PL 16.207212

INSPECTOR'S REPORT

Proposed Development:	Construct gas terminal for the reception and separation of gas from the Corrib Gas Field, and for a peat deposition site.
Address:	Townland of Bellagelly South, Bellanaboy Bridge, and townlands of Srahmore and Attavally, Bangor Erris, both in County Mayo.
Type of Appeal:	1st party against specified conditions 3rd Party against Grant of Permission
Planning Authority ref:	P03/3343
Planning Authority:	Mayo County Council
Applicants:	Shell E & P Ireland Limited
Appellents:	Shell E & P Ireland Limited (1st Party) Ballinaboy/Leenamore Residents & Others (3rd Party)
Date of Site Inspection:	16th July 2004 and others
Inspector:	Des R. Johnson, Deputy Planning Officer.

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1.0 INTRODUCTION

1.1.0 I have read the file, including the submitted Environmental Impact Statement, inspected the site and surrounding area on several occasions, considered the written grounds of appeal and all other relevant written submissions, and assessed the proposal in the context of the proper planning and sustainable development of the area.

1.1.1 In order to assist me in the preparation of this report, the Board requested the written views of three separate consultants in relation to the specific issues of stability and other earthworks and construction matters, transportation and traffic issues, and potential for leaching of phosphate and other matter during the excavation, windrowing and deposition of peat. These reports are attached at the back of this volume and copies of the Briefs are included in Appendix B of Volume 2. Each consultant visited the site.

1.1.2 In total, my report is contained in two volumes as follows:

Volume 1	Main text and assessment
Volume 2	Appendices

This is Volume 1 and should be read in conjunction with the volume of appendices. Regular reference is made in this volume to the appendices contained in Volume 2.

1.1.3 The Volume 2 Appendices contain a range of material categorised under the following headings:

EIS Structure and Content
Consultants Briefs
Board Directions
Additional Information submitted to the Planning Authority
Other Relevant Licences
Planning Authority Decision and Technical Reports
Technical Notes requested by Planning Authority
NAOSH Report
1st and 3rd Party Grounds of Appeal
Observations
Responses
Mayo County Development Plan
Board Requests for Additional Information

The appendices contain summaries of the various reports, submissions and other documents. A full set of all the relevant documentation accompanies the two volumes of this report.

1.1.4 Several 3rd Party appellants requested an Oral Hearing in this case. By memorandum dated 4th June 2004, I recommended that, on balance, an Oral Hearing should be held having regard to the following:

- the nature and scale of the proposal
- the nature and range of issues raised in the grounds of appeal
- material changes to the current proposal compared with the previous, and the significant new issues which these raise
- the material change of circumstances since the previous Board decision
- the terms of the Board Direction relating to PL 16.126073

The Board decided, unanimously, that an Oral Hearing should not be held, having regard to the planning history in relation to this proposed gas terminal and to the amount of background information available arising from the two previous extensive oral hearings already held and the information provided in the planning application and in the EIS (see Appendix C of Volume 2).

2.0 SITE LOCATION AND DESCRIPTION

2.1.0 There are two sites involved in this proposal – the Terminal site at Bellanaboy and a Deposition site at Srahmore.

2.1.1 The ***Bellanaboy Site*** is irregular in shape and is stated to have an area of 160 hectares. It was previously used as a peatland experimentation station. The proposed terminal footprint is stated to be approximately 13 hectares, with an additional 1 hectare to be used for temporary construction facilities. The proposed terminal footprint has bands of coniferous forestry interspersed with areas of bogland, covered with reeds and sodden underfoot.

The site is located in northwest Mayo, approximately 9.5km north of Bangor Erris and approximately 16km due east of Belmullet. It is to the north side of the R314 Regional road which links Glenamoy and Belmullet.

To the southeast the site adjoins the R314, to the west is the L5244 Local road linking the R314 and Pollatomish, and adjacent to the north eastern site boundary is another local road also linking to Pollatomish. Bellanaboy Bridge, adjacent to the junction of the R314/L5244 is at the southwestern corner of the site.

Blanket bog and areas of coniferous forestry generally cover the site. The site is on the southern flank of a gently sloping hillock that peaks at 45m AOD

(Malin). Existing ground levels vary from 43m AOD in the north east of the terminal area to 30m AOD in the southwest. The site slope is stated to be 1.5°.

The main access is from the R314 towards the southeastern end of the terminal site. This access road leads to a series of temporary administrative buildings/structures and stores. (These were present on my first site visit but not on the occasion of a second visit). Other internal roads/tracks include one along the northwestern limit of the proposed terminal footprint and another along the southwestern limit. At the time of inspection I noted that drainage ditches had been cleared and deepened, silt ponds were being constructed in the mid west and south western sections of the terminal site, and that a wooden walkway had been constructed in the south western section of the overall site.

2.1.2 The ***Srahmore Site*** is irregular in shape, and is located approximately 1 – 1.5km west and north west of Bangor Erris, Co. Mayo. It is approximately 16km south east of Belmullet and 11km south west of Glenamoy.

The site is low lying in a saucer shaped depression of cutover peatland. The site slopes gently from east to west falling from 20.5m AOD to 14m AOD at a slope stated to be c1.8°. The overall area of the site is stated to be 117ha approximately. Deposition of peat is proposed over an area of 63 hectares approximately, and there would be a controlled overflow area of about 12 hectares.

To the northeast a small section of the site adjoins the R313 Regional road which links Bangor Erris and Belmullet, and to the south the boundary adjoins the L1205 Local road linking Bangor Erris and Gweesalia. The Munhin River is approximately 500 metres to the northwest of the site at its nearest point, and the Owenmore River is to the south of the L1205 Local road.

The site forms part of an extensive open cutover Bord na Móna peatland landscape. The bog is part of the Oweninny complex and has been in use for 40 years providing peat for the ESB power station at Bellacorrick. The area proposed for deposition (Area 6) is divided into a series of bays, each separated by a high field left in-situ to facilitate the stockpiling of peat. At the time of inspection there was little evidence of the revegetation of the exposed peat surfaces, and underlying rock was exposed in places. The deposition site is within the catchment of the Owenmore River, approximately 3km from the discharge point at Tullaghan Bay.

The EIS states that there are approx. 40 residences located immediately north of the Srahmore site, distributed linearly along the R313 and the County road along the eastern shores of Carrowmore Lake. South of the site there are 30 dwellings located in close proximity to the deposition site.

2.1.3 A *Haul Route* is proposed linking the Bellanaboy and Srahmore sites for the transportation of peat between the two sites. It should be noted that this is not

referred to in the public notice for the proposed development. The initial stretch of the haul route is along the R314 south-westwards from the site entrance to the junction with the L1204. Shortly before this junction there is a turning to the right (L5244 leading towards Pollatomish), and Bellanaboy Bridge over the Bellanaboy River. The L1204 leads south and is approximately 10km in length. It is a typical bog road with changing vertical and horizontal alignments. The carriageway width varies over the roads length. There are several sharp bends and pinch points, including Muingerroon South Bridge (approx. 400 metres south of the R314/L1204 junction), Glenturk More, Glenturk Beg (approx. half way along the road), and Cloontakilla, where there is a weak bridge structure. The L1204 meets the R313 Regional road at an acute angle.

A one-way system is proposed at the southern end of the Route for returning traffic. From the deposition site entrance peat haulage traffic would travel north west along the R313 to the junction with the L12044. The local road meets the regional road at a slight angle. The carriageway width of the L12044 is approx. 3.5m and there is a right-angled bend about two thirds the way along the road (approx. 600m in total length). There is a small cluster of housing at this point. The L12044 rises into the junction with the L1204. There is an agricultural gate, and a gate and access leading to a ruined building opposite this junction. I noted a planning notice dated 2002 relating to a new dwelling at this point. Vision from the L12044 north east along the L1204 is very restricted (estimated approx. 46m) due to a sharp bend in the main road. Vision in a southerly direction is estimated at approx. 135m. The junction is on the outside of a bend on the main road.

There are several houses on the R314 opposite the proposed Terminal site and another adjacent to the junction with the L1204. There are several groups of houses along the L1204, including newly constructed dwellings.

2.1.4 Carrowmore Lake is the dominant water feature in the wider area. This is a large freshwater lake, which is important both as a fishery and as a water supply for the Erris region. The lake is to the north of the Srahmore site, south west of the Bellanaboy site, and to the west of the L1204, which forms the majority of the proposed Haul route. The L5284 is a narrow winding road which follows the western shoreline of Carrowmore Lake; there are scenic views from this road in north westerly and westerly directions.

To the west of the Terminal site, the Bellanaboy River flows south beneath Bellanaboy Bridge and then southwestwards into Carrowmore Lake. A short distance south of Bellanaboy Bridge there is a confluence with another stream flowing generally in a northwesterly direction. To the north east of the Terminal site the lands are drained by the Glenamoy River which flows generally in a northerly direction into Sruwaddacon Bay. The Ordnance map indicates that there is a watershed across the eastern portion of the Terminal site.

Along the length of the L1204, other than the Bellanaboy River, there are two other rivers flowing from east to west under the Local road and feeding into

Carrowmore Lake. The first of these drains the areas shown as Glenturk More and Glenturk Beg, and the second is the Glencullin River.

The outlet from Carrowmore Lake is the Munhin River, which flows in a south westerly direction and feeds into Tullaghan Bay. This river is to the west and north west of the Srahmore site. It should be noted that there is a drainage channel adjacent to the northern boundary of the proposed deposition area and this flows generally in a westerly direction to join the Munhin River. The Owenmore is a sizeable river, which flows in a westerly direction to the south of Bangor Erris, and joins with the Munhin River approx. 0.5km before the outflow into Tullaghan Bay.

2.1.5 The two sites and the proposed Haul Route are generally low lying. To the east of the L1204 there are higher lands with Slieve Fyagh (331m) being the highest point.

2.1.6 I attach photographs taken at the time of inspection at the end of this report.

3.0 THE PROPOSED DEVELOPMENT

3.1.0 The Corrib Gas Field is an accumulation of natural gas (methane) approx. 65km off the Mayo coast. It is at a water depth of approx. 350 metres, and the gas is at a stated depth of approx. 3.5km below the seabed.

The development of the Field would involve a number of sub sea gas wells flowing into an underwater pipeline. A collection system, known as the manifold would be placed on the seabed. A pipeline would come ashore at Dooncarton in Broadhaven Bay, and then run underground to the proposed Terminal site at Bellanaboy.

There are two distinct elements to the proposal currently before the Board namely:

- Development of a gas terminal at a site adjacent to Bellanaboy Bridge, Bellagelly South, Co. Mayo.
- Peat deposition site at Srahmore, Bangor Erris, Co Mayo.

3.2.0 The proposed ***Gas Terminal*** consists of a series of buildings and other structures to be constructed on a platform footprint area stated to be approx. 13 hectares. In order to create the platform for the terminal significant excavation and filling is proposed. In total, up to 650,000m^3 of peat, rock and mineral soils would be excavated. The peat, estimated at approx. 450,000m^3 would be transported off the site to a separate Bord na Móna deposition site. Approx.

200,000m^3 of mineral soils and rock would be reused as fill material on the south and western parts of the terminal site.

The majority of the construction would be at 33.4m AOD (Malin). Warehouse, maintenance and administration buildings would be at 34.1m AOD. The main buildings would be up to 13 metres high. The highest feature would be the flare stack at 40 metres and founded at 35.08 metres. Approx. 10% of the site would be paved and the remainder covered in gravel. A stockproof property fence would be placed around the perimeter of the terminal landholding and the terminal itself would be enclosed with a security fence (3.4m high during operational phase). The overall site layout is shown on Drg. COR-AR-CO-001 (Index Sheet) and COR-AR-SP-014; both can be found in Volume 2 Drawings. An annotated layout drawing COR-AM-PR-001 is contained in Volume 4 Drawings. The Site Roads Layout Plan (Drg. COR-AR-RL-001) can be found in Volume 3 Drawings, and a plan of the entrance COR-MC-BU-008 can be found in Volume 8 Drawings.

3.2.1 The proposed terminal would consist of gas conditioning and power generation equipment, and utilities including water treatment, fire water ponds, pipe racks, flare, control room, administration block, maintenance building, equipment plant buildings, paved areas, walkways, plant roads and landscaped areas.

The incoming gas is stated to be sweet (no H_2S), containing a small amount of hydrocarbon condensate (naturally occurring fluid), and with low water content. The incoming gas and slugs of liquid arriving at the Terminal would pass through a slug catcher, reducing the velocity and calming the liquid. Liquid phases would be separated from the gas by gravity. Condensate would be recovered and water/methanol would pass to the methanol regeneration system. Gas would pass to the inlet separator, then the mercury recovery unit and then to a pressure valve allowing condensation of any remaining condensate, methanol and water. Finally gas would be compressed and odorant added before metering on leaving the terminal. Odorant comprises Tertiary Butyl Mercaptan (80%) and Di-methyl Sulphide (20%). The peak design capacity of the Terminal is 10 million cubic metres/day, and the design life is approx. 30 years.

The main function of the Terminal would be as follows:

- Incoming gas treatment separation.
  - Slug catcher removes the main bulk of liquids
  - Inlet separation removes remaining liquids, corrosion and scale inhibitor.
- Export gas treatment conditioning.
  - To meet specification quality
  - Gas compression
  - Odorisation

- Metering of export gas into distribution network

- On-site recycling facilities.

  - Methanol recovery (used as antifreeze in subsea installation)
  - Condensate stabilisation (recovered and reused as fuel in heating medium heater)

Utility systems to be provided include the following:

- Gas and liquid fuels
- Hydrate inhibitor injection (methanol)
- Chemical injection: anti corrosion and anti scale chemicals
- Water treatment including purification, collection of rainwater and run-off water.

3.2.2 Cut slopes on the construction site would be designed as follows:

- Unweathered rock 1 in 1
- Weathered rock & mineral soil 1 in 3
- Peat Retained

There would be cut slopes along the NE corner of the terminal site, where excavation would be a maximum of 10 metres deep. Where peat is to be excavated, the edge of the excavation would be supported as follows:

- in areas where existing ground level is above platform level, by a gabion gravity wall

- in areas where platform level is above ground level, by sheet pile retaining walls. Following construction the sheet piles would be removed and replaced by a geotextile wrap.

Excavated peat for export would be placed in windrows on a mineral soil foundation for 8 days prior to transportation. It is stated that windrowing may reduce the water content of the peat by up to 10%.

A number of structures and site roads are proposed for construction directly onto the peat. It is proposed to stabilise the peat in these areas using in-situ soil strengthening methods. Proposed methods of stabilisation are column stabilisation or mass stabilisation. The preferred binder is cement, or possibly a cement/sand mix, in dry form. Proposed peat stabilisation areas are as follows:

- site of administration building etc. (west of main access road)
- temporary construction site (east of main access road)
- flare site

- area around settlement ponds
- internal roads

Volume 3 Drawings include COR-AR-RL-001 and 002. Section 2-2 shows the eastern end of the flare site with 350mm diameter piles at 3500mm centres to bedrock, topped by 300mm thick RC slab. Section 7-7 shows a section through the proposed settlement ponds.

3.2.3 Excavation would commence in the northeastern corner of the site and progress westwards. During construction storm water would be collected in sumps in the terminal area before being pumped to field drains to the west of the excavation face and the fire break ditch to the south of the terminal. Ditches containing construction runoff would be diverted to settlement ponds to remove suspended solids. Roads would be drained by open channels and then to settlement ponds. During the permanent phase there would be cut or embankment slopes surrounding the majority of the terminal footprint. Drainage would be along the perimeter of the terminal with 8 connection points. Surface water from processed areas would be treated by corrugated plate interceptor/multi media filtration and ultra filtration prior to discharge.

Two settlement ponds are proposed in the SW corner of the terminal site. These would allow peat and silt to settle out, and would store runoff water from high rainfall events. The ponds would be monitored electronically for turbidity and phosphates.

3.2.4 A two-stage approach is proposed for groundwater drainage – a temporary construction dewatering scheme to be replaced by permanent groundwater control drainage. Initially two lines of dewatering (vacuum) wells would be installed as follows:

- One extending into the NE corner of the site. These wells are designed to cut off water draining on to the site from bedrock from the north of the site – the main source of groundwater entering the site

- A second line along the SW half of the site along a zone where bedrock groundwater levels are above rock level and close to the present ground surface.

A permanent groundwater drainage system is proposed around the perimeter of the platform to attract preferential flow. A second groundwater drain is to be installed at the base of the fill along the southern edge of the terminal site.

3.2.5 A commercial Puraflo wastewater treatment system is proposed.

3.2.6 Landscaping proposals for the Terminal site include the provision of a new shelter belt (9-12m approx. wide) to the west of the terminal footprint.Species to be planted would include Lodgepole Pine, Sitka Spruce and Scots Pine. This is illustrated on drawing No. COR-RS-LA-002 in Volume 9 Drawings. In addition it is proposed to provide additional planting to the south west of the

proposed footprint, adjacent to the R314, and in the vicinity of the proposed settlement ponds. It is proposed to create reedbeds around the perimeter of the settlement ponds in association with the outflow.

3.2.7 It is stated that during construction approx. 500 would be employed. The operation of the plant would engage approx. 50 people and the terminal would be manned 24 hours a day.

Construction and commissioning would take approx. 27 months. Peat removal activity would take approx. 6 months and would be weather dependent.

Working hours during construction would be 0700 – 1900 Monday to Friday, and 0700 – 1600 on Saturdays. Working outside normal working hours may be necessary.

3.2.8 Proposed access arrangements are as follows:

- Primary access from the R314 (see Drg. No. COR-MC-BU-008 in Volume 8 Drawings)
- Secondary access from the Pollatomish Road at the NE corner of the site
- Further access from the R314 to the west of the main entrance, to facilitate proposed settlement ponds.

3.2.9 Volume 1 of the EIS states that associated with the terminal would be the construction and operation of the following:

- Incoming gas pipeline
- Control umbilical system
- Produced water outfall pipe

3.3.0 The ***Peat Deposition*** site at Srahmore would receive the 450,000m^3 of excavated blanket peat from the terminal site following its transportation by road along the 11km Haul route. The peat would arrive at a reception area and be transferred to low ground-bearing pressure tractors/trailers. The trailers would haul the peat via internal haulage roads to the high fields adjoining the deposition area. A long reach excavator would lift the peat into the deposition bay for spreading and grading by a bulldozer. Maximum depth of deposited peat would be 1.4 to 1.8 metres and there would be a fall (approx. 1:200) from the centre of the bay to the margins

3.3.1 There are eight separate areas of cutover peat in the Oweninny Bog complex. One of these (Area 5) is proposed as the peat reception area, another (Area 6) is proposed for the deposition, and a further area (Area 7) is to be utilised as a controlled overflow area in the event of the design rainfall being exceeded.

Deposition of peat would take place in an area of 63 hectares approx., and the controlled overflow area comprises 12 hectares approx. The overall proposed layout of the Srahmore site is shown on Drg. No. COR-TE-CO-001 in Volume 10 Drawings. Other drawings which I bring to the particular attention of the Board are in Volume 12 Drawings_

- COR-TE-PD-001 Existing topographical contours
- COR-TE-PD-003 Phasing plan for deposition site
- COR-TE-PD-004 Site infrastructure at Srahmore
- COR-TE-PD-005 Section through access road at Srahmore

3.3.2 Approximately 4,000m^3 of peat would arrive daily over a 6 month period. This may be spread over two seasons depending on the weather conditions. Transportation to the site would be in payloads of approx. 11 tonnes.

3.3.3 The overall development at Srahmore would comprise the following:

- Hardstanding reception area of 5,112 m^2.
- Oil interceptor
- Settlement tank 28m^3 approx.
- Temporary weighbridge
- Temporary wheelwash
- 5 car parking spaces adjacent to administration building
- 20 parking spaces for haulage vehicles at reception area
- Temporary administration building of 108m^2 approx.
- Entrance and access road
- Internal roads
- Surface water swale along the southern and western boundaries
- Surface water settlement ponds

3.3.4 The existing drainage system would be modified to provide for the reception and spreading of peat. Surface water drains would be constructed at the edge of each peat deposition bay, running parallel and adjacent to the 'high fields'. These would transfer surface water runoff from the peat deposition areas to the perimeter swale. The perimeter swale would transmit surface water to the settlement ponds, and would also act as storage during periods of heavy rainfall.

There are two existing settlement ponds in the southern section of the site. Five additional surface water settlement ponds are proposed. Two proposed ponds in the north-western section of the deposition area would measure 100 metres long by 8 metres wide by 1.5 metres deep. Three smaller ponds serving the proposed reception area would be 50 metres in length. The existing ponds are shown to drain to the Owenmore River, while the proposed ponds are shown as draining to the Munhin River. The Site Drainage Layout is shown on Drg. No. COR-TE-PD-013 in Volume 12 Drawings.

3.3.5 Access is proposed from the R313 Regional route. An 8 metre wide access road would be constructed into the site and finished with black top. The

access would be controlled by flagmen during construction and peat transport operations. Warning signs would be placed on the roadside to the east and west of the site entrance.

3.3.6 It is proposed to operate the site 12 hours per day during deposition operations. It is stated that this could be extended in exceptional circumstances. Proposed hours of operation are 0700 to 1900.

4.0 PLANNING AUTHORITY REQUEST FOR ADDITIONAL INFORMATION AND RESPONSE

4.1.0 During the processing of the application, the Planning Authority requested 28 items of Additional Information relating to Volumes 1 and 2 of the Environmental Impact Statement, and other matters. The 1st Party submitted Additional Information on 11th March 2004, and a newspaper notice referring to this submission was published on 12th March 2004. The Planning Authority's request and a summary of the 1st Party response are contained in Appendix D1 of Volume 2.

4.1.1 I draw the Boards particular attention to the responses to items 1, 2, 6, 7, 9, 11, 21, 23, 27 and 28. The submitted Traffic Management Plan (item 1) is summarised in Appendix D2 of Volume 2. Copies of the Foreshore Licence, and Plan of Development and Pipeline Consent are contained in Appendix E of Volume 2.

5.0 PLANNING AUTHORITY'S DECISION

5.1.0 By Order dated 30th April 2004, Mayo County Council decided to *Grant Permission* subject to 70 conditions. A summary of this decision is given in Appendix F1 of Volume 2.

5.1.1 I draw the Boards particular attention to the specified considerations and reasoning contained in the First Schedule of the decision. The specified considerations are as follows:

- National policy relating to development of energy and natural gas
- Development strategies for the BMW region within the NSS
- Mayo CDP 2003 – 2009
- Character of the landscape of the site
- Report of the NAOSH in relation to land use planning under the Seveso II Directive.

The Planning Authority's reasoning for its decision is that the proposed development:

- would not injure the visual amenities or landscape character of the area
- would not seriously injure property values in the area
- would not be prejudicial to public health
- would not endanger public safety
- would not otherwise be contrary to the proper planning and sustainable development of the area.

5.2.0 As previously stated the Planning Authority's decision was made following the submission of extensive additional information.

5.2.1 During the course of consideration of the application the Planning Authority sought the views of ***Fehily Timoney & Co.*** on geotechnical aspects of the proposal. Two Geotechnical notes were forwarded to the Planning Authority, the first relating to the original application and the second relating to the additional information submitted. Summaries of these two notes are contained in Appendix G of Volume 2.

I draw the Boards particular attention to the conclusion in the Supplementary Geotechnical Note that the response to Item 2 does not provide the written confirmation requested, relates primarily to environmental matters and makes no reference to the structural stability of pipelines constructed in deep peat.

5.2.2 The Planning Authority requested the comments of the ***National Authority for Occupational Safety and Health*** (otherwise known as the Health and Safety Authority (HSA)). A response report was submitted to the Planning Authority on 8th April 2004 titled *Land Use Planning Advice for Mayo County Council in relation to P03/3343.* This report is summarised in Appendix H of Volume 2.

Notable conclusions are as follows:

- The gas-oil terminal would be a 'lower tier' Seveso site
- The Authority retains no expertise for consideration of the 'Global Stability' of the terminal
- The *establishment* is the area within the security fence footprint where the hazardous substances are processed and stored
- Risks are at such a level that the Authority 'does not advise against' granting of planning permission
- The risk contours fall within the applicant's landholding
- Methane gas releases are very unlikely to lead to vapour cloud explosions

- Worst possible consequences would be caused by a full-bore rupture at the high pressure import gas pipeline. The risk of such an event is very unlikely.

5.2.3 The ***Planning Officers Report*** dated 29th April 2004, and other technical reports submitted to the Planning Authority are summarised in Appendix F2 of Volume 2.

6.0 1st PARTY APPEAL

6.1.0 The 1st Party has appealed 14 of the 75 conditions attached to the Planning Authority decision. The grounds of appeal are summarised in Appendix I of Volume 2. It is argued that conditions 3, 31, 32, 34, 35 and 36 should be omitted, and that conditions 2, 6, 12, 15, 25, and 55 should be amended.

7.0 3rd PARTY APPEALS

7.1.0 There are 13 third party appeals against the Planning Authority's decision. Many of these raise common issues. The ground of appeal are summarised in Appendix J of Volume 2. The principal issues raised include the following:

- The viability of excavating, transferring and depositing 450,000m^3 of peat
- Environmental, residential and traffic implications relating to the above
- Health and safety considerations
- Adequacy of the EIS
- Adequacy of the Traffic Management Plan
- Potential for serious environmental pollution and impact on designated habitats
- Potential for bog slides
- Visual impact
- Sustainability
- Impacts from environmental emissions
- Devaluation of property

- Project splitting
- Impacts from boring and blasting
- Adequacy of the consideration of alternatives
- Request to omit, modify and/or clarify the terms of 12 conditions

8.0 OBSERVATIONS

8.1.0 There are 12 Observations (excluding those submitted in response to the EIS notice) and these are summarised in Appendix K1 of Volume 2. Ten of the submissions favour the granting of permission and two are opposed. The submissions in favour generally argue that the proposed development would bring social and economic benefits to the area and would act as a catalyst for further development. The submissions opposed generally raise environmental and health and safety concerns.

9.0 RESPONSES

9.1.0 Responses to the 1st and 3rd Party grounds of appeal are summarised in Appendix L1 of Volume 2.

10.0 EIS ISSUES

10.1.0 An Environmental Impact Statement was submitted to the Planning Authority with the planning application. There are two main volumes titled as follows:

Volume 1 Proposed Bellanaboy Bridge Gas Terminal

Volume 2 Proposed Srahmore Peat Deposition Site

Volume 1 has three separate Technical Appendices as follows:

Technical Appendix 1 - *Geology, Hydrogeology & Stability Report*

Technical Appendix 2 – *Earthworks Report*

Technical Appendix 3 – *Site Drainage Report*

10.1.1 The structure, main volumes and appendices of the EIS are summarised in Appendix A Volume 2 of this report.

10.1.2 Observations submitted to the Board in response to the EIS notice are summarised in Appendix K2 of Volume 2 of this report. These generally raise

similar issues to those raised in the written grounds of appeal. Additional issues of note include the following:

- In relation to vapour cloud explosions (VCE) the EIS makes no mention of the villages of Bunowna, Glenamoy and Gortacragher

- The Offshore EIS states that excessive movement of peat can turn it into 'a mushy soup with poor restoration potential'

- The EIS does not acknowledge an independent study *Marine Mammal Monitoring in the Waters of Broadhaven Bay & Northwest Mayo 2001 – 2002* by the Coastal & Marine Resources Centre, UCC.

