14 CLIMATE

14.1 Introduction

This section describes the meteorological conditions and potential emissions associated with the Srahmore Peat Deposition site activities that have the potential to affect on the climate, through the release of 'greenhouse' gases (GHGs).

There will be no direct impacts on climate as a result of the deposition on peat. Examination for potential emissions from the deposited peat has been assessed.

No other releases are anticipated that can lead to other regional or global climatic impact issues such as ozone depletion.

14.2 Meteorological Conditions

The landscape in the environs of the Srahmore Peat Deposition site is flat lying. The prevailing wind is from the southwest.

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The nearest meteorological station in the area is the Met Eireann Synoptic Station in Béal an Mhuirthead (Belmullet) which is 16.6km northwest of the Srahmore site.

The 30 year average (1961-1990) for the Belmullet Synoptic Station are presented below:

- Mean Temperature: 9.6^{0}C;
- Mean Relative Humidity (@ 0900UTC %): 83
- Mean Daily Sunshine Duration (Hours): 3.5
- Mean Annual Rainfall (mm): 1142.7
- Mean Evapotranspiration (mm): 527.1
- Mean Wind Speed (knots): 13.1 (24.3km/hr)

14.3 Global Warming

The main compounds considered to contribute to global warming are carbon dioxide (CO_2) and methane (CH_4). Other compounds have the potential to contribute to global warming but are generally released in much smaller quantities.

Global warming and the management of emissions with the potential to contribute to global warming are an increasingly important issue for Ireland. An international agreement was drawn up (the Kyoto Protocol) in response to rising emissions of the principal contributing compounds which has subsequently been ratified by the European Union.

Under the burden sharing agreement within the European Union to implement the Protocol, Ireland agreed to a limit of 13% above 1990 emission levels to be achieved between 2008

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and 2012. By 2001, the level of global warming releases however had risen by 31% above the 1990 levels following a period of rapid economic growth. The last provisional data showed that National greenhouse gas emissions were 10% over target in 2007 (i.e. 23% above 1990 levels).

Numerous initiatives are in place to reduce emission levels under the Government's National Climate Change Strategy and EU initiatives including the Directive on Emission Trading.

Global warming has numerous potential implications for Irelands' environment including:

- greater risk of seasonal flooding with an increased rainfall in winter and decrease in summer;
- changes to habitats and ecosystems including the drying of peatlands; and
- effects on sea and river levels and influence on water resources.

14.4 Influence of Peat Deposition on Releases with Global Warming Potential

Using the methodology issued by the Scottish Government 'Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A New Approach' (University of Aberdeen, 2008), it is possible to assess the influence of the deposition of the peat on GHG emissions. The detailed calculations of the gas emissions are outlined in Chapter 8 of the on-shore pipeline development (Volume 1 & 2 of the EIS) and summarised herein.

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The loss of Carbon from the Removed Peat ($L_{removed}$) from the pipeline route is calculated using the following equation:

$$L_{removed} = 3.667/100 \times pC_{dry\ peat} \times Bd_{dry\ soil} \times V_{direct}$$

Where

$L_{removed}$ is the Loss of Carbon from the Removed Peat

$pC_{dry\ peat}$ is the carbon content of dry peat (%) given the default of 55%

$xBd^{dry\ soil}$ is the dry soil bulk density (g/cm3) given the default value of 0.1g/cm3

V_{direct} is the total volume of peat removed during construction (m^3)

Based on the above formula, the carbon loss from the removed peat equates to 13,881 $tCO_2(eq)$ if 100% of the carbon in the peat was lost to the atmosphere. However it is proposed to transport the peat to the Srahmore Peat Deposition site and to deposit the material in a manner to minimise carbon loss through peatland rehabilitation and ultimately bog regeneration (following the stabilisation period). As such, the removal of peat is predicted to cause negligible carbon losses.

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14.5 Do Nothing Scenario

In the event the development does not proceed the Srahmore Peat Deposition site will be rehabilitated in accordance with its current Waste Licence (Ref, EPA, W0-199-01) and Existing planning permission. This will result in the Srahmore Peat Deposition site reverting to a carbon neutral during and following the stabilisation, rehabilitiation and bog regeneration programme.

14.6 Predicted Impact of the Proposed Development

The only predicted impacts will be associated with emissions from HGV and from onsite vehicles at the peat deposition site. This is addressed in Section 11 of this Volume of the EIS.

The deposition of up to 75,000m^3 of peat at Srahmore from the onshore pipeline would produce significantly lower GHG emissions than the exportation of this peat to the next nearest permitted facility, quantified as 13,881 tCO_2(eq)

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14.7 Mitigation Measures

Vehicle emissions will be minimised through effective vehicle maintenance. Releases from HGV movements between the Pipeline development and the peat deposition site will additionally be minimised through appropriate route selection to and from the peat deposition site.

14.8 Monitoring and Reporting

It is proposed to implement a programme to monitor Carbon Dioxide and Methane emission levels, which will include the accurate recording of disposed peat volumes and the regular servicing and maintenance of vehicles. Details of this programme will be agreed in advance with the relevant authorities.

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15 ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

15.1 Introduction

The development involves taking up to 75,000m^3 of peat from the on-shore pipeline development and depositing it within the existing Srahmore Peat Deposition site. The proposed development consists of utilising remaining void space within the permitted activity boundary of the Srahmore Peat Deposition Site to accommodate up to 75,000m³ of peat from the on-shore pipeline construction.

This study was carried out as part of an EIA, in order to address in advance any archaeological issues that may arise in the course of the development.

This section has been prepared taking account of the original Archaeological survey conducted by ADS Ltd., in 2003 and monitoring undertaken by ADS Ltd., in 2005. The proposed deposition is to be undertaken within the activity boundary of the previous investigation and therefore this Archaeological information remains relevant and valid.

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15.2 Methodology

This study was carried out under the following headings:

- Review of schedule of buildings and items of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest that are listed for protection in the study area from Mayo County Council source.
- Field Survey;
- Journal & documentary research;
- Cartographic research;
- Aerial photographic research;
- Search of Sites and Monuments Record, Department of the Environment, Heritage and Local Government, (DoEHLG); and
- Search of Topographic Files, Irish Antiquities Division, National Museum of Ireland (NMI).

The Development Application Unit in the Department of the Environment, Heritage & Local Government was also consulted for their views on the proposed development. Refer to Appendix 1.3, Book 3 for Letter from Development Application Unit.

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15.3 Existing Environment

The area of the development is located in Bord na Móna industrial peatland in the townland of An Srath Mór (Srahmore) immediately northwest of the small town of Baingear (Bangor), I gContae Maigh Eo (Co Mayo). The Srahmore Peat Deposition site forms part of the Bangor Bogs which are part of the Bord na Móna group of bogs known as the Oweninny Group.

15.3.1 Architectural Heritage

The Mayo Development Plan (2008-2014) was consulted to identify protected buildings. There are no items of architectural heritage significance or their surrounds, curtilage or attendant grounds that will be affected by the proposed development.

15.3.2 Field Survey October 2003

The site of the development was systematically fieldwalked in October 2003 by Archaeologists Jane Whitaker, Daire Leahy and Giles Dawkes of Ads Ltd. Both of the bog areas (Area 5 & 6) were systematically fieldwalked at this time. Each drain was walked starting in the northwestern extent of Area 6. When the development area was extended Area 7 was walked in December 2003 by Archaeologists Daire Leahy and Mark Morahan, ADS Ltd. This area was included as a flood plain should exceptional rainfall levels occur.

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The drains provide regular section faces through the bog to facilitate archaeological inspection. Fieldwalking techniques in Bord na Móna peatlands have been developed over the past twelve years since the Irish Archaeological Wetland Unit IAWU and more recently ADS Ltd were commissioned by DoEHLG to carry out the wetland aspect of the Archaeological Survey of Ireland. During fieldwalking the drain faces and field surfaces are investigated for archaeological remains. The anaerobic conditions in wetland environments favour the preservation of organic materials such as wood, leather, textiles and even human bodies. The 2003 Peatland Survey was carried out in the Oweninny Group by ADS Ltd., in August and September 2003. The Bord na Móna bogs around both Béal Átha Liag (Bellacorick) and Baingear (Bangor) were all systematically fieldwalked and no sites or finds of archaeological interest were recorded during the course of this work (Whitaker, forthcoming).

Area 6 is accessible along its southern boundary from the Geesala road. The drains run in an east-northeast / west-southwest direction in this area. While all of this bog is currently in production the northern extent is almost milled out and there are a lot of tree stumps currently exposed across this area. Towards the centre of Area 6 there were two small areas, which were completely flooded as a result of the recent rain. Nothing of archaeological importance was recorded in this Area 6.

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Area 5 is accessible from the Belmullet road and the drains run in a northeast/southwest direction. This area is smaller than Area 6 and is currently in production. There is a small area along the northern extent where the underlying glacial gravels are exposed .

Nothing of archaeological importance was recorded in this area.

Area 7 was accessed from the rail line that runs along the western extent of Area 6. The drains run in an east – west orientation. The majority of this area was production bog with the exception of a small milled out portion at the southern extent. Nothing of archaeological importance was recorded in this area

There is an area of reclaimed bogland to the southeast of Area 5 and to the east of Area 6 between the Geesala and Belmullet roads which will not be affected during the course of the development.

15.3.3 Monitoring May 2005

Monitoring of groundworks associated with this development was completed from December 2004 to March 2005. This monitoring work consisted of excavations of five settlement ponds, access roads, administrative area, peat reception area and three major drains. Nothing of archaeological interest was noted in this area during these excavations, in addition no deposits or objects were found during any of the drainage works. Refer to Appendix 15.1, Book 3 for Monitoring Report.

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In conclusion, there was nothing of archaeological significance identified during either the fieldwalking or during monitoring which took place in May 2005.

Documentary research did not reveal any recorded monuments on or in the immediate vicinity of the site, however the archaeological and historical background below shows that there are a number of recorded monuments surrounding the Bangor bogs three of which are within a 1.5km range of the development site.

15.3.4 Journal & documentary research

Various published sources, including local and national journals, were consulted for reference to the townlands of An Srath Mór (Srahmore), Áit an Bhaile (Attavally) and Baingear (Bangor). In addition various archaeological artefact corpora were also consulted.

15.3.5 General Historical background

The site of the existing Peat Deposition Site is located on the outskirts of the town of Baingear (Bangor) in the Barony of Iorras (Erris), I gContae Maigh Eo (Mayo).

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Erris

The word Iorras has been variously interpreted throughout history as meaning " a borderland, a headland or promontory, a peninsula". The name appears as "Irrus Domnann" (Iorras of the people called Domnann) in a great many Irish sources. Perhaps the most notable in an 11th Century manuscript known as "Lebor na Huidre" (the Book of the dun Cow). Iorras (Erris) was dominated by various families throughout the Medieval Period, principally the O'Dowds until after the Norman invasion when the Barretts and Burkes, both Norman families established themselves as Barons of Erris. In the late 16th Century, Mayo as a County became established and ten "Baronies" were created to act as administrative centres for the then ruling English. Erris (then known as Invermore) came under the governship of Sir Henry Sidney who appointed Sherrifs and Officials. They in turn introduced landlords who were allowed to take estates under grants from the English Crown. The Plantation of the 17th century brought new families to Iorras (Erris) and the local people were banished from place to place.

Bangor

Bangor Erris gets its name from the Gaelic *Beann Chor*, which means *Ridge of Mountain Peaks*. The original name for the townland was *Doire Choineadaigh* (The Wood of the Kennedys) a name found in maps from 1724 to 1829. John O Donovan in the Ordnance Survey name books also called the place *Coineadach*. James Mc Parlan in his survey of the locality called the place Cahel and stated that fairs were held there regularly. Locally the place was known as *Aonach Cathail* (Cathal's Fair) because a wealthy buyer of that name attended fairs here. The name Bangor (*Beann Chor*) was given to the town by Major Dennis Bingham who established the town there.

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Baingear (Bangor) is a village in the parish of Kiltane, barony of Iorras (Erris), I gContae Maigh Eo (County of Mayo), and province of Connaught, 10 miles (E.S.E.) from Belmullet; the population is returned with the parish. It is situated on the road from Castlebar to Belmullet, and contains two comfortable inns. Fairs are held on the 20th of Jan., Feb., March, and April, May 10th, June 11th, July 20th, Aug. 11th, Sept.8th, Oct. 16th, Nov. 16th, and Dec. 11th; and here is a station of the constabulary police. (Lewis, Topographical Survey, 1837).

Baingear (Bangor) was a good site for a town. It was at the crossroads of two old roads, which were in use from the mid eighteenth century. One of these was from Carne to Castlebar, the other from An tInbhear (Inver) to Baile U Fhiacháin. Both these roads were repaired by order of the County assizes in 1793. The townland was also sheltered from the north winds and situated on the banks of the Owenmore River.

