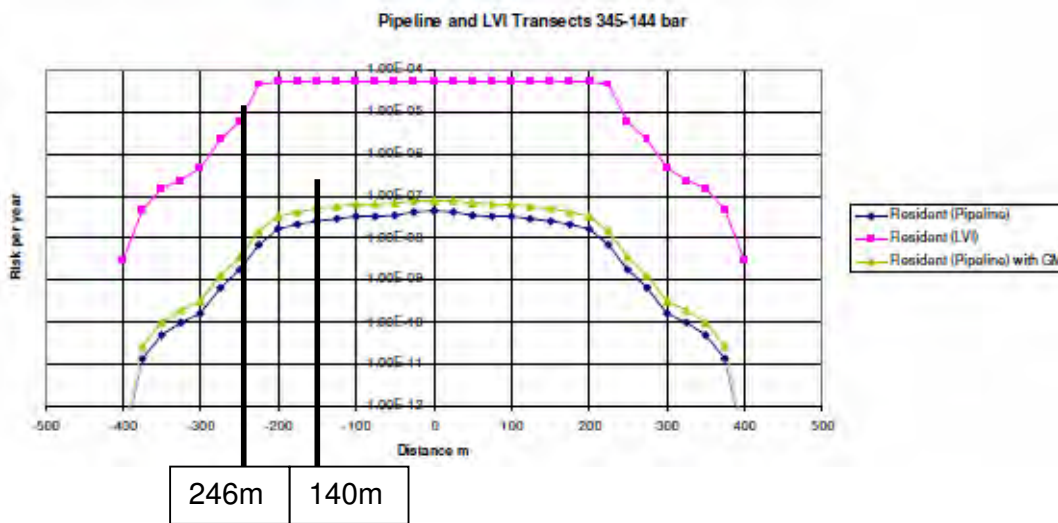


FIGURE 24 CASE 3 INDIVIDUAL RISK TRANSECTS 345 LVI 144 BARG PIPELINE

Figure 24 shows the 345 barg risk to the Glengad residents (Red 3E-06 ALARP) and the risk to the Ross Port residents (blue 5E-8) and (green with ground movement 7E-08)

7.3.5 Conclusions

- The maximum individual risk per year to the Glengad residents at 246m away from the pipeline is 1E-05. This will arise if the LVI remains pressurised at this value for 1 year. At this risk the area would be in an ALARP condition where SEPIL would need to look at strategies to lower the risk. If this condition only occurs for a period of 10 days then the risk drops to around 5E-07, which is classified as broadly acceptable by PD8010-3.
- The individual risk to the Glengad residents drops to around 1E-07 when the LVI is operated at a pressure of 144 barg, which is classified as no restrictions by PD8010-3.
- No societal Risk was calculated for the residents of Glengad
- The maximum individual risk per year to the Ross Port residents at 140m away from the downstream pipeline is around 7E-11, which is classified as no restrictions by PD8010-3.
- The Societal Risk to the residents of Ross Port is 5.82E-10 Km/year and is well below the risk criterion line in PD8010-3 or IGEM/TD/2
- Adding the low failure frequency of 9E-08 for ground movement does significantly alter the individual risk per year to the residents of Ross Port at 140m away from the pipeline with the yearly individual risk increasing to 1E-08, which is classified as no restrictions by PD8010-3.

- It is noted that these low risks to the residents are predicted from a model, which only recognises rupture from 3rd party interference on thick wall pipe with an option of incorporating a low failure frequency due to ground movement.

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8 OTHER EVENTS THAT CAUSE PIPELINE FAILURES

Both the EIGIG and the UKPOA databases referenced in the EIS submission have a failure category labelled 'Other', which allows site-specific events to be included in the analysis.

PD8010-3 – Annex B9 states that failure rates due to other causes need to be assessed on a pipeline specific bases. The relevant causes will vary according to the **Operating Regime** and the **Location of the Pipeline**.

The inspection team's view was that the site-specific QRA presented to the Hearing was limited in value by the omission of a detailed account of how these other events were eliminated or deemed negligible.

Various issues surrounding these events are discussed below.

8.1 External Corrosion

The PD 8010-3 document states that there have been no recorded ruptures from external corrosion mechanism for pipelines with wall thicknesses 15mm or above. The main defence against external corrosion is a good pipeline coating and any defects in the coating protected by Cathodic Protection (CP).

In the case of the Corrib onshore pipeline both of these protection methods are specified. The outer anticorrosion coating consists of a base layer of Fusion Bonded Epoxy (FBE) tied to an outer protective layer of Poly Propylene. These coating are termed three layer

Therefore the only failure mechanisms are poor quality control during manufacture of the outer coating, poor storage of the pipes due to the delay in pipeline construction and poor management of the CP system during operation of the line.

Advantica's Report (Section 4.4) recommended that the when the pipes are stored they should be protected from UV light which can degrade the outer coating. During the hearing the observers criticised the storage of the pipes claiming the pipes had only recently been covered over. Photographs and a video of the stored pipes backed up this claim.⁴⁸ Subsequently SEPIL submitted photographs⁴⁹ of the pipes now covered and test results⁵⁰ from the coating showing no degradation.

Advantica also criticised the poor condition of the joint field coating – discussed in construction failures in Section 8.6

Advantica recommend the use of an insulation joint to separate the management of the onshore and offshore CP systems. A factory built insulation joint installed at the landfall is considered best practice and cited in DNV RP B401 and ISO/CD 15589-2.

⁴⁸ Pipes Storage Donegal – ANON letter – Submission T Conway - 9 June 2009 - Inspectors Ref No 76/76a/76b

⁴⁹ SEPIL Pictures of Onshore Pipe storage

⁵⁰ Notes of Flexibility Testing on 3LPP Coating at Bodycote on pipe straps cut from Stored Corrib Pipe 30 Jan 2009 - Inspectors Ref No 65

Advantica claimed that the absence of a landfall insulation joint will:-

- Make accurate polarised close interval potential surveys more difficult to achieve. – essential to show that the CP is being applied effectively
- The land based CP system is likely to experience significant current drain from the offshore section, which may result in increased difficulty in managing the CP

This recommendation of a landfall insulation joint was rejected by Shell(EIS Appendix Q8 line 10) stating an assessment of CP interface shows that the insulation joint is not necessary and its inclusion may compromise the structural integrity of the pipeline.

Conclusion

As there is a difference of opinion between two respected bodies there must remain some doubt over whether the effectiveness of the CP system has been compromised by the lack of a landfall insulation joint. The PD8010-3 data, which indicates no risk, is based upon an onshore pipeline population with no offshore component. Therefore the 'No Risk' value cannot be automatically be adopted.

Recommendation

SEPIL should review their design of the CP system to ensure that it meets best practice stated in DNV RP B401 and ISO/CD 15589-2. Alternatively SEPIL need to demonstrate that manufacturing an insulation joint would jeopardise the safety of the pipeline at 345 bar

8.2 Internal Corrosion

Both the EGIG and the UKPOA databases are based upon dry natural gas and therefore instance of failure is low. However PD8010-3 still gives a failure frequency of $3E-06$ for pinholes and zero for ruptures. PD8010-3 also states the likelihood of occurrence of internal corrosion depends upon the fluid transported.

This is a clear case where the risk from internal corrosion is a site-specific risk and should have been included in the analysis. The presence of water and CO₂ results in Carbolic Acid in the pipe. The rate of corrosion will depend upon the amount of water, CO₂, gas conditions and the temperature of the gas. All these parameters need to be monitored for the life of the pipe and the quantity inhibitor adjusted accordingly.

Rather than state that the Pipeline Integrity Monitoring System (PIMS) will manage all corrosion risks it would have been more credible to use a pipeline population transporting natural gas, water and CO₂ and adopted their failure rates for internal corrosion. The pipeline population could include offshore as well as onshore pipes since the internal risk and mitigation methods are similar.

A request was made to SEPIL/Shell during the Hearing to provide this data but no database was submitted.

Advantica's thought that the pipeline corrosion allowance of 1mm given in the EIS (Appendix Q2 Section 4.5), was too low and stated that many companies use the minimum corrosion allowance of 1.5mm or 3mm if there is fluctuating flow patterns.

The EIS states that the corrosion rates will be below 0.05mm/year verified by Shell's Hydrocor methodology (EIS Appendix Q6 Internal Corrosion Rate Assessment).

H2S sour gas conditions are not expected to occur as stated in Section 2

During the Hearing it was stated that at Glengad the pipeline with the 20in diameter normally closed valve would be manufactured from corrosion resistant alloy to resist any internal corrosion. With the valve closed the pipe is a 'dead end' allowing no circulation of the inhibitor. The 16 in loop will be constructed from a Duplex alloy

Recommendation

Since there are numerous parameters which can influence the corrosion rate including the amount of water, CO2, temperature and flow regime, it is recommended that SEPIL include a frequency of failure from data bases with pipelines transporting CO2 in the presence of gas and water. This would reveal the variation in managing the problem.

8.3 Formation of Methane Hydrate

The formation of Methane Hydrate in a pipeline is one of the highest risk events experienced by pipeline engineers. The hydrate is formed when natural gas reacts with water under certain pressures and temperatures. It can appear as slush blocking valves and neutralising control systems. Alternatively it can form as a block of ice that acts as a plug in the pipeline. Swabbing with additional methanol can be highly dangerous when there is a higher pressure at one side of the plug. The plug has to be released with the pressure either side equalized, otherwise the plug will accelerate within the pipe and hit the nearest bend with the chance of a pipeline rupture.

It does not appear as a risk in the databases because the pipeline populations used are based upon dry gas pipelines.

Suppression of methane hydrate by methanol injection is not an exact science since the concentration of methanol has to match the water available and the dispersion of the water or concentration in slugs or pools.

No reference could be found in the EIS on how SEPIL would deal with a Hydrate blockage or the risks involved managing the prevention of hydrate formation other than dosing the gas with methanol

Recommendation

It is recommended that SEPIL include a frequency of failure for risks associated with Methane Hydrate from databases with pipelines transporting wet gas operating at high pressure and low temperatures where the hydrate is controlled by methanol. This would reveal the variation in managing the problem.

8.4 Erosion

EIS states that sand production is not expected (Appendix Q1 section 4.5) and at the Hearing pipeline erosion was not seen as a problem. However within the EIS there are two statements warning about the potential of erosion. Appendix Q5 sub appendix 3.3 states that erosion damage is possible as selected wells may have to be fractured and treated with proppant materials. The maximum metal loss is predicted to occur at bends and tees at Glengad LVI. A restriction on the amount of solids allowed in the pipeline is required as a barrier to the loss of containment by erosion.

Any erosion loss would have to be catered for by the 1mm corrosion allowance, which Advantica has already stated is inadequate.

Again SEPIL are relying on their management systems and well production strategy to limit the flow of proppant in to the pipeline. In Appendix Q1 section 4.5 it states that proppant production could be as high as 320kg/ year per well

As with internal corrosion and methane hydrate, the risks associated with erosion from proppants has not been fully evaluated especially at the high-risk area at the Glengad LVI.

Recommendation

The risk of pipeline erosion wall thinning subtracting from the corrosion allowance of 1mm, especially at Glengad, has not been fully disclosed. In order that the Inspectors team can agree that this risk is negligible i.e. below 1E-08, further information needs to be disclosed on how the risk was mathematically discounted.

8.5 Geotechnical Stability of Pipeline

The risk associated with the geotechnical stability of the pipeline is fully considered in Mr Conner O Donnell's report as a member of the Inspectors team

The report observes that the UKPOA ground movement risk for rupture 2.1E-07 mainly relates to mining subsidence and the EGIG value of 1.56E-5 is dominated by failures that occurred in mountainous regions in one country in Europe.

The risks associated from the stone road resting on a mixture of peat and boulders to provide a stable foundation can't be classified as negligible. Therefore Mr O Donnell concludes that if the negligible value is 1E-8 /Km year then the value for the Corrib pipeline has to be greater than 1E-08/Km year and concludes a value of 9E-8/Km year would be more representative. This would be applied to all pressure cases of 100 barg, 144 barg and 345barg.

Recommendation

The frequency 9E-8 /Km year recommended by Mr O Donnell and used in the subsequent analysis by SEPIL during the hearing should be adopted for all QRA's on the project as a lower band failure frequency for ground movement on the Corrib pipeline that could cause a rupture.

8.6 Construction Defects

All contractors set out to construct a defect free pipeline to the quality standard specified in the contract. However in reality problems arise that compromise that goal. These are related to:-

- Poor quality specifications within the contract
- Poor supervision of the contractors
- Bad workmanship by the contractors

To account for the above events both the EGIG and the UKPOA databases contain a failure frequency value of 5E-06 and 2.4E-06 respectively for Holes and Pinholes. The value for ruptures is zero.

The Advantica report, section 4.5.1.1, published a photograph of a badly disbonded field joint. The report stated that during a visit to site that a significant number of field joints had disbonded. SEPIL stated that these sleeves had not been inspected during the disruption to the work programme. It is still evident that the project team failed to stop these being applied in the first place through one or all of the reasons stated for construction defects.

The extremely thick wall pipe will also give concern over the quality of the girth welds. However the Advantica report – section 4.6 reported that the welding procedures specified will give high quality welds with a good tolerance to defects.

Conclusion

Given that there has been problems on the pipeline associated with construction quality then the figure presented in EIS Appendix Q7 – sub appendix VII Table 22 of 5E-06 for pinhole and hole failure frequency is acceptable

8.6.1 Estuary Mini Tunnelling

The method proposed by SEPIL is a combination of using a Tunnel Boring Machine (TBM) combined with Pipe Jacking. EIS Appendix S3 review the risks associated with the Micro-Tunnelling construction process. The Risk Assessment covered:-

- Ground Conditions
- Geotechnical Hazards – including obstructions from boulders/ tree trunks / peat/ metallic objects
- Equipment
- Environmental

The document also contains mitigations for the above risks, which includes sinking an intervention pit to remove obstructions in Sruwaddacon Bay and discusses potential scour around such a pit.

Within Appendix S3, SEPIL listed the previous lengths of tunnels completed with this method. This showed that the tunnel lengths were less than the tunnel proposed for Lower Sruwaddacon Bay crossing which is 1000m long. During the Hearing this was correct by the submission of a document⁵¹ showing tunnels, which exceed 1000m

Although the risk analysis was thorough there was no data on any pipelines failing or corroding in a tunnel. With such techniques used for over 20 years there will be enough experience to make a statement on the health of the pipeline population within these tunnels.

Recommendation

SEPIL should publish a document, which looks at the health of the pipelines that have been installed over the last 20 years by these Micro- Tunnelling techniques.

8.7 3rd Party Intentional Damage

A number of observers at the Hearing raised issues concerning intentional 3rd party damage. Although discussion of this topic was not encouraged it never the less remains a fact of modern life that strategic facilities are a target from groups of environment protestors to urban terrorists. The Australian standard A2885-1 recognises this threat and allows the risk to be included in the QRA.

During the Hearing the security arrangements at the unmanned Glengad LVI were discussed by SEPIL. These consist of an outer stock fence and a 2.8m high boundary fence. Also present would be CCTV security systems. This level of security compares to an average Above Ground Installation. However it was stated by the observers to be inadequate for a strategic facility controlling 50% of the gas imported to Ireland. Similar gas import facilities in the UK have double electric fences with armed police.

Recommendation

- SEPIL should reassess the security arrangements at Glengad LVI in light of its strategic importance to Ireland's secure supply of gas.
- SEPIL should include a value in a site specific QRA for the risk from 3rd party Intervention

8.7.1 Independent Clients Supervision

During the questioning of Mr Hanna Chief technical Advisor – Dept of Communication Energy and Natural Resources - the following question was asked and Mr Hanna's response is summarised below:-

- Because of such dependency on close supervision during construction to mitigate the risks – What is it your department's role regarding the appointment of an independent body to monitor the pipeline construction and commissioning process? This would cover such works as pipe welding - coating – construction of the stone road in the bog etc

Answer :- While the department maintains responsibility for Upstream Gas

⁵¹ SEPIL document on Micro Tunnelling lengths – 4 June 09 Inspectors Ref No 48

Safety it will ensure monitoring either through its own staff, we have a number of authorised offices who are competent to monitor certain processes or contracted in staff to provide that competency. The Commission for Energy Regulation will adopt a similar procedure for the project

8.8 Umbilical Failure

During the oral hearing there was a great deal of discussion from the Observers about the potential effects resulting from the failure of the umbilical. This discussion centred on the spillage of Methanol and Ethylene Glycol and the potential for fires and pollution of the bog.

SEPIL submitted a document⁵² on Umbilical Leakage. This stated that a leak detection system would monitor the methanol line's inlet and outlet flow and the pressure of the methanol at the terminal and at the wellheads. These measures will detect any loss of flow from a leak. If all three umbilicals were damaged at the same time a total liquid release would occur consisting of 3,000 Litres of treated water, 8,800 litres of methanol and 6000 litres of hydraulic fluid based on a estimate of 1 hour to detect the leak and isolate the umbilical.

In the event of a umbilical failure there would be a pressurised leak of methanol and if ignited would cause a jet fire with a radiation level of 6Kwm^{-2} at a distance of 35m away from the umbilical. This would be classified as a safe distance. The document states that if the methanol fire subjected the pipeline to thermal radiation, the integrity of the pipeline wall would be maintained. Therefore the failure of the umbilical does not present a credible risk to the pipeline.

An event of greater concern is the loss of hydraulic function of the actuated valves at the wellhead and Glengad LVI. If the hydraulic function is lost then certain valves will close automatically. In the case of the subsea valves, an intervention task would need to be organised to reopen the valves using a Remote Operated Vehicle. Also if the hydrate and inhibition flow cannot be maintained then the wells will be closed down.

The umbilical is designed for a 30-year life but there are a number of threats to the umbilical. These are detailed in Appendix Q5 section Appendix 5. These are listed below :-

- Internal Corrosion – mitigation is the use of Duplex stainless steel. Crevice corrosion is the main threat for umbilical tubes exposed to aerated produced water
- External corrosion –CP is proposed to prevent galvanic corrosion between dissimilar metals. Also the Duplex alloy tubes have to avoid high stresses which can induce hydrogen embrittlement from the hydrogen produced by the CP
- Mechanical damage – 3rd party damage
- Brittle Fracture – Duplex resistant to fracture at ambient temperature
- Overstress – protected by relief devices in pumping equipment

⁵² SEPIL document fact Sheet on Umbilical Leak – 4 June 09 Inspectors Ref No 49

- Joint integrity – to be proven by pressure test
- Blockage – by degradation of chemicals or bacterial action. – chemicals to be tested on a regular basis

Conclusion

Failure and any subsequent fire may cause disruption to gas production but it will not compromise the safety of the pipeline.

8.9 Long Term Management of Pipeline

It is argued in the EIS and throughout the Hearing that the other events discussed in this section were not included in the QRA because SEPIL has a competent system for long-term management of the pipeline. This includes the Pipeline Integrity Management System (PIMS) – EIS Appendix Q5. The PIMS covers the integrity of the 20in offshore and onshore pipeline, gathering lines from the manifold to the wells, the umbilical system and the water outfall.

PIMS role is to efficiently and effectively control and manage the integrity of the pipe system in compliance with Irish legislation and conditions of consent. The document describes the organisation required for the implementation of the integrity management scheme, defines roles and responsibilities and interfaces and outlines the management processes involved.

The integrity reference plan (EIS Q5 Appendix A) provides the details and performance standards for the risk barriers, monitoring measures and the immediate and long term action requirements for the pipeline system.

It is clear from their submission at the Hearing and the EIS that the PIMS and the Integrity plans replace the QRA for all the threats they have direct control over except for 3rd party damage, which they have no control over.

However as IGEM/TD/2 highlights in Section 1.5 :-

It is now widely accepted that the majority of accidents in industry generally are in some measure attributed to human as well technical factors in the sense that actions by people initiate or contribute to the accidents or people might have acted better to avert them.

It is therefore necessary to give proper consideration to the management of these human factors and the control of risk

It could be argued that the Management System should have its own frequency of failure risk factor for the QRA since it controls the majority of the risk and is managed and controlled by human activity, which is prone to error.

8.9.1 Independent Competent Person

At present the competent person for the pipeline is a Shell staff member. This could lead to a conflict of interest and therefore to reduce that risk an additional independent person should be appointed with responsibilities to the relevant Government

Department. This would also defuse the concerns of the Observers that it would be difficult to obtain information from Shell during the operation of the pipeline on the health of the system.

During the questioning of Mr Hanna Chief technical Advisor – Dept of Communication Energy and Natural Resources - the following question was asked and Mr Hanna's response is summarised below:-

- Given the importance of the risk mitigation previously mentioned - what is your view on adopting an independent monitoring scheme similar to that detailed in the UK Pressure Systems Safety Regulations which requires the pipeline operator to write a Written Scheme of Examination detailing all of the controlling actions that keep the pipeline safe (as detailed in the PIMS) together with the frequency of examination and overseen by an independent Competed Person who would have the right to notify your dept or CER if he thought that the integrity of the pipeline was being compromised during its operating life.
Answer:-I understand the point you are making but it is an issue of regulation philosophy. The independent system works well in the UK with the UK HSE deemed to be an independent body. Here in Ireland the HSA does not have a role here. We have required the developer to submit procedures and practices including a PIMS document. The PIMS document is acceptable and meets the relevant codes and standards. It is in the implementation of it where I agree with you that we need to demonstrate that what the developer says they will do they are doing in practice. It is the prerogative of the Minister working through us to decide from time to time how that is undertaken in practice. I am considering and hoping to agree with the developer a procedure, which might involve an independent entity. That was not the plan because that goes back to procedure operated under the Petroleum Affairs Division, which had a retained consultant. It was not the plan that we were going to in setting up the monitoring regime we have specified the standard that applies and developer has indicated that they will operate to the standard but there is very likely a role for an independent person in policing that monitoring regime and I am certainly open to the suggestion but I need to formulate a more considered response.

Conclusion

- Many events that could lead to a loss of product or complete rupture of the pipeline have not been included in a site-specific QRA but are covered by a Shell PIMS and management integrity plan. While the inspectors team recognises the critical importance of this strategy for the long-term health of the pipeline and the requirement for operational safety it does not negate the need to produce a comprehensive quantified risk assessment covering all events that could endanger the pipeline.

Recommendation

- SEPIIL should resubmit a Quantified Risk Assessment covering all events all events that could endanger the pipeline.
- Dept of Communication Energy and Natural Resources should recommend the appointment of an independent entity to monitor the long-term health of the onshore pipeline.

8.10 Data From Other Similar Pipelines

Since this pipeline was unique in Ireland and the UK and the databases submitted were for pipelines transporting dry processed gas, SEPIL were requested to provide databases from pipelines that transported untreated wet gas. This was to demonstrate that the management systems controlling methane hydrate and internal corrosion were working without incident – None were submitted

What was submitted was information on a number of pipelines in the Netherlands and a pipeline in Australia. None of these pipelines were managed by Shell.

8.10.1 Netherlands Study and Specification

The EIS Appendix D1 describes a tour for RPS staff to visit similar unprocessed gas pipelines operated by NAM in the Netherlands. This was to allow RPS staff to familiarise themselves with the issues surrounding the construction and operation of such pipelines.

NAM is a joint 50/50 joint venture between Shell and ExxonMobile.

The main object of the tour was to gain information on the following:-

- Pipeline design and operation.
- Transportation of unprocessed gas
- Proximity and safety issues
- Pipeline Integrity Management
- Pipeline Environmental concerns
- Community concerns and consultation
- Landowner consultation
- Route selection process

Five pipelines were visited during the visit. These ranged in diameter from 8in to 16in and design pressure from 60 barg to 274 barg. However many of these lines are currently operating below their design pressure due to depletion of the reservoirs.

The EIS discusses the present design codes in the Netherlands for gas transmission pipelines. These codes are NEN 3650 and NEN 3651 and make no distinction between dry processed gas and unprocessed wet gas. There is a 5m limit from the pipeline to the nearest dwelling. However these codes are expected to be revised within the next two years.

The EIS document gives a large amount of detail on consultation with landowners, details of proximity distances from NAN3650 specification, tables of pipelines operating in Europe transporting unprocessed gas and descriptions of each pipeline visited.

However important data to reinforce their application was not included. This would have include:-

- Any QRA submission and what events were included together with the frequency of failure values
- Do the Netherland authorities work purely from proximity distances similar to I.S. 328
- Details of the changes proposed to the standards related to safety
- Tables of incidents of internal corrosion and methane hydrate problems where the dosing of inhibitor and methanol has been inadequate.
- Actual failure frequencies covering ruptures, holes and pinholes from a large and mature wet gas pipeline population.

If as requested SEPIL had used this population as a basis for its QRA then many of the questions raised in this report would have been answered.

A submission on QRA data for pipelines in the Netherland was submitted⁵³ during the Hearing. However this was written in Dutch and no translations were available so it has not been considered in this review.

It is noted Annex 7⁵⁴ of the Dutch Land Use Planning System requires operating companies to prepare a site specific QRA showing Individual and Societal risk. The Dutch have also insisted that every applicant used the same computational methodology SAFETI. Similar limits to the UK system apply and have been mandatory since Nov 2004. From 2010 vulnerable objects such as houses will not be allowed to be sited where the individual risk is greater than 1E-6/ year.

For Societal Risk the planning document has a straight-line criterion curve similar to PD 8010-3 in that crosses the 10-casualty line at 1E -05 but differs at the 100 casualty line which it crosses at 1E-07 instead of 1E-06

Conclusion

The evidence collected from the NAM unprocessed gas pipelines does not have the detailed information related to QRA submissions and operational incidents to gain an accurate insight into the safety of a wet gas system in Ireland.

8.10.2 Australian pipeline and specification

At the hearing SEPIL submitted⁵⁵ details of the Casino Gas Pipeline in Australia, which transports unprocessed gas. This pipeline was developed by Santos and the submitted document outlines its safety policy

As with the Netherlands NAM submission, the document adds little to the knowledge of QRA failure frequencies or incident statistics for wet gas pipelines.

⁵³ QRA Data of Pipelines in the Netherlands – submitted 8 June 2009 – Inspectors Ref No 61

⁵⁴ Annex 7 from the Buncefield incident Enquiry Report

⁵⁵ Casino Gas Pipeline Project – Environmental Management Framework submitted 9 June 2009 – Inspectors Ref No 68

9 QUALITATIVE RISK ASSESSMENT

The major disadvantage with SEPIL's Quantitative Risk Assessment is that it does not adequately analyse all of the risks associated with the pipeline. In some cases there is no database to derive a value for the QRA.

During the Hearing SEPIL submitted a partially completed draft⁵⁶ of a Qualitative Risk Assessment, which will form the core component of the Safety Case for the Corrib Pipeline. The Qualitative Assessment is in the form of a Bowtie analysis, which links Threats and Consequences. Assigned to the Threats are the control measures to prevent the event and assigned to the Consequences are the recovery measures to mitigate the consequence impact.

The downside to this submission is the document has not been completed and therefore cannot be used to highlight the risks from the operation of the pipeline.

9.1 Australian Standard AS 2885.1 2007 – Appendix F

The Australian pipeline standard recognises that it is not always possible to assign a numerical value to a risk and therefore contains guidance on how to perform a Qualitative Risk Assessment.

Tables F2 – F4 from AS 2885.1 – Appendix F shown below :-

**TABLE F2
SEVERITY CLASSES**

	Severity class				
	Catastrophic	Major	Severe	Minor	Trivial
Dimension	Measures of severity				
People	Multiple fatalities resulting	Few fatalities; several people with life-threatening injuries	Injury or illness requiring hospital treatment	Injuries requiring first aid treatment	Minimal impact on health and safety

**TABLE F3
FREQUENCY CLASSES**

Frequency class	Frequency description
Frequent	Expected to occur once per year or more
Occasional	May occur occasionally in the life of the pipeline
Unlikely	Unlikely to occur within the life of the pipeline, but possible
Remote	Not anticipated for this pipeline at this location
Hypothetical	Theoretically possible but has never occurred on a similar pipeline

⁵⁶ Qualitative Risk Management – submitted 9 June 2009 – Inspectors Ref No 63

**TABLE F4
RISK MATRIX**

	Catastrophic	Major	Severe	Minor	Trivial
Frequent	Extreme	Extreme	High	Intermediate	Low
Occasional	Extreme	High	Intermediate	Low	Low
Unlikely	High	High	Intermediate	Low	Negligible
Remote	High	Intermediate	Low	Negligible	Negligible
Hypothetical	Intermediate	Low	Negligible	Negligible	Negligible

**TABLE F5
RISK TREATMENT ACTIONS**

Risk rank	Required Action
Extreme	Modify the threat, the frequency or the consequences so that the risk rank is reduced to 'intermediate' or lower For an in-service pipeline the risk shall be reduced immediately
High	Modify the threat, the frequency or the consequences so that the risk rank is reduced to Intermediate or lower For an in-service pipeline the risk shall be reduced as soon as possible, typically within a timescale of not more than a few years
Intermediate	Repeat threat identification and risk evaluation processes to verify and, where possible, quantify the risk estimation; determine the accuracy and uncertainty of the estimation. Where the risk rank is confirmed to be 'intermediate', if possible modify the threat, the frequency or the consequences to reduce the risk rank to 'low' or 'negligible' Where the risk rank cannot be reduced to 'low' or 'negligible', action shall be taken to— (a) remove threats, reduce frequencies and/or reduce severity of consequences to the extent practicable; and (b) demonstrate ALARP For an in-service pipeline, the reduction to 'low' or 'negligible' or demonstration of ALARP shall be completed as soon as possible; typically within a timescale of not more than a few months
Low	Determine the management plan for the threat to prevent occurrence and to monitor changes that could affect the classification
Negligible	Review at the next review interval

The output from the Australian Qualitative Risk method has been assessed using the above tables. An upper and lower boundary limit has been adopted to indicate the sensitivity of the tables

Upper Boundary

Failure Frequency – **Unlikely** – Unlikely to occur within the life time of the project

Severity (Consequences) – **Catastrophic**- Multiple casualties result

Matrix rating **High** – Action:- Not Acceptable Modify the threat , Frequency or consequence so the risk rank is reduced to intermediate or lower

Lower Boundary

Failure Frequency – **Remote**– Not anticipated for this pipeline at this location

Severity (Consequences) – **Major**- Few fatalities – several people with life threatening injuries

Matrix rating **Intermediate** – Action:- Repeat and quantify the risk estimation and determine the accuracy of the estimation
Modify the risk to low if possible
If risk cannot be modified
a) take action to remove the threat or reduce frequencies or consequences
b) demonstrate ALARP

What both of these approaches show is that the risks are of a magnitude to reassess the design or routing of the pipeline to reduce the risk.

It would have been ideal to recommend the failure frequency as Hypothetical but there is not enough evidence to adopt this frequency, which states 'Theoretically possible but has never occurred on a similar pipeline'.

Recommendation

SEPIL should complete their Qualitative Risk Assessment to gain a wider perspective of the risks posed by this ultra high-pressure pipeline transporting unprocessed gas through a populated area.

10 GLENGAD LVI – SAFETY RISK

The Advantica recommendation of reducing the downstream pressure from a potential 345 barg to 144barg was sound. However, the design of the Glengad LVI may have introduced a higher risk of failure into the Corrib downstream pipeline.

The present design of Glengad LVI produces the following undesirable risks:-

- If the HIPPS system closes and there is a significant leakage past the subsea valves, the pressure at Glengad LVI could rise to 345 barg upstream of the HIPPS system.
- At a pressure of 345 barg 8 dwellings would be affected at Glengad from a rupture assuming no shelter for the occupants.
- At a pressure of 345 barg for 1 year, Glengad has the highest individual risk to the population at around $7E-05$ around the LVI site and $1E-05$ at the nearest dwelling 246m away
- These risk figures are considered conservative since only a limited site specific QRA was performed by SEPIL, which ignored the threats from internal corrosion, methane hydrate and 3rd part intentional damage.
- The security at Glengad LVI is considered to be inadequate for such a strategic gas import facility.
- The internal corrosion regime is considered complex due to a design, which incorporates a dead end leg where the corrosion inhibitor is ineffective. This then requires a duplex alloy pipe section which no data has been submitted on its toughness and ability to tolerate gouges and dents at 345barg
- If the HIPPS system is closed and the down stream pipe is depressurised then on reopening the pressure down stream of the HIPPS the gas temperature can fall as low as minus 26C.
- The method of reopening the HIPPS valves with a differential pressure of 345 barg or even 144 barg across the valve is extremely complex. This is due to the only gas pressure available downstream is the BGE pressure at the terminal which will be 80 Barg. This is insufficient to equalise the pressure and the pressure up stream of the HIPPS cannot be vented.
- When opening these valves there is a chance of methane hydrate forming at the LVI, which increase the risk at the installation.
- The EIS recognised that if proppant was allowed to be fed into the gas stream the area most affected by erosion would be the bends and tees at Glengad LVI again increasing the risk at the installation.

Recommendation

- SEPIL re-examines the design of Glengad LVI and considers the design of a temporary relief valve and vent stack for the four years that the well pressure remains above 100bar.
- This would allow the removal of the HIPPS system and simplify the layout of the plant to a single 20in valve with a small-bore bypass.
- The removal of the HIPPS would eliminate the potential threat of erosion on tees and bends and allow a vent point to prevent the pressure rising above 100 barg.
- This would dramatically reduce the risks to the residents near Glengad
- This would eliminate the chance of 8 dwelling suffering fatalities around Glengad.
- At no time during the Oral Hearing or stated in the EIS has there been any suggestion that a vent stack would have to cater for the full production flow from the wells. The only gas flow that has been discussed has been a small amount of seepage past the valves.
- The diameter of the vent stack would be small since it is only catering for any leakage past the well chokes and valves.
- After 4 years the relief valve could be isolated and the stack removed
- The minor temporary intrusion of the vent stack and the remote chance it will be used will be offset by dramatically increasing the safety for the Glengad residents.
- However, if the umbilical is damaged, then it is critical to know which valves will automatically close. If it is only the Sub Surface Safety Valve (SSSV) at the well and the HIPPS at the LVI, then the HIPPS has a major role in stopping high pressure gas flowing from the well if the SSSV fails to close or partially closes. A vent stack in these circumstances would not be recommended. SEPIL needs to clarify this scenario.

11 OVERALL COMMENTS AND RECOMMENDATIONS

SEPIL and Mr Hanna Chief technical Advisor – Dept of Communication Energy and Natural Resources accepted that the design and operation of the Corrib pipeline is unique when compared to other onshore gas transmission pipelines operating in Ireland and the UK.

The difference or uniqueness of the Corrib pipeline can be appreciated when the comparison is made to conventional gas transmission pipe operating on dry processed gas at pressures below 100 barg The uniqueness arises because:-

- The Corrib Pipeline operates at potentially ultra high pressure of 345 barg at Glengad and 144 barg from Glengad LVI to the Bellanaboy Terminal.
- The Corrib Pipeline conveys wet gas, which needs to be treated to stop the formation of methane hydrate, which is considered to be highly dangerous.
- The Corrib Pipeline conveys CO₂ which when combined with water forms corrosive carboic acid within the pipeline.
- The Corrib Pipeline incorporates a HIPPS, which is a high pressure-limiting device at Glengad LVI to prevent the majority of the pipeline exceeding 144 barg.

The uniqueness of the design and operation of the Corrib onshore pipeline has meant that additional issues needed to be addressed in the areas of:-

- Specifications and Codes of Practice
- Design
- Pipeline Safety and subsequent Quantified Risk Analysis

Specifications and Codes of Practice

The composite code approach based upon different parts of the Irish Standard IS EN 14161 supplemented by PD 8010 and IS 328, does cover the minimum requirements to design, construct and operate a safe pipeline for unprocessed gas. However the use of various codes to cover a specific pipeline design is not considered good practice and lacks the holistic approach necessary for continued improvement in the industry. *Recommendation: With the possibility of further offshore gas fields being developed in Irish waters, the relevant agencies should form a working group to revise I.S 328 to include best practice to cater for this design of pipeline transporting untreated gas in a downstream environment.*

The section of onshore pipeline from the high water mark to the outlet from the HIPPS at Glengad, is covered by the offshore standard DnV OS- F101, but is not covered by any of the supplementary codes. *Recommendation: TAG should re- examine this section of onshore pipeline and review if any supplementary codes are required.*

The Published Document PD8010 – 3:2009 definitions of Societal and Individual Risk criteria meet the requirements for examining safety of the Corrib Onshore Pipeline.

Pipeline Design

The design of the pipeline is considered to meet the basic requirements of the codes. However, SEPIL needs to set a Maximum Allowable Operating Pressure (MAOP) for the Onshore Pipeline System as required by the codes.

SEPIL accepted that hard particles within the gas stream, especially proppants, could damage valve sealing faces causing valves with no block and bleed facility to leak. They also accepted that leaking valves could allow pressures upstream of the HIPPS system to rise to 345 barg and downstream pressures to increase to 144 barg. These design pressures were used in all of the subsequent safety studies. SEPIL stated that if the main isolation valve leaked they would flare gas at Bellanaboy to maintain the pressure at 144 bar in the pipeline downstream of the HIPPS.

The claim that all of the onshore pipeline will be tested to 504 barg is confusing since this will increase the stress in the pipe upstream from Glengad LVI to beyond 100% of SMYS instead of the planned 90%, which is outside of the code DnV OS- F101.

As there is a difference of opinion between Advantica and SEPIL, there must remain some doubt over whether the effectiveness of the CP system has been compromised by the lack of a landfall insulation joint. The PD8010-3 data, which indicates no risk, is based upon an onshore pipeline population with no offshore component. Therefore the 'No Risk' value cannot be automatically be adopted. *Recommendation:- SEPIL should review their design of the CP system to ensure that it meets best practice stated in DNV RP B401 and ISO/CD 15589-2. Alternatively SEPIL need to demonstrate that manufacturing an insulation joint would jeopardise the safety of the pipeline at 345 bar*

To ensure high strains are not generated in the pipeline SEPIL should fit vibrating wire strain-monitoring equipment to the pipeline in areas of deep peat or known areas of peat instability.

Risk - Prediction of Frequency of Failure

SEPIL / DNV stated in their written submission that a QRA was not required for high-pressure transmission pipelines designed in accordance to IS328. In addition DNV has not carried out a QRA for the BGE pipeline to the West or any other pipeline in Ireland. The above comment is misleading. I.S. 328 does state that where it is impractical to comply with the proximity requirements deviation is permitted provided it can be justified by a Quantitative Risk Assessment (QRA). SEPIL have also specified the use of IS EN 14161 Annex A. This allows the hazard to be evaluated by either a QRA or Qualitative Analysis to illustrate the risk level for a pipeline that is transporting untreated gas. It was agreed by all parties that this pipeline was unique. Therefore performing a QRA to identify the Individual and Societal risk to the local population was fully justified. *Recommendation:-This report endorses Advantica's recommendation that consideration should be given by the Irish Government to establish a risk-based framework for decisions on proposed and existing major hazard pipelines and related infrastructure to ensure transparency and consistency of the decision making process.*

The frequency of a pipeline failure is defined as the probability of failure multiplied by the incident rate for a given pipe population. Therefore the choice of pipeline population is critical to the level of risk predicted by the QRA. In their submission

SEPIL used pipeline populations transporting dry natural gas. Therefore using such generic pipeline failure databases from Europe EGIG and the UKPOA could not be fully relied upon to quantify the risks arising from transporting wet untreated gas at pressures in excess of 100 barg in a peat bog environment. This strategy does not fully reflect the potential Corrib pipeline failure mechanisms and could distort the risk levels predicted by the QRA.

SEPIL further modified the generic pipeline failure databases by considering 3rd party interference as the only plausible mechanism for the pipeline to rupture and used the PIE analysis to predict the failure frequencies of 9.15E-08 at 345 barg, reducing to 5.82E-10 at 144 barg and 0 at 55barg.

In SEPIL's analysis it claimed that ruptures from Construction, Corrosion, Hot taps and other events will be mitigated by the measures taken by SEPIL to increase pipeline integrity. The analysis also did not include potential methane hydrate problems at Glengad LVI or Internal corrosion from CO₂ and the 3rd Party intentional damage threat. Without any evidence or data, SEPIL decided that since the pipeline is now going to be laid in a stone road the failure frequency for ground movement will be negligible i.e. falling below 1xE-08 and therefore eliminated from analysis. When requested by the Inspector's team to include a figure for ground movement SEPIL selected the slope instability value of 9E-08 from PD8010-3 which is well below the general ground movement value of 9E-06.

Many events that could lead to a loss of product or complete rupture of the pipeline have not been included in SEPIL's QRA because they are covered by Shell's PIMS and management integrity plan. While I recognise the critical importance of this strategy for the long-term health of the pipeline and the requirement for operational safety it does not negate the need to produce a comprehensive quantified risk assessment. It was noted that SEPIL's modified failure analysis for an ultra high-pressure unprocessed CO₂ wet gas pipeline produces frequencies, which are well below the generic values used in Europe and the UK for lower pressure processed dry natural gas.