- Proper account has not been taken of the significant risk posed by the upstream pipeline. A study conducted by Applied Ground Engineering Consultants Ltd (AGEC) confirms this fact.

11.0 PLANNING HISTORY

11.1.0 PL16.126073 – Permission refused by the Board on appeal for proposed gas terminal at Bellagelly South, Bellanaboy Bridge, Belmullet, Co. Mayo. There was a single reason for refusal as follows:

The proposed development involves the excavation of approximately 650,000 cubic metres of peat and other unsuitable materials from the site of the gas processing terminal and the removal of peat and other materials to adjoining repositories and overlaying them on an existing blanket bog of variable thickness on a sloping site above the R314 Regional Road.

Having regard to –

- *the contours of the area of the repositories,*
- *the amount and pattern of rainfall in the area,*
- *the characteristics of the disaggregated peat,*
- *the method proposed for the moving of material to and within the repositories,*
- *the details of the system for retaining the deposited materials,*

the Board considers that the proposed surface drainage system would be ineffective in ensuring the integrity of the peat repositories as permanent structures for the retention of the peat and other unsuitable materials.

Consequently, the Board considers that both of proposed repositories have a high probability of failure and that the proposed development would constitute an unacceptable risk to the health and safety of the local community and of the general public on the public road in the vicinity of the site, would constitute an unacceptable risk of pollution of salmonid waters in Glenamoy River, Sruwaddacon Bay and Carrowmore Lake, and would seriously injure the

amenities of property in the vicinity. The proposed development would, therefore, be contrary to the proper planning and development of the area.

The Board Direction included two specific notes to the decision explaining the reasons the Board decided not to use recommended reasons for refusal included in the Inspectors report. These notes briefly state as follows:

Visual Impact. The Board had particular regard to the lack of landscape designation in the Development Plan, and to existing vegetation and plantation on the site.
The Board accepted that the proposal would have an adverse visual impact but considered that such impact would not be so serious as to warrant refusal, having regard to the strategic nature of the development

Alternatives. At national level, policy in relation to the provision of gas infrastructure and the timing and terms of the development of natural gas resources is a matter for the Dept. of Communications, Marine and Natural Resources. The Board accepted that the proposal may not constitute the optimum solution to the development of the Corrib Gas Field in terms of facilitating the provision of gas infrastructure to serve Co. Mayo and the North-West of the country, but this would not warrant a refusal of *a development that was otherwise acceptable in terms of its land use and environmental impacts (my italics).*
The proposal would not necessarily be incompatible with the development strategies of the Mayo CDP and the strategies for the BMW Region within the NSS.

Health & Safety. The Board had particular regard to the report of the National Authority for Occupational Safety and Health, the relevant competent authority, which did not recommend against the granting of planning permission subject to a number of conditions.

Finally, the Board noted that alternatives are available for the development of the Corrib Gas Field.

12.0 MAYO COUNTY DEVELOPMENT PLAN 2003-2009

12.1.0 A new County Development Plan has been adopted for Co. Mayo since the previous Board decision. Relevant provisions of the adopted Plan are summarised in Appendix M of Volume 2.

I draw general attention to the Development Objectives and specifically to the following objectives:

- To have a gas powered generating station built in North Mayo
- To fully support the realisation of the Corrib Gas Field find… and …to support the provision of an on-shore gas terminal in North Mayo and the related pipe network through the County

- To continue with the strengthening and improvements of the local road network and to improve strategic sections of those roads servicing … gas industry

I also draw the Boards attention to the Landscape Appraisal section of the Plan and to the specific objectives in relation to designated Scenic Routes and Scenic Views and Highly Scenic Views.

13.0 NATIONAL POLICY

13.1.0 *The National Development Plan 2000-2006*

The Plan includes the following national objectives:

- Continuing sustainable national economic and employment growth
- Consolidating and improving Ireland's international competitiveness
- Fostering balanced Regional Development
- Promoting social inclusion

More balanced Regional Development is a fundamental objective of the Plan. Key and distinctive challenges for the BMW Region include:

- Pursuing more balanced growth within the Region
- Improving the quality of the Region's economic and social infrastructure and human resources
- Building on the Region's natural resource base, especially in the areas of agriculture, tourism, the seafood sector and rural enterprise

In relation to Energy, the plan states that the Government will be concerned, in the context of a more competitive environment for energy supplies, to ensure that energy capacity does not act as a constraint on regional development.

In relation to Sustainability, the plan states that economic and social development should not be to the detriment of environmental quality.

The National Spatial Strategy 2002-2020

Balanced regional development is stated to mean developing the full potential of each area to contribute to the optimal performance of the State as a whole – economically, socially and environmentally.

The NSS proposes that Ballina/Castlebar act as a linked hub working to promote regional development.

In relation to Gas the NSS states that the Government decided in 2001 that in principle, and subject to more detailed analysis, the gas network should be extended to Letterkenny and Sligo via a spur from the Mayo/Galway pipeline, which is planned to connect the Corrib Field to the gas network.

Priorities for Energy include, subject to appropriate commercial evaluation, extending the gas network to support the development of the existing and proposed gateways and hubs, including, where necessary, appropriate advance investment to meet anticipated demand arising from planned-for growth in these centres.

Referring to The West Region, the strategy states that parts of north Mayo have significant natural and cultural attractions such as landscape, inland waterways and historical artefacts. Priorities for development here include identifying key assets and presenting or assembling a quality package – e.g. enhancing hotel facilities in north west Mayo, improving regional road access and improving awareness through marketing.

National Climate Change Strategy for Ireland, 2000.

The Strategy includes the following general remarks:-

- The Government is embarking on a challenging programme to limit the growth in emissions in the short to medium term.
- "Business as usual" is no longer an option for Ireland.
- Greenhouse gas emissions must be dramatically reduced over this decade.
- Key initiatives include:-
  - use of emissions trading,
  - fuel switching to low and zero carbon fuels.

Developed countries agreed legally binding targets in Kyoto in 1997 to reduce global emissions of six greenhouse gases by 5.2% in the period from 1990-2012. The EU will reduce emissions by 8% overall.

As part of the EU target Ireland has agreed to limit growth of greenhouse gas emissions by 13% above 1990 levels. Without actions set out in the strategy

annual emissions would increase by 37.3%. The main greenhouse gas in Ireland is CO_2, mainly arising from the burning of fossil fuel in transport, heating and electricity generation.

The strategy is based on the fundamental principles of sustainable development and takes account of the need to protect economic development and competitiveness.

A separate section of the Strategy refers to the ***Energy Supply Sector***. The following background information is given:-

1990 - the energy supply sector contributed 32% of Ireland's CO_2 emissions.

2010 - emissions from this sector are expected to have grown by 62% above 1990 rates.

Under the heading of 'Measures to Control Greenhouse Gas Emissions' it is stated that there are two key sector specific domestic policy options, as follows:-

- Fuel switching to less carbon intensive fuels while maintaining overall levels of electricity generation or use.
- Improving efficiency of energy transformation.

These options are to be developed both on a sectoral basis and by application of cross-sectoral instruments, in particular greenhouse gas taxation and emissions trading.

In relation to fuel switching, this is expected to be an important factor for many countries in meeting the Kyoto targets. The strategy supports fuel switching to gas and to renewables for electricity generation. The development of electricity and gas interconnectors would assist in addressing security of supply and access to energy sources with reduced greenhouse gas emissions.

13.2.0 Since the previous Board decision the following ***Ministerial statements*** have been made:

- *29th May 2003.* In response to Parliamentary Question No. 184, the Minister for Communications, Marine and Natural Resources stated in respect of the Corrib Gas Field "I strongly believe that such a development would have had many quantitative and qualitative benefits which would have benefited the State, the local Community and the BMW region in a number of ways". The reply includes many of the points made in the Ministerial statement of 5th June 2003.

- *5th June 2003.* Minister for Communications, Marine and Natural Resources stated (in a Press statement), in relation to the Corrib Gas Field, "I strongly believe that such a development would have had many benefits to the State, the local Community and the BMW region in a number of ways. The benefits to the State as a whole can be summarised as follows:

  - Increase Irelands security of supply by providing a reliable, secure indigenous source of gas
  - Provide significant tax revenues
  - Improve Irelands industrial competitiveness
  - Encourage continued investment in oil and gas exploration in Ireland, and
  - Help Ireland achieve its Kyoto objectives.

  Mayo and the Northwest perform poorly on most economic criteria. The availability of indigenous competitively priced gas should facilitate an improvement in the regions energy infrastructure and supply position and thereby help stimulate further investment in Mayo and the Northwest.

  The development of the gas field would contribute to the potential economic and social regeneration of Mayo and the north-west region and to the sustainable development of the area, in that it would have:

  - Acted as a catalyst for the extension of the natural gas network to the west of Ireland
  - Facilitated the improvement of the regions infrastructure, particularly its electricity supply and distribution network, thereby removing a barrier to inward investment
  - Significantly increased local employment, especially in the construction phase, and the long term by way of terminal jobs".

- *5th November 2003.* Minister of State (John Browne T.D.) stated that the goals of Irish energy policy are:

  - the development of competitive, efficient markets, which provide a choice of energy services and support economic growth throughout Ireland

  - the security of energy supply, and

  - ensuring that energy supply and use are environmentally sustainable

  The Minister of State, referring to the Corrib Gas Field, stated "the successful development of this field as soon as possible is important if we are to reverse the decline in the supply of indigenous sourced gas and improve our security of supply position. The Government has

repeatedly expressed its support for the development of this significant gas field". (Underlining mine)

"Security of supply in Ireland is robust at present. The Second Interconnector, together with indigenous sources such as Seven Heads and, hopefully, Corrib, leave us well equipped to meet the projected gas demand in the coming decades. The Pipeline to the West has ensured that gas is accessible to many new locations from Dublin to Galway to Limerick, while also facilitating access to the network for Corrib gas, and improving capacity delivery to the existing pipeline network in the South through the completion of a ringmain".

"The Government is determined that Ireland will be in a position to provide as much of its energy requirements as possible from indigenous sources in order to enhance security of supply".

- *22nd June 2004.* The Minister for Communications, Marine and Natural Resources referred to the importance, which he attached to continued activity by offshore exploration companies in Ireland. He stated that with continuing uncertainty around international oil prices and the ongoing geopolitical issues attached to oil and gas, it is more imperative than ever that continued exploration activity takes place off our coast.

14.0 BOARDS REQUEST FOR ADDITIONAL INFORMATION

14.1.0 The Board sought two lots of additional information by letters dated 11th August 2004 and 27th August 2004. The additional information related to stability issues, roads and transportation issues, and leachability of excavated peat. The requests for additional information are contained in Appendix N of Volume 2.

14.1.1 In response to the additional information requests, the 1st Party responded with submissions dated 31st August 2004 and 15th September 2004. Information included in these submissions is incorporated into the Assessment section of this report. Responses to the Additional Information submissions are summarised in Appendix L2 of Volume 2.

15.0 ASSESSMENT

Introduction

15.1.0 Essentially, there are two main elements to the proposed development before the Board, namely:

- Development of a gas terminal on a stated footprint area of approximately 13 hectares at Bellanaboy Bridge
- Peat deposition on a stated area of approximately 63 hectares at Srahmore

A further significant element, directly resulting from the development of the terminal site, is the proposed road haulage of approximately 450,000m^3 of excavated peat along a designated route of about 11km, utilising public regional and local roads.

15.1.1 There is a recent Board decision (29th April 2003, Ref. PL 16.126073) refusing permission for a gas terminal development on the Bellanaboy Bridge site. The current proposal has many similarities to the previous, but also contains significant differences designed to overcome the Boards reason for refusal. The most significant of these is the proposal to remove the excavated peat from the terminal site and deposit it on a separate deposition site at Srahmore.

15.1.2 The Board sought consultancy advice in relation to specific issues arising in the current appeal, namely:

- Stability and soil mechanics issues
- Traffic and transportation issues
- Leachability issues in relation to the excavated peat.

The consultancy briefs are included in Appendix B of Volume 2, and the consultants' reports by Dr. Trevor Orr, Mr. Danny O'Connor (Inspector), and Mr. Austin Morgan are attached at the back of this Volume 1 report. The advice of the consultants has been taken into account in the preparation of this report.

15.1.3 In accordance with section 98(1B)(a) of the Environmental Protection Act, 1992, as amended, and section 54(3B)(a) of the Waste Management Act, 1996, as amended, the Board requested the Observations of the Environmental Protection Agency on the general suitability of the Bellanaboy Bridge site for the proposed construction works and the operation of the proposed gas terminal, and the general suitability of the proposed Srahmore site for the deposition of 450,000m^3 of peat from the terminal site. The Board received a response from the Agency which includes a Proposed Decision for the Srahmore Peat Deposit area which issued on 27th July 2004, and a statement that "there is no information before the Agency at this time to indicate that the

requirements of Section 83(5) of the Environmental Protection Agency Acts, 1992 and 2003 will not be satisfied in so far as the risk of environmental pollution is concerned". These comments are made without prejudice to any future decisions of the Agency. I have had regard to the comments of the Agency in this assessment.

15.1.4 The Assessment is structured under the following general headings:

Parameters for Assessment
Legal context
Legal issues
Recent National and Local Policy
Environmental Impact Statement
Stability and Soil Mechanics issues
Excavated Peat issues
Roads & Transportation issues
Visual impact
Environmental impacts during construction and operation phases
Health & Safety issues
Decommissioning
Planning Authority conditions
Other issues

Parameters for this Assessment

15.2.0 I submit that the recent planning history for the terminal site is important in setting the parameters for this assessment. The previous Board decision under PL 16.126073, and the Board Direction, effectively define the starting point for those aspects of the proposal that are not materially different to the previous proposal. I intend to examine the previous decision and Direction in detail in order to ascertain the matters previously decided by the Board. The decision made by the Board on 29th April 2003 was unanimous.

I then intend to determine those aspects of the current proposal that are materially different than the proposal decided under PL 16.126073.

It is important to note that there have been *material changes in circumstances* since the previous Board decision as follows:

- the Mayo County Development Plan 2003 – 2009 has been adopted

- the legislative background has changed under the Planning and Development Act, 2000 and the Board must now consider all environmental factors, subject to the provisions of section 34(2)(c) of the Act

- the Board must now consider the proper planning and *sustainable* development of the area

- the general area has been subjected to landslides

The Board must take these changes in circumstances into account, and I have had regard to them in preparing this assessment.

Should the Board consider that the parameters, which I am setting for this assessment are unreasonable or too confined, on direction I will prepare a supplementary report.

15.2.1 The Inspector's report (and a Consultants report relating to Soils, Peat, Bedrock, Groundwater and Surface Water and their influence on other Planning Issues by David Ball, Hydogeologist) was considered by the Board at the time of making its previous decision. The Inspectors recommendation was to refuse permission for three stated reasons, but the Board did not accept two of these in principle. The reasons for not accepting two of the recommended reasons for refusal are set out in the Board Direction, which accompanied the decision.

The Boards decision was based on a single reason for refusal relating to proposed peat repositories on the terminal site. The Board considered that both of the proposed repositories would have a high probability of failure and that the proposed development would constitute an unacceptable risk to the health and safety of the local community and of the general public on the public road in the vicinity of the site, would constitute an unacceptable risk of pollution of salmonid waters in Glenamoy River, Sruwaddacon Bay and Carrowmore Lake, and would seriously injure the amenities of property in the vicinity. It concluded that the proposed development would, therefore, be contrary to the proper planning and development of the area.

The Notes attached to the Board Direction give an important insight into the Boards conclusions in relation to other issues raised by the Inspector. The Inspectors *first recommended reason* for refusal concluded as follows:

- The proposed development is not designed to meet any energy demands of Co. Mayo or the BMW Region

- The proposed siting, with its significant tie-back constraints, would be contrary to the strategic planning of infrastructural development for the BMW Region

- The proposed development would conflict with the policies of the Planning Authority by reason of:

  (a) the imposition of a large industrial development in a remote inland rural location that is seriously deficient in public infrastructure to serve the development

  (b) the visual obtrusiveness of the development

(c) the irreversible alteration of this landscape arising from the development works proposed

(d) the degradation of the fragile ecology of the area arising from the intensive industrial activities of the construction and operational phases

(e) the environmental and public safety implications derived from the construction works, and

(f) the significant increase in traffic volumes and HGV movements at the construction stage onto a road network that is substandard in width, pavement and alignment

- The Board is not satisfied that, having regard to the significant adverse environmental effects, that the development at Ballinaboy constitutes the optimum solution to providing a gas terminal to serve the Corrib Gas Field

- The proposed development would contravene the Mayo County Development Plan, be contrary to the orderly development of gas infrastructure within the BMW Region, and would be contrary to the proper planning and sustainable development of the area.

In explaining why it did not use this recommended reason for refusal the Board reasoned as follows:

- While accepting that the terminal would have an adverse visual impact in the area, such impact would not be so serious as to warrant a refusal of permission having regard to the strategic nature of the proposal

- The Board had particular regard to the lack of any landscape designation in the Development Plan and to the existing vegetation and plantation on the site

- At National level, policy in relation to the provision of gas infrastructure and the timing and terms of the development of natural gas resources is a matter for the Department of Communications, Marine and Natural resources

- While the proposal may not constitute the optimum solution to the development of the Corrib Gas Field in terms of facilitating the provision of gas infrastructure to serve population and industrial centres in Co. Mayo and the North-West of the country, this would not warrant a refusal of permission of a development that was otherwise acceptable in terms of its land use and environmental impacts. (Underlining is mine)

- The proposal would not necessarily be incompatible with the development strategies of the CDP and the strategies for the BMW Region within the National Spatial Strategy.

On the above, I consider that the conclusions reached by the Board on national policy and strategic planning issues in relation to the previous proposal would equally apply to the current proposal; I am not aware of any material change of circumstances likely to alter the Boards views on these issues. Ministerial statements made since the previous Board decision are clearly supportive of the development of the Corrib Gas Field. As such, I do not propose to revisit in detail the arguments in relation to national policy and strategic planning issues. The Board also indicates that the proposed development is acceptable in terms of land use and environmental impacts. Issues relating to visual impact and the County Development Plan do need to be revisited, as there are significant changes proposed relating to the height of the proposed terminal and the absence of repositories of peat on the terminal site, and a new County Development Plan for the area is now in operation. These issues will be discussed later in this assessment under the relevant headings.

The Inspectors *second recommended reason* for refusal refers to stability issues relating to the peat repositories. The Boards reason for refusal refers to similar issues.

The Inspectors *third recommended reason* for refusal refers to Health and Safety issues, and concludes:

- The Board is not satisfied, on the basis of the submissions made in connection with the planning application and appeal, the proposed development could not, due to the risk of a major accident or if a major accident were to occur, lead to serious danger to human health and the environment

- The proposed development would give rise to an unacceptable risk to members of the public due to the proximity of the terminal site to residential properties and areas of public use to which the Seveso II Directive applies

In not accepting this recommended reason, the Board noted as follows:

- The report of the NAOSH, the competent authority, which did not recommend against the granting of planning permission subject to a number of conditions.

- Conditions relating to the provision of a contaminated firewater pond and separation of tree growth from the terminal may have implications with regard to visual impact but these matters were considered in assessing the visual impact of the terminal

- The applicants proposal and the NAOSH requirement that the facility be treated as an 'upper tier' establishment in the interests of operational safety although it strictly constitutes a lower tier facility in terms of the Directive

On the above, I consider that the general conclusions reached by the Board with regard to Health & Safety issues on the terminal site would apply equally to the current proposal as to the previous one. I do not intend to rehearse to arguments relating to the remit of the HSA or the extent of the establishment in this report, having regard to the general conclusions reached by the Board on the previous proposal. I note that, in the current case the HSA conclude that, based on the information supplied, the proposed gas terminal would be a 'lower tier' Seveso site. I also note that the HSA have no remit with regard to the excavation of peat on the Bellanaboy site or the deposition of peat at Srahmore. I will address a number of health and safety issues, which I consider are important and which are outside the general conclusions referred to above.

Finally, the Board Direction notes that alternatives are available for the development of the Corrib Gas Field. I am unclear as to the precise meaning of this statement, but note that it refers to the 'Corrib Gas Field' and not just to the gas terminal. In any event, I do not interpret this statement as overriding any of the other conclusions reached in the Boards Direction.

15.2.2 Following consultation with Kevin Moore, Senior Inspector, who prepared the report and recommendation in relation to the previous appeal, reference to his report and the report of Mr. David Ball, and examination of the documentation submitted with the current proposal, I conclude that the matters which are materially different between the current and previous appeals are as follows:

Site & Haul Route

- two separate sites are now proposed for the proposed terminal and deposition of the excavated peat
- a designated 'Haul Route' is proposed for peat haulage vehicles, although is not specifically referred to in the public notice

Peat Management

- the removal of 450,000m3 from the terminal site to a repository 11km away
- the associated increase in traffic generated on the public roads

Elevation

- there is a change in the footprint elevation from 32m AOD in the previous case to 33.4m AOD in the current proposal

Terminal Footprint

- there is a reduction in area from 15ha to 13ha. and associated layout changes

Plant and Terminal Site Changes

- 4,935m^2 of buildings are proposed, up from 4,385m^2
- the flare stack (highest feature at 40m) is to be founded at 35.08m AOD
- warehouse, maintenance and administration buildings are to be founded at 34.1m AOD
- increased capacity of each generator set from 1MW to 1.3MW
- horizontal heating medium heater proposed
- relocation of tanker loading station
- road widening at entrance
- landscape changes

Legal Context

15.3.0 The legal context in which the Board must make its decision is materially different to the context in which the previous decision was made.

15.3.1 The Board is required to consider the proper planning and sustainable development of the area, having regard to the matters set out in section 34(2) of the Planning and Development Act, 2000. One of the matters to which the Board must have regard is *where relevant, the policy of the Government, the Minister or any other Minister of the Government.*

14.3.2 Section 256 of the 2000 Act amends section 98 of the Environmental Protection Agency Act, 1992. Under subsection (a)(1) where a licence or revised licence under section 98 has been granted or will be required in relation to an activity, An Bord Pleanála shall not, where it decides to grant permission under section 34 of the 2000 Act in respect of any development comprising the activity or for the purposes of the activity, attach conditions which are for the purposes of –

(a) controlling emissions from the operation of the activity, including the prevention, limitation, elimination, abatement or reduction of those emissions, or

(b) controlling emissions related to or following the cessation of the operation of the activity

Under subsection (a)(1A), where a similar licensing scenario exists to that outlined above, the Board may decide to refuse permission under section 34, where it considers that the development, notwithstanding the licensing requirements, is unacceptable on environmental grounds, having regard to the proper planning and sustainable development of the area.

Under subsection (a)(1B)(a) and (b), before making a decision in respect of a development comprising or for the purposes of an activity, the Board may request the observations of the Agency (EPA). When making its decision the Board shall have regard to any such observations. *In this case the Board sought and received the observations of the Agency and this assessment has regard to those observations.*

Chapter 2, section 15 of the Protection of the Environment Act 2003 came into operation on 12th July 2004. This contains similar provisions to those outlined above.

15.3.2 Section 257 of the 2000 Act amends section 54 of the Waste Management Act, 1996 in similar fashion to the amendments outlined for section 98 of the EPA Act, 1992.

15.3.3 Under section 37(2)(a) of the 2000 Act the Board may grant permission even if the proposed development contravenes materially the relevant Development Plan, but only in the specified circumstances detailed in subsection (2)(b). These include the following circumstances:

- Where the Board considers the proposed development is of strategic or national importance
- Where there are conflicting objectives in the Plan or the objectives are not clearly stated, insofar as the proposed development is concerned
- Where the Board considers that permission should be granted having regard to any relevant policy of the Government, the Minister or any Minister of the Government.

15.3.4 Under section 143 of the 2000 Act, the Board must have regard to the policies and objectives for the time being of the Government, a State Authority, the Minister, planning authorities and other specified public bodies.

15.3.5 Other consents required in the case of the activities associated with the proposed development are as follows:

- An IPPC licence in relation to the activity to be carried out in the operational phase on the terminal site

- A Waste Licence in relation to the activity to be carried out in the deposition phase on the Srahmore site

Other consents have been granted for other aspects of the overall Corrib Gas Field scheme as follows:

- Petroleum Lease by the Minister of the Marine and Natural Resources in 2001

- Consent under the Continental Shelf Act 1968

- Export pipeline consent under section 8 of the Gas Act, 1976

- Pipeline Consent under section 40 of the Gas Act, 1976

- Foreshore Licence for the pipeline, umbilical and outfall

Copies of the Foreshore Licence, authorisation of Plan of Development provided for in the Petroleum Lease, and Pipeline Consent are included in Appendix E of Volume 2.

Legal Issues

15.4.0 The validity of the Planning Authority's decision is challenged as it appears that the planning application and the EIS were submitted on separate dates, and two different dates were given for 3rd party submissions to the Planning Authority. I submit that this is a procedural matter, which is not for the consideration of the Board. The legislation provides for application of Judicial Review procedures in such cases but there is no record of any such application for Review in this case. In these circumstances, I submit that the Board has a valid Planning Authority decision before it.

15.4.1 It is argued that the carrying out of the proposed development may involve the compulsory acquisition of lands, particularly to accommodate road improvements along the designated haul route. The full consideration of the current proposal for planning permission is not precluded by any such requirement, and is not prejudicial to any future compulsory acquisition procedures that may be required.

15.4.2 3rd Party appellants question the procedures adopted and the information available at the time of the granting of the other consents granted in respect of the overall scheme. I submit that these are not matters for the consideration of the Board.

15.4.3 It is argued that mechanical refrigeration will be required in the future on the terminal site and that this should be assessed in the current proposal because it is likely to have significant visual and environmental impacts. I consider that any refrigeration unit is likely to be ancillary to the main use of the site, and that there is no requirement to apply for permission at this stage. Any permission granted now may no longer be valid in nine or ten years time. It is also reasonable to assume that the detailed design of any unit to be constructed in the future may not be known at this stage.

15.4.4 3rd Party appellants argue that substantial works have already been carried out on the site and that these invalidate the application. I do not agree. From my observations made on two visits to the site it seems to me that the works, which appear to be mainly related to the drainage of the site and internal access, are of a relatively minor nature, particularly when considered in the context of the overall proposal.

15.4.5 It is argued that a grant of permission would be to effectively sanction the continued use of an unauthorised quarry. This is clearly not the case. In the event of unauthorised use arising, whether it is in connection with the proposed development or any other development, there are enforcement provisions available in the 2000 Act to require the cessation of such use. Enforcement is the function of the Planning Authority.