In 1823 Major Bingham was granted a patent to hold fairs in the town. By the 1830's the place was described as a little town with 'two comfortable inns.' The fairs were held of the 20th January, February, March and April, the 10th May, the 11th June, the 20th July, the

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11th of August, the 8th, September, 8th October, 16th November and 11th December.

There is evidence that the place was inhabited several thousand years ago - a megalithic Court Tomb (MA026-04) is situated close to the village of Baingear (Bangor) about 100 yards north of the road from Baingear (Bangor) to Béal an Mhuirthead (Belmullet). It stands in a sloping pasture field on a fertile ridge between Carrafull Hill and the Owenmore River. This archaeological monument is very ruined and consists of several set stones and some prostrate ones incorporated in a roughly oval shaped mound, about one metre high.

A way marked walking route called the Bangor Trail starts in the village of Baingear (Bangor) and follows a route over the Nephin Beg mountain range to Newport. This route was originally a cattle drover's trail. It is difficult to put a definite date on how long this route has been in existence but it has attracted the interest of travellers for many centuries. Dr. Pococke visited it in 1752, Caesar Otway in 1837 and Robert Lloyd Praeger early in the 20th century.

General Archaeological Background

The following archaeological monuments in the surrounding townlands are included to highlight the type of sites, which survive in the general area of the existing peat deposition development site. It should be stressed that none of these monuments is directly affected by this development. However Sheet No 17, 18, 26, and 27 for I gContae Maigh Eo (County Mayo) revealed a number of sites within 2.5km of the existing site, refer to Table 15.1 and Figure 15.1 for "Areas of Archaeological Interest" in close proximity to the existing Peat Deposition Site.

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Table 15.1: Archaeological Monuments in Vicinity of the Existing Peat Deposition Site

SMR No	Townland	Description	Distance from Site (km)
MA018-006	Ráth Muireagáin (Rathmorgan)	Holy Well, Cairn & Standing Stone	3.53
MA018-007	Ráth Muireagáin (Rathmorgan)	Rath/Enclosure	3.3
MA018-008	Cluainte Cille Cloontakilla	Children's Burial Ground	1.05
MA018-010	Ráth Muireagáin Rathmorgan	Cairn	3.1
MA018-011	Dereens Island	Ecclesiastical Remains	0.78
MA018-013	An Gort Mor Gortmore/ Áit an Bhaile Attavally	Architectural Fragments	0.35
MA018-014	Carrowmore Lake	Possible Crannogs	0.78
MA025-00101 & MA00102	Bun an Mhuilinn (Bunawillin)	Church and Midden	8.69
MA025-00201 & MA00202	An Mhoing Mhór Muingmore	Enclosure & House	6.74
MA025-003	An Mhoing Mhór Muingmore	Possible Crannog	6.33
MA025-004	Dumha Locha Doolough	Possible Crannog	5.54
MA025-005	Dumha Locha Doolough	Possible Crannog	5.14
MA026-001001 & 00102	Troiste Tristia	Burial Ground & Cist	3.27
MA026-00201	Troiste Tristia	Megalithic Court Tomb	3.2
MA026-00202	Troiste Tristia	Pre-Bog Walls	3.32
MA026-003	Cill tSéine Kilteany	Ecclesiastical Remains	0.33
MA026-004	Baingear (Bangor)	Megalithic Tomb	0.67
MA035-003	An Bun Mor Thiar Bunmore West	Ecclesiastical Remains	10.82
MA035-004	An Bun Mor Thiar Bunmore West	Holy Well & Cross	10.88
MA035-005	An Bun Mor Thoir Bunmore East	Hilltop Cairn	10.02
MA035-007	Cnoc Maoilin Knockmoyleen	Enclosure	11.4
MA027-001	An Leargain Bheag Largan Beg	Ecclesiastical Remains	6.31
MA017-012	Gleann Chaisil Glencastle	Promontory Fort/Gatehouse/Settlement Platform	6.16
MA017-013	Gleann Chaisil Glencastle	Burial Ground	5.75
MA017-01401	Gleann Chaisil Glencastle	Enclosure	5.48
MA017-01402	Gleann Chaisil Glencastle	Enclosure	5.39

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Refer to Appendix 15.2, Book 3 for details on RMP Sites.

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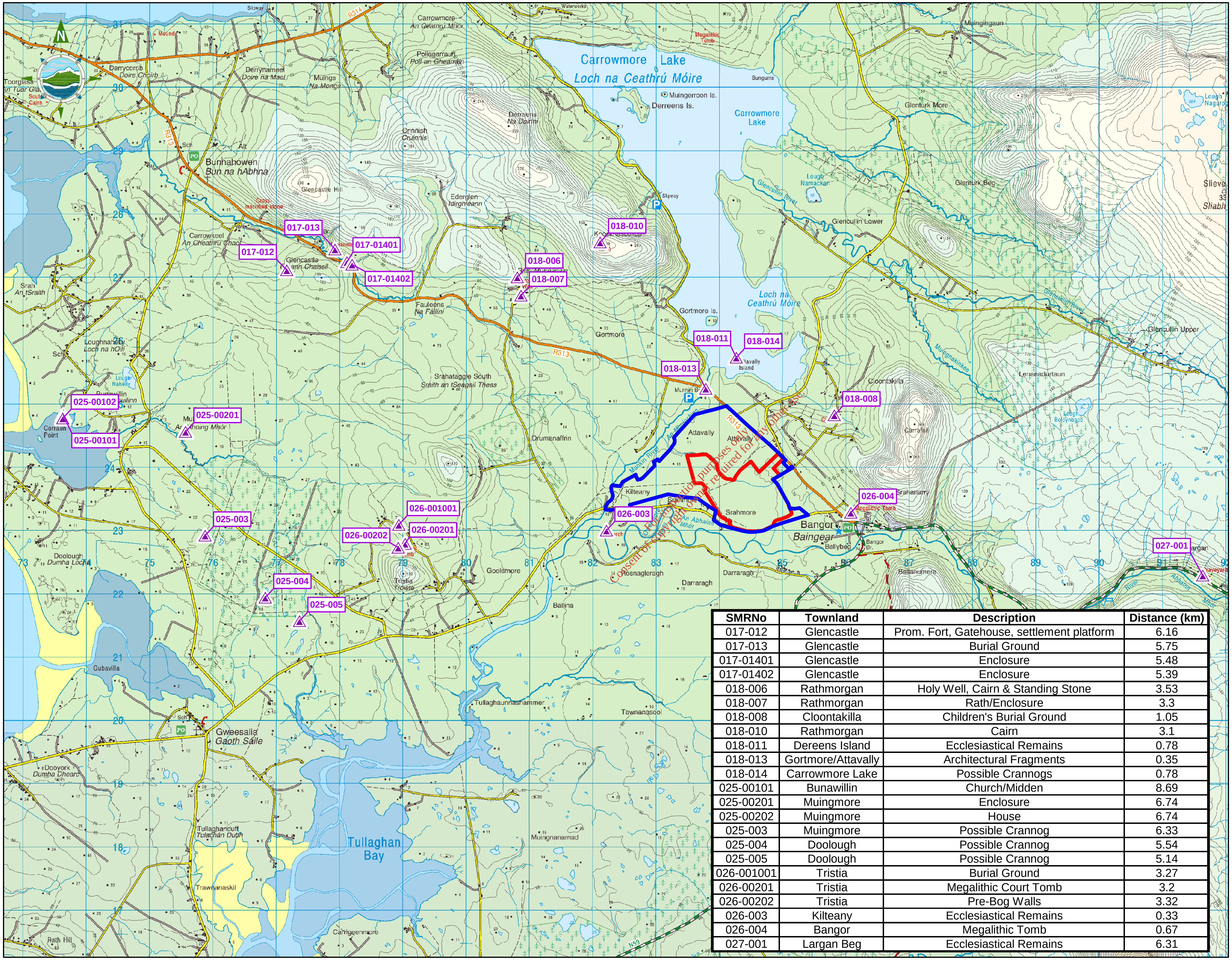

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SMRNo	Townland	Description	Distance (km)
017-012	Glencastle	Prom. Fort, Gatehouse, settlement platform	6.16
017-013	Glencastle	Burial Ground	5.75
017-01401	Glencastle	Enclosure	5.48
017-01402	Glencastle	Enclosure	5.39
018-006	Rathmorgan	Holy Well, Cairn & Standing Stone	3.53
018-007	Rathmorgan	Rath/Enclosure	3.3
018-008	Cloontakilla	Children's Burial Ground	1.05
018-010	Rathmorgan	Cairn	3.1
018-011	Dereens Island	Ecclesiastical Remains	0.78
018-013	Gortmore/Attavally	Architectural Fragments	0.35
018-014	Carrowmore Lake	Possible Crannogs	0.78
025-00101	Bunawillin	Church/Midden	8.69
025-00201	Muingmore	Enclosure	6.74
025-00202	Muingmore	House	6.74
025-003	Muingmore	Possible Crannog	6.33
025-004	Doolough	Possible Crannog	5.54
025-005	Doolough	Possible Crannog	5.14
026-001001	Tristia	Burial Ground	3.27
026-00201	Tristia	Megalithic Court Tomb	3.2
026-00202	Tristia	Pre-Bog Walls	3.32
026-003	Kilteany	Ecclesiastical Remains	0.33
026-004	Bangor	Megalithic Tomb	0.67
027-001	Largan Beg	Ecclesiastical Remains	6.31

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LEGEND

- Site Activity Boundary
- Lands under control of Developer
- Sites and Monument Record

0 0.25 0.5 1 1.5 2
Kilometers

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

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C	01-02-09	Issued for Resubmission	A.G.	M.H.
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Applicant: **Shell E&P Ireland Limited**
Corrib House, 52 Leeson Street Lower, Dublin 2, Republic of Ireland

Operator: BORD NA MÓNA

Project: CORRIB ONSHORE PIPELINE DEVELOPMENT

Aspect: SRAHMORE PEAT DEPOSITION SITE

Title: ARCHAEOLOGICAL SITES

Scale @ A3: 1:55,000

Prepared by: P. Kelly | Checked: M. Hogan | Date: Feb 2009

Project Director: S. Finlay

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Figure 15.1

Issue: C

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The archaeological sites in the development area represent both prehistoric and historic remains with a large number of crannogs recorded particularly on Carrowmore Lake. An unclassified megalithic tomb (MA-26004) is recorded in the townland of Baingear (Bangor) approximately 1km from the eastern extent of Area 6. To the northeast of the development area, in the townland of Cloonakilta, a children's burial ground (MA-18008) is recorded. It is situated on top of a hillock and consists of a low mound of earth and stones with four graves to the east, northeast and southeast of the mound. Architectural fragments (MA-18013) consisting of dressed stones are recorded in the townland of Gortmore/ Áit an Bhaile (Attavally) and may originally have formed part of the church in the townland of Dereens Island in Carrowmore Lake where ecclesiastical remains (MA-18011) are recorded. The remains consist of the ruins of an old church and the ruins of seven stone and mortar dwellings.

There are also several recorded archaeological sites in the landscape surrounding the Bord na Móna Bangor bogs. Carrowmore Lake is the largest lake in this barony and covers 1000ha in area. Twenty-seven sites (MA-18014) in the lake are listed as possible crannogs in the Record of Monuments and Places (RMP). A complex of three monuments (MA-18006) is recorded to the north of the bogs, in the townland of Ráth Muireagáin (Rathmorgan), on the east southeast slope of a steep hill. The complex consists of a holy well, a cairn and a standing stone all within close proximity of one another. In the same townland, east-northeast of the complex, a cairn is recorded, unfortunately no further information is available about this site. Also in Ráth Muireagáin (Rathmorgan) townland, to the south of the above complex, a rath or enclosure (MA-18007) is recorded. This site is situated on the south slope of a steep hill and consists of a raised circular area approximately 29m in diameter defined by a low irregular scarp. In the townland of An Mhoing Mhór (Muingmore) to the west of the westernmost section of the Bangor bogs an enclosure (MA-2500201 and a house (MA-2500202) are recorded. The enclosure consists of a circular area, approximately 12.4m in diameter, defined by a low earthen bank with an entrance to the east southeast. This may be a modern structure. The house is rectangular and outlined by the lower portions of drystone walls, divided internally into two rooms; this is probably a relatively modern structure. Also in the townland of An Mhoing Mhór (Muingmore) is the site of a possible crannog (MA-25003). In the townland of Troiste Tristia a burial ground (MA-2600101) and a cist (MA-2600102) are recorded. The burial ground is situated on a southwest facing slope and is ill defined on the ground. In the northeast of the burial ground is a possible cist burial consisting of large boulder split into two portions resting on smaller stones. In the townland of Cill tSéine (Kilteany) a church (MA-2600301), graveyard (MA2600302) and an abbey (MA-2600303) are recorded. The church is in ruins as is the abbey and no information is available about the graveyard.