The evidence collected from the visit to the Dutch NAM unprocessed gas pipelines does not have the detailed information related to QRA submissions and operational incidents to gain an accurate insight into the safety of a wet gas system in Ireland.

Recommendation:- SEPIL should repeat the QRA with a detailed site-specific failure analysis, which incorporates a database that matches the conditions on the Corrib onshore pipeline. That is a pipeline population transporting wet untreated gas. In addition, SEPIL should perform a comprehensive Qualitative Risk Assessment to capture those events that can't easily be defined mathematically.

The frequency 9E-8 /Km year recommended by Mr O Donnell and used in the subsequent analysis by SEPIL during the hearing should be adopted for all QRA's on the project as a lower band failure frequency for ground movement on the Corrib pipeline that could cause a rupture.

SEPIL should publish a document, which looks at the health of the pipelines that have been installed over the last 20 years by these Micro- Tunnelling techniques.

SEPIL should reassess the security arrangements at Glengad LVI in light of its strategic importance to Ireland's secure supply of gas and include a value in a site specific QRA for the risk from 3rd party Intervention

Given that there have been problems on the pipeline associated with construction related to the quality of the butt weld coatings, then the figure presented in EIS Appendix Q7 of 5E-06 for pinhole and hole failure frequency is acceptable

Dept of Communication Energy and Natural Resources should recommend the appointment of an independent entity to monitor the long-term health of the onshore pipeline.

Failure of the Umbilical and any subsequent fire may cause disruption to gas production. However SEPIL have not detailed which valves will automatically close if the hydraulic supply is lost.

Recommendation:- SEPIL should disclose their Failure Cause and Effect Analysis to demonstrate the valve functionality if the hydraulic supply is lost

Risk - Modelling Frequency of Failure for 3rd party Damage

During the Oral Hearing Shell admitted that it had not performed any full scale testing to verify any of the assumptions used in the PIE failure model. These cover the extrapolation of gouge and denting modelling for:-

- Higher strength X70 material
- Pipe wall thickness over 25mm thick
- Pressures up to 345barg

SEPIL acknowledged that the Advantica prediction for probability of failure from 3rd party interference is 8.08 times higher than the PIE value and for frequency of failure the value is 14.4 times higher.

PIE used a charpy value of 70 Joules for the toughness of the pipe material. However during the Hearing SEPIL stated that the temperature of the pipework at Glengad could drop to minus 20C and if a through wall defect occurred, the pipe could cool a further 23C from the cooling effect of the gas passing through the defect. At temperatures around minus 40C the steel is getting close to its brittle transition temperature, which may affect the PIE model predictions.

The event that led to the very low temperatures at Glengad LVI was opening the fully pressurised valves with the downstream pipework to the terminal depressurised. This event was not included in the risk analysis because it is classified as a rare event by SEPIL.

SEPIL stated at 345barg the critical crack length for rupture is only 103mm, which is equivalent to 1/4 inch diameter hole.

Safety - Consequences

The SEPIL's QRA is limited in that it does not fit the actual situation at Glengad or Ross Port. It is based around a series of artificial assumptions to fit a generic safety case of PD8010 -3. SEPIL DNV admitted that a site-specific risk QRA assessment

could be undertaken by SEPIL but in this instance they decided to adopt a standard industry template to allow comparison with the PD8010 generic safety case

DNV SEPIL confirmed that in the event of a pipeline rupture there would be a significant fireball lasting up to 30 seconds followed by a jet fire. The jet fire would continue to burn until the supply of gas was isolated. Also holes in the pipeline would only produce a jet fire. To quantify the risk to the population SEPIL DNV have used PD8010 – 3, which defines two methods of analysing the risk. These are Individual Risk and Societal Risk.

The Individual Risk analysis is based upon the UK HSE methodology, which plots individual risk profile against distance away from the pipeline. These values can be compared to the PD8010-3 defined levels of risk. SEPIL used PD8010-3 to define the boundaries of Individual risk, which are above 1×10^{-5} Intolerable, between 1×10^{-5} and 1×10^{-6} Tolerable (ALARP) and below 1×10^{-6} broadly acceptable. The UK HSE methodology assumes escaping people will be subjected to a thermal radiation level to produce 1000 TDU giving a probability of 1% fatality if the person finds shelter within 30 Seconds walking at a speed of 2.5 ms^{-1}

Societal Risk is defined from a plot of Cumulative Frequency of Failure against Number of Casualties SEPIL have used the risk criterion curve from PD8010, which gives a value of 10 casualties at a frequency 1×10^{-5} . This curve assumes a thermal radiation level to give 1800 TDU, which produces a probability of 50% casualties from the affected population.

SEPIL DNV used the UK HSE model to predict the radiated heat from a fireball as a result of a rupture. Mr Crossthwaite of DNV defended the use of the model although admitted that the model has not been verified against pressures above 100 bar. He also stated that DNV used extrapolation techniques to obtain the predictions at 144 barg and 345 barg. Mr Crossthwaite acknowledged there would be additional uncertainty with extrapolating the data but maintained the physics was well understood which permitted the extrapolation.

From the modelling of thermal radiation SEPIL DNV produced two sets of hazards distances, which have a consequence impact on the community. These are 'Building Burning Distance' and 'Escape Distance'. From this data SEPIL DNV produced a set of Consequence Impact Maps illustrating contours of Building Burning Distances and Escape Distances along the whole length of the Corrib pipeline

SEPIL predicted only rupture of the pipeline affects the dwellings, jet fires from holes have no effect

At Glengad between 1 and 7 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 3 and 8 dwellings.

At Ross Port – pipeline bay side, between 14 and 18 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 18 and 20 dwellings.

At Ross Port – pipeline bog side, between 3 and 5 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 7 and 13 dwellings.

At Ross Port – pipeline North Crossing point , between 4 dwellings will be affected depending upon pipeline pressure providing there is shelter. If no shelter is found this could rise to between 5 and 11 dwellings

There was a great deal of concern from the observers that there is NO shelter from the thermal radiation either out to the commonage or down to the bay at Ross Port and therefore the model on fatalities and injury could underestimate the casualties because it assumes everyone will find shelter within 30seconds walking at 2.5ms^{-2} . Mr Crossthwaite estimated that without shelter the escape distances could be in the order of an extra 50m before the radiation level fell away, The population would continue to accumulate heat radiation damage during the period.

SEPIL DNV estimated if there was a catastrophic failure anywhere on the onshore pipeline the maximum number of casualties is predict at seven fatalities at 144 bar pressure.

Risk to the Residents

The maximum individual risk per year to the Glengad residents at 246m away from the pipeline is $1\text{E-}05$. This will arise if the LVI remains pressurised at this value for 1 year. At this risk the area would be in an ALARP condition where SEPIL would need to look at strategies to lower the risk. If this condition only occurs for a period of 10 days then the risk drops to around $5\text{E-}07$, which is classified as broadly acceptable by PD8010-3. The individual risk to the Glengad residents drops to around $1\text{E-}07$ when the LVI is operated at a pressure of 144 barg, which is classified as no restrictions by PD8010-3.

No societal Risk was calculated for the residents of Glengad

The maximum individual risk per year to the Ross Port residents at 140m away from the downstream pipeline is around $7\text{E-}11$, which is classified as no restrictions by PD8010-3.

The Societal Risk to the residents of Ross Port is $5.82\text{E-}10$ Km/year and is well below the risk criterion line in PD8010-3 or IGEM/TD/2

Adding the low failure frequency of $9\text{E-}08$ for ground movement does significantly alter the individual risk per year to the residents of Ross Port at 140m away from the pipeline with the yearly individual risk increasing to $1\text{E-}08$, which is classified as no restrictions by PD8010-3.

It is noted that these low risks to the residents are predicted from a model, which only recognises rupture from 3rd party interference on thick wall pipe with an option of incorporating a low failure frequency due to ground movement.

Glengad LVI – Safety Risk

The Advantica recommendation of reducing the downstream pressure from a potential 345 barg to 144barg was sound. However, the design of the Glengad LVI may have introduced a higher risk of failure into the Corrib downstream pipeline. The present design of Glengad LVI produces the following undesirable risks:-

If the HIPPS system closes and there is a significant leakage past the subsea valves, the pressure at Glengad LVI could rise to 345 barg upstream of the HIPPS system. At

this pressure 8 dwellings would be affected at Glengad from a rupture assuming no shelter for the occupants. Glengad has the highest individual risk to the population at around $7E-05$ around the LVI site and $1E-05$ at the nearest dwelling 246m away. If the pressure of 345 barg is present for 1 year,

These risk figures are considered conservative since only a limited QRA was performed by SEPIL, which ignored the threats from internal corrosion, methane hydrate and 3rd part intentional damage. The security at Glengad LVI is also considered to be inadequate for such a strategic gas import facility.

The internal corrosion regime is considered complex due to a design, which incorporates a dead end section where the corrosion inhibitor is ineffective. This then requires a duplex alloy pipe section, which no data has been submitted on its toughness and ability to tolerate gouges and dents at 345 barg.

If the HIPPS system is closed and the downstream pipe is depressurised then on reopening the HIPPS the gas temperature can fall as low as minus 26C as the high pressure gas expands through the valve. The method of reopening the HIPPS valves with a high differential pressure across the valve is extremely complex. When opening these valves there is a chance of methane hydrate forming at the LVI, which increases the risk at the installation.

The EIS recognised that if proppant were allowed to be fed into the gas stream the area most affected by erosion would be the bends and tees at Glengad LVI again increasing the risk at the installation.

Recommendations

SEPIL should examine the design of Glengad to include a temporary relief valve and vent stack to prevent the pipeline reaching 345 barg. The equipment would be dismantled after 4 years as the well pressure falls. This would allow the removal of the HIPPS system and simplify the layout of the plant to a single remotely operated 20in valve with a small-bore bypass. The removal of the HIPPS would eliminate the potential threat of erosion on tees and bends and allow a vent point to prevent the pressure rising above 100 barg.

Lowering the pressure at Glengad would dramatically reduce the risks to the residents and eliminate the chance of 8 dwellings suffering fatalities around Glengad.

After 4 years the relief valve could be isolated and the stack removed. The minor temporary intrusion of the vent stack and the remote chance it will be used will be offset by dramatically increasing the safety for the Glengad and Ross Port residents. The diameter of the vent stack would be small because the only gas flow discussed at the Oral Hearing was a small amount of seepage past the valves. However, if the umbilical is damaged, then it is critical to know which valves will automatically close. If it is only the Sub Surface Safety Valve (SSSV) at the well and the HIPPS at the LVI, then the HIPPS has a major role in stopping high pressure gas flowing from the well if the SSSV fails to close or partially closes. A vent stack in these circumstances would not be recommended. SEPIL needs to clarify this scenario.

SEPIL should modify the design of Glengad LVI to include security arrangements that are normally associated with major gas import and storage installations in the UK.

Conclusions 182c Application

1.1 Overall Conclusions

The Report has considered the issues relating to these applications on a Chapter by Chapter basis. In each Chapter conclusions are set out. For quick reference each of the conclusions is provided below in Section 50.2. These are my overall conclusions:

1. A comprehensive assessment of the proposed development has been completed.
2. The tunnel modification proposed in 2010 by SEPIL has had a profound effect on reducing the impacts of the development on the area.
3. There is good clarity and transparency available now on the site, the proposed development itself, on the impacts of the scheme, on the safety implications of the scheme. This clarity provides confidence in the decision recommended and provides confidence that the safety of the public is fully protected and that the public will not be put at risk by the proposed development.
4. The development is a major project by any measure. Notwithstanding that fact, the modified proposed 2010 development will have a remarkably light impact on the pristine environment of the area.
5. The ABP decision to adopt a consequence-based routing distance was a key driver in the overall process of consideration of these applications. That decision provided the impetus for SEPIL to moderate the consequence of a gas release from the pipeline. That decision provided the impetus for SEPIL to find what I consider is now a most suitable, the shortest and the most obvious route for this development.
6. The Corrib Gas Field Development, of which the onshore pipelines is but one small part, will provide substantial benefit for Kilcommon, Erris, Mayo and for Ireland. In this I look at the Kinsale Gas Field which provided the impetus for the large gas industry we now have across the state. Kinsale provided the impetus for electricity power generation to shift from coal/oil/turf fuels to natural gas. Corrib will, I have no doubt, provide impetus for future expansion of the Natural Gas Network in Ireland and I expect it will provide impetus for additional exploration off the coast. Corrib will in my view provide opportunity for Mayo in particular to develop as a new energy producing centre.
7. New momentum is required to engage the local community and to ensure the benefits of the scheme are developed and harnessed locally.
8. The Community Gain Condition will, I believe, provide a strong enabling community gain which can be developed with leadership at every level into a long term economic and social stimulus for the area locally but regionally as well.
9. ABP has been well served by the prescribed bodies and particularly DCENR in this assessment. The contributions of the prescribed bodies have been vital in providing expert opinion and in the assessment of the overall impacts of the proposed development.

10. I find that Government policy in Gas Energy Development is a well developed policy. Further strategic planning is required if the depths of controversy and conflict seen in the Corrib Scheme are to be avoided in future. Standards, strategic development sites, strategic corridors, clear process requirements for all consents, open procedures for decision making, transparency in presentation of projects, these are areas that have led to the depth of conflict and controversy seen in the Corrib scheme.

END OVERALL CONCLUSIONS

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1.2 Chapter by Chapter Conclusions

Chapter 4: Local Planning Policy, Mayo County Development Plan

Mayo County Council's County Development Plan policy remains the same as in 2009 other than the change in rural housing policy as outlined above. Therefore the conclusions contained in the Inspector's 2009 report stand and are repeated below.

1.2.1.1 Mayo CDP 2008-2014

It is clear from the Mayo CDP 2008 – 2014, that the Planning Authority supports the realisation of the Corrib Gas Field.

"It is an objective of the council that it fully supports the realization of the Corrib Gas Field find and any other gas finds in the County either on or offshore"

1.2.1.2 Mayo CDP 2008-2014

It is also clear that the Mayo CDP 2008 – 2014 provides protection for the significant landscape resources in the County. Proposed development needs to be assessed and applicants need to demonstrate that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape.

"It is the policy of the Council, through the Landscape Appraisal of County Mayo, to recognize and facilitate appropriate development in a manner that has regard to the character and sensitivity of the landscape, to ensure that development will not have disproportionate effect on the existing or future character of a landscape in terms of location, design and visual prominence, and that development will have regard to the effects of developments on views from the public realm towards sensitive or vulnerable features and areas. In this regard, proposals for development that have the potential to impinge on the integrity of significant landscape resources will be assessed having regard to the guidelines set out in Section 4.18 of the Development Management Guidelines."

1.2.1.3 View and Prospects

Views and prospects should not be adversely affected by the development.

Map 10 of the Mayo CDP 2008 – 2014 indicates the scenic views in the County. This shows the view from L1202 at Glengad looking towards Garter Hill and down to Broadhaven Bay as highly scenic. This also shows views from Ceathrú Thaidhg south and from L1202 north onto Sruth Fada Conn Bay as highly scenic views.

1.2.1.4 Mayo CDP 2008-2014

The Mayo CDP 2008 – 2014 Policy is to protect and enhance and conserve cSAC's and natural habitats. [Mayo CDP 2008 – 2014 Policy P/EH-NH1, P/EH-NH3].

1.2.1.5 Mayo County Council

It is clear that Mayo County Council are of the view that the consent under Section 40 of the Gas Act 1976 (as amended) by the Minister for Communication, Marine and Natural Resources on 15th of April 2002 established in principle that natural gas was to be brought ashore to a landfall and that the gas was to be piped to the gas terminal along a route on the north side of Sruth Fada Conn Bay.

1.2.1.6 Planning Authority's View

It is the Planning Authority's view that these underlying principles have not changed. It is Mayo County Council's view that the changes in detail leading to this 16.GA.0004 application have come about through acceptance by the developer of the recommendations of the Cassells Report (with regard to the relocation of the pipeline) and the recommendations of the Advantica Report (with regard to the re-design of the LVI).

1.2.1.7 The 2009 Scheme Mayo County Council's Considered View

It was clear in the Mayo County Council submission in 2009 that the Council supported the 2009 proposed development and at that time Mayo County Council recommended to ABP that permission be approved for the 2009 scheme subject to ABP satisfying itself as regards certain matters.

1.2.1.8 The 2010 Scheme Mayo County Council's Considered View

It is again clear in the Mayo County Council submission for the modified 2010 proposed development that Mayo County Council consider the revised proposal is acceptable. Mayo County Council recommend to ABP that permission be approved for the 2010 modified proposed development scheme subject to ABP satisfying itself as regards certain matters outlined above.

1.2.1.9 Mayo County Council have Provided a Substantial Submission which details

1. The Reasons why the Council considers the proposed development is acceptable.
2. A range of detail conditions which are recommended in the event that ABP decides to approve the application.
3. A monitoring and overseeing procedure is proposed whereby the development would be controlled in the event that ABP decide to approve the application.
4. In reality the proposed development will during the construction phase have requirements for (a) Water Supply: In the operational phase of the onshore pipeline there will be no water required. A separate condition [Section 47 Agreement] is proposed in relation to Council services that may be required during the construction phase of the development. (b) Roads: A separate condition [Section 47 Agreement] is proposed by Mayo County Council related to payments by the Applicant for special road maintenance and road improvement costs which Mayo County Council may incur and which are required directly to facilitate the proposed development (c) Waste: A separate condition [Section 47 Agreement] is proposed in relation to Council services that may be required during the construction phase of the development. In the operational phase of the onshore pipeline there will be no waste generated by the proposed onshore pipeline. (d) Waste Water: A separate condition [Section 47 Agreement] is proposed in relation to Council services that may be required during the construction phase of the development. In the operational phase of the onshore pipeline there will be no waste water disposal service required.

Chapter 5: Regional Planning Policy

1. It is clear that the RPG's place strong emphasis on the protection of the environment and on the conservation of landscape resources in the region.
2. The RPG's confirm that EU Habitats Directive requirements should be implemented in full. In particular where development is located in Natura 2000 sites or where there is the potential for development to impact on the conservation objectives of Natura 2000 sites the Habitat Directive should be implemented in full.
3. The RPG's identified the tourism sector as a key part of the economy of the west region. Marketing of the landscape, archaeology, architectural heritage, biodiversity and of the environmental resources is supported.
4. The RPG's have introduced policy on Regional Flood Risk Appraisal for implementation in accordance with the guidelines proposed jointly by DEHLG and OPW on Flood Risk Assessment for Planning Authorities.
5. The RPG's support the development of a small number of gas fired electricity generating stations in the west region.
6. The RPG's support *"...the development of the necessary onshore facilities to enable the potential of the Corrib Gas Field to be utilised in the Regional and National context. The potential of this very important natural resource can be of enormous benefit to the region as a whole and is seen as a project of large scale potential development for the region.*

7. The RPG's state that the sustainable growth and development of the Gaeltacht areas has significant potential for the Irish Language, Cultural Heritage, Enterprise and Employment, Recreation, Leisure and Tourism within the West Region.
8. Planning authorities are asked to support the provision of energy networks provided that adequate technological standards and acceptable development standards are achieved.

Chapter 6: National Policy for Gas Infrastructure

1. National Policy for the Energy Sector is well developed.
2. The sources and supply of gas into the energy sector is a vital component within the National Economy because of the reliance on gas to provide a large part of electricity generating capacity.
3. The security of energy supply is identified as a critical National Interest.
4. National Policy is to strengthen the physical infrastructure links with UK and also strengthen the agreements with UK and European Energy Markets.
5. National Policy is to ensure a diversity of energy sources and to move towards high efficiency use of energy.
6. As regards Gas infrastructure, significant investment is provided in the period of the National Development Plan for BGE Galway Mayo Pipeline to connect to the Corrib Gas Field and to bring Natural Gas to towns in the west.
7. The issue raised in the report on a Common Approach to Gas North and South Policy discussion regarding "Flattening the production profile for Corrib Gas Field" is one for DCENR/CER and SEPIL. This is not a matter that should be considered by ABP in their assessment of this application. The rate of extraction of the resources is a matter for the undertaker to agree with the competent authority and the Regulator.
8. It had been expected that gas usage will increase by 6.5% per annum up to 2013. This is now forecast that total Irish Annual Gas Demand will grow at 0.9% per annum up to 2020. (Joint Gas Statement 2010)
9. The White Paper sets out a target of 50% for Gas contribution to Electricity Generation by 2020. This is to be achieved by bringing increased renewable energy sources on stream up to 2020.
10. In absence of this increased renewable energy, Gas, on a business as usual basis, would be the energy source for 70% of electricity generation by 2020.
11. Having diverse sources of secure energy supply into the future is central to National Policy.
12. It is clear that bringing the Corrib Gas Field into production and connecting the supply from Corrib into the National Gas Network is a Government priority and has been a Government priority for some considerable time.
13. It is clear that Corrib Gas Field is required and that when available, Corrib Gas will provide a vital source of energy supply for the economy and will help provide greater security of supply for the energy needs of the country. Ireland is obliged to strengthen security of supply by 03/12/2014 and to take the necessary measures to satisfy total gas

demand on a day of exceptional gas demand (1:20 years demand level) and in the event that a disruption of the single largest gas infrastructure occurs.

14. The competent authority [DCENR/CER] shall require the natural gas undertakings that it identifies to take measures to ensure gas supplies to the protected customers in extreme weather conditions (7 days), in extended periods of high demand for gas (30 days) and in case of disruption of the single largest gas infrastructure (30 days) These measures are required to be implemented by 3/06/2012.

Chapter 9: Legislative Context

1. Section 22 of Energy (Misc. Provisions) Act 2006 and the High Court decision in *Jonathon O'Donnell v SEPIL* 233 MCA July 2010 appear to support SEPIL's position that the offshore pipeline as laid onshore for the 2002 consent does not need to be included in this application 16.GA.0004.

However, neither the LVI nor the construction and works associated with drainage to the LVI were a part of the 2002 development. That, in my view, justifies the request by ABP that "...part of the route had been omitted..." and that SEPIL should submit revised drawings "...which fully describe the full extent of the onshore pipeline from HWM to the terminal site...". This matter is considered in more detail in Chapter 23 Boundaries of the Permission Sought.

2. Flood Risk Assessment for the proposed development has been included in the addendum to the E.I.S. This is considered in Chapter 43 Hydrology and Eco Hydrology.

Chapter 11: Prescribed Bodies Submissions (Part Only)

1.2.5.1 An Taisce

1. The submission is informed by observers who have separately made submissions to ABP against the proposed development.
2. The submission is argued in principle and has raised procedural issues and legal issues. All the issues raised are considered in the context of the individual chapters of this report.
3. An Taisce accepted at OH that it had not been possible for them to examine the E.I.S. in its entirety. Their examination related to the Non-Technical Summary of the project.

1.2.5.2 CER Submission to ABP

1. DCENR in their submission to ABP and at 2009 OH had outlined the regulation system envisaged and for which legislation was pending. This is now a reality with the passing of Petroleum (Exploration and Extraction) Safety Act 2010. The CER have now taken up the implementation of this Act to regulate the designated petroleum undertakers.
2. It is clear that CER expect that Corrib Gas Field will require a safety permit before commencement of operations.

1.2.5.3 Inland Fisheries Ireland to ABP

1. It is clear that control of construction operations and in particular control of pollution from bentonite, cement grout, residual wastewater from separation unit and waste water from sewage treatment plant potential overloading are the concerns of Inland Fisheries Ireland.

Chapter 12: DCENR Submissions

1. DCENR participated in the ABP consultation phase in a very comprehensive manner.
2. DCENR, who are engaged in a separate process related to the Section 40 Gas Act 1976 and Section 13 Petroleum Act 1960 Application, shared with ABP in a very open way the expertise and the information being considered by the consultants to DCENR i.e.

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Environ and ENTEC. I welcomed this and from my point of view DCENR have provided highly significant submissions to the ABP process.

3. DCENR and their consultants participated extensively in the OH and answered questions put to them on many technical and procedural issues which informed the ABP process.
4. It is my belief that the observers who put a lot of questions to DCENR, found the participation of DCENR beneficial and observers derived a lot of information regarding aspects of the Corrib Gas Field Development from the DCENR answers.
5. The applicant provided the OH with a copy of response to DCENR further information request which is very useful to ABP now in consideration of these applications.
6. The conclusions set out in Chapter 12 of the 2009 Inspectors Report are still valid but events have moved forward since then.
7. DCENR has not yet concluded the process of assessing the Section 40 Application and the Section 13 Application now before the Minister for consideration. These are parallel process applications to the applications before ABP.
8. It would not be unreasonable to expect that the Ministers public consultation on the Section 40 and Section 13 applications may be re-opened.
9. The safety framework being developed by CER will be (most likely) used to regulate the safety of the Corrib onshore pipeline.
10. In the event that CER Safety Framework is not ready then DCENR will itself regulate the safety of the Corrib onshore pipeline in the manner set out for the ABP in the 2009 submission:

“In the event that the Minister grants consent to the applicant pursuant to Section 40, and because CER requires a period of time to implement the safety framework, that the DCENR will be responsible for safety of the pipeline.”

Chapter 13: DEHLG and NPWS Submissions

1. Overall it is clear that the DEHLG consider that the development will not be significant and will not have an adverse impact on the integrity of the pSPA and cSAC.
Inspector’s Note: This contrasts with the DEHLG (NPWS) concerns regarding the 2009 route which impacted on the cSAC Blanket Bog at Rosspoint Common.
2. DEHLG have recommended conditions regarding archaeology and how the proposed development is controlled and monitored for attachment in the event that ABP decide to approve these applications.
3. It is also clear that there are two issues that do concern DEHLG:
 - (a) Implementation of mitigation measures;
 - (b) Intervention Pit. In the event that an intervention pit becomes necessary that proper and timely procedures are followed to minimize any impacts that will arise from such intervention pit.
1. In my view these concerns of DEHLG can be fully reflected by the attachment of appropriate conditions in the event that ABP decide to approve these applications.
The DAFF have a concern that the proposed works in the event that an intervention pit be required, may impact the licenced shell fish activity. In my view these concerns can

be reflected in an appropriate condition which can be attached in the event that ABP decide to approve these applications.

Chapter 14: EPA/HSA Submissions

1. A ruling was given at OH that only those matters related to the onshore pipeline as proposed in the modified E.I.S. and all matters relevant to same could be considered. In my view that ruling was correct and was not unreasonable.
2. I am satisfied that all matters related to the proposed development were considered at OH. In particular, matters relating to the impacts on the environment of both construction phase and operation phase of the development were considered. In addition, the potential for unplanned events-loss of integrity of the pipeline, loss of integrity of umbilicals, service cables and outfall pipe were also considered, as was the possibility of an intervention pit being required in the Bay.
3. I am satisfied that sufficient information is available to me and to ABP to enable a decision in respect of the Health and Safety aspects of the proposed development. These aspects and my recommendations to the Board are contained in Chapter 30 of this report.

Chapter 16: Other Issues Raised at OH

1. In the course of the OH much material put forward by observers regarding human rights was ruled not relevant and inadmissible.
That material related to perspectives shown on TV programmes, film, local video material and articles written about the past conflicts between protestors against the Corrib Development and Gardaí and SEPIL employees or contractors.
2. It is clear that in the conflict situation that exists between the applicant and those who object to the Corrib scheme, community consultation and communication between the parties will not work as well as it might do.
3. SEPIL have demonstrated very clearly that they apply for necessary permissions, licences, approvals and consents for the proposed development. The granting and enforcement of permissions, licences, approvals and consents is a matter for the relevant bodies to consider and to grant or otherwise and then if granted, to enforce.
4. I was not impressed by arguments that previous licences, approvals and consents already issued to SEPIL are invalid, illegal or otherwise considered to be not properly in place.
Such arguments were made concerning decisions by Mayo County Council, ABP, EPA, DMNR (now DCENR), DEHLG and DAFF.
5. An Taisce submission was made in support of those opposing the development and An Taisce retracted contentions made when they were challenged by SEPIL.
6. SEPIL is a petroleum undertaker and in making these applications to ABP did so with the benefit of a certificate issued by DCENR under section 20(1)(b) of the Gas Act 2000. A copy of that certificate accompanied the initial applications. That complies with Section 182(c)(2) of the Planning and Development (Strategic Infrastructure) Act 2006.

In my view by submitting that certificate, SEPIL have the required standing and ABP must now consider the applications on their merit and, in accordance with the statutory requirements, take a decision on these applications.

7. The consideration of the international performance of SHELL is not in my view a relevant consideration to these applications.
8. I am satisfied that SEPIL have put forward a very substantial response to ABP's invitation to modify the proposed development.
9. I am satisfied on the basis of the information presented by SEPIL in E.I.S. and in evidence and at OH that SEPIL has prepared these applications using necessary expertise and that SEPIL have the required experience to complete this development should ABP decide to approve the proposed development.

Chapter 18: Advantica Report

1. Notwithstanding the changes in the onshore pipeline scheme since 2002 and that are now incorporated into the 2010 modified proposed development, the Advantica Report continues to be an important technical appraisal reference report in the consideration of the 2010 scheme.
2. The proposed development (2010) is considerably different to that examined by Advantica.
3. The routing distance set out by ABP in the letter of 2/11/2009 follows the most cautious approach to proximity distance as identified by Advantica in The Independent Safety Review of the Onshore Pipeline Section of the Corrib Gas Pipeline.
4. External expert advice is being provided with regard to the 2010 proposed development. Mr. Wright provides this to ABP.
5. Mr. Waite [ENTEC], Mr. Hancox [ENVIRON] and Mr. Keane [KOIL] provide expert advice to DCENR and these experts provided much evidence at the 2010 OH.
6. At the OH, 2010 there was considerable discussion, question and answer and clarification of the issues relating to the proposed development that concern DCENR. Mr. Keane [KOIL] the engineering auditor appointed by DCENR for the offshore operations was available and provided clarification on the DCENR oversight of the project.
7. The CER are now in the process of establishing a risk-based Petroleum Safety Framework within which the safety of designated petroleum activities (Corrib included) will be controlled.

Chapter 19: Selection of Landfall Location

1. The fact is that consent (2002) was given to the project plan for development, to the foreshore licence application to construct the facilities, and the consent was granted to construct the pipeline both offshore and onshore. Those consents followed the submission of an E.I.S for the original pipeline route. That consent confirms the acceptance of the then regulatory regime of Glengad as a suitable landfall location. That

consent was confirmed following an EIA process by DMNR (now DCENR) as was confirmed in evidence at OH.

2. In considering file 16.GA.0004 for approval, An Bord Pleanála is not in my view constrained by that consent in considering the acceptability or otherwise of the Glengad site as the landfall for the onshore pipeline.
3. The onshore pipeline requires ABP approval in the present regulatory regime. SI Act 2006 in Section 182c (3) says *“The proposed development shall not be carried out unless the Board has approved it with or without modifications”* However the facts that approvals to the plan for development and that the consent to construct a pipeline had been issued and that the foreshore licence had been issued are a significant consideration of which the Board needs to take account in making a decision on the proposed development.
4. I have inspected the potential landfall sites at Inver, Glengad, Garter Hill, Portacloy, and Glinsk. I have reviewed the 2001 E.I.S. Route Selection carried out. It is my view that a suitable landfall had been identified at Glengad in 2001.
5. The proposed development at Glengad must be acceptable from a proper planning and from an environmental impact position on the same basis as the other parts of the proposed development.
6. The suitability of the site does not in itself constrain ABP in considering all aspects of the onshore pipeline proposed development.
The suitability and the full examination of the proposed development is set out in the following chapters.
 - i. The impact of the proposed development at Glengad on the environment (Chapter 38 Natural Environment)
 - ii. The impact of the Glengad Landfall on the proper planning and sustainable development of the area and the Health & Safety of the community (Chapters 27-30 Safety)
 - iii. The visual impact of the proposed development at Glengad. (Chapter 42 Landscape and Visual Impact).
 - iv. Traffic (Chapter 44 Haul Routes and Traffic Plan)

Chapter 20: Regulation of Pipeline

The conclusions in my 2009 report are valid and repeated below updated to reflect all submissions received by ABP from DEHLG, DCENR, Mayo County Council and CER.

1. Observer's very real concerns contain a recognition by observers that a substantial safety regime and thorough and independent system for regulating the proposed development is what is required throughout the lifetime of the development.
2. The procedures for evaluating and approving design, construction, testing commissioning and operation of the proposed onshore pipeline were outlined by DCENR

in some detail in 2009 by way of submissions to ABP and in evidence at the 2009 OH.

3. These procedures were subject to much more detailed submissions by DCENR and the consultants advising DCENR on the section 40 application in submissions and in a lengthy question and answer section at the OH in 2010.
4. The Petroleum (Safety) Act 2010 has provided that the CER will be responsible for safety of the upstream gas pipelines.
5. The procedures being established by CER in the Petroleum Safety Framework will provide a comprehensive system of regulation for the proposed development. In my view the system as outlined will provide for the protection of the public. The system will be designed to govern design, construction, operation, maintenance, modification and decommissioning of petroleum infrastructure and to prescribe and control the operation of petroleum infrastructure to the applicable standards and codes of practice for the designated petroleum activation.

Chapter 21: Extensification of Well Field

1. It is clear that there will be control through the Petroleum Lease, through the Plan for Development for the Corrib Gas Field Development and through the Consent to Construct a Pipeline on any proposed extensification or any addition of a new gas field into the upstream pipeline.
2. It is also clear that there will be control through the Petroleum Safety Framework being established by CER and through the Safety Permit system on any additional connection into the upstream pipeline.
3. In recommending below, that control of the use of the onshore pipeline and a requirement for appropriate planning permission to be obtained before connecting any new Gas Field to the proposed development I am conscious:
 - i. That the ABP has other options should the Board decide to grant planning permission for the 2010 modified proposed onshore pipeline development.
 - ii. The Board could (a) leave open the question of control of potential future Gas Field discoveries and/or (b) control such potential connections through a condition requiring DCENR and CER approval/consent before such potential future gas field discoveries could be connected.
4. In recommending that a planning approval be required I am conscious SEPIL have clearly stated the current permission is required for the Corrib Gas Field Development and nothing more. I am also conscious that the concerns of observers and in some ways the strength of opposition to the proposed modified development of the onshore pipeline is as a result of a fear that the process and decision-making machinery will work without adequate regard for local community and the issues of concern to the safety of that community and that such decision making will not be transparent.
5. The need for appropriate planning approval will, in my view, address these concerns in a manner that is not restrictive in any way in respect of the current applications that are before the Board for decision.

Chapter 22: Project Splitting

1. In summary I find that the objection of project splitting is not well founded. The original approval to the Corrib Field Plan of Development in 2002 included an EIA procedure. The present application for the proposed development includes an E.I.S. which will be assessed by ABP. In relation to matters under construction on site I find that these are outside of my remit and they are not in my view relevant considerations for ABP in arriving at a decision on 16.GA.0004.
2. I have reviewed again the consideration of project splitting in Chapter 22 of my 2009 Report. I conclude that the issues involved were adequately addressed in that Report.
3. The project has to be progressed in discrete parts all integrated within the overall scheme but each such part relating to a particular statutory requirement for consent or permission. Project splitting has not taken place in my view.
4. The Applications before the Board 16.GA.0004 and 16.DA.0005 include a full E.I.S. and ABP will in due course perform the Environment Impact Assessment on the modified onshore pipeline development as proposed in the 2010 E.I.S.
5. There are aspects of the observers concerns which though expressed as one of project splitting are in my view more properly related to project monitoring and control on the construction activities of the applicant SEPIL. I will deal with those aspects in Chapter 41 Other Issues in the context of the proposal that a Project Monitoring Committee be established to oversee the construction of the project should ABP decide to approve the applications.

Chapter 23: Boundaries of Permission

1. There were a number of matters raised which I have no authority to examine and I do not propose to do so:
 - i. 2002 EIA process
 - ii. The 2002 section 40 consent
 - iii. Construction of the offshore pipeline
 - iv. Undertakings given to the High Court in SEPIL v McGrath and Others
 - v. Issue relating to material widening of a means of access to a public road at Aghoos and that relate to the 2002 proposed development.
2. I am satisfied that ABP was correct in requesting revised drawings "...which fully describe the full extent of the onshore pipeline from the HWM to the terminal..." It was confirmed by SEPIL that works related to the construction of the onshore pipeline will extend into the areas between the chainage 83+400 cliff face and the HWM chainage 83+380 i.e. site works and fencing and the laying of the drainage pipe from the LVI and the head wall at the cliff face.
3. SEPIL's position, that the 2002 consent is valid in respect of the gas pipeline and such parts of the umbilicals and outfall pipeline as are laid at Glengad is concerned has been clarified by reference to the provision of section 22 subsection 3 of the Energy

Miscellaneous Act 2006 and by the decision of the High Court in the O'Donnell vs SEPIL case. However those parts of the proposed development that were not included in the 2002 consent i.e. the LVI and drainage pipeline for the LVI compound and associated construction works up to the HWM are properly part of the onshore pipeline and need to be included in this application. This has now been clearly done.

4. I am satisfied that it is construction practice that there be an overlap between the construction of the offshore and the onshore pipelines at Glengad where the offshore pipeline comes ashore. I am satisfied in regard to this overlap the offshore pipeline which has been laid at Glengad extends onshore and does so on the basis of the consent granted in 2002. I am also satisfied that the modified proposed development, the subject of these applications extends beyond the cliff face and as far as the HWM.

This proposed development as I have said above includes the LVI and associated drainage works and the works required for their construction.

5. The important point in regard to this overlap is that there is full clarity for all, for applicant, for ABP, for landowners, for general public, for the planning authority, for prescribed bodies, of the extent of development proposed in the application under consideration.

This is now fully clarified and I am satisfied that there is no uncertainty regarding the applications before the Board as it relates to the point of commencement and extent of the development.

6. I am satisfied that sufficient clarity of information has been made available between the 2009 EIS, the additional information provided at the 2009 OH (DRN OH2009 44) in particular) and the 2010 EIS together with the additional information provided at the 2010 OH to enable me to assess the issues involved.
7. I note for the record here the DCENR position that the Minister is of the view that the section 40 consent issued on 15/04/2002 is valid.
8. I note for the Board's information the High Court decision of 22/07/2010 (233 MCA/2009):

“that there has to be a provision in law whereby if a matter changes, such as, as is argued in this case, the bringing into force of the Strategic Infrastructure Act 2006, that it is a matter of necessary implication of law that what has been permitted up to that point continues in force unless the new Act in some way affects it. But even if that were not the case, by reason of ordinary or necessary implication, it seems to me also to be clear that by reason of Section 22 of the Energy (Miscellaneous Provisions) Act 2006, the Oireachtas expressly provided for the continuance of previous consents whereby the continuing of a project under the Gas Act, 1976, was to be regarded as being lawful, notwithstanding the fact that in the meantime the Act which I have mentioned the Strategic Infrastructure Act, came into force, and that by reason of that planning permission need to be applied to, as it has now been applied to in relation to the land ward side of this, to An Bord Pleanála.

Part 8, Section 22, states that: “no approval shall be required in relation to a development referred to at Section 182C if-in the case of a development so referred to it has been subject to the grant of a consent under Section 39A or 40 of the Gas Act of

1976 before the commencement of this section and that consent is in force immediately before such commencement”

That is, it seems to me, a prophylactic measure which is probably not necessary as a matter of law, to state that where a new Act comes into force, and the new Act being the Strategic Infrastructure Act, does not specifically affect, by its expressed terms, a permission that has hitherto been given, that in fact once the permission has been given it has no effect at all on the permission, and that the permission continues to be valid as a matter of law”. Mr. Justice Charleton High Court 22/7/2010

9. I am satisfied that the Advertisement placed by SEPIL properly describes that the development extends to the HWM.
10. Following on from the above conclusions, I do not accept the observer’s contention regarding that part of the offshore pipeline laid onshore that it requires a retention permission.

Chapter 24: Protection of Drinking Water Sources

1. While concern was expressed that a well on Mr. Philbin’s land at Rossport may be affected by the proposed development, I am satisfied that there should be no impact on this well. The proposed development is located a long distance from lands at Rossport and the construction proposed is located a minimum of 5.5m below the bed of Sruth Fada Conn. The construction will be within a tunnel under the Bay and the tunnel will be grouted on completion. On the basis of these factors I believe it is reasonable to conclude that should be no impact on Mr. Philbin’s well.

Chapter 25: Construction Method and Programme

I am satisfied with the consideration given to cliff face erosion by the applicant. I accept Mr. O’Donnell’s opinion that some form of natural coastal protection should be included in the works at the cliff face to prevent erosion. This matter also affects the foreshore as well as the cliff face.

The construction of the offshore pipeline pull in has involved a large excavation through the cliff at Glengad. The reinstatement of this cliff face has not been detailed. The Applicant does not expect the sand martin colony along this section of the cliff face to be able to use the restored site.

The beach apart from the immediate area at the base of the cliff face and to the HWM is outside of the site relevant to this application and comes within the remit of the DEHLG and the Foreshore Licence granted by DEHLG (now has responsibility for Foreshore Licensing) for the works concerned.