15.4.6 Any grant of planning permission would not prejudice consideration of licence applications under the EPA Act, 1992, as amended or the Waste Management Act, 1996, as amended. Any views expressed by the EPA in respect of this appeal are without prejudice to any other function of the Agency – this is specifically stated in sections 256 and 257 of the 2000 Act.

15.4.7 3rd Party appellants argue that proposed road improvements and usage outlined in the Traffic Management Plan (submitted by way of AI to the Planning Authority) for the L1204 would have significant environmental impact on a cSAC. There is one section of the road proposed for improvement, which runs through the cSAC (i.e. it borders both sides of the road), and other sections where the road borders the cSAC on one side. I consider that the arguments that the proposed improvements would have significant environmental impacts on the European site are unconvincing. The Board should be aware, however, that a 3rd Party has requested determination on this matter separately.

Recent National and Local Policy

15.5.0 The previous Board decision was made in the context of National policy set out in the National Development Plan 2000-2006, the National Spatial Strategy 2002-2020, and the National Climate Change Strategy, 2000. While important provisions contained in these documents are referred to in section 13.1.0 of this report, I do not examine them any further in this assessment as the Board has already considered them.

The Board will be aware that permission was granted for the an Environmental Retrofit Project at Moneypoint in February 2004 and that the Minister for

Communications, Marine and Natural Resources has indicated that, from both a security of supply and fuel diversity perspective, Ireland needs Moneypoint as a coal burning station going forward. The Board will also be aware that an emissions trading scheme is due to be introduced in January 2005.

15.5.1 Since the previous Board decision in relation to PL 16.126073 there have been a number of Ministerial statements relating to the Corrib Gas Field. These are referred to in section 13.2.0 of this report. I submit that it is clear from these statements that it remains Government policy to support the development of the Corrib Gas Field.

The Board is obliged to have regard to Government policy, although is not rigidly constrained by it. I submit that Government policy is clearly supportive in this case, and that this should be taken into account in the overall consideration of the proper planning and sustainable development of the area. While Government policy is not site specific, I submit that the proposed development conforms to stated policy.

15.5.2 Mayo County Development Plan 2003 – 2009 has been adopted since the previous Board decision. The relevant provisions of the new plan are summarised in Appendix N of Volume 2. Development objectives included are:

- To have a gas powered station built in North Mayo
- To fully support the realisation of the Corrib Gas Field find … and …to support the provision of an on-shore gas terminal in North Mayo and the related pipe network throughout the County
- To continue with the strengthening and improvements of the local road network and to improve strategic sections of those roads servicing … gas industry

I note that these development objectives are not site specific, but I submit that the proposed development is in conformity with them.

Environmental Impact Statement

15.6.0 An EIS consisting 2 main volumes and 3 technical appendices was submitted as part of the application to the Planning Authority. These volumes and appendices are examined in Appendix A of Volume 2 of this report. The structure of the EIS is also summarised in the same appendix.

The information in the EIS is supplemented by additional information submitted to both the Planning Authority and the Board in response to requests.

In my view, the EIS complies with the requirements of article 94 and Schedule 6 of the Planning and Development Regulations, 2001 and provides a useful aid to the decision making process.

Stability and Soil Mechanics Issues

15.7.0 The site is on the southern flank of a gently sloping hillock that peaks at 45m AOD (Malin). Existing ground levels are stated to vary from 43m AOD in the north east of the terminal area to 30m AOD in the south west. The site slope is stated to be 1.5°. The blanket bog is stated to vary in thickness from 2.2 metres in the north east to 3.6 metres in the south west. This is underlain by a clay layer (0.2 metres in the north east thickening to 2.2 metres in the south west), and a sand layer. The underlying rock is micaceous schist. The depth to bedrock varies from 3 metres (approx.) near the top of the hill to greater than 9 metres along the south side of the terminal footprint. Generally, permeability of the various strata is stated to be very low, with peat values of 10^{-8} to 10^{-9}.

In order to create the proposed terminal platform, there would be extensive excavation of peat and other materials, and backfilling of portion of the site. Cut slopes on the construction site would be designed as follows:

- Unweathered rock — 1 in 1
- Weathered rock & mineral soil — 1 in 3
- Peat — Retained

There would be cut slopes along the north eastern corner, where excavation would be a maximum of 10 metres deep. Where peat is to be excavated, the edge of the excavation would be supported as follows:

- in areas where existing ground level is above platform level, by a gabion gravity wall

- in areas where platform level is above ground level, by sheet pile retaining walls. Following construction the sheet piles would be removed and replaced by a geotextile wrap around.

A number of structures and site roads are to be constructed directly onto the peat – administration building, temporary construction site, area around settlement ponds and internal roads. In these areas the peat is to be stabilised using in-situ strengthening methods. Proposed methods of stabilisation are column stabilisation or mass stabilisation. The preferred binder is cement, or possibly a cement/sand mix, in dry form.

15.7.1 The Board sought consultancy advice on the proposed earthworks and construction works, particularly in relation to:

(a) the stability of the cut peat during earthworks and the construction phase

(b) stability of the peat beyond the terminal footprint during earthworks and the construction phase

(c) stability of the fill areas beneath the terminal footprint and the buildability of these areas

(d) longer term stability of the cut peat and the fill areas during the operation phase

(e) the likely short, medium and longer term relationship between the areas of fill and the cut peat

Dr. Trevor Orr, Chartered Engineer (University of Dublin Department of Civil, Structural & Environmental Engineering) advised on these matters, and his report is at the back of this assessment. His conclusions can be summarised as follows:

- The factor of safety of 1.5 against sliding, the conservative design parameter values used and the low slope angle of 1.5° should ensure the stability of the cut peat above the terminal platform during the operation phase and in the long term

- Proposals to stabilise the uphill peat before excavating should ensure the stability of the peat slopes during excavation and hence the stability of the peat beyond the terminal footprint

- The risk of not achieving sufficient strengthening using cement stabilisation is greater than using sheet piles, which is a proven technology and has less potential for environmental impact

- Provided the fill areas are constructed using adequately compacted fill material, the stability of the fill beneath the terminal footprint and the buildability of these areas should be ensured

- The use of a geotextile wraparound is a proven technology and should ensure the stability of the peat in front of the fill

- Having regard to the conservative design of the gabion walls, the slopes of 1:3 chosen for the excavated mineral soil and fill and 1:1 for the intact rock, and the use of geotextile wraparound to support the peat in front of the fill, the long term stability of the peat should be assured as well as the short, medium and longer term relationship between the areas of fill and the cut peat.

- The likely short, medium and longer term relationship between the areas of fill and the cut peat in front of the fill should be ensured by the sheet pile wall and wraparound wall. The drain to go in front of the wraparound wall will strengthen the fill and the peat.

15.7.2 The Board also sought advice in relation to the proposals for on-site earthworks to remove peat and remove and redistribute mineral soils and rock, and in particular:

- the proposal to remove the first section of peat from the north eastern section of the site and transport it without windrowing
- the proposal to progress from east to west across the site in order to create the proposed platform level
- the proposal to install two lines of dewatering (vacuum) wells to facilitate excavation and construction works
- proposals for surface water collection and control during excavation and construction works

Dr. Orr concluded on these matters as follows:

- Provided only the drier, thinner peat is transported without windrowing, the proposal should cause no adverse effects
- The proposal to progress from east to west across the site in order to create the proposed platform level is logical and feasible
- The fines contents of the clay stratum exceed 65%; much of this material will need to be removed off the site. Much of the glacial till may also have to be removed
- The EIS concludes that approximately 33,000m^3 of mineral soil will be removed from the site. This appears to be a conservative estimate; it appears that a significant proportion of the mineral soil on site may have to be removed and suitable material brought to the site
- The proposal for dewatering wells will reduce groundwater level in the underlying rock and till and hence make the mineral soil and bedrock easier to handle. It will also remove some water from the peat
- Flows from the wells are not expected to be large and this is a realistic assumption considering the nature of the rock and mineral soil
- By lowering the groundwater levels across the site, the dewatering wells will significantly improve the stability of the peat and soils on the site
- While calculations indicate that proposed settlement ponds will achieve the required reduction in suspended solids, it is important that the performance of these ponds be monitored during the construction and operation phases.

15.7.3 Dr. Orr was asked to give a critical assessment of the **Risk Assessment** contained in Technical Appendix 2 of the EIS. On this issue Dr. Orr concluded as follows:

- The risk assessment involves a very confident assessment of all the design aspects and hence provides a very optimistic view of the risks associated with the project and the design

- It appears that the values used for probability of occurrence of each hazard, and qualitative assessment of the impact of the hazard are not entirely consistent or based on objective evidence

- Although a number of different causes have been given for the different hazards, the likelihood of each cause occurring is not evaluated separately and each hazard has been treated in isolation so that the probability of several hazards occurring simultaneously or sequentially does not appear to have been addressed

15.7.4 In relation to the reception and deposition of transported peat at the Srahmore site, the Board sought advice on the following:

- the stability of the deposited and graded peat in the short, medium and long terms

- likely impacts, if any, on the surrounding cutover peatland

- the adequacy of the drainage proposals during the deposition phase

Dr. Orr concluded on these matters as follows:

- The greatest geotechnical risk in the case of the reception and deposition of the transported peat is the risk of excess settlement or bearing failure of the metalled access road from the R313 across the thickest part of the peat. Any of the methods proposed for addressing this issue would be suitable, although the risk of contamination may be greater in the case of in-situ mixing with cement or lime.

- Several slides have occurred in bogs with slopes of just 2^{o}, particularly where they have been disturbed by human activity. This could occur but any failure would be local and would not affect the global stability of the site

- The stability of the cutover peatland is not likely to be compromised, as the overall slope of the site is only 0.2^{o}.

- Drainage proposals are based on a 100 year rainfall event of 31mm per hour. Provided the drainage system is constructed before deposition

takes place, it should be adequate during the deposition phase. It is important that the outflow from settlement ponds is monitored closely.

15.7.5 I am in broad agreement with the conclusions reached by Dr. Orr in his report of 26th July 2004. Resulting from a number of concerns raised, and reference to a paper titled *Stabilisation of Irish Soils* by Hebib and Farrell, February 2004, the Board requested additional information from the 1st Party. This request is contained in Appendix N1 of Volume 2.

The request for additional information (dated 11th August 2004) broadly relates to the following:

- Revised Risk Assessment
- Contingency measures in the event of required soil strengthening not being achieved
- Statement regarding the potential short, medium and long term run-off and/or leaching from stabilised soil.

15.7.6 The response to the Additional Information request was submitted to the Board and date stamped 31st August 2004.

The response includes a revised Geotechnical Risk Register. This includes an additional section indicating risks associated with the carrying out of works in the absence of proposed design and construction measures. It also includes an evaluation of how pre-control risks have been mitigated. It is stated that the lessons learned from the Pollatomish and Derrybrien events formed the basis for geotechnical design and construction. The main geotechnical risk is that posed by the presence of soft soil in the form of blanket bog. Risks have been reduced to an acceptable level by design. An acceptable risk is defined as one which is as low as reasonably practicable *i.e. a risk that could not be reduced further without additional resources which would be considered extraordinary and disproportionate to the credible consequences of the hazard.*

In relation to peat stabilisation the response states that field investigations, preliminary design, cost analysis and laboratory test mixing all confirm the feasibility of the proposal. All stabilisation works would be subjected to a range of regular and close centred tests to ensure that target strengths are met. Further peat excavation and removal would be a last resort, and the overall quantities of peat for removal would not materially increase. The predicted impact arising from leaching of the cement and sand binder is negligible.

In relation to the environmental impact of peat stabilisation it is stated that the reactive phase for the cement would be no more than 24 hours. After this time the cement is generally solid and the availability of leachable components is negligible. Hexavalent chromium could, theoretically be released, but only in very small amounts and in the immediate contact zone of the cement. It is

stated that the stabilisation works would have no residual effect on the quality of groundwater or surface waters or their associated ecosystems.

15.7.7 Following receipt of the Additional Information I held further consultation with Dr. Orr, and sought a supplementary report on specific aspects of the Additional Information response relating to the Geotechnical Risk Assessment, peat stabilisation and conditions in the event of permission being granted by the Board. This supplementary brief is contained in Appendix B of Volume 2.

Dr. Orr's supplementary report, dated 9th September 2004 concludes as follows:

- The revised Register provides a realistic view of the geotechnical risks associated with the project and the design
- In the revised Register the information in the additional column for P and I values before design factors are taken into account are reasonable
- The explanation for post design P and I values is reasonable
- The probability of several hazards occurring simultaneously or sequentially is satisfactorily addressed
- The design measures and contingency plans proposed are reasonable in the context of the information submitted, including the Risk Register
- Proposals for the strength testing of stabilised peat are reasonable
- The proposal to introduce contingency measures in the event of stabilised peat not achieving the required strength is a reasonable and standard approach
- It is important that the foundation design for the proposed flare on strengthened soil accommodates the weight of the flare and the wind loading
- If permission is being granted there is a need to ensure that appropriate and adequate monitoring is carried out with regard to all of the geotechnical risks at all stages of the project both during construction and (where relevant) post construction.

15.7.8 Observations were received in relation to the Additional Information submission and these are summarised in Appendix L2 of Volume 2. 3rd Parties argue that the Risk Register is inadequate. They state that landslides are still occurring in the area and this can be seen in the distortion of the line of stockproof fences. Underneath the bog is a floating subsoil of daub and the proposed excavation would lead to a quagmire eventually leading to damaging discharges to Carrowmore Lake. It is argued that the proposal involves too much experimentation and a 'make-it-up-as-you-go-along' approach.

Sheetpiling could lead to stability problems due to draining and shrinkage downstream of the pile leaving access to sudden water pressures during severe rainfall events. The effect of construction vibrations on the stability of the peat is raised, as is the contingencies available in the event of failure of the access road due to an accident at the plant. It is also argued that reinforced concrete walls attached to bedrock should be used instead of rock gabions.

There are strong and coherent arguments submitted on both sides in relation to the area of geotechnical risks. However, I am strongly influenced by Dr Orr's views expressed in his two reports to the Board, and conclude that there are no convincing geotechnical reasons, which would warrant refusal of permission. I am satisfied that any concerns relating to the stability of the flare stack can be addressed by way of condition, and that ongoing monitoring with regard to all geotechnical risks can also be conditioned as a requirement of any permission granted.

Excavated Peat Issues

15.8.0 The principal issues arising in relation to excavated peat (issues which are not covered elsewhere in this assessment) are:

- Potential for significant leaching of phosphate or any other materials (such as N) from the peat at any stage from excavation to deposition
- Adequacy of windrowing proposal to reduce moisture in the excavated peat
- Likelihood of slurrying of peat resulting from the number and type of movements proposed from excavation to final deposition

15.8.1 Information has been submitted in relation to phosphate hotspots in the peat on the terminal site. The additional information submitted to the Planning Authority states that 17 Phosphorus sample points were located within the footprint of the site, and that 36 samples were taken outside of the terminal footprint. It seems likely that the source of the phosphate is rock phosphate connected with the former use of the site, but cattle feeders offer another, but less likely, possibility. Maps are submitted with the additional information showing the spatial distribution of phosphate at shallow depth (0.00 – 0.15m) and deeper (0.15 – 0.30m). At shallow depth results indicate that leachable orthophosphate concentrations are typically less than 50mg/l with the exception of one area within the northeastern part of the terminal footprint, where the maximum reported leachable orthophosphate concentration was 219mg/l. The average concentration of leachable orthophosphate within the terminal footprint at shallow depths was 30.4mg/l. Orthophosphate concentrations decrease with depth. I did not detect any obvious visible signs of elevated phosphate levels, such as changes in growth patterns, at the time of site inspection.

This area, and particularly Carrowmore Lake, which is an important fishery and water supply, has been susceptible to increased phosphate levels with significant detrimental knock-on effects. Carrowmore Lake fishery has been closed to anglers for the past two years due to algal blooms, and it is stated that this has had a devastating impact on the local economy. An article in the *Mayo News,* dated 14th July 2004, indicates that the cause of the Carrowmore problem may be complex with a number of factors contributing to the heavy nutrient load in the lake. Low intensity farming, septic tanks on unsuitable sites and fertilisers used in connection with public and private forestry are listed as possible sources. The *Irish Times,* dated 22nd July, 2004, reported that the North Western Regional Fishery Board (NWRFB) suspect that fertilisers used in forestry are the cause of increased nutrient levels.

The proposed terminal site is mainly within the catchment of the Bellanaboy River, and it is proposed that the terminal site will drain in a southwesterly direction towards this river. The Bellanaboy, which accounts for 28% of the catchment for Carrowmore Lake, flows into the lake approximately 2.5km from the terminal footprint. Mean orthophosphate levels in the river are elevated and it is considered by the EPA (who carry out regular monitoring in conjuction with the NWRFB) to be the main culprit for elevated levels of Phosphorus in the lake. The EPA indicates (see tape of radio interview in submission by Ó Seighin & Others in Appendix L2 of Volume 2) that there is no evidence of a direct link between works carried out on the terminal site and the elevated levels.

The deposition site at Srahmore is within the catchment of the Owenmore River, which has a confluence with the Munhin River before flowing into Tullaghan Bay cSAC. The Munhin River is the outflow from Carrowmore Lake.

The NWRFB are not opposed to the proposed development, concluding that provided all of the measures proposed through the Additional Information submitted to the Planning Authority are put in place and operated satisfactorily, the threat to the inland fisheries in the area should be minimised. The NWRFB recommends conditions in the event of permission being granted, including a baseline survey before the carrying out of any works, and follow up surveys during the construction phase and in the year following completion of the development.

Having regard to this background the Board sought consultancy advice on the potential for significant leaching of phosphates or any other material at any stage from excavation to deposition. The consultant's brief is contained in Appendix B of Volume 2.

15.8.2 Mr Austin Morgan (Consultant) submitted a report to me dated 2nd September 2004, a copy of which is at the back of this volume. This report outlines the historical background to the terminal site and the application of fertilizers since 1955, concluding that phosphate fertilizer may have been applied by plane giving uneven distribution. It poses a reasonable question - *If the hotspots are real and the phosphate in the peat is leachable or highly*

leachable, why has it persisted for 40-50 years? Mr. Morgan questions the methods used to analyse the peat from the Bellanaboy site, and states that in Ireland over recent years, there has been much discussion/difference of opinion as to whether soil tests that were specifically developed to give advice on fertilizer use by farmers should, without further appropriate calibration, be used as indices of risk of nutrient loss from land to water. Mr Morgan is of the view that they should not be used because appropriate calibration work has not been done.

Overall conclusions reached by Mr. Morgan include:

- In the particular circumstances of the Phosphorus hot spots at Bellanaboy, there is not a serious risk of Phosphorus loss to local watercourses in the form of dissolved Phosphorus (i.e. leaching or surface run-off losses).

- The above conclusion applies to the Bellanaboy site (excavation and windrowing) and the Srahmore site (reception, deposition and grading).

- Based on the chemical composition of the peat, the resistance of the peat to chemical and/or biological decomposition, and the nature of the fertilizer materials historically applied to the lands, it is not likely that there will be significant leaching of any other materials (including N) from the peat.

- The possible leaching of phosphates into local catchments due to liquid peat removal and deposition is a management/husbandry issue at each phase of the whole development.

- The relative concentrations of Phosphorus in the peat and in lake waters (and the connection of this with possible orthophosphate impact) is tenuous.

15.8.3 Following a site visit and further consultation with Mr. Morgan, on my recommendation the Board sought Additional Information regarding sampling methods used, and the environmentally acceptable levels of orthophosphate (see Appendix B of Volume 2,).

The 1st Party responded by submission date stamped 15th September 2004. This includes the following information:

- A baseline survey included studies of phosphate concentrations in surface waters, groundwater and peat. The sampling programme was undertaken in connection with the previous application. Some areas highlighted as elevated (in P) are outside the proposed zone of excavation.

- There are 17 sampling locations within the current site. A sampling density of one point per hectare was used. Stratified samples were collected at 0.0-0.15m and 0.15-0.30m

- The methodology for monitoring point location and sampling is discussed in this submission. Single discrete samples were taken and not composite sub-samples.

- The Molybdate Reactive Phosphate concentrations measured are broadly equivalent to orthophosphate.

- The baseline information dates from 2002 and it is possible that phosphate concentration has now reduced. There is no record of application of fertiliser to the site over the past 5 years.

- All waters leaving the proposed settlement ponds would pass over a rip-rap mattress and over a riparian vegetated area, before being discharged to off site watercourses. These measures would assist in the precipitation and uptake of water-soluble phosphates. The drainage system captures all surface water run-off from the Terminal site.

- Values given for orthophosphate concentration (mg/l) are based on wet volumes of peat.

Following the receipt of the Additional Information, I raised a number of further queries with Mr. Morgan and requested a supplementary report (see Appendix B of Volume 2). Mr Morgan submitted a supplementary report, dated 23rd September 2004 and this is attached at the back of this volume. In this, Mr Morgan concludes as follows:

- There is not a serious risk of Phosphorus loss to local watercourses in the form of dissolved Phosphorus

- There is a possibility of particulate P loss occurring if good management practices are not employed

- Should the Board conclude that soil test values for P reflect the risk of loss to water, the case for re-sampling and quantification of the Phosphorus status using the Morgan's method, becomes more compelling

- There should be serious concern about the need to maintain the quality of local surface water bodies during the excavation and deposition stages of the project, particularly Carrowmore Lake and the rivers and streams that feed into it. The parameters 'total Phosphorus concentration' (for Carrowmore Lake), 'molybdate reactive Phosphorus (MRP) concentration' (for rivers and streams), and 'suspended solids concentration' (for all water bodies) appear the most relevant from the standpoint of water quality.

- The most beneficial approach to the issue of water quality is to invoke/apply the conditions set down in the 'Phosphorus Regulations' (S.I. 258, 1998). This would require that the existing biological quality rating for any part of a river be maintained, and that the existing trophic status for

any part of a lake be maintained. The wording for such a condition is suggested in the report.

3rd Party submissions in response to the submission of additional information to the Board argue that there is a direct link between the works carried out on the terminal site and the deterioration of water quality in Carrowmore Lake. It is contended that the works have tapped into the aquifer which is directly connected to the lake.

15.8.4 I submit that a critical point to be determined by the Board is the degree (if any) to which the soil test values submitted for Phosphorus reflect the actual risk of Phosphorus loss to water. Mr Morgan concludes that there is not a serious risk in the form of dissolved Phosphorus and, based on the information before me, I agree with this conclusion. The historical background indicates that phosphorus fertiliser was applied to these lands, but not in the recent past. I submit that peat would not be expected to hold dissolved Phosphorus over a prolonged period; if the hotspots identified do represent significant concentrations of dissolved and potentially mobile Phosphorus, there appears to be no obvious reason why it has not moved before now.

I submit that regular monitoring of the outflow from the proposed settlement ponds is crucial and the most appropriate form of monitoring, and I support the general approach adopted by the Planning Authority in this regard. I note that the applicants refer to the fact that the ponds would be monitored electronically for turbidity and phosphates. I am not aware of such methodology for the monitoring (sampling and analysing) of phosphates. This is an important issue when considering frequency periods for the monitoring of phosphates. The 'pitfalls' of monitoring orthophosphates should also be recognised; depending on the time samples are taken, surges in orthophosphates could be missed. In the event of permission being granted, I recommend that monitoring for orthophosphates at the outfall from the settlement ponds initially be required three times per week during excavation and construction. Any alteration to this frequency in the future could be a matter for agreement with the planning authority, following consultation with the Project Monitoring Committee.

15.8.5 3rd Party appellants argue that the proposal to windrow the peat for eight days, prior to its transportation to the Srahmore site, will not achieve the required reduction in water content. The 1st Party state that the peat extracted in Bellanaboy will have moisture content well below 91% as it is already well drained and the quantity of free water has already been reduced, and that windrowing is designed to reduce the moisture content to 82-87%, the required level for spreading. It is stated that the most effective drying occurs during the first 8 days approximately. In the event of adverse weather conditions, the peat would be covered with waterproof sheeting.

It is my understanding that the peat at Bellanaboy is typical blanket peat; it is sedgy with little sphagnum, and includes nitrate fixing plants. Total nutrition for the peat comes from rainwater, and there is small potash content originating from seawater. The upper half of the peat profile is stated to have

a Von Post classification of H4 – H6 with the fibrous nature of the peat still evident. Lower down and closer to the interface between the peat and the mineral soil, the peat becomes increasingly decomposed and amorphous with little tensile strength. Thickness of the peat generally varies from 1.5m – 4,0m, with the deeper peat in the lower half of the site. Windrowing is designed to reduce the free water content to a manageable level for transportation and deposition. It is stated that the process has been designed in consultation with by Bord Na Móna, and would consist of the linear stockpiling of peat up to 3.5 metres in height on a mineral soil foundation. A Bord Na Móna representative would monitor loading operations.

Windrowing is not a new practice and has been used on other sites including the cutaway site at Srahmore; however the circumstances at Srahmore are different than on the terminal site. While the reduction in moisture content is required for the transportation method proposed, it is important that the peat is not dried excessively. Peat can become hydrophobic in which circumstances the top few millimetres of the deposited peat may remain dry; this could have implications for revegetation of the deposited peat and possible erosion of the dried peat by surface water run-off. I do have concerns in relation to the lower levels of peat, which have little tensile strength; Mr. Ball expressed similar concerns in his report on the previous appeal. The pumping of this 'liquefied' peat between the two sites would have significant benefits, but may be more problematic in relation to the more fibrous peat.

On balance, based on the information before me, I consider that the windrowing of peat and transportation by road offers a practical option. What is important is that the entire operation be managed and monitored to ensure protection of watercourses and that there is no significant leakage from the haulage vehicles resulting in soiling of the haulage route and possible environmental damage to a European site (cSAC 00476). The Planning Authority include a condition that *the developer ensure that no material shall leak or fall from vehicles while in transit transporting waste from the terminal site.* The 1st Party argues that the enforceability of this condition is an issue and suggests that alternative wording be used to the effect that *all reasonable measures be taken* by the developer and that the written agreement of the Planning Authority be required regarding details of the *vehicles and methodologies to be used to ensure the prevention of leakage from the vehicles while in transit.* This condition is addressed later in this assessment.

15.8.6 There is 3rd Party argument that the excavated peat is likely to slurry, having regard to the number and the nature of the movements, which it has to undergo, and to the high rainfall amounts recorded annually in this area. The Ball report in relation to the previous appeal raised concerns in relation to this matter. In response to the Planning Authority's request for additional information, the 1st Party states that at a moisture content of 82-87%, the peat would be quite cohesive and capable of retaining its consistency through multiple rehandlings. A reduction of 4-5% moisture content can increase the ultimate shear strength of the peat by a factor of 2 or 3, improving the handleability of the peat. The 1st Party carried out a qualitative test at the Oweninny Works and it is claimed that this indicated that peat maintains its

shape both after tipping and additional handling, and that it proved that the peat does not readily degrade into liquid slurry due to handling.