The archaeological remains around the Bangor Bogs are representative of many periods. The main concentration of sites is found to the north of the bogs in Carrowmore Lake. The nearest recorded monuments are however, located approximately 0.35km to the northwest

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(MA-18013), 1.05km to the northeast (MA-18008), 0.33km to the south west (MA026-003) and 0.67km to the east (MA-260004) to the boundary of the development area.

15.3.6 Cartographic research

1st Edition Ordnance Survey Map, 1838, 6 Inch Scale

No archaeological features can be observed on the development site or in the immediate area. There are very few field boundaries in the surrounding area at this time. The site is entirely located in bogland. The stream that runs into the Munhin River and intersects Areas 5 and 6 is indicated as is a small lake or turlough within Area 6. There are no buildings on or adjacent to the development site.

3rd Edition Ordnance Survey Map, 1915/16, 6 Inch Scale

The development site had not altered within 22 years, with the field boundaries and nearby buildings largely unchanged apart from further subdivisions and dwellings. Nothing of archaeological or historical significance is evident on the site or in the immediate vicinity.

15.3.7 Aerial photographic research

Aerial photographs (2000) were provided by Bord na Móna for consultation. Nothing of archaeological interest was noted on these photographs.

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15.3.8 Sites & Monuments Record, Archaeological Survey, Department of the Environment, Heritage and Local Government.

The development site is located in An Srath Mór (Srahmore) and Áit an Bhaile (Attavally) townlands to the north west of Baingear (Bangor) Town. No known archaeological monuments are recorded on the development site in the County Mayo Sites & Monuments Record. However there are 23 recorded monuments in the area surrounding the Bord na Móna industrial peatlands of the Bangor Bogs. Six of these monuments are within 1.5km of the boundary of the development site (MA – 018008, MA-018011, MA-018013 MA-018014, MA-026004 and MA-026004).

15.3.9 Topographic Files, Irish Antiquities Division, National Museum of Ireland (NMI)

The term ‘stray finds’ is applied to archaeological artefacts submitted to the National Museum that have been recovered by the general public. In the absence of accurate grid references these finds are recorded by the townland that they came from. The sites are recorded around all parts of the Bangor Bogs with a particular concentration to the north of the bogs near Carrowmore Lake.

The Topographical files for I gContae Maigh Eo (County Mayo) were searched for references to An Srath Mór (Srahmore), Áit an Bhaile (Attavally), Cluainte Cille

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(Cloontakilla) and Baingear (Bangor) townlands. Two finds were recorded from Áit an Bhaile (Attavally) townland and are listed in Appendix 15.3, Book 3 while a further two finds are recorded from Baingear (Bangor) townland. The plough share or ard from Áit an Bhaile (Attavally) and the wooden vessels from Baingear (Bangor) are all recorded as having been recovered from bogs but none state that they were retrieved from Bord na Móna holdings.

The four finds recorded from the Bangor Bog environs come from the townlands of Áit an Bhaile (Attavally) and Baingear (Bangor). The first consists of a wooden plough share or ard (1964: 68) which was recovered from the bog at a depth of approximately two meters in the townland of Áit an Bhaile (Attavally). The second find, also from Áit an Bhaile (Attavally) townland, was of a chert scraper (1997: 10). The third and fourth finds were two wooden vessels from a bog at Bangor (1938:8574-5).

15.4 Characteristics of the Proposed Development

Peat was deposited in this site from the Bellanaboy Gas Terminal periodically from April 2005 to June 2007. The proposed development consists of utilising remaining void space within the permitted activity boundary of the Srahmore Peat Deposition Site to accommodate up to 75,000m³ of peat from the Corrib on-shore pipeline construction.

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15.5 Potential Impact of the development

There are no protected buildings or architectural significance that will be impacted by the proposed development.

This study has shown that there are no recorded monuments on or in the immediate vicinity of the development. The nearest recorded monuments is located approximately 300m from the boundary to the existing development.

Historical research has shown that the general area has seen constant human activity since at least prehistoric times in the surrounding landscape evidenced by megalithic tombs (Baingear (Bangor), Ráth Muireagáin (Rathmorgan) & Troiste Tristia) and crannogs (Carrowmore Lake) and the finds of the chert scraper (Áit an Bhaile) (Attavally) and wooden objects (Baingear (Bangor) and Áit an Bhaile) (Attavally). More recent archaeological sites are evidenced by ecclesiastical remains (Áit an Bhaile (Attavally, Dereens Island, Ráth Muireagáin (Rathmorgan) and Cill tSéine (Kilteany)) and the children's burial ground (Cloonakilta).

Although the scale of the development and the level of ground disturbance will be relatively minor as this is an existing site, the presence of the archaeological sites mentioned above and the recovery of some stray finds from the surrounding area shows the potential for

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previously unrecorded sites and/or artefacts being revealed during groundworks.

15.6 Do Nothing Scenario

If this development does not take place any previously unrecorded archaeological sites or artefacts are likely to remain undiscovered and undisturbed.

15.7 Mitigation Measures

Archaeological attendance will be provided for any new excavations associated with the development. A suitably qualified archaeologist with relevant wetland experience will be employed to carry out the archaeological monitoring as part of any earth excavations.

Under the terms of the National Monuments Act (1930 & amendments) should any archaeological discoveries be made during operations, it is the responsibility of the finder to immediately report their discovery to the Duty Officer of the National Museum of Ireland. Any archaeological discoveries should also be reported to the Department of the Environment Heritage and Local Government (DoEHLG). All recommendations herein are subject to discussion with, and approval of, the relevant heritage authorities, namely the DoEHLG and the National Museum of Ireland.

Refer to Appendix 15.4, Book 3 for details of relevant Archaeology Legislation.

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15.8 Predicted impact of the Proposed Development

15.8.1 Predicted impact of operation

Because of the detailed and intensive nature of the fieldwalking carried out by ADS Ltd. it is predicted that the development will not have a significant archaeological impact during its operation and use. It is possible however that some stray finds may be uncovered during this work. The spreading of the imported peat is unlikely to impact on any un-recorded archaeological features or artefacts. The imported peat will provide extra cover for any potential archaeological material as well as guaranteeing long-term preservation in situ.

15.9 Monitoring

It is proposed that a suitably qualified archaeologist monitor any new excavation of peat.

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16 MATERIAL ASSETS AND TRAFFIC

16.1 Introduction

Material assets are those resources available to the local community. In this section, the impact of the operation of the Srahmore peat deposition site focuses on:

- Waste production, treatment and disposal.
- Use of the local road network; and
- Consumption of road / surfacing construction materials and water.

16.2 Waste Production, Treatment and Disposal

16.2.1 Introduction

This section considers the solid waste that will be generated during the operation of the peat deposition site. The treatment and disposal of liquid effluents is discussed in Section 10 of this Volume of the EIS.

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16.2.2 Receiving Environment

This section deals with waste stored on-site pending its removal. This could affect the soil, geology and hydrology at the peat deposition site. Section 8 (Soils and Geology) and Section 10 (Effluent) herein include descriptions of the relevant aspects of the receiving environment that could be affected by the on-site storage of waste.

16.2.3 Characteristics of the Proposed Development

This section summarises the characteristics of the peat deposition project that are relevant to the consideration of waste management.

Non-Hazardous Wastes generated during the operation of the peat deposition site will be limited to general domestic waste.

Hazardous wastes are likely to consist of used oil spill clean-up kits and oily sludge from the on-site interceptors.

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16.2.4 Potential Impact of the Proposed Development

There is the potential for impacts to arise from non-hazardous waste if there is no management in place. Examples of this would be poor housekeeping, or loss of containment. The impacts in any event are unlikely to be significant.

By contrast, loss of containment of hazardous waste presents a more significant impact. Because the materials are intrinsically hazardous, there is the possibility of soil and or ground water contamination. Due to the small quantities and types of hazardous waste generated at the site, however, the risk of loss of containment is considered to be small.

16.2.5 Do Nothing Scenario

If the development did not proceed, there would be neither waste generation nor disposal.

It should be noted, however, that if the development did not proceed there would still be the issue of disposal of up to 75,000m^3 of peat from the Corrib on-shore pipeline development.

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16.2.6 Mitigation Measures

Mitigation measures include waste management planning, which addresses the impacts associated with waste production, treatment and disposal and ensures compliance with the relevant legislation.

The relevant waste management legislation comprises certain European Union Directives and Regulations, and the Irish legislation that implements them.

European Union Legislation

Council Directive (75/442/EEC) on Waste

The framework directive on waste establishes general rules for waste management and introduces the ‘polluter pays’ principle. The directive recognises that the recovery and reuse of waste should be encouraged. It provides that EU Member States must take all the necessary measures to ensure that waste is recovered or disposed of without endangering human health and in a manner which does not harm the environment.

Council Regulation (EEC) No.259/93

This concerns the supervision and shipment of waste within, into, and out of the European Union. It requires consignment notes to control the shipment of hazardous waste, and defines waste categories.

Council Directive (1991/689/EEC)

The hazardous waste directive sets out requirements for records of the type, quantity and disposal destination of hazardous waste that must be maintained.

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Irish Legislation

The Waste Management Act, 1996 to 2003 provides for:

- a comprehensive and modern regulatory framework for the effective organisation of the management of waste in Ireland;
- the assignment of functions to public authorities in relation to waste management, e.g. the EPA and local authorities; and
- measures - mainly regulatory powers - designed to improve national performance in relation to the prevention, minimisation and recovery or recycling of wastes.

Compliance with the Waste Management (Licensing) Regulations, 2000 is required by the EPA for licensing landfill and other waste disposal activities.

The Waste Management (Facility Permit and Registration) Regulations, 2007 (as amended in 2008) are operated by local authorities with certification and permits required for certain waste activities.

The Waste Management (Hazardous Waste) Regulations, 1998 inter alia deals with the management of hazardous waste such as batteries, asbestos, PCBs, waste oil etc.

The Waste Management (Transfrontier Shipments of Waste) Regulations 1998 and the Waste Management (Movement of Hazardous Waste) Regulations 1998 require consignment notes for waste movements and give effect to the provisions of Council Regulation (EEC) 259/93 on the supervision and control of shipments of waste within, into and out of the European Community.

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Waste Management

Consignments of waste leaving the site will be recorded on consignment notes through to the final destination in accordance with the relevant legislation. The recycling or ultimate disposal of waste will be certified by the parties receiving, or processing, each consignment.

Non-Hazardous Waste Disposal

The generation of non-hazardous waste will be minimised where practicable, by maximising recycling and re-use and minimising packaging.

A licensed waste contractor will dispose of residual waste at an appropriate facility.

The site will be supplied with temporary toilets with all effluent diverted to a holding tank. A licensed contractor will empty these on a regular basis, and the waste will be disposed of in accordance with the relevant legislation at an approved waste water treatment plant.

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Hazardous Waste Disposal

Hazardous wastes will be segregated and disposed of via a licensed waste contractor.

The licensed waste contractor will transport any hazardous waste generated during the construction and operational phases of the project by road to a licensed hazardous waste transfer facility. Depending on the nature of the waste, it may then have to be exported to continental Europe for disposal at an appropriately licensed facility.

If it is necessary to export the waste, it will be shipped to appropriate facilities operating dedicated handling and treatment processes. These facilities will be selected to ensure they have full abatement and monitoring capabilities and conform to stringent standards for emissions to air, water and land.

The proposed mitigation measures will minimise the potential impact of hazardous waste as far as reasonably practicable.

16.2.7 Predicted Impact of the Proposed Development

Where waste is generated it will be stored securely, transported and ultimately disposed of in strict accordance with EU and Irish legislation. Particular care will be exercised with hazardous waste. On-site waste management ensures that these materials cannot be released into the environment at the peat deposition site.

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16.2.8 Monitoring

All waste removed from the peat deposition site will be checked to ensure it is properly classified as either non-hazardous or hazardous waste. Where there is any doubt, the material will be treated as hazardous waste.

Consignment notes will be retained to provide a documentary record of wastes taken off site.