Any restoration plan that is required should be agreed with the appropriate authority DEHLG in respect of the Foreshore Licenced part of the overall site for the Corrib Gas Field Development.

1. I believe these revised proposals will reduce the environmental impact and these modifications represent a significant minimisation of impacts on the environment on the Glenamoy Bog Complex cSAC and the Broadhaven Bay pSPA.
2. The narrow bog rampart and residential roads in Rosspart which will not now be traversed at all by construction traffic and the lengthened programme means that the Pollathomais and Glengad traffic on the L1202 will be of lower intensity.
3. The longer programme will allow the contractors involved to plan transportation and to include local community everyday events, funerals, etc. more fully within the programme of work.
4. I am satisfied with the methodology proposed for construction of the modified scheme.
5. I am satisfied following the analysis by Mr. O'Donnell in 2009 that the stone road technique is an acceptable method for providing access and for providing stability for the pipeline through the peat lands.
6. I am satisfied that SEPIL's proposal to tunnel underneath Sruth Fada Conn is a substantial mitigation on the overall impact of the development on the environment and on the local community.
7. I am satisfied that SEPIL's proposed tunnel is a superior method to the alternatives considered for that section of the pipeline.
8. SEPIL have demonstrated that tunnels have been used successfully for this type of pipeline requirement.
9. I am satisfied that the programme is now a practical programme and is achievable.

Chapter 26: Security

The proposal to construct a tunnel under Sruth Fada Conn and to base the construction at Aghoos and to tunnel in one direction has a profound impact on a number of factors.

1. Security – All activity relating to the tunnel will now be secured on the Aghoos site which is located on L1202 and approached from R314 away from residential dwellings.
2. Length of Construction Site in Community – Effectively the length of the overall linear pipeline has been reduced by 0.9km, because the 2010 route is shorter than 2009 route by 0.9km, and by 4.9km because the new modified route will be underground and as such will only impact indirectly on the community as compared to the original proposal where an open cut trench was proposed through the Rosspart Linear Residential Area. In overall terms then the impact of construction and securing that construction for 5.8km has been removed in 2010 scheme.
3. I am satisfied that the safety of the public from any risk due to third party intentional damage is protected by the design of the scheme.
4. The safety of the public from any risk to the pipeline from intentional third party damage is the central issue here, once that is acceptable then other secondary issues such as potential loss of production and/or potential environmental damage from third party interference can be assessed.

5. The security of the proposed development is a matter for SEPIL. They have indicated that a security review conducted by them after the event of 05/06/2010 has assessed that the gas pipeline is safe from foreseeable intentional third party damage. I am satisfied the issue has been fully considered by SEPIL in the E.I.S.
6. In the event that at any time SEPIL or DCENR or CER consider that there is a potential threat to production or security of supply then SEPIL can at that time take any appropriate course of action required to rectify that situation. Such is not the case here where DCENR has indicated:

“Physical Security of Energy Installations

The Department undertook to clarify its role in relation to a Directive concerning the security of strategic energy infrastructure. Directive 2008/114/EC deals with the identification and designation of European critical infrastructures and the assessment of the need to improve their protection. It relates to energy and transport infrastructure.

Within the Directive, ‘European critical infrastructure’ is defined as critical infrastructure located in Member States the disruption or destruction of which would have a significant impact on at least two Member States. While the Directive requires the identification and notification of European critical infrastructure; it does not lay down specific guidelines or measures to be taken for their protection. Infrastructure relating to the Corrib Gas project has not been designated as European critical infrastructure and is unlikely to be so designated in the future, having regard to the fact that such infrastructure must be critical to two EU Member States.

As is the case with respect to downstream security, the onus for the physical protection of the infrastructure is the responsibility of the developer in the first instance and this is underpinned by the State security services.”

7. The CER are only in the process of setting up their safety framework for upstream gas infrastructure under the Petroleum (Safety) Act 2010.

In this set of circumstances I am not prepared to recommend that ABP take any action with regard to the possible modification of the proposed development in this regard. SEPIL in evidence indicated that this was not necessary.

I have concluded that the safety of the public is provided by the design of the 2010 proposed development as submitted by SEPIL. For absolute clarity on this point, in my view the slabbing protection for the umbilicals will not add any further safety control nor will it mitigate or moderate the risks any further. The public are protected by the design of the scheme itself.

Chapter 27: Safety – Pipeline Design and Codes of Practice

1. The codes that apply to the pipeline have now been clarified. The design of the pipeline meets the requirements of the codes.
 2. Mr. Wright in his report indicates that he is satisfied with the clarity provided. Mr. Wright recommends that DCENR should issue a confirmatory document confirming DNV-OS-F101 for use on that section of the offshore pipeline onshore. DCENR should also confirm the supplements form IS 328, PD 8010, IS 14161 that apply to DNV-OS-F101.
 3. The 2010 proposed pipeline has the same design pressures [345barg offshore, 144barg onshore] as the 2009 proposed pipeline.
 4. The MAOP's have now been declared 150barg offshore and 100barg onshore. These provide additional factor of safety protection because the stress levels in the pipeline at these MAOPs will be considerably below the stress levels at the design pressures.
 5. The hydro test requirements for LVI and onshore pipeline will be 504barg.
 6. The concerns expressed by observers regarding the safety of the pipeline have been responded to in the 2010 E.I.S. which has a clear and transparent demonstration of the design of the pipeline and how that design protects the safety of the public.
 7. In my view the code requirements and the details of the technologies involved in the proposed development have been clarified and explained in a satisfactory manner in the E.I.S. and in the E.I.A. process which included the OHs of 2009 and 2010.
 8. I conclude that the concerns of observers have been addressed in the revised design in the E.I.S. and in the revised configuration proposed for the pipeline.
 9. Mr. Waite (ENTEC) consultant to DCENR has indicated to ABP at the OH that there are no major concerns sufficient to withhold a permit to construct a pipeline and that he will be advising DCENR accordingly.
 10. I am satisfied that a conservative approach has been taken to the design of the pipeline. I am satisfied that a set of robust technologies have been assembled by SEPIL to address the different design conditions that apply along this pipeline route.
 11. I have examined the design and details of the proposed development in conjunction with Mr. Wright Gas Consultant and with Mr. O'Donnell Geotechnical Consultant. I am satisfied at the information provided and the analysis provided is satisfactory.
- On the basis of Mr. Wright's Reports of 2009 and 2010 and on the basis of Mr. O'Donnell's Report of 2009, I conclude that the design of the pipeline is satisfactory.

Chapter 28: Safety – Quantified Risk Assessment

1. The QRA is an acceptable method for evaluating risks near pipelines.
2. The QRA provided in the 2010 E.I.S. is substantially in compliance with the request of ABP of 2/11/2009.
3. QRA analysis is one factor in the decision making process – codes and standards, the Qualitative Risk Analysis, the Consequence Analysis, expertise and experience of designers and experience across the industry has also to be considered in the assessment of the proposed development.

4. While SEPIL's costs have not been considered in this assessment there is very clearly a significant increase in costs in the modified 2010 scheme over the 2009 scheme because of the tunnel proposed.
5. I accept and agree with Mr. Wright's conclusion that the margin of safety between the risk levels calculated (2.9×10^{-9} per year at pipeline, 1.8×10^{-11} per year at nearest house) and the level set by ABP as broadly acceptable (1×10^{-6} per year) is necessary to cater for any potential uncertainties that may have occurred by adopting a composite database.
6. The Advantica Report recognised that there were uncertainties in the risk analysis and that there were societal concerns. Advantica as a result recommended 144barg for the onshore pipeline.
7. In my view, the uncertainties have now been addressed by the modified 2010 scheme MAOPs, offshore well overpressure protection system, LVI overpressure protection system, the reliability standards adopted for the overpressure protection system and particularly by the ABP routing distance standard.
8. The Qualitative Risk Analysis provided by SEPIL demonstrates that SEPIL have a comprehensive system that will manage the operational phase of the proposed development – the PIMS.

Chapter 29: Safety – Landfall Valve Installation

The following conclusions are based on the assessment that has been conducted of the LVI as presented in the 2010 E.I.S. and on details provided by SEPIL at both 2009 and 2010 OHs. My conclusions are informed by Mr. Wright's analysis and by his Reports in 2009 and 2010.

1. I am satisfied with the clarity and transparency and completeness of the information provided.
2. The part of the site nearest LVI where ALARP risk levels apply (between 10^{-5} to 10^{-6}) is within a 63m radius of the LVI.
3. The pipeline and LVI are located at a satisfactory distance from existing dwellings at LVI and in Glengad. Compare 216m consequence hazard distance to 246m (distance to pipeline) existing house proximity and 280m nearest house to LVI.
4. I am satisfied that SEPIL have provided satisfactory justification for their proposed configuration of the system which includes LVI and MAOP offshore and onshore.
5. I am satisfied that SEPIL have considered the alternative configurations of venting at Glengad and/or locating the LVI directly on the 20inch gas pipeline itself rather than on a loop. SEPIL consider that these alternatives are not materially superior to the proposed configuration. In the end of the day SEPIL must configure the scheme and ABP must then assess the configuration as proposed by them. I am satisfied with the configuration as now proposed.
6. I am satisfied that concerns of observers have been included in considerations and design of the scheme as now presented in the revised E.I.S. The LVI as presented in this application is a high integrity overpressure protection device for the onshore pipeline.
7. I am satisfied that the onshore pipeline and the LVI as set out in the revised E.I.S. does not pose an unacceptable risk to the public.

8. I am satisfied and I have a degree of confidence that the onshore pipeline and LVI does not pose an unacceptable risk to the existing normally occupied dwellings (this effectively means all dwellings except the one SEPIL own at Aghoos).
9. I am satisfied that SEPIL have provided sufficient information to enable me to conclude that an adequate overpressure protection system has been proposed for the LVI. The reliability of the LVI has been independently verified and will be approved or otherwise by DCENR.
10. I am satisfied that SEPIL have provided sufficient information to enable me to conclude that an adequate overpressure protection system has been proposed for the offshore pipeline. The reliability of the offshore overpressure protection system is being examined by specialists for DCENR and will be approved by DCENR.
11. Mr. Wright's Report confirms that the analysis of the LVI carried out by SEPIL provides robust technical justification for the proposed LVI configuration.
12. The impact on the development potential of lands in the immediate vicinity of LVI is not significant. This is because the pipeline and LVI are at a distance from L1202 where such development may take place in the future.

Chapter 30: Safety – Overall Summary on Safety

1. I accept Mr. Wright's Report. I propose to ABP that ABP accept that report.
2. The details of Mr. Wright's Report have been considered under Chapter 27 – Pipeline Design and Codes of Practice, Chapter 28 – QRA/Consequences of failure, Chapter 29 – LVI Adequacy of Proposed Installation. Mr. Wright's Report (2010) provides the basis for my conclusions. Mr. Wright's Report (2009) has also made a substantial contribution to the analysis and overall assessment of the issue of safety of the public from this proposed development.
3. The onshore pipeline proposed has been examined in detail. I find the design of the scheme is acceptable.
4. I am satisfied that the pipeline routing is now acceptable.
5. The proximity distance between the pipeline and the nearest occupied dwelling calculated as the appropriate distance as set out by ABP provides a margin of safety in the event of a worst case scenario full bore rupture of the pipeline.
6. The ABP standard for proximity to houses is not a recognised standard however it is based on Advantica's suggested best practice approach for routing the pipeline in remote low density population areas.
7. The ABP standard is a high standard. I believe this is correct and necessary in this case.
8. The QRA for the proposed pipeline has been examined in detail. I find the QRA as submitted to ABP is acceptable.
9. The risk to the public from the pipeline and from the LVI have been calculated. These risks are low and are acceptable.
10. The consequence of a full bore rupture in the pipeline has been evaluated. All residential dwellings are outside the consequence distance and provide safe shelter as required to comply with the standard set out by ABP in their letter of 2/11/2009.

11. The scheme has been reconfigured with MAOP's being declared and incorporating revised overpressure protection systems. The revised configuration is acceptable.
12. The design of the LVI has been re-examined. I find that the risk to the public from the LVI is low and is acceptable. The configuration of the LVI proposed is considered acceptable.
13. Mr. Wright has concluded that the proposed development does not pose an unacceptable risk to the public. Mr. Wright has concluded that the risk to the public from the LVI and from the pipeline is low and is acceptable.
14. In my view, ABP can now decide to approve the pipeline with confidence that it does not pose a threat to the safety of the public nor a threat to the safety of the local community.

Chapter 31: Waste

1. I believe it should be a requirement of any permission being considered for the project that the E.M.P. contain a method statement whereby the waste for disposal be minimized as part of the Waste Management Plan.
2. I also believe that stone for disposal should be the subject of a separate agreement with Mayo County Council and rather than be disposed, the stone should be reprocessed for re-use as part of that agreement, the location and function of re-use to be part of that agreement also.
3. For the absence of any doubt on this, I do not agree that stone be left in place at the request of the landowner (as had been proposed in 2009). This would have the affect of patchwork reinstatement and would have a significant and long term impact on the visual environment. I therefore recommend that reinstatement of lands be fully carried out as part of the proposed works in accordance with details contained in the E.I.S. 2010.
4. I am satisfied with the proposals as outlined in the E.I.S. for management of waste generated during the construction project.
5. I am satisfied that the proposal to use the Environment Management Plan to detail the ongoing management of wastes is the appropriate way for this to be achieved.

Chapter 32: Outfall Pipe

1. The outfall pipe was considered fully in the 2009 Inspectors Report.
2. The consideration of this outfall discharge pipeline in 2009 was complete and the recommendations from that previous report are repeated below.
3. The additional analysis requested by ABP has been included in the modified E.I.S.
4. I am satisfied that no further issues arise in respect of the outfall discharge pipeline.

Chapter 33: Umbilical

I am satisfied that SEPIL have provided the analysis requested by ABP and that the robustness of the umbilicals, service cables and ducts have been demonstrated satisfactorily in that analysis

Chapter 35: The Tunnel

1. I am satisfied that investigation of the soils/geology under Sruth Fada Conn Bay have been presented. In my view a sufficient set of information is available to ABP on which to base a decision.
2. I am also satisfied that the soils/geology of the tunnel have been placed in the context of deposits within the overall geological context of the area.
E.I.S. reference – Chapter 15.1, Figure 15.1
3. The tunnel proposed through Sruth Fada Conn is in my opinion the best route for the proposed development when considered under the proper planning and sustainable development of the area.
4. The tunnel proposal has a profound effect on reducing the impact of the construction project on the residents in the area and on the environment in the area.
5. The Aghoos compound site is well suited and very well located both from visual point of view, from being outside the Natura 2000 sites point of view and from an access point of view for traffic.
6. The method of construction of the grouted pipeline in the tunnel has been demonstrated to be a substantial and satisfactory method for constructing the pipeline underneath Sruth Fada Conn Bay.

Chapter 36: Peat Stability

1. Mr. O Donnell in 2009 in his examination of the then proposed development in the peat lands concluded that it was acceptable.
2. SEPIL have now provided an integrated set of design documentation as required by ABP.
3. I am satisfied that this documentation provides confirmation for the 2010 scheme that the pipeline can be constructed successfully without generating peat instability.
4. I am satisfied that the construction of the 12 m wide stone road in lieu of a 9 m stone road will not pose any risk of peat instability. I am also satisfied that Mr. O Donnell in his analysis and report 2009 satisfied himself with the method proposed for the stone road construction.
5. I also note that the side casting of peat as proposed has been assessed by SEPIL using the qualitative risk assessment methodology proposed by Mr. O Donnell and is considered acceptable. I noted on my site visits that that portion of stone road constructed between 90+700 and 91+500 near the terminal varies in width 11 m and more and that side casting of peat in this area has been used.

Chapter 37: Stone Road Method

1. The 2009 Inspectors Report largely dealt with the stone road issues.
2. Mr. O'Donnell's report [Reference Appendix 3 to the Inspectors 2009 Report] dealt very fully with the stone road construction proposed.
3. I have reviewed again the recommendations in Mr. O'Donnell's report and my recommendations below have been made to give effect to Mr. O'Donnell's recommendations.
4. I am satisfied that the 12m width for the stone road as proposed is acceptable, it will provide a greater width for construction of the pipeline in the peat lands.
5. I am also satisfied that the reduced working width of 9m in the intact Blanket Bog habitat is a positive mitigation measure for that area. It is also proposed that construction and backfill including returving will be conducted in this section at as early a time as possible in the programme to reduce the impact of the development on this section of blanket bog and to assist in restoration of vegetation there as quickly as possible.
6. The stone road is an acceptable method for construction in peat lands. The work needs to be carried out by an experienced contractor and under the supervision of an experience Geotechnical Engineer. The work also needs to be conservatively designed. All these recommendations from Mr. O'Donnell's report are included below.

Chapter 39: Habitats Directive Assessment

1. In light of the extent of the proposed development and in light of the extent of the site involved, the technology proposed for the construction, the duration of the proposed construction works, the Natura 2000 designated sites in that location, ABP need to carry out an appropriate assessment.
2. SEPIL have presented sufficient information in the E.I.S. and in the additional information provided to ABP to enable the appropriate assessment to be carried out.
3. Observers concerns that the proposed development is likely to have a significant impact on the integrity of Natura 2000 sites, in particular Blacksod/Broadhaven Bay SPA Glenamoy Bog Complex cSAC Broadhaven Bay cSAC is not accepted.
4. It is accepted that the proposed development has the potential threats which could cause negative impacts. However, the development as proposed in my view provides the construction technology and construction techniques required so that those potential threats of negative impacts can be managed, controlled and mitigated without significant impacts on the sites. In my view, as proposed, the development is not likely to have a significant impact on the integrity of the sites.

The potential threats include:

- The potential requirement for an intervention pit
- The potential risk of peat instability
- The potential for spillage and contamination arising from the construction works at Aghoos Compound
- The potential impact from Noise/lighting/air quality threats at Aghoos

Chapter 40: Peat Deposition Srahmore

1. The haulage of peat and the deposition at Srahmore is similar to that activity whereby 450,000m³ of peat were moved and deposited from the terminal site.
2. The method used on the previous occasion was by general agreement successful and managed satisfactorily. This is also borne out by a lack of any negative comment or objections at both OH.

Chapter 41: Other Relevant Considerations

1. The National Framework for Major Emergencies has been put in place and sets a high standard for preparedness for emergencies. The fact that this is an up to date framework and that independent audit of the framework have taken place, provides confidence that is required in regard to how a major emergency on this proposed development will be responded to by all the agencies. I am satisfied that a comprehensive emergency planning regime will apply to the proposed development.
2. It is clear that the Sevesco Directive does not apply to the onshore gas pipeline.
3. SEPIL have indicated that the Emergency Response Plan will be incorporated within the Corrib asset-wide documented emergency response planning and provisions – i.e. integrated with the Terminal Emergency Response Plan.
4. I note the requirement that in the case of Sevesco sites, the internal emergency plans for an establishment site involve consultation with the workers there. The external emergency plans involve consultation with the public [Article 11(3) 96/82/EC].
5. It is clear that the Emergency Response Plan and the adoption and approval of that plan is not a matter for ABP approval as part of the consideration of these applications that are before the Board for decision.
1. The 2010 scheme is very different in impact as regards development potential of lands to the 2009 scheme. In my view there is very little impact.
2. I do not accept the argument that this development will lead to an exodus of local people. I see no reason for this to be the case.
3. The development potential of lands in Glengad, Pollathomais and Aghoos will not in my view be diminished or impacted by the proposed development.
4. I expect that family members wishing to locate near to their family owned land/residence will be able to do so subject to the normal planning criteria that will apply to such development.
5. I am not convinced by arguments that the proposed development will affect the insurability of dwellings at Glengad. I expect this may have more to do with the landslides in 2003. Insurance companies understand risk and risk levels and can factor these into their evaluation of the insurable risk. I accept SEPIL's position on this issue.

Chapter 44: Haul Routes and Traffic Plan

I have considered the information provided in detail. I am satisfied that a comprehensive assessment of the traffic involved has been carried out. I am satisfied that a comprehensive assessment of the traffic carrying capacity of the existing road network to handle the volumes

of traffic involved has been carried out. I am also satisfied that an adequate assessment of the peak hour volumes of traffic has been prepared for the junctions on the haul route.

I have obtained clarification of the sight distances and signage details proposed at the Access A and B at Aghoos tunnelling compound and at the entrance to the Srahmore peat deposition site.

The 2010 Traffic Management Plan is a big improvement on that proposed in 2009. In particular the decision to tunnel under Sruth Fada Conn and a tunnel in one direction from Aghoos has reduced very significantly the traffic impacts on Pollathomais and Glengad.

I am impressed that the longer time programme now envisaged (26 months) will provide flexibility for the applicant to respond to community derived traffic needs be they (1) school drop off pick up times, (2) local funerals, (3) use of the L1202 by community bus or service vehicles, (4) vulnerable people using the road as pedestrians cyclists etc.

I am impressed that the revised 2010 proposed development includes stronger Traffic Management and Control logistics and a good management structure to deliver the transportation requirements of the project.

I am also impressed that adequate measures to mitigate the impact of the traffic use on the Haul Route are being adopted – speed controls, full radio contact with vehicles, breakdown plan for HGV's, driver code of conduct and training and monitoring regime.

I am satisfied that the R313, R314, L1204 and L1202 from its junction with R314 to Pollathomais junction with L5243-0 have been improved to a good standard and that these roads and the junctions involved can cope with the traffic proposed for the construction of this project.

As regards the L1202 from its junction with L5243-0 through Pollathomais and to Glengad, I note parts of this road have not been widened. I note that much reduced level of HGV traffic estimated for this road in the 2010 proposal. I am satisfied that the convoy system is a workable system. I am satisfied with the speed control measures proposed for his section of road.

I am satisfied with the proposals regarding those areas at McGraths Public House and McEleney's where properties are close to the road.

I am satisfied with the monitoring proposals for vibrations and for control of vibrations from HCV's - road surface quality to be maintained, speed reductions to be implemented and vibration monitoring to be verified.

I conclude that the Traffic Management Plan and Haul Route proposals are satisfactory.

Chapter 45: Route Selection

1.2.33.1 On Route Selection and Tunnel Chainage 83+880 to 88+770

1. Glengad as the landfall was confirmed by SEPIL following reconsideration by them of the options available in 2007.
2. SEPIL confirmed in [2009 OH] evidence that the landfall itself is not part of this 16.GA.0004 application. In other words SEPIL believe the Glengad location for landfall has been established and is a constraint on ABP in considering 16.GA.0004.
3. In my view the proposed development, including the landfall at Glengad, must satisfy the same planning requirements in respect of the onshore pipeline at Glengad as elsewhere along the pipeline route. In reality then I do not accept that the landfall at Glengad constitutes a restraint on ABP from considering the proper planning and sustainable development of the area and the impact of the proposed development on the environment. The landfall must pass these tests if it is to be acceptable.
4. The 2002 consents are significant considerations for the Board to have regard to as required under Section 143 of the P & D Act 2000.
5. The planning permission that exists for the terminal is a significant consideration for the Board.
6. I find that the route selected for the 2010 modified proposed development is one which is respectful of the community concerns regarding proximity to dwellings. The route is now located at a distance from dwellings which effectively means that the dwellings and those who live there would be safe even in the event of a worst case scenario, a full bore rupture of the pipeline.
7. I find that the route selected meets the requirements of ABP invitation of 2/11/2009 in the following manner:
 - i. SEPIL have selected a route generally up underneath Sruth Fada Conn Bay, i.e. Route C
 - ii. The proximity distance standard against which ABP indicated that the proposed development would be assessed has been demonstrated in E.I.S. to have been achieved. I am satisfied that it has been achieved. Mr. Wright in his report (and as discussed in Chapter 30 under Safety) has assessed this and he has found that SEPIL have achieved that proximity standard.
 - iii. The revised operating pressures MAOP and the revised route have reduced the risk to the public a low risk level and to an acceptable level. The risks are set out in Chapter 28 QRA. In fact by the standards used by the gas industry, the risks to the public from Corrib Onshore Pipeline are conservative.
8. I also find that the construction method proposed – an underground segmented lined tunnel bored in one direction from a tunnelling compound at Aghoos – has the following important characteristics:
 - i. The tunnel method underneath Glenamoy Bog Complex cSAC and Blacksod Broadhaven Bay pSPA is a proven construction method that will have only slight impact on the ecology and little or no impact on the conservation objectives of these sites.

- ii. The tunnelling compound at Aghoos is not within a Natura 2000 site. While the compound is adjacent to the cSAC and pSPA the proposals for managing the site will in my view and in the view of Mr. O'Sullivan who has assessed the impacts of the proposed development on the Natural Environment mitigate any potential impacts satisfactorily. This compound will be restored at the end of construction so any impacts (noise, light, visual in particular) from the compound will be temporary.
- iii. The concentration of construction activity for 4.9km of the linear construction project at the Aghoos compound and which can be reached over a haul network of good well improved roads L1202, L1204, R314 and in an area that is not residential has reduced significantly the traffic impacts of the proposed development on the rural linear residential areas – Glengad, Pollathomais, Rosspport.
- iv. The concentration of 4.9km of construction activity at Aghoos removes this activity from within the community and consequently all the other non traffic impacts on community are also reduced.

1.2.33.2 Landfall and Glengad Pipeline Route to chainage 83 + 880

The selection of Glengad as the landfall site has been dealt with in Chapter 19 above.

The landfall is acceptable from a Natural Environment point of view (Chapter 38). The landfall is acceptable from a ground stability point of view (Chapters 34 and 38). The landfall is acceptable from a landscape and visual impact point of view (Chapter 42). I am now satisfied regarding the safety of the public in Glengad from the risks posed by the pipeline and from the LVI. These have been discussed in Chapters 27-30 where the overall conclusion is that the risk to the public from the pipeline at Glengad is low and is acceptable. The risk to the public from the LVI at Glengad is low and is acceptable.

Accordingly I am now satisfied that the route including the landfall itself from landfall at HWM to chainage 83+880 (tunnel reception pit) is acceptable. This section of the route is in my view in accordance with the proper planning and sustainable development of the area. This section of the route will have an impact on the environment, that impact will be slight negative (loss of habitat at LVI compound) and is acceptable.

1.2.33.3 Section from Chainage 88+770 to Chainage 91+720

I am now satisfied regarding the safety of the public from the risks posed by the pipeline in that area between the tunnel launch pit and the terminal. These risks have been discussed in Chapters 27-30 where the overall conclusion is that the risk to the public from the pipeline is low and is acceptable.

Accordingly, I am satisfied that the route from Aghoos tunnel launch pit back to the connection into the terminal is acceptable. This section of the route in my view is in accordance with the proper planning and sustainable development of the area. This section of

the route will have an impact on the environment, that impact will be slight negative and is acceptable.

Chapter 46: Environment Impact Assessment

1. SEPIL present a strong argument that vibrations will not cause any problems and will be well within acceptable ranges.
2. Evidence has been provided in respect of TBM vibrations and vibrations from traffic convoy and the vibrations from pile driving at the reception and launch pits and rock breaking at the reception and launch pits.
3. Observers concerns have been raised on waterbourne vibrations, marine mammals and fish, Dooncarton susceptibility to vibrations, property damage issue and traffic damage issues.
4. Mr. O'Sullivan has been satisfied with the information provided in the E.I.A. process regarding the characterisation of noise predictions and regarding the range/frequencies detectible by marine mammals and fish. He has concluded that the proposed development is acceptable in this regard.
5. I am satisfied that SEPIL's proposal to carry out pre-construction structural surveys and vibration monitoring on an ongoing basis these measures will provide control data on vibrations.
6. As outlined in Chapter 34 Landslides at Dooncarton I am satisfied that the proposed development does not pose a threat to the stability of Dooncarton Mountain.
7. I conclude that an appropriate condition on vibration monitoring is the appropriate control for the proposed development.

Chapter 49: Acquisition Order

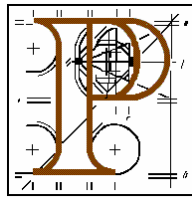
I have examined the proposed development in detail and I have come to the following conclusions.

1. SEPIL, in modifying the proposed development in response to the invitation by ABP, has reduced very much the extent of the Compulsory Acquisition of rights over lands involved.
2. The rights over lands being acquired are well removed from the residential dwellings of the landowners and are well removed from the L1202 from which the landowners affected obtain access to their lands.
3. The areas affected and the rights being acquired are minimal and will have very limited impacts on the farming activities of those landowners involved. The impacts will be simply a loss of use of the area of land affected for a period of up to 26 months in total.
4. The areas affected are at or near the end of the fields in questions and so the impact on the remainder of the holding will be minimal.
5. The rights over lands that are sought are reasonable and not excessive taking into account the development that is proposed. They are a minimum requirement in my view to enable the construction of the project.

6. I find that overall the proposed development is acceptable.
7. I can see no reason why ABP should not confirm this Acquisition Order.
8. As discussed in Chapter 33, the spare umbilical, outlet pipe, fibre optic cable and electrical cable should be extended through the sites of each of the lands over which rights are proposed to be acquired. Accordingly, I believe ABP should modify the order to allow the construction of these spare services.

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An Bord Pleanála



STRATEGIC INFRASTRUCTURE DEVELOPMENT

PLANNING AND DEVELOPMENT ACTS 2000 to 2010

An Bord Pleanála Reference Number: 16.GA0004

(Local Authority: Mayo County Council)

APPLICATION for approval under section 182C(1) of the Planning and Development Act, 2000, as amended, by Shell E & P Ireland Limited care of RPS Group, Fifth Floor, Block E, Iveagh Court, Harcourt Road, Dublin in accordance with plans and particulars, including an Environmental Impact Statement, as originally lodged with An Bord Pleanála on the 12th day of February, 2009 and as described in the public notice on that date, and as altered in the Environmental Impact Statement received by An Bord Pleanála on the 31st day of May, 2010 and further described in the public notice received by An Bord Pleanála on the 6th day of July, 2010.

PROPOSED DEVELOPMENT: Construction of the Corrib Onshore Pipeline, comprising strategic upstream gas pipeline infrastructure

The proposed onshore pipeline is approximately 9.2 kilometres in length, comprising part of a longer strategic upstream pipeline system for the carrying of natural gas, and associated by-products, from the existing Corrib Gas Field to the gas terminal at Béal an Átha Buí (Bellanaboy Bridge), County Mayo, previously permitted under planning authority register reference number P03/3343 (An Bord Pleanála appeal reference number PL 16.207212). The proposed pipeline system comprises the onshore gas pipeline itself, associated services umbilicals and other essential cabling, and an outfall discharge pipeline extending from the gas terminal to a location some 12.7 kilometres offshore. The proposed pipeline extends from a landfall point in the townland of Gleann an Ghad (Glengad or Dooncarton), County Mayo, in a generally easterly direction across Sruwaddacon Bay, and across land in the vicinity of the settlement of Ros Dumhach (Rossport / Rossdoagh), before re-crossing Sruwaddacon Bay, and running east and south in the townlands of Na hEachú (Aghoos) and Béal an Ghoille Theas (Bellagelly South), into the Bellanaboy Bridge Gas Terminal. It is proposed to lay the pipeline within a corridor of a general width between 40 metres and 100 metres. The permanent wayleave of the pipeline will be of between 14 metres and 20 metres width. The working width during the construction phase will typically be 40 metres. The proposed development will result in the removal from use of two number houses within the settlement of Ros Dumhach (Rossport / Rossdoagh) for the duration of operation of the pipeline.

The proposed development includes an above-ground Landfall Valve Installation, including an associated surface water outfall system, located in the townland of Gleann an Ghad (Glengad or Dooncarton), and the permanent use of, and associated upgrading of, an existing access road from the L1202 public road to the site of the proposed Landfall Valve Installation. The Landfall Valve Installation is designed to limit the pressure in the onshore pipeline to 144 bar or less. The proposal also includes all associated temporary and permanent construction, site development and landscaping works, including the provision of temporary site construction compounds, and including the temporary use of the existing construction compound and internal access roads within the terminal site, and the use of existing access points from the terminal site onto the public road network, previously permitted under planning authority register reference number P03/3343 (An Bord Pleanála appeal reference number PL 16.207212).

Temporary vehicular access to the pipeline corridor will be taken from the public road network, including at points where the corridor crosses public roads. The proposed development will cross public roads at four number locations – three number locations in the townland of Ros Dumhach (Rosspport / Rosssdoagh), and one number location in the townland of Béal an Ghoille Theas (Bellagelley South). It is proposed to carry out minor road improvements at the junction of the L-52453-0 and L-52453-25 in the townland of Rosspport to facilitate construction traffic.

The proposal includes the importation and deposition of up to 75,000 cubic metres of peat, to be excavated from the route of the proposed onshore pipeline, into and within the existing Bord na Móna peat deposition site in the townlands of Srahmore and Attavally, Bangor-Erris, County Mayo (the 'Srahmore site'), previously permitted under planning authority register reference number P03/3343 (An Bord Pleanála appeal reference number PL 16.207212). The proposal includes all associated temporary and permanent site works, infrastructure, and facilities which facilitate such use of, and activity at, the Srahmore facility. The proposed activity at Srahmore comprises an activity for which a separate waste licence is required.

Following a request by An Bord Pleanála to the undertaker under section 182C(5) of the Planning and Development Act 2000, as amended, to make alterations to the proposed development including modifying the pipeline route, the proposed development has been altered as described in the revised Environmental Impact Statement received by An Bord Pleanála on the 31st day of May, 2010, as follows:-

The altered pipeline extends from the High Water Mark to the landfall at Glengad townland, County Mayo in a route under Sruwaddacon Bay to Aghoos townland and to Bellagelley South townland, and into the Bellanaboy Bridge Gas Terminal

The nature of the specified alterations is as follows (All placenames referred to are located in County Mayo save for Sruwaddacon Bay which is partly in County Mayo and partly in the foreshore):

- Modified pipeline route, to be beneath Sruwaddacon Bay (and approaches to same) between chainages 83+910 and 89+550 (per pipeline chainages in 2009 application) (Glengad and Aghoos).

- A further significant increase in separation distance between the proposed pipeline to the nearest occupied residence.
- The proposed pipeline is now reduced in length by 0.9 kilometres to approximately 8.3 kilometres long.
- The altered route under Sruwaddacon Bay (and the approaches to same) of approximately 4.9 kilometres will include the placing of the pipeline within a 4.2 metre (outside diameter) tunnel, constructed from Aghoos to Glengad.
- Approximately 4.6 kilometres of the tunnel will be beneath Sruwaddacon Bay.
- A Maximum Allowable Operating Pressure in the Onshore Pipeline (between the Landfall Valve Installation and the Bellanaboy Bridge Gas Terminal) of 100 barg.
- A Maximum Allowable Operating Pressure in the Offshore Pipeline (upstream of, and including, the Landfall Valve Installation) of 150 barg.
- The proposed pipeline is no longer located within Priority Habitat in the Glenamoy Bog Complex (candidate Special Area of Conservation).
- The tunnel will be constructed in one direction from Aghoos and the pipeline will be assembled and installed into the tunnel from Aghoos; as a result the tunnelling compound at Aghoos will be larger and will see an increased volume of activity while the tunnelling compound at Glengad will see a decreased level of activity, and there will be no construction activity at Rosspoint.
- The section of pipeline from chainage 83+400 to the High Water Mark at Glengad has been included within the development application.

Ancillary changes to the development arising out of the specified alterations are also included. These include: a spare umbilical, electrical cable, fibre optic cable and water discharge pipeline within the tunnel, increased width of the stone road by 3 metres to 12 metres, increased importation of material to the Aghoos tunnelling compound, increased volume of excavated material (approximately 68,000 cubic metres) and a longer duration of construction works.

DECISION

GRANT approval under section 182D of the Planning and Development Act, 2000, as amended, for the above proposed development in accordance with the said plans and particulars based on the reasons and considerations under and subject to the conditions set out below.

MATTERS CONSIDERED

In making its decision, An Bord Pleanála had regard to those matters to which, by virtue of the Planning and Development Acts and Regulations made thereunder, it was required to have regard. Such matters included the submissions and observations received by it in accordance with statutory provisions.

REASONS AND CONSIDERATIONS

Having regard to:

- (a) the strategic importance of the Corrib Gas Field, both nationally and regionally;
- (b) the provisions of Regulation (EU) No 994/2010 of the European Parliament and of the Council, 20 October 2010, concerning measures to safeguard security of gas supply for Member States, taken together with the existing dependence of the State on imports to meet most of its energy needs, particularly gas;
- (c) national policy in relation to security and reliability of gas supply, as set out in the Government White Paper “Delivering a Sustainable Energy Future for Ireland”, The Energy Policy Framework, 2007-2020, which seeks to ensure secure and reliable electricity and gas supplies, to enhance diversity of fuels used for power generation and to prepare for energy supply disruption;
- (d) the provisions of the National Development Plan, 2007-2013, in relation to the paramount importance of energy supply security to ensure the continued economic development of the country;
- (e) the provisions of the Regional Planning Guidelines for the West Region, 2010-2022, in relation to utilisation of the potential of the Corrib Gas Field;
- (f) the policies of the Mayo County Development Plan, 2008-2014, to support the realisation of the full potential of the Corrib Gas Field and in respect of the protection of natural habitats and of visual amenity;
- (g) the permission granted by An Bord Pleanála under appeal reference number PL 16.207212, for the gas terminal at Bellanaboy to serve the Corrib Gas Field, which terminal has been substantially completed;
- (h) the consent granted under the provisions of Section 40 of the Gas Act, 1976, as amended, for the offshore pipeline from the Corrib Gas Field to Glengad, which pipeline has been substantially completed;
- (i) the provisions of the Petroleum (Exploration and Extraction) Safety Act 2010, which provides for the regulation of the safety of gas installations;

- (j) the alterations to the pipeline, in particular those relating to its routing and operating pressure, proposed in response to the notice issued by An Bord Pleanála on the 2nd day of November, 2009, under Section 182C(5) of the Planning and Development Act, 2000, as amended, and which alterations entail significantly enhanced provision for safety, natural heritage protection and residential amenity;
- (k) the revised Environmental Impact Statement, including mitigation measures, received by An Bord Pleanála on 31st day of May, 2010, and further information submitted to the oral hearing supplementary thereto;
- (l) the limited duration of the construction period, with consequent curtailment of impacts on visual and residential amenity;

and, having considered the submissions and observations received in relation to the application and having particular regard to the reports of the lead Inspector, who conducted the oral hearing, and to the supplementary reports commissioned by the Board in relation to (i) Pipeline Design and Safety, (ii) Ground Movement and Peat Stability and (iii) legislation, natural heritage, landscape, peat deposition and community gain, it is considered that the proposed development, as altered, and subject to compliance with the conditions set out below, would help safeguard the energy security of the State, would benefit the Western Region of Ireland, would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health or to public safety, would not be likely to have significant effects on the environment or on any European Site, would be acceptable in terms of traffic safety and convenience and would not conflict with the provisions of the Mayo County Development Plan, 2008-2014. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

CONDITIONS

Clarification of Extent of the Approved Development

1. Except as may be amended by any of the conditions attached to this approval, the proposed development hereby approved shall be carried out in accordance with the Corrib Onshore Gas Pipeline development, as altered and described in the Environmental Impact Statement, May 2010, received by An Bord Pleanála on the 31st day of May, 2010, including the peat deposition site at Srahmore and the mitigation measures contained in the Environmental Impact Statement, together with the original letter of application received by An Bord Pleanála on the 12th day of February, 2009, and the additional, documented information submitted by the undertaker to An Bord Pleanála during the proceedings of the oral hearing in 2010, including amendments.

(The relevant documents are set out in the Schedule of Documents submitted by the undertaker to the 2010 oral hearing and attached as an appendix to this order)

Reason: In order to clarify the development to which this approval relates, and the proper planning and sustainable development of the area.

2. The use of the onshore pipeline shall be confined to the transportation of natural gas from the Corrib Gas Field. Any proposal to connect additional gas fields to the onshore pipeline shall be the subject of an appropriate planning application and approval.

Reason: To ensure proper regulation of the development, to protect the integrity of the onshore pipeline and to allow for the assessment of any extensification of the gas field.

Public Safety

3. The undertaker shall obtain from the Department of Communications, Energy and Natural Resources a document confirming the code supplements that apply to Offshore Standard DNV-OS-F101 (Submarine Pipeline Systems), when used for the onshore sections of the offshore pipeline, that is, between the high water mark and the first downstream weld below the Landfall Valve Installation. The development shall be carried out in accordance with these requirements.

Reason: In the interest of protection of the health and safety of the public.

4. Before the pipeline becomes operational, the reliability rating of the offshore pipeline overpressure protection system and of the onshore pipeline overpressure protection system shall be certified by an external independent person, with particular competence in this matter, to the satisfaction, as confirmed in writing, of the authority for the time being having statutory competence (that is, the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be) or, in the alternative, by the said statutory authority itself. Written confirmation of such certification is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

5. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as the construction, testing and commissioning of the pipeline, the Landfall Valve Installation and the equipment and ancillary facilities to the pipeline have been completed to the certified satisfaction of the authority for the time being having statutory competence (that is, the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). Written confirmation of such certification is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

6. (1) The Maximum Allowable Operating Pressure of the onshore pipeline, subject of this approval, shall be 150 barg upstream of and including the Landfall Valve Installation, and shall be 100 barg downstream of the Landfall Valve Installation.
- (2) The complete onshore pipeline shall be hydro tested to 504 barg pressure prior to the commencement of operation.
- (3) Written confirmation of such testing is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

7. Prior to commencement of operations, the undertaker shall obtain a safety permit from the authority for the time being having statutory competence (that is, the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). A copy of the safety permit is to be provided to Mayo County Council to place on the public file prior to the commencement of operation.