While I have some concerns regarding the qualitative test carried out and the degree to which the peat sample used may be representative of the different layers of peat to be excavated at the proposed terminal site, I consider that the strength of evidence lies with the 1st Party on this issue. Subject to a suitably worded condition as referred to in paragraph 15.8.2 above, the onus would be placed on the 1st Party to manage all stages of the handling of the peat to prevent slurrying occurring or, if it does occur, to ensure that there are no resulting significant detrimental environmental impacts.

Roads and Transportation Issues

15.9 While the public notice refers to the proposed developments on the Bellanaboy and Srahmore sites, there is a further important aspect to the overall proposal. A ***Haul Route*** is proposed for the transportation of the peat. This is the R314 – L1204 – R313 – L12044. This is approximately 11km in length. A one-way system would operate at the southern end of the Haul Route with returning traffic using the R313 and L12044 for the initial section before returning to the L1204. Clarification, by way of Additional Information submitted to the Board, indicates that the one-way system would apply to all traffic, and not just development related traffic. This would require statutory approval under the Roads Act, 1993.

Proposed access arrangements for the Bellanaboy site are:

- Primary access from the R314 Regional Route
- Secondary access from the Pollatomish Road at the north west corner of the site
- Further access from the R314 to the west of the main access to facilitate access to the settlement ponds

Improvement works proposed for the main site entrance would include a deceleration lane leading into the site from the west, and general widening of the carriageway both sides of the entrance. The public notice refers to reconfiguration of entrance from R314 to include widening of the entrance and provision of deceleration lane; realignment of the R314 to the south of its current location, at site entrance, over a length of 115m approx. to the west of the centreline of the existing site entrance, and over a length of 80m approx. to the east of the centreline of the existing site entrance.

At the Srahmore site it is proposed to construct an access road into the site from the R313, directly opposite the junction between the R313/L1204.

The transportation of the peat would involve an estimated 45,000 HCV movements. In addition, the transportation of construction materials would involve an estimated 21,000 HCV movements. It is estimated that there would be up to 400 round trips/day (800 truck movements) on the Haul Route

associated with the transportation of the peat and a smaller amount of mineral soil.

A ***Traffic Management Plan*** was submitted to the Planning Authority by way of additional information.

Mayo Co. Co. published notification of the proposed upgrading of Regional Roads R313 and R314 and Local Roads L1204 and L12044, under section 179 of the 2000 Act and Part 8 of the 2001 Regulations. This does not refer to any one-way system as indicated in the additional information submitted to the Board. On 13th September 2004, Mayo Co. Co. passed a Part 8 procedure relating to the upgrade of the R313, R314, L1204 and L12044.

I submit that the key issues in relation to Roads and Transportation are as follows:

- General adequacy of the Traffic Management Plan submitted and incorporated into the Planning Authority's decision and, in particular:
  - the physical adequacy of the proposed haul route
  - public safety along the length of the proposed improved haul route
- Access proposals for the proposed terminal and deposition sites.
- Cumulative traffic impacts on the amenities of property in the vicinity of the proposed haul route and other transportation routes, and on the environment in general.

15.9.1 The Board sought the advice of Mr. Danny O'Connor, Inspector (Engineer) on the following specific aspects:

1. Critical assessment of the Traffic Management Plan (TMP) submitted to the Planning Authority by way of Additional Information. This is titled *Appendix A: Traffic Management Plan.* It was requested that the assessment would focus on the following:
   - The physical adequacy of the proposed Haul Route, improved in line with the TMP proposals, to cater for the nature and extent of traffic predicted during the earthworks and construction phase of the two sites
   - Public safety along the length of the improved Haul Route arising from the traffic generated during earthworks and the construction phase of the sites
2. Examination of the compatibility between the TMP proposals and the proposed roads upgrading and improvement works advertised in the public notice by Mayo County Council on 21st June 2004.

3. Critical review of the relevant conditions attached to the Planning Authority's decision to grant permission with particular comment on their adequacy in the event of permission being granted on appeal.

Following consultation with Mr. O'Connor and a site inspection, on my recommendation the Board sought Additional Information on aspects of the roads and transportation proposals (see Appendix O of Volume 2). Briefly this referred to the following:

- Sight distances and turning radii at all junctions on the proposed haul route
- Procedures for vehicle breakdowns
- Proposed regulation of the proposed one-way stretch of the L1204
- Proposed regulation of the one-way L12044
- Clarification of Drg. No. 2044-1011

15.9.2 The 1st Party responded by submission dated 15th September 2004. This includes the following information:

- The proposed one-way system for traffic on the R313-L12044-L1204 loop at the southern end of the haul route requires a statutory variation to the current position. The one-way system will apply to all traffic for the duration of materials haulage and will be implemented by Mayo Co. Co. under the Roads Act, 1993.
- The following drawings are submitted:
  - Details of Proposed Turning Movements Rigid Truck (1:500)
  - Details of Proposed Visibility at Junctions (1:1000)
  - Details of Proposed Traffic Management (NTS)
  - Details of Proposed Turning Movements Articulated Truck (1:500)
- Traffic Directors, under the control of the Transport Operations Manager, would control traffic at junctions. These would receive specialised training.

  Traffic Director duties at the various junctions would be:

  L1204/R313
  Directing laden vehicles from the L1204 across the R313 to the site entrance, and unladen vehicles on to the R313 towards Belmullet. Stalling

other traffic when HGV's are crossing the R313. Proposed signage would regulate traffic outside working hours.

R313/L12044
Provision of a right turning lane on the R313, delineated by road markings. Traffic Director to direct traffic on to L12044, and to pause other traffic heading east while the manoeuvre takes place. Proposed signage to regulate traffic outside working hours. Coordination with Traffic Director at the entrance to the Srahmore site.

R314-Terminal Access Road
Traffic Directors to pause other traffic on the R314 to allow laden vehicles to emerge and head towards the L1204 junction. New slip road to be constructed into the Terminal site.

R314/L1204
Traffic Director to direct unladen traffic on to the R314, and pause non-construction traffic. Yellow box to be painted at the junction with the L5244 to permit non-construction traffic to enter the westbound flow on the R314.

L1204/L12044
Part of the one-way loop. Traffic Director to direct traffic left on to the L1204 northbound. A Traffic Director to control southbound traffic approaching the junction. Out of working hours control to be by traffic light regulation (Drg. No. 2044-1021).

Other Junctions
Control by statutory signage as shown on Drg. No. 2044-1033 of the Traffic Management Plan. Additional temporary signage proposed on side roads leading on to the L1204 and L12044 advising of haulage activities.

- A Recovery Vehicle is to be permanently based on the site and will respond to call out. Stand-by Traffic Directors will direct traffic around obstructions. Operation to be controlled by the Transport Operations Manager.

- Road sweeping on the main haul route to be carried out in the evenings outside haulage hours. Trial runs of peat haulage did not result in free water spillage on to the roads. A second sweeping period could be provided at lunchtime if required. The option of covering trucks with a tarpaulin during haulage is available.

- The southern end of the L1204 (one-way section) will be widened to 5.5m where the width between fences permits, and more than 5.5m locally. No designated lay-bys are proposed.

- The School bus operator has no difficulty with the proposed one-way system. Haulage drivers will be instructed not to overtake a school bus loading or disembarking children

- Updated Drawing No. 2044/1011 is submitted providing for the proposed one-way system. Two additional cross sections submitted.

- Signage will encourage the use of the L5284 as an alternative route

15.9.3 Mr. O'Connor reported to me on 30th September 2004, and a copy of this report is attached at the back of this volume. Mr. O'Connor's main conclusions are as follows:

- It is not clear how the traffic controller(s) would operate at the junction of the L12044/L1204

- The number of Traffic Directors for the various junctions in the haul route appear adequate, except for the junction with the L1204 and L12044, where one is proposed.

- Drawing 2044 – 1022 gives details of turning circles for an articulated truck at the three most restricted junctions and indicates that turning movement is possible although the entire carriageway of the L12044 and the L1204 is required to effect the movement

- The duties of the Traffic Directors are satisfactory, with the exception of the L1204/L12044 junction where pause control is required. A second Traffic Director is required at this junction

- The one-way system is to apply to all traffic

- Conditions are required to cover the operation of the L1204/L12044 junction, the ongoing maintenance of the haul route, and the operation of a one-way system

- A specific condition appears necessary in relation to the upkeep of the road as Mayo County Council are now taking the responsibility

- Condition 4 could be modified by deleting reference to importing construction materials into the Bellanaboy site, requiring the employment of traffic controllers at the site entrance from the commencement of importing materials into the site and limiting traffic movements in this phase to 5 vehicles per hour in each direction pending road realignment.

15.9.4 I am in general agreement with the conclusions reached by Mr. O'Connor. In broad terms I conclude that the proposals for the haul route, subject to amendment of proposals for the L12044/L1204 junction, could facilitate the transportation of the excavated peat in a safe manner. However, the proposed haul route is a contrived solution to the problem of transporting the excavated peat from the terminal site in order to overcome the Boards previous refusal. Over the long term or for a less important development, I submit that it is most

unlikely that the proposed haul route would be deemed acceptable because of the level of disruption, inconvenience and disamenity it would cause to residents and other road users. However, in this case the strategic nature of the proposed development, and the limited duration of the proposed haulage operations are important factors to be considered.

The southern end of the proposed haul route in its present condition is substandard in terms of carriageway width and alignment, and it includes three awkward junctions – L1204/R313, R313/L12044 and L12044/L1204. I consider that it is essential that the southern section of the L1204 (south of the junction with the L12044) and the L12044 are made one-way for all traffic prior to the commencement of peat haulage operations. It is also critical that the proposed Traffic Directors are operational at this stage. The L12044 is narrow, has a right-angled bend adjacent to a small cluster of houses and has a seriously substandard junction with the L1204. Unladen vehicles returning to the terminal site, and any other large vehicles would have to occupy the entire carriageway of the L1204 when emerging from the L12044 at the junction. Vision to the north from the junction is poor, and I consider that the safe operation of this junction during peat haulage would be dependent on two Traffic Controllers. I note that lights would operate on the L1204 leading into this junction outside haulage hours.

The proposed haul route is essentially made up of roads crossing boglands. The existing surface is poor in places and is generally unsuitable for the level and nature of traffic proposed. There are proposals to upgrade the route, including widening and resurfacing and these have now been sanctioned by the Local Authority, who would carry out the works at the developers expense. I submit that it is likely, given the nature and scale of the proposed peat transportation operations, that the improved surface would be subjected to significant pressures and be likely to require regular maintenance. It is essential that this issue be addressed by way of condition in any permission granted.

The appellants argue that the use of the L5284 is not a practical option as this road is seriously substandard. I travelled the road in both directions by car. The carriageway generally varies between 3 and 4 metres, and the quality of the surface also varies along the length of the road. There is no public lighting or road markings, and the road is winding and close to the lakeshore for significant lengths. The road was lightly trafficked at the time of inspection. I passed other cars travelling in the opposite direction without undue difficulty. While I accept that the L5284 is not suited to high levels of traffic or for a HCV route, I consider that it could be used as a short term alternative route as proposed without endangerment to public safety.

15.9.5 At present, this is a quiet rural area. Traffic on the R314 is relatively slight (79 in morning peak and 56 in evening peak) whereas, in comparison, traffic on the R313 is higher (220 in morning peak and 238 in evening peak). During my site inspections traffic along the proposed haul route was light, and ambient noise levels were low. I noted a small number of buses and heavy articulated lorries on the L1204.

In addition to the main haulage route (R314-L1204-R313), the Traffic Management Plan details the transportation of materials associated with pipeline construction. In terms of assessing the cumulative impact, the movements associated with the transportation of these materials must be taken into account. In addition, there would be private vehicle movements generated by workers on both the proposed terminal and deposition sites.

I submit that traffic generated during the earthworks and construction phase of the sites would generate significant adverse impact on the amenities of properties along the various haul routes and, in particular, along the nominated haul route between the terminal and deposition sites. Noise levels would be very significantly increased with resulting loss of amenity, and there would be considerable disruption and inconvenience caused to other road users. The 1st Party estimates that there are 50 houses on or adjacent to the L1204 and also housing on or adjacent to minor roads. The Traffic Management Plan seeks to control the movement of all project related traffic during the construction phase, thereby minimising the loss of amenity and inconvenience. It does not propose maximum noise levels and none are specifically conditioned in the Planning Authority's decision. I have serious doubts regarding the practicalities of stipulating maximum noise levels associated with particular forms of traffic, and consider that control can usually be better achieved by limiting working hours and managing the traffic generated.

The Board must weigh the significant loss of amenity, disruption and inconvenience, which would result against the strategic nature of the proposed development, and the limited duration of the proposed haulage and construction operations. It must also consider if the Traffic Management Plan, as proposed, together with the proposed limitation on working hours, is likely to minimise amenity loss, disruption and inconvenience to an acceptable degree. Having regard to the following:

- Statements in the Board Direction relating to PL 16.126073
- Recent Ministerial statements regarding national energy policy and the Corrib Gas Field,
- The limited duration of the proposed haulage and construction operations
- Management proposals set out in the Traffic Management Plan, as clarified/amended by additional information submitted to the Board,
- Mr. O'Connor's report dated 30th September 2004

I conclude that it would be unreasonable to withhold permission for traffic safety reasons or because of the loss of amenity, disruption and inconvenience, which would be generated by traffic during the earthworks and construction stage. I also consider that the cumulative impacts of traffic related to this proposal combined with other developments related to the Corrib Gas Field would not be such as to warrant refusal on either safety or amenity grounds.

I consider that the proposed access arrangements at both the proposed terminal and deposition sites are acceptable in terms of traffic safety and convenience. In coming to this conclusion I note, in particular, proposals for the two access points, the limited duration of peak traffic movements associated with peat haulage and construction, and proposals to manage this traffic in the vicinity of the junctions concerned.

I am satisfied that the issue of emergencies and contingencies is satisfactorily addressed in the Traffic Management Plan (section 5.4.17).

Visual Impact

15.10.0 The Board considered that the previous proposal under PL 16.126073 would have an adverse visual impact in the area, but that such impact would not be so serious as to warrant a refusal of permission having regard to the strategic nature of the proposal. The Board also indicated that it had particular regard to the lack of any landscape designation in the Development Plan and to existing vegetation and plantation on the site.

There are significant changes, which need to be considered by the Board in the case of the current appeal:

- The proposed terminal footprint is reduced in area
- There are changes to the heights of proposed buildings (see paragraph 15.2.2 of this assessment). In general, the proposed development would be higher than the previous proposal
- There are two sites in the current proposal, with the deposition of peat at Srahmore being a new element
- There is no current proposal to deposit peat on the terminal site
- The existing plantations and vegetation on the terminal site are older than they were at the time of the previous proposal
- There is a new Development Plan adopted with new amenity provisions

15.10.2 I submit that the proposed terminal development would have an adverse visual impact on the area, and would significantly alter the existing rural character of the area. However, this would not be significantly different to the adverse impact, or change of character, which would have resulted from the previous proposal. I note the previous Board decision did not include visual impact or change of rural character as a reason for refusal, and I deem this to be a material consideration. On the terminal site, the overall footprint elevation proposed is 1.4m higher than the previous, but the terminal footprint is reduced by 2ha. The flare stack would be the most prominent feature on this site. The Srahmore site is low lying and saucer shaped. I submit that the

deposition of peat, as proposed, would not have a significant visual impact, and that any such impact would be positive.

The proposed terminal development would be visible for significant stretches of the L5284, which runs along the western shoreline of Carrowmore Lake. There are good panoramic views, listed in the Development Plan, but the impact on these would be limited having regard to separation distance.

Environmental Impacts during Construction and Operation Phases

15.11.0 In addition to noting the nature and extent of residential development in the vicinity of the two sites and the haul route, it is important to note that this area, in general, has a significant number of European sites.

Designated sites within 10km of the proposed terminal site are as follows:

1.	Glenamoy Bog Complex (includes Sruwaddacon Bay SPA)	cSAC500	2km
2.	Carrowmore Lake Complex	cSAC476	1.5km
3.	Pollatomish Bog	pNHA1548	1.75km
4.	Slieve Fyagh Bog	cSAC542	2km
5.	Broadhaven Bay	cSAC472	8km

Designated sites within 10km of the proposed deposition site are as follows:

1.	Aughness Bog	cSAC1473	4km
2.	Broadhaven Bay	cSAC472	9.5km
3.	Carrowmore Lake Complex	cSAC476	1km
4.	Glenamoy Bog Complex	cSAC500	10km
5.	Blacksod Bay Complex	cSAC470	9km
6.	Owenduff/Nephin Complex	cSAC534	1km
7.	Pollatomish Bog	pNHA1548	9.5km
8.	Slieve Fyagh Bog	cSAC542	6km
9.	Tristia Bog	pNHA1566	3.5km
10.	Tullaghan Bay	pNHA1567	3.5km

15.11.1 The control of environmental emissions (by way of conditions) from the activities proposed for each site is a matter for licensing control by the EPA. The control of emissions at the construction phase for each site is a matter for the Board in this appeal. The land use decision involves the consideration of all environmental matters, including the potential impact of environmental emissions during the operation phase.

15.11.2 I submit that the key factors for consideration fall under the headings of Dust, Air, Water, and Noise.

15.11.3 Any construction project of this scale is likely to give rise to increased dust levels. In addition, the use of the haul route, which would facilitate the transportation of peat between the two sites, would be likely to give rise to increased dust levels. I submit that any increased dust levels arising from the construction and haulage would be limited in both amount and duration, and would not be a reasonable ground for refusal. The Planning Authority imposed a condition controlling dust deposition levels at the site boundaries and requiring measures where proposed activity would be expected to exceed the specified levels. I consider that this is a reasonable approach for the construction phase. While dust levels from the operation phase would be a matter for control through the appropriate licences, I submit that there is no convincing evidence submitted to indicate that these levels are likely to give rise to serious disamenity. I reach similar conclusions in relation to the likely impact of air emissions on ambient air quality in the general area.

15.11.4 Emissions to surface and ground water from the proposed activities on the two sites would be a matter for control through the appropriate licences. The Board consulted with the Environmental Protection Agency in relation to the general suitability of the two sites for the development proposed. The Agency forwarded a proposed Decision for the Srahmore Peat Deposition Area, and stated that there was no information before the Agency at this time to indicate that the requirements of section 83 of the EPA would not be satisfied insofar as the risk of environmental pollution is concerned. The Agency's comments are without prejudice to the making of formal decisions in relation to the necessary licences to operate the proposed activities on the two sites. However, I submit the Agency's response indicates a generally favourable line of thinking at this stage in relation to the operation of the proposed development, and the Board is obliged to have regard to the Agency's views. I also draw the Boards attention to the fact that there is no objection raised by the Fisheries Board. In these circumstances, I conclude that the operation of the proposed development would not be likely to give rise to significant surface or ground water pollution.

The potential for pollution of water resulting from both earthworks and construction and haulage activities is a crucially important consideration. The Terminal site is effectively in two river catchments – the Bellanaboy River and the Glenamoy River, and the Srahmore site is in the catchments of the Owenmore and Munhin Rivers. The range of European sites, which could

potentially be effected, and the importance of Carrowmore Lake both as an amenity and a water supply, are important considerations.

I submit that the greatest potential for pollution of water during earthworks and the construction phase arises from suspended solids and, to a lesser extent, accidental spillages. The potential for the leaching of phosphates and other components from the peat has already been addressed earlier in this assessment. It should, be noted, however, that increased deposition of suspended solids could lead to increased concentrations of total Phosphorus in watercourses and the Lake. At the terminal site, during the earthworks period, it is proposed to collect run-off by temporary falls and grips leading the water to sump areas. At an early stage permanent surface water drains would be installed along the top and toe of cut slopes. Cut slope drains would eventually form a continuous perimeter drain around the footprint of the terminal. Essentially, the footprint site would drain in a south westerly direction towards the Bellanaboy River. Two settlement ponds are proposed to allow peat and silt to settle out, and these would be monitored for turbidity and phosphates. If necessary, it is proposed that flocculants could be introduced.

The design parameters for the proposed settlement ponds on the terminal site need careful consideration. The ponds would collect suspended solids during both the construction and operation phases. Two parallel ponds, 70m in length, 20m wide and 2m deep are proposed. There would be a maximum 1m allowable depth of sludge and the minimum cross-sectional flow area of each pond would be $20m^2$. Details of the ponds are illustrated on Drawing No. COR-AR-SD-003 in Volume 1 Technical Appendix 3 of the EIS. The proposed ponds design is based on the anticipated peak run-off during the construction phase. The water velocity within the ponds would reduce suspended solids concentration to less than 30mg/l for 80% of the peak annual storms and to less than 100mg/l for 99% of the peak annual storms. In order to achieve these limits the following design storms were used:

- 1 in 5 year return period storm, with a 15mm/hr intensity for the former limit

- 1 in 100 year return period storm, with a 31mm/hr intensity for the latter limit

Settled solids would be removed from the ponds as required, i.e. when the sludge reached a depth of 1m. The pond being cleaned would be taken off-line. Discharge from the ponds would be via a rip-rap outfall and across open land to open drains. The pond outflow would be routed through a water quality sampling point. I consider that regular monitoring of the outflow from the ponds would be essential and should be conditioned in any permission granted. I note that the Emission Limit Value for suspended solids in the proposed decision for a Waste Licence at Srahmore is 35mg/l.

However, the Board should note that it is proposed that approximately 2 hectares of peat could initially be removed before the settlement ponds are

constructed and operational. It is stated that this is required to establish a suitable area for the windrowing of peat excavated for the settlement ponds. Water from this excavation would be collected in local sumps and pumped to existing field drains to the west of the excavated area. The field drains would flow through small silt ponds to perimeter open drain D12 (see Drawing No. COR-AR-SD-005 in EIS Volume 1 Technical Appendix 3). Having regard to the evidence relating to rainfall and rainfall events in this area, I consider that this is cause for concern and that the area proposed is excessive. I am concerned that, in the event of excess solids being discharged to the Bellanaboy River, Carrowmore Lake could effectively become a giant settlement pond. It is critical that this does not occur as deposition of peat particles on the floor of the lake would have a seriously detrimental impact and would be difficult, if not impossible, to remove. In the event of permission being granted, I recommend that conditions be attached requiring regular monitoring (with the right for the Planning Authority to require cessation of operations in the event of agreed trigger levels being exceeded) and restricting the excavation and removal of peat to a maximum area of 1 hectare before the settlement ponds are operational. This excavation area would be in the north eastern section of the terminal footprint where the peat is stated to be drier.

The greatest potential for water pollution at construction phase on the Srahmore site is also from suspended solids and spillages. Prior to the deposition activity an access road and reception area would be constructed, and drains constructed at the edge of each deposition bay. There are two existing settlement ponds and it is proposed to construct a further five to serve the proposed development. The existing ponds would drain to the Owenmore River whereas the proposed ponds would drain to the Munhin River. The control of emissions during deposition would be a matter for the EPA, and I note the Agency have issued a proposed decision in relation to a Waste Licence application for this site.

I submit that the potential for pollution from accidental spillages could be significantly reduced by the adoption of appropriate management measures on the site. I am satisfied that appropriate measures are proposed in this case, and that suitable conditions are attached to the Planning Authority's grant of permission. I consider that ongoing monitoring, and the development of a maintenance programme for silt ponds and settlement ponds, are essential requirements for the prevention of water pollution. I note that the Planning Authority's decision includes conditions relating to these matters, and recommend that similar conditions be attached to any grant of permission issued by the Board. I also support the approach adopted by the Planning Authority in conditioning the establishment of a Project Monitoring Committee *to ensure effective monitoring during construction,* and a further requirement to implement an agreed Environmental Management System for the duration of the construction stage of the project *to ensure adequate protection of the environment during construction.* I note the submission of the NWRFB to the Planning Authority, which does not object to the proposed development. In the circumstances outlined, I submit that it would not be

reasonable to refuse permission for reason relating to water pollution during the earthworks or construction phase on the sites.

There is clearly potential for the pollution of surface waters arising from the transportation of peat between the two sites. The nominated haul route crosses the Bellanaboy, the Glencullin and at least one other sizeable river feeding into Carrowmore Lake, and the route is within approx. 50m of the lake along one stretch. The route is also within the Carrowmore Lake cSAC for a stretch and adjoins the boundary on one side for further stretches. The pollution potential arises from the leakage of peat residue, accidents and the leakage of fuel from the haulage vehicles. A Traffic Management Plan was submitted to the Planning Authority by way of Additional Information (see Appendix D of Volume 2). This plan details proposed management measures for the haulage of peat along the route, and under Condition 1 of the Planning Authority's decision, forms an integral part of the permission granted. The Planning Authority has included two other specific conditions requiring all vehicles leaving the construction area to pass through a wheel wash, and a further requirement that no material leak from the haulage vehicles. I consider that the pollution risk could be minimised by the implementation of the management measures proposed and the imposition of appropriate conditions attached to any permission granted. Subject to good management practices as detailed in the Traffic Management Plan, and compliance with appropriate conditions attached to any permission granted, I submit that there would be no significant risk of water pollution along the haulage route during the operation phase of the proposed development.

15.11.5 There would be an increase in noise levels during the earthworks and the construction phase on the two sites. There would also be increased levels along the proposed haul route. These increases are likely to be significant and noticeable given the nature and scale of the proposal, the nature of this rural area and the low ambient levels that prevail. They would give rise to significant disamenity for residents close to the two sites and along the haul route. I submit that the level of disamenity could be reduced through the adoption of good management practices on both sites and along the haul route, and by limiting the hours of operation, as proposed. Increased noise levels would be of limited duration and are likely to be most pronounced during the earthworks and haulage operations. The level of disamenity must be considered in the context of the strategic nature of the proposal and Government policy, and of the limited duration of the excavation, deposition and construction phase of the development; in this context I do not consider that it would be a reasonable ground for refusal.

Noise levels arising from the activities on the sites would be a matter for control under the relevant licences. Based on the information before me, I consider that there is no convincing evidence to indicate that noise levels during the operation phase would be such as would warrant refusal of permission.

Health and Safety Issues

15.12.0 Health and Safety is a major cause of concern raised by the appellants. It was also a major issue in the previous appeal. Under PL 16.126073 the Inspector recommended refusal for reason relating to health and safety matters, but the Board decided not to use this in its decision, noting the report of the NAOSH, the competent authority, which did not recommend against the granting of planning permission.

I note the view of the HSA with regard to its remit and, in particular, the interpretation of what constitutes "the establishment" in this case. The HSA is the central competent authority under the 'Dangerous Substances' Regulations (S.I. No 476 of 2000) and is the appropriate body to define "the establishment". I also note that the HSA claims no remit over the incoming pipeline, save for a short stretch within the establishment.

15.12.1 There are existing consents relating to the Corrib Gas Field development as follows:

- Foreshore Licence (30 years) granted by the Minister for the Marine and Natural Resources on 17th May 2002 under section 3 of the Foreshore Act, 1933.
- Plan of Development (POD) granted by the Minister for the Marine and Natural Resources under the Other Minerals Development Act, 1960. Granted 15th April 2002.
- Petroleum lease granted in November 2001 by the Minister for the Marine and Natural Resources.
- Construction of a Pipeline under section 40 of the Gas Act, 1976, as amended. Granted 15th April 2002.
- Export Pipeline consent under section 8 of the Gas Act, 1976, as amended. Granted 28th February 2002.
- Construction of Sub-sea Structures under the Continental Shelf Act, 1968, as amended. Granted 2001.