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16.3 Traffic Impact Assessment

16.3.1 Introduction

The Traffic Impact Assessment presented in this Volume of the EIS is consistent with the relevant traffic movement assessed for the on-shore pipeline development (Chapter 7 Volume 1 & 2 of the EIS). The traffic movements specific to the Srahmore site (i.e. material imports and workforce movement for the Srahmore Peat Deposition site) are also assessed in both Traffic Impact Assessments. An overall Onshore Gas Pipeline Traffic Management Plan (Appendix 16.1) has been prepared to take account of the cumulative impact of all traffic associated with the construction of the on-shore pipeline (including peat movement), together with other traffic arisings associated with the Corrib Gas project. This provides an intrinsic link between the on-shore pipeline development (Volume 1 & 2 of the EIS) and the Srahmore peat deposition site (Volume 3 of the EIS).

The proposed peat deposition site lies at An Srath Mór (Srahmore) south of the R313 and west of Baingear (Bangor). The location of the peat deposition area and the associated haul route from the gas pipeline working area is identified in Figure 16.1.

This application seeks to allow for the acceptance and deposition of up to 75,000m^3 of peat within the existing activity boundary of the Srahmore Peat Deposition site from a specified source (i.e. the on-shore pipeline development). Preliminary calculations indicate that up to 75,000m^3 of peat will arise from the onshore pipeline development. It should be noted that only peat arising from the onshore pipeline development will be deposited at An Srath Mór (Srahmore).

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The traffic movements associated with peat removal and transportation have already been included in the projected traffic calculations at all of the haul road junctions between the originating trench locations in Ros Dumhach (Rossport) and Na hEachú (Aghoos), and the L1204/R314 Junction (Junction No 8 near the Srahmore Peat Deposition Site).

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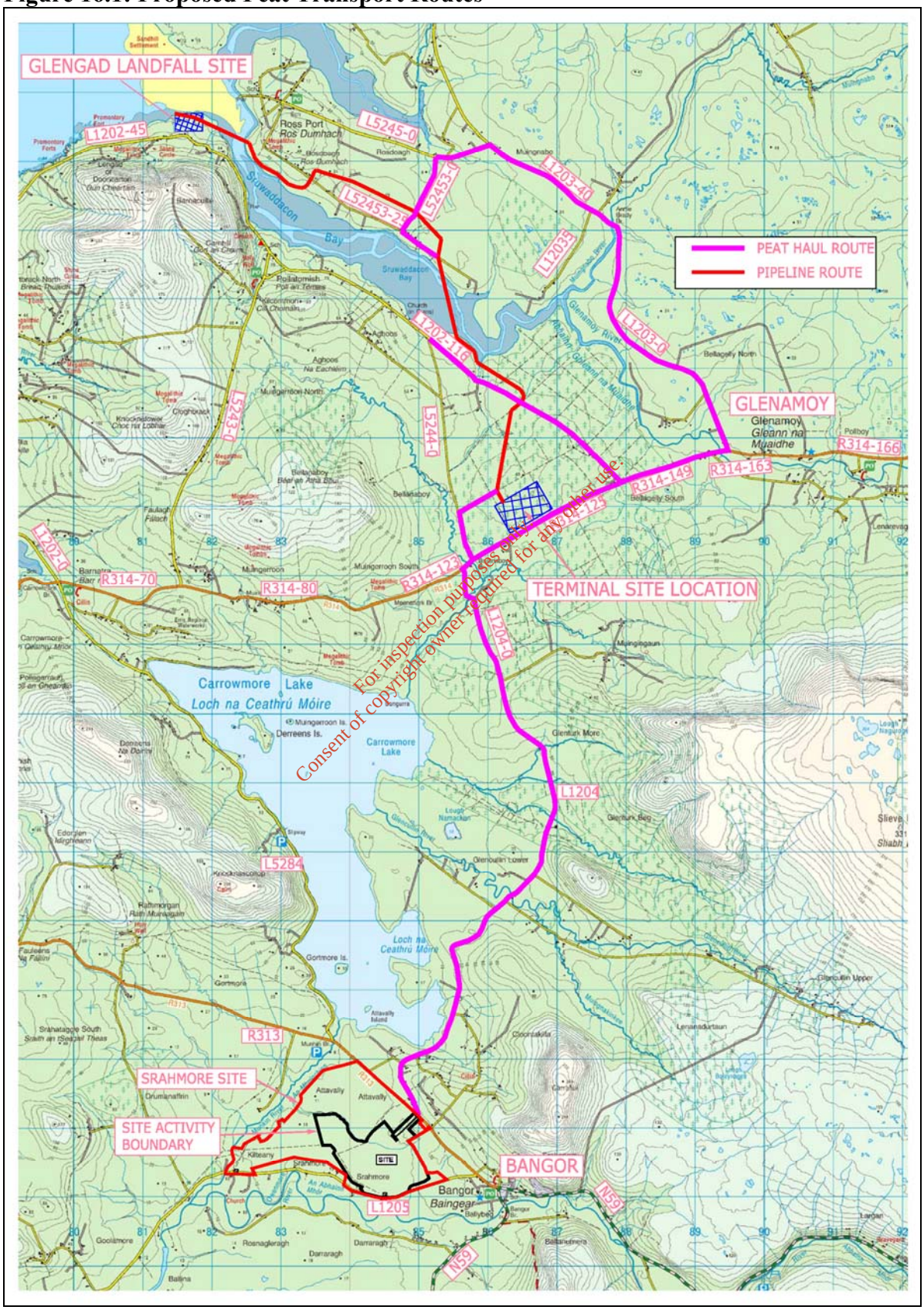
Figure 16.1: Proposed Peat Transport Routes



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16.3.2 Methodology

This section considers the following issues:

- Examination of the pavement condition of the existing road network;
- Suitability of the surrounding road network to cater for the traffic generated by the proposed peat deposition operation; and
- Mitigation measures required to allow the development to be constructed in a safe and environmentally sustainable manner, with planned road preventative maintenance and repair works.

16.3.3 Structure of Section

Following this introduction this section is divided into three further sections as follows:

- Existing road and traffic conditions;
- Assessment of proposed development traffic; and
- Mitigation measures.

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16.3.4 Existing Road and Traffic Conditions

The R313 through Baingear (Bangor) is the primary access to the Srahmore Peat Deposition site, and peat will be transported across this road, from the L1204 to the existing access road to An Srath Mór (Srahmore). Further north, the R314 will initially direct and focus these peat loads from the on-shore pipeline working areas served by the L1203 Ros Dumhach (Rossport side) and L1202 (Na hEachú) (Aghoos side) onto the L1204. These four roads are the main haul routes for peat from the on-shore pipeline development, with secondary roads to the working area in Ros Dumhach (Rossport) (L52453-25 , L52453-0 and L5245-0).

16.3.5 Haul Route network

R313 Baingear *(Bangor) /Bun na hAbhna (Bunnahowen)* – This route is a Regional Road of varying width from 6.5m to 4.5m at it narrowest location. The pavement is generally of reasonable condition and both buses and heavy goods vehicles traverse the route frequently. A recent river crossing approximately 3.5km west of Baingear (Bangor), at the junction of the Carrowmore Drive and the R313 has been constructed. At this location the road widens to approximately 6.5m.

A quarry is located between Baingear (Bangor) and *Bun na hAbhna (*Bunnahowen), which

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generates a number of heavy vehicle movements, however, there are no other significant generators of traffic along the route.

R314 Bun na hAbhna (Bunnahowen) / Bellanaboy Bridge – This route known as the Coast Road is a very scenic route connecting Ballina to Béal an Mhuirthead (Belmullet) via the coast through Cill Ala (Killala), and Baile an Chaisil (Ballycastle). The carriageway design on this route varies significantly, with road widths averaging between 5m and 6m.

The route is extensively used as a tourist route and there is an important viewing point located at Mionnán (Minnaun). The horizontal and vertical alignments at the road vary considerably, and while the route does cater for heavy vehicle movements, particularly for vehicles used for tree felling and peat extraction operations, it is not a designated haulage route for bulk materials under the on-shore pipeline and Terminal construction projects, and will not be used for the haulage of peat.

L1204 Ballinaboy to Bangor - The primary haulage route for peat from the on-shore pipeline development to An Srath Mór (Srahmore) is the L1204 to the east of Carrowmore Lake.

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The improvement works carried out in 2005 by Mayo County Council on the L1204, between its junctions with the R313 and R314 comprised of:-

1. A widening of the Haul Route to provide a minimum of 5.5m paved width throughout its length.
2. The removal of visibility deficiencies through a combination of minor horizontal realignments and hedge trimming.
3. The replacement of weak bridge structures at Cluainte Cille (Cloontakilla) and Gleann Toire Beag (Glenturk Beg), and a piped culvert at Cluainte Cille (Cloontakilla).
4. The carrying out of pavement strengthening works over the full extent of the route.

In upgrading the L1204 road, Mayo County Council followed the Department of the Environment and Local Government "Guidelines on the Depth of Overlay to be used on Rural Non National Roads".

The road pavement constructed on the L1204 has an estimated life of 10 years under normal operating conditions. In 2006-2007, Mayo County Council carried out further widening and strengthening works over an 800m central section of the L1204.

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16.3.6 Haul Road Profile

16.3.6.1 R314 (Terminal Entrance) to L1202 Jn. (Béal an Ghoile Theas) (Bellagelly South)

The pavement construction on this section of the R314 is granular material overlying peat. During 2008, the existing pavement along this section of the R314 was strengthened by Mayo County Council. The pavement is generally a minimum of 5.5m and will therefore be sufficient to accommodate the safe two-way movement of HGVs. The strengthening works comprised a regulating macadam course, a 'meshtrack' fabric and a 100mm layer of bituminous surfacing finished with a double pass of surface dressing.

As the existing pavement foundation on this section of the R314 is granular material overlying peat, there is a risk of pavement damage due to the compressible peat subgrade, which is subject to distortion under loading. To mitigate any dame to the pavement that may occur during both the Landfill Value Installation works and on-shore pipeline works, arrangements will be put in place so Mayo County Council will be available to repair and maintained the pavement to an acceptable standard.

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16.3.6.2 L1202 (Gleann an Ghad)(Glengad – Na hEachú) (Aghoos access)

The L1202 has been strengthened and widened where possible and a weak culvert structure at Na hEachú Theas (Aghoos South) has been replaced.

The L1202 can broadly be divided into two areas:
(a) Sections of road that have a width of less than 5.5m.
(b) Sections of road that have a width of not less than 5.5m.

(a) Sections of road that have a width of less than 5.5m.

This results in places where there is insufficient width along the L1202 for two HGVs to pass. In order to manage this situation, it has been possible to provide pause points. (section of road where width is available where one vehicle can stop to allow an oncoming vehicle to safely pass), separated by adequate sight distance, where a priority rule in favour of the loaded vehicle will apply. These areas are identified by chainage references below. Also, during busy periods, the vehicles are moved in batches of up to 5 vehicles operating in a convoy manner through the area of limited width. This approach was successfully adopted in 2008 during the initial Landfall Works.

(b) Sections of road that have a width of not less than 5.5m

These are sections of road where there is sufficient width for two HGVs to pass each other, which is a desirable situation. In general, where passing is possible, the pavement has been improved and has resulted in an overall betterment of the situation, which aids the management of traffic on the road.

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The Traffic Management Plan is included in Appendix 16.1, which includes drawings detailing the locations addressed below. This provides details of the improvement works along the L1202. As of December 2008, Mayo County Council were on site widening and/or strengthening of the L1202 between the Junction with the R314 at Béal an Ghoile Theas (Bellagelly South) and the access to the Landfall site at Gleann an Ghad(Glengad).

From the junction with the R314 to chainage E4+875, (approximately 400m south of Aghoos Church) the L1202 has been widened to a minimum 5.5m carriageway width and strengthened. There is also realignment works substantially complete that will remove the sub-standard horizontal and vertical alignment at chainage E3+700. This will provide good access to the onshore pipeline works either side of Road Crossing RDX4 and the access to the launch pit and pipe stringing area for the upper marine crossing of Sruwaddacon Bay at chainage E4+000.

Road improvements works are also substantially complete between chainage E5 and Gleann an Ghad (Glengad) Landfall access. The improvement works comprised widening of the existing carriageway where width was available between road boundaries or where additional lands were available. Strengthening of the pavement is also complete or substantially complete, along the majority of the route.

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Chainage E4+875 to E5+275 – Strengthening works were carried out along this section of road with its width generally 4.0 to 4.3 metres. A passing bay is substantially constructed near chainage E5 that would ensure the safe passage of two HGV's. There is good forward visibility either side of this section of road where motorists can see ahead and can either wait at the wide section or at the passing bay to allow other vehicles to pass.

Chainage E5+275 to E5+480 – (adjacent to Aghoos Church) strengthening and widening works to a minimum 5.5m carriageway width are substantially complete.

Chainage E5+480 to E5+580 – This short section of road could not be widened due to land constraints . Clear visibility is available either side of this narrow section of road from the higher eye height of a lorry driver cabin seating position where they can see ahead and wait at the wider section to allow oncoming vehicles to pass.