Reason: In the interest of protection of the health and safety of the public and of transparency.

8. The undertaker shall install instrumentation required to measure ground movements at the following areas of concern:
- (a) the Landfall Valve Installation site interface with the offshore pipeline;
 - (b) the transition areas between the grouted pipe in the tunnel and the buried sections;
 - (c) the stone road at the deep peat sections; and
 - (d) the interface between the existing and newly laid sections of the stone road.

The undertaker shall also deploy stable strain gauges (including vibrating wire gauges with protective housings) on the pipeline to verify the maximum predicted stress levels on the pipe and confirm the modelling accuracy. The instrumentation shall remain *in situ* until steady state levels are confirmed and a sufficient period of time has elapsed to ensure exposure to a variety of environmental conditions.

Reason: In the interest of protecting the health and safety of the public.

9. An Annual Pipeline Report shall be made by the undertaker before the 31st day of January every year of operation and shall be submitted to the authority for the time being having statutory competence (that is, the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). A summary of this report is to be provided to Mayo County Council to place on the public file.

Reason: In the interest of protection of the health and safety of the public and of transparency.

10. (1) The undertaker shall comply with any Security of Network Standards as may be determined from time to time by the Department of Communications, Energy and Natural Resources (or Commission for Energy Regulation, as appropriate) in respect of the facilities at the Landfall Valve Installation in Glengad.
- (2) The undertaker shall redesign the security fencing at the Landfall Valve Installation to include a double 2.8 metre high security fence and gates with a flood lit zone between the inner and outer fence. The inner fence may be electrified, on the advice of An Garda Síochána.

Reason: To ensure the security of this strategic infrastructure site.

11. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an Emergency Response Plan has been prepared by the undertaker, for the area between Glengad, Rosspport, Aghoos and Bellanaboy. The plan shall be agreed with An Garda Síochána, the Health Service Executive and Mayo County Council and shall comply with any requirements set down in the Major Emergency Plan for the area. The plan shall include control of traffic close to the terminal, close to the Landfall Valve Installation and in the vicinity of the route of the pipeline in the event of a major accident. The preparation of the Emergency Response Plan shall include consultation with the public on the details to be contained in the plan.

Reason: In order to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area.

Provide for Agreements with Mayo County Council

12. Prior to commencement of development, other than works directly associated with pre-construction surveys, the undertaker shall enter into an agreement with Mayo County Council, which shall be legally binding on the undertaker and successors in title. The agreement shall provide for the following:
- (a) payment to Mayo County Council of all costs incurred by it in relation to the repair, maintenance and rehabilitation of the road network arising from the construction of the development, as determined by the Road and Bridge Survey to be carried out prior to and post construction. The amount of such costs shall be as agreed between Mayo County Council and the undertaker;
 - (b) implementation of the Traffic Management Plan contained in the Environmental Impact Statement, as may be amended by the conditions of this approval or with the prior written agreement of Mayo County Council;
 - (c) payment of Mayo County Council's reasonable, certified costs in engaging transportation personnel to monitor the Traffic Management Plan, and including the cost of the provision of accommodation and telecommunications facilities on site for such personnel,

- (d) payment of Mayo County Council's reasonable, certified costs in engaging environmental personnel to monitor implementation of the Environmental Management Plan, and including the cost of the provision of accommodation and facilities on site for such personnel,
- (e) a scheme for the restoration of the Landfall Valve Installation site at Glengad and associated way leave, to the satisfaction of Mayo County Council, following the cessation of gas transportation, which restoration shall include removal of items of all over ground equipment and facilities to grade level, and
- (f) the provision of a supply of water to serve the proposed development, by Mayo County Council.

In default of agreement in relation to any of the above, the relevant matter shall be referred to An Bord Pleanála for determination.

Reason: To ensure reimbursement of costs incurred by Mayo County Council in respect of the foregoing and the satisfactory control of the development, in the interest of the proper planning and sustainable development of the area.

13. All agreements with Mayo County Council required by way of the conditions in this approval shall be in writing and copies of such agreements shall be made available for public inspection during normal office hours at the offices of Mayo County Council's and at the offices of the undertaker in Belmullet. The development hereby approved shall be carried out in accordance with the terms of such agreements.

Reason: In the interest of clarity and transparency.

Project Monitoring Committee

14. (1) Prior to commencement of development, a Project Monitoring Committee shall be established by Mayo County Council to monitor the progress on construction of the project. The Project Monitoring Committee shall monitor all aspects of the construction including:
- the geotechnical risks as set out in the Geotechnical Risk Register or any further revision of the risk register following pre-construction site investigations;
 - surface water run-off;
 - drainage control;
 - traffic management and road maintenance;
 - implementation of the reinstatement plan; and
 - other environmental issues.

- (2) The Project Monitoring Committee shall comprise two representatives of the undertaker and two representatives of Mayo County Council, and an invitation shall be extended to Inland Fisheries Ireland; the Department of the Environment, Heritage and Local Government (National Parks and Wildlife Service); the Department of Communications, Energy and Natural Resources; the Environmental Protection Agency and Bord na Móna to provide one representative each for the committee. In addition, four representatives of the local community from Kilcommon Parish, selected in accordance with procedures to be determined by Mayo County Council, shall be invited to serve on this committee. The Project Monitoring Committee shall have the right to co-opt other members as required. The Mayo County Manager or his/her nominee shall chair the Project Monitoring Committee.
- (3) The Project Monitoring Committee shall operate to maintain communication between the undertaker and the community regarding local issues arising from construction and traffic. It shall establish a local liaison procedure between the undertaker and the community that shall allow information regarding local events and activities that may be affected by construction traffic to be provided to the undertaker. The Project Monitoring Committee shall consider submissions regarding the impact of construction and associated traffic and shall review the issues raised and publish its conclusions in the manner which it deems appropriate.

Reason: To ensure effective monitoring and liaison with the local community during construction, in the interest of the proper planning and sustainable development of the area.

15. The undertaker shall appoint a suitably qualified and experienced Environmental Officer for the period of the construction of the pipeline project. The Environmental Officer shall liaise with the Project Monitoring Committee in relation to implementation of the Environmental Management Plan, including environmental monitoring, and shall be responsible for reporting to that committee and Mayo County Council in respect of:

- any malfunction of any environmental protection system,
- any occurrence with the potential for environmental pollution,
- any emergency

which could reasonably be expected to give rise to pollution. The Environmental Officer shall maintain a record of any such occurrences and actions taken. This record shall be available for public inspection at the office of the undertaker at Belmullet during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

Environmental Management Plan

16. The carrying out of the development of the pipeline authorised by this approval, including the tunnelling works and the construction of the Landfall Valve Installation, shall be governed by an Environmental Management Plan. The details of the Environmental Management Plan shall be based on the provisions of the Environmental Impact Statement, including mitigation measures, as modified by the submissions made by the undertaker to the oral hearing of 2010 and as may otherwise be amended by the terms of the conditions attached to this approval. The undertaker shall prepare a draft Environmental Management Plan after consultation with the Department of the Environment, Heritage and Local Government and Inland Fisheries Ireland, and it shall be submitted to Mayo County Council for written agreement. Development shall not commence until this agreement has been obtained or, in default of agreement, the matter shall be referred to An Bord Pleanála for determination.

In particular, the Environmental Management Plan shall include details of the followings matters:-

- (a) The Management and Reporting Structure.
- (b) A Schedule of Environmental Objectives and Targets.
- (c) The order and duration of the various works, including details of how seasonally sensitive works are to be accommodated in the programme
- (d) Pre-construction surveys.
- (e) Method statements for construction.
- (f) Details for the minimisation of suspended solids movement to surface water systems, including the sedimentation, filtration and attenuation of all surface waters from the construction site prior to discharge and the maintenance routines for these facilities.
- (g) Details of the temporary surface water drainage swales, channels and settlement ponds to serve the construction works, with capacity to cater for severe rain episodes, based on conservative parameters (as referred to in the Geotechnical Risk Register of the Environmental Impact Statement).
- (h) Measures to monitor and control noise and vibration arising from the development, including from tunnelling under Sruwaddacon Bay.
- (i) Traffic Management Plan and monitoring.
- (j) Monitoring Programme for surface water, dust, noise and vibration, including from tunnelling under Sruwaddacon Bay.
- (k) Monitoring Programme for ecology.
- (l) Corrective Action Procedures.
- (m) Emergency Response Procedures for Environmental or Other Incidents
- (n) Awareness and Training Programme.
- (o) Proposed Community Liaison.
- (p) Communications Programme.
- (q) Waste Management Plan, including a minimisation plan for the solid waste emanating from the construction works site.
- (r) A method statement for the use of bentonite and the monitoring thereof.
- (s) A detailed method statement for the reinstatement works of the beach and the cliff face at Glengad, including materials.
- (t) Details of right of access for Mayo County Council to carry out environmental monitoring checks.

On written request by Mayo County Council, the undertaker shall submit a report on any specific environmental matter or an environmental audit. The Environmental Management Plan shall be the subject of an annual review by Mayo County Council, following consultation with the Project Monitoring Committee. The undertaker shall modify the Environmental Management Plan in accordance with any reasonable requirement of Mayo County Council, at any stage.

Reason: In the interests of environmental protection and the proper planning and sustainable development of the area.

17. The Environmental Management Plan shall provide for monitoring of surface water, dust, noise and vibration in accordance with the requirements of Mayo County Council and, in respect of surface water, monitoring shall be in accordance with CIRIA "Control of Water Pollution from Linear Construction Projects: Technical Guidance" (C648, 2006). Any alterations to the agreed monitoring regime shall be subject to agreement with Mayo County Council, following consultation with the Project Monitoring Committee. Such monitoring shall be carried out by the undertaker throughout the construction of the pipeline, tunnelling and Landfall Valve Installation (to the date of commissioning of the pipeline and Landfall Valve Installation), the results of which shall be submitted to Mayo County Council at such intervals as may be specified by Mayo County Council (following consultation with the Project Monitoring Committee). All results shall be made available for public inspection within seven days of receipt.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

18. Monitoring results required under the conditions of this approval shall be submitted to Mayo County Council electronically and in hard copy form and shall be made available for public inspection during normal office hours at the offices of Mayo County Council and at the offices of the undertaker offices in Belmullet. The undertaker shall develop a computerised database for the recording and transfer of monitoring data; the design of which shall be agreed with Mayo County Council.

Reason: In the interest of clarity and transparency, and to facilitate ease of interpretation of all monitoring data collected and recorded.

Complaints Register

19. A complaints register shall be maintained by the undertaker at its offices in Belmullet. This shall relate to all written complaints made regarding any aspect of the earthworks and construction phase of the development. The register, which shall be available for public inspection on request during normal office hours, shall include:
- (a) the name of the complainant
 - (b) the nature of the complaint
 - (c) the date and time of the complaint
 - (d) actions taken as a result of the complaint

Reason: In the interest of the proper monitoring of the development.

Traffic Management

20. The following traffic management measures shall apply and shall be reflected in the Traffic Management Plan required under the terms of this approval:
- Haulage of all excavated peat from the site to the deposition site shall be restricted to the designated haul route, and the return of all unladen haulage vehicles to the construction site shall be along the haul route. No haulage of peat shall commence until such time as those improvements required by Mayo County Council of the relevant section of the haul route have been completed
 - The maximum number of Heavy Commercial Vehicle movements along the haul route shall not exceed those set out in Environment Impact Statement, as amended by documents submitted at the oral hearing. The undertaker shall keep a record of all traffic movements into and out of the sites, and a copy of this record shall be made available for inspection by Mayo County Council and the Project Monitoring Committee on request.
 - All signage detailed in the Traffic Management Plan shall be erected prior to the commencement of the haulage of peat or construction materials and equipment and shall be maintained during construction works. Prior to this, or during the haulage period, the undertaker shall erect any other signage required by Mayo County Council to facilitate the safe haulage of construction materials.
 - A school traffic warden shall be engaged at the undertaker's expense to travel on each of the school buses or to travel in tandem with the school bus using the haul route so as to facilitate the safe embarking/alighting and road crossing by children at all times during the haulage of peat. Arrangements shall be put in place that the Heavy Commercial Vehicle traffic using the haul route shall stand by at the drop-off times and pick-up times at the schools.

- The potential impact of traffic management proposals and the convoy system on the bus schedules shall be monitored and any necessary adjustments, as considered necessary by Mayo County Council, shall be made.

Reason: In the interest of efficient traffic management, road safety and public safety.

21. The undertaker shall be responsible for the carrying out of a Road and Bridge Survey before and after the construction period. The extent and precise content of the survey, which shall generally relate to the road network directly and indirectly affected by the proposed development, shall be subject to agreement with Mayo County Council. The survey may be carried out by Mayo County Council at the undertaker's request.

Reason: To facilitate the determination of damage attributable to the proposed development, and to ensure the proper maintenance and reinstatement of roads and bridges following construction.

22. In the event of target tolerances (per Traffic Management Plan) for road surfaces being exceeded and in the absence of necessary maintenance of the road surface, Mayo County Council (following consultation with the Project Monitoring Committee) may require the cessation of all haulage activities or construction traffic directly related to the development.

Reason: To ensure the proper maintenance of road surfaces during the construction and haulage periods in the interest of traffic safety.

23. All vehicles leaving the construction areas of the sites shall pass through an appropriate wheel cleansing area. The undertaker shall take all reasonable measures to ensure that no material shall leak or fall from vehicles transporting waste from the site. The measures required in this regard shall be set out in the Environmental Management Plan.

Reason: In the interest of amenity, the proper planning and sustainable development of the area, and traffic safety.

24. The haul route and schedule of haulage for the construction phase of the development shall be clearly documented and published in a manner to be agreed with Mayo County Council.

Reason: In the interest of traffic management and to make provision for control and review of vehicles.

25. An independent safety audit on the upgraded haul route shall be carried out and agreed in writing with Mayo County Council prior to the commencement of haulage of peat or other construction generated material. The audit shall have regard to:

- The proposed 60 km/h, 50 km/h, 30 km/h, 20 km/h speed limit zones for Heavy Commercial Vehicles.
- The spacing of Heavy Commercial Vehicles in convoy.
- Pedestrian and cyclist use of the haul route.
- School traffic at Pollathomais and the proposed stand down of haulage during pick-up and drop-off times at the school.
- Arrangements regarding Funerals, Church Services at Pollathomais
- The operational aspects of the Traffic Management Operatives.
- Vehicle break-down incident management.
- Emergencies and full access for emergency vehicles to the route at all times.

Reason: In the interest of traffic safety.

26. On the L1202 road between Pollathomais and Glengad the maximum speed for Heavy Commercial Vehicles working on the project shall be 50 km/h. The speed restrictions as set out on Drawing 6013-1015 and in respect of McGrath's Bar (20 km/h) shall also apply, as set out in the Environmental Impact Statement.

Reason: In the interests of road safety on the L1202 road.

27. The visibility at the site junctions proposed at Aghoos and the visibility at the existing entrance to Srahmore Deposition site shall be in accordance with National Road Authority standards, as indicated in the revised details provided at the oral hearing [Oral Hearing Document Reference Number 133].

Reason: To ensure that road safety standards are achieved at these junctions.

Control and Monitoring of the Construction

28. The surface water from the construction site that lies within the Carrowmore Lake catchment shall be collected, attenuated and taken through silt settlement ponds before being discharged into the Leenamore River Catchment. The existing surface water system that serves the undertaker's site, and which discharges into the Carrowmore Lake Catchment, shall be monitored initially on a daily basis and then at a frequency and for a full range of parameters to be agreed with Mayo County Council prior to commencement of construction works and continuing during the construction works.

Reason: It is necessary to put in place a full monitoring programme and control system for the surface water discharge to prevent water pollution and to protect the drinking water supply source at Carrowmore Lake.

29. The SC2 reception pit construction shall be protected from inundation by a severe storm event and from any overflow of Channel 2.

Reason: To prevent any damage to the environment that may result from an overflow of this channel.

30. Vibration monitoring shall be carried out during construction as provided in the Environmental Impact Statement generally and in the specific detail provided at oral hearing [Oral Hearing Document Reference Number 25]. The monitoring shall include:

- Monitoring at the Aghoos Tunnel Launch Pit Area and Monitoring at the Glengad Tunnel Reception Pit Area
 - (a) At each site monitoring vibration from (i) Piling activity (ii) Rock Excavation activity (iii) Tunnel Boring Machine activity. In the case of the Glengad site, monitoring is to be carried out as the Tunnel Boring Machine approaches the site.
 - (b) Monitoring at 25 metres and 50 metres from the source on two orthogonal planes aligned parallel and perpendicular to the predominant foliation or schistosity of the rock or as close to parallel and perpendicular as may be practicable.
- The monitoring shall serve to characterise the site specific ground response to these construction activities and shall provide verification data for review of the model predicted vibrations.
- An interpretative report and the data of the monitoring activity shall be provided to Mayo County Council and to the Project Monitoring Committee and published on a website in accordance with monitoring procedures established.

Vibration shall not exceed the standards set out in National Roads Authority Guidelines for Treatment of Noise and Vibration in National Road Schemes so that the maximum allowable vibration velocity (PPV) at the closest part of any sensitive property (including any dwelling) to the source of vibration shall be as follows:

Less than 10Hz	For all vibrations >10Hz
8 mm/sec	12.5 mm/sec

Reason: To provide for the control of vibrations and ensure there is no adverse impact from excavation works.

31. The hazards listed on the Geotechnical Risk Register in the Environment Impact Statement submitted to An Bord Pleanála shall be the subject of ongoing monitoring throughout the development. A qualified engineer with appropriate experience shall carry out the monitoring. During the excavation and construction phase, the undertaker shall submit a report in relation to the Risk Register every two months to Mayo County Council and the Project Monitoring Committee. The report shall describe the progress of monitoring the hazards listed on the Register and shall detail any specific difficulties encountered and contingencies employed. The reports shall be made available for public inspection within seven days of submission at the offices of Mayo County Council and the offices of the undertaker in Belmullet.

Reason: In the interest of safety and the proper planning and sustainable development of the area.

Control of Waste

32. All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following:-

- 110% of the capacity of the largest tank or drum within the bunded area, or
- 25% of the total volume of substances which could be stored within the bunded area.

Reason: To prevent surface and ground water or surface pollution.

33. All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges will cause pollution to ground waters.

Reason: To prevent surface and ground water pollution.

34. The undertaker shall maintain on the sites, for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials.

Reason: To prevent water pollution.

35. Prior to disposal of materials from site that have derived from tunnel arisings, testing shall be carried out on the materials to confirm appropriate waste disposal options and records of the testing shall be maintained by the undertaker.

Reason: To protect the environment.

Sanitary Waste Facilities and Management

36. Sanitary facilities shall be installed in the compounds and on the site of the construction works and on the site of the peat deposition area for the duration of the construction project. All waste generated from such facilities shall be disposed of by a licensed waste contractor to an appropriate approved treatment works.

Reason: In the interest of public health.

37. Where liquid wastes are being disposed of at appropriate treatment works, the undertaker shall establish that there is adequate capacity at those works to take the loadings from the liquid waste.

Reason: To protect fish and the aquatic environment from consequential pollution.

Construction in Peatland

38. Prior to construction of the Stone Road in the peat lands, pre-construction confirmatory examination of the site by an experienced Engineer/Geologist, as provided for in the Environmental Impact Statement and Geotechnical Risk Register, shall take place. In particular, in relation to those areas identified in the qualitative assessment of relative potential for peat failure of medium potential and high potential, the following shall apply:

- (a) The design of the proposed stone road and the design of the compound at Aghoos shall be reviewed in light of the examination of the conditions at the site at the time of construction.
- (b) Side casting of peat shall be restricted as follows:
 - (i) No side casting of peat shall take place in those areas of relative high potential for peat failure
 - (ii) No side casting of peat shall take place at any location ahead of the completed Stone Road i.e. where side casting peat, the area on which the peat is being placed shall lag behind the area where the Stone Road is being constructed so that peat is not side cast adjacent to an open or partially backfilled excavation.
 - (iii) No side casting of peat shall take place where the slope on the surface, or at the base of the peat, is greater than 3 degrees
 - (iv) No side casting of peat shall take place within 25 metres from a break in slope greater than 3 degrees.

Notwithstanding the above, the designer shall carry out the necessary site investigation, design and analysis to confirm that the stability of the peat repository will be acceptable at the time of construction. Specific consideration shall be given to areas where the alignment of the road is perpendicular to the slope contours, where it will not be possible to sidecast upslope from the stone road.

Reason: To ensure stability of peat and to protect the environment from any peat slide damage.

39. Within the stone road, the rock fill below the trench for the gas pipeline and umbilical shall extend beyond a minimum 45 degree influence line (1 vertical:1 horizontal) from the sides of the trench at pipe invert level down to the base of the peat.

Reason: To ensure stability of peat and the pipeline and to protect the environment from any peat slide damage.

40. In the construction of the pipeline, care shall be taken in those areas where the pipeline is being laid within the stone road and below the peat in the mineral soil. In those areas peat plugs shall be installed across the stone road section at either end of those sections and at centres in between not greater than 100 metres apart.

Reason: To prevent the stone road and pipeline construction acting as a preferential drain in the peat.

41. (1) In the construction of the stone road, permeability barriers shall be installed where the road approaches the Leenamore River, the two streams and ditches, which shall restrict free drainage of water through the road.
- (2) The construction detail for the compounds regarding drainage and restoration in the peat lands shall be similar in terms of permeability restriction to that used for the stone road.

Reason: To ensure that the impact of the stone road on hydrology of the peatlands is minimised.

42. Method statements for construction works in the peatlands shall be developed using conservative design values and applying conservatively the risk mitigation measures set out in the Geotechnical Risk Register of the Environmental Impact Statement, or as may be set out in any revision of the risk register following preconstruction surveys and confirmation of method of construction and during the construction of the project. All construction work in peatland shall be supervised by professional persons with adequate expertise of the geohydrology and ecology of blanket bogs and experience of construction in peatland, who shall ensure that hydraulic paths in the peat are identified, marked and reinstated

satisfactorily. An experienced contractor with specific experience of construction in peat shall be engaged for the construction.

Reason: To protect against peat instability and minimise the impact of the development on blanket bog habitats.

Archaeology

43. Monitoring for archaeological materials or remains shall be carried out at this site in accordance with the measures outlined in the Environmental Impact Statement and as follows:

- (a) The undertaker shall engage the services of a suitably qualified archaeologist who shall monitor ground disturbance works associated with the development
- (b) If archaeological remains are found the work may be stopped pending a decision on how best to deal with the archaeology. The undertaker shall be prepared to receive advice in this regard from the Heritage and Planning Division of the Department of the Environment, Heritage and Local Government and shall facilitate the archaeologist in recording any material found.
- (c) The archaeologist shall submit reports of the monitoring to Mayo County Council, the Project Monitoring Committee and the Department of the Environment, Heritage and Local Government at regular intervals as determined by Mayo County Council

Reason: To protect the archaeological heritage of the area and provide for the appropriate preservation of any remains that may exist within the site.

The Protection of Drinking Water Sources

44. Prior to commencement of construction, the location of wells which serve as water supply sources shall be identified, in agreement with Mayo County Council, and these wells shall be monitored prior to, during and after construction.

Reason: To protect existing drinking sources in the area.

45. The undertaker shall include in the Environmental Management Plan a detailed method statement for construction of surface water drainage and discharge from the construction site in the chainage 91+420 to chainage 91+720 area approximately, that is in the Carrowmore Lake Catchment. Surface water from the construction project shall not discharge into the Carrowmore Lake Catchment (Chainages given here refer to the 2010 chainages)

Reason: To protect the Carrowmore Lake Water Supply

Noise, Lighting and Air Quality

46. Where night lighting is proposed to be used at Glengad the impact of these lights on the area outside the work areas shall be mitigated in the same way as is proposed at Aghoos – selection of appropriate lanterns, downward, inward facing lights, baffle boards at lights at periphery, lights to be switched off when not required.

Reason: To protect the residential amenity of the area.

47. Monitoring of lighting impacts at the residential properties nearest and at those most likely to be impacted by night lighting shall be carried out on completion of the lighting installation and the results shall be submitted to Mayo County Council and the Project Monitoring Committee. Mayo County Council may direct the undertaker to make any necessary adjustments in the lighting required to avoid nuisance to those residential properties.

Reason: To protect the residential amenity of the area.

48. The lighting control within the compound at Aghoos and the compounds in Glengad shall be designed such that lighting can be switched off at night in those areas of the compound where lighting is not required at night.

Reason: To mitigate the impact of lighting in the landscape at night.

49. **Glengad:** All construction work shall be programmed as far as possible to avoid working between 2000 Hours and 0700 Hours. Where night working at Glengad becomes necessary the programme shall require the prior written agreement of Mayo County Council. Only essential works shall be carried out at night, avoiding audible tones and impulsive noise. Noise generation at night shall be controlled on site and kept to the lowest possible achievable levels. Noise levels at the nearest noise sensitive receptor (dwellings) shall not exceed the following limits -

Day	0700 – 2000 Hours	Overall limit:	65dB L _{AEQ} (1Hr)
Night	2000 – 0700 Hours	Target level for design:	35dB L _{AEQ} (1Hr)
	Calm night limit:		40dB L _{AEQ} (1Hr)
	Overall night limit:		45dB L _{AEQ} (1Hr)

Aghoos

Only essential work shall be carried out between 2000 and 0700, avoiding audible tones and impulsive noise. Noise generation at night shall be controlled on site and kept to the lowest possible achievable levels. Noise levels at the nearest noise sensitive receptor (dwellings) shall not exceed –

Day	0700 – 2000 Hours	Overall limit:	65dB L _{AEQ(1Hr)}
Night	2000 – 0700 Hours	Target level for design:	35dB L _{AEQ(1Hr)}
	Calm night limit:		40dB L _{AEQ(1Hr)}
	Overall night limit:		45dB L _{AEQ(1Hr)}

Reason: To protect the residential amenity of the area.

50. During construction and haulage, noise levels shall be kept to a minimum. Any activity that will result in a significant increase in the ambient noise levels, for example, piling or rock breaking, shall be notified to Mayo County Council and the Project Monitoring Committee in advance. Advance notice of the schedule of such activity shall be given to the public that may be affected.

Reason: In the interest of public health and residential amenity.

51. Dust levels shall not exceed 350 mg/m³ per day (TA Luft Air Quality Standard) when levels are averaged over thirty days and as measured at the site boundaries. Any activity which could reasonably be expected to exceed that dust level, and proposed mitigation measures, shall be notified to Mayo County Council and the Project Monitoring Committee in advance, and shall be notified to the public that may be affected.

Reason: In the interest of public health and residential amenity.

Protection of the Amenity of the Area

52. All lands shall be reinstated, as set out in the Environmental Impact Statement.

Reason: To ensure that the visual impact of the project on the landscape is mitigated.

53. The work in relation to the final reinstatement of the margins of the access road to the Landfall Value Installation from the public road L1202 shall be carried out under the supervision of the project ecologist.

Reason: To limit any impact on the candidate Special Area of Conservation.

54. The undertaker shall ensure that access to the beach at Glengad is not unduly restricted for the duration of the construction works and while the construction spread is in situ across the traditional access to the beach at Glengad.

Reason: To ensure that the amenity of the beach at Glengad is protected for public use during the construction works.

55. All boundary fencing at Aghoos and at the Glengad compound sites shall be coloured (dark green or brown is suggested) and shall be agreed in writing with Mayo County Council

Reason: To mitigate the visual impact of the fencing in the landscape.

56. Before tunnelling works commence, a written agreement, encompassing a method statement and construction methodology for an intervention pit in Sruwaddacon Bay, shall be made with the Department of the Environment, Heritage and Local Government (National Parks and Wildlife Service), with Inland Fisheries Ireland and with the Department of Agriculture, Fisheries and Food. In the event that such intervention pit in connection with the tunnelling becomes necessary, the relevant works shall be carried out on the basis of the said agreement. In default of agreement, the matter shall be referred to An Bord Pleanála for determination.

Reason: To protect the natural amenities of the area.

Financial Conditions

57. Prior to commencement of development, the undertaker shall lodge with Mayo County Council a cash deposit, a bond of an insurance company, or other agreed security to provide for the satisfactory re-instatement of the site upon the cessation of use of the pipeline and Landfall Valve Installation coupled with an agreement empowering Mayo County Council to apply such security or part thereof to the satisfactory reinstatement of the site. The form and amount of the security shall be as agreed between Mayo County Council and the undertaker or, in default of agreement, shall be determined by An Bord Pleanála.

Reason: To ensure the satisfactory reinstatement of the site.

58. (a) The undertaker shall provide a Community Gain Investment Fund over each of the five years commencing from 2011. The purpose of this fund shall be to finance facilities and services of the type described in section 6.5 of the main volume of the Environmental Impact Statement submitted to An Bord Pleanála on the 31st day of May, 2010, and which shall benefit the community in the area of the proposed development. The Investment Fund shall be €1.7 Million per annum, a total of €8.5 Million over the life of this Community Gain Investment Fund and shall be paid in trust to Mayo County Council.

- (b) Mayo County Council shall, through the County Development Board, agree on a Community Development Plan for the Area, which shall be broadly based and not solely dependent on the Investment Fund. The objectives, services and actions contained within the plan shall provide the basis upon which the Investment Fund will be disbursed and against which application for funding will be considered. The plan and the area to be covered by the plan shall be subject to consultation with the local community and shall be put in place within nine months of the date of this Order. The plan shall be proposed by the County Development Board and adopted by Mayo County Council.
- (c) Nothing in this condition shall be interpreted as an exclusion of the Local Grants Programme, the Scholarship Programme, or the Corrib Natural Gas Erris Development Fund Projects from receiving support from this new Community Gain Investment Fund. Nothing in this condition shall prevent the undertaker from continuing to invest in the local community after five years.

Reason: To provide substantial community gain for the area in which the development is located and in accordance with Section 182D(6) of the Planning and Development Act, 2000, as amended.

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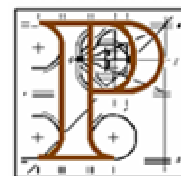
**Member of An Bord Pleanála
duly authorised to authenticate
the seal of the Board.**

Dated this day of 2011.

Appendix

Strategic Infrastructure Development Documents Submitted by SEPIL at Oral Hearing 2010

An Bord Pleanála



These refer to Condition 1:

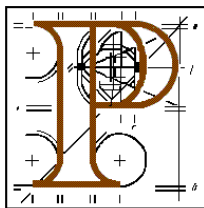
Document Number	Document Description	Submitted by
2	BOE - Route Selection and Alternatives Considered	Ciaran Butler SEPIL
3	BOE - Construction	Eamon Kelly SEPIL
4	List of briefs/speakers	E Keane SEPIL
5	BOE – Tunneling Construction	Tim Jaguttis SEPIL
6	BOE – Community Issues and Planning Policy Context	Kieran Kennedy SEPIL
7	BOE – Geotechnical Issues	Turlough Johnston SEPIL
8	Addendum of E.I.S Includes Appendix E Foreshore Site Investigation (Aug 2010)	E Keane SEPIL
11	BOE - Overview of Pipeline safety	Gerry Costello SEPIL
12	BOE - Operation of Pipeline – Pipeline Safeguarding	Ian Malcolm SEPIL
13	BOE – Onshore Pipeline and LVI Design	John Gurden SEPIL
14	BOE – Pipeline Protection	S Paterson SEPIL
15	BOE – Qualitative Risk Assessment	Sheryl Hurst SEPIL
16	BOE – Quantified Risk Assessment	Philip Crossthwaite SEPIL
20	Errata E.I.S.	SEPIL
21	BOE - Appropriate Hazard Distance	Gerry Costello SEPIL
22	BOE - Public Safety – Application of Design Codes	Jane Haswell SEPIL
23	BOE – Roads and Traffic	Michael Noonan SEPIL
24	BOE – Landscape and Visual	Raymond Holbeach SEPIL
25	BOE – Ground borne Noise and Vibration	Rupert Thornely-Taylor SEPIL
26	BOE – Noise and Vibration (Works on Land)	SEPIL
27	BOE – Underwater Archaeology	Darragh Kingston SEPIL
28	BOE – Archeology, Architectural Heritage & Cultural	Niall Brady SEPIL
29	Heritage	Liam Courtney SEPIL
30	BOE – Peat land Hydrology & Hydrogeology	Michael Gill SEPIL
	BOE – Marine and Freshwater Environment Issues	Ian Wilson SEPIL
34	Large Drawings Site Investigations, Part 1 (Refer DRN 8)	SEPIL
35	BOE – Terrestrial Ecology	Jenny Neff SEPIL
36	BOE – Cumulative Impacts	Agnes McLaverty SEPIL
58	Foreshore Site Investigation Data Report 1 (August 2010) (see DRN 8 and 34)	SEPIL
73A	Foreshore Site Investigations Report 2 (3 rd Sept 2010)	Turlough Johnston SEPIL
73B	Foreshore S.I. Large Drawings	Turlough Johnston SEPIL
73C	Site Investigation Data	Turlough Johnston SEPIL
74	Houses Proximity Map – Glengad	SEPIL
78	Letter from Bob Hanna to G. Costello SEPIL	SEPIL
79	Copy of Foreshore Licence 11 th June 2010	SEPIL
80	Responses to Questions subject 1-8 Tunnel Construction	SEPIL
84	& On shore Pipeline Overpressure Protection System (LVI) Reliability	SEPIL

Document Number	Document Description	Submitted by
86	Risk Assessment Matrix Consequence Scale	Ms Hurst SEPIL
86A	Letters between SEPIL and DCENR 22/12/2005	G Costello SEPIL
87	Tunnel Stress Analysis Document	SEPIL
88	LVI Stress Analysis Document	SEPIL
89	Response by Ian Malcolm to Subsea Pressure Protection	SEPIL
90	Stress Sensitivity Analysis Document	SEPIL
91	DCENR correspondence acknowledging S.40 Application 17/06/2010	SEPIL
92	BOE – Application for Compulsory Acquisition Order	Eamon Kelly SEPIL
94	Tunneling Construction Works Aghoos – Additional Noise Attenuation Measures	SEPIL
131	Vibration Monitoring	SEPIL
133	Traffic Sight Lines Srahmore /Aghoos Entrances	SEPIL
134A	EMG Report Near shore Pipe lay and Pull in June 2009	SEPIL
134B	EMG Report Near shore Pipe lay and Pull in September 2009	SEPIL
134C	EMG Report Near shore Pipe lay and Pull in October 2009	SEPIL
135	Power Supply at Aghoos	SEPIL
136	Total Volume Capacity of Bunded Areas	SEPIL
137	Intervention Pit Clarification	SEPIL
138	Use of Roads and Pier Rosspoint Clarification	SEPIL
139	Biocide for Produced Water	SEPIL
140	Outfall Locations and Numbering	SEPIL
141	Noise Monitoring	SEPIL
145A	Pavement Condition at Mc Eleney's House on L1202	SEPIL
146A	Terminal/Belmullet on Site Weather Station data	SEPIL
146B	Security & Public Safety Clarification (Slabbing Drawing Attached)	SEPIL
147	Pavement Conditions in vicinity of McGraths Bar & Letter from Mayo Co. Co. to SEPIL	SEPIL
153	High Water Mark OSI 1:5,000 Vector Data Site Map	SEPIL
180	Case Law Referred to in Closing Statement by Mr. Keane	Mr. Keane SEPIL

**Member of An Bord Pleanála
duly authorised to authenticate
the seal of the Board.**

Dated this day of 2011.

An Bord Pleanála



FORBAIRT BHONNEAGAIR STRAITÉISIGH

Na hAchtanna um Pleanáil agus Forbairt 2000 go 2010

Uimhir Thagartha an Bhord Pleanála: 16.GA0004

(Údarás Áitiúil: Comhairle Chontae Mhaigh Eo)

IARRATAS chun ceadú a fháil faoin alt 182C(1) den Acht um Pleanáil agus Forbairt, 2000, arna leasú, ó Shell E agus P faoi chúram RPS Group, 5ú Úrlár, Bloc E, Cúirt Uíbh Eachach, Sráid Fhearchair, Baile Átha Cliath de réir pleananna agus sonraí, san áireamh Ráiteas Tionchar Comhshaoil, taiscthe ar dtús leis An Bord Pleanála ar an 12ú lá de mhí Feabhra, 2009, agus mar a thuairiscítear sa bhfhógra poiblí faighte ar an dáta céanna, agus de réir mar a bhí athraithe sa Ráiteas Tionchar Comhshaoil faighte ag an mBord Pleanála ar an 31ú lá de Mheitheamh, 2010 agus mar a thuairiscítear tuilleadh sa fhógra poiblí faighte ag An Bord Pleanála ar an 6ú lá de mhí Iúil, 2010.

AN FHORBAIRT BHEARTAITHE: Cead chun Phíblíne Cois Cladaigh na Coiribe le tógáil ina mbeidh píblíne gáis as-sruthach infreastruchtúr straitéiseach ann.

Tá an píblíne ardsruthach atá beartaithe istigh is amuigh le 9.2km ar fhaid, le gás aiceanta agus le fothorthaí bainteacha a iompar ó Mhaigh Ghás na Coiribe mar atá, go dtí críochfort gáis ag Droichead Béal an Átha Bhuí, Contae Mhaigh Eo; seanchheadaithe faoi uimhir thagartha an údaráis pleanála P03/3343 (uimhir thagartha an Bhord Pleanála PL 16.207212). 'Séard atá i gcóras na píblíne atá beartaithe ná an píblíne intíre gáis féin, imleacáin do sheirbhísí bainteacha agus cáblaíocht riactanach eile a shíneann freisin idir Mhaigh Ghás na Coiribe agus an críochfort, agus píblíne do shruth éalaithe ag síneadh ón gcríochfort go hionad atá c.12.7km amuigh sa bhfarraige. Síneann an píblíne atá beartaithe, ó phointe ar an gcladach i mbaile fearann Ghleann an Ghaid (Dún Ceartain), Contae Mhaigh Eo, go hiondúil ar bhealach soir, trasna Bhá Sruth Fada Con agus ansin thar fhéarach gar d'áitreabh an Ros Dumhach (Rosphoirt), sula a dtrasnaíonn sé arís eile Bá Sruth Fada Con agus ansin ag rith soir agus ó dheas, trí bhailte fearann Na hEachú agus Béal an Ghoile Theas, agus isteach sa chríochfort gáis ag Droichead Bhéal an Átha Bhuí. Tá sé ceapaithe an píblíne a leagan taobh istigh de dhorchla le leithead ginearálta de 40m go 100m. Beidh cead slí buan na píblíne idir 14m agus 20m ar leithead. Mar thoradh ar an bhforbairt tógfar as úsáid dhá theach atá taobh istigh d'áitreabh an Rosphoirt chomh fada agus a leanann an píblíne ag feidhmiú.

Os cionn talún mar chuid den fhorbairt bheartaithe beidh Comhla Insealbhaithe an Chladaigh (LVI) mar aon le córas éalaithe usice dromchla suite i mBaile Fearann Ghleann an Ghaid (Dún Ceartáin) agus san áireamh fresin beidh úsáid bhuan leanúnach agus uaschothabháil bhainteach an bhóthair áise atá ann faoi láthair, ó bhóthar poiblí L1202 go dtí an suíomh molta don Chomla Intíre (LVI). Tá an LVI deartha le teorainn a chur leis an mbrú sa píblíne intíre go 144 bar nó níos lú. Clúdaíonn an tionscnamh atá molta, an tógail go léir, buan nó sealadach, atá bainteach leis, idir forbairt suímh agus oibreacha garraíodóireachta, mar aon le clóis sealadacha mar shuímh do chúrsaí tógála, chomh maith le úsáid sealadach den chlós tógála atá ann faoi láthair agus ina dteannta siúd bóithre áise inmheánacha laistigh de shuíomh an chríochfoirt agus úsáid na mbealach rochtana amach ar chóras na mbóithre poiblí a ceadaíodh cheana féin faoi uimhir thagartha an údaráis pleanála P03/3343 (uimhir thagartha achomhairc an Bhord Pleanála PL 16.207212).

Gheofar bealach isteach ag feithiclí a fhreastalaíonn ar dhorchla na píblíne, ag na pointí a dtrasnaíonn an dorchla agus bóithre poiblí a chéile. Trasnóidh an fhorbairt bheartaithe na bóithre poiblí ag 4 (uimhir) ionad – 3 (uimhir) i mbaile fearann an Ros Dumhach agus ceann amháin i mbaile fearann An Ghoile Theas. Tá sé beartaithe mionfheabhsú a dhéanamh ar an gcrotaire L-52453-0 and L-52453-25 i mbaile fearann Ros Dumhach mar áis don trácht tógála.