Copies of the Plan of Development consent, Pipeline consent and Foreshore licence are contained in Appendix E of Volume 2.

An Environmental Impact Statement accompanied the application for *Foreshore Licence consent*, and EIA formed part of the decision-making procedure leading to the granting a licence by the Minister. Section 13A(2B) of the Foreshore Act 1933 (as amended) requires the Minister to have regard to the criteria specified in Article 27 of the EIA Regulations, including 'characteristics of the proposed development' and, in particular specified

matters including risk of accidents, having regard to substances or technologies used. Conditions attached to the Foreshore Licence include:

- Ensuring that all Facilities (defined as gas pipeline, discharge pipeline and control umbilical located in the Licensed Area) are maintained in a good and proper state of repair and condition so that they do not constitute a public health hazard or danger to persons, animals, marine life or the environment.

- Drawing up of an Environmental Management Plan for the approval of the Minister, and providing detailed construction methodology and consideration of all potential impacts and how they should be managed, the mitigation and control measures and how they would be implemented as well as monitoring proposed.

- Avoidance of areas of submerged peat

The Plan of Development consent, granted in April 2002, is conditional on the following:

- Prior to commencement of gas production (for commissioning or commercial operations) the receipt of a letter(s) of Acceptance for all Corrib installations, pipelines and associated engineering infrastructure from the Minister's auditor indicating that 3rd Party Independent Verification has been carried out and completed satisfactorily in relation to the development

- All pipelines to be the subject of separate approval

- Requirement for an Environmental Management Plan for the approval of the Minister

- The outfall of the discharge pipeline to be located outside the cSAC, not closer than 12km from the landfall site

- Requirement for a Traffic Management Plan for the management of construction traffic associated with pipeline and landfall construction activities, and to address emergency access for emergency response vehicles.

- Duration, likely frequency and noise associated with flaring of both the HP and LP flares should be kept to a minimum

Under Article 20(5)(a) of the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. No. 349 of 1989), which amends the Gas Act, 1976, the Minister is obliged to have regard to the EIS submitted with an application for *Pipeline Consent*. Assessment of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) on human beings is a

requirement of the EIA process. Specific conditions of the consent include the following:

- Pipeline route to be fixed near inhabited buildings to ensure that a minimum proximity distance of 70 metres is achieved.
- Requirement for an Onshore Pipeline Quantified Risk Assessment.
- Ensuring that liquid slugs can be safely accommodated in the inshore piping, additional transient analysis to be undertaken and to be subject to review and acceptance by the Petroleum Affairs Division (PAD) prior to pipeline installation.
- The Pipeline Integrity Philosophy document, the hydrotest/pre-commissioning procedures and the Terminal Quantified Risk Assessment to be subject to review and acceptance by PAD prior to commissioning.
- Requirement for an Environmental Management Plan providing detailed construction methodology. Construction methodology and timing to be agreed with Dúchas.
- Requirement for a Traffic Management Plan.
- Duration, likely frequency and noise associated with flaring of both the HP and LP flares to be kept to a minimum.

15.12.2 Health and safety is an important planning consideration, and the Board is obliged to consider the likely significant effects resulting from the existence of the proposed development. Part (albeit a small section) of the incoming pipeline is exposed within the terminal footprint, but a significantly greater length (in excess of 900m) is shown within the planning application boundary. The public notice does not refer to the incoming pipeline. Based on this background, and the contents of the HSA report to the Planning Authority, dated 8th April 2004 (see Appendix H of Volume 2), I recommended to the Board that the specific views of the Authority be sought with regard to the following:

- Does the Authority's conclusion in relation to 'worst possible consequences' relate solely to the length of import pipeline within the establishment site or could it apply to the full length of the import pipeline from the landfall to the terminal?
- Is there a statutory person or body with a remit to advise on the safety (both structural and operational) of the import pipeline from the landfall to the terminal?
- It is noted from the H&SA report that the operator has committed to have a Safety Audit and Review as required by the Seveso II Directive. Is it the

H&SA view that this Audit would encompass all aspects of the scheme, or would it be confined to the establishment?

The Board did not accept my recommendation by Direction dated 22nd July 2004 (see Appendix C of Volume 2), for reasons that the pipeline is, for the most part, outside the application site and is the subject of a separate consent procedure, including Environmental Impact Assessment.

15.12.3 The Board did receive a general submission from the HSA, date stamped 30th July 2004, which includes the following points:

- Following a review of the appeals, the HSA has not found reason to change its advice

- In the event of permission being granted the following condition should be included – *Should there be any proposed amendment to the permitted scheme which relates to the control or impact of major accident hazards (as defined by Seveso II Directive) then that amendment shall not proceed until the agreement of the HSA has been obtained.* This request is made under article 137(1)(a) of the 2001 Regulations.

- Consideration should be given to the inclusion of the following – *arrangements should be made between the applicant and Mayo Co. Co. to provide for traffic control on roads close to the terminal for use in the event of a major accident.*

- Part of the HSA submission to the Planning Authority was made in the context of information that a small bore release at the slugcatcher could result in a 45m throw of liquid (HSA estimate that this could be up to 50 – 55m). The Authority discussed the issue with the applicant who indicated that additional technical measures are possible to limit the risk and the extent of the release. The determination of an appropriate distance is subject to further engineering design, which is expected to result in shorter distances.

- Planning Authority conditions 34, 35 and 36 are likely to be reviewed by the EPA in the event of an application for an IPPC licence.

- The HSA are satisfied that appropriate accident overpressure data was used in the consideration of global stability issues.

- The transport of dangerous substances in pipelines and pumping stations outside the establishment is specifically outside the scope of the 'Dangerous Substances' regulations.

- Only a 5 metre length of upstream pipeline is exposed on the terminal footprint. The inlet pipeline was included in the Authority's risk assessment, both for full-bore failure of the pipeline and a hole equivalent to 10% of the pipeline diameter.

- The potential consequences of Jet fire, Flash fire and Vapour Cloud Explosion (VCE) have been included in the calculation of the risk contours generated for the generic advice submitted to Mayo Co. Co.

- The Authority considered all methane gas releases as leading to a VCE event, which is reflected in the overall risk contours.

- It is assumed that H_2S would not be present. If it were proposed to process H_2S or install equipment to treat such gas at the wellhead, the Authority would expect that this would require additional planning permission.

- The transport of dangerous goods outside the establishment is outside the remit of the Regulations under which the Authority provides advice. The requirements for the safe carriage of goods by road are addressed in the "Carriage of Dangerous Goods by Road Regulations 2004", which are enforced by the Authority.

- The 'Dangerous Substances' regulations apply to dangerous substances, which are or will be stored above certain thresholds. There is no reason to expect that these thresholds will be exceeded at the construction phase.

- The status of the establishment (upper or lower tier) has no bearing on the calculation of consequences and risks.

- 'Domino' effects were not a consideration in this application as there is only one proposed establishment involved.

- The operation of the flare is not expected to result in tree fires.

- Fire and toxicity analysis of the proposed odorant indicates that there would only be localised effects from a spillage, and these would not lead to any off site effects. The substance has an unpleasant smell and this would be experienced over a wide area.

15.12.4 In the Direction relating to the previous appeal (PL16.126073), the Board noted the applicants proposal and the NAOSH requirement that the facility be treated as an 'upper tier' establishment in the interests of operational safety. There is no such proposal or requirement in this case. The HSA submission to the Board (date stamped 30th July 2004) states that the status of the establishment (upper or lower tier) has no bearing on the calculation of consequences and risks.

The appellants argue that the incoming gas may contain H_2S but the applicants refute this. I submit that the proposal should be based on the assumption that the incoming gas would be sweet and not contain H_2S, as stated by the applicants; I submit that there is no convincing evidence to indicate that this is not the case.

It is proposed to use an odorant for the processed gas. The HSA indicates that this does not pose significant risks of off-site effects from on-site spillages. The odorant would only be used during the operation phase and would be subject to control under IPPC licensing. In the event of spillage, an unpleasant odour would be experienced over a wide area.

`5.12.5 I submit that it is critical that the health and safety aspects of the *combined* incoming pipeline within the application site, and the proposed terminal, prior to commissioning, are considered. The two elements are interdependent – without the incoming pipeline transporting the raw gas there would be no terminal, and without the proposed terminal at this location there would appear to be no need to route the incoming pipeline as proposed. Under section 40(2) of the Gas Act, 1976, the Minister may attach conditions to the construction and operation of a pipeline, and such conditions may relate to the safety and efficiency of the construction, operation and maintenance of the pipeline. Conditions 2, 3, 6 and 10 of the incoming pipeline consent appear to indicate that a combined assessment may have been carried out under that consent procedure, but any such assessment may have been confined to the pipeline. The relevant sections of the Gas Act, 1976 relate to pipelines. The HSA did not have input into the consent decision.

In a *Prime Time* interview on R.T.E. television on 15th September 2004, the then Minister for Communications, Marine and Natural Resources, Dermot Ahern T.D. stated that it would be the officials of his Department that would have responsibility in relation to the monitoring of the incoming pipeline. He also gave assurance that all pipelines would be to the highest standards and would be monitored by the officials responsible.

The remit of the HSA means that a short section of the incoming pipeline within the application site falls within the 'establishment', but that a significantly longer stretch within the application site does not. The operation of the activity at the terminal is IPPC licensable. It is reasonable to conclude that the health and safety aspects of the activity would be addressed by the Agency.

15.12.6 There are two options for the Board to consider on this issue. Firstly it could conclude that the health and safety aspects of the incoming pipeline (including the section within the current application site) have already been considered by the Minister for the Marine, Communications and Natural Resources and that repetition of the exercise under the planning code is not necessary. Secondly the Board may conclude that, having regard to the circumstances outlined above, it would be reasonable to consider the health and safety aspects of the combined elements within the application site prior to commissioning, as part of this appeal, even though planning permission is not being sought for the incoming pipeline outside the terminal footprint. I favour the second option because:

- I consider that there is a lack of absolute certainty under the first option
- The two elements are interdependent

- There is an onus on the Board to consider all impacts (including direct, indirect, cumulative etc.) and

- The adoption of the first option could be interpreted as project splitting.

Based on the information before me, including the Board Directions referred to above and the HSA submissions to the Planning Authority and the Board, I consider that it would be unreasonable to refuse permission for reasons relating to health and safety. I am recommending that any permission granted should include a condition requiring that health and safety aspects of the combined elements within the application site be addressed and agreed with the Planning Authority prior to the commissioning of the terminal. I accept that such a condition may duplicate, in part, condition(s) under the pipeline consent code, but I consider that it is a necessity and in the interests of the proper planning and sustainable development of the area. I further consider that it would be reasonable to include the additional HSA requirements (as outlined in the submission to the Board) by way of conditions.

Decommissioning

15.13.0 When the proposed terminal is decommissioned, the EIS indicates that the following would take place:

- Decontamination of process equipment
- Independent consultant to identify any contamination and monitor during decontamination and demolition
- Demolition of process items of equipment
- Removal of underground pipework and pipelines to the boundary fence
- Stabilise import pipeline and open drain systems and leave in-situ
- Remove facilities to grade level

It is indicated that the terminal would be assessed approximately 5 years prior to the predicted date of decommissioning.

A programme for the decommissioning of the Srahmore site is set out in Volume 2 of the EIS. This would involve the removal of the peat reception area, entrance road, the internal haul road network and temporary roads. Peat would be used to cover the areas of the reception facilities and the entrance road.

The Planning Authority has included conditions relating to the cessation of operations at the plant and a reinstatement programme (see conditions 1, 3(iii), 74 and 75). The notification of a *proposed decision* in relation to the Waste

Licence application for the Srahmore site includes a condition requiring bog and peat deposit area rehabilitation and aftercare.

I consider this aspect of the proposal to be satisfactory, and that the general approach adopted by the Planning Authority is reasonable.

Planning Authority Conditions

15.14.0 In total, there are 75 conditions attached to the Planning Authority's decision. The 1st Party has appealed 14 of these, requesting omission of some and amendment of others.

The conditions generally fall under the following headings:

- General compliance (1-3)
- Roads and Traffic Management (4-15)
  - Road improvements
  - Traffic Management
  - Haul Routes
- Environment management (16-45)
  - Protection of Water Resources
  - Rock Blasting
  - Noise & Dust
  - Waste Disposal
  - Natural Heritage
  - Health & Safety
  - Fire Safety
- Financial (46-50)
- Monitoring (51-75)
  - Environment
  - Traffic
  - Natural Heritage
  - Landscape
  - Archaeology

15.14.1 Many of the conditions imposed relate to standard matters such as compliance and environmental management. Others, such as those related to rock blasting and fire safety appear to be inappropriate; no rock blasting is proposed, and fire safety matters are more appropriately controlled under a separate code.

I submit that several conditions require particular consideration, in the event of the Board deciding that permission may be granted. These are as follows:

Condition 3
This requires legally binding agreements and covenants under section 47. The 1st Party has appealed the condition seeking its omission on the grounds that it is unnecessary and inappropriate, because matters of agreement are addressed in other conditions, which must be complied with.

Section 47 relates to agreements regulating development or the use of land. Any agreement may contain incidental and consequential provisions (including provisions of a financial character) as appear to the Planning Authority to be necessary or expedient. The condition imposed by the Planning Authority requires agreements in relation to landscaping, road network costs, restoration following cessation of operations at the plant, implementation of the Traffic Management Plan and acceptance of stated requirements in relation to the Project Monitoring Committee (see condition 16). I can see no reason why any of these matters should not be included within the terms of agreements and covenants under section 47, as they all fundamental to the overall decision. Other conditions could be reworded to avoid overlap of agreement requirements.

Condition 16
This requires the establishment of a Project Monitoring Committee to monitor earthworks, surface water run-off, drainage control, traffic management and road maintenance, implementation of the landscape plan and other environmental issues. The condition is not appealed. A similar requirement is contained within the Plan of Development consent for the Corrib Gas Field (Environmental Monitoring Group), and the incoming Pipeline consent. I strongly recommend the retention of the requirement for a Project Monitoring Group to liase with the Planning Authority, and I recommend extension of the Committee's remit to cover monitoring of the Geotechnical Risk Register.

Financial Conditions (46-49 incl.)
These require Special Development Contributions for road improvement works, extension of the Regional Water Supply Scheme, Fire Service specialist infrastructure, and the provision of artwork in a location and form to be agreed. The conditions have not been appealed. Condition 46 identifies the road improvement works and costs them. Conditions 47 and 48 also include costings. Condition 49 is less precise and provides for artwork 'to a maximum value of E30, 000'.

Section 48(2)(c) allows the Planning Authority to require the payment of a special contribution in respect of a particular development where specified exceptional costs not covered by a development contribution scheme are incurred in respect of public infrastructure and facilities which benefit the proposed development. I submit that conditions 46-48 (incl.) fall within the terms of this section of the Act, but I fail to see how the requirements of condition 49 conform. The provision of artwork as required could undoubtedly contribute to the amenities of the area, but it does not fall within the description of public infrastructure and is hardly a facility, which benefits the proposed development. In these circumstances, I do not recommend the inclusion of condition 49 in the event of permission being granted.

Condition 55
This requires the submission of an accredited Environmental Management System (EMS), specific to the construction stage of the development. This is similar to requirements in the consents for Plan of Development and the incoming Pipeline (Environmental Management Plan). The 1st Party requests that the word 'accredited' be omitted, arguing that independent certification bodies do not certify an EMS without evidence that the procedures are being implemented, and that procedures cannot be implemented prior to commencement of development. I consider that the 1st Party concerns could be overcome by rewording, and I recommend retention of the requirement for an EMS in any permission granted.

Condition 60
This requires the submission of a monitoring plan for the settlement ponds and discharges from the ponds. Monitoring parameters are listed as temperature, turbidity, dissolved oxygen, electrical conductivity, phosphate, nitrate, suspended solids and any other parameter required by the NWRFB. I consider that a condition of this type is critical to the protection of surface waters and important habitats in the area. The condition should be extended to require action and, in extreme circumstances, cessation of activities, if agreed levels are exceeded. In the event of permission being granted, the Board could consider setting limits for each of the parameters; I do not recommend this approach as it could result in an inflexible, unduly restrictive and ultimately unworkable monitoring programme. The Planning Authority condition has not been appealed.

Condition 62
This requires the appointment of a suitably qualified and experienced Environmental Officer during the construction stage of the project. The condition has not been appealed. I support this requirement and recommend its retention in the event of permission being granted.

15.14.2 The 1st Party has appealed other conditions. In response, I submit the following comments:

Condition 2
This requires rewording in line with condition 1.

Condition 4
This condition requires the realignment of the R314 at the Terminal site entrance, in accordance with Mayo Co. Co. Drawing No. 3225/04/02. (This drawing is attached to the report by the Senior Engineer West Region, dated 13th April, 2004). The realignment includes a deceleration lane eastwards into the site, and a general widening of the road in the vicinity of the entrance.

The 1st Party argues that this condition is unduly restrictive, as worded, and that procedural restrictions on the import of materials could cause delay. Site preparatory works should be allowed without delay. The Planning Authority

argues that the condition does not exclude preparatory works within the site, and that it is the volume of material, rather than the nature of materials, that needs to be considered.

I could not recommend that any large-scale importation of construction materials be permitted into the site with the R314 in its present condition. While sightlines are reasonable along the regional road, the carriageway is clearly substandard in width for large scale movements. There is no information before me to indicate that there would be any procedural delays inhibiting the required realignment. I submit, however, that it would not be reasonable to prevent the importation of construction materials into the site until the realignment is carried out. I recommend that this condition be amended in any permission granted to permit up to 4 HCV's/hour importing construction materials until such time as the required realignment is completed, subject to the employment of two Traffic Controllers at the junction. I submit that this level of movement could be facilitated safely and without undue inconvenience. I would not recommend any increase on this figure until such time as the required improvements are carried out, because the improvement works themselves are likely to cause disruption.

Condition 6

This refers to the maintenance, repair and upkeep of the haul route and all other roads in the region, which are affected directly or indirectly by the proposed development throughout the construction period, and requires this to be carried out at the developers' expense. The 1st Party argues that the wording is too broad and could be interpreted as all roads in the Erris Region. The Planning Authority states that the word 'region' is taken to be that defined by the extent of the Road and Bridge Survey, and has no objection to amended wording to incorporate this. I consider that the general thrust of the condition is reasonable, as the operation of the haul route would clearly put pressure on other roads in the area. As worded, I agree that the condition is too broad and vague, and I recommend that the amendment put forward by the Planning Authority be incorporated into the condition in the event of permission being granted.

Condition 12

This requires documentation and publishing of the haul route and schedule of haulage. There is no objection to this. The condition also requires that all vehicles hauling materials to the sites have a notice visible to the public identifying their involvement with the development. The 1st Party argue that they are not in a position to ensure complete compliance with the second part of this condition, and that occasional vehicles may not comply. They recommend rewording which would apply to vehicles regularly carrying loads to the site. The Planning Authority states that it is clear that the condition does not refer to small single deliveries, couriers etc.

I support the thrust of this condition, but recommend rewording to refer to 'all HCV's and other regularly attending commercial vehicles'.

Condition 15
This requires the developer to ensure that no material shall leak or fall from vehicles while in transit transporting waste from the terminal site. The 1st party questions the enforceability of this condition, as worded. They recommend alternative wording requiring 'all reasonable measures to be taken' by the developer and the written agreement of the Planning Authority of the 'vehicles and methodologies to be used to ensure the prevention of leakage from the vehicles while in transit'. The Planning Authority raises no objection to the proposed revised wording. I support the general thrust of the condition and recommend inclusion of the revised wording in the event of permission being granted.

Condition 25
This seeks to control noise levels during the construction phase, and requires that any activity which will elevate the pre-construction noise levels by 5dB Leq to be notified to the Project Monitoring Committee in advance, mitigation measures to be put in place and notification of the general public by way of public advertisement. The 1st Party state that almost all construction activities will raise pre-construction ambient levels by 5dB Leq. They recommend that, in addition to standard mitigation measures there should be communication with affected residents. The Planning Authority argues that the raising of background levels by more than 5dBA is significant, and that noise measurement should be taken at the nearest residence. They state that the proposed wording is vague and uncertain.

In the event of permission being granted, I submit that it is desirable that increases in noise levels are kept to a minimum in the interest of residential amenity. I do not consider that the wording of this condition is practical or would achieve the desired objective. There would be significant increases in noise levels during the construction phase of the development. Sources for this noise would include machinery on the sites and both haulage and non-haulage traffic attending the sites. The increases in noise levels would result in significant disamenity and inconvenience to residents in the area; this would occur over the limited period of construction and haulage. I submit that the most practical way of controlling noise levels is to control the hours of operation on the sites and the haulage hours. Such control is part of the overall proposal.

I recommend that the developer be required to carry out a survey of ambient noise levels at 12 residences in the vicinity of the two sites and along the haul route (4 in the vicinity of the terminal site, 4 along the haul route and 4 in the vicinity of the Srahmore site). Any proposed activity during the construction phase which is predicted to raise ambient levels at the surveyed residences by at least 10dB Leq *(1 hour)* during the period of 0830 – 1900hrs for a period of three continuous days or more, or which would have significant tonal and/or impulsive components, should be notified to the Project Monitoring Committee. In addition, there should be a requirement for the developer to give advance notice of at least one week to all residences along the haul route and fronting onto the public roads adjoining the two sites. There could be a similar requirement for any activity outside of the above hours, which is

predicted to raise ambient levels at the surveyed residences by at least 5dB Leq *(15 mins.)*, or which would have significant tonal and/or impulsive components.

Condition 31
This requires a report, including survey into the presence or otherwise of breeding hen harriers, together with proposals for mitigation measures if breeding is recorded. The 1st Party seeks the omission of this condition as no breeding hen harriers have been found on the site. Should it be necessary to retain the condition, the 1st Party request that the period for the report be extended from 6 to 12 months. The Planning Authority state that the condition arises from the report of the DoEHLG. I note that there are other claimed sightings of the hen harrier in the vicinity of the site. I recommend that the condition be retained but that the period for the report be extended to 12 months.

Condition 32
This requires the removal of vegetation within the site to be carried out outside the breeding season. The 1st Party request the omission of this condition claiming that it is unreasonable and impractical. They state that this is not a designated site for the protection of birds and that no rare or protected species breed on the site. Alternative wording is proposed if the condition is deemed necessary; this would require the removal of vegetation resulting in the disturbance to birds and their habitat within the site to be carried out outside the breeding season. The Planning Authority state that the condition arises from the report of the DoEHLG.

Based on the information before me, I consider that the wording of this condition is unduly onerous. I favour the deletion of this condition.

Conditions 34-36 (incl.)
These relate to health & safety requirements during the operational phase of the development. All of the conditions contain requirements to prevent pollution from releases of material. The reason given for each of the conditions is *to ensure proper environmental control in the event of accidental spillage of hazardous material.* The Planning Authority states that the HSA technical advice recommended inclusion of these items. I submit that the subject matter of these conditions would be more appropriately addressed through the IPPC licensing code, and that the conditions should not be included in any permission granted by the Board.

Condition 55
I have previously addressed this condition and recommend rewording in the event of permission being granted by the Board.

Condition 70
This requires a monitoring plan to ensure that all mitigation measures proposed in the EIS relating to the protection of habitats, flora and fauna, during the construction and operation phases are carried out. The 1st Party requests amendment deleting reference to the operation phase, as this would

be covered under the relevant IPPC and Waste Licences. I submit that the protection of habitats is a planning consideration at all phases. The Planning Authority raises no objection to the proposed rewording. I recommend rewording of this condition in the event of permission being granted to omit any reference to phases of development..

Other Conditions

While not appealing, the 1st Party questions the inclusion of conditions 13, 14, 19 and 37. Condition 13 refers to a wheel wash and I recommend its inclusion. Condition 14 requires vehicles transporting waste to operate under a Waste Collection Permit. I submit that this is a matter controlled under other legislation, and not an appropriate matter for a planning condition. Condition 19 relates to lime/cement binder and prohibits its discharge, or other deleterious matter to surface waters. I have previously addressed the issue of lime/cement binder. I consider that this condition, as worded, is inappropriate and should not be included in any permission granted. Condition 37 requires a Fire Safety Certificate. I submit that this matter is controlled under another legislative code and is inappropriate as a condition of planning permission.

Other Issues

15.15.0 3rd Party appellants question the *Need* for the proposed development. I submit that the Need for the proposed terminal was previously considered by the Board under PL 16.126073, and I do not propose to revisit this issue in this assessment. Given this background, I consider that the Need for the major new element of the proposal, namely the deposition site (and indirectly the haul route), is self evident. The proposal is essentially designed to overcome the reason for refusal previously given by the Board, and this involves removal of the excavated peat from the site and its deposition elsewhere.

3rd Party appellants raise the matter of *Alternatives*. In relation to the terminal, the Board has already considered this issue. The Boards reason for refusal does not refer to the issue of Alternatives, but the Direction notes that Alternatives are available for the development of the Corrib Gas Field. I have addressed this matter earlier in this assessment. I am satisfied that the issue of Alternatives for the major new element of the proposal, namely the deposition site, has been satisfactorily addressed.

The issue of *Sustainability* is raised. The principle of the proposed terminal and the sustainability of processing the gas at an inland site have previously been considered by the Board. The extension of the gas distribution network to towns in the region is a political consideration, and is outside the remit of the Board. I submit that the proposal to deposit the excavated peat on a cutaway peatland is acceptable in principle, although reuse of the peat would be preferable in terms of sustainability. The proposed transportation arrangements for the excavated peat along the designated haul route could not be regarded as sustainable in the longer term. The arrangements are put forward as a short term solution to a particular problem, to facilitate the construction of this development, which is of strategic importance and has the potential to bring significant social and economic benefits to the region.

Considered in this context, I consider that the overall development is acceptable in terms of its sustainability.

3rd Party appellants argue that the approach adopted by the developers amounts to *Project Splitting*. I submit that it is important to consider the approach taken in the context of the Irish legislative framework. This framework requires different consents to be obtained for the various elements of the overall scheme, from different bodies and under different legislative codes. I submit that the approach adopted fits with this legislative framework. The EIA process requires that a range of different impacts be considered, including direct, indirect and cumulative impacts. I submit that it is reasonable, in any assessment, to have regard to the fact that other consents have been granted following environmental impact assessment. In my assessment I have had regard to the existing consents, and have considered the required range of impacts arising, particularly in relation to health and safety, and roads and transportation issues.

3rd Party appellants argue that the *Environmental Record* of Shell, worldwide, has been very poor, and that there is no reason to expect that it would be any different in relation to the proposed development. I submit that, in the event of the Corrib Gas Field development proceeding, the developer would be required to comply with the various consents granted, and to the conditions attached to them. In terms of any planning permission granted, the planning authority has the responsibility of enforcement using the range of provisions set out in the 2000 Act. The responsibility of enforcing the terms of any IPPC licence or Waste Licence granted falls to the EPA.