Chainage E5+580 to E5+980 – Strengthening and widening works to a minimum 5.5m carriageway width are complete.

Chainage E5+980 to E6+625 – Strengthening and widening works to a minimum 4.8 to 5.5 metres carriageway width, allowing safe two-way movement of a HGV and a light vehicle, are substantially complete.

Chainage E6+625 to E7+090 – Strengthening and widening works to a minimum 5.5m

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carriageway width are complete.

Chainage E7+090 to E7+465 – (adjacent to Pollatomish National School) Existing carriageway is generally 4.8 to 5.5 metres width passing the school, allowing safe two-way movement of a HGV and a light vehicle. Surfacing works are planned at this location.

Chainage E7+465 to E7+865 – Strengthening and widening works to a minimum 5.5m carriageway width are complete.

Chainage E7+865 to E8+075 – Existing carriageway is generally 4.8 to 5.5 metres width, allowing safe two-way movement of a HGV and a light vehicle, improvement works are substantially complete..

Chainage E8+075 to E9+555 – Strengthening works was carried out along this section of road with its width generally 4.0 to 4.8 metres and are substantially complete.

Between chainage E7+900 and the Landfall Site Entrance a specific Traffic Management regime will be implemented to control the movement of traffic along the narrow road as discussed in section 5.2.1

The L1202 pavement will be monitored during the remainder of the Landfall /Pipeline Pull-in Works and for the duration of the Onshore Pipeline works and damaged pavement will be repaired by Mayo County Council as necessary.

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16.3.6.3 L1203 (Ros Dumhach) (Rossport access)

The L1203 as far as chainage F8, north of Annie Bradys' Bridge has already been upgraded by the Council in recent years, and is suitable for the two-way movement of HGV's in its present condition. The L1203 pavement will be monitored for the duration of the Onshore Pipeline works and damaged pavement will be repaired by Mayo County Council as necessary.

16.3.6.4 L52453 - Ros Dumhach (Rossport)

The L52453-0 is formed on peat deposits, it is narrow (no greater than 3.0m) and it is of poor pavement quality. It is proposed to strengthen the existing pavement and replace existing culverts (if necessary) before the Onshore pipeline works intensifies. It is also proposed to monitor the pavement for the duration of the Onshore Pipeline works and damaged pavement will be repaired by Mayo County Council as necessary. A specific Traffic Management regime will be implemented to control the movement of traffic along the narrow road.

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16.3.6.5 L52453-25 - Ros Dumhach (Rossport)

The L52453-25 between the L52453-0 and Ros Dumhach (Rossport) is formed on mineral deposits. It is narrow (no greater than 3.0m) and it is of poor pavement quality. It is proposed to strengthen the existing pavement and replace existing culverts (if necessary) before the on-shore pipeline works intensifies. It is also proposed to monitor the pavement for the duration of the on-shore Pipeline works and damaged pavement will be repaired by Mayo County Council as necessary. A specific Traffic Management regime will be implemented to control the movement of traffic along the narrow road. A temporary easement will be required at the junction of the L52453-0 with the L52453-25 (at chainage F10), to facilitate necessary junction widening to ensure HGV's can manoeuvre safely around the junction.

16.3.6.6 Traffic Surveys

In August and September 2007, the following traffic surveys, summarised in Table 16.1 were undertaken within the study area, as part of their preparatory work for the On-shore Pipeline development (Volume 1 & 2 of the EIS). The locations of the surveys are shown in Figure 16.2.

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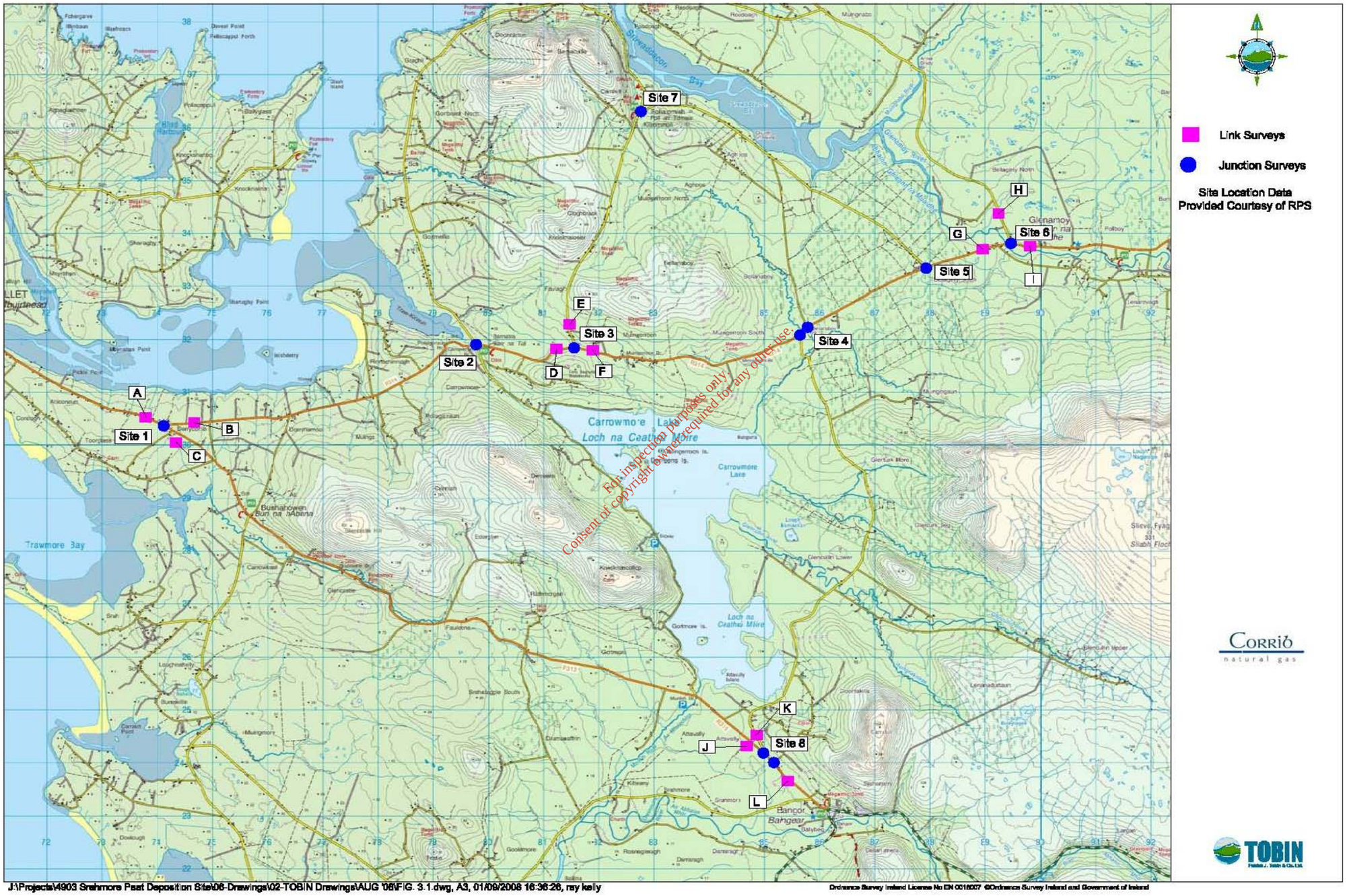

Figure 16.2: Traffic Survey Locations

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Table 16.1: Location and Type of Junction Surveyed

Location	Survey Type	Site Reference Number from Figure 16.2
R313/314	12 Hour Manual Classified Turning Count and Three 7 Day Link Flow Surveys	1
Cross roads with the R314, the County Road to An tInbhear Inver and the L5284	12 Hour Manual Classified Turning Count	2
R314 with County Road to Poll an tSómais (Pollathomais)	12 Hour Manual Classified Turning Count and Three 7 Day Link Flow Surveys	3
Cross Roads with the R314 and the L1204	12 Hour Manual Classified Turning Count	4
R314 with County Road L1202	12 Hour Manual Classified Turning Count	5
R314 with county road towards Ros Dumhach (Rossport)	12 Hour Manual Classified Turning Count and Three 7 Day Link Flow Surveys	6
Poll an tSómais (Pollathomais)	12 Hour Manual Classified Turning Count	7
R313 with County road L1204	12 Hour Manual Classified Turning Count and Three 7 Day Link Flow Surveys	8

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These surveys were carried out over a week long period, as preparatory work for the on-shore pipeline development (Volume 1 & 2 of the EIS) on two occasions in the latter half of 2007. The first was in the period August 8th to 14th inclusive, representative of conditions in the tourist season, but with schools closed, and the counts were repeated in a second week from September 17th to 23rd inclusive, when schools were open and tourism-related traffic had declined.

16.3.6.6.1 Manual Classified Junction Turning Counts

Junction Turning Counts were undertaken for a 12 hour period on two separate occasions, Wednesday 8th August 2007 and Wednesday 19th September 2007, for each of the eight survey sites shown in Figure 16.2. This data was assessed in terms of total through movements, the primary through movement, the % count of HGV traffic for the full 12 hour period, as well as morning peak flows, afternoon peak flows and off peak traffic flows.

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16.3.6.6.2 Peak Hour Traffic Flows

The existing daily traffic flow profiles for the road network surrounding the proposed site were analysed to identify the periods of peak traffic flow at all junctions as summarised below.

- The weekday morning peak hour period was identified as 09:00 – 10:00 hours for both survey periods.
- The weekday afternoon peak hour period was identified as 17:00 – 18:00 hours and 18:00 – 19:00 hours for the August and September Survey periods respectively.
- The weekday inter peak for both survey periods was also found to be 14:00 – 15:00.
- The turning movements for all the eight sites are contained in Appendix F of the Traffic Impact Assessment Report of the Environmental Impact Statement for the on-shore pipeline development (Volume 2 of the EIS).

16.3.6.6.3 Site 1 (Junction of R313 and R314)

The August survey showed that the primary through movement at Site 1 over the 12-hour period was the straight through movement from the R313 southeast to the R313 northwest towards Béal an Mhuirthead (Belmullet) and this was the primary movement over all the time periods. The total movements through this junction over the 12-hour period was 3,699 vehicles with 6.5% comprising of HGVs.

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The September survey showed that the primary through movement at Site 1 over the 12-hour period was again the straight through movement from the R313 southeast to the R313 northwest towards Béal an Mhuirthead (Belmullet) and this was again the primary movement over all the time periods. The total movements through this junction over the 12-hour period was 3,230 vehicles with 7.5% of the count arising from HGVs.

16.3.6.6.4 Site 2 (Crossroads of R314 with L1202 and the L5284 toward Carramore Lake)

The August survey showed that the primary through movement at Site 2 over the 12 hour period was the straight through movement from the R314 west to the R314 east and this was the primary movement over all the time periods. The total movements through this junction over the 12 hour period was 1,865 vehicles with 5.6% HGVs.

The September survey showed that the primary through movement at Site 2 over the 12-hour period was the straight through movement from the R314 west to the R314 east but the primary movement during the peak periods was the straight through movement from the R314 East to the R314 West. The total movements through this junction over the 12 hour

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period was 1,764 vehicles with 5.5% of the count arising from HGVs.

16.3.6.6.5 Site 3 (Junction of the R314 and the L5243 northwards to Na hEachú) (Aghoos)

The August survey showed that the primary through movement at Site 3 over the 12-hour period was the east-west movement from the R314 east to the R314 west. This was the primary movement for the off peak time periods but for the morning and afternoon peaks the primary movements were from the R314 west to the R314 east. The total movements through this junction over the 12-hour period was 1,051 vehicles with 3.8% accounted for by HGVs.

The primary through movement at Site 3 over the 12-hour period in the September survey was again the east-west movement from the R314 east to the R314 west and this was the primary movement over all the time periods. The total movements through this junction over the 12-hour period in the September survey was 1,038 vehicles with 7.1% accounted for by HGVs.

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16.3.6.6.6 Site 4 (Compound Junction of R314, the L1204 towards Bangor, and the L5244 to Poll an tSómais) (Pollathomais)

The August survey showed that the primary through movement at Site 4 over the 12-hour period was again the straight through east-west movement from the R314 east to the R314 west. This was the primary movement for the morning peak and the off peak periods but for the afternoon peak time period the primary movement was from the R314 west to the R314 east. The total movements through this junction over the 12-hour period were 1,311 vehicles with 7.9% accounted for by HGVs.