Clúdaíonn an moladh importáil agus leagan anuas 75,000 m³ móna a thochlófar ar bhealach na píblíne isteach agus laistigh de shuíomh stórála Bhord na Mona i mbailte fearann an Srath Mór agus Áit a'Bhaile, Iorras, Contae Mhaigh Eo (Suíomh na Sraithe Móire) atá ceadaithe cheana féin faoi uimhir thagartha an údaráis pleanála P03/3343 (uimhir thagartha achomhairc an Bhord Pleanála PL 16.207212). Clúdaíonn an tionscnamh molta chuile oibriúchán suímh, buan agus sealadach, infreastruchtúr agus áiseanna a éascóidh gach feidhmiúocht agus gníomhaíocht an ionaid féin agus san ionad ag an Srath Mór. Teastóidh ceadúnas dramhaíola ar leith don ghníomhaíocht atá ceapaithe don Srath Mór.

De bharr iarratais ón mBord Pleanála ar an ngnóthaire faoin alt 182C(5) den Acht um Pleanála agus Forbartha, 2000, arna leasú, a chur i bhfeidhm ar an bhforbairt bheartaithe san áireamh treoir na píblíne a athrú, tá an fhorbairt bheartaithe athraithe de réir mar atá leagtha amach sa Ráiteas leasaithe Tionchar Comhshaoil faighte ag an mBord Pleanála ar an 31ú lá de Mheitheamh, 2010, seo mar a leanas:

Síneann an píblíne athchóirithe ón bpointe barr taoide go dtí an bpointe ar an talún ag Gleann an Ghaid i gContae Mhaigh Eo, ar bhealach faoi Bhá Sruth Fada Con go dtí baile fearainn na hEachú agus go dtí baile fearainn Béal an Ghoile Theas, agus isteach sa Chríochfort Gáis i mBéal an Átha Bhuí.

Tá dreach na n-athraithe sonraithe le feiceáil thíos (Tá na logainmneacha go léir a luaitear suite i gContae Mhaigh Eo ach amháin Bá Sruth Fada Con a bhfuil cuid de sa chladach).

- Tá bealach athraithe na píblíne le bheith faoi Bhá Sruth Fada Con (agus inrianta chuige) idir slabhraíocht 83+910 agus 89+550 (mar a bhí na slabhraíochtaí píblíne i 2009) (Gleann an Ghad agus Na hEachú);
- Méadú suntasach níos mó ar an fhad eatarthu a scarann óna chéile an phíblíne molta agus an teach cónaithe is goire a bhfuil daoine ina gcónaí ann;
- Tá fad na píblíne gearrtha go 8.3km, ísliú de 0.9km;
- ‘Séard atá i gceist ná an píblíne a shocrú i dtollán, a bhfuil trastomhas seachtrach 4.2m aige, ó Na hEachú go Gleann an Ghad ar an mbealach athraithe faoi Bhá Sruth Fada Con (agus na hinrianta chuige) ar feadh 4.9km;
- Beidh tuairim is 4.6 km den tollán faoi Bhá Sruth Fada Con;
- ‘Sé an tUasbhrú Oibriúcháin Ceadaithe (MAOP) sa Phíblíne Intíre (idir Comhla Suite Intíre (LVI) agus an críochfort ag Droichead Bhéal an Átha Buí ná 100 barg;
- ‘Sé an tUasbhrú Oibriúcháin Ceadaithe (MAOP) den phíobán thar chladach amach (uas-sruthach de agus ag áireamh an LVI) ná 150 barg;
- Níl an píblíne suite níos mó taobh istigh den Áitreabh le Tosaíocht I gCoimpléasc Phortach Gleann na mBuaidhe (cSAC);
- Tógfar an tollán i dtreo amhain ó Na hEachú agus cuirfear an píblíne le chéile sula leagfar é sa tollán ó Na hEachú; mar thoradh air sin beidh an clós tollánaithe ag Na hEachú níos mó agus feicfear i bhfad níos mó gníomhaíochtaí ann seachas ag an gclós tollánaithe ag Gleann an Ghad agus ní bheidh aon ghníomhaíocht tógála ag Ros Dumhach;
- Tá an roinn sin den Phíblíne ó shlabhraíocht 83+400 go dtí an pointe barr taoide áirithe san iarratas forbartha.

Áirítear freisin na hathraithe leantacha don fhorbairt atá ag eascairt as na hathruithe sonraithe. Ina measc tá: imleacán breise, cábla breise, cábla snáthoptaic, píobán taoscailte uisce laistigh den tollán méadú ar leithead an bhóthair cloiche le 3m go 12m, iompar ábhar go clós tollánaithe Na hEachú, toirt mhéadaithe den ábhar tochailte (c.68,000 m ciúbaithe) agus téarma níos faide do na hoibreacha tógála.

CINNEADH

CEADÚ A THABHAIRT faoin alt 182D den Acht um Pleanáil agus Forbairt, 2000, arna leasú, don fhorbairt beartaithe thuasluaite de réir pleananna agus sonraí thuasluaite mar gheall ar na cúiseanna agus tuisceanna atá ráite thíos agus faoi réir na gcoinníollacha a shonraítear seo a leanas.

NA hÁBHAIR CURTHA SAN ÁIREAMH

Ag déanamh a chinnidh, thug an Bord aird do na nithe áirithe atá dualgas air, de bhua na n-Achtanna um Pleanáil agus Forbairt agus na Rialachán arna ndéanamh fúthu, aird a thabhairt dóibh. San áireamh bhí aon aighneacht agus tuairim a fuair an Bord faoi réir forálacha reachtúla.

CÚISEANNA AGUS TUISCEANNA

Nuair a tugtar aird ar:

- (a) tábhacht straitéiseach Gháscheantar na Coiribe, i gcomhthéacs náisiúnta agus réigiúnach;
- (b) forálacha Rialúcháin (AE) Uimhir 994/2010 Pharlaimint agus Comhairle na hEorpa, 20 Deireadh Fómhair 2010, maidir le bearta chun cosaint a thabhairt don sholáthar gáis do na Ballstáit, in éindigh le spleáchas an Stáit faoi láthair ar iompórtáil chun riachtanaisí fuinnimh an Stáit a shású, go háirithe i gcás gáis;
- (c) polasaí náisiúnta maidir le cosaint agus iontaofacht soláthair gáis a chinntiú, mar atá leagtha amach i bpáipéar bán, “Ag Seachadadh Todhchaí Fuinnimh Inbhuanaithe d’Éirinn”, 2007-2020, a bhfuil aidhm ag an bpolasaí seo go mbeidh cinnteacht agus iontaofacht faoi leith ag baint le soláthar gáis agus leictreachais, gp leathnófar ilchineálacht bhreosla, a úsáidtear chun cumhacht a ghiniúint agus go mbeidh an Stáit in ann déileáil le briseadh ar sholáthar;
- (d) forálacha an Phlean Forbartha Náisiúnta, 2007-2013, maidir leis an bpríomh-áit a tugtar do shlándáil an tsoláthair fuinnimh ionas go mbeidh forbairt eacnamaíochta na tíre ag leanúint ar aghaidh;
- (e) forálacha Treoirlínte um Pleanáil Reigúnach an Iarthair, 2010-2022, chun usáid is mó a bhaint as acmhainneacht gháscheantar na Coiribe;
- (f) forálacha Phlean Forbartha Chiontae Mhaigh Eo 2008-2014, chun usáid is mó a bhaint as acmhainneacht gháscheantar na Coiribe agus maidir le cosaint gnáthóga nádúrtha agus taitneamhacht amhairc;
- (g) an chinneadh déanta ag an mBord Phleanála cead pleanála a thabhairt chun críochfort gáis a thógáil i mBéal an Átha Buí le freasta ar Gháscheantar na Coiribe, faoi uimhir achomhairc PL 16.207212, críochfort atá beagnach tógtha;
- (h) an t-aontú ceadaithe faoi Alt 40 den Acht Gáis, 1976 maidir leis an bpíblíne gháis a thógaint ó gháscheantar na Coiribe go dtí Gleann an Ghad, píblíne atá beagnach tógtha;
- (i) na forálacha den Acht Peitiriliam (a Thaiscéaladh agus a Bhaint) Sábháilteacht, 2010 a chuireann smacht agus sábháilteacht ar monarchana gáis;
- (j) na hathruithe curtha i bhfeidhm ar an bpíblíne, go háirithe maidir le treo na píblíne agus an brú oibriúcháin, a beartaíodh mar fhreagairt ar an bhfógra eisithe ag an mBord Pleanála ar an 2ú lá mí Shamhna faoi Alt 182 C(5) den Acht um Pleanáil agus Forbairt, 2000, arna leasú, athruithe a chuireann níos mó béime ar chúrsaí sábháilteachta, cosaint oidhreachtá nádúrtha agus taitneamhacht chónaithe;

- (k) An Ráiteas Tionchair Timpeallachta atá athbhreithnithe, na bearta maolaithe faighte ag an mBord Phleanála ar an 31ú lá Mheitheamh, 2010 agus an t-eolas breise seolta chuig an éisteacht ó bhéal san áireamh
- (l) An t-am teoranta atá ar fail don tréimhse togála, agus laghdú ar na tionchair ar thaitneamhacht amhairc agus cónaithe dá bharr sin;

agus, tar éis aire a thabhairt do na haighneachtaí agus na tuairimí seolta chuig an mBord i ndáil leis an iarratas agus go háirithe ag tabhairt aire do thuarascála an phríomh-Chigire, a stiúraigh an éisteacht ó bhéal, agus ag tabhairt aire don tuarascála breise, ordaithe ag an mBord maidir le (i) Dearadh agus Sabhailteacht na Píblíne, (ii) Bogadh Talún agus Cobhsaíocht Mhóna agus (iii) reachtaíocht, oidhreacht nádúrtha, tírdhreach, sil-leagan móna agus an tairbhe don phobal áitiúil, meastar go gcabhródh an fhorbairt bheartaithe, arna leasú agus faoi réir na gcoinníollacha leagtha amach thíos, le éileamh an Stáit fuinneamh a choimeád slán, go mbeadh tairbhí i gceist d'Iarthar na tíre, nach ndéanfaidh an fhorbairt bheartaithe díobháil mhór don áiseanna cónaithe nó do mhaoin sa cheantar, nach mbeadh sí ag dul in aghaidh sláinte nó sabhailteacht an phobail, nach mbeidh tionchair suntasacha ar an gcomhshaol nó aon suíomh Eorpach, go mbeadh sí inghlactha maidir le sábhailteacht agus áis tráchta agus nach sáródh sí forálacha Plean Forbartha Chontae Mhaigh Eo, 2008-2014. Dá bhrí sin, bheadh an fhorbairt beartaithe ar aon dul le planáil cuí agus forbairt inchothaithe an limistéir.

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COINNÍOLLACHA

Soiléiriú ar Mhéid na Forbartha Ceadaithe

1. Seachas an mhéid atá leasaithe sna coinníollacha iniata leis an gceadú seo, cuirfear an fhorbairt bheartaithe atá ceadaithe i gcríoch de réir an fhorbairt Cois Cladaigh Píblíne Gháis na Coiribe, arna leasú agus mar a thuairiscítear san Ráiteas Tionchar Timpeallachta, faighte ag an mBord Pleanála ar an 31 Meitheamh, 2010, san áireamh an suíomh ina mbeidh móin leagtha síos ag An Srath Mór agus na bearta maolaithe san Ráiteas Tionchar Timpeallachta, san áireamh an chéad litir iarratais faighte ag an mBord Pleanála ar an 12ú lá mí Feabhra, 2009 agus an t-eolas breise ar cháipéisí, seolta ón iarratasóir chuig an mbord i rith tréimhse na héisteachta ó bhéal i 2010, san áireamh na leasuithe.

(Tá na caipéisí i gceist le fáil Sceideal Cáipéisí seolta ón iarratasóir go dtí an éisteacht ó bhéal 2010 agus mar atá ceangailte do na coinníollacha seo).

Cúis: Chun soiléiriú a thabhairt don fhorbairt atá faoi réir an cheadaithe seo, ar mhaithe le cinnteacht agus ar mhaithe le pleanáil cuí agus forbairt inchothaithe an limistéir.

2. Ní úsáidtear an phíblíne cois cladaigh ach chun gás nádúrtha a iompar ó Gháscheantar na Coiribe. Caithfear ceadú pleanála a fháil úsáid as an bpíblíne seo chun gás a iompar ón aon gáscheantar eile.

Cúis: Ionas go mbeidh smacht riachtanach i bhfeidhm ar an bhforbairt chun cosaint a thabhairt do shláinte na píblíne cois cladaigh agus go mbeidh sé ceadaithe scrúdú a dhéanamh ar aon fairsingiú a bheith ar siúl sa gháscheantar.

Sabháilteacht an Phobail

3. Caithfidh an gnóthaire cáipéis a fháil ón Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha ag cinntiú na cóid fhorlín atá i bhfeidhm do DNV.OS.F101 nuair a úsáidtear a leithéid sna páirteanna cois cladaigh de phíblíne atá amach ón gcósta, sé sin an páirt idir an líne bharr láin agus an chéad táthán thíos an abhainn faoin Comhla Insealbhaithe an Chladaigh. Cuirfear an fhorbairt seo i bhfeidhm de réir na riachtanas seo.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint.

4. Sula gcuirfear an phíblíne i bhfeidhm, beidh ráta iontafachta maidir leis an gcóras cosanta róbhrú de phíblíne cois cladaigh agus maidir leis an gcóras cosanta róbhrú phíblíne atá amach ón gcósta deimhnithe ag duine seachtrach neamhspleách, agus saineolas ag an duine seo san ábhar i gceist, ionas go mbeidh an t-údarás leis an dualgas reachtúil ar an bhforbairt ag an am (is é sin An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha, nó de réir mar a bheidh) sásta glacadh leis an deimhniúchán seo agus aontaithe i scríbhinn), nó atá glacadh ag an údarás reachtúil é féin. Caithfear aontú scríofa maidir leis an deimhniúchán seo a sheoladh chuig Chomhairle Chontae Mhaigh Eo agus é curtha ar an gcomhad poiblí sula gcuirfear an phíblíne i bhfeidhm.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint agus ar mhaithe le hoscailteacht.

5. Ní chuirfear an phíblíne cois cladaigh thuas an abhainn i bhfeidhm chun gás a iompar ón bhfarraige ó Gháscheantar na Coiribe sula mbeidh an phíblíne tógtha, tástáilte agus coimisiúnaithe, an Chomhla Insealbhairthe an Chladaigh (LVI) agus an trealamh agus na háiseanna coimhdeacha don phíblíne críochnaithe do shástacht deimhnithe an údaráis a bhfuil dualgas reachtúil aige ag an am (is é sin An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha, de réir an cháis). Caithfear aontú scríofa maidir leis an deimhniúchán seo a sheoladh chuig Chomhairle Chontae Mhaigh Eo agus é curtha ar an gcomhad poiblí sula mbeidh an phíblíne i bhfeidhm.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint agus ar mhaithe le hoscailteacht.

6. (a) Is é an t-uasbhrú oibre incheadaithe maidir leis an bpíblíne cois cladaigh, atá i gceist san ordú seo, ná 150 barg thuas an abhainn san áireamh an Chomhla Insealbhairthe an Chladaigh (LVI), agus thíos an abhainn tar éis an LVI caithfear an t-uasbhrú oibre incheadaithe a bheith mar 100 barg.
- (b) Caithfidh an phíblíne iomlán cois cladaigh curtha faoi hidri-thriail chomh fada le 504 barg sula mbeidh na hoibríochtaí i bhfeidhm.
- (c) Caithfear deimhniúchán scríofa maidir leis an tástáil seo a sheoladh chuig Chomhairle Chontae Mhaigh Eo agus é curtha ar an gcomhad poiblí sula gcuirfear an phíblíne i bhfeidhm.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint agus ar mhaithe le hoscailteacht.

7. Sula gcuirfear tús leis na hoibríochtaí, caithfidh an gnóthaire ceadúnas sábháilteachta ón údarás leis an dualgas reachtúil i gceannas ar an bhforbairt ag an am (is é sin An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha, nó de réir mar a bheidh). Caithfear cóip den cheadúnas sábháilteachta seo a sheoladh chuig Chomhairle Chontae Mhaigh Eo agus é curtha ar an gcomhad poiblí sula mbeidh an phíblíne i bhfeidhm.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint agus ar mhaithe le hoscailteacht.

8. Caithfidh an gnóthaire an ionstraimíocht riachtanach a chur i láthair ionas go mbeifear in ann na corraí talún maidir le na hábhair seo a leanas a thaifead:

- (a) An comhéadan suímh maidir leis an gComhla Insealbhaith an Chladaigh leis an bpíblíne amach ón gcósta;
- (b) na hidiráiteanna idir an bpíblíne leachtmhoirtéala sa tollán agus na páirteanna curtha faoi thalamh;
- (c) an clochbhóthar ag na háiteanna móna dhomhain; agus
- (d) An comhéadan idir na páirteanna den chlochbhóthair a bhí ann cheana féin agus na páirteanna nua a bhí leagtha síos.

Cuirfidh an gnóthaire straidhntomhsaí, cobhsaí (san áireamh tomhsaí sreinge creathacha le cásáil chosanta) ar an bpíblíne ionas go mbeidh cinnteacht ann maidir leis an uasmhéid struis réamhmheasta ar an bpíblíne agus go mbeidh cruinneas an samhaltaithe cinntithe. Fanfaidh an ionstraimíocht i gceist 'in situ' go dtí go mbeidh leibhéil fhoistíne cinntithe and go dtí mbeidh tréimhse ama fada go leor caite ionas go mbeidh taithí faighte ó choinníollacha timpeallachta éagsúla.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint.

9. Caithfidh an gnóthaire tuairisc bhliantúil píblíne a chur le chéile roimh an 31ú lá de Mhí Eanáir i ngach bhliain den oibríocht agus curtha faoi bhráid an údaráis leis an dualgas reachtúil i gceannas ar an bhforbairt ag an am (is é sin An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha, nó de réir mar a bheidh). Caithfear achoimre den tuairisc a sheoladh chuig Comhairle Chontae Mhaigh Eo freisin agus agus é curtha ar an gcomhad poiblí.

Cúis: Ar mhaithe le sláinte and sabháilteacht an phobail a chosaint agus ar mhaithe le hoscailteacht.

10. (a) Caithfidh an gnóthaire cloí le haon Caighdeán Slandála Lónra faoi mar a bheith socraithe ó am go ham An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha (nó an Coimisiún um Rialáil Fuinnimh, mar atá cuí) maidir leis na háiseanna ag an LVI i nGleann an Ghad.

- (b) Caithfidh an gnóthaire athdhearadh a dhéanamh ar an bhfál slándála ag an LVI agus fál dúbailte le slándáil ardleibhéal agus geataí a thógaint, 2.8m ar airde, agus crios tuilsholais a bheith ann idir an fál ar an taobh istigh agus an fál ar an taobh amuigh. Is féidir leictreachas a chur tríd an bhfál ar an taobh istigh má comhairlíonn an Garda Síochána é sin.

Cúis: Ar mhaithe le slándáil an shíomh bhonneagair straitéisigh seo.

11. Ní féidir an phíblíne cois cladaigh atá thuas an abhainn a chur i bhfeidhm chun gás a iompar ón bhfarraige ó Gháscheantar na Coiribe sula mbeidh Plean Práinnfhreagartha ullmhaithe ag an ngnóthaire, don cheantar idir Gleann an Ghad, Ros Dumhach, na hEachú agus Béal an Átha Buí. Aontófar an plean idir An Garda Síochána, Fheidhmeannacht na Seirbhíse Sláinte agus Comhairle Chontae Mhaigh Eo agus caithfidh an plean cloí leis na riachtanais atá leagtha amach sa Phlean Práinnfhreagartha i leith an cheantair. Sa plean caithfear sonraí a bheith ann ag déileáil le cúrsaí tráchta in aice leis an gcríochfort, cóngarach don LVI agus san áit ina bhfuil an píblíne ag dul, má tharlaíonn aon mórthimpiste. Nuair a chuirtear an plean le chéile, caithfear túairimí ón bpobal a ghlacadh agus cuirfear san áireamh iad sa plean.

Cúis: Ionas go mbeidh plean práinnfhreagartha i bhfeidhm ar mhaithe le sláinte and sabháilteacht an phobail a chosaint.

Comhaontú le Comhairle Chontae Mhaigh Eo

12. Sula gcuirfear tús leis an bhforbairt, seachas na hoibreacha atá ceangailte go díreach leis na suirbhéanna roimh chúrsaí tógála, caithfidh an gnóthaire socrú a dhéanamh le Comhairle Chontae Mhaigh Eo, beidh an socrú seo faoi cheangal dlí ar an ngnóthaire agus a chomharbaí-i-dteideal. Beidh sonraí maidir leis na hábhair seo a leanas sa socrú:
- (a) caithfidh an gnóthaire an costas iomlán a íoc don údarás pleanála chun an ghréasán bóithre a dheisiú, a chothabháil agus a aisiriú, a tharlaíonn i rith tréimhse thógáil na forbartha, mar a bheidh le fáil sa suirbhé bóthair agus droichid, beidh an suirbhé seo curtha i gcrích roimh agus tar éis na tógála. Aontófar an méid airgid idir an údarás pleanála agus an gnóthaire.
- (b) Plean Bainistíochta Tráchta, atá le fáil sa Ráiteas Tionchar Comhshaoil, a chur i bhfeidhm, agus is féidir é a leasú de réir na gcoinníollacha nó an cheadaithe seo nó le aontú scríofa faighte ón údarás pleanála roimhe sin;
- (c) íocfar na costais deimhnithe réasúnta ag Comhairle Contae Mhaigh Eo mar gheall ar saineolaithe iompair a fhostú ag déanamh faireachán ar an bPlean Bainistíochta Tráchta, san áireamh na costais a bhaineann le lóistín agus áiseanna teileachumarsáide a chur ar fáil ar shuíomh ar son na ndaoine sin;

- (d) íocfar na costais deimhnithe réasúnta ag Comhairle Contae Mhaigh Eo mar gheall ar saineolaithe comhshaoil a fhostú ag déanamh faireachán ar an bPlean Bainistíochta Comhshaoil, san áireamh na costais a bhaineann le lóistín agus áiseanna teileachumarsáide a chur ar fáil ar suíomh ar shon na ndaoine sin;
- (e) scéim chun suíomh na Comhla Insealbhaithe an Chladaigh (LVI) a athchóiriú ag Gleann an Ghad agus an cead slí a bhaineann leis, ionas go mbeidh Chomhairle Contae Mhaigh Eo sásta maidir leis na torthaí, nuair a bheidh iompar gáis thart, san áireamh san athchóiriú seo caithfear gach ceann d'aon treallamh agus áiseanna atá os cionn talún a bhaint as an suíomh don leibhéal gráid, agus
- (f) soláthar uisce a chur ar fáil don fhorbairt bheartaithe, ag an gComhairle Contae Mhaigh Eo.

Muna n-aontófar aon cheann den na hábhair thuasluaite caithfear an cheist a chur chuig an Bhoird chun cinnidh a dhéanamh ar an ábhar;

Cúis: Ionas go mbeidh Comhairle Chontae Mhaigh Eo in ann a chuid costas a fháil ar ais maidir leis na habhair thuasluaite agus chun cinntiú go mbeidh smacht sásúil curtha ar an bhforbairt, agus ar mhaithe le planáil cuí agus forbairt inchothaithe an limistéir.

13. Caithfear gach aontú le Comhairle Chontae Mhaigh Eo faoin gceadú seo de réir n gcoinníollacha seo a bheith i scríbhinn agus beidh cóipeanna de na n-aontuithe seo ar fáil don phobal i rith gnáth-uaireanta oifige ag oifigí Comhairle Chontae Mhaigh Eo agus le fáil san oifig an ghnóthaire i mBéal an Mhuirthid. Beidh an fhorbairt seo atá ceadaithe de réir an ordaithe seo curtha i bhfeidhm ar aon dul leis na haontuithe seo.

Cúis: Ar mhaithe le soiléireacht agus oscailteacht.

14. (1) Sula gcuirfear tús leis an bhforbairt, caithfidh Comhairle Chontae Mhaigh Eo Coiste Monatóireachta Tionscadail a bhunú ionas go mbeifear in ann faireachán a dhéanamh ar thógáil na forbartha. Beidh an Coiste Monatóireachta Tionscadail ag coimeád súil ar gach gné de chúrsaí tógála, san áireamh:
- na rioscaí geoiteicniúla mar atá leagtha amach sa Chlár Rioscaí Geoiteicniúla nó aon leasú eile a bheith déanta sa chlár rioscaí tar-éis scrúdú réamh-tógála bainte amach;
 - uisce dromchla a ritheann chun srutha;
 - rialú draenála;
 - bainistíocht tráchta agus cothabháil bóithre;
 - plean chun aisiriú a chur i bhfeidhm, agus
 - ábhair eile a bhaineann leis an gcomhshaol.

- (2) Ar an gCoiste Monatóireachta Tionscadal beidh beirt ón ngnóthaire agus beirt ó Chomhairle Chontae Mhaigh Eo agus beidh cuireadh seolta chuig Iascach Intíre Éireann, chuig an Roinn Comhshaoil, Oidhreachta agus Rialtais Áitiúil (an tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra), an Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha, an Ghníomhaireacht um Chaomhnú Comhshaoil agus chuig Bord na Móna chun duine amháin ó ghach eagra a bheith ar an gCoiste. Chomh maith le sin tabharfar cuireadh do cheithre ionadaí ón bpobal áitiúil i bParóiste Chill Chomáin, a roghnófar i gcomhréir le nósanna imeachta atá le réiteach ag Comhairle Chontae Mhaigh Eo, chun freastal ar an gcoiste seo. Beidh an Coiste Monatóireachta Tionscadail in ann baill eile a chur ar an gcoiste de réir riachtanas. Bíodh Bainisteoir Contae Mhaigh Eo nó duine ainmnithe aige/aici ina chathaoirleach ar an gCoiste Monatóireachta Tionscadal.
- (3) Oibreoidh an Coiste Monatóireachta Tionscadail chun idirchumarsáid a choimeád idir an gnóthaire agus pobal na háite ó thaobh fadhbanna áitiúla a bhaineann le cúrsaí tógála agus tráchta. Cuirfidh an Coiste nós imeachta cumarsáide i bhfeidhm idir an gnóthaire agus an pobal a áiseoidh foráil eolais ag an ngnóthaire maidir le eachtraí agus gníomhaíochtaí áitiúla gurbh fhéidir tionchar a bheith orthu ag trácht tógála. Caithfidh an Coiste Monatóireachta Tionscadal aire a thabhairt don tuairimí déanta maidir le tionchar na tógála agus an tráchta agus athbhreithneoidh siad na tuairimí déanta agus foillseoidh siad a gcuid torthaí i slí chuí.

Cúis: Ionas go mbeidh monatóireacht sásúil i bhfeidhm le muintir na háite i rith tréimhse tógála, agus ar mhaithe le planáil cuí agus forbairt inchothaithe an limistéir.

15. Beidh Oifigeach Comhshaoil atá cáilithe i gceart agus leis an taithí oiriúnach i rith tréimhse na tógála chun forbairt na píblíne a thógáil. Beidh an tOifigeach Comhshaoil i dteagmháil go rialta leis an gCoiste Monatóireachta Tionscadal chun an bPlean Bainistíochta Comhshaoil a chur i bhfeidhm, san áireamh monatóireacht comhshaoil, agus tuairisceoidh an tOifigeach don choiste agus do Chomhairle Chontae Mhaigh Eo maidir le:

- haon rud mícheart leis an gcóras cosanta comhshaoil,
- haon rud a tharlaíonn agus seans truailliú a bheith ann de bharr sin,
- haon eigeandáil a tharlaíonn

agus seans réasúnta de thoradh sin go mbeidh tuilleadh truaillithe i gceist. Caithfidh an tOifigeach Comhshaoil taifead a dhéanamh faoin aon eachtraí a tharlaíonn agus na gníomhaíochtaí curtha i bhfeidhm de bharr sin. Beidh an taifead seo ar fáil ionas go mbeidh an pobal in ann iadsan a scrúdú ag oifig an ngnóthaire i mBéal an Mhuirhead i rith gnáth-uaireanta oifige.

Cúis: Ar mhaithe le rialú chomhshaoil cuí a chur i bhfeidhm i rith tréimhse tógála agus chréfoirt.

Plean Bainistíochta Comhshaoil

16. Bíodh cur i gcríoch fhorbairt na píblíne údaraithe ag an gceadú seo, ag tógáil na hoibreacha tolláin agus tógáil Comhla Insealbhaithe an Chladaigh (LVI) san áireamh, riaraithe ag an bPlean Bainistíochta Comhshaoil. Bíodh sonraí an Phlean Bainistíochta Comhshaoil bunaithe ar fhorálacha an Ráitis Tionchar Timpeallachta, ag tógáil bearta maolaithe san áireamh, mar a mhodhnaíodh ag na haighneachtaí déanta ag an ngnóthaire do éisteacht ó bhéal na bliana 2010 agus mar a leasaófaí i slite eile ag téarmaí na gcoinníollacha iniata don cheadú seo. Ullmhóidh an gnóthaire dréacht-Phlean Bainistíochta Comhshaoil i ndiadh comhairliúcháin leis an Roinn Comhshaoil, Oidhreacht agus Rialtais Áitiúil agus le Iascach Intíre Éireann, agus cuirfear é faoi bhráid Chomhairle Chontae Mhuigh Eo chun aontaithe i scríbhinn. Ní chuirfear tús leis an bhforbairt go bhfaightear an t-aontú seo nó, ceal aontaithe, déanfar an t-ábhar a tharchur chuig an mBord Pleanála chun réitigh.

Go sonrach, tógfaidh an Plean Bainistíochta Comhshaoil san áireamh na hábhair seo a leanas:-

- (a) An Structúr Bainistíochta agus Tuairisceoireachta.
- (b) Sceideal Cuspóirí agus Spriocanna Timpeallachta.
- (c) Ord agus fad na n-oibreacha éagsúla, sonraí ar an gcaoi a chuimseofar oibreacha leochailleacha séasúracha sa chlár tugtha san áireamh.
- (d) Suirbhéanna réamhthógála.
- (e) Ráitis modheolaíochta don Tógáil.
- (f) Sonraí íoslaghdaíthe bogadh mearanna crochtha isteach i gcórais uisce dromchlácha, ag tógáil san áireamh dríodró, scagachán agus maolúchán na n-uiscí dromchlácha uilig ón láithreán tógála roimh shileadh agus nósanna cothabhála don háiseanna sin.
- (g) Sonraí ar na claiseanna reatha, cainéil agus linnte síothlaithe sealadacha chun freastal ar na hoibreacha tógála, in éindigh le toilleadh chun déileáil le heachtreacha dianbháistí, bunaithe ar pharaiméadair caomhacha (de réir tarchuir i gClár Rioscaí Geoteicniúla an Ráitis Tionchair Comhshaoil).
- (h) Bearta chun torann agus crith ón bhforbairt a mhonatóiriú agus a rialú, ag tógáil torann agus crith ó oibreacha tolláin faoi Bhá Sruth Fada Con san áireamh.
- (i) Plean Bainistíochta Tráichta agus monatóireacht.
- (j) Clár Monatóireachta do uisce dromchlách, smúit, torann agus crith, ag tógáil oibreacha tolláin faoi Bhá Sruth Fada Con san áireamh.
- (k) Clár monatóireachta do eiceolaíocht.
- (l) Nósanna Imeachta Gníomhartha Leasaithe.
- (m) Nósanna Imeachta Práinnfhreagartha do Eachtraí Timpeallachta nó Eile.
- (n) Clár Feasachta agus Traenála.
- (o) Idirchaidreamh bheartaithe leis an bPobail.
- (p) Clár Cumarsáide.
- (q) Plean Bainistíochta Draimhíle, ag tógáil san áireamh plean íoslaghdaíthe don dramhaíl tathagach ag éirí ón láithreán oibreacha tógála.

- (r) Ráiteas modheolaíochta do úsáid beintínít agus monatóireacht arna húsáid.
- (s) Ráiteas modheolaíochta sonrach do oibreacha athchóirithe na trá agus éadan na haille ag Gleann an Ghad, na hábhair tógtha san áireamh.
- (t) Sonraí cearta rochtana do Chomhairle Chontae Mhaigh Eo chun iniúchtaí monatóireacht comhshaoil a chur i gcríoch.

Ar iarratas scríofa ó Chomhairle Chontae Mhaigh Eo, cuirfidh an gnóthaire tuarascáil ar aon ábhar sonrach comhshaoil nó iniúchadh comhshaoil chuig an gChomhairle. Bíodh an Plean Bainistíochta Comhshaoil faoi réir athbhreithniú bliantúil ag Comhairle Chontae Mhuigh Eo, i ndiaidh comhairliúcháin le Coiste Monatóireachta an Tionscadail. Modhnófaidh an gnóthaire an Plean Bainistíochta Comhshaoil i gcomhréir le aon riachtanas réasúnta ó Chomhairle Chontae Mhaigh Eo, i dtráth ar bith.

Cúis: Ar mhaithe le cosaint an chomhshaoil agus le pleanáil cuí agus forbairt inchothaithe an limistéir.

17. Forálfaidh an Plean Bainistíochta Comhshaoil monatóireacht uisce dhromchlách, smúite, torainn agus creatha i gcomhréir le riachtanais Chomhairle Chontae Mhuigh Eo agus, maidir le uisce dromchlách, bíodh an mhonatóireacht i gcomhréir le CIRIA “Rialú ar Thruailliú Uisce ó Thionscadail Tógála Líneach: Treoir Teicniúil” (C648, 2006). Bíodh aon athraithe don chóras monatóireachta faoi réir aontaithe le Comhairle Chontae Mhaigh Eo, i ndiaidh comhairliúcháin le Coiste Monatóireachta an Tionscadail. Cuirfear an mhonatóireacht seo i gcríoch ag an ngnóthaire le linn tógála na píblíne, oibreacha tollaí agus Comhla Insealbhaithe an Chladaigh (go dtí dáta coimisiniú na píblíne agus Comhla Insealbhaithe an Chladaigh), a gcuirfear torthaí na monatóireachta faoi bhráid Chomhairle Chontae Mhaigh Eo ag a leithéid de thréimhsí a shonrófar ag Comhairle Chontae Mhaigh Eo (i ndiaidh comhairliúcháin le Coiste Monatóireachta an Tionscadail). Cuirfear na torthaí uilig ar fáil do iniúchadh ag an bpobal taobh istigh de sheacht lá ó fháil na dtorthaí.

Cúis: Ar mhaithe le smacht comhshaoil cuí le linn tréimhse oibreacha ithreach agus tógála.

18. Cuirfear na torthaí monatóireachta ag teastáil faoi choinníollacha an cheadaithe seo faoi bhráid Chomhairle Chontae Mhaigh Eo go leictreonach agus i bhfoirm crua-chóip agus cuirfear iad ar fáil do iniúchadh an phobail le linn gnáthuaireanta oifige in oifigí Chomhairle Chontae Mhaigh Eo agus in oifigí an ngnóthaire i mBéal an Mhuirthid. Forbróidh an gnóthaire bunachar sonraí ríomhairithe do chlárú agus aistriú an eolais monatóireachta; a n-aontófar a dhearú le Comhairle Chontae Mhuigh Eo.

Cúis: Ar mhaithe le soilléarachta agus oscailteacht, agus chun éascaíocht mínithe an eolais monatóireachta uilig bailithe agus cláraithe a áisiú.

Clár Gearán

19. Bíodh clár gearán coimeádta ag an ngnóthaire ina oifigí i mBéal an Mhuirthid. Bainfidh an clár seo leis na gearáin scríofa uilig déanta maidir le aon ghné de thréimhse oibreacha ithreach agus tógála na forbartha. Cuimseoidh an clár, a gcuirfear ar fáil do iniúchadh an phobail ar iarratas le linn gnáthuaireannta oifige:
- (a) ainm an ghearánaí
 - (b) nádúr an ghearáin
 - (c) dáta agus am an ghearáin
 - (d) gníomhartha tógtha de bharr an ghearáin.

Cúis: Ar mhaithe le monatóireacht cuí na forbartha.

Bainistíocht Tráchtá

20. Cuirfear na modhanna bainistíochta tráchtá seo a leanas i bhfeidhm agus bíodh aird tugtha dóibh sa Phlean Bainistíochta Tráchtá ag teastáil faoi théarmaí an cheadaithe seo:

- Bíodh tarlú na móna tochailte uilig on láithreán go dtí an láithreán sil-leagain srianta don tslí ainmnithe tarlaithe, agus bíodh teacht ar ais na bhfeithiclí neamhualaithe uilig chuig an láithreán tógála ar an slí tarlaithe. Ní thosnófar le aon tarlú móna go dtí críochnú na bhfeabhsaithe ag teastáil ó Chomhairle Chontae Mhaigh Eo ar an gcuid den slí tarlaithe atá gceist.
- Ní sháróidh uaslimhir gluaiseachtaí Feithlicí Troma Tráchtála fan an slí tarlaithe thar na huimhreacha leagtha síos sa Ráiteas Tionchar Comhshaoil, arna leasú ag cáipéisí curtha faoi bhráid na héisteachta ó bhéal. Coimeádfaidh an gnóthaire clár dena gluaiseachtaí tráchtá uilig isteach sna láithreáin agus amach astu, agus bíodh cóip den chlár seo curtha ar fáil do iniúchadh ag Comhairle Chontae Mhaigh Eo agus Coiste Monatóireachta an Tionscadail ar iarratas.
- Tógfar an chomharthacht uilig sonraithe sa Phlean Bainistíochta Tráchtá roimh tarlú na móna nó ábhair tógála agus treallamh agus bíodh sí cothabhálta le linn na n-oibreacha tógála. Roimhe seo, nó le linn na tréimhse tarlaithe, tógfaidh an gnóthaire aon chomharthacht eile a theastaíonn Comhairle Chontae Mhaigh Eo chun tarlú sábháilte ábhar tógála a áisiú.
- Fostófar maor tráchtá scoile, a íocfar ag an ngnóthaire, chun taisteal ar ghach aon bus scoile nó i dteannta leis an mbus scoile a úsáideann an slí tarlaithe chun dul ar bord / teacht anuas agus trasnú an bhóthair ag na páistí a áisiú an t-am ar fad le linn tarlaithe na móna. Cuirfear socraithe ar bun go seasfaidh na Feithlicí Troma Tráchtála ag úsáid na

slí tarlaithe ar leataobh le linn amanna ligean amach agus piocadh suas ag na scoileanna.

- Déanfar monatóireacht ar thionchar féideartha na mbearta bhainistíocht tráchta agus an chórais tionlacain ar na sceidil bus agus déanfar aon leasaithe riachtanacha, a meastar a bheith riachtanach ag Comhairle Chontae Mhaigh Eo.

Cúis: Ar mhaithe le bainistíocht tráchta éifeachtach, sábháilteacht bóthair agus sábháilteacht an phobail.

21. Bíodh an gnóthaire freagrach do chur i gcríoch Suirbhé Bóithre agus Droichead roimh agus i ndiaidh na tréimhse tógála. Bíodh fairsinge agus ábhar cruinn an tsuirbhé, a bhainfidh go ginearálta leis an ngréasán bóithre a mbeadh tionchair ag an bhforbairt bheartaithe air idir tionchair díreach agus indíreach, i gcomhréir le aontú le Comhairle Chontae Mhaigh Eo. Féadfaidh an suirbhé a chur i gcríoch ag Comhairle Chontae Mhaigh Eo ar iarratas an ghnóthaire.

Cúis: Chun réiteacht ar dhamáiste curtha i leith na forbartha beartaithe a áisiú agus chun cothabháil cuí agus athchóiriú bóithre agus droichid i ndiaidh tógála a chinntiú.

22. I gcás iomarcaíocht ar lámhaltas sprice (ag éirí ón bPlean Bainistíochta Tráchta) do dhromchlánna bóithre agus ceal cothabhála riachtanach an dromchlaigh, féadfaidh Comhairle Chontae Mhaigh Eo (i ndiaidh comhairliúcháin le Coiste Monatóireachta na Togra) stad a éileamh ar ghníomhaíocht tarlaithe uilig nó trácht tógála ag baint go díreach leis an bhforbairt.

Cúis: Chun cothabháil cuí dromchlá na mbóithre le linn na dtréimhsí tógála agus tarlaithe a chinntiú ar mhaithe le sábháilteacht tráchta.

23. Rachaidh gach feithicil ag fágáil limistéir tógála na láithreán trí limistéar cuí glanadh rotha. Tógfaidh an gnóthaire gach chéim réasúnta le cinntiú nach sceithfidh nó nach dtitfidh aon ábhar ó fheithiclí ag iompar dramhaíola ón láithreán. Bíodh na bearta ag teastáil i ndáil leis seo leagtha amach sa Phlean Bainistíochta Comhshaoil.