This general area is relatively rich in *European* sites and protected habitats. Based on the conclusions reached in this assessment, and subject to compliance with appropriate conditions attached to any permission granted and satisfactory management of all phases of development, I conclude that the proposed development would not be likely to have significant impact on designated European sites or protected habitats.

The appellants raise the issue of NORM (Naturally Occurring Radioactive Material) and TENORM (Technologically Enhanced NORM). I submit that there is no convincing evidence to indicate that either material is likely to have any significant detrimental impact arising from the proposed development.

The issue of *buried carcases* in the southeastern section of the site is raised. Based on the information before me, and having regard to the previous Board decision and Direction, I conclude that any such carcases could be safely removed and disposed of without injury to public health or the environment. Any such disposal may require licensing.

I am not aware of any particular *aviation concerns* relating to the proposed development, but would recommend a standard condition relating to this issue in the event of permission being granted.

Appellants argue that it is likely that the development will not be carried out as proposed e.g. a significantly larger amount of material will have to be transported from the site, and an unauthorised quarry may be used to source material for the site. I submit that any material deviations from any permitted development would require a further application for permission. Enforcement against unauthorised development is the role of the Planning Authority and the necessary enforcement provisions are set out in the 2000 Act.

Any permission granted by the Board would not exempt the developer from obtaining other necessary consents under other legislation. If Waste Licences or permits are required under other legislation in relation to non-peat wastes, the granting of planning permission does not overcome such requirements.

16.0 OVERALL CONCLUSION

16.1.0 I have had regard to the previous Board decision (including Direction) under PL 16.126073, and conclude that this is a material consideration and is important in setting the parameters for my assessment. Material changes in circumstances since the previous Board decision are considered in the assessment.

I conclude that the proposed development would result in significant disamenity, disruption and inconvenience to residents in the vicinity of the sites and the haul route, and also to road users in the area. I consider that most of these effects would be confined to the earthworks and construction phase and, as such, would be short term.

I conclude that the proposed development is in line with Government policy, is of strategic importance and has the potential to bring significant social and economic benefits to the Erris and northwest regions.

I conclude that, subject to the implementation of the mitigation measures proposed, compliance with the conditions set out below, and satisfactory management control, the proposed development would not have a significant impact on the environment.

On balance, I consider that the importance of the development, and the real and potential benefits which it would generate, would outweigh the short-term disamenity, disruption and inconvenience to residents and road users.

In the circumstances outlined, I conclude that the proposed development is in accordance with the proper planning and sustainable development of the area.

17.0 RECOMMENDATION

I recommend that planning permission be granted.

REASONS AND CONSIDERATIONS

Having regard to:

- The planning history relating to the Terminal site, including the Board Direction under PL 16.126073

- The strategic importance of the proposal and to the real and potential social and economic benefits which it would bring to the Erris and northwest regions

- National policy as expressed in the National Development Plan 2000-2006, the National Spatial Strategy 2002-2020, and the National Climate Change Strategy for Ireland, 2000, and recent Ministerial statements in relation to energy supply and the Corrib Gas Field

- The limited duration of the earthworks and construction phase, including the transportation of peat

- The availability of vegetation and plantations to provide screening on the terminal site

- The nature, extent and low lying profile of the deposition site

- The legislative requirement to obtain licences from the Environmental Protection Agency in relation to the proposed activities on the two sites

- Consents granted under the Gas Act, 1976, as amended, and the Foreshore Act, 1933, as amended

- The development objectives and the conservation and amenity provisions of the current Mayo County Development Plan 2003-2009

- The reports of the Health & Safety Authority to the planning authority and to the Board

it is considered that the proposed development, subject to compliance with the conditions set out hereto, would not be unduly injurious to the amenities of the area or property in the vicinity, would be acceptable in terms of traffic safety, would not be prejudicial to public health and safety, and would be in accordance with the proper planning and sustainable development of the area.

CONDITIONS

General/Clarification

1. The development shall be carried out in accordance with the following plans and particulars:

- Original submission to the planning authority on 17th December 2003 and 23rd December 2003, including the Environmental Impact Statement and the mitigation measures contained therein
- Amendments and elaboration of the original submission by way of Additional Information submitted to the planning authority on 11th March 2004
- Amendments and elaboration to the above submissions by way of Additional Information submitted to the Board on 31st August 2004 and 15th September 2004,

save as may be amended by the following conditions.

Reason: To clarify the development to which this permission relates, and in the interest of the proper planning and sustainable development of the area.

2. This permission does not relate to the processing of gas including H_2S or the installation of equipment to treat such gas.

Reason: In the interest of clarity

3. Before development commences, other than works directly associated with the reconfiguration of the main entrance to the Terminal site and the provision of an entrance to the Deposition site, the owners/developers (and their successors in title) shall enter into legally binding agreement(s) with the planning authority under section 47 of the Planning and Development Act, 2000. This agreement(s) shall provide for the following:

(i) the satisfactory landscaping of the site, including the maintenance and/or replacement of existing trees and provision of new planting, in accordance with the Landscape Strategy (Drawings Numbers COR-RS-LA-001 – 003(incl.)) submitted to the planning authority on 23rd December 2003.

(ii) payment to the planning authority of all costs incurred by Mayo County Council in relation to the repair, maintenance and rehabilitation of the road network arising from the construction of the development, determined by the Road and Bridge survey to be carried out prior to and post construction in accordance with a further condition of this permission.

(iii) restoration of the Terminal site to the satisfaction of the planning authority following the cessation of gas processing operations, including the demolition of process items of equipment and removal of facilities to grade level.

(iv) full implementation of the Traffic Management Plan, submitted to the planning authority on 11th March 2004, as amended and clarified by Additional Information submitted to the Board on 15th September 2004, and as may be amended by the conditions of this permission,

(v) payment of the planning authority's reasonable costs in employing transportation personnel to monitor the Traffic Management Plan, and the provision of office accommodation and telecommunications facilities on site for such personnel,

(vi) payment of the planning authority's reasonable costs in employing environmental personnel to monitor implementation of the Environmental Management System, required by way of further condition, and the provision of office accommodation and telecommunications facilities on site for such personnel,

Reason: To ensure satisfactory control of the development in the interest of the proper planning and sustainable development of the area.

4. All agreements with the planning authority, required by way of the conditions in this permission, shall be in writing and copies of such agreements shall be made available for public inspection during normal office hours at the Planning authority's offices, and at the developers' offices in Bangor Erris.

Monitoring results required under the conditions of this permission shall be submitted to the Planning authority electronically and in hard copy form, and shall be made available for public inspection during normal office hours at the Planning authority's offices, and at the developers' offices in Bangor Erris. 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 the planning authority.

Reason: In the interests of clarity and transparency, and to facilitate ease of interpretation of all monitoring data collected and recorded.

StabilityMatters

5. The foundation design for the flare shall be such as to accommodate the weight of the flare and the wind loading. Details of this design shall be agreed with the planning authority prior to the construction of the flare.

Reason: In the interests of safety and the proper planning and sustainable development of the area.

6. The hazards listed on the Geotechnical Risk Register submitted to the Board on 31st August 2004 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, on a two monthly basis, to the planning authority 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 7 days of submission at both the developers' offices in Bangor Erris and the planning authority's offices. The nature and frequency of reporting during the operation phase shall be agreed with the planning authority prior to commissioning the terminal plant.

Reason: In the interests of safety and the proper planning and sustainable development of the area.

Roads, Transportation and Traffic Management

7. Prior to the commencement of peat haulage operations from the Terminal site, the main entrance and adjoining carriageway of the R314 shall be realigned in accordance with Mayo County Council Drawing No. 3225/04/02 to the satisfaction of the planning authority. Until such time as these works are completed, and subject to the employment of 2 Traffic Controllers at the entrance, the importation of construction materials into this site shall be restricted to a maximum of 4 HCV's per hour.

Reason: In the interest of traffic safety.

8. The following traffic management measures shall apply:

(a) Haulage of all excavated peat from the Terminal site to the Deposition site shall be restricted to the designated Haul Route, and the return of all unladen haulage vehicles shall be along the designated return route. No haulage of peat shall commence until such time as the proposed improvements of the Haul Route and the return route are completed.

(b) The maximum number of Heavy Commercial Vehicle (HCV) movements along the haul route shall not exceed 800 per day, or 400 in each direction per day. 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 the planning authority and the Project Monitoring Committee on request.

(c) The proposed statutory one-way system at the southern end of the Haul Route, involving the L1204 and L12044, shall be in place prior to the commencement of haulage of peat.

(d) Two Traffic Directors shall be employed at the junction of the L12044 and L1204 at all times during the haulage of peat.

(e) All signage detailed in the Traffic Management Plan shall be erected prior to the commencement of the haulage of peat. Prior to this, or during the haulage period, the developer shall erect any other signage required by the planning authority to facilitate the safe haulage of construction materials.

Reason: In the interests of efficient traffic management and public safety.

9. The roadside boundary on the R314 shall be set back in accordance with Mayo County Council Drawing No. 3225/04/03, and the setback area shall be made level with the adjoining carriageway; these works shall be completed to the satisfaction of the planning authority at the same time as the creation of the proposed access to the settlement ponds.

Reason: In the interest of traffic safety.

10. (a) On completion of the main entrance to the terminal site, the haulage of all materials required for the construction of the development at the Bellanaboy site shall be via Local Roads L1204 and L12044 and the section of the Regional Road R314 from Bellanaboy Bridge to the main entrance.

(i) Materials transported via Bangor shall use Regional Road R313, the Local Road L12044, the Local Road L1204 and the Regional Road R314 as the haul route to the site.

(ii) Materials transported from Belmullet shall use the Regional Road R313, the Local Road L12044, the Local Road L1204 and the Regional Road R314 as the haul route to the site.

(b) Haulage of all materials required for the construction of development at the Srahmore site shall be via the Regional Road R313.

Reason: In the interests of efficient traffic management and public safety and to minimise damage to the public road system in the area.

11. 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 developers' request and which shall generally relate to the road network

directly and indirectly affected by the proposed development, shall be subject to agreement with the planning authority.

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.

12. 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 and return route during the haulage and construction period. At minimum, a survey shall be carried out on a monthly basis during peat haulage and on a three monthly basis 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.

13. (a) All vehicles leaving the construction areas of the sites shall pass through a wheel wash.

(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 interests of amenity, the proper planning and sustainable development of the area, and traffic safety.

14. 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.

Reason: In the interest of traffic management.

15. 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 the Risk Assessment Matrix in Appendix 1 of the Traffic Management Plan and make particular reference to the following:

(a) Items A11, A12, A14, A15, A16, A18, A19, A20, A21, A24, A26, and A27 of the Risk Matrix

(b) The possible need for a lay-by on the southern approach to the bridge over the Glencullin River

(c) The appropriateness of the proposed 40mph non statutory speed limit in the vicinity of, and on the lead-in to the junction between the L1204 and L12044

(d) The appropriateness of the proposed 40mph non statutory speed limit in the vicinity of, and on the lead-in to the sharp bend at chainage 8000m

(e) The operational aspects of the proposed traffic lights along the haul route outside haulage hours.

Reason: In the interest of traffic safety.

Health &Safety

16. Before the commissioning of the gas terminal the developer shall submit to the planning authority a certified Safety Audit in relation to the installation of the combined upstream pipeline and terminal elements of the development within the planning application site, and the agreement of the planning authority shall be received.

The Safety Audit shall be prepared and certified by an independent qualified and competent person or body. Such body or person, and the precise form of the Safety Audit, which shall include Qualitative and Quantitative Risk Analysis of the specified combined components, shall be agreed with the planning authority.

Reason: It is necessary that the cumulative impacts of the upstream pipeline and terminal components within the application site are assessed and a Safety Audit is prepared and certified in the interest of public health and safety.

17. (a) Any amendment to the permitted scheme which relates to the control or impact of major accident hazards (as defined by Seveso II Directive), but which does not materially alter the permitted development, shall be subject to notification and agreement of the

planning authority, following consultation with the Health & Safety Authority.

(b) Prior to the commissioning of the terminal the developer shall obtain the agreement of the planning authority for a plan for the control of traffic close to the terminal for use in the event of a major accident.

Reason: In the interest of health and safety.

18. No development works shall take place on the sites until water supplies are provided to the satisfaction of the planning authority.

Reason: In the interest of public health.

19. Prior to commencement of development, details of aeronautical requirements shall be agreed with the planning authority. Subsequently, the developer shall inform the planning authority of the co-ordinates of the as-constructed position of the flare stack and any other structures required by the planning authority.

Reason: In the interest of air traffic safety.

Environmental Protection

Management System

20. Before development commences the developer shall obtain the agreement of the planning authority for an Environmental Management System (EMS), specific to the earthworks and construction phase of the development on the two sites. The EMS shall include as a minimum the following:

(i) Management and Reporting Structure
(ii) Schedule of Environmental Objectives and Targets, including objectives for the minimization of suspended solids movement to surface water systems, and effective management of all silt and settlement pond flow discharges during periods of high precipitation
(iii) An Environmental Management Programme
(iv) Corrective Action Procedures
(v) Awareness and Training Programme
(vi) Communications Programme.

The developer shall implement the agreed EMS for the duration of the earthworks and construction phase of the development. On written request by the planning authority, the developer shall submit a report on any specific environmental matter or an environmental audit.

The EMS shall be the subject of an annual review by the planning authority, following consultation with the Project Monitoring Committee.

The developer shall modify the EMS in accordance with any reasonable requirement of the planning authority, at any stage.

Reason: In the interests of environmental protection and the proper planning and sustainable development of the area.

Water Resources

21. The initial excavation phase on the terminal footprint, prior to the construction and operation of the settlement ponds, shall conform to the following:

(a) The area to be excavated shall not exceed 1 hectare.

(b) All drainage waters from this excavated area shall be monitored for suspended solids and orthophosphate, and any other parameter at specified frequency required by the planning authority (following consultation with the Project Monitoring Committee), before discharge from the site. The initial monitoring frequency of suspended solids shall be each afternoon during working days, and three times weekly for orthophosphate (all on working days). Precise details of the monitoring programme, including Trigger Levels shall be agreed with the planning authority (following consultation with the Project Monitoring Committee) prior to the commencement of the excavation of peat. Where practical, at least 2 sampling occasions per month for suspended solids and orthophosphate shall follow a heavy rainfall event.

(c) Monitoring results shall be submitted on a weekly basis to the planning authority or as otherwise specified by the planning authority, and shall be placed on public display within 7 days of receipt.

(d) In the event of Trigger Levels being reached or exceeded for any of the specified monitoring parameters, the developer shall notify the planning authority without delay, and shall carry out any remedial measures specified by the planning authority including, if necessary, cessation of works.

(e) Proposals for the regular maintenance of silt ponds facilitating this phase of development shall be agreed with the planning authority prior to commencement of excavation.

Reason: To prevent water pollution.

22. Other than the initial excavation phase referred to in condition 12, all surface water discharges from the disturbed area of the sites shall be channeled through the 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:

(i) temperature
(ii) turbidity
(iii) dissolved oxygen
(iv) electrical conductivity
(v) orthophosphate
(vi) total phosphorus
(vii) nitrate
(viii) ammonia (as N)
(ix) 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.

Results shall be submitted to the planning authority on a fortnightly basis or at other such interval specified by the planning authority (following consultation with the Project Monitoring Committee). All results shall be made available for public inspection within 7 days of receipt.

Reason: To prevent water pollution.

23. 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:

(i) 110% of the capacity of the largest tank or drum within the bunded area, or
(ii) 25% of the total volume of substance which could be stored within the bunded area

All fuel storage areas and cleaning areas, particularly for concrete 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.

24. 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 the commencement of development.

Reason: To prevent water pollution.

25. The location of the percolation area for the wastewater treatment system shall be as shown on Drawing No. COR-AR-SD-RF1-005, submitted to the planning authority on 11th March 2004.

Reason: To prevent water pollution in the interests of public health.

Noise and Dust

26. Prior to the commencement of development the developer shall arrange the carrying out of an independent survey of ambient daytime and nightime noise levels at residences likely to be effected by the proposed development. Ambient levels shall be determined at 4 residences in the vicinity of the terminal site, 4 residences along the haul route and 4 residences in the vicinity of the deposition site. The precise location of residences to be monitored shall be agreed with the planning authority.

During construction and haulage, any proposed activity which is predicted to raise ambient levels by at least 10dB Leq (1 hour) during the hours of 0830 – 1900, for a period of three continuous days or more, or which would raise ambient levels outside of these hours by at least 5dB Leq (15 mins) over a similar time period, or which would contain significant tonal or impulsive elements, shall be notified in advance to the planning authority and the Project Monitoring Committee. In such cases the developer shall be responsible for giving advance notice of one week to all residences fronting or adjacent to the haul route, and fronting the public roads adjoining the two sites.

Reason: In the interest of public health and residential amenity

27. Dust levels shall not exceed 130 mg/m^2 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 in local radio and/or local newspaper.

Reason: In the interest of public health and residential amenity.

Waste Disposal

28. (a) 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.

(b) 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.

29. Sanitary facilities shall be installed on the sites for the duration of the peat haulage and 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.

Natural Heritage

30. Prior to the commencement of development the developer shall carry out a baseline study of salmonid habitats in the area of the sites for the proposed development. The scope, nature and degree of monitoring of the baseline study shall be agreed with the planning authority, together with a schedule of follow-up surveys during the construction and immediate post-completion phases of the development.

Reason: In order to provide comprehensive baseline data to facilitate necessary monitoring and protection of salmonid habitats in the area.

31. Within 12 months of the date of this decision the developer shall submit a report, including a survey (carried out at the appropriate time of year) into the presence or otherwise in the area of the sites of breeding hen harriers together with mitigation measures proposed to minimise disturbance during the breeding season, if breeding is recorded.

Reason: In order to establish if hen harriers are breeding in the area effected by the development and to determine the nature and extent of any mitigation measures required.

Monitoring

General

32. Prior to the 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 submitted to the planning authority and 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 interests of protecting the environment.

33. 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:

(i) any malfunction of any environmental system
(ii) any occurrence with the potential for environmental pollution
(iii) 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 developers offices at Bangor Erris during normal office hours.

Reason: In the interest of proper environmental control during the earthworks and construction phase.

34. 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 (to the date of commissioning on the terminal site and the date of commencement of deposition on the repository site). The monitoring plan shall, as a minimum, include:

(i) A list of all monitoring locations
(ii) Description and specification of equipment to be used
(iii) The identity and qualifications of persons responsible for monitoring
(iv) Parameters to be used
(v) Monitoring intervals
(vi) Averaging times
(vii) Proposal for the presentation of data
(viii) Codes of practice to be used
(ix) 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 interests of clarity, and the protection of the environment during the earthworks and construction phase.

35. Prior to the commencement of development a Project Monitoring Committee (PMC) shall be established to monitor geotechnical risks set out in the revised Geotechnical Risk Register (submitted to the Board on 31st August 2004), surface water run-off, drainage control, traffic management and road maintenance, implementation of the landscape 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 Heritage and Planning Division of the Department of the Environment, Heritage and Local Government, and the Environmental Protection Agency to provide one representative each for the 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 liasing 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.

Archaeology

36. The developer shall facilitate the planning authority in the archaeological appraisal of the site and in preserving and recording or otherwise protecting archaeological materials or features which may exist within the site. In this regard the developer shall

(a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including any further hydrological and geotechnical investigations) relating to the proposed development, and

(b) employ a suitably qualified archaeologist with relevant experience in Peatland archaeology prior to commencement of development. The archaeologist, who shall work under licence, shall assess the site and monitor all site development works.

(c) provide satisfactory arrangements for the recording and removal of any archaeological material which may be considered appropriate to remove. The archaeologist shall be responsible for reporting any finds, without delay, to the planning authority. In such event, works shall cease in the effected area and shall not recommence until such time as mitigation measures (if any) agreed with the planning authority have been carried out.

(d) submit a report to the planning authority detailing the results of the monitoring.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation of any remains which may exist within the site.

Complaints Register

37. A complaints register shall be maintained by the developers at their offices in Bangor Erris; 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-

- the name of the complainant
- the nature of the complaint
- the date and time of the complaint
- actions taken as a result of the complaint

Reason: In the interests of the proper planning and sustainable development of the area.

Financial

38. The developer shall pay the sum of €4,325,125 (four million three hundred and twenty five thousand one hundred and twenty five euro) (updated at the time of payment in accordance with the Wholesale Price Index – Building and Construction (Capital Goods), published by the Central Statistics Office, to the planning authority as a special contribution under section 48(2)(c) of the Planning and Development Act 2000 in respect of road improvement works, namely:

- Widening and strengthening of the Local Roads L1204 and L12044 along their entire length
- Strengthening of Regional Road R313 Bangor-Muinhin and Glencastle
- The provision of a right turning lane at the junction of Regional Road R313 and Local Road L12044 in accordance with Mayo County Council Drawing No. 3225/04/04.

This contribution shall be paid prior to the commencement of development or in such phased payments as may be agreed between the planning authority and the developer. Payment is subject to the provisions of section 48(12) of the Planning and Development Act 2000.

Reason: It is considered reasonable that the developer should contribute towards the specific exceptional costs which will be incurred by the planning authority which are not covered in the Development Contribution Scheme and which will benefit the proposed development.

39. The developer shall pay the sum of €1,394,361 (one million three hundred and ninety four thousand three hundred and sixty one euro) (updated at the time of payment in accordance with the Wholesale Price Index – Building and

Construction (Capital Goods), published by the Central Statistics Office, to the planning authority as a special contribution under section 48(2)(c) of the Planning and Development Act 2000 in respect of the cost of upgrading the proposed extension of the Erris Regional Water Supply which will facilitate the development. This contribution shall be paid prior to the commencement of development or in such phased payments as may be agreed between the planning authority and the developer. Payment is subject to the provisions of section 48(12) of the Planning and Development Act 2000.

Reason: It is considered reasonable that the developer should contribute towards the specific exceptional costs which will be incurred by the planning authority which are not covered in the Development Contribution Scheme and which will benefit the proposed development.

40. The developer shall pay the sum of €30,000 (thirty thousand euro) (updated at the time of payment in accordance with the Wholesale Price Index – Building and Construction (Capital Goods), published by the Central Statistics Office, to the planning authority as a special contribution under section 48(2)(c) of the Planning and Development Act 2000 in respect of the cost of specialist infrastructure required by Mayo County Fire Service which will facilitate the development. This contribution shall be paid prior to the commencement of development or in such phased payments as may be agreed between the planning authority and the developer. Payment is subject to the provisions of section 48(12) of the Planning and Development Act 2000.

Reason: It is considered reasonable that the developer should contribute towards the specific exceptional costs which will be incurred by the planning authority which are not covered in the Development Contribution Scheme and which will benefit the proposed development.

41. Prior to the commencement of development, the developer shall lodge with Mayo County Council a cash deposit, a bond from an insurance company, or other security to secure the satisfactory reinstatement of the site, upon the cessation of activity at the terminal, 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 Pleanala.

Reason: To ensure the satisfactory reinstatement of the site.

Des R. Johnson
Deputy Planning Officer
14th October 2004.

Advice on Gas Terminal Site at Bellanaboy and Peat Deposition Site at Srahmore, Co. Mayo

by

Dr. Trevor L.L. Orr, Chartered Engineer

1. The Risk Assessment in Appendix 3A of Volume 1, Technical Appendix 2 of the EIS

The Risk Assessment in Appendix 3A of Section 3 of Volume 1, Technical Appendix 2 of the EIS states that a Geotechnical Risk Register has been completed to show the degree of risk attached to the various elements of the design. This Register consists of a table that included 19 rows for 19 geotechnical hazards that have been identified. The hazards are numbered from 1 to 20, with no number 6, and may be grouped as follows:

- 5 involve problems due to the existing ground being too soft for traffic or drainage
- 3 involve strengthened peat or soil being insufficiently strong or causing pollution
- 1 involves the ground being harder than expected causing difficulties
- 1 involves the quantity of material for fill being insufficient due to large quantity of unsuitable material
- 5 involve the stability of slopes or retaining structures
- 3 involve flooding, the dewatering or drainage systems
- 1 involves the ground strengthening causing dust problems

Although called a Geotechnical Register and while most of the hazards are geotechnical, not all the hazards are geotechnical in the sense that they involve the properties of the ground and ground failure, as can be seen from the groups above. Some of the hazards are hydrological or environmental, involving flooding, the flow of water from the site, the leaching of cement used to improve the ground, and the creation of dust.

The risks associated with the hazards have been assessed by multiplying a value (P) reflecting the probability of occurrence of each hazard by a qualitative assessment (I) of the impact of the hazard. Using this approach, the greatest risk value (5) has been found to be associated with the hazard of bog slides because of the very high impact (5) attributed to a bog slide. The risks associated with all the other hazards are calculated as being 3 or less, i.e. trivial. This has arisen because in the case of each hazard, either the probability (P) value or the impact (I) value has been given a value of 1 (i.e. negligible probability of occurrence or very low impact). Thus this risk assessment involves a very confident assessment of all the design aspects and hence provides a very optimistic view of the risks associated with the project and the design.

From examining the values for P and I used in the Register, it appears that these values are not entirely consistent or based on objective evidence; for example, the hazard of "unexpected ground conditions" is given a probability rating of 3 while the

hazard of the "failure of an excavated slope" due to "encountering previously unknown weaker zone within the rock or mineral soils .." (i.e. also unexpected ground conditions) is given a probability rating of only 1. Another example is the hazard of flooding caused by "extended periods of wet weather" which has been given a probability rating of 1, i.e. negligible. This seems far too optimistic considering the location of the site on a bog in the west of Ireland and considering the extreme rainfall event that caused bog slides at Pollatomish in September 2003. The bases on which probability (P) values of the hazards occurring have been selected should have been clarified. These values should be consistent and, where possible, should be based on objective scientific/statistical evidence.

Although a number of different causes have been given for the different hazards, the likelihood of each cause occurring is not evaluated separately and each hazard has been treated in isolation so that the probability of several hazards occurring simultaneously or sequentially, as in the case of the hazard of flooding causing the hazard of the failure of ponds, does not appear to have been addressed.

In my view a more critical and objective risk assessment should have been carried out. This would result in more of the hazards receiving R values above 5 and hence more attention needing to being paid to the design and construction of those hazards that receive higher R values and appropriate design measures and contingency plans being prepared either to reduce the probability of occurrence or deal with the hazard should it occur.

2. <u>Critical assessment of the proposed earthworks and construction works, and potential impacts during the operation phase of the development and stability of the fill and the peat, in particular:</u>
   - Stability of the cut peat on the terminal footprint during the earthworks and construction phase
   - Stability of the peat beyond the terminal footprint during the earthworks and construction phase
   - Stability of the fill beneath the terminal footprint and the buildability of these areas
   - The longer term stability of the peat and the peat areas during the operation phase
   - The likely short, medium and longer term relationship between the areas of fill and the cut peat.