16.3.6.6.7 Site 5 (Junction of the R314 and the L1202 to Poll an tSómais) (Pollathomais)

The August survey showed that the primary through movement at Site 5 over the 12-hour period was the straight through movement from the R314 east to the R314 west. This was the primary movement for the morning peak and the off peak periods but for the afternoon peak time period the primary movement was from the R314 west to the R314 east. The total movements through this junction over the 12-hour period were 1,037 vehicles with 5% accounted for by HGVs.

The September survey showed that the primary through movement at Site 5 over the 12-hour period was again the straight through movement from the R314 west to the R314 east. This was the primary movement for the afternoon peak and the off peak periods but for the morning peak time period the primary movement was from the R314 east to the R314 west.

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The total movements through this junction over the 12-hour period was 970 vehicles with 5.4% accounted for by HGVs.

16.3.6.6.8 Site 6 (Junction of the R314 and the L1203 to Moing na Bó)(Muingnabo)

The August survey showed that the primary through movement at Site 6 over the 12-hour period was the straight through movement from the R314 west to the R314 east. This was the primary movement for the afternoon peak and the off peak periods but for the morning peak time period the primary movement was from the R314 east to the R314 west. The total movements through this junction over the 12-hour period were 1,203 vehicles with 5.6% accounted for by HGVs.

The September survey showed that the primary through movement at Site 6 over the 12-hour period was again the straight through movement from the R314 west to the R314 east and this was the primary movement over all the time periods. The total movements through this junction over the 12-hour period in September were 1,047 vehicles with 5.7% accounted for by HGVs.

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16.3.6.6.9 Site 7 (Junction of L5243 and L1202 at Poll an tSómais)(Pollathomais)

The August survey showed that the primary through movement at Site 7 over the 12-hour period was the left turn from the L5243 towards the L1202 west. This was the primary movement over all the time periods and this movement had a high percentage of HGV movements also. The total movements through this junction over the 12-hour period were 301 vehicles with 8.9% accounted for by HGVs.

The September survey showed that the primary through movement at Site 7 over the 12-hour period was the straight through movement from the L1202 west to the L1202 east. This was the primary movement for the morning and off peak movements but the primary movements for the afternoon were from the L1202 east to the L1202 west. The total movements through this junction over the 12-hour period were 220 vehicles with 4.5% accounted for by HGVs.

16.3.6.6.10 Site 8 (Junction near Bord na Móna Srahmore Site of the R313 with the L1204 towards Gleann Chuillin Íochtarach)_(Glencullin Lower)

The August survey showed that the primary through movement at Site 8 over the 12-hour period was the straight through movement from the R313 west to the R313 east towards Baingear (Bangor). This was the primary movement for the morning peak and the off peak periods but for the afternoon peak time period the primary movement was in the opposite

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direction from the R313 east to the R313 west towards Béal an Mhuirthead (Belmullet). The total movements through this junction over the 12-hour period were 2,471 vehicles with 9.5% accounted for by HGVs.

The September survey showed that the primary through movement at Site 8 over the 12-hour period was again the straight through movement from the R313 west to the R313 east towards Baingear (Bangor). This was the primary movement for the morning peak and the off peak periods but for the afternoon peak time period the primary movement was again in the opposite direction from the R313 east to the R313 west towards Béal an Mhuirthead (Belmullet). The total movements through this junction over the 12-hour period was 2,334 vehicles with 11.5% accounted for by HGVs.

16.3.6.6.11 Existing Annual Average Daily Traffic (AADTs) on the Road Network

The AADTs on the road network were calculated by the surveyors using the 12-hour link flows over the two 7 day periods. The link flow data was then converted to AADT using the appropriate expansion factors from Expansion Factors for Short Period Traffic Counts 1978 by J Devlin. Table 16.2 gives a summary of the results. The AADTs for the study area at 2007 are also shown in Figure 16.3. RPS Group extended the 2007 AADTs to project the corresponding figures for 2010 as a baseline for impact assessment of on-shore pipeline related traffic, and these are shown on Figure 16.4.

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LEGEND:

R313 Road Numbers

4244 2007 AADTs

9.6% HGVs

AADT = ANNUAL AVERAGE DAILY TRAFFIC

Road Network & 2007 AADTs

Figure 16.3

File Ref: COR25MDR0470TR3002-T A02
Date: February 2009

CORRIB ONSHORE PIPELINE

Corrib natural gas

TOBIN
Patrick J. Tobin & Co. Ltd.

Figure 16.3: AADTs at 2007

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Figure 16.4: AADTs at 2010

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Table 16.2: Existing AADT within the Study Area (2007)

Reference Number from Figure 16.2	Location Description	August Surveys		September Surveys		AADT Estimate
		Average Weekday Flows	HGV %	Average Weekday Flows	HGV %	
Site 1, Link A	Northwest side of the R313 at the junction with the R313 and R314	3,840	6.47	3,377	7.5	3,624
Site 1, Link B	R314 east of the junction with the R313	1,379	3.52	1,265	3.05	1,324
Site 1, Link C	Southeast side of the R313 at the junction with the R313 and R314	2,557	8.01	2,177	10.16	2,382
Site 3, Link D	West side of the R314 at the junction with the L5243 and R314	1,058	3.86	940	6.9	993
Site 3, Link E	L5243 north of the junction with the R314	268	4.21	370	5.82	310
Site 3, Link F	East side of the R314 at the junction with the L5243 and R314	845	3.69	813	7.75	820
Site 6, Link G	West side of the R314 at the junction with the L1203 and R314	995	5.6	897	5.96	944
Site 6, Link H	L1203 north of the junction with the R314	708	6.87	622	5.22	665
Site 6, Link I	East side of the R314 at the junction with the L1203 and R314	745	4.44	674	6.01	709
Site 8, Link J	West side of the R313 at the junction with the L1204 and R313	1,881	9.47	1,602	9.47	1,750
Site 8, Link K	L1204 north of the junction with the R313	697	7.65	808	17.79	745
Site 8, Link L	East side of the R313 at the junction with the L1203 and R313	2,560	9.6	2,348	10.97	2,457
Site 2, L1202*	L1202 north of the junction with the R314 and the L5284	788	5.2	635	4.7	703
Site 4, L5244*	L5244 north of the junction with R314	295	2.4	NA	NA	319
Site 5, L1202*	L1202 north of the junction with the R314	235	6.0	243	5.4	233
Site 7, L1202 Westbound*	West side of the L1202 at the junction with the L1202 and the L5243	261	8.8	NA	NA	282

***Based on one day 12 hour counts undertaken in August and September NA= Not Available due to technical complications**

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The traffic flows show the highest movements on the R313 near Béal an Mhuirthead (Belmullet). The traffic flows generally do not exceed an average weekday flow of 1,000 vehicles throughout the majority of the road network. The average weekday flows exceed 1,000 vehicles on the regional roads. These regional roads are a higher standard of road compared to local roads and are capable of catering for this traffic volume.

Table 16.3 below summarises the traffic information from the 2007 link flow surveys.

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Location			Survey Periods		Time Period of Maximum	Flows Range
Site	Description	Link	Description			
1	**Junction of R313 and R314**	A	Belmullet side	August	16:00-17:00, Tuesday 14th	300-450
				September	18:00-19:00, Sunday 23rd	250-400
1		B	R314 side	August	14:00-15:00, Saturday 11th	100-200
				September	15:00-16:00, Friday 21st	80-140
1		C	Baingear (Bangor) side	August	16:00-17:00, Friday 10th	200-300
				September	18:00-19:00, Sunday 23rd	150-250
3	**Junction of the R314 and the L5243 northwards**	D	Béal an Mhuirthead Belmullet	August	15:00-16:00, Monday 13th	75-150
				September	15:00-16:00, Friday 21st	60-120
3		E	Poll an tSómais (Pollathomais)	August	14:00-15:00, Monday 13th	20-40
				September	12:00-13:00, Saturday 22nd	15-30
3		F	Terminal	August	17:00-18:00, Friday 10th	60-100
				September	15:00-16:00, Friday 21st	50-100
6	**Junction of the R314 and the L1203 to Moing**	G	Terminal Entrance side of	August	17:00-18:00, Wednesday 8th	60-120
				September	18:00-19:00, Tuesday 18th	60-100
6		H	L1203 side	August	13:00-14:00, Saturday 11th	40-100
				September	18:00-19:00, Monday 17th	40-90
6		I	Gleann na Muaidhe Glenamoy	August	12:00-13:00, Friday 10th	40-85
				September	12:00-13:00, Saturday 22nd	40-80
8	**Junction near the Bord na Móna Srahmore site**	J	Belmullet link	August	16:00-17:00, Tuesday 14th	150-200
				September	18:00-19:00, Sunday 23rd	100-150
8		K	L1204 link	August	18:00-19:00, Tuesday 14th	35-80
				September	18:00-19:00, Friday 21st	40-100
8		L	Bangor link	August	18:00-19:00, Tuesday 14th	150-250
				September	18:0019:00, Friday 21st	150-250

Table 16.3: 7 Day Profile Summary

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Traffic flows associated with peat transportation are included within overall traffic movements associated with other elements of the project, as follows:-

(a) Traffic flows arising from construction of the On-shore Pipeline, including road preventative maintenance and repair works.
(b) Traffic related to the workforce on the on-shore pipeline development.
(c) Residual traffic flows to the Terminal Site.

These movements are summarised in Table 16.4.

Table No. 16.4 shows the projected profile of combined project traffic for 2010. It shows that HGV traffic will range between 20 and 259 vehicle deliveries per day, over the duration of the works. Traffic associated with personnel employed on the construction work, will vary between 213 and 331 vehicle round trips per day approximately.

These HGV traffic volumes are well within those experienced previously with the peat haulage operation, and will be manageable with residential traffic in the area, given the same attention to safety and organisation as was previously put in place for the peat haulage operation from the Terminal Site.

The majority of private vehicle movements associated with the workforce will be concentrated at the start and end of the working day and will not be coincident with the peak HGV movements. Parking facilities off the public road will also be provided and car sharing will be encouraged to the greatest practical extent.

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Table 16.4: Projected On-shore Pipeline HGV Deliveries and Personnel Traffic Round Trips

	Month											
Commercial Vehicles	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Monthly Total Onshore Pipeline	3426	3260	1447	5648	4657	2281	1167	403	277	2202	2045	1673
of which Peat Haulage to Srahmore				*2230*	*2240*	*2220*	*860*					
(i.e. included in Total Onshore Traffic above)												
Srahmore Enabling Works			1389									
Monthly Total Terminal Traffic	160	160	160	160	160	160	160	160	160	160	160	160
Monthly Total Mayo County Council Haul Road improvement works	206	206	206	20	20	20	20	20	20	20	20	20
Combined Monthly Total	3792	3626	3202	5828	4837	2461	1347	583	457	2382	2225	1853
Average Daily Total	**169**	**161**	**142**	**259**	**215**	**109**	**60**	**26**	**20**	**106**	**99**	**82**
Personnel Vehicles												
Monthly Total Onshore Pipeline Workforce	2615	2965	3350	3800	3800	3800	4050	3100	3100	3100	2115	1845
Monthly Total Terminal Workforce	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950	2950
Monthly Total Mayo County Council Staff	110	110	110									
BnM Srahmore workforce		*300*	*300*	*450*	*450*	450	450	200				
Combined Monthly Total	5675	6325	6710	7200	7200	7200	7450	6250	6050	6050	5065	4795
Average Daily Total	**252**	**281**	**298**	**320**	**320**	**320**	**331**	**278**	**269**	**269**	**225**	**213**

Note: Average daily figures rounded to nearest integer.

This table takes account of all on-shore pipeline traffic as outlined in the TMP included in Appendix 16.1 herein together with Srahmore traffic associated with material imports and workforce movements. This table also takes account that stone delivery lorries will be back loaded with peat and transported to the Peat Deposition Area, to reduce the total HGV movement associated with the project and ultimately reduce the impact on the local area.

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16.3.7 Prediction of Impacts at Traffic Survey Sites

Prediction of traffic impact at each of the eight sites at which traffic count surveys were carried out is complicated by the following factors:

(a) It is not possible to say with certainty where bulk materials such as stone, rock, etc will be sourced, or where construction personnel will reside, and therefore by what route they will arrive in the working area. The stone will be sourced from local providers, and

(b) The August and September 2007 counts already include some HGV construction traffic to the Terminal at that time. Our approach of adding projected HGV traffic, to counts which already include some HGV traffic which will have ceased, will therefore tend to overestimate impact of work associated with the pipeline and terminal.

It has been assumed that the workforce broadly breaks down into one third each from the Béal an Mhuirthead (Belmullet), Baingear (Bangor) and Gleann na Muaidhe (Glenamoy) approaches to the working area. In order to generate robust traffic figures there has been no reduction in personnel vehicle numbers to allow for shared trips, which on this situation is likely to occur.