Cúis: Ar mhaithe le taitneamhacht, pleanáil cuí agus forbairt inchothaithe an limistéir agus sábháilteacht tráchta.

24. Bíodh an slí tarlaithe agus sceideal tarlaithe do thréimhse tógála na forbartha sonraithe go soilléar agus foillsithe ar bhealach a aontófar le Comhairle Chontae Mhaigh Eo.

Cúis: Ar mhaithe le bainistíocht tráchta agus chun foráil a dhéanamh do rialú agus athbhreithniú feithicli.

25. Cuirfear iniúchadh sábháilteachta neamhspleách ar an slí tarlaithe uasghrádaithe i gcríoch agus aontófar i scríbhinn é le Comhairle Chontae Mhaigh Eo roimh thosnú tarlaithe móna nó ábhair tógála eile. Bíodh aird ag an iniúchadh ar:

- Na criosanna teoranta luais 60 cm/u, 50 cm/u, 30 cm/u, 20 cm/u atá beartaithe do Fheithiclí Troma Tráchtála.
- Scaradh Feithiclí Troma Tráchtála i dtionlacain.
- Úsáid na slí tarraingte ag coisithe agus rothaithe.
- Trácht scoile ag Poll an tSómais agus seasamh ar leataobh na bhfeithiclí tarlaithe le linn amanna ligean amach agus piocadh suas ag na scoileanna.
- Socraithe maidir le Sochraidí, Seirbhísí Eaglaise ag Poll an tSómais.
- Gnéithe reatha na gCuspóirí Bainistíochta Tráchta.
- Bainistíocht Eachtraí Clisidh Feithicli.
- Práinneacha agus rochtain iomlán do fheithiclí práinne don slí ag am ar bith.

Cúis: Ar mhaithe le sábháilteacht tráchta.

26. Ar bhóthar L1202 idir Poll an tSómais agus Gleann an Ghad bíodh 50 cm/u mar uaslus do Fheithiclí Troma Tráchtála ag obair ar an tionscadal. Bíodh na srianta luais leagtha amach ar Líníocht 6013-1015 agus maidir le Teach Ósta Mac Craith (20 cm/u) curtha i bhfeidhm freisin, mar atá leagtha amach sa Ráiteas Tionchar Timpeallachta.

Cúis: Ar mhaithe le sábháilteacht bóthair ar bhóthar L1202.

27. Bíodh infheictheacht ag na gabhail láithreán beartaithe ag na hEachú agus an infheictheacht ag an mbealach isteach i láithreán sil-leagain na Sraithe Móire i gcomhréir le caighdeán an Údaráis um Bhóithre Náisiúnta, mar atá léirithe sna sonraithe leasaithe curtha ar fáil ag an éisteacht ó bhéal [Cáipéis na hÉisteachta ó Bhéal dar Uimhir Tagartha 133].

Cúis: Le cinntiú go mbaintear amach caighdeán sábháilteachta bóithre ag na gabhail seo.

Rialú agus Monatóireacht na Tógála

28. Déanfar an t-uisce dromchlách ón láithreán tógála a luíonn laistigh de abhantrach Loch na Ceathrún Móire a bhailiú, a mhaolú agus a thógáil trí linnte síothlaithe roimh sileadh isteach in Abhantrach Abhann an Líonáin Mhóir. Déanfar monatóireacht ar an gcóras reatha uisce dhromchláigh a fhreastalann ar láithreán an ghnóthaire, agus a sileann isteach in Abhantrach Loch na Ceathrún Móire, ar bhun laethúil i dtús agus ansin ag minicíocht agus do réimse iomlán paraiméadar a aontófar le Comhairle Chontae Mhaigh Eo sula dtosófar leis na hoibreacha tógála agus ag leanacht le linn na n-oibreacha tógála.

Cúis: Is riachtanach clár iomlán monatóireachta agus córas rialaithe do shileadh uisce dhromchláigh a chur i láthair chun truailliú uisce a chosc agus chun an foinse soláthair fíoruisce ag Loch na Ceathrún Móire a chosaint.

29. Cosnófar an limistéar claise glacachta ó bhá a éiríonn i rith ama stoirme trom agus ó aon róshreabhadh ó chainéal 2.

Cúis: Chun cosaint a thabhairt don timpeallacht da mbeadh aon róshreabhadh i gceist ó chainéal seo.

30. Cuirfear monatóireacht creatha i gcríoch le linn tógála de réir forálacha an Ráitis Tionchar Timpeallachta i gcoitinne agus sa sonra ar leith curtha ar fáil ag an éisteacht ó bhéal [Cáipéis na hÉisteachta ó Bhéal dar Uimhir Tagartha 25]. Tógfaidh an mhonatóireacht san áireamh:

- Monatóireacht ag Limistéar Claise Lainseála Tolláin na n-Eachú agus Monatóireacht ag Limistéar Claise Glacachta Ghleann an Ghad
 - (a) Monatóireacht creatha ag gach láithreán ó (i) Gníomhaíocht pileála (ii) Gníomhaíocht Tochailte carraige (iii) Gníomhaíocht Meaisín Tollta Tolláin. I gcás láithreáin Ghleann an Ghad, cuirfear an mhonatóireacht i gcríoch in éindigh le druidim an Mheaisín Tollta Tolláin ar an láithreán.
 - (b) Monatóireacht ag 25 mhéadar agus 50 méadar ón bhfoinse ar dhá phlána dronuillógacha ailínithe comhtheormhara agus ingearacha do bhunduilliú nó scoilteachas na carraige nó chomh gar do chomhtheormhar agus ingearach agus is féidir.
- Déanfaidh an mhonatóireacht crut a chur ar fhreagairt talún sonrach an láithreáin dona gníomhaíochta tógála seo agus cuirfidh sí sonraíocht deimhnithe ar fáil le haghaidh athhreithniú na gcreathanna réamh-mheasta ag an samhail.

- Cuirfear tuarascáil míniúcháin agus sonraíocht gníomhaíocht monatóireachta ar fáil do Chomhairle Chontae Mhaigh Eo agus do Choiste Monatóireachta an Tionscadail agus foillseofar iad ar shuíomh ghréasáin i gcomhréir le nósanna imeachta bunaithe.

Ní sháróidh an crith na caighdeáin leagtha amach i dTreoirlínte an Údaráis um Bhóithre Náisiúnta do Chóireáil Torainn agus Creatha i Scéimeanna Bóithre Náisiúnta ar slí gurbh é na sonraí thíosluaite an t-uasluas incheadaithe creatha (PPV) ag an gcuid is congraí de aon mhaoin leochailleach (aon teach tógtha san áireamh) do fhoinsé na creatha:

Níos lú ná 10Hz
8 mm/sec

Creathanna uilig >10Hz
12.5 mm/sec

Cúis: Chun rialú creatha a fhoráil agus le cinntiú nach mbeidh aon tionchar dochrach ó oibreacha tochailte.

31. Beidh na guaiseacha ar an gClár Rioscaí Geoiteicniúla sa Ráiteas Tionchair Comhshaoil seolta chuig An Bord Pleanála faoi scrúdú leanúnach i rith tréimhse na tógála. Beidh innealtóir cáilithe leis an taithí riactanach ag cur na monatóireachta seo i bhfeidhm. I rith tréimhse tochailte agus tógála, caithfidh an gnóthaire tuairisc a sheoladh maidir leis an gClár Rioscaí gach dhá mhí chuig Chomhairle Chontae Mhaigh Eo agus chuig an Coiste Monatóireachta Tionscadal. Sa thuairisc faightear eolas maidir leis an dul chun cinn déanta ar na guaiseacha agus faireachán a dhéanamh orthu agus beidh aon deacracht airid a tharlaíonn sa thuairisc agus na gníomhaíochtaí chun déileáil leo. Beidh na tuairiscí seo ar fáil laistigh de sheacht lá tar éis iad a sheoladh ionas go mbeidh an pobal in ann iadsan a scrúdú ag oifigí Comhairle Chontae Mhaigh Eo agus oifig an gnóthaire i mBéal an Mhuirhead i rith ghnáth-uaireanta oifige.

Cúis: Ar mhaithe le sabhálteacht agus ar mhaithe le pleanáil cuí agus forbairt inchothaithe an limistéir.

Rialú Dramhaíola

32. Caithfidh gach áit stórála umair agus drumáí stórála ar an suíomh a bheith, ar a laghad, bundaithe le toirt nach bhfuil níos lú ná an ceann is mó de na rudaí seo a leanas:-
 - 110% d'acmhainn maidir leis an humar nó an drum is mó taobh istigh den áit bundaithe, nó
 - 25% den toirt iomlán maidir leis na hábhair a bheith stóráilte san áit bundaithe.

Cúis: Chun truailliú a sheachaint maidir le huisce ar an dromchla agus le screamhuisce

33. Beidh gach áit stórála breosla agus áiteanna chun rudaí a ghlanadh, go háirithe áiteanna chun leoraithe a ghlanadh, tógtha ionas go mbeidh na háiteanna neamhthréscailteach i gcomhair ábhair stóráilte nó ábhair ghlanadh agus beidh na háiteanna tógtha ionas nach scaoilfear aon truailliú don screamhuisce.

Cúis: Chun truailliú a sheachaint maidir le huisce ar an dromchla agus le screamhuisce

34. Caithfidh an gnóthaire trealaimh lacáiste ola a choimeád ar na láithreáin, i rith tréimhse na tógála, a mbeidh bumailí agus ábhair ionsúiteacha iontu.

Cúis: Chun truailliú uisce a sheachaint.

35. Sula mbeidh eascairtí dramhaíola caite amach ón suíomh, eascairtí as obair a tharlaíonn ar na tolláin, caithfear tástáil a dhéanamh ar na heascairtí chun cinnteacht a bhaint amach maidir leis an modh cuí chun an dramhaíl a dhiúscairt agus caithfidh an gnóthaire na taifid a choimeád maidir leis an tástáil.

Cúis: Chun an comhshaol a chosaint.

Áiseanna Dramhaíola, Sláintíochta agus Bainistíocht

36. Caithfear áiseanna sláintíochta a chur i bhfeidhm sna compúin agus ar shuíomh na hoibreacha tógála agus sna háiteanna ina bhfuil an mhóin leagtha síos i rith tréimhse tógála na forbairt. Aon dramhaíl a éiríonn as na háiseanna seo, caithfidh conraitheoir dramhaíola ceadúnaithe le déileáil leis agus na hábhair a iompar go dtí ionad atá ceadaithe agus in ann an dramhaíl a chóireáil i gceart.

Cúis: Ar mhaithe le sláinte an phobail.

37. Nuair a diúscaíonn múnalach sna áiteanna cóireála cirte, caithfidh an gnóthaire a bheith cinnte go bhfuil gom leor spáis ann ag na hoibreacha chun déileáil leis an múnalach.

Cúis: Ar mhaithe le héisc agus an timpeallacht uisceach ó chosaint ón mbaol truaillithe.

Tógáil ar an bPortach

38. Sula dtógfar an bóthar clocha sa phortaigh, caithfidh Innealtóir/Geolaí, leis an taithí riachtanach, scrúdú a dhéanamh ar an suíomh, roimh aon chúrsaí tógála, mar atá leagtha amach sa Ráitear Tionchar Timpeallachta agus sa Chllár Rioscaí Geoteicniúla. Go háirithe, caithfear scrúdú a dhéanamh ar na háiteanna atá ainmnithe sa mheasúnú cineálach agus ina bhfuil acmhainneacht meán and ard ann mar gheall ar chliseadh móna, maidir le sin beidh na sonraí thíosluaite i bhfeidhm:

- (a) Beidh dearadh an bhóthair clocha agus an chompúin ag na hÉachú athbheithnithe de réir na coinníollacha a bheith i bhfeidhm ag an suíomh i rith tréimhse na tógála.
- (b) Beidh srian i bhfeidhm ar chastreabhadh na móna ón dtaobh mar atá leagtha thíos:
 - (i) Ní cheadaítear castreabhadh ón dtaobh a dhéanamh sna háiteanna ina bhfuil seans ard go dtarlódh cliseadh móna.
 - (ii) Ní cheadaítear castreabhadh ón dtaobh a dhéanamh in aon áit thar cinn an Bhóthair Clocha críochnaithe, sé sin an áit ina bhfuil an mhóin curtha síos, beidh sé taobh thiar don áit ina mbeidh an Bhóthair Clocha á thógaint ionas nach mbeidh móin castreabhadh ón dtaobh ar siúl in aice le haon áit ina mbeidh tochailt cúl-líonta iomlán nó go páirteach ar siúl.
 - (iii) Ní cheadaítear castreabhadh ón dtaobh in aon áit ina bhfuil fána ar an dromchla le fáil nó ag bun na móna agus tá céim ar an bhfána sin níos mó ná trí chéim.
 - (iv) Ní cheadaítear castreabhadh ón dtaobh laistigh 25 méadar ó bhriseadh sa bhfána atá níos mó ná trí chéim.

Seachas na rudaí atá thuasluaite, caithfidh an gnóthaire na scrúduithe riachtanacha a bhaint amach ar an suíomh, an dearadh agus an anailís, go gcinnteofar go mbeidh cobhsaíocht le fáil ag stór na móna a bheith in-ghlactha i rith tréimhse na tógála. Go háirithe caithfear aire faoi leith a thabhairt do na háiteanna ina bhfuil dearadh an bhóthair go hingearach leis na fánaí comhrianta, sna háiteanna ina mbeidh sé do-dhéanta castreabhadh ón dtaobh a dhéanamh suas na fána ón mbóthar clocha.

Cúis: Ionas go gcinnteofar cobhsaíocht na móna agus cosaint a thabhairt don chomhshaol ó thaobh aon sciorradh móna.

- 39. Taobh istigh den bhóthar clocha, beidh líonadh carraige faoin trinse maidir leis an bpíblíne agus an nasc imleacáin, sínithe amach ar a laghad 45 céim thar líne thionchair (1 ceartingearach: 1 cothrománach) ó thaobhanna an trinsé ag an leibhéal is ísle den phíopa go dtí bun na móna.

Cúis: Ionas go gcinnteofar cobhsaíocht na móna agus cobhsaíocht na píblíne agus cosaint a thabhairt don chomhshaol ó thaobh aon sciorradh móna.

- 40. I rith tógála na píblíne, caithfear aire a thabhairt sna háiteanna ina mbeidh an phíblíne leagtha síos laistigh den bhóthar clocha agus faoin mhóin san ithir mhianrach. Caithfear plugaí móna a chur isteach trasna páirtithe an bhóthair clocha ag dá thaobh de na páirteanna sin agus sna páirteanna san lár nach bhfuil níos mó 100 méadar eatarthu.

Cúis: Ionas nach mbeidh an bóthar clocha agus tógáil píblíne ag feidhmiú mar draein fhabhrach sa mhóin.

41. Ag togáil an bhóthair clocha, caithfear bacainní tréscailteachta a chur síos san áit ina bhfuil an bóthar ag druidim i leith na habhann Leenamore, an dá sruth agus claíocha, rud a stopfaidh an uisce ag draenáil gan cosc ar an mbóthar.

Beidh sonraí tógála faoin ábhair maidir le cúrsaí draenála agus cúrsaí athchóirithe sa phortach mar an gcéanna ó thaobh chosc ar tréscailteachta leis na hábhair mar a úsáidtear ag tógáil an bhóthair clocha.

Cúis: Ionas go laghdófar an éifeacht ag an mbóthar clocha ar hidreolaíocht ar na tailte portaigh.

42. Caithfear ráiteas modhanna maidir le cúrsaí tógála sa phortach a chur i gcrích ina bhfuil luachanna dearaidh coimeádacha le fáil agus ag an am céanna ag cur na mbeart maidir le maolú rioscaí atá leagtha amach sa Chlár Rioscaí Geoteicniúla mar atá le fáil sa Ráiteas Tionchar Timpeallachta, nó mar a bheadh leagtha amach in aon athbhreithniú ar an gclár rioscaí tar éis torthaí na suirbhéanna roimh chúrsaí tógála agus tar éis daingniúchán a bhaint amach maidir le modh tógála agus i rith tréimhse thógáil na forbartha. Beidh daoine profisiúnta leis an saineolas cuí i gceannas ar chúrsaí tógála sa phortaigh agus beidh na daoine sin oilte mar gheall ar chúrsaí geoihdreolaíochta agus éiceolaíochta i leith bratphortach agus taithí acu faoin chúrsaí tógála i bPortach, beidh dualgas ar na daoine sin go mbeidh cosáin hidrálacha so phortach aitheanta, marcáilte, agus aistriúcháin go sásúil. Fostófar conraitheoir mar gheall ar an obair agus taithí faoi leith aige maidir le chúrsaí tógála i bPortach.

Cúis: Chun cosaint a thabhairt do éagobhsaíocht mhóna agus go laghdófar an éifeacht ag an bhforbairt ar ghnáthóga sa bhratphortach.

43. Cuirfear monatóireacht ar bun do ábhair agus iarsmaí seandálaíochta ag an láithreán seo i gcomhréir leis na forálacha breactha sa Ráiteas Tionchair Timpeallachta agus mar a leanas:

- (a) Fostóidh an gnóthaire seirbhísí seandálaí cáilithe go cuí a dhéanfaidh monatóireacht ar oibreacha corraíle talún ag baint leis an bhforbairt.
- (b) I gcás go bhfaightear iarsmaí seandálaíochta féadfar stop a chur leis an obair ag brath ar chinneadh ar cén chaoi is fearr déileáil leis an seandálaíocht. Bíodh an gnóthaire ullamh le comhairle a fháil i ndáil leis seo ó Rannóg Oidhreacht agus Pleanála na Roinne Comhshaoil, Oidhreacht agus Rialtais Áitiúil agus áiseoidh sé an seandálaí i gclárú aon ábhar faighte.
- (c) Cuirfidh an seandálaí tuarascálacha ar an monatóireacht faoi bhráid Chomhairle Chontae Mhaigh Eo, Choiste Monatóireachta an Tionscadail agus na Roinne Comhshaoil, Oidhreacht agus Rialtais Áitiúil ag tréimhsí rialta de réir breithe Chomhairle Chontae Mhaigh Eo.

Cúis: Chun oidhreacht seandálaíochta an láithreáin a chaomhnú agus chun slánchoimeád aon fhuíollach gurbh fhéidir a bheith ar fáil laistigh den láithreán a chur i gcríoch.

Cosaint Foinsí Fíoruisce

44. Roimh thosnú tógála, aithneofar suíomhanna na dtoibreacha a fhreastalann mar fhoinsí soláthair uisce, arna aontú le Comhairle Chontae Muigh Eo, agus déanfar monatóireacht ar na toibreacha seo roimh, le linn agus i ndiaidh tógála.

Cúis: Chun foinsí reatha fíoruisce sa limistéar a chosaint.

45. Cuimseoidh an gnóthaire sa Phlean Bainistíochta Comhshaoil ráiteas modheolaíochta sonrach le haghaidh tógáil córais draenála uisce dromchláigh agus scaoileadh ón láithreán tógála sa limistéar timpeall ar shlabhracht 91+420 go dtí slabhracht 91+720, sé sin Abhantrach Loch na Ceathrún Móire. Ní scaoilfear uisce dromchlách ón tionscadal tógála isteach in Abhantrach Loch na Ceathrún Móire (Déanann na slabhrachta tugtha anseo tagairt don slabhrachta 2010).

Cúis: Chun Soláthar Uisce Loch na Ceathrún Móire a chosaint.

Torann, Soilseacht agus Caighdeán an Aeir

46. In áit ina mbeartaítear soilseacht oíche a úsáid i nGleann an Ghad maolófar tionchar na soilse seo lasmuigh dena limistéir oibre ar an slí chéanna a mbeartaítear seo ag na hEachú – toghadh laindéir cuí, soilse ag tabhairt aghaidh síos agus isteach, boird scéithe ag soilse imeallacha, múchadh soillsí nuair nach dteastaítear iad.

Cúis: Chun taitneamhacht cónaithe na háite a chosaint.

47. Cuirfear monatóireacht tionchar soilseachta ar na maoine cónaithe is congaraí agus orthu siúd is mó a mbeadh tionchar orthu ag soilseacht oíche i gcríoch ar chríochnú suiteála na soilseachta agus cuirfear na torthaí faoi bhráid Chomhairle Chontae Muigh Eo agus Coiste Monatóireachta an Tionscadail. Féadfaidh Comhairle Chontae Muigh Eo stiúr a thabhairt don ghnóthaire aon leasú riachtanach sa soilseacht a dhéanamh chun níos dona maoine cónaithe sin a sheachaint.

Cúis: Chun taitneamhacht cónaithe na háite a chosaint.

48. Beidh dearadh an rialaithe soilseachta laistigh den chompún ag na hEachú agus de na compúin i nGleann an Ghad ar bhealach gur féidir an soilseacht a mhúchadh san oíche sna codanna sin nach bhfuil gá na soilse a bheith lasta san oíche.

Cúis: Chun tionchar soilseachta sa tírdhreach san oíche a mhaolú.

49. **Gleann an Ghad**

Clárófar an obair tógála uilig chomh fada agus is féidir chun obair idir 2000 uaire agus 0700 a sheachaint. Nuair a theastaíonn obair oíche ag Gleann an Ghad beidh sé riachtanach aontú scríofa roimh ré a fháil ó Chomhairle Chontae Muigh Eo. Ní chuirfear ach oibreacha riachtanacha i gcríoch san oíche, ag seachaint toin inchloiste agus torann ríogach. Rialófar gineadh torainn láithreáin san oíche agus coimeádfar é ag na leibhéil is ísle gur féidir a bhaint amach. Ní sháróidh na leibhéil torainn ag an ngabhdóir torann-leochailleach is congaraí (tithe) na teorainneacha seo a leanas:-

Lá	0700 – 2000 uaire	Teorainn iomlán:	65dB L _{AEQ} (1 Uair)
Oíche	2000 - 0700 uaire	Spríocleibhéal don dearadh:	35dB L _{AEQ} (1 Uair)
	Teorainn oíche ciúin:		40dB L _{AEQ} (1 Uair)
	Teorainn iomlán:		45dB L _{AEQ} (1 Uair)

Na hEachú

Ní chuirfear ach oibreacha riachtanacha i gcríoch idir 2000 uaire agus 0700 uaire, ag seachaint toin inchloiste agus torann ríogach. Rialófar gineadh torainn láithreáin san oíche agus coimeádfar é ag na leibhéil is ísle gur féidir a bhaint amach. Ní sháróidh na leibhéil torainn ag an ngabhdóir torann-leochailleach is congaraí (tithe) na teorainneacha seo a leanas:-

Lá	0700 – 2000 uaire	Teorainn iomlán:	65dB L _{AEQ} (1 Uair)
Oíche	2000 - 0700 uaire	Spríocleibhéal don dearadh:	35dB L _{AEQ} (1 Uair)
	Teorainn oíche ciúin:		40dB L _{AEQ} (1 Uair)
	Teorainn iomlán:		45dB L _{AEQ} (1 Uair)

Cúis: Chun taitneamhacht cónaithe na háite a chosaint.

50. I rith tréimhse tógála agus tarlaithe, coimeádfar íosmhéid ar na leibhéil torainn. Má tharlaíonn aon méadú suntasach ar an leibhéal torann timpeallach ó aon gníomhaíocht, mar shampla píleáil nó briseadh charraige, caithfear fógra a thabhairt do Chomhairle Chontae Mhaigh Eo agus don Choiste Monatóireachta Tionscadal roimh ré. Tabharfar fógra roimh ré faoin sceideal d'aon gníomhaíochta dá gcuirfear isteach ar an bpobal é.

Cúis: Ar mhaithe le sláinte an phobail agus taitneamhachta cónaithe.

51. Ní ceadáítear leibhéil dheannaigh a bheith níos mó na 350 mg/m² gach lá (TA Luft Caighdeán Aeir) nuair a fhaightear an meán-leibhéal ar feadh tríocha lá agus nuair a fhaightear na torthaí sin ag teorainneacha an suímh. Má tharlaíonn aon gníomhaíocht agus samhlaítear go réasúnta go mbeidh na leibhéil dheannaigh níos mó ná an leibhéal thuasluaite, caithfear fógra agus na bearta chun maolú a dhéanamh, a thabhairt do Chomhairle Chontae Mhaigh Eo agus don Choiste Monatóireachta Tionscadal roimh ré agus tabharfar fógra roimh ré don phobal d'aon gníomhaíochta dá gcuirfear isteach ar an bpobal é.

Cúis: Ar mhaithe le sláinte an phobail agus taitneamhachta cónaithe.

Cosaint Thaitneamhacht na hÁite

52. Beidh na tailte go léir athchóirithe, mar atá leagtha amach sa Ráiteas Tionchar Timpeallachta.

Cúis: Ionas go laghdófar éifeacht amhairc na forbartha ar an tírdhreach.

53. Beidh obair an athchóirithe dheireanach ar na himill den bhealach isteach go dtí Comhla Insealbhaithe an Chladaigh (LVI) ón mbóthar poiblí L1202 curtha i gcrích faoi stiúradh an éiceolaí tionscadail

Cúis: Go laghdófar aon éifeacht ar an Limistéar Caomhantais Speisialta.

54. Beidh dualgas ar an ngnóthaire nach mbeidh srian míchuí ar an mbealach isteach go trá Ghleann an Ghad i rith tréimhse na tógála agus nuair a bheidh na hoibreacha tógála i láthair trasna an bhealaigh tradisiúnta isteach don trá ag Gleann an Ghad.

Cúis: Go gcosnófar áis na trá Ghleann an Ghad ar shon muintir na háite i rith tréimhse tógála.

55. Dathófar gach fál ag na teoireannacha ag na compuin in Éachú agus i nGleann an Ghad ('sé mar thuairim le dath dúghlas nó donn) agus caithfear aontú scríofa faoi seo a fháil ó Chomhairle Chontae Mhaigh Eo

Cúis: Go laghdófar an éifeacht amhairc ón bhfálú ar an tírdhreach.

56. Sula gcuirfear tús leis na hoibreacha tollánaithe, caithfear aontú scríofa a dhéanamh a chuimsíonn ráiteas modha agus modheolaíocht tógála maidir le clais idirghabhála i gCuan Sruth Fada Con, leis an Roinn Comhshaoil, Oidhreacht agus Rialtais Áitiúil (an tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra) agus le Iasach Intíre Éireann agus leis an an Roinn Talmhaíochta, Iascaigh agus Bia. Sa chás go mbeidh a leithéid de chlais idirghabhála riachtanach seo chun na hoibreacha tollánaithe a chur i gcrích, cuirfear na hoibreacha sin i bhfeidhm de réir an aontaithe sin. Muna n-aontófar déanfar an t-ábhar a tharchur chuig an mBord Pleanála chun réitigh.

Cúis: Chun cosaint a thabhairt do na háiseanna nádúrtha na háite.

Coinníollacha Airgid:

57. Sula gcuirfear tús leis an bhforbairt, caithfidh an gnóthaire suim airgid, banna comhlucht árachais, nó urrús aonaithe eile, a chur i dtaisce ag an gComhairle Chontae Mhaigh Eo i dtreo is go mbeidh an suíomh athchóirithe nuair a bheidh úsáid na píblíne agus úsáid na Comhla Insealbhaithe an Chladaigh thart nasctha le comhaontú ag tabhairt an chumhacht don údarás áitiúla an t-urrús seo, nó aon chuid de, a úsáid chun athchóiriú a dhéanamh ar an suíomh nó aon chuid den suíomh. Beidh foirm agus méid an urrúis mar a bheith aontaithe idir Comhairle Chontae Mhaigh Eo agus an gnóthaire nó gan aontú, beidh siad mar a réiteoidh an Bord Pleanála.

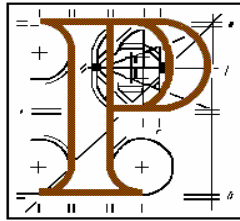
Cúis: Ionas go mbeidh an suíomh athchóirithe i gceart.

58. (a) Cuirfidh an gnóthaire Ciste Infheistíochta Gnóchain Pobail ar bun i ngach ceann dena cúig bliana ag tosnú i 2011. Is é an cuspóir a bheidh ag an gchiste seo ná maoiniú saoráidí agus seirbhísí den chineál a bhfuil cur síos orthu in alt 6.5 de phríomh-imleabhar an Ráitis Tionchair Timpeallachta curtha faoi bhráid an Bhord Phleanála ar an 31ú lá de Bhealtaine, 2010, agus a rachaidh chun tairbhe an phobail i limistéar na forbartha beartaithe. Beidh €1.7 milliún in aghaidh na bliana sa chiste seo, sé sin méid iomlán €8.5 milliún ar feadh saol an Ciste Infheistíochta Gnóchain Pobail seo, agus íocfar an tsuim seo ar iontaobhas do Chomhairle Chontae Mhuigh Eo.
- (b) Aontóidh Comhairle Chontae Mhuigh Eo, trí Bhord Forbartha an Chontae, ar Phlean Forbartha Pobail don Limistéar, a bheidh bunús leathan aige agus nach mbeidh spleách ar an gCiste Infheistíochta amháin. Cuirfidh na cuspóirí, seirbhísí agus gníomhartha cuimsithe sa phlean bunús ar fáil ar a n-íocfar an Ciste Infheistíochta agus ina leith a measfar iarratais ar chistiú. Beidh an plean agus limistéar an phlean faoi réir chomhairliúcháin leis an bpobal áitiúil agus curtha i láthair laistigh de naoi mí ó dháta an Ordaithe seo. Beidh an plean molta ag Bord Forbartha an Chontae agus deanta ag Chomhairle Chontae Mhuigh Eo.
- (c) Ní thógfar aon léirmhíniú na gcoinníoll seo go gcuirfear cosc ar thacaíocht a chur ar fáil, on gCiste Infheistíochta Gnóchain Pobail don Chlár Deontas Áitiúil, Clár na Scoláireachtaí nó na Tionscadail Ciste Forbartha Iorrais Gais Nádúrtha na Coiribe. Ní chuirfidh aon ní sa choinníoll seo cosc ar an ngnóthaire infheistíocht breise a dhéanamh sa phobal áitiúil tar éis cúig bliana.

Cúis: Chun gnóchan substaintiúil a chur ar fáil don limistéar ina suífear an fhorbairt agus i gcomhréir le Alt 182D(6) den Acht um Pleanáil agus Forbairt, 2000, arna leasú.

**Ball den Bhord Pleanála a bhfuil
údarás aige séala an Bhoird a
fhíordheimhniú.**

Dátaithe ar an lá seo de 2011.



Board Direction

Ref: 16.GA0004 & 16.DA0004

The submissions on this file and the Inspector's report were further considered at a Board meeting held on 23rd October 2009. At a further Board meeting of 30th October 2009 the Board approved this draft order.

The Board decided, unanimously, to invoke its powers under Section 182C(5) of the Planning and Development Act 2000 as amended and to issue a notice to the applicant as set out below.

Having considered the application made, the submissions received and the report of the Inspector who carried out the oral hearing the Board considers:-

- (1) The design documentation for the pipeline and the Quantified Risk Analysis provided with the application does not present a complete, transparent and adequate demonstration that the pipeline does not pose an unacceptable risk to the public.
- (2) That part of the route between chainages 83+910 and 89+550 (5.64 kilometres between Greengad and Aghoos) is considered unacceptable for the following reasons:-
 - (a) the proposal to route the pipeline at a proximity distance from dwellings which is within the hazard range of the pipeline should a failure occur is unacceptable,
 - (b) the limitations on the road improvement works in the Rosspoint area resulting in a Traffic Plan and Haul Route proposal that involves convoys of five HGV trucks travelling over narrow bog rampart and bog roads partly through a rural residential area which would constitute a traffic hazard and obstruction of road users, and
 - (c) the impacts on the local community during the construction and operational phases of the development which would seriously injure the residential amenities of the area and the development potential of lands in the designated rural settlement of Rosspoint.
- (3) That part of the route of the pipeline which is onshore (between chainage 83+390 and 83+400) has been omitted from the application i.e between chainage 83+400 and the High Water Mark.

Furthermore, the Board having examined the detailed proposals submitted and having regard to the fact that Ireland has not adopted a risk-based framework for decision-making on major hazard pipelines (transporting wet gas) and related

infrastructure considers that the following standards, when applied to the proposed pipeline, are the appropriate standards against which the proposed development should be assessed and that the Board should, therefore,

- (a) adopt the UK HSE risk thresholds for assessment of the Individual Risk Level associated with the Corrib Gas Pipeline ----
Individual Risk Level above 1×10^{-5} – intolerable
Individual Risk Level between 1×10^{-5} and 1×10^{-6} – tolerable if ALARP (As Low as Reasonably Practicable) is demonstrated
Individual Risk Level below 1×10^{-6} broadly acceptable, and
- (b) adopt a standard for the Corrib upstream untreated gas pipeline that the routing distance for proximity to a dwelling shall not be less than the appropriate hazard distance for the pipeline in the event of a pipeline failure. The appropriate hazard distance shall be calculated for the specific pipeline proposed such that a person at that distance from the pipeline would be safe in the event of a failure of the pipeline.

Having regard to the foregoing and to the strategic national importance and current status of the entire Corrib Gas Field development, and as it is provisionally the view of the Board that it would be appropriate to approve the proposed onshore pipeline development should alterations be made to the proposed development, you are invited to make alterations to the proposed development as follows:-

Modify the pipeline route between chainages 83+910 and 89+550 so that the route at this location would be generally in accordance with that indicated as Corridor C (that is, within Sruwaddacon Bay) in the Route Selection Process which formed part of the EIS and planning application. The revised development including this alteration shall be accompanied by a revised EIS including an appropriate assessment of the development on Natura 2000 sites.

Furthermore, the applicant is requested to furnish the following further information in relation to the entire pipeline route modified as above:-

- (a) Clarify the code requirements and pressure test requirements for the pipeline from chainage 83+390 (HWM) approx. to chainage 83+470 (downstream weld at LVI)
- (b) Provide confirmation that the design of this section of the pipeline meets the requirements set down by TAG
- (c) Provide an integrated set of design documentation in the form of a revised Appendix Q. The documentation should integrate the analysis provided in the incidental and individual documents at the oral hearing. The whole set should provide a transparency of the design for the complete pipeline from the HWM to the terminal. This transparency should relate to the different site and design conditions along the pipeline and should relate to the codes. The design should include the analysis related to ground stability and should provide a system for monitoring movement of the pipeline in those areas of deep peat. Furthermore, the maximum allowable operating pressure (MAOP) for the pipeline should be stated.
- (d) Submit a new QRA that presents the analysis of risk at the different operating conditions and different locations along the pipeline route. The QRA should be site specific. The QRA should include ground

movement and incorporate a database that matches the conditions of the proposed development. A sensitivity of the QRA is required which demonstrates the range of risk that relates to any uncertainty (in the database) of failure frequencies for the various potential failure modes of the pipeline. The database should be relevant for an upstream wet gas. In order to eliminate any doubt please note that all failure modes should be included including the possibility of third party intentional damage at Glengad, wet gas in the pipeline, CO₂ in the pipeline and potential for Methane Hydrate in the pipeline.

- (e) Provide a qualitative assessment of risk. This should be prepared for the different operating conditions and different locations along the pipeline route and should provide a comprehensive assessment to include those events that cannot be easily defined mathematically.
- (f) Submit an analysis of the condition where the umbilical becomes severed and the control of valves at the wellhead and the subsea manifold is lost. The analysis needs to identify what conditions apply to the onshore pipeline and the risks involved in that circumstance.
- (g) An examination of the potential for pressure in the offshore pipeline to increase to wellhead pressure levels in the event that all wellhead valves had to be shut in over a prolonged period and in that period incremental leakage past the valves occurred. The concept of a vent at Glengad as a measure to protect against pressure at the wellhead side of the pipeline at the landfall rising above the maximum operating pressure should be examined. Information should also be provided on the reliability of the subsea shut down valve system proposed for the wellhead and manifold offshore.
- (h) Provide details of the examination of the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and provide full justification for the proposed design as submitted (and any revised design that may result from the modifications requested herein).
- (i) Provide details of the hazard distances, Building Burn Distances and Escape Distances in contours for the entire pipeline. The applicant should indicate the Outer Hazard Line contour which should show the distance from the pipeline at which a person would be safe. A number of these contours were provided at the oral hearing (copies of which are attached to this letter), however, the set of hazard contours should be complete and should include the entire onshore pipeline as far as the terminal. Please indicate the assumptions made in determining these hazard contours and indicate any limitations that apply to these hazard contours.
- (j) Provide details separately of the inner zone, middle zone and outer zone contour lines for the pipeline. These shall represent the distance from the pipeline at which risk levels of 1×10^{-5} , 1×10^{-6} and 0.3×10^{-6} per kilometre of pipeline per year exist.
- (k) Provide an assessment of the societal risk for Glengad and the societal risk along the revised route. This should be fully documented.
- (l) Submit precise section by section details of the proposals for temporary peat turve storage, which take into account the condition of the existing surface layer of the peat and which specifically

- identify where peat turves or remoulded peat will be stored on bog mats adjacent to the stone road (or elsewhere).
- (m) Submit details of the specific risk mitigation measures that would be proposed for each of the sections within the peat lands (Sections 1 to 18 were the relevant sections in the route as originally proposed and as set out in the qualitative assessment of relative peat failure potential which was presented as additional information at the oral hearing). These details should identify in particular where there would be limits on the storage of peat on bog mats adjacent to the stone road excavation and where a conservative approach would be proposed to the use of design factors and in the assessment of peat stability.
 - (n) Submit an assessment of the potential impact of the estimated stone road settlements on the umbilical pipeline and service ducts that will also be constructed within the stone road, including an assessment of the risks associated with failure due to rupture of these umbilicals or services.

Revised drawings should be submitted which fully describe the full extent of the onshore pipeline from the High Water Mark to the terminal site. These alterations to the extent of the site the subject of this planning application shall be accompanied by revised public notices as referred to below.

The site of the proposed development has been incorrectly detailed in the EIS between chainage 91.537 and chainage 92.539, i.e, the existing stone road at the Terminal end of the pipeline. The applicant is invited to amend the details of the proposed development at this location.

The applicant should consider whether or not the construction of a pipeline along the altered route as referred to in this communication would require the compulsory acquisition of any lands or rights over land not covered in the application to the Board, (file ref. 16.DA0004), under Section 32 of the Gas Act 1976. In the event of an acquisition order being required for any additional land or rights over land an application for such order should be prepared under the provisions of the Gas Act 1976 and submitted to the Board in conjunction with the information requested herein. Any alterations or modifications required to the application already submitted (file ref. 16.DA0004) should be indicated. As an alternative an application for an acquisition order to cover the entire revised route may be submitted.

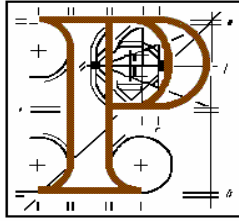
Attention is drawn to subsections (6), (7) and (8) of Section 182C of the Act which set out procedures that will apply to any altered proposals submitted in response to the foregoing notice. As stated above a revised EIS is required and new public notices will be necessary.

Reply to be submitted before end of business on 5th February 2010.

Board Member:

Brian Hunt

Date: 30th Oct. 2009.



Board Direction

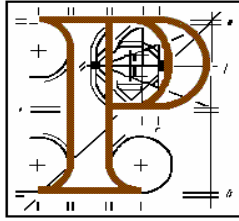
Ref: 16.GA0004

The Inspector's note attached was considered at a Board meeting held on 16th August 2010.

The Board decided to issue the following instructions regarding the conduct of the re-opened oral hearing commencing on 24th August 2010:-

1. The Oral Hearing should be limited to the consideration of the modifications to the proposed development as set out in the revised EIS.
2. The Oral Hearing should not re-open consideration of those matters already examined at the initial oral hearing and not affected by the revised proposals.
3. The Oral Hearing should be confined to consideration of relevant matters i.e. the onshore pipeline and not matters in relation to the offshore wellhead/wellfield or the terminal except as they may be relevant to the performance of the onshore pipeline the subject of this application – as determined by the Inspector on an item by item basis.
4. The order of the Oral Hearing shall be as set out by the Inspector in the Programme for the Oral Hearing and procedures for the taking of questions shall be as required by the Inspector and notified during the course of the hearing.

Board Member: _____ Date: 16th August 2010.
Brian Hunt



Board Direction

Ref: 16.GA0004 & 16.DA0005

At a Board meeting held on 21st December 2010 the Board reviewed the Bord Direction of 30th October 2009 and the subsequent notice of 2nd November 2009.

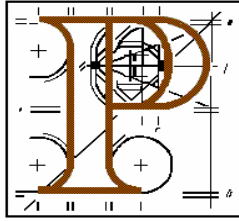
The Board also considered the applicant's reply of 31st May 2010 including the revised EIS and revised drawings and the new application under 16.DA0005 (16.DA0004 having been withdrawn). The Board considered the submissions made and the draft interim report of the Inspector (Chapters 1 to 26 and Chapter 49) together with the report of Conor O'Donnell and the draft report of Stephen O'Sullivan.