The stability of the peat and fill during the construction and the operation phases of the development at the Terminal site are considered in Section 4 Volume 1, Technical Appendix 2 of the EIS.

- It is proposed to stabilise the cut slopes of the peat up hill of the terminal platform using gabions. The factor of safety of 1.5 against sliding, the conservative design parameter values used and the low slope angle of 1.5^{o} should ensure the stability of the cut peat above the terminal platform during the operation phase and in the long term.

  During construction, it is proposed to stabilise the up hill peat before excavating to construct the gabion walls either by mixing the peat with cement or by using sheet piles to retain the peat behind the excavation. These procedures should

ensure the stability of the peat slopes during excavation and hence the stability of the peat beyond the terminal footprint. The use of dry cement to strengthen peat is a new technology in Ireland. The results of tests carried out by Farrell and Hebib, referred to in the EIS, were on two peats from raised bogs rather than on a blanket bog as at Bellanaboy and gave "marked differences between the strengths of the stabilized mixture formed with the two peats". Thus the risk of not achieving sufficient strengthening using cement stabilisation is greater than using sheet piles, which is a proven technology. Also the use of sheet piles has less potential for environmental impact than the use of cement stabilization.

No results of strength tests on stabilised samples of peat were included in the documents provided to justify the values used in the stability analyses. It is stated in Section 4.7 that the effect of adding cement is to stiffen the peat resulting in a material with properties similar to a firm to stiff clay. This is a very optimistic view of the stabilised peat. In Section 5 the strength of the stiffened soil is stated as ranging from 25 to 50 kPa, which corresponds to soil ranging from soft to firm and is more realistic. The lower bound strength value of $25kN/m^2$ is used for the strength of the stabilised peat in Appendix 5.1 is a reasonable cautious value for the strength of cement stabilised peat. It is important to note that the strength values obtained in the field may be considerably less than the values obtained from laboratory tests and that the gain in strength may vary with depth. Field tests are required to verify strengths obtained from laboratory tests and I understand such tests may have been carried out but are not reported in the documents provided.

The possible environmental impact of cement stabilisation and how it relates to the EC Water Framework Directive requirements are not considered by Farrell and Hebib and is not elaborated in the EuroSoilStab Design Guide for Soft Soil Stabilisation. Cement may contain small amounts of chromium VI, amines and formaldehyde, all three of which are classified as carcinogenic. These substances dissolve easily in water and could therefore be a threat to the groundwater. I have not seen this aspect considered in the EIS reports. I would expect that the chemical properties of the cement and the potential run-off from stabilised soil have been examined, but I could not find this in the documents provided. Due to the low permeability of the peat and the sheet pile walls around the stabilised peat beneath the access roads, the rate at which pollutants will be transported from the stabilised areas to the drains should be slow. However this aspect should be assessed before cement stabilisation is used.

- Provided the fill areas are constructed using suitable fill material that is adequately compacted, the stability of the fill beneath the terminal footprint and the buildability of these areas, should be ensured.
- In the fill areas, it is proposed to use a geotextile wraparound to support the peat in front of the fill area. The peat will be temporarily supported using sheet piling until the wraparound fill has been placed. The use of a geotextile wraparound is a proven technology and should ensure the stability of the peat in front of the fill.
- The question is asked about the longer term stability of the peat and the peat areas during the operation phase and the likely short, medium and longer term relationship between the areas of fill and the cut peat. Taking account of the conservative design of the gabion walls, the slopes of 1:3 chosen for the excavated mineral soil and fill and 1:1 for the intact rock, and the use the geotextile wraparound to support the peat in front of the fill, the log term stability of the peat should be assured as well as the short, medium and longer term relationship between the areas of fill and the cut peat. In areas of unloading, for example the

gabions and cut slopes, any increases in water pressure with time have been taken into account in the design. In areas of loading, for example beneath the fill, the stability of soil will increase with time as excess pore pressures dissipate. This in both areas stability should be ensured.

- The likely short, medium and longer term relationship between the areas of fill and the cut peat in front of the fill should be ensured by the sheet pile wall and wraparound wall. The drain to go in front of the wraparound wall will strengthen the fill and the peat.

3. Critical assessment of the proposed on-site earthworks to remove peat and to remove and redistribute mineral soils and rock, and in particular:
   - The proposal to remove the first section of peat from the NE section of the site and transport it to the deposition site without windrowing
   - The proposal to progress from east to west across the site in order to create the proposed platform level
   - The proposal to install two lines of dewatering (vacuum) wells to facilitate excavation and construction works
   - The proposals for surface water collection and control during excavation and construction works.

The proposed on-site earthworks to remove peat and to remove and redistribute mineral soils and rock at the Ballanaboy site are outlined in Volume 1, Technical Appendix 2: Earthworks of the EIS. I have studied these and my comments on the particular aspects noted above are listed below.

- The proposal to remove the fist section of the peat from the NE section of the site and transport it to the deposition site without windrowing is discussed in Section 11.4.14. As this part of the site is higher and the peat thinner and drier than on other parts of the site, it is stated that the peat should be of sufficient quality to be loaded into the haulage trucks and transported to the deposition site without windrowing. This procedure will result in the peat being transported being wetter, and hence bulkier, than if it had been first windrowed. However, provided only the drier, thinner peat is transported without windrowing, this proposal should cause no adverse effects.
- The proposal to progress from east to west across the site in order to create the proposed platform level is logical and feasible. The area required at any one time for the peat removal and windrowing is stated to be about 2 hectares. It is proposed to use suitable mineral soil and rock, exposed after removal of the peat from those areas in the north-east part of the site that are at a higher level than the platform, for upgrading internal access roads and as fill to create the platform in the south-west part of the site. Eight of the nine grading curves for the clay stratum, given in Section 3 of Volume 1, Technical Appendix 2: Earthworks of the EIS, show the fines contents of this stratum exceeding 65%. In view of this and the fact that it is stated in Table 3.1 that the reuse of this material is expected to be very weather dependent, much of this material will be classed as U1 and will need to be removed off site. The glacial till layer, which is described as a sand, is reported in Table 3.1 as having poor CBR and MCV values and a water content above the optimum value for compaction, so that much of it too may need to be removed. In Appendix 10 – Material Balance, Section 10.3 of Volume 1, Technical Appendix 2 of the EIS, it is concluded that approximately 33,000m^3 of mineral soil, i.e. 18% of the excavated mineral soil, will be removed from site. This appears to be a

conservative estimate and from the data provided, it appears that a significant proportion of the mineral soil on site may have to be removed and suitable material brought to the site.

- The proposal to install two lines of dewatering (vacuum) wells to facilitate excavation and construction work will reduce the groundwater level in the underlying rock and till and hence make the mineral soil and bedrock easier to handle. It will also remove some water from the peat. The vacuum system has been chosen because of the low permeability of the rock and the peat and hence the flows from the wells are not expected to be large. This is a realistic assumption considering the nature of the rock and the mineral soil. It is noted that stripping the peat from the surface of the soil will allow air enter the ground and hence the wells will cease to act as vacuum wells once this occurs and become conventional wells. By lowering the groundwater levels across the site, the dewatering wells will significantly improve the stability of the peat and soils on the site.
- The surface water collection and control system during the excavation and construction works consists of drains and leading to perimeter drains and settling tanks. The design of the drains and the settling ponds, which are 70m long with a 2m depth and 20m width are designed to limit the solids to <100mmg/l for 99% of the peak annual storms. While the calculations indicate that the settlement ponds will achieve the required reduction in suspended solids, it would be important that the performance of the settlement ponds is monitored during the construction and operational phases. I could not find any details of a monitoring programme for the drainage in the case of the Bellanaboy site.

4. Critical assessment of the proposals for the reception and deposition of transported peat at the Srahmore site, and in particular:
   - The stability of the deposited and graded peat in the short, medium and long terms
   - The likely impacts, if any on the surrounding cutover peatland
   - The adequacy of the drainage proposals during the deposition phase.

I have studied the proposals for the reception and deposition of transported peat at the Srahmore as set out in Volume 2 of the EIS. The Geotechnical Aspects are covered in Appendix 9: Preliminary Geotechnical Design for the Srahmore Peat Deposition Site. The proposal involves preparing a metalled access route from the R313 to the site across blanket bog, which is 6m thick at the road and decreases in thickness to 0.31m. As noted in the Geotechnical Risk Register in Appendix D of Appendix 9, the greatest geotechnical risk in the case of the reception and deposition of the transported peat at Srahmore is the risk of excessive settlement or bearing failure of the metalled access road from the R313 across the thickest part of the peat. In Section 11.2.1, options are proposed for either removing the peat or stabilising it using one of three treatment methods which include using vibro-compacted concrete columns, stone columns or in situ mixing of peat with cement or lime. Any of these methods would be suitable, although, as noted above in my section 2, the risk of contamination may be greater in the case of in-situ mixing with cement or lime. In the case of roads on the peat that are not metalled, it is proposed to place granular fill on a geotextile layer and to re-level the surface with more fill if excessive settlements occur. This method should be suitable over the peat upstands where the peat is drier, and hence stronger, and more fibrous, than the cut-away parts of the bog.

- Regarding the stability of the deposited and graded peat in the short, medium and long terms, the analyses in Appendix 9 have been carried out assuming cautious values for the undrained and drained shear strength of the peat and the groundwater level at the surface. The analyses show that the calculated factors of safety for the deposited peat, which is at a slope of 1:10 or 5.6°, all exceed the recommended minimum value of 1.3. However, in the case histories of bog slides reported in Table 10.2 of Volume 1, Technical Appendix 1: Geology, Hydrogeology and Global Stability, it is noted that several slides have occurred in bogs with slopes of just 2°, particularly where they have been disturbed by human activity. This could occur, for example, as a result of the top of the peat drying and cracking and then heavy rain filling the cracks causing the peat to flow towards the side drains. This sort of failure would be local and would not affect the global stability of the site.
- Regarding the likely impacts of the deposition of the peat on the surrounding cutover peatland, the stability of the cutover peatland is not likely to be compromised as the overall slope of the site is only 0.2°.
- As stated in Section 9: Hydrology and Drainage of Volume 2 of the EIS, the drainage proposals for the deposition site is based on a 100 year rainfall event of 31mm per hour. If this is exceeded, there is a controlled overflow area in Area 7 to receive the excess flow so that the treatment system, which provides retention time to allow sediment to fall out of suspension, is not compromised. The drainage consists of 1m deep drains, 2m wide at top to 1m wide at bottom, along side the upstand beside each bay. These lead to a collection swale and then settlement ponds. Provided this drainage system is constructed before deposition takes place and taking account of the fact that the existing drainage system has been effective in draining the site so as to enable Bord na Mona to operate the site, the proposed drainage system should be adequate during the deposition phase. However, it is important that the outflow from the settlement ponds is monitored closely, as proposed, to check that the discharges suspended solids remain within the permitted discharge limits.

Trevor L.L. Orr
26th July 2004

MEETING WITH DR. ORR 09.09.04

Meeting held following receipt of Dr. Orr's report dated 26th July 2004, request for, and receipt of Additional Information from the 1st Party.

Points for Clarification

1. A revised Risk Assessment (now called a Geotechnical Risk Register) is submitted.

   - Does the revised Register provide a realistic view of the 'geotechnical' risks associated with the project and the design?
   - Is the information in the additional column for P and I values before design factors are taken into account reasonable?
   - Is the explanation for post design P and I values reasonable?
   - Is the probability of several hazards occurring simultaneously or sequentially satisfactorily addressed?
   - Are the design measures and contingency plans proposed reasonable in the context of the information submitted including the Risk Register?

2. Information is submitted in relation to proposed peat stabilisation.

   - Is the proposed approach to strength testing of the stabilised peat reasonable?
   - Are there any specific significant geotechnical risks associated with the proposed soil strengthening in the area of the flare stack?
   - Contingency measures would be introduced in the ("unlikely") event of stabilised peat not achieving required strength. Is this a reasonable approach?

3. In the event of the Board deciding to grant permission, are there any specific issues relating to stability and/or the stabilisation of peat, which should be addressed by way of conditions?

Des Johnson
Deputy Planning Officer
8th September 2004.

RESPONSE TO ADDITIONAL INFORMATION ON GAS TERMINAL SITE AT BELLANABOY, COUNTY MAYO.

1. Revised Risk Assessment (now called a Geotechnical Risk Register)

In my view the Geotechnical Risk Register provides a much improved and clearer evaluation of the 'geotechnical' risks than did the previous Risk Assessment. Some additional text has been provided to explain each hazard. Also the inclusion of a column showing the risks due to the hazards and the impacts before being controlled by the design measures demonstrates more clearly the geotechnical risks involved and the effects of the design measures on the 'geotechnical' risks. Detailed justifications have been included for the probabilities adopted.

I have found one typing error in the revised Register - the hazard after No. 12, "Soil strengthening - strength not achieved or deformation failure", should be No. 13 "Ground strengthening - creation of dust" and the cause column should be "Control of construction methods inadequate".

From my examination of the Geotechnical Risk Register, my answers to your specific questions are:

- The revised Register does provide a realistic view of the geotechnical risks associated with the project and the design.
- The information in the additional column for P and I values before design factors are taken into account are reasonable.
- The explanation for the post design P and I values are the same as in the original Risk Assessment and are reasonable.
- The probability of several hazards occurring simultaneously or sequentially is satisfactorily addressed.
- The design measures and contingency plans proposed in the context of the information included in the Risk Register are reasonable. A design that relies on contingency measures in case the geotechnical conditions turn out to be different to those assumed in the design is known as the "Observational Method". An essential feature of the observational method is that, for all the hazards and at all stages during and (where relevant) post construction, appropriate monitoring should be carried out, as noted in the Risk Register in the case of most of the hazards to check that the ground conditions and performance of roads and drainage, etc. are as assumed in the design and should the conditions or performance be worse than those assumed in the design, then the contingency measures must be implemented and the design modified.

2. Information Submitted in Relation to Proposed Peat Stabilisation

- The proposed approach to strength testing of the stabilising peat is reasonable and in accordance with engineering practice.

- Regarding geotechnical risks associated with the proposed strengthening of the ground in the area of the flare stack, I could find no mention of treatment of the area of the stack in the documents provided. The area of the stack is not included in the EIS Technical Appendix I: Earthworks - see for example Fig. 3.14, although Fig. 3.13 does show a road leading into this area. Nor could I find any plans or drawing for the stack and its foundations. As far as I could see, no stability analyses have been carried out for the flare and the stone layer. However, an area 120m in diameter is shown in Fig. 3.19 of the EIS by RSKENSR. This drawing shows that the ground is not levelled for the flare but, as noted, the peat is "surfaced with 25mm top layer of reflective stone overlaid on a geotechnical layer and 100mm depth of graded engineering fill". No information is provided concerning the foundations for the stack. If the foundations are shallow foundations in stabilised peat, then these foundations need to have the capacity to resist the weight from the flare and the wind loading, which may be considerable, and the loading of the flare stack may pose a risk to the overall stability of the peat. If the flare stack is supported on appropriate piles resting on the underlying rock, then the stack should pose no stability problems or geotechnical risks.
- As noted above in the last bullet of (1), it is not only reasonable, it is an essential part of the design process to introduce contingency measures should the stabilised peat not achieve the required strength. The contingency measures range from redoing the strengthening process to introducing structural piles and a surface load transfer platform to carry the loads.

3. In the event of the Board deciding to grant permission, I have no specific issues relating to stability and/or the stabilisation of peat, which should be addressed as conditions, apart from the need for the client to ensure that appropriate and adequate monitoring is carried out with regard to all the geotechnical risks at all stages of the project both during construction and (where relevant) post construction.

Dr. Trevor L.L. Orr

REPORT TO AN BORD PLEANÁLA (REF. MR DES JOHNSON) ON THE SOIL PHOSPHORUS PROFILE OF PEAT PROPOSED FOR EXCAVATION AT BELLANABOY BRIDGE GAS TERMINAL, BELLANABOY BRIDGE, BELLAGELLY SOUTH, CO. MAYO.

Advice Sought by An Bord Pleanála (Ex. Mr Des Johnson)

(1) "Information is submitted in relation to phosphates in the peat on the terminal site. Please advise if there is significant risk of the leaching of phosphate during excavation, windrowing and deposition of the peat."

(2) "Is there a risk of significant leaching of any other naturally occurring material (such as N) from the peat at any stage from excavation to deposition, in such quantities as would likely to give rise to significant environmental impact?"

Documentation

The following documents were made available and have been reviewed:

(a) Corrib Gas Field Development Environmental Impact Statement, Volume 1, with Non-Technical Summary of Same, and Appendicies.

(b) Corrib Gas Field Development Environmental Impact Statement, Volume 2, with Non-Technical Summary of Same, and Appendicies.

(c) An untitled File containing a number of Appendicies, including the Planning Authority Decision on Development (with Conditions), Written Grounds of Appeal (1st Party), Written Grounds of Appeal (3rd Parties), Planning Authority Request for Further Information, and 1st Party Response to latter.

The General Scenario

During geological and hydrogeological investigation of the site (Terminal Site), occasional high levels of phosphorus were detected in the peat samples (EIS, Vol. 1, 8.4.7). Further, 'phosphate is generally readily leached through peat during rainfall ... and it would ordinarily be expected that the phosphate applied to peat in one year would be leached to water in less than twelve months' (EIS, Vol. 1, 8.6.1). In its decision to grant planning permission to the Developer, the Planning Authority imposed 75 Conditions to be complied with, including three (3) (Conditions 17, 18 and 19) 'to prevent water pollution', one (1) (Condition 20) 'to avoid the pollution of surface or ground waters', one (1) (Condition 21) 'in order to prevent water pollution', nine (9) (Conditions 52-60, inclusive) 'to ensure adequate protection of the environment during construction' and two (2) (Conditions 62 and 63) 'to ensure proper environmental control during construction.' In only one instance in the Conditions is there a specific reference to phosphorus (Condition 60), which, inter alia, requires monitoring of phosphate in settlement ponds/discharges from settlement ponds.

A total of thirteen (13) Third Party Appeals have been made regarding the proposed Development, two (2) of which specifically refer to the issue of phosphorus:

(a) **'Leaching of phosphates into local water catchments due to liquid peat removal and deposition would occur. This is an area of high rainfall' (Sean McDonnell and others) and**

(b) **'There is concern at possible orthophosphate impact. All the phosphate concentrations recorded in the blanket bog are approximately 250-10,000 times greater than the allowable concentrations in lake water' (Brian Coyle).**

In February 2004, the Planning Authority requested Additional Information from the Developer. Concerning phosphorus, the specific request was stated as follows:

> 'Submit a map outlining phosphate hot-spots, quantities of contaminated materials, details of the analysis of the occasional occurrence of high levels of phosphorus detected in peat samples on the site and proposals to deal with the same including disposal. The format of the response shall include a comparison between the total concentrations (above background levels) that

may theoretically result from the development works and other land use activities that regularly occur in the area e.g., afforestation, clearfelling etc' (Item 6).

Considerations of the Response by the Developer to this request by the Planning Authority, and associated issues concerning phosphorus behaviour generally, form the basis of this Report.

Glenamoy Experimental Station – Bellanaboy Site

The Bellanaboy site has a total area of 160 ha (approx), 13 ha of which will constitute the proposed Terminal Footprint, and 1 ha (approx) proposed for temporary construction facilities. Previously, this site was part of the Glenamoy Peatland Experimental Station operated by Teagasc (formerly An Foras Taluntais) since 1959. Experimental work carried out by An Foras Taluntais/Teagasc was concerned with determining the optimum use of lime, fertilizers and trace elements for grass and arable crop production on the peat. It has been reliably determined that the area for the proposed Terminal Footprint was previously developed as a grassland site following surface seeding (no cultivation) with various grass seed mixtures. The likely rate of phosphorus fertilizer use at seeding was 3 Cwt superphosphate fertilizer (containing 8% water-soluble phosphorus) per acre (equivalent to approx. 27 lb phosphorus per acre or 30 kg phosphorus per ha). In the year(s) after seeding, the site would have received 1 Cwt superphosphate fertilizer (containing 8% water-soluble phosphorus) per acre per year (equivalent to 9 lb phosphorus per acre per year, or 10 kg phosphorus per ha per year). Historically, this grassed area was grazed. In the late 1970's, An Foras Taluntais/Teagasc vacated the site, and the surface seeded pasture reverted to soft rush vegetation (largely).

In 1955, Coillte (formerly the Forestry Division of the Dept. of Lands) established a presence at Glenamoy to investigate the feasibility of reafforestation on blanket peat. In 2003, 22 plantations were standing within the Planning Application Boundary, of which eight (8) are on/within the boundaries of the Terminal Footprint (see EIS, Vol. 1, 13.1) as follows:

Plantation Designation	Planted	Species Present
B	1959	Sitka Spruce/Lodgepole Pine
C	1960	Sitka Spruce/Lodgepole Pine
K	1985	Lodgepole Pine
L	1985	Sitka Spruce
V	1985	Sitka Spruce/Lodgepole Pine
T	1985	Lodgepole Pine
S	1985	Lodgepole Pine
R	1985	Lodgepole Pine

It is not known with certainty what level of phosphorus fertilizer was applied to these plantations at planting. The modern approach however is to apply 350 kg Rock Phosphate (14%, essentially water-insoluble phosphorus) per ha at planting (equivalent to 49 kg phosphorus per ha), likely followed in the case of Plantation L (only) by a booster dose of fertilizer (350 kg Rock Phosphate per ha) in 1995 or later. Conceivably, then, the plantations listed above could have received these quantities of phosphorus.

It is not known how fertilizer was applied either to the grassland area or the forestry area. It is suggested however that fertilizer application to the forestry area may have been by plane (partly), and possibly subject to uneven distribution. There is also anecdotal evidence that fertilizer use on the pasture areas employed man-handling techniques that occasionally resulted in bags being spilled, burst or ruptured. It is considered that either or both of these possibilities (uneven distribution from the air or accidental spillage) is/are more likely to account for the alleged phosphorus hot-spots on site than the suggestion that the hot-spots reflect animal activity around feeding troughs some 40-50 years ago. A question that arises here also is the following: assuming the hot-spots to be real, and not artefactual, and assuming also that the phosphate in peat is 'leachable/highly leachable', why has it persisted in the peat from as far back as 40-50 years ago?

Response by Developer to Planning Authority Request

The implication (p. 4 of Response) that mixing 'high-P-peat' with 'low-P-peat' will reduce the possible adverse environmental effect of the former at the Srahmore Peat Deposition Site is accepted.

However, the written response is unsatisfactory from a number of stand-points:

(a) Setting aside its ambiguity, no attempt seems to have been made to address the issue referred to in the last sentence of the Request.

(b) Use of the term 'UKAS accredited method (Molybdate Reactive Phosphate Method)' is inaccurate. Individual *laboratories* are accredited (or not) in carrying out analyses using particular methods! Further detail on the precise method is needed to assess the phosphorus (P) data.

(c) There are no specific proposals to deal with the 'high' phosphorus levels other than flow retardation, settlement ponds and an iron oxide mesh (where necessary?) to reduce dissolved concentrations of phosphorus. Assuming phosphorus transport from the hot-spots, how effective are these measures likely to be?

(d) The argument that a flux rate for phosphate of 1 mm per day is more realistic than 1 cm per day (pp 2 and 3) because of factors such as retardation, leakage, ion-exchange and in-homogeniety is not convincing – what are these processes?

(e) It appears that the 'seventeen phosphorus sampling points' located within the footprint of the terminal site are seventeen discrete points from each of which a single sample was taken (in an unspecified manner) and sent for analysis. If this is so, the procedure for sampling is highly questionable. According to Teagasc, a composite sample to be used for soil analysis should consist of twenty (20) soil cores from each sampling area.

(f) The Reply refers (p. 3) to SI 258 (1998) – The Phosphorus Regulations – and to 'a maximum limit for orthophosphate in river waters of 0.05-0.07 mg/l, and 0.02-0.05 mg/l in lake waters.' It should be noted that the quoted range for rivers refers to the *median molybdate reactive phosphate* concentration in unfiltered water that is moderately polluted. The quoted range for lakes refers to the *average total phosphorus* concentration in unfiltered water that is

mesotrophic-eutrophic. According to The Phosphorus Regulations, median concentrations are to be determined using as a minimum ten (10) samples taken at intervals of four (4) weeks or longer in any twelve (12) consecutive month period. The Phosphorus Regulations also specify that the average concentration of total phosphorus for lake water is to be determined using as a minimum ten (10) samples taken at intervals of four (4) weeks or longer in any twelve (12) consecutive month period. All of this raises a question as to the validity of applying the rigid standards in SI 258 to the phosphorus status of local water courses that have been sampled and analyzed in an unspecified way.

(g) There is reference in the Response (p. 3) to 'Table 6.2 also includes surface water quality data taken from other agricultural/forestry sites in Ireland.' In fact, the data in Table 6.2 referring to Cowlands, Warren 1 and Warren 2 are measurements of Morgan's extractable phosphorus in the *soils* from these field plots, and not to water originating from them. Concerning sites D1 and D2 in Table 6.2, the values quoted are incorrect and misleading – examination of the cited source for these data shows that the values for D1 and D2 should read 1.3 and 1.1 mg/l *dissolved reactive phosphorus*, respectively (or 1.7 and 4.4 mg/l *total phosphorus*, respectively). The errors in Table 6.2 alluded to here are not in themselves important except that they seek to enhance the significance of the already low values for phosphorus content in the local rivers and streams. It is not clear from Table 6.2 however how many water samples the data represent, or what phosphorus fraction is being reported (do the data refer to single grab samples or not?).

Advice Sought by An Bord Pleanála (Item 1)

Most of the questions addressed in the foregoing section (Response by Developer to ...) are of lesser importance than the basic question of whether or not there is a reliable soil test to reflect risk of nutrient loss from soil to water. For many years in Ireland, rate of fertilization of crops has been based on calibrated soil testing procedures that assign the probable degree of yield response to a fertilizer application. In soil testing, a representative soil sample is extracted with a chemical solution under controlled conditions and the amount of the nutrient(s) in the extracting solution then

measured. The amount of nutrient(s) extracted reflects the amount of nutrient(s) that is/are available for crop growth. Rate of fertilization with a particular nutrient(s) is related to the quantity of that nutrient extracted (the 'available' nutrient content). In Ireland, the levels of the different nutrients that are extracted are assigned to a Soil Index System as follows:

The Soil Index System in Ireland

Soil Index	Index Description	Likely Response to Fertilizer
1	Very Low	Definite
2	Low	Likely
3	Medium	Unlikely/Tenuous
4	Sufficient/Excess	None

The Index System for phosphorus (P) in Ireland is based on the amounts of phosphorus that are extracted after shaking a soil/peat sample with 'Morgan's Solution' (a mixed solution of sodium acetate and acetic acid; pH 4.8) under specified conditions. Differing amounts of phosphorus extracted from the soil or peat are then classified according to the following Phosphorus Index System:

The Phosphorus Index System in Ireland

Soil Phosphorus Index	Amounts of Phosphorus Extracted (mg/l)	
	Mineral Soil	Peat
1	0-3.0	0-10
2	3.1-6	11-20
3	6.1-10	21-30
4	> 10	> 30

The amounts of phosphorus fertilizer recommended for growth are based on the Soil Phosphorus Index into which a particular soil or peat sample falls, and also on the

particular crop to be grown. The difference here between the amounts of phosphorus in a mineral soil compared with a peat (for a given Soil Phosphorus Index) is based on the differences between the way phosphorus behaves/interacts with a mineral soil versus a peat.