With due regard to these constraints and assumptions, the following comments can be made with respect to traffic during the peak month of construction of the on-shore pipeline, when peat transportation will share the haul routes with other construction traffic.

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16.3.7.1 Site 1 (Junction of R313 and R314)

The project related traffic at Site 1 will arise from journeys to and from work of that fraction of the construction personnel who will be based at Béal an Mhuirthead (Belmullet). Journeys of HGVs drawing stone, rock and concrete from local suppliers will be routed towards Baingear (Bangor) and the L1204. Stone hauled to the Bord na Móna Site at An Srath Mór (Srahmore), if drawn from a quarry in the Béal an Mhuirthead (Belmullet) area will not impact on traffic at Site 1.

16.3.7.2 Site 2 (Crossroads of R314 with L1202 and the L5284 toward Carramore Lake)

The impact of construction traffic at Site 2 will be generated by those personnel travelling to and from work who will base themselves in the Béal an Mhuirthead (Belmullet) area, and any haulage of bulk materials from local suppliers or of peat towards An Srath Mór (Srahmore) will not impact upon traffic at Site No. 2, because it is not on a designated haulage route to An Srath Mór (Srahmore).

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16.3.7.3 Site 3 (Junction of the R314 and the L5243 northwards to Na hEachú) (Aghoos)

Since the L5243 is not a designated haul route, other than in unusual circumstances where traffic is directed to use it by Gardaí or the roads authority, the traffic impact here will be similar to that at Site 2, with personnel travelling to and from work from the Béal an Mhuirthead (Belmullet) area impacting on the east-west component of traffic on the R314 at this location. This will tend to keep the percentage of HGVs at or below its projected background level in 2010.

16.3.7.4 Site 4 (Compound Junction of R314, the L1204 towards Bangor, and the L5244 to Poll an tSómais) (Pollathomais)

The farfield haulage of construction material from the port of Dublin and from Killybegs will arrive via the L1204 from Baingear (Bangor), as will any quarried rock or stone or concrete products intended for the pipeline and sourced from local quarries, using the R313 and L1204. The construction personnel based in the Baingear (Bangor)- Béal Átha Liag (Bellacorick) area will also travel to and from work via this route. Consequently it would be expected that HGV traffic at this location would increase by the same extent as that projected for Site 5 below.

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16.3.7.5 Site 5 (Junction of the R314 and the L1202 to Poll an tSómais)(Pollathomais)

All pipeline related traffic via the L1204 from Baingear (Bangor), and the R314 west from Béal an Mhuirthead (Belmullet), previously described under Site 4, will continue onwards to Site 5. Any Terminal related traffic will enter the Terminal Site between these two junctions. At Site 5, the onward journey depends on whether the materials are bound for the Ros Dumhach (Rossport) side of the pipeline operations, in which case they continue to Site 6, or the Gleann an Ghad (Glengad)/A Na hEachú(Aghoos) side, in which case the traffic will turn onto the L1202 at Site 5.

Consequently, it is expected that construction related workforce and HGV delivery traffic will peak during peat deposition activity (i.e. Month 4).

It has been assumed that one third of the personnel will originate from each of the Béal an Mhuirthead (Belmullet), Baingear (Bangor) and Gleann na Muaidhe (Glenamoy) approaches to the area. All HGV traffic approaches and leaves the area via the L1204.

The morning peak associated with construction personnel would be likely to be earlier than peak traffic at present. Personnel traffic would also divide at this junction (Site 5), depending on its origin and on whether the workers concerned were deployed on the Ros Dumhach (Rossport) or Gleann an Ghad (Glengad) working areas.

The west link from Site 5 will have an assumed two thirds of the pipeline workforce, plus one third

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of the Terminal workforce travelling to and from the Gleann na Muaidhe (Glenamoy) side.

At peak, HGV and personnel traffic between the L1204 and Site 5 would increase overall traffic from 859 to 1,675 movements per day, and HGV traffic would amount to 36.64% of all traffic during the month of peak activity on the pipeline, declining to a lesser percentage at other times.

16.3.7.6 Site 6 (Junction of the R314 and the L1203 to Moing na Bó)(Muingnabo)

All traffic via the L1204 from Baingear (Bangor), and the R314 west from Béal an Mhuirthead (Belmullet), and any materials hauled eastwards along the R314, and which is destined for the Ros Dumhach (Rossport) side of the pipeline operations, will arrive at Site 6. At this point, it will turn onto the L1203.

Consequently it would be expected that HGV traffic turning onto the L1203 at this location would increase by an estimated 194 deliveries per day, at peak. Personnel traffic would increase by approximately 133 round trips per day at peak, but again the morning peak from construction personnel would be likely to be earlier than peak traffic at present. Personnel traffic from the Gleann na Muaidhe (Glenamoy) area would also divide at this junction, depending on whether the workers concerned were deployed on the Ros Dumhach (Rossport) or Gleann an Ghad (Glengad) working areas. Personnel arriving at this junction from the Gleann na Muaidhe (Glenamoy) side are assumed to be one third of overall project construction personnel.

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HGV traffic between Sites 5 and 6, during the peak month, would increase to 17.37% of all traffic, and on the L1203, this percentage would rise to 23.11% in the peak month.

16.3.7.7 Site 7 (Junction of L5243 and L1202 at Poll an tSómais) (Pollathomais)

Peat transportation will not impact on traffic counts at Site 7.

16.3.7.8 Site 8 (Junction near Baingear (Bangor) of the R313 with the L1204 towards Gleann Chuillin Íochtarach) (Glencullin Lower)

Since Site 8 is at the Bangor end of the L1204 near the entrance to the Srahmore deposition site, all of the haulage from the ports of Dublin and Killybegs will arrive at Site 8, and will turn onto the L1204 there, as will any quarried rock or stone or concrete products sourced from local quarries using the R313 and L1204. The construction personnel based in the Baingear (Bangor)- Béal Átha Liag (Bellacorick) area will also travel to and from work via this route through Site 8.

Consequently it would be expected that HGV traffic at this location would increase by an estimated 198 deliveries per day, at peak on the L1204 link. Personnel traffic would increase by

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approximately 13 round trips per day at peak, but the morning peak associated with construction personnel would be likely to be earlier than peak traffic at present.

The total construction HGV traffic at Junction 8 includes peat removed offsite for deposition at An Srath Mór (Srahmore). Accordingly, there will be peat haulage crossing the R314, estimated at 100 deliveries per day over the deposition activities. Variations in estimated deliveries could arise in the event of weather conditions or requirements of the traffic management controls.

16.3.7.9 Summary

The projected impacts are shown in Table No. 16.5.

Impacts at Sites 1, 2 and 3 will be small compared to existing traffic at these sites, and compared to volumes of traffic which have been managed through these junctions at earlier stages in the project, including the earlier peat haulage and Terminal construction stages.

Impacts on Sites 4 and 8 will be significant but within limits already managed along the R314, L1204 and R313 earlier in the project.

The turning traffic onto the L1202 and L1203 from Sites 5 and 6 respectively, will be significantly larger than traffic currently experienced on these links at these junctions. Traffic control, in terms of driver control and additional signage at junctions are outlined in the Traffic Management Plan (Appendix 16.1, Book 3) and implementation of these measures will be agreed with the Gardaí and roads authority.

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Traffic movement at Site 7 will increase, compared to current low traffic counts. However, the increase of HGVs will be of relatively short duration, and will be mitigated by the traffic control measures outlined in the TMP.

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Table 16.5: Estimated Impact on 2010 AADT's of Peak Month Construction Activity

Site No		2010 background AADT			Peak Daily Addition		Est. Works Conditions AADT		
		AADT	% HGV	HGV	Personnel	HGV	AADT	% HGV	HGV
1	A	3806	7.0%	266	214		4020	6.62%	266
	B	1390	3.3%	45	214		1604	2.81%	45
	C	2501	9.1%	228			2501	9.1%	228
3	D	1043	5.4%	56	214		1257	4.46%	56
	E	325	5.0%	16			325	4.92%	16
	F	861	5.7%	49	214		1075	4.56%	49
5	R314 west link	859	5.0%	43	312	504	1675	32.64%	547
	R314 east link	991	5.8%	58	245	190	1426	17.37%	248
	L1202 link	244	5.7%	14	204	307	756	42.51%	321
6	G (R314 west link)	991	5.8%	58	245	195	1430	17.7%	253
	H (L1203)	699	6.1%	43	133	195	1027	23.11%	237
	I (R314 east link)	744	5.2%	39	228		971	3.98%	39
7		296	8.8%	26	80	54	430	18.61%	80
8	J (R313 B'mullet link)	1838	9.5%	175	13	198	2050	18.19%	373
	K (L1204)	782	10.3%	81	227	519	1527	39.22%	599
	L(R313 Bangor link)	2580	12.7%	328	227	320	3127	20.72%	648

Note: Traffic associated with Mayo County Council road preventative maintenance and repair works has been included here in addition to direct project related traffic scheduled

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16.3.7.10 Characteristics of the Proposed Development at Srath Mór(Srahmore)

It is estimated that up to 12,000m^3 of construction materials (mainly rock and maintenance material) will be required to develop circulation roads in the deposition facility. The majority of importation of this construction material will take place before any peat is moved from the pipeline site. It is anticipated that this material will be imported from a local quarry. This quantity of material has been included in the analysis of the movement of peat to ensure the worst-case scenario is modelled. An allowance has also been made for loads associated with portcabin importation and geotextile, wheelwash and weighbridge equipment transport.

The peat removal phase will involve the removal of up to 75,000m^3 of peat from the on-shore pipeline development and relocation of same to the peat deposition site. It is envisaged that the peat removal process will take place over a 3 to 4 month period. The process however is weather dependant and may need to take place over a longer period. In order to perform a robust analysis the consultants have assumed the following conservative assumptions:

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- Volume of peat to be moved is 75,000m^3. It is planned to use a fleet of approximately 20 trucks in number to carry out an expected number of 100 deliveries per day over the peat haulage activity (up to a peak 150 deliveries per day for short durations).
- The type of vehicle used for calculation purposes is a conventional rigid 4 axle tipper truck with a capacity of 10m^3. During previous deposition activities vehicles were capable of carrying up 20m^3 of peat. The actual loading of each vehicle during this operation will be dependent on location of the peat source but as of previously it may be up to 20m^3 per load.
- To minimise impact on the local area, stone delivery lorries will be back loaded with peat and transported to the Peat Deposition Area at Srahmore. This reduces the total HGV movements associated with the project.
- Peat will generally be moved from 07.00hrs to 19.00hrs Monday to Friday and 07.00hrs to 16.00hrs on Saturdays (in periods of good weather increased operations may be considered to reduce the haulage operation duration).
- Road preventative maintenance and repair works may be carried out on weekends as and when required.
- Staff involved in placing peat at Srahmore will number approximately 50.

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16.3.7.11 Potential Impact of the Proposed Development

It has been demonstrated that the study area road network can adequately cater for the traffic volumes generated by the proposed development, having regard to HGV volumes already successfully accommodated earlier in the project.

16.3.7.12 Do Nothing Scenario

If the overall development does not proceed, there will be no requirement for use of the Srahmore Peat Deposition Site.

If the on-shore pipeline development proceeds and the peat is not deposited at Srahmore, the peat will require an alternative deposition site. These alternative sites are on the Regional Road network, as outlined in Section 4 of this Volume of the EIS.

16.3.7.13 Mitigation Measures

The public road network will provide access to the temporary working area of the pipeline during the construction phase and for export of excess peat from the pipeline to the Srahmore site.

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To minimise impact on the local area, stone delivery lorries will be back loaded with peat and transported to the Peat Deposition Area at Srahmore. This reduces the total HGV movements associated with the project.

The current road network and the proposed haul roads can cater for the overall construction traffic volumes generated by the proposed development with the implementation of the traffic control measures outlined in the TMP.

Significant improvement and maintenance works on the public road network has been undertaken by Mayo County Council, as outline in Section 16.3.6.

Pavement condition surveys of the proposed haul route have been carried out, which indicate areas where ongoing preventative maintenance and repair works are likely to be required during the pipeline construction and peat deposition phase. Such measures have been discussed with Mayo County Council as part of the pre-application consultation process. The costs of any preventative maintenance and repair works, during the construction phase, will be borne by the developer.

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Whilst it is clear from this traffic assessment, and from previous experience of hauling peat from the terminal site, that the road network and proposed haul routes can cater for the peat loads within the overall simultaneous traffic generated by the project, it is important to minimise the overall affect on the residents and general environment within the study area. With this in mind, a Traffic Management Plan (TMP) has been developed to track the number and types of vehicles arriving/departing from the pipeline construction working areas. This TMP is included in Appendix 16.1 herein. This TMP includes recommendations to control construction traffic and reduce the risk on the public road users, including pedestrian and cyclists.