The Board also noted the Chairperson's memo of 14th December 2010 and the undersigned will hand over the presentation of this file to Mr. Karl Kent after completion of this Board Direction.

The Board decided to defer consideration of these files to a further Board meeting.

The Board also decided that it was not appropriate to take into account any further submissions received after the closing of the oral hearing on 1st October 2010.

Board Member: _____ Date: 24th December 2010.
Brian Hunt



Board Direction

Ref: 16.GA0004 and 16.DA0005

The submissions on this file and the Inspector's full report were considered at a Board meeting held on 7th January 2011, when a decision was deferred to a subsequent meeting.

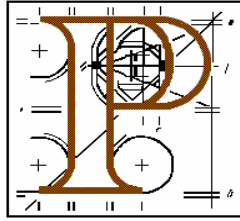
At a meeting on the 10th January 2011, the Board again considered the case, including the final consolidated version of the Inspector's report. The Board decided to defer this case for consideration at a further Board meeting.

Board Member: _____

Karl Kenney

Date: 10th January 2011

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Board Direction

Ref: 16.GA.0004 and 16.DA.0005

The submissions on these files and the Inspector's report, plus the supplementary reports, were further considered at a Board meeting held on 11th January 2011.

The Board decided to confirm the acquisition order, Ref. No. 16.DA.0005, generally as recommended by the Inspector.

The Board also decided, generally in accordance with the Inspector's recommendation, to approve the proposed development, as altered, Ref. No. 16.GA0004, for the following reasons and considerations. The Board discussed the recommended conditions, as drafted by the Inspector, and decided it would be appropriate to further discuss and approve a final draft at a later meeting.

REASONS AND CONSIDERATIONS

Having regard to:

- (a) the strategic importance of the Corrib Gas Field, both nationally and regionally;
- (b) The provisions of Regulation (EU) No 994/2010 of the European Parliament and of the Council, 20 October 2010, concerning measures to safeguard security of gas supply for Member States, taken together with the existing dependence of the State on imports to meet most of its energy needs, particularly gas;
- (c) National policy in relation to security and reliability of gas supply, as set out in the white paper, "Delivering a Sustainable Energy Future for Ireland", 2007, which seeks to ensure secure and reliable electricity and gas supplies, to enhance diversity of fuels used for power generation and to prepare for energy supply disruption;
- (d) the provisions of the National Development Plan, 2007-2013, in relation to the paramount importance of energy supply security to ensure the continued economic development of the country;
- (e) the provisions of the Regional Planning Guidelines for the West Region, 2010-2022, in relation to utilisation of the potential of the Corrib Gas Field;
- (f) the policies of the Mayo County Development Plan, 2008-2014, to

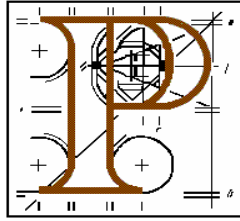
support the realisation of the full potential of the Corrib Gas Field and in respect of the protection of natural habitats and of visual amenity;

- (g) The permission granted by An Bord Pleanála for the gas terminal at Bellanaboy to serve the Corrib Gas Field, per Reg. Ref. PL 16.207212, which terminal has been substantially completed;
- (h) the consent granted under the provisions of Section 40 of the Gas Act, 1976, for the offshore pipeline from the Corrib Gas Field to Glengad, which pipeline has been substantially completed;
- (i) the provisions of the Petroleum (Exploration and Extraction) Safety Act, 2010, which provides for the regulation of the safety of gas installations;
- (j) the alterations to the pipeline, in particular those relating to its routing and operating pressure, proposed in response to the notice issued by An Bord Pleanála under Section 182C(5) of the Planning and Development Act, 2000, as amended, and which alterations entail significantly enhanced provision for safety, natural heritage protection and residential amenity;
- (k) the revised Environmental Impact Statement, including mitigation measures, and further information submitted to the Oral Hearing supplementary thereto;
- (l) the limited duration of the construction period, with consequent curtailment of impacts on visual and residential amenity;

and, having considered the submissions and observations received in relation to the application and having particular regard to the reports of the lead Inspector, who conducted the oral hearing, and to the supplementary reports commissioned by the Board in relation to (i) Pipeline Design and Safety, (ii) Ground Movement and Peat Stability and (iii) legislation, natural heritage, landscape, peat deposition and community gain, it is considered that the proposed development, as altered and subject to compliance with the following conditions, would help safeguard the energy security of the State, would benefit the Western Region of Ireland, would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health or to public safety, would not be likely to have significant effects on the environment or on any European Site, would be acceptable in terms of traffic safety and convenience and would not conflict with the provisions of the Mayo County Development Plan, 2008-2014. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Board Member: _____ Date: 11th January 2011

Karl Kent



Board Direction

Ref: 16.GA0004

Further to the meeting and decision of the Board of 11th January, 2011, revised draft conditions were considered at a Board meeting held on 17th January 2011. The Board approved the following direction, encompassing the draft order and re-drafted conditions.

REASONS AND CONSIDERATIONS

Having regard to:

- (a) the strategic importance of the Corrib Gas Field, both nationally and regionally;
- (b) The provisions of Regulation (EU) No 994/2010 of the European Parliament and of the Council, 20 October 2010, concerning measures to safeguard security of gas supply for Member States, taken together with the existing dependence of the State on imports to meet most of its energy needs, particularly gas;
- (c) National policy in relation to security and reliability of gas supply, as set out in the white paper, “Delivering a Sustainable Energy Future for Ireland”, 2007, which seeks to ensure secure and reliable electricity and gas supplies, to enhance diversity of fuels used for power generation and to prepare for energy supply disruption;
- (d) the provisions of the National Development Plan, 2007-2013, in relation to the paramount importance of energy supply security to ensure the continued economic development of the country;
- (e) the provisions of the Regional Planning Guidelines for the West Region, 2010-2022, in relation to utilisation of the potential of the Corrib Gas Field;
- (f) the policies of the Mayo County Development Plan, 2008-2014, to support the realisation of the full potential of the Corrib Gas Field and in respect of the protection of natural habitats and of visual amenity;
- (g) The permission granted by An Bord Pleanála for the gas terminal at Bellanaboy to serve the Corrib Gas Field, per Reg. Ref. PL 16.207212, which terminal has been substantially completed;

- (h) the consent granted under the provisions of Section 40 of the Gas Act, 1976, for the offshore pipeline from the Corrib Gas Field to Glengad, which pipeline has been substantially completed;
- (i) the provisions of the Petroleum (Exploration and Extraction) Safety Act, 2010, which provides for the regulation of the safety of gas installations;
- (j) the alterations to the pipeline, in particular those relating to its routing and operating pressure, proposed in response to the notice issued by An Bord Pleanála under Section 182C(5) of the Planning and Development Act, 2000, as amended, and which alterations entail significantly enhanced provision for safety, natural heritage protection and residential amenity;
- (k) the revised Environmental Impact Statement, including mitigation measures, and further information submitted to the Oral Hearing supplementary thereto;
- (l) the limited duration of the construction period, with consequent curtailment of impacts on visual and residential amenity;

and, having considered the submissions and observations received in relation to the application and having particular regard to the reports of the lead Inspector, who conducted the oral hearing, and to the supplementary reports commissioned by the Board in relation to (i) Pipeline Design and Safety, (ii) Ground Movement and Peat Stability and (iii) legislation, natural heritage, landscape, peat deposition and community gain, it is considered that the proposed development, as altered and subject to compliance with the following conditions, would help safeguard the energy security of the State, would benefit the Western Region of Ireland, would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health or to public safety, would not be likely to have significant effects on the environment or on any European Site, would be acceptable in terms of traffic safety and convenience and would not conflict with the provisions of the Mayo County Development Plan, 2008-2014. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

CONDITIONS

Clarification of Extent of the Approved Development

1. Except as may be amended by any of the conditions attached to this approval, the development hereby approved shall be carried out in accordance with the Corrib Onshore Gas Pipeline development, as altered and described in the Environmental Impact Statement, May 2010, submitted to An Bord Pleanála on the 31st May 2010, including the peat deposition site at Srahmore and the mitigation measures contained in the Environmental Impact Statement, together with the original letter of application 12th of February, 2009 and the additional, documented information submitted by the applicant to the Board during the proceedings of the Oral Hearing in 2010, including amendments.

(The relevant documents are set out in the Schedule of Documents submitted by the applicant to the 2010 Oral Hearing and attached to this order)

Reason: In order to clarify the development to which this approval relates, and the proper planning and sustainable development of the area.

2. The use of the onshore pipeline shall be confined to the transportation of natural gas from the Corrib Gas Field. Any proposal to connect additional gas fields to the onshore pipeline shall be the subject of an appropriate planning application and approval.

Reason: To ensure proper regulation of the development to protect the integrity of the onshore pipeline and to allow for the assessment of any intensification of the gas field.

Public Safety -

3. The developer shall obtain from the Department of Communications, Energy and Natural Resources a document confirming the code supplements that apply to Offshore Standard DNV-OS-F101 (Submarine Pipeline Systems), when used for the onshore sections of the offshore pipeline, that is between the high water mark and the first downstream weld below the Landfall Valve Installation (LVI). The development shall be carried out in accordance with these requirements.

Reason: In the interest of protection of the health and safety of the public.

4. Before the pipeline becomes operational, the reliability rating of the offshore pipeline overpressure protection system and of the onshore pipeline overpressure protection system shall be certified by an external independent person, with particular competence in this matter, to the satisfaction, as confirmed in writing, of the authority for the time being having statutory competence (i.e. the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be) or, in the alternative, by the said statutory authority itself. Written confirmation of such certification is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

5. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as the construction, testing and commissioning of the pipeline, the landfall valve installation (LVI) and the equipment and ancillary facilities to the pipeline have been completed to the certified satisfaction of the authority for the time being having statutory competence (i.e. the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). Written confirmation of such certification is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

6. (a) The Maximum Allowable Operating Pressure of the onshore pipeline, subject of this approval, shall be 150 barg upstream of and including the LVI, and downstream of the LVI shall be 100barg.
(b) The complete onshore pipeline shall be hydro tested to 504barg pressure prior to the commencement of operation.
(c) Written confirmation of such testing is to be provided to Mayo County Council to place on the public file before the pipeline commences operating.

Reason: In the interest of protection of the health and safety of the public and of transparency.

7. Prior to commencement of operations, the developer shall obtain a safety permit from the authority for the time being having statutory competence (i.e. the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). A copy of the safety permit shall be submitted to Mayo County Council to place on the public file before commencement of operations.

Reason: In the interest of protection of the health and safety of the public and of transparency.

8. The developer shall install instrumentation required to measure ground movements at the following areas of concern:
 - (a) the landfall valve site interface with the offshore pipeline;
 - (b) the transition areas between the grouted pipe in the tunnel and the buried sections;
 - (c) the stone road at the deep peat sections; and
 - (d) the interface between the existing and newly laid sections of the stone road.

The developer shall also deploy stable strain gauges (including vibrating wire gauges with protective housings) on the pipeline to verify the maximum predicted stress levels on the pipe and confirm the modelling accuracy. The instrumentation shall remain *in situ* until steady state levels are confirmed and

a sufficient period of time has elapsed to ensure exposure to a variety of environmental conditions.

Reason: In the interests of protecting the health and safety of the public.

9. An Annual Pipeline Report shall be made by the developer before the 31st January every year of operation and shall be submitted to the authority for the time being having statutory competence (i.e. the Department of Communications, Energy and Natural Resources or the Commission for Energy Regulation, as the case may be). A summary of this report shall be submitted to Mayo County Council to place on the public file.

Reason: In the interest of protection of the health and safety of the public and of transparency.

10. (a) The developer shall comply with any Security of Network Standards as may be determined from time to time by the Department of Communications, Energy and Natural Resources (or Commission for Energy Regulation, as appropriate) in respect of the facilities at the LVI in Glengad.
(b) The developer shall redesign the security fencing at the LVI to include a double 2.8m high security fence and gates with a flood lit zone between the inner and outer fence. The inner fence may be electrified, on the advice of An Garda Síochána.

Reason: To ensure the security of this strategic infrastructure site.

11. The onshore upstream pipeline shall not be operated for the purpose of bringing gas onshore from the Corrib Gas Field until such time as an Emergency Response Plan has been prepared, by the developer, for the area between Glengad, Rosspoint, Aghoos and Bellanaboy. The plan shall be agreed with An Garda Síochána, the Health Services Executive and Mayo County Council and shall comply with any requirements set down in the Major Emergency Plan for the area. The plan shall include control of traffic close to the terminal, close to the LVI and in the vicinity of the route of the pipeline in the event of a major accident. The preparation of the Emergency Response Plan shall include consultation with the public on the details to be contained in the plan.

Reason: In order to ensure that a fully detailed emergency plan is in place in the interests of public health and safety in the area.

Provide for Agreements with Mayo County Council

12. Before the commencement of development, other than works directly associated with preconstruction surveys, the developer shall enter into an agreement with Mayo County Council, which shall be legally binding on the developer and successors in title. The agreement shall provide for the following:

- i. payment to Mayo County Council of all costs incurred by it in relation to the repair, maintenance and rehabilitation of the road network arising from the construction of the development, as determined by the Road and Bridge survey to be carried out prior to and post construction. The amount of such costs shall be as agreed between Mayo County Council and the developer.
- ii. implementation of the Traffic Management Plan contained in the Environmental Impact Statement, as may be amended by the conditions of this approval or with the prior written agreement of Mayo County Council;
- iii. payment of Mayo County Council's reasonable, certified costs in engaging transportation personnel to monitor the Traffic Management Plan, and including the cost of the provision of accommodation and telecommunications facilities on site for such personnel,
- iv. payment of Mayo County Council's reasonable, certified costs in engaging environmental personnel to monitor implementation of the Environmental Management Plan, and including the cost of the provision of accommodation and facilities on site for such personnel,
- v. a scheme for the restoration of the Landfall Valve Installation (LVI) site at Glengad and associated way leave, to the satisfaction of Mayo County Council, following the cessation of gas transportation, which restoration shall include removal of items of all over ground equipment and facilities to grade level, and
- vi. the provision of a supply of water to serve the proposed development, by Mayo County Council.

In default of agreement in relation to any of the above, the relevant matter shall be determined by An Bord Pleanála.

Reason: To ensure reimbursement of costs incurred by the Council in respect of the foregoing and the satisfactory control of the development, in the interest of the proper planning and sustainable development of the area.

13. All agreements with Mayo County Council required by way of the conditions in this approval shall be in writing and copies of such agreements shall be made available for public inspection during normal office hours at Mayo County Council's offices and at the developer's offices in Belmullet. The development hereby approved shall be carried out in accordance with the terms of such agreements.

Reason: In the interest of clarity and transparency.

Project Monitoring Committee

14. (a) Prior to commencement of development, a Project Monitoring Committee shall be established by Mayo County Council to monitor the progress on construction of the project. The Project Monitoring Committee shall monitor all aspects of the construction including: the geotechnical risks as set out in the

Geotechnical Risk Register or any further revision of the risk register following preconstruction site investigations; surface water run-off; drainage control; traffic management and road maintenance; implementation of the reinstatement plan; and other environmental issues.

(b) The Project Monitoring Committee shall comprise two representatives of the developer and two representatives of Mayo County Council, and an invitation shall be extended to Inland Fisheries Ireland; the Department of the Environment, Heritage and Local Government (National Parks and Wildlife Service); the Department of Communications, Energy and Natural Resources; the EPA and Bord na Móna to provide one representative each for the committee. In addition, four representatives of the local community from Kilcommon Parish, selected in accordance with procedures to be determined by Mayo County Council, shall be invited to serve on this committee. The Project Monitoring Committee shall have the right to co-opt other members as required. The Mayo County Manager or his/her nominee shall chair the Project Monitoring Committee.

(c) The Project Monitoring Committee shall operate to maintain communication between the developer and the community regarding local issues arising from construction and traffic. It shall establish a local liaison procedure between the developer and the community that shall allow information regarding local events and activities that may be affected by construction traffic to be provided to the developer. The Project Monitoring Committee shall consider submissions regarding the impact of construction and associated traffic and shall review the issues raised and publish its conclusions in the manner which it deems appropriate.

Reason: To ensure effective monitoring and liaison with the local community during construction in the interest of the proper planning and sustainable development of the area.

15. The developer shall appoint a suitably qualified and experienced Environmental Officer for the period of the construction of the pipeline project. The Environmental Officer shall liaise with the Project Monitoring Committee in relation to implementation of the Environmental Management Plan, including environmental monitoring, and shall be responsible for reporting to that committee and Mayo County Council in respect of:

- any malfunction of any environmental protection system,
- any occurrence with the potential for environmental pollution,
- any emergency

which could reasonably be expected to give rise to pollution. The Environmental Officer shall maintain a record of any such occurrences and actions taken. This record shall be available for public inspection at the developer's office at Belmullet during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

Environmental Management Plan

16. The carrying out of the development of the pipeline authorised by this approval, including the tunnelling works and the construction of the Landfall Valve Installation (LVI), shall be governed by an Environmental Management Plan (EMP). The details of the EMP shall be based on the provisions of the Environmental Impact Statement, including mitigation measures, as modified by the submissions made by the applicant to the Oral Hearing of 2010 and as may otherwise be amended by the terms of the conditions attached to this approval. The developer shall prepare a draft EMP after consultation with the Department of the Environment, Heritage and Local Government and with Inland Fisheries Ireland, and shall submit it to Mayo County Council for its written agreement. Development shall not commence until this agreement has been obtained or, in default of agreement, the matter shall be determined by An Bord Pleanála.

In particular, the EMP shall include details of the followings matters—

- i. The Management and Reporting Structure.
- ii. A Schedule of Environmental Objectives and Targets.
- iii. The order and duration of the various works, including details of how seasonally sensitive works are to be accommodated in the programme
- iv. Pre construction surveys.
- v. Method statements for construction.
- vi. Details for the minimisation of suspended solids movement to surface water systems, including the sedimentation, filtration and attenuation of all surface waters from the construction site prior to discharge and the maintenance routines for these facilities.
- vii. Details of the temporary surface water drainage swales, channels and settlement ponds to serve the construction works, with capacity to cater for severe rain episodes, based on conservative parameters (as referred to in the Geotechnical Risk Register of the EIS).
- viii. Measures to monitor and control noise and vibration arising from the development, including from tunnelling under Sruwaddacon Bay.
- ix. Traffic Management Plan and monitoring.
- x. Monitoring Programme for surface water, dust, noise and vibration, including from tunnelling under Sruwaddacon Bay.
- xi. Monitoring Programme for ecology.
- xii. Corrective Action Procedures.
- xiii. Emergency Response Procedures for Environmental or Other Incidents
- xiv. Awareness and Training Programme.
- xv. Proposed Community Liaison.
- xvi. Communications Programme.
- xvii. Waste Management Plan, including a minimisation plan for the solid waste emanating from the construction works site.
- xviii. A method statement for the use of bentonite and the monitoring thereof.
- xix. A detailed method statement for the reinstatement works of the beach and the cliff face at Glengad, including materials.
- xx. Details of right of access for Mayo County Council to carry out environmental monitoring checks.

On written request by Mayo County Council, the developer shall submit a report on any specific environmental matter or an environmental audit. The

EMP shall be the subject of an annual review by Mayo County Council, following consultation with the Project Monitoring Committee. The developer shall modify the EMP in accordance with any reasonable requirement of Mayo County Council, at any stage.

Reason: In the interests of environmental protection and the proper planning and sustainable development of the area.

17. The EMP shall provide for monitoring of surface water, dust, noise and vibration in accordance with the requirements of Mayo County Council and, in respect of surface water, monitoring shall be in accordance with CIRIA “Technical Guidance: Control of Water Pollution from Linear Construction Projects” (C648, 2006). Any alterations to the agreed monitoring regime shall be subject to agreement with Mayo County Council, following consultation with the Project Monitoring Committee. Such monitoring shall be carried out by the developer throughout the construction of the pipeline, tunnelling and LVI (to the date of commissioning of the pipeline and LVI). Results shall be submitted to Mayo County Council at such intervals as may be specified by Mayo County Council (following consultation with the Project Monitoring Committee). All results shall be made available for public inspection within seven days of receipt.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

18. Monitoring results required under the conditions of this approval shall be submitted to Mayo County Council electronically and in hard copy form and shall be made available for public inspection during normal office hours at Mayo County Council’s offices and at the developer’s offices in Belmullet. The developer shall develop a computerised database for the recording and transfer of monitoring data; the design of the database shall be subject to agreement with Mayo County Council.

Reason: In the interest of clarity and transparency, and to facilitate ease of interpretation of all monitoring data collected and recorded.

Complaints Register

19. A complaints register shall be maintained by the developer at its offices in Belmullet. This shall relate to all written complaints made regarding any aspect of the earthworks and construction phase of the development. The register, which shall be available for public inspection on request during normal office hours, shall include:

- i. the name of the complainant
- ii. the nature of the complaint
- iii. the date and time of the complaint
- iv. actions taken as a result of the complaint

Reason: In the interest of the proper monitoring of the development.

Traffic Management

20. The following traffic management measures shall apply and shall be reflected in the traffic management plan required under the terms of this approval:

- Haulage of all excavated peat from the site to the deposition site shall be restricted to the designated haul route, and the return of all unladen haulage vehicles to the construction site shall be along the haul route. No haulage of peat shall commence until such time as those improvements required by Mayo County Council of the relevant section of the haul route have been completed
- The maximum number of Heavy Commercial Vehicle (HCV) movements along the haul route shall not exceed those set out in EIS., as amended by documents submitted at the oral hearing. The developer shall keep a record of all traffic movements into and out of the sites, and a copy of this shall be available for inspection by Mayo County Council and the Project Monitoring Committee on request.
- All signage detailed in the Traffic Management Plan shall be erected prior to the commencement of the haulage of peat or construction materials and equipment and shall be maintained during construction works. Prior to this, or during the haulage period, the developer shall erect any other signage required by Mayo County Council to facilitate the safe haulage of construction materials.
- A school traffic warden shall be engaged at the developer's expense to travel on each of the school buses or to travel in tandem with the school bus using the haul route so as to facilitate the safe embarking/alighting and road crossing by children at all times during the haulage of peat. Arrangements shall be put in place that the HCV traffic using the haul route shall stand by at the drop off times and pick up times at the schools.
- The potential impact of traffic management proposals and the convoy system on the bus schedules shall be monitored and any necessary adjustments, as considered necessary by Mayo County Council, shall be made.

Reason: In the interest of efficient traffic management, road safety and public safety.

21. The developer shall be responsible for the carrying out of a road and bridge survey before and after the construction period. The extent and precise content of the survey, which may be carried out by Mayo County Council at the developer's request and which shall generally relate to the road network directly and indirectly affected by the proposed development, shall be subject to agreement with Mayo County Council.

Reason: To facilitate the determination of damage attributable to the proposed development, and to ensure the proper maintenance and reinstatement of roads and bridges following construction.

22. In the event of target tolerances (per Traffic Management Plan) for road surfaces being exceeded and in the absence of necessary maintenance of the road surface, Mayo County Council (following consultation with the Project Monitoring Committee) may require the cessation of all haulage activities or construction traffic directly related to the development.

Reason: To ensure the proper maintenance of road surfaces during the construction and haulage periods in the interest of traffic safety.

23. All vehicles leaving the construction areas of the sites shall pass through an appropriate wheel cleansing area. The developer shall take all reasonable measures to ensure that no material shall leak or fall from vehicles transporting waste from the site. The measures required in this regard shall be set out in the EMP.

Reason: In the interest of amenity, the proper planning and sustainable development of the area, and traffic safety.

24. The haul route and schedule of haulage for the construction phase of the development shall be clearly documented and published in a manner to be agreed with Mayo County Council.

Reason: In the interest of traffic management and to make provision for control and review of vehicles.

25. An independent safety audit on the upgraded haul route shall be carried out and agreed in writing with Mayo County Council prior to the commencement of haulage of peat or other construction generated material. The audit shall have regard to:

- The proposed 60 km/hr, 50km/hr, 30km/hr, 20km/hr speed limit zones for HCVs.
- The spacing of HCVs in convoy.
- Pedestrian and cyclist use of the haul route.
- School traffic at Pollathomais and the proposed stand down of haulage during pick-up and drop-off times at the school.
- Arrangements regarding Funerals, Church Services at Pollathomais
- The operational aspects of the Traffic Management Operatives.
- Vehicle break-down incident management.
- Emergencies and full access for emergency vehicles to the route at all times.

Reason: In the interest of traffic safety.

26. On the L1202 between Pollathomais and Glengad the maximum speed for HCVs working on the project shall be 50km/hour. The speed restrictions as set out on Drawing 6013-1015 and in respect of McGrath's Bar (20km/hour) shall also apply as set out in the EIS

Reason: In the interests of road safety on L1202.

27. The visibility at the site junctions proposed at Aghoos and the visibility at the existing entrance to Srahmore Deposition site shall be in accordance with NRA standards as indicated in the revised details provided at the oral hearing [Oral Hearing Document Ref No. 133].

Reason: To ensure that road safety standards are achieved at these junctions.

Control and Monitoring of the Construction

28. The surface water from the construction site that lies within the Carrowmore Lake catchment shall be collected, attenuated and taken through silt settlement ponds before being discharged into the Leenamore River Catchment. The existing surface water system that serves the applicant's site, and which discharges into the Carrowmore Lake Catchment, shall be monitored initially on a daily basis and then at a frequency and for a full range of parameters to be agreed with Mayo County Council before commencement of construction works and continuing during the construction works.

Reason: It is necessary to put in place a full monitoring programme and control system for the surface water discharge to prevent water pollution and to protect the drinking water supply source at Carrowmore Lake.

29. The SC2 reception pit construction shall be protected from inundation by a severe storm event and from any overflow of Channel 2.

Reason: To prevent any damage to the Environment that may result from an overflow of this channel.

30. Vibration monitoring shall be carried out during construction as provided in the EIS generally and in the specific detail provided at Oral Hearing [Oral Hearing Document Ref No. 25]. The monitoring shall include:

- Monitoring at the Aghoos Tunnel Launch Pit Area and Monitoring at the Glengad Tunnel Reception Pit Area
 - i. At each site monitoring vibration from (a) Piling activity (b) Rock Excavation activity (c) Tunnel Boring Machine activity. In the case of the Glengad site, monitoring is to be carried out as the TBM approaches the site.
 - ii. Monitoring at 25m and 50m from the source on two orthogonal planes aligned parallel and perpendicular to the predominant foliation or schistosity of the rock or as close to parallel and perpendicular as may be practicable.
- The monitoring shall serve to characterise the site specific ground response to these construction activities and shall provide verification data for review of the model predicted vibrations.

- An interpretative report and the data of the monitoring activity shall be provided to Mayo County Council and to the Project Monitoring Committee and published via web in accordance with monitoring procedures established.

Vibration shall not exceed the standards set out in NRA Guidelines for Treatment of Noise and Vibration in National Road Schemes so that the maximum allowable vibration velocity (PPV) at the closest part of any sensitive property (including any dwelling) to the source of vibration shall be as follows:

Less than 10Hz	For all vibrations >10Hz
8 mm/sec	12.5 mm/sec

Reason: To provide for the control of vibrations and ensure there is no adverse impact from excavation works.

31. The hazards listed on the Geotechnical Risk Register in the EIS submitted to An Bord Pleanála shall be the subject of ongoing monitoring throughout the development. A qualified engineer with appropriate experience shall carry out the monitoring. During the excavation and construction phase, the developer shall submit a report in relation to the Risk Register every two months to Mayo County Council and the Project Monitoring Committee. The report shall describe the progress of monitoring the hazards listed on the Register and shall detail any specific difficulties encountered and contingencies employed. The reports shall be made available for public inspection within seven days of submission at both the developer's offices in Belmullet and Mayo County Council's offices.

Reason: In the interest of safety and the proper planning and sustainable development of the area.

Control of Waste

32. All tank and drum storage areas on the sites shall, as a minimum, be bunded to a volume not less than the greater of the following –
 - 110% of the capacity of the largest tank or drum within the bunded area, or
 - 25% of the total volume of substances which could be stored within the bunded area.

Reason: To prevent surface and ground water or surface pollution.

33. All fuel storage areas and cleaning areas, particularly for trucks, shall be rendered impervious to the stored or cleaned materials and shall be constructed to ensure no discharges will cause pollution to ground waters.

Reason: To prevent surface and ground water pollution.

34. The developer shall maintain on the sites for the duration of the construction period, oil abatement kits comprising of booms and absorbent materials.

Reason: To prevent water pollution.

35. Prior to disposal of materials from site that have derived from tunnel arisings testing shall be carried out on the materials to confirm appropriate waste disposal options and records of the testing shall be maintained by the developer.

Reason: To protect the environment.

Sanitary Waste Facilities and Management

36. Sanitary facilities shall be installed in the compounds and on the site of the construction works and on the site of the peat disposition area for the duration of the construction project. All waste generated from such facilities shall be disposed of by a licensed waste contractor to an appropriate approved treatment works.

Reason: In the interest of public health.

37. The applicant shall establish, where liquid wastes are being disposed of at appropriate treatment works, that there is adequate capacity at those works to take the loadings from the liquid waste.

Reason: To protect fish and the aquatic environment from consequential pollution.

Construction in Peatland

38. Prior to construction of the Stone Road in the peat lands, pre-construction confirmatory examination of the site by an experienced Engineer/Geologist as provided in the EIS and Risk Register shall take place.
In particular, in relation to those areas identified in the qualitative assessment of relative potential for peat failure of medium potential and high potential the following shall apply:

- The design of the proposed stone road and the design of the compound at Aghoos shall be reviewed in light of the examination and of the conditions at the site at the time of construction.
- Side casting of peat shall be restricted as follows:
 - No side casting of peat shall take place in those areas of relative high potential for peat failure
 - No side casting of peat shall take place at any location ahead of the completed Stone Road i.e. where side casting peat, the area on which the peat is being placed shall lag behind the area where the Stone Road is being constructed so that peat is not side cast adjacent to an open or partially backfilled excavation.
 - No side casting of peat shall take place where the slope on the surface, or at the base of the peat, is greater than 3 degrees
 - No side casting of peat shall take place within 25m from a break in slope greater than 3 degrees.

Notwithstanding the above, the designer shall carry out the necessary site investigation, design and analysis to confirm that the stability of the peat repository will be acceptable at the time of construction. Specific consideration shall be given to areas where the alignment of the road is perpendicular to the slope contours, where it will not be possible to sidecast upslope from the stone road.

Reason: To ensure stability of peat and to protect the environment from any peat slide damage.

39. Within the stone road, the rock fill below the trench for the gas pipeline and umbilical shall extend beyond a minimum 45° influence line (1 vertical:1 horizontal) from the sides of the trench at pipe invert level down to the base of the peat.

Reason: To ensure stability of peat and the pipeline and to protect the environment from any peat slide damage.

40. In the construction of the pipeline, care shall be taken in those areas where the pipeline is being laid within the stone road and below the peat in the mineral soil. In those areas peat plugs shall be installed across the stone road section at either end of those sections and at centres in between not greater than 100m apart.

Reason: To prevent the stone road and pipeline construction acting as a preferential drain in the peat.

41. (a) In the construction of the stone road, permeability barriers shall be installed where the road approaches the Leenamore River, the two streams and ditches, which shall restrict free drainage of water through the road.
(b) The construction detail for the compounds regarding drainage and restoration in the peat lands shall be similar in terms of permeability restriction to that used for the stone road.

Reason: To ensure that the impact of the stone road on hydrology of the peat lands is minimised.

42. Method statements for construction works in the peat lands shall be developed using conservative design values and applying conservatively the risk mitigation measures set out in the EIS risk register or as may be set out in any revision of the risk register following preconstruction surveys and confirmation of method of construction and during the construction of the project. All construction work in peat land shall be supervised by professional persons with adequate expertise of the geohydrology and ecology of blanket bogs and experience of construction in peatland, who shall ensure that hydraulic paths in the peat are identified, marked and reinstated satisfactorily. An experienced contractor with specific experience of construction in peat shall be engaged for the construction.

Reason: To protect against peat instability and minimise the impact of the development on blanket bog habitats.

Archaeology

43. Monitoring for archaeological materials or remains shall be carried out at this site in accordance with the measures outlined in the EIS and as follows:
- The developer shall engage the services of a suitably qualified archaeologist who shall monitor ground disturbance works associated with the development
 - If archaeological remains are found the work may be stopped pending a decision on how best to deal with the archaeology. The developer shall be prepared to receive advice in this regard from the Heritage and Planning Division of DEHLG and shall facilitate the archaeologist in recording any material found.
 - The archaeologist shall submit reports of the monitoring to Mayo County Council, the Project Monitoring Committee and the DEHLG at regular intervals as determined by Mayo County Council

Reason: To protect the archaeological heritage of the area and provide for the appropriate preservation of any remains that may exist within the site.

The Protection of Drinking Water Sources

44. Prior to construction, the location of wells which serve as water supply sources shall be identified, in agreement with Mayo County Council, and these wells shall be monitored before, during and after construction.

Reason: To protect existing drinking sources in the area.

45. The developer shall include in the EMP a detailed method statement for construction of surface water drainage and discharge from the construction site in the chainage 91+420 to chainage 91+720 area approximately, that is in the Carrowmore Lake Catchment. Surface water from the construction project shall not discharge into the Carrowmore Lake Catchment (Chainages given here refer to the 2010 chainages)

Reason: To protect the Carrowmore Lake Water Supply

Noise, Lighting and Air Quality

46. Where night lighting is proposed to be used at Glengad the impact of these lights on the area outside the work areas shall be mitigated in the same way as is proposed at Aghoos – selection of appropriate lanterns, downward, inward facing lights, baffle boards at lights at periphery, lights to be switched off when not required.

Reason: To protect the residential amenity of the area.

47. Monitoring of lighting impacts at the residential properties nearest and at those most likely to be impacted by night lighting shall be carried out on completion

of the lighting installation and the results shall be submitted to Mayo County Council and the Project Monitoring Committee. Mayo County Council may direct the developer to make any necessary adjustments in the lighting required to avoid nuisance to those residential properties.

Reason: To protect the residential amenity of the area.

48. The lighting control within the compound at Aghoos and the compounds in Glengad shall be designed such that lighting can be switched off at night in those areas of the compound where lighting is not required at night.

Reason: To mitigate the impact of lighting in the landscape at night.

49. **Glengad:** All construction work shall be programmed as far as possible to avoid working between 2000 and 0700. Where night working at Glengad becomes necessary the programme shall require the prior written agreement of Mayo County Council. Only essential works shall be carried out at night, avoiding audible tones and impulsive noise. Noise generation at night shall be controlled on site and kept to the lowest possible achievable levels. Noise levels at the nearest noise sensitive receptor (dwellings) shall not exceed the following limits -

Day	0700 – 2000	Overall limit:	65dB L _{AEQ} (1hr)
Night	2000 – 0700	Target level for design:	35dB L _{AEQ} (1hr)
		Calm night limit:	40dB L _{AEQ} (1hr)
		Overall night limit:	45dB L _{AEQ} (1hr)

Aghoos

Only essential work shall be carried out between 2000 and 0700, avoiding audible tones and impulsive noise. Noise generation at night shall be controlled on site and kept to the lowest possible achievable levels. Noise levels at the nearest noise sensitive receptor (dwellings) shall not exceed –

Day	0700 – 2000	Overall limit:	65dB L _{AEQ} (1hr)
Night	2000 – 0700	Target level for design:	35dB L _{AEQ} (1hr)
		Calm night limit:	40dB L _{AEQ} (1hr)
		Overall night limit:	45dB L _{AEQ} (1hr)

Reason: To protect the residential amenity of the area.

50. During construction and haulage, noise levels shall be kept to a minimum. Any activity that will result in a significant increase in the ambient noise levels, for example, piling or rock breaking, shall be notified to Mayo County Council and the Project Monitoring Committee in advance. Advance notice of the schedule of such activity shall be given to the public that may be affected.

Reason: In the interest of public health and residential amenity.

51. Dust levels shall not exceed 350mg/m² per day (TA Luft Air Quality Standard) when levels are averaged over thirty days and as measured at the site boundaries. Any activity which could reasonably be expected to exceed that dust level, and proposed mitigation measures, shall be notified to Mayo County Council and the Project Monitoring Committee in advance, and notice shall be notified to the public that may be affected.

Reason: In the interest of public health and residential amenity.

Protection of the Amenity of the Area

52. All lands shall be reinstated, as set out in the Environmental Impact Statement.

Reason: to ensure that the visual impact of the project on the landscape is mitigated.

53. The work in relation to the final reinstatement of the margins of the access road to the LVI from the public road L1202 shall be carried out under the supervision of the project ecologist.

Reason: To limit any impact on the ~~CSA~~ ^{CSA}.

54. The developer shall ensure that access to the beach at Glengad is not unduly restricted for the duration of the construction works and while the construction spread is in situ across the traditional access to the beach at Glengad.

Reason: To ensure that the amenity of the beach at Glengad is protected for public use during the construction works.

55. All boundary fencing at Aghoos and at the Glengad compound sites shall be coloured (dark green or brown is suggested) and shall be subject to agreement Mayo County Council

Reason: To mitigate the visual impact of the fencing in the landscape.

56. Before tunnelling works commence, a written agreement, encompassing a method statement and construction methodology for an intervention pit in Sruwaddacon Bay, shall be made with the Department of the Environment, Heritage and Local Government (National Parks and Wildlife Service), with Inland Fisheries Ireland and with the Department of Agriculture, Fisheries and Food. In the event that such intervention pit in connection with the tunnelling becomes necessary, the relevant works shall be carried out on the basis of the said agreement. In default of agreement, the matter shall be referred to An Bord Pleanála for determination.

Reason: To protect the natural amenities of the area.

Financial Conditions

57. Prior to commencement of development, the developer shall lodge with Mayo County Council a cash deposit, a bond of an insurance company, or other agreed security to provide for the satisfactory re-instatement of the site upon the cessation of use of the pipeline and LVI coupled with an agreement empowering Mayo County Council to apply such security or part thereof to the satisfactory reinstatement of the site. The form and amount of the security shall be as agreed between Mayo County Council and the developer or, in default of agreement, shall be determined by An Bord Pleanála.

Reason: To ensure the satisfactory reinstatement of the site.

58. (a) The developer shall provide a Community Gain Investment Fund over each of the 5 years commencing from 2011. The purpose of this fund shall be to finance facilities and services of the type described in section 6.5 of the main volume of the environmental impact statement submitted to An Bord Pleanála on 31st May 2010 and which shall benefit the community in the area of the proposed development. The Investment Fund shall be €1.7 Million per annum, a total of €8.5 Million over the life of this Community Gain Investment Fund and shall be paid in trust to Mayo County Council.

(b) The County Council shall, through the County Development Board, agree on a Community Development Plan for the Area, which shall be broadly based and not solely dependent on the Investment Fund. The objectives, services and actions contained within the plan shall provide the basis upon which the Investment Fund will be disbursed and against which application for funding will be considered. The plan and the area to be covered by the plan shall be subject to consultation with the local community and shall be put in place within 9 months of the date of this order. The plan shall be proposed by the County Development Board and adopted by Mayo County Council.

(c) Nothing in this condition shall be interpreted as an exclusion of the Local Grants Programme, the Scholarship Programme, or the Corrib Natural Gas Erris Development Fund Projects from receiving support from this new Community Gain Investment Fund. Nothing in this condition shall prevent the developer from continuing to invest in the local community after 5 years.

Reason: To provide substantial community gain for the area in which the development is located and in accordance with Section 182D(6) of the Planning and Development Act, 2000, as amended.