It appears as if the peat samples from the Bellanaboy site were analyzed in the UK. In this context, it should be noted that the chemical solution used to extract phosphorus in UK (or Northern Ireland) soil tests is not the same as that used in the Republic of Ireland (i.e., Morgan's Solution). In the UK and Northern Ireland, the extracting solution is 'Olsen's Solution' (sodium bicarbonate; pH 8.4) which, for a given soil or peat, will extract far more phosphorus than will Morgan's Solution. Hence, the numerical values for the amounts of phosphorus extracted from a group of soils or peats by the Olsen method will be much higher than the same group of soils or peats extracted by the Morgan method. This is seen in a comparison of the UK/Northern Ireland Phosphorus Index System for mineral soils (below) and that given above for the Republic of Ireland. Because of the calibrations that are made in the development of different soil tests, however, there should be equivalence between the different tests from an agronomic stand-point i.e., the different test methods should result in the same fertilizer recommendation for a given level of production/yield.

The Phosphorus Index System for Mineral Soils in the UK and Northern Ireland

Soil Index	Index Description	Amounts of Phosphorus Extracted (mg/l)
A	Very Low	0-9
B	Low	10-15
C	Medium/Optimal	16-25
D	High	26-45
E	Very High	46+

In Ireland over recent years, there has been much discussion/difference of opinion as to whether soil tests that were specifically developed to give advice on fertilizer use

by farmers (such as the Morgan's or Olsen's tests referred to above) should, without further appropriate calibration, be used as indicies of risk of nutrient loss from land to water. This applies particularly in the case of phosphorus. Some of the scientific fraternity in this country would say 'yes', others (including the writer) would say 'no' – 'no', because appropriate calibration work has not been done. In the particular circumstances of the phosphorus hot-spots at Bellanaboy, therefore, I am of the view that there is not a serious risk of phosphorus loss to local water courses in the form of dissolved phosphorus (i.e., leaching or surface run-off losses). This view applies to the Bellanaboy site (excavation and windrowing) and the Srahmore site (reception, deposition and grading). At both sites however, it is clear that untidy/untimely machine-operating practices, poor management etc. could result in particulate peat loss which, in a new chemical environment *might* lead to phosphorus dissolution and relative enrichment of water bodies. The issue of the loss and physical presence of peat particles in water courses, phosphorus-rich or not, is a separate question.

An alternative scenario to the above might be that An Bord Pleanála feels that the peat phosphorus data provided by the Developer in its Response do, in fact, reflect some level of risk of phosphorus loss during some stage of the excavation/deposition activity. However in view of the reservations expressed in the previous section about the Developer's Response, and notwithstanding the questions/clarifications sought from the Developer last week, I would hesitate to accept the phosphorus data as a comprehensive description of the real phosphorus status (agronomic) of the Bellanaboy site. Accordingly, I would recommend that the bog site be re-sampled (following conventional sampling procedures) and that the samples be analyzed in Ireland using the Morgan's Soil Test Methodology. At the least, such a course of action would provide a more defensible base than currently exists to develop mitigating strategies, should these be necessary. As well, the Phosphorus Index System for Peat in Ireland (referred to earlier) can be used as a reference for making decisions as to the degree of phosphorus enrichment of the on-site peat at Bellanaboy, and how the peat at/following excavation might be 'managed' to lessen possible environmental impacts. It should be noted that there is no Phosphorus Index System for Peat in the UK/Northern Ireland based on the Olsen soil test procedure. Further discussions on this general approach can take place if found necessary.

Advice Sought by An Bord Pleanála (Item 2)

Based on chemical composition of the peat, the resistance of the peat to chemical and/or biological decomposition, and the nature of the fertilizer materials applied to the peat by Coillte (particularly) and Teagasc/An Foras Taluntais, I do not consider it likely that there will be significant leaching of any other materials (including Nitrogen) from the peat.

Third Party Objections

(a) The possible leaching of phosphates into local catchments due to liquid peat removal and deposition is a management/husbandry issue at each phase of the whole development (re Seán McDonnell and others).

(b) The relative concentrations of phosphorus in the peat and in lake waters (and the connection of this with possible orthophosphate impact) is tenuous, to say the least (Brian Coyle).

Austin Morgan

2/9/2004

MEETING WITH AUSTIN MORGAN 09.09.04

Meeting held to discuss aspects of Mr. Morgan's report received 3rd September 2004, and following the (2nd) request for Additional Information from the 1st Party.

Points for Clarification.

1. If an Irish test (Morgan's solution) was to be carried out, would it be reasonable to expect that the results would be more conservative in relation to P than the results presented by the 1st Party? Do the submitted results present what could reasonably be predicted as the 'worst case' scenario on this site?

2. You reach a conclusion in relation to the Bellanaboy and Srahmore sites that there is not a serious risk of phosphorous loss to local water courses in the form of dissolved phosphorous. If you were a member of the 'yes' scientific fraternity would you be likely to reach the same conclusion? In other words is the 1st Party case reasonable?

3. What would re-sampling of the Bellanaboy site using Morgan's Soil Test Methodology be likely to achieve? Would this have to be undertaken before development commences or could it be carried out in stages parallel with the staged development of the site? How could a suitable condition be worded in the event of the Board deciding to grant permission?

4. You state that the possible leaching of phosphates into local catchments due to liquid peat removal and deposition is a management/husbandry issue at each phase. In the event of the Board deciding to grant permission how could a suitable condition be worded?

5. Are there any other matters in relation to this issue which should be addressed by way of conditions?

Des Johnson
Deputy Planning Officer
9th September 2004.

REF: MEETING WITH MR DES JOHNSON ON SEPTEMBER 9TH, 2004 - POINTS FOR CLARIFICATION / RESPONSE TO QUERIES

(1) (a) The results would be more 'conservative' in the sense that the magnitude of the analytical values obtained by extracting a particular soil sample with Morgan's Solution (rather than Olsen's Solution) would be lower/smaller. However, in *agronomic terms*, the 'lower' value(s) arising from Morgan's extraction would/should be equivalent to the 'higher' value(s) arising from Olsen's extraction, assuming that appropriate field calibrations of the two methods has been carried out i.e., all things being equal, it can be taken that a recommendation for P fertilizer use by a farmer at a given 'low' level of Morgan's extractable P would be the same as would apply at the corresponding 'higher' level of Olsen's extractable P.
(b) Not necessarily (because of doubts concerning the whole sampling procedure and the fact that there is no specific statement in any of the documentation that the peat samples were, in fact, extracted using Olsen's Solution).

(2) My conclusion is based on the fact that there is not a proven/validated/widely accepted case that there is a direct relationship between the magnitude of P loss to water and the magnitude of the soil test values for available P. Even from an agronomic perspective, a soil with 'low' Morgan's P (say 6 mg/l) will not necessarily give a larger response to an application of P fertilizer than another soil with 'higher' Morgan's P (say 15 mg/l).

Were I part of the 'yes' community however, I would likely be saying that there *is* a risk of dissolved P loss, particularly from the areas of peat showing the highest P values at 0-15 cm depth (i.e., 219 and 130 mg/l).

(3) (a) Currently, there is a doubt about the sampling methodology employed and whether or not the Olsen procedure was used. In addition, even if Olsen's procedure *was* used, there is no 'reference scale' for Olsen's extraction of *peat* that allows differentiation of the values for extractable P into specific categories e.g., 'very low', 'low', 'medium', or 'medium', 'high', 'very high' – the system for Olsen's testing outlined on p. 8 of the Report refers to mineral soils only. This is not the case in Ireland for Morgan's extraction of peats (see p. 7 of Report). Consequently, an approved sampling of the site, in conjunction with P evaluation by the Morgan's procedure, will give an accurate perspective of the overall P status of the site and of the spatial variability in relative P levels. At the very least, such information would allow decisions/choices to be made about separation of 'high P areas' from 'low P areas' at the excavation and windrowing stages, and also at the deposition stage at which peat from 'high P areas' would/could be mixed with peat from 'low P areas' so as to moderate the possible impact of the 'high P peat' through dilution.
(b) The re-sampling and P evaluation of the samples would have to be undertaken before development commences. Being optimistic, all of this could be achieved over a short time, say two-three weeks.

(c) 'Excavation of the peat is initially subject to approved sampling and assessment of the vertical and lateral variability of the P status of the terminal site based on extraction of peat samples with Morgan's Solution and arising from this, to the application of such agreed work practices as will minimise the risk of P losses at all subsequent stages (windrowing, reception and deposition) of working the peat.'

(4) 'Effluents arising from the operation and management of settlement ponds (and particularly those feeding to Carrowmore Lake?) shall be subject to a monitoring programme for total P and total suspended solids, the emission limit values and frequency of monitoring for which shall be determined by the Environmental Protection Agency. Such monitoring may be reviewed or cancelled in light of the monitoring data obtained during the first five (?) weeks of monitoring.'

(5) Do you have P data for the deposition site at Srahmore?

Austin Morgan
14/9/2004

RESPONSE BY TPA TO LETTER (27/8/2004) FROM AN BORD PLEANÁLA RE ISSUES CONCERNING PHOSPHORUS – REPLY

Par. 2.2.3 of Response: The sampling procedure including intensity of sampling (i.e., one sampling point/ha) is unsatisfactory. The methodology employed contrasts strongly with the procedure for soil sampling recommended by Teagasc (see attached Appendix 1).

Par. 2.2.5 of Response: It *appears* that the methodology employed by the applicant was not a measure of Olsen's extractable phosphorus (as was assumed when preparing my original Report to An Bord Pleanála (2/9/2004), as well as the follow-up Response to Queries (14/9/2004). Rather, the phosphorus data presented by the applicant appear to represent water-extractable phosphorus content of the peat which I would accept as 'broadly equivalent to orthophosphate.'

Par. 2.2.7 of Response: (a) It is still not clear from the TPA Response what the applicant regards as *an environmentally acceptable concentration of orthophosphate and an environmentally unacceptable level of orthophosphate*. Further, no attempt is made to distinguish between a 'background' level and an 'elevated' level of orthophosphate in the peat (b) The compounding of data for water-extractable phosphorus content of *peat* with the Phosphorus Index System for *mineral soils* (section on Soil), and the concentrations of molybdate reactive phosphorus and/or total phosphorus for *rivers and lakes* respectively (section on Water) is not reasonable.

Conclusion. Notwithstanding the above, nothing in the Responses by TPA to the queries about phosphorus has altered my view that there is not a serious risk of phosphorus loss to local water courses in the form of dissolved phosphorus. However, my view about the possibility of particulate P loss as a result of untidy/untimely/slack management practices still holds. However, as pointed out previously, an alternative approach is that An Bord Pleanála might take the view that soil test values for phosphorus do, in fact, reflect risk of phosphorus loss to water. If so, then in light of the TPA response regarding the peat sampling procedure and the method used to quantify the phosphorus status of the peat samples, the case for re-sampling and quantification of the phosphorus status by a method (Morgan's) about which there is some experience in Ireland, becomes even more compelling.

FURTHER RESPONSE TO ITEM 4 OF D.J.'s 'POINTS FOR CLARIFICATION' MEMO (9/9/2004).

There should be serious concern about the need to maintain the quality of local surface water bodies during the excavation and deposition stages of the project, particularly Carrowmore Lake and the rivers and streams that feed into it. Environmental Protection Agency Reports on Water Quality in Ireland (1995-1997 and 1998-2000) indicate that the overall trophic status of Carrowmore Lake was *mesotrophic*, while all of the following rivers were classified as Class A (unpolluted) in each of the same Reports: Altnabrocky, Bellanaboy, Glenamoy, Glencullin, Munhin, Owenduff (Blacksod Bay) and Owenmore. Further, EIA Vol. 2 (9.3.2) indicates that more recent (2002) investigations of the Owenmore by the Environmental Protection Agency confirms its satisfactory trophic status, although there is some evidence of peat sediment runoff.

In the context of the Bellanaboy and Srahmore developments, the parameters 'total phosphorus concentration' (for Carrowmore Lake), 'molybdate reactive phosphorus (MRP) concentration' (for rivers and streams) and 'suspended solids concentration' (for all water bodies) appear the most relevant from the stand-point of water quality. These parameters are variously used as 'standards' in the following legislative Regulations:

(6) EC (Drinking Water) Regulations, 2000: no specification for suspended solids or phosphorus content.
(d) EC (Quality of Surface Water Intended for Abstraction of Drinking Water) Regulations, 1989: (a) 50 mg/l suspended solids is the upper limit for category A1 surface water, with no standards for suspended solids for category A2 or A3 waters (b) the phosphorus standard for A1 water is 0.218 mg/l, and 0.305 mg/l for A2 and A3 water.
(e) EC (Quality of Salmonid Waters) Regulations, 1988: (a) there is no standard for phosphorus (b) the annual average suspended solids concentration should be less than 25 mg/l.
(f) Urban Waste Water Treatment Regulations, 2001 (S.I. 254): (a) the upper limit for total phosphorus concentration in discharges is 2 mg/l for population equivalents of 10,000-100,000, and 1 mg/l for population equivalents greater than 100,000 (b) the upper limit for suspended solids concentration in discharges to designated 'sensitive waters' where population equivalent is more than 10,000 is 35 mg/l.

It is not clear which, if any, of the above Regulations is strictly relevant to the Bellanaboy/Srahmore development. However, it should be noted that the standard for suspended solids in the Salmonid Regulations (less than 25 mg/l) was used in assessing water quality from 13 rivers and drains at Bellanaboy, and also from 5 locations around Carrowmore Lake (EIS, Vol. 1, section 8). It was also used in the assessment of water courses within, and in the vicinity of, the terminal site at Bellanaboy (Response, Vol. 1, section 8). In contrast, a standard of 35 mg/l suspended solids (the same as the standard for suspended solids in the Urban Waste Water Treatment Regulations) was used in the assessment of surface water samples from Srahmore (EIS, Vol. 2, section 9, p. 130).

Much is currently known about the quality of the principal water courses in the development areas, including Carrowmore Lake itself. In addition, the applicant has committed to monitoring of water quality prior to, during and after construction (EIS, Vol. 1, section 9.7; EIS, Vol. 2, section 9.9, see also the last paragraph of section 2.2.7 of Response by TPA to Request for Further Information). It is suggested therefore that the most beneficial approach to the issue of water quality is to invoke/apply the conditions set down in the 'Phosphorus Regulations' (S.I. 258, 1998). At the very least, this would require that 'the existing biological quality rating for any part of a river shall be maintained' (Article 3) and also that 'the existing trophic status for any part of a lake shall be maintained (Article 5). So far as is understood, all aspects/conditions of the Phosphorus Regulations is the responsibility of the relevant Local Authority and the Environmental Protection Agency. As a 'condition' for planning, the wording might be as follows:

> 'Prior to, during and post construction, receiving surface waters (including Carrowmore Lake) for effluents arising from the operation and management of all settling ponds shall be subject to the requirements of the Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations, 1998 (Statutory Instrument No. 258, 1998).'

Austin Morgan
23/9/2004

Mr. D Johnson
Deputy Planning Officer

Re: Request for Assessment of Traffic Management Plan and Planning Authority Conditions in relation to the Corrib Gas Field Development. (Ref PL 16.207212)

1 Description of Road Proposal

Proposed Haul Route works to provide route for transportation of approximately 450,000 m^3 peat from the site at Bellanaboy to Srahmore, a distance of 11 kms.

The route is R314 – L1204 – R313 with return proposed via R313 – L12044 – L1204 – R314.

Traffic Management Plan is dated February 2004. This addresses the logistics of filling transport vehicles at the Bellanaboy Terminal Site, transporting the peat via a dedicated haul Route with all the associated traffic controls and recording systems.

Drawings 2044 – 1000 to 2044 - 1017 refer.

Proposal is to travel west on R314, turn left onto L1204, and at junction with R313 to cross the road to the deposition site.
Empty trucks to emerge to R313 by Traffic Director and travel 0.98 km to turn right via a new right turning lane into L12044. Proposed to have Traffic Director Control on this junction. Empty trucks to turn left from L 12044 to L1204.

Mayo Co Co. (MCC) Drawing 3225/04/01 @ 1:20,000 indicates one way system for trucks on south end of L1204, R313 and L12044. It was not clear if this also applies to other traffic. The Section 179,Part 8 Notice by MCC does not mention one way systems. The situation was clarified in the submission of additional information of 15th September 2004 from TPA.

Observations on Proposals: (made in relation to application before submission of additional information.)

1. While Drawings show alterations to Bridges and culverts and pavement construction there were no Drawings indicating the geometry of the junctions.

2. It appeared that the one way system applies to site trucks only. While it could be argued that a car and a truck could pass on a road width less than 5.5m it would not be possible to ban larger (non-project related) vehicles selectively from using the lower end of the L1204 in the northerly direction. (buses and non project HGVs are most relevant)

3. It was noted the R313 has AADT of approx 2,000 with high HGV proportion. Morning peak hourly flow is 220, with evening peak at 238. L1204 has recorded 73 morning and 75 evening vehicle movements It was also noted that this is outside BNM peat harvesting time but no estimation of additional volumes was apparent in report.

4. Report did not mention buses in description of vehicles using route at present but these have been observed on L1204.

5. 3 no. laybys on L1204 could be beneficial to cater for potential breakdowns and pull in locations for road sweepers which are proposed to be used. Section 5.4.8 deals with localised areas of restricted carriageway width and proposes a protocol for drivers to deal with this problem. It would be anticipated that a safety audit would address this point

6. If Traffic Director control is proposed for R313/L1204 and R313/L12044 the exact function of same was not clear and if control required at L1204/ L12044 and L1204/ R314 junctions.

7. It was noted that MCC Drawings 3225/04/01,05 and 06 are included. But 02 and 03 which related to works on the R314 and include details of realignment and 04 which related to the right turning lane on the R313 are mentioned in the MCC schedule.

8. As to adequacy of design, this appeared to have been carried out in a satisfactory manner. However, the Report acknowledges that there may be considerable differential settlement in the widened parts of the carriageway.

Additional Information sought:

The following additional information was recommended to be sought:

1. The details of sight distances and turning radii at junctions should be submitted with indications that the vehicles using the junctions can safely make the required manoeuvres . Details of the right hand turning lane also required. Compliance with TD 42/95 NRA should be indicated. (note Drawings 3225/04/02,03 and 04 not submitted. MCC Drawings 3225/01, 05 and 06 were submitted.

2. Safety audit would be required in respect of route including junctions/safety barriers etc. for peat deposition and post peat deposition stages.

3. Confirmation that land is available without need for acquisition to carry out any necessary widening or improvements at junctions, in particular at

R313/L12044 and L12044/L1204 junctions. Also confirm that land is available without acquisition for right hand turning lane on R313.

4. Define duties of Traffic Director at junctions and proposals for junctions at which this control is not proposed.

5. Details of how truck breakdowns would be handled and how slower moving HGV's including road sweepers are to be passed.

6. Details of regulation of one-way system required with particular reference to non-site traffic, especially HGV's on lower end of L1204 towards R313. Supply details of proposed minimum carriageway width for one-way section of L1204.

7. Details of regulation of non-site traffic on L12044, with particular reference to housing cluster access junction and provision for passing on section of route approaching R313 where carriageway width is less than 4.0 metres .

8. Proposed maintenance details of carriageway during peat transportation where differential settlement occurs (see last paragraph of Report Clause 4.2)

Response:

By letter of 15th September 2004, TPA, on behalf of the Applicant responded to the request for additional information. Observations and comments on this response are given below.

2. Report on additional information in relation to Roads and Transportation

Introduction:

1. Additional information addressing letter of 27th August 2004 was received on 15th September 2004.

2. Drawings nos. 2044 – 1001, 1002, 1011, 1012, and 1018 – 1023 inclusive were submitted in addition to a written report. (10 drawings). These drawings clarified the proposals in relation to roads and transportation.

3. The report referred to each point raised and also referred to the relevant drawings.

4. The points raised in the letter of 27th August are addressed in the response and these are set out in sequence and are dealt with below.

Observations:

1. In relation to sight distances and turning radii at junctions, the information is contained in the following drawings and in paragraphs 2.1.2 .

    - Drawing 2044 –1019 indicates the proposed turning movements for a rigid truck for each junction and it is noted that at the following junctions the turning radius requires the truck to use the entire carriageway:
        a. L1204 / L12044 for both roads
        b. R313 / L12044 for the L12044.

    - Drawing 2044 – 1020 gives details of visibility at junctions and indicates that 160m visibility can be achieved at 4.5 metres set back at main junctions except the L1204 / L12044. At this junction it is proposed to achieve 160 metres unrestricted visibility at a set back of 20.5 metres by regrading of the L12044 as it approaches its junction with the L1204. This raises questions as to how the traffic controller(s) will operate at this junction.

    - Drawing 2044 – 1021 gives details of traffic management proposals and indicates the following:-

R313/L1204 (Bord na Móna junction) :	2 No. Directors
R313/L12044	1 No. Director
L1204/L12044	1 No. Director
L1204/R314	1 No. Director
Bellanaboy Access	2 No. Directors

      The number of Traffic Directors appear adequate except for the junction of the L1204 with the L 12044.

    - Drawing 2044 – 1022 gives details of turning circles for an articulated truck at the three most restricted junctions and indicates that turning movement is possible although the entire carriageway of the L12044 and the L1204 is required to effect the movement.

    - The drawings indicate that an additional Traffic Director is required at the junction of the L1204 / L12044.

2. In relation to the duties of the Traffic Directors and flagmen, the duties are explained and are considered satisfactory, with the exception of the L1204 / L12044 junction where pause control is required and the location at which the southbound traffic is proposed to be halted is not in sight of the actual junction and hence a second Traffic Director would appear to be required.

3. Vehicle Breakdowns and handling of interaction with Road Sweepers is dealt with in paragraph 2.1.4. and it is stated that Road Sweepers

will operate as an evening activity with additional sweeping scheduled for lunchtimes.

4. In paragraph 2.1.6 and 2.1.8 it is explained that the one – way system will apply to all traffic.

5. Drawing 2044 – 1011 covers the issue of the detail of the realignment proposed on the one –way section of the L1204. Additional cross sections are shown in Drawing 2044-1018.

Conclusions on Additional Information:

Conditions are required to cover the operation of the L1204 / L12044 junction on the ongoing maintenance of the haul route and on the operation of a one – way system. These are outlined under Recommended Conditions below.

3 Planning Authority Conditions :

Planning Authority Conditions relating to Roads and Transportation are as follows:-

Condition No 3 covers the requirement to make payment to Mayo County Council in respect of construction of the road and of condition surveys of roads and bridges.

Condition No 4 requires the applicant to realign the R314 prior to the commencement of peat haulage operations and importing of construction materials into the Bellanaboy site.

Condition No 5 requires a set-back at the entrance to the settlement ponds at the Bellanaboy site.

Condition No. 6 states that the maintenance, repair and upkeep of the roads involved in the haul route will be carried out by Mayo County Council.

Condition No 7 requires the applicant to carry out surveys of road network before and after construction.

Conditions No 8 and 9 deal with the maximum permitted traffic under the proposed Traffic Management Plan (TMP) and the location of road signs

Condition No 10 specifies the route to be used for haulage of materials to the Bellanaboy site.

Condition No 11 specifies the R313 as the access route to the Srahmore site

Condition No 12 requires documentation of route and identification of vehicles.

Condition No 13 requires provision and use of a wheel wash in the construction area.

Condition No. 14 specifies waste collection permit compliance.

Condition No 15 requires ensuring that material does not fall or leak from vehicles.

Comments on Planning Authority Conditions on Roads:

Conditions nos. 3,6,7,8,9,12 and 13 appear to be satisfactory, although the action to be taken in the event of problems with the condition or integrity of the road surface is not specified in relation to condition No.6. The Project Management Committee (PMC) may be relevant in this regard but a specific condition appears necessary in relation to the upkeep of the road as Mayo County Council are now undertaking the responsibility.

Condition No 4 should be modified to be required before peat haulage commences.

Condition No. 5 should be modified to be required at the same time as the access to the settlement ponds.

The intent of Condition No 11 is unclear.

Condition No. 14 could be omitted as the requirement is covered under other legislation.

Condition No.15 would pose problems on implementation as it is absolute in its terms.

Planning Authority Conditions in relation to Environment (relevant to roads)

Condition No. 16 requires the formation of a Project Monitoring Committee and sets out it's functions..

Conditions No. 17 and 18 relate to silt traps and settling ponds.

Conditions No. 19 to 24 do not relate directly to roads.

Conditions Nos. 25 and 26 relate to noise and dust. Conditions Nos.27 to 50 relate to general aspects (including financial) of the proposal.

Conditions Nos. 51 to 63 relate to monitoring. These are very comprehensive and have a relevance to roads as well as other aspects of the proposal.

Condition No 64 relates to recording of traffic movements.

Conditions Nos 65 to 75 relate to financial issues, archaeology and natural heritage.

Conditions of Planning Authority (Nos. 16 – 75)

In relation to Condition No. 16, minutes of the PMC meetings should be published on Mayo County Council website

In relation to conditions 17,18,25,26 and51 the results of all monitoring would require to be published with the proceedings of the PMC.

6. Recommended Conditions.

a. Two Traffic Directors are required to be used at junction of L1204 / L 12044. (reference additional information ,Drawing 2044 – 1021)

b. Statutory approval to be obtained by Mayo County Council for one – way operation as per Drawing No 2044 – 1021 and 2044 – 1023. (submitted as additional information 15th Sep 2004)

c. Safety audit to be carried relating to construction and post construction period. Audit to be submitted to Planning Authority. In particular, Audit should update Risk Assessment Matrix A1, A11, A12, A14, A15, A16, A18, A19, A20, A21, A24, A26, A27 and A30. Audit should also examine local recommended speed limits over total route.

d. Ongoing maintenance by Mayo County Council of haulage route to be documented and notified to the Project Monitoring Committee. Target tolerances for road surfaces and response times for repairs to be set prior to commencement of construction and agreed with Mayo County Council.

e. Condition No. 4 of Mayo County Council to be modified by deleting the reference to importing of construction materials into the Bellanaboy site and reads:

> "Prior to the commencement of peat haulage operations the developer shall, at his own expense, realign Regional Road R314 in accordance with Mayo County Council Drawing No. 3225/04/02. The realignment shall be carried out under the supervision of Mayo County Council to an agreed design and specification. Traffic controllers shall be employed for this junction from the

commencement of importing materials into the Bellanaboy site and traffic movements shall be limited in this phase to 5 vehicles per hour in each direction pending the completion of the road realignment.

D.G.O'Connor
Engineer Gd I
5th October 2004