Documents Submitted by SEPIL at Oral Hearing 2010

These refer to Condition 1:

Document Number	Document Description	Submitted by
2	BOE - Route Selection and Alternatives Considered	Ciaran Butler SEPIL
3	BOE - Construction	Eamon Kelly SEPIL
4	List of briefs/speakers	E Keane SEPIL
5	BOE – Tunneling Construction	Tim Jaguttis SEPIL
6	BOE – Community Issues and Planning Policy Context	Kieran Kennedy SEPIL
7	BOE – Geotechnical Issues	Turlough Johnston SEPIL
8	Addendum of E.I.S Includes Appendix E Foreshore Site Investigation (Aug 2010)	E Keane SEPIL
11	BOE - Overview of Pipeline safety	Gerry Costello SEPIL
12	BOE - Operation of Pipeline – Pipeline Safeguarding	Ian Malcolm SEPIL
13	BOE – Onshore Pipeline and LVI Design	John Gurden SEPIL
14	BOE – Pipeline Protection	S Paterson SEPIL
15	BOE – Qualitative Risk Assessment	Sheryl Hurst SEPIL
16	BOE – Quantified Risk Assessment	Philip Crossthwaite SEPIL
20	Errata E.I.S.	SEPIL
21	BOE - Appropriate Hazard Distance	Gerry Costello SEPIL
22	BOE - Public Safety – Application of Design Codes	Jane Haswell SEPIL
23	BOE – Roads and Traffic	Michael Noonan SEPIL
24	BOE – Landscape and Visual	Raymond Holbeach SEPIL
25	BOE – Ground borne Noise and Vibration	Rupert Thornely-Taylor
26	BOE – Noise and Vibration (Works on Land)	SEPIL
27	BOE – Underwater Archaeology	Darragh Kingston SEPIL
28	BOE –Archeology, Architectural Heritage & Cultural	Niall Brady SEPIL
29	Heritage	Liam Courtney SEPIL
30	BOE – Peat land Hydrology & Hydrogeology	Michael Gill SEPIL
	BOE – Marine and Freshwater Environment Issues	Ian Wilson SEPIL
34	Large Drawings Site Investigations, Part 1 (Refer DRN 8)	SEPIL
35	BOE – Terrestrial Ecology	Jenny Neff SEPIL
36	BOE – Cumulative Impacts	Agnes McLaverty SEPIL
58	Foreshore Site Investigation Data Report 1 (August 2010) (see DRN 8 and 34)	SEPIL
73A	Foreshore Site Investigations Report 2 (3 rd Sept 2010)	Turlough Johnston SEPIL
73B	Foreshore S.I. Large Drawings	Turlough Johnston SEPIL
73C	Site Investigation Data	Turlough Johnston SEPIL
74	Houses Proximity Map – Glengad	SEPIL
78	Letter from Bob Hanna to G. Costello SEPIL	SEPIL
79	Copy of Foreshore Licence 11 th June 2010	SEPIL
80	Responses to Questions subject 1-8 Tunnel Construction &	SEPIL
84	On shore Pipeline Overpressure Protection System (LVI) Reliability	SEPIL

Document Number	Document Description	Submitted by
86 86A 87 88 89 90	Risk Assessment Matrix Consequence Scale Letters between SEPIL and DCENR 22/12/2005 Tunnel Stress Analysis Document LVI Stress Analysis Document Response by Ian Malcolm to Subsea Pressure Protection Stress Sensitivity Analysis Document	Ms Hurst SEPIL G Costello SEPIL SEPIL SEPIL SEPIL SEPIL
91 92 94	DCENR correspondence acknowledging S.40 Application 17/06/2010 BOE – Application for Compulsory Acquisition Order Tunneling Construction Works Aghoos – Additional Noise Attenuation Measures	SEPIL Eamon Kelly SEPIL SEPIL
131 133 134A 134B 134C 135 136 137 138 139 140 141	Vibration Monitoring Traffic Sight Lines Srahmore /Aghoos Entrances EMG Report Near shore Pipe lay and Pull in June 2009 EMG Report Near shore Pipe lay and Pull in September 2009 EMG Report Near shore Pipe lay and Pull in October 2009 Power Supply at Aghoos Total Volume Capacity of Bunded Areas Intervention Pit Clarification Use of Roads and Pier Rosspoint Clarification Biocide for Produced Water Outfall Locations and Numbering Noise Monitoring	SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL SEPIL
145A 146A	Pavement Condition at Mc Eleney's House on L1202 Terminal/Belmullet on Site Weather Station data	SEPIL SEPIL
146B 147	Security & Public Safety Clarification (Slabbing Drawing Attached) Pavement Conditions in vicinity of McGraths Bar & Letter from Mayo Co. Co. to SEPIL	SEPIL SEPIL
153	High Water Mark OSI 1:5,000 Vector Data Site Map	SEPIL
180	Case Law Referred to in Closing Statement by Mr. Keane	Mr. Keane SEPIL

Notes:

1. In relation to the previous acquisition order application, Ref. No. 16.DA 0004, (under the provisions of the Gas Act, 1976, as amended) the Board noted that this application had been withdrawn by letter from Shell E&P Ireland Ltd, received on the 31st May 2010. Accordingly, no application in respect of that acquisition order is before the Board and no further action is required. In this context, the Board has no power to order payment of costs in respect of that application.
2. In relation to the provision of spare umbilicals or the addition of concrete protective slabs over the umbilicals (as referred to in the Inspector's report), the Board considered that such alterations, although they might be prudent from the developer's viewpoint, are not essential elements of the development as proposed. The Board noted that it is open to the applicant to apply under the provisions of Section 146B of the Planning and Development Act, 2000, as amended, for approval of such alterations.
3. The Board did not consider it appropriate to specify a particular return period (50 or 100 years) for the surface water drainage system serving the construction works, having regard to the temporary nature of these and the contents of the Environmental Impact Statement, including the conservative design principles cited in the Geotechnical Risk Register. The details of the temporary drainage system are appropriate to the EMP.
4. Apart from the matters referred to in Notes 2 and 3 above, the conditions attached to the approval by the Board generally reflect the Inspector's recommended conditions, consolidated and re-drafted in the interest of clarity, efficiency and to eliminate some unnecessary repetition and remove some conditions that it deemed superfluous, where the matters concerned had been addressed in the application or further information submitted to the oral hearing.
5. The Board directed that the matter of fees/cost recovery be deferred for consideration at a later date.

Board Member: _____ Date: 18th January 2010
Karl Kent

16.GA0004

Shell Exploration and Production Ireland Limited

Re-routing of onshore, upstream gas pipeline facility relating to the Corrib Gas Field Project, Co. Mayo.

Case Reference: 16.GA0004

Case Type: Application for approval

Website address to access information:

www.corribgaspipelineABPApplication.ie

Prescribed Bodies notified of Application:

- Department of Environment, Heritage and Local Government
- Department of Communication, Energy and Natural Resources
- Department of Agriculture, Fisheries and Food
- Mayo County Council
- The National Roads Authority
- An Comhairle Ealaíonn
- Fáilte Ireland
- An Taisce
- The Heritage Council
- North Western Fisheries Board (Inland Fisheries Ireland)
- Department of Transport
- The Environmental Protection Agency
- The Health Service Executive
- The Commission for Energy Regulation
- The Department of Community, Rural and Gaeltacht Affairs

Status: Board is accepting submissions in relation to further information submitted by the undertaker on 31st of May 2010.

Last day for making a submission to the Board: 28th of July, 2010

Date of Correspondence:**Details of Correspondence**

12 th February, 2009	Application lodged with the Board.
26 th February, 2009	Comments received from the N.R.A.
16 th March, 2009	Submission received from Monica Muller and Peter Sweetman.
16 th March, 2009	Submission received from J. McAndrew and T. McAndrew.
26 th March, 2009	Submission received from Council for the West.
26 th March, 2009	Submission received from Micheál Ó Seighin and Others.
1 st April, 2009	Submission received from The Corrib Gas Scholarship Programme c/o Sean Staunton
1 st April, 2009	Submission received from Paraic Cosgrove and Pádraig McGrath.
2 nd April, 2009	Submission received from Cornelius King and Gerry Sheerin.
2 nd April, 2009	Submission received from Department of Agriculture, Fisheries and Food.
2 nd April, 2009	Submission received from Belmullet GAA Club.
2 nd April, 2009	Submission received from Erris Chamber of Commerce.
2 nd April, 2009	Submission received from Teach John Joe Teo (Seán Ó Gallchóir)
2 nd April, 2009	Submission received from Údarás na Gaeltachta.
2 nd April, 2009	Submission received from Ethel and Thomas Corduff.
3 rd April, 2009	Submission received from Maura Harrington.

3 rd April, 2009	Submission received from Roadbridge Ltd.
3 rd April, 2009	Submission received from Shevlin Engineering Ltd.
3 rd April, 2009	Submission received from Turasóireacht Iorrais Teo.
6 th April, 2009	Submission received from Engineers Ireland.
6 th April, 2009	Submission received from Bord Gáis Networks.
6 th April, 2009	Submission received from Mercury Engineering.
6 th April, 2009	Submission received from Irish Offshore Operator's Association.
6 th April, 2009	Submission received from Goodbody Economic Consultants.
6 th April, 2009	Submission received from Kilcawley Construction.
6 th April, 2009	Submission received from Fr. Michael Nallen.
6 th April, 2009	Submission received from Pro Gas Mayo Group.
7 th April, 2009	Submission received from the Department of the Environment, Heritage and Local Government.
7 th April, 2009	Submission received from Irish Business and Employers Confederation (IBEC).
7 th April, 2009	Submission received from Dara Calleary, T.D.
7 th April, 2009	Submission received from Pobal Chill Chomain.
7 th April, 2009	Submission received from Mayo County Council.
7 th April, 2009	Submission received from An Taisce.
7 th April, 2009	Submission received from Terence Conway and Others.
7 th April, 2009	Submission received from John Monaghan.

7 th April, 2009	Submission received from Colm and Gabrielle Henry.
7 th April, 2009	Submission received from DB Marine Research and Associates.
7 th April, 2009	Submission received from Rossport Solidarity Camp.
7 th April, 2009	Submission received from Fritz and Betty Schult and Others.
7 th April, 2009	Submission received from Pobal le Chéile.
7 th April, 2009	Submission received from Cllr. Harry Walsh.
7 th April, 2009	Submission received from Brendan Hegarty.
7 th April, 2009	Submission received from Chambers Ireland.
7 th April, 2009	Submission received from TJ Lennon.
7 th April, 2009	Submission received from Catherine McAndrew.
7 th April, 2009	Submission received from Tom Philbin.
7 th April, 2009	Submission received from Teresa McGarry and Bríd McGarry.
21 st April, 2009	Comments requested from the Health and Safety Authority.
21 st April, 2009	Comments requested from the Environmental Protection Agency.
21 st April, 2009	Comments requested from the Department of Communications, Energy and Natural Resources.
5 th May, 2009	Department of Environment, Heritage and Local Government requested to send representative to Oral Hearing.
6 th May, 2009	Comments received from the Environmental Protection Agency.

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12 th May, 2009	Comments received from the Department of Communications, Energy and Natural Resources.
18 th May, 2009	Comments received from the Health and Safety Authority.
12 th June, 2009	Further comments received from the Health and Safety Authority.
2 nd November, 2009	Additional information requested from Undertaker
15 th January, 2010	Correspondence received from Undertaker seeking extension of time in relation to Further Information request.
20 th January, 2010	Correspondence received from the Department of Communications, Energy and Natural Resources.
27 th January, 2010	Correspondence received from Undertaker in relation to date for receipt of additional information.
31 st May, 2010	Response received from Undertaker in relation to Board's letter of 2 nd November, 2009.
25 th June, 2010	All parties are informed that the Board will, from 30 th June 2010, accept further submissions/observations in relation to information submitted on 31 st May, 2010. Last date for receipt of submissions/observations is 5.30pm on Wednesday, 28 th of July, 2010.
25 th June, 2010	Board requests comments from the Department of Communications, Energy and Natural Resources (DCENR), the Commission for Energy Regulation (CER) and the Environmental Protection Agency (EPA).
2 nd July, 2010	Submission received from Peter Sweetman and Associates
13 th July, 2010	Parties informed of re-opening of oral hearing on 24 th of August, 2010
15 th July, 2010	Comments received from National Roads Authority
16 th July, 2010	Submission on received from Chambers Ireland

16 th July, 2010	Submission received from Gaslink Independent System Operators Ltd
16 th July, 2010	Submission received from J. McAndrew and T. McAndrew
16 th July, 2010	Submission received from Council for The West
19 th July, 2010	Correspondence received from RPS in relation to oral hearing date
19 th July, 2010	Additional submission received from Peter Sweetman and Associates
20 th July, 2010	Submission received from Sean Staunton, The Corrib Gas Scholarship Programme
21 st July, 2010	Response issued to RPS letter of 19 th July
23 rd July, 2010	Additional documentation received from undertaker, amending section J1 of revised EIS
23 rd July, 2010	Submission received from the Irish Offshore Operators' Association
23 rd July, 2010	Submission received from Turasóireacht Iorrais (Ghabháltais) Teo (Erris Tourism (Holdings) Ltd)
26 th July, 2010	Submission received from Pat Meenaghan
26 th July, 2010	Submission received from Mary Meenaghan
26 th July, 2010	Submission received from John, Kathleen and Johnathan Barrett
26 th July, 2010	Submission received from Tom Philbin
26 th July, 2010	Submission received from Ethel and Thomas Corduff
26 th July, 2010	Submission received from Eamonn Ó Coilleáin
28 th July, 2010	Submission received from Micheál Ó Seighin and Others

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27 th July, 2010	Submission received from Jarlath and Teresa McAndrew
27 th July, 2010	Submission received from Bord Gáis
27 th July, 2010	Submission received from Neil McEleney
27 th July, 2010	Submission received from Martin Harrington
27 th July, 2010	Submission received from Brendan Conway
27 th July, 2010	Submission received from Donal Connolly and Paddy McGuire
27 th July, 2010	Submission received from The Irish Academy of Engineering
27 th July, 2010	Submission received from Engineers Ireland
27 th July, 2010	Submission received from IBEC
27 th July, 2010	Submission received from Catherine McAndrew
28 th July, 2010	Submission received from Fr. Kevin Hegarty
28 th July, 2010	Submission received from Pro Erris Gas Group
28 th July, 2010	Submission received from Seirbhísí Cúram Chill Chomáin Teo
28 th July, 2010	Submission received from Diana Taylor, Damhnait de Brun and Lucy Bingham McAndrew
28 th July, 2010	Submission received from Paula and Michael King
28 th July, 2010	Submission received from Teach John Joe Teo (Seán Ó Gallchóir)
28 th July, 2010	Submission received from Tony McGrath
28 th July, 2010	Submission received from Teresa McGarry and Bríd McGarry
28 th July, 2010	Submission received from Department of Communications, Energy and Natural Resources

28 th July, 2010	Submission received from Mayo County Council
28 th July, 2010	Submission received from the Commission for Energy Regulation
28 th July, 2010	Submission received from National Monuments section of the Department of the Environment, Heritage and Local Government
28 th July, 2010	Submission received from the Nature Conservation and Foreshore Unit of the Department of the Environment, Heritage and Local Government
28 th July, 2010	Submission received from Pobal Chill Chomáin
28 th July, 2010	Submission received from Rossport Solidarity Camp
28 th July, 2010	Submission received from Colm and Gabrielle Henry
28 th July, 2010	Submission received from Fritz and Betty Schult
28 th July, 2010	Submission received from DB Marine Research and Associates
28 th July, 2010	Submission received from Parish of Kilcommon Erris (c/o Fr. Michael Nallen)
28 th July, 2010	Submission received from Inland Fisheries Ireland
28 th July, 2010	Submission received from Niall King and Jerry Sheeran
28 th July, 2010	Submission received from Pro Gas Mayo
28 th July, 2010	Submission received from An Taisce
28 th July, 2010	Submission received from Pierce and Anne Finnegan
28 th July, 2010	Submission received from David Dendy and Claire Haynes
28 th July, 2010	Submission received from John Monaghan

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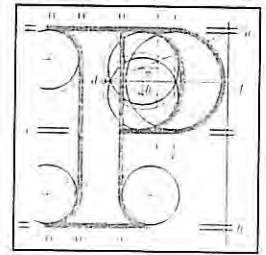
28 th July, 2010	Submission received from Pullathomas National School Board of Management
28 th July, 2010	Submission received from M.M. McCarron and Vincent Fahy
28 th July, 2010	Additional submission received from Micheál Ó Seighin
28 th July, 2010	Submission received from Maura Harrington
28 th July, 2010	Submission received from Niall Harnett, Rossport Solidarity Camp
28 th July, 2010	Submission received from Jonathan Naughton
28 th July, 2010	Submission received from Terence Conway and Others
28 th July, 2010	Submission received from Brendan and Rachel McKenna
28 th July, 2010	Submission received from Martin McDermott and Others
3rd th August, 2010	E.P.A. is requested to resubmit comments by 10 th August, 2010
4 th August, 2010	Oral hearing agenda issued to parties
10 th August, 2010	Comments received from the E.P.A.

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Our Ref: 16.GA0004 & 16.DA0004

Your Ref: SEPIL

An Bord Pleanála



Des Cox,
RPS Planning & Environment,
West Pier Business Campus,
Dun Laoghaire,
Co. Dublin.

2nd November 2009

Re: Onshore upstream gas pipeline facility relating to the Corrib Gas Field Project, Co. Mayo.

Dear Sir,

I have been asked by An Bord Pleanála to refer to the above mentioned applications.

Having considered the application made under section 182C of the Planning and Development Act 2000 as amended, the submissions received and the report of the Inspector who carried out the oral hearing, the Board considers:-

- (1) The design documentation for the pipeline and the quantified risk analysis (QRA) provided with the application does not present a complete, transparent and adequate demonstration that the pipeline does not pose an unacceptable risk to the public.
- (2) That part of the route between chainages 83+910 and 89+550 (5.64 kilometres between Glengad and Aghoos) is considered unacceptable for the following reasons:-
 - (a) the proposal to route the pipeline at a proximity distance from dwellings which is within the hazard range of the pipeline should a failure occur is unacceptable,
 - (b) the limitations on the road improvement works in the Rosspoint area resulting in a traffic plan and haul route proposal that involves convoys of five heavy goods vehicle (HGV) trucks travelling over narrow bog rampart and bog roads partly through a rural residential area which would constitute a traffic hazard and obstruction of road users, and
 - (c) the impacts on the local community during the construction and operational phases of the development which would seriously injure the residential amenities of the area and the development potential of lands in the designated rural settlement of Rosspoint.
- (3) That part of the route of the pipeline which is onshore (between chainage 83+390 and 83+400) has been omitted from the application i.e. between chainage 83+400 and the high water mark (HWM).



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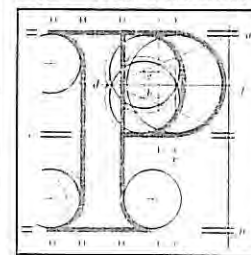
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email: bord@pleanala.ie

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Dublin 1.

Furthermore, the Board having examined the detailed proposals submitted and having regard to the fact that Ireland has not adopted a risk-based framework for decision-making on major hazard pipelines (transporting wet gas) and related infrastructure considers that the following standards, when applied to the proposed pipeline, are the appropriate standards against which the proposed development should be assessed and that the Board should, therefore,

- (a) adopt the UK HSE risk thresholds for assessment of the individual risk level associated with the Corrib Gas Pipeline,
individual risk level above 1×10^{-5} – intolerable,
individual risk level between 1×10^{-5} and 1×10^{-6} – tolerable if ALARP (As low as reasonably practicable) is demonstrated,
individual risk level below 1×10^{-6} broadly acceptable, and
- (b) adopt a standard for the Corrib upstream untreated gas pipeline that the routing distance for proximity to a dwelling shall not be less than the appropriate hazard distance for the pipeline in the event of a pipeline failure. The appropriate hazard distance shall be calculated for the specific pipeline proposed such that a person at that distance from the pipeline would be safe in the event of a failure of the pipeline.

An Bord Pleanála



Having regard to the foregoing and to the strategic national importance and current status of the entire Corrib Gas Field development, and as it is provisionally the view of the Board that it would be appropriate to approve the proposed onshore pipeline development should alterations be made to the proposed development, you are invited to make alterations to the proposed development as follows:-

Modify the pipeline route between chainages 83+910 and 89+550 so that the route at this location would be generally in accordance with that indicated as Corridor C (that is, within Sruwaddacon Bay) in the route selection process which formed part of the Environmental Impact Statement (E.I.S.) and planning application. The revised development including this alteration shall be accompanied by a revised E.I.S. including an appropriate assessment of the impact of the development on Natura 2000 sites.

Furthermore, the applicant is requested to furnish the following further information in accordance with section 182C(5) of the Planning and Development Act, 2000 as amended in relation to the entire pipeline route modified as above:-

- (a) Clarify the code requirements and pressure test requirements for the pipeline from chainage 83+390 (HWM) approx. to chainage 83+470 (downstream weld at LVI)
- (b) Provide confirmation that the design of this section of the pipeline meets the requirements set down by the Technical Advisory Group (TAG).
- (c) Provide an integrated set of design documentation in the form of a revised Appendix Q. The documentation should integrate the analysis provided in the incidental and individual documents at the oral hearing. The whole set should provide a transparency of the design for the complete pipeline from the HWM to the terminal. This transparency should relate to the different site and design conditions along the pipeline and should relate to the codes. The design should include the analysis related to ground stability and should provide a system for monitoring movement of the pipeline in those areas of deep peat. Furthermore, the maximum allowable operating pressure (MAOP) for the pipeline should be stated.
- (d) Submit a new QRA that presents the analysis of risk at the different operating conditions and different locations along the pipeline route. The QRA should be site specific. The QRA should include ground movement and incorporate a database that matches the conditions of the proposed development. A sensitivity of the QRA is required which demonstrates the range of risk that relates to any uncertainty (in the database) of failure frequencies for the various potential



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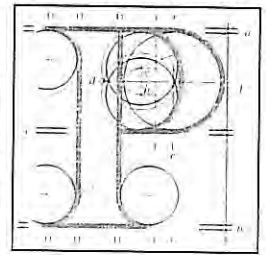
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failure modes of the pipeline. The database should be relevant for an upstream wet gas. In order to eliminate any doubt please note that all failure modes should be included including the possibility of third party intentional damage at Glengad, wet gas in the pipeline, CO2 in the pipeline and potential for Methane Hydrate in the pipeline.

- (e) Provide a qualitative assessment of risk. This should be prepared for the different operating conditions and different locations along the pipeline route and should provide a comprehensive assessment to include those events that cannot be easily defined mathematically.
- (f) Submit an analysis of the condition where the umbilical becomes severed and the control of valves at the wellhead and the subsea manifold is lost. The analysis needs to identify what conditions apply to the onshore pipeline and the risks involved in that circumstance.
- (g) An examination of the potential for pressure in the offshore pipeline to increase to wellhead pressure levels in the event that all wellhead valves had to be shut in over a prolonged period and in that period incremental leakage past the valves occurred. The concept of a vent at Glengad as a measure to protect against pressure at the wellhead side of the pipeline at the landfall rising above the maximum operating pressure should be examined. Information should also be provided on the reliability of the subsea shut down valve system proposed for the wellhead and manifold offshore.
- (h) Provide details of the examination of the potential increase in safety for the population at Glengad by the use of a straight pipe at the landfall and provide full justification for the proposed design as submitted (and any revised design that may result from the modifications requested herein).
- (i) Provide details of the hazard distances, building burn distances and escape distances in contours for the entire pipeline. The applicant should indicate the outer hazard line contour which should show the distance from the pipeline at which a person would be safe. A number of these contours were provided at the oral hearing (copies of which are attached to this letter), however, the set of hazard contours should be complete and should include the entire onshore pipeline as far as the terminal. Please indicate the assumptions made in determining these hazard contours and indicate any limitations that apply to these hazard contours.
- (j) Provide details separately of the inner zone, middle zone and outer zone contour lines for the pipeline. These shall represent the distance from the pipeline at which risk levels of 1×10^{-5} , 1×10^{-6} and 0.3×10^{-6} per kilometre of pipeline per year exist.
- (k) Provide an assessment of the societal risk for Glengad and the societal risk along the revised route. This should be fully documented.
- (l) Submit precise section by section details of the proposals for temporary peat turve storage, which take into account the condition of the existing surface layer of the peat and which specifically identify where peat turves or remoulded peat will be stored on bog mats adjacent to the stone road (or elsewhere).
- (m) Submit details of the specific risk mitigation measures that would be proposed for each of the sections within the peat lands (Sections 1 to 18 were the relevant sections in the route as originally proposed and as set out in the qualitative assessment of relative peat failure potential which was presented as additional information at the oral hearing). These details should identify in particular where there would be limits on the storage of peat on bog mats adjacent to the stone road excavation and where a conservative approach would be proposed to the use of design factors and in the assessment of peat stability.
- (n) Submit an assessment of the potential impact of the estimated stone road settlements on the umbilical pipeline and service ducts that will also be constructed within the stone road, including an assessment of the risks associated with failure due to rupture of these umbilicals or services.

An Bord Pleanála



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Revised drawings should be submitted which fully describe the full extent of the onshore pipeline from the HWM to the terminal site. These alterations to the extent of the site the subject of this planning application shall be accompanied by revised public notices as referred to below.

The site of the proposed development has been incorrectly detailed in the EIS between chainage 91.537 and chainage 92.539, i.e, the existing stone road at the Terminal end of the pipeline. The applicant is invited to amend the details of the proposed development at this location.

The undertaker should consider whether or not the construction of a pipeline along the altered route as referred to in this communication would require the compulsory acquisition of any lands or rights over land not covered in the application to the Board, (file ref. 16.DA0004), under Section 32 of the Gas Act 1976. In the event of an acquisition order being required for any additional land or rights over land an application for such order should be prepared under the provisions of the Gas Act 1976 and submitted to the Board in conjunction with the information requested herein. Any alterations or modifications required to the application already submitted (file ref. 16.DA0004) should be indicated. As an alternative an application for an acquisition order to cover the entire revised route may be submitted.

Please note that upon receipt and examination of any response to its request, the Board can at that stage invoke its powers pursuant to subsection (7) and (8) of Section 182C of the said Act which require the undertaker to publish a newspaper notice of the furnishing of the further information and to make same available for inspection or purchase. Any such newspaper notice would provide that written submissions or observations in relation to the further information may be made to the Board. The undertaker would also be required to send to the local authority and to each prescribed body to which notice was given of the application, a copy of the further information and E.I.S. indicating that submissions / observations may be made to the Board. You will also be requested to erect site notices at specified locations along the route.

A response to this request for further information and revised E.I.S. should be received by the Board on or before 5th February, 2010.

If you have any queries in relation to the matter please contact the undersigned officer of the Board.

Please quote the above mentioned An Bord Pleanála reference number in any correspondence or telephone contact with the Board.

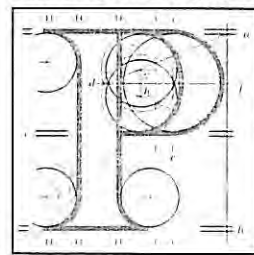
Yours faithfully,

PP *Mancella* *Dof*

Alan McArdle
Executive Officer

Registered Post

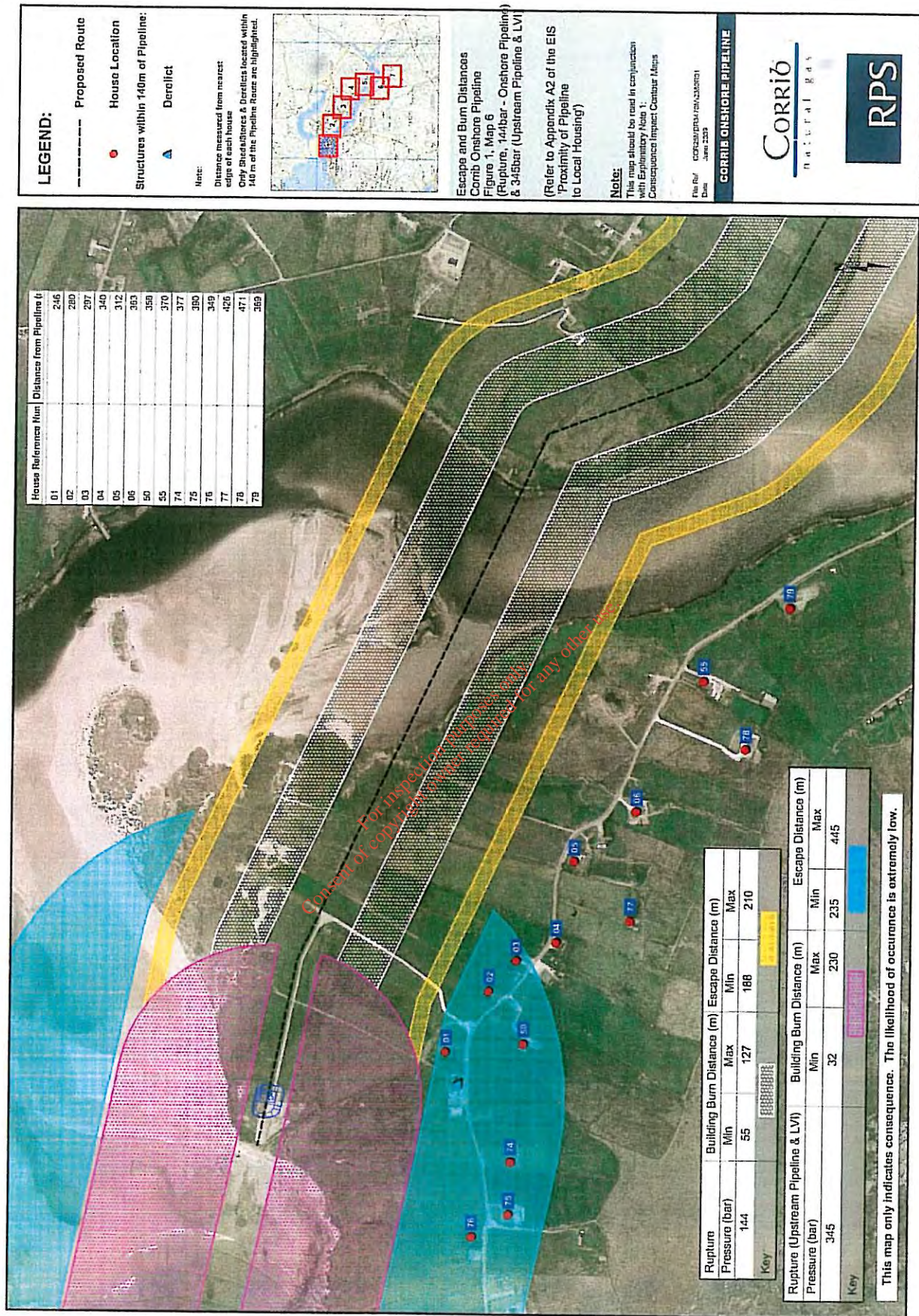
An Bord Pleanála

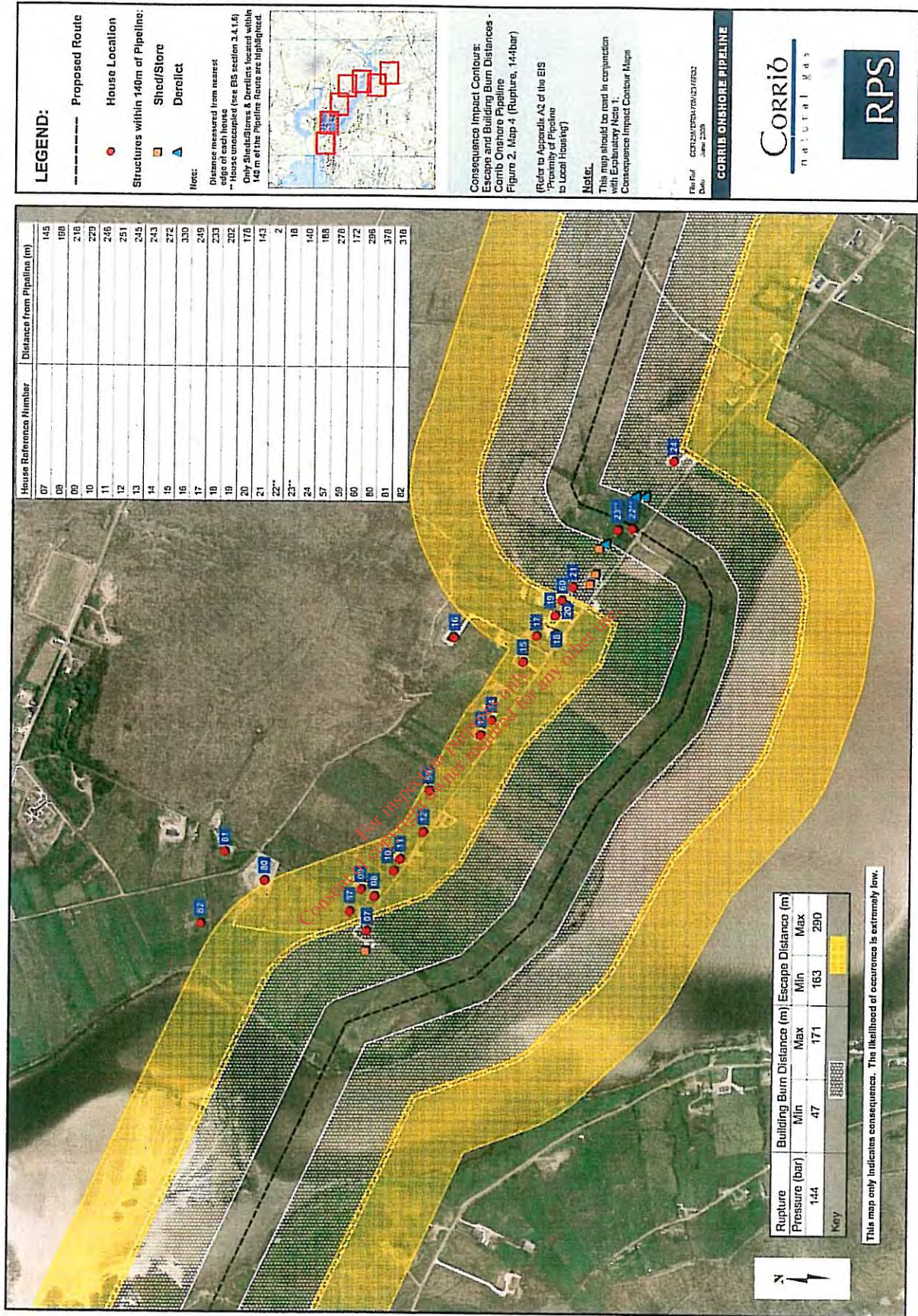


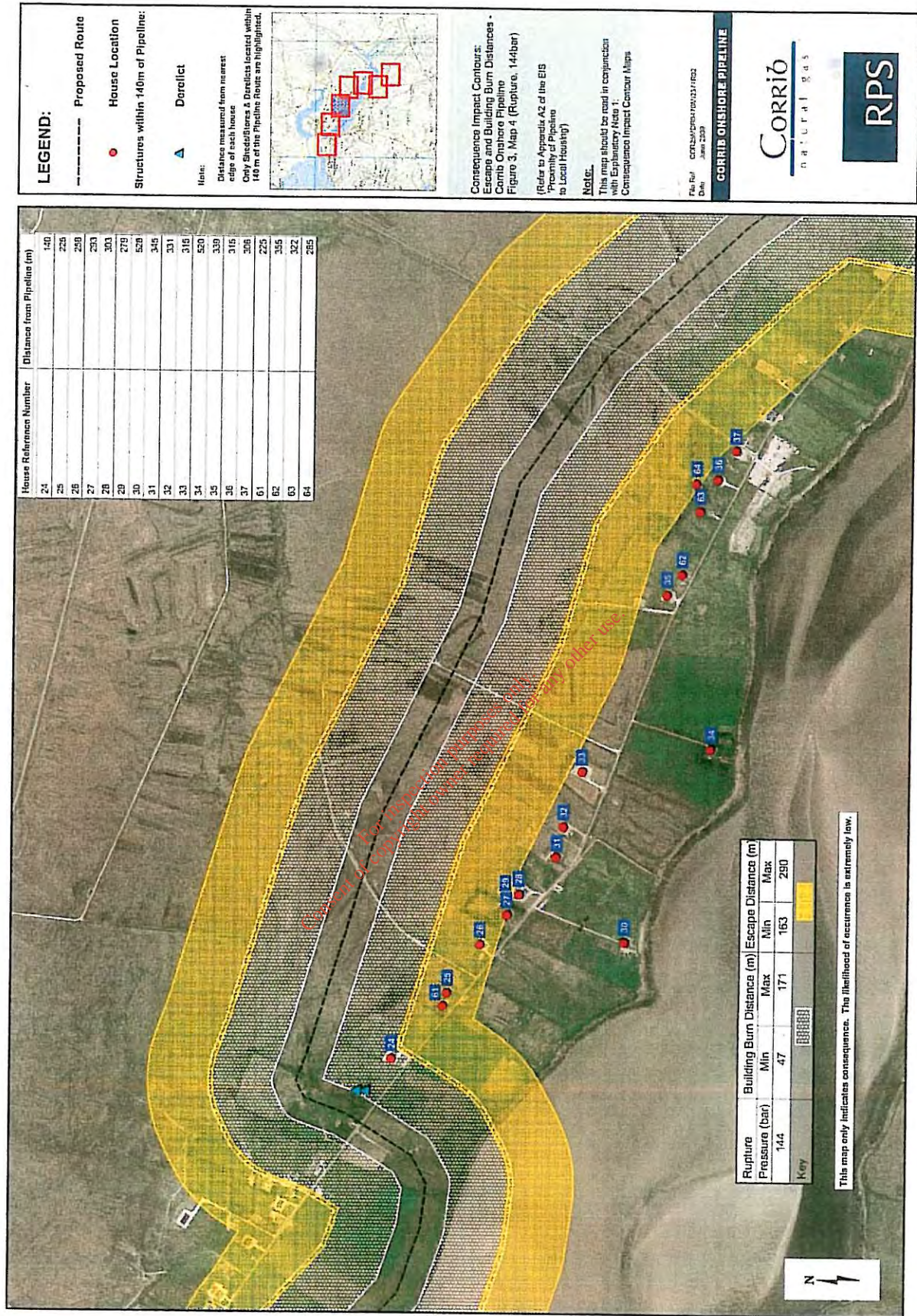
64 Stráid Maoilbhríde,
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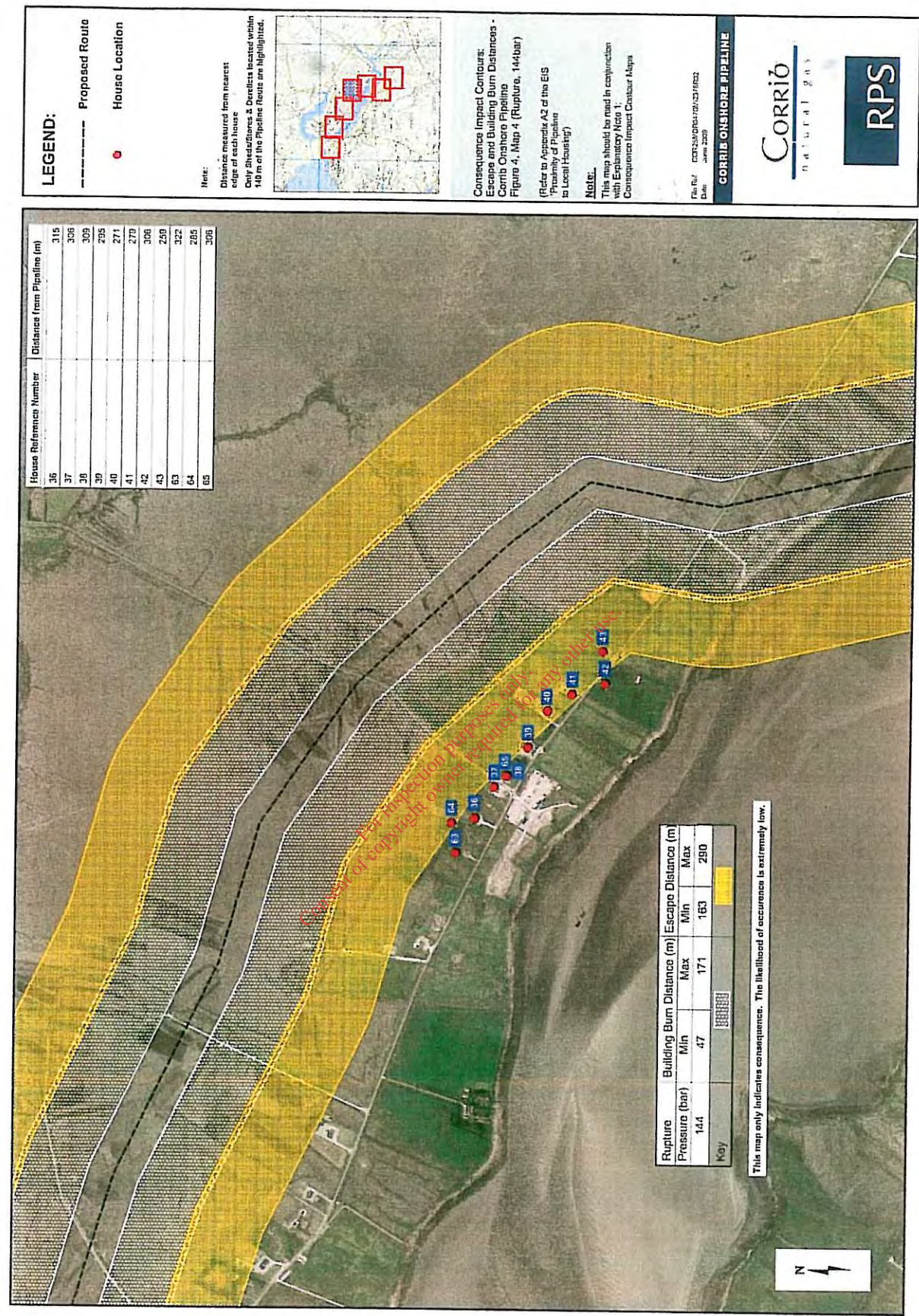


Figure 6 Individual Risk Contours (100bar, Corrib specific frequencies)