These recommendations are summarised below and discussed in more detail in the TMP (Appendix 16.1):

- Road signage;
- Communications in media;
- Speed limits and vehicle separation distances;
- Accomodating Local Needs
- Driver training;
- Road inspections;
- Record Keeping;
- Emergency and contingency planning; and
- Regular reviews and updates of plan, in consultation with Local Authority.

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These control measures are considered appropriate to accommodate the construction traffic on the local road network. These measures, including proposed reduction in speed limits, additional road signage and convoy systems on narrow road sections will minimise road impacts and reduce the risk to all road users, including cyclists and pedestrians.

16.3.7.14 Predicted Impacts

The main impact of the HGV traffic will be in the context of impact on other road users and possible impact on the road pavement due to the amount of traffic using the route during the peat deposition phase. However, the road pavement on the L1204 has already been designed and constructed to take HGV loads in excess of those already carried in earlier stages of the work, and those projected over the remaining work on the terminal and on the on-shore pipeline section.

In summary, during the construction phase the volumes of traffic can be catered for on the road network as demonstrated by previous more intense peat haulage operations on the same haul route (L1204). The development at Srahmore will not have any traffic impacts when the peat deposition is complete.

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16.3.7.15 Monitoring

The Traffic Management Plan for the on-shore pipeline (Appendix 16.1 Book 3) outlines extensive controls and monitoring for HGVs on the public road network.

16.3.7.16 Reinstatement and Residual Effects

The scope of preventative maintenance and repair works will be agreed with Mayo County Council, as discussed with the Local Authority. This work will be to the benefit of the general public during and post construction works.

16.3.8 Consumption of Materials within Srahmore Site

16.3.8.1 Introduction

This section considers the use of materials during the enabling and maintenance works at the Srahmore Peat Deposition Site.

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16.3.8.2 Study Methodology

The assessment of material use has been conducted as a desk top study.

16.3.8.3 Characteristics of the Proposed Development

It is proposed to use Bays 1, 2 and 6 (ref. Figure 16.5) to accept the peat loads for deposition at An Srath Mór (Srahmore) (with Bay 7 available if required). An estimated 12,000m^3 of rock and maintenance material will be imported from local quarries to the existing peat reception area, and from there will be transported by trailers along the existing haul roads within the site to the northern edge of Bay 2 (Point A). The rock will be placed on a geotextile layer, to form a 7.5m wide haul road to Point B midway across the width of Bay 2. From there a secondary haul road will run longitudinally westwards along the centreline of Bay 2, to Point C, a distance of 75m from the boundary of the Deposition Bay.

A secondary haul route will be formed by timber mats running east-west and subdividing the areas defined by the rock roads from Points A to B and C. The timber mats are already on site at An Srath Mór (Srahmore) from previous deposition operations. As the peat is deposited and graded in the partitioned sub-sectors of Bay 2, the timber mats are recovered. If the western section of Bay 1 is required, the timber mats will be deployed from Point B to Point D to Point E. Owing to ground conditions within Bay 6, internal circulation will be facilitated by means of timber mat placement directly onto the existing ground.

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In summary the following construction activities will require road / surfacing materials:

- Construction of internal circulation roads from Point A to Point B , and Point B to Point C
- Construction and removal of peat placement timber tracks midway in the bays to each side of the rock road from Point B to Point C, and also from Point B to Point D to Point E
- Maintenance of the tracking surface of the internal circulation roads

Estimated amounts of material required for these construction activities are shown in Table 16.6. The construction materials will be obtained from local quarries.

Table 16.6: Material requirements for Enabling Works / Maintenance

Use	Amount imported rock for enabling works (m^3)	Amount of imported rock for maintenance (m^3)	Amount of imported terram (sq.m)
Internal Circulation Roads	10,000	2,000	20,000

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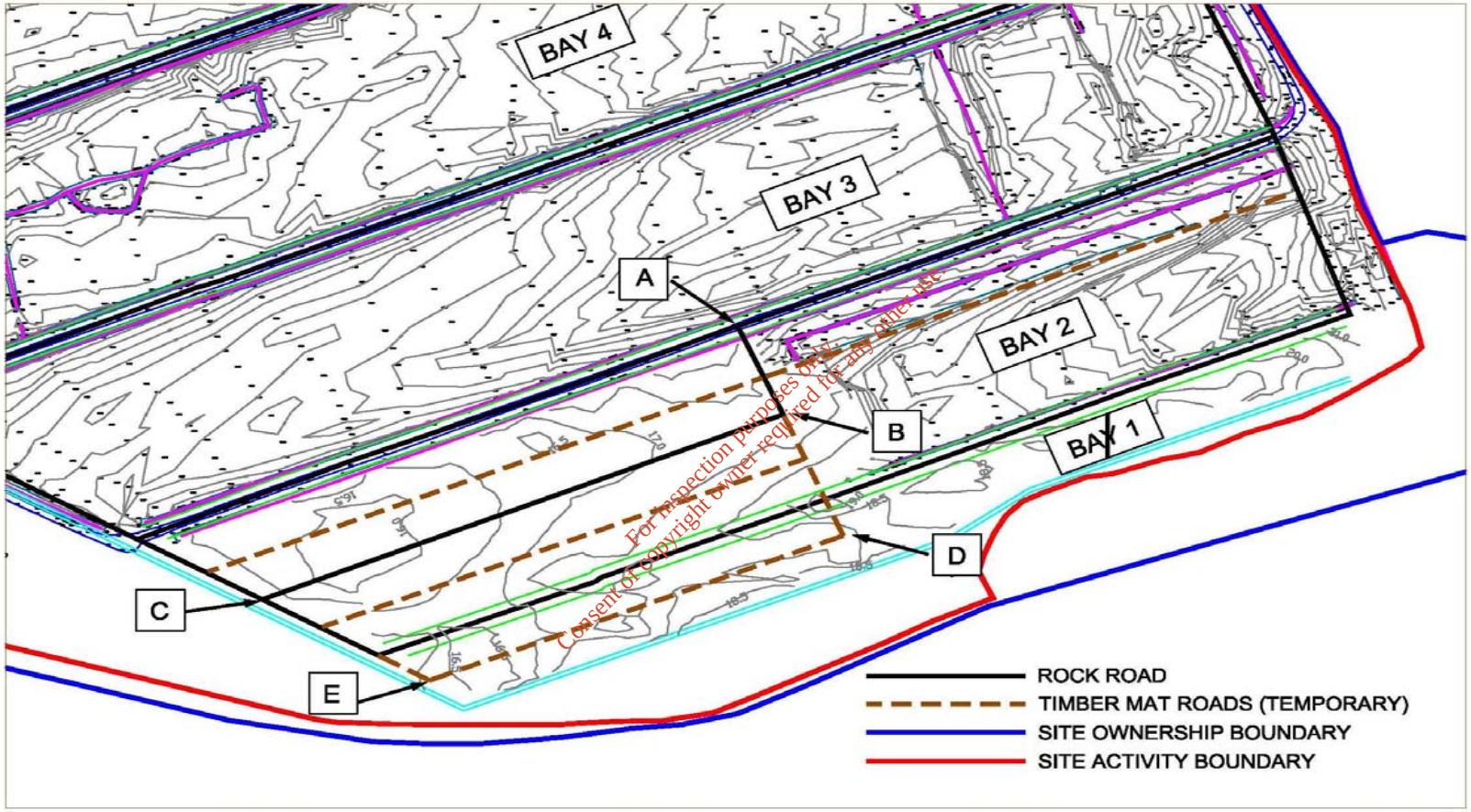

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Figure 16.5: Layout of Temporary Timber and Rock Circulation at Srahmore

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16.3.8.4 Potential Impact of the Proposed Development

The potential impacts of the use of rock materials are possible effects on surface water quality as a result of sediment entrainment to local watercourses.

16.3.8.5 Mitigation Measures

Mitigating measures consist of:

- Minimising the number of internal site roads used in the peat transport;
- All run-off is diverted through existing settlement lagoons to enhance settlement of solids by providing a low energy environment, prior to discharge;
- All discharge from site are monitored in compliance with requirements of the Waste Licence for the site; and
- The Srahmore site manager will plan and co-ordinate internal activities.

16.3.8.6 Predicted Impact of the Proposed Development

The mitigation measures described above address the ways in which the impacts associated with use of circulation road and surfacing construction materials can be reduced. On this basis, together with the existing mitigation measures, the environmental impacts associated with the use of rock material is judged to be insignificant.

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16.3.9 Consumption of potable water

Service and potable water for the peat deposition site will continue to be provided from the existing link to the mains supply running along the R313.

Wheelwash water will be settled and recirculated and no significant environmental impact is anticipated from this activity.

16.3.10 Conclusion

While there is potential for the above impacts to interact and result in a cumulative impact, it is unlikely as a result of the various mitigation measures proposed in the body of this Volume of the EIS that any of these cumulative impacts will result in significant environmental degradation. It is likely that the overall cumulative impact of the development will be positive.

16.3.11 Do Nothing Scenario

If the proposed development did not proceed, there would be no cumulative impacts with other developments.

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16.3.12 Mitigation Measures on impacts on other road users

Impacts associated with the peat haulage to and deposition within Srahmore will be mitigated by:

(a) appointment of a designated traffic manager;
(b) an extensive network of road signage to regulate haulage traffic safely
(c) regular communications by radio, telecoms and the print media to inform the public of the progress of the work
(d) monitoring of feedback from the public on all aspects of the transport operation
(e) maintenance of safe separation distances between vehicles and enforcement of project-specific speed limits on project-related traffic
(f) HGV driver training in accordance with Institute of Advanced Motoring best practice.
(g) regular inspection of watertightness of peat loads in transport and regular mechanical inspection of the vehicles used in the operation
(h) regular sweeping and maintenance of the internal circulation roads and wheelwashing of haulage vehicles before exit onto the public road network.

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The project team will work closely with the managers of other concurrent development projects to pre-empt and resolve any conflicts in terms of use of materials, waste disposal, traffic management etc. The environmental monitoring group for the project will monitor developments on the site to review progress, impacts and other issues arising during the preparation, haulage and deposition phases.

16.3.13 Monitoring

Regular inspections of pavements will take place

16.3.14 Reinstatement and Residual Impacts

The peat, once placed, will be allowed to regenerate the natural vegetative surface, and likewise the internal circulation roads will be permitted to become colonised by mosses and vegetation over time.

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17 IMPACT INTERACTIONS AND CUMULATIVE IMPACTS

17.1 Introduction

Potential impacts of each aspect considered under the scope of the EIA, which culminated in this Volume of the EIS, have been outlined individually in this report. Mitigation measures have been identified and outlined.

However, in any development with the potential for environmental impact there is also potential for interaction between impacts of each environmental aspect. The results of these interactions may either exacerbate the magnitude of the impact or may in fact ameliorate it.

As part of the requirements of an Environmental Impact Statement the interaction of the various environmental criteria and their resultant impacts on the surrounding environment needs to be addressed.

A cumulative impact assessment of the Corrib Gas Field Development, which includes the deposition of peat at Srahmore, has been completed and is provided in Chapter 17 of the Corrib Onshore Pipeline (Volume 1).

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The interaction of environmental factors, with respect to the Srahmore Peat Deposition site are summarised in Table 17.1 below. This table highlights where different aspects of the environmental inter-relate with each other. The table shows how one element of the environment can interact with, or have knock-on effect on, other specialist areas. These interactions and cumulative impacts range from very localised in scale (i.e. internal to the Srahmore site) to regional in scale (i.e. external to the Srahmore site) and range in the level of impact.

All specialists' studies have had regard to the potential for interactions and cumulative impacts in their studies and preparation of reports. Cumulative impacts are discussed in the relevant sections of this Volume of the EIS, however, in the interest of completeness these interactions are presented below.

The following sections summaries the main inter-relationships.

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	EFFECT										
CAUSE	**Human Beings (Socio- Economics)**	**Flora/ Fauna**	**Soils / Geology**	**Hydrogeology**	**Water: Hydrology**	**Air Quality**	**Noise and Vibration**	**Landscape and Visual Impact**	**Climate**	**Archaeological/ Architectural/ Cultural Heritage**	**Traffic**
Human Beings (Socio Economics)		●			●	●	●	●	●	●	●
Flora/Fauna	●		●	●	●			●			
Soils / Geology		●		●	●			●		●	●
Hydrogeology		●	●		●						
Water: Hydrology	●	●	●	●							●
Air quality	●								●		●
Noise & Vibration	●										●
Landscape & Visual Impact	●	●	●								
Climate						●					●
Archaeological/Architectural/ Cultural Heritage	●		●								
Traffic	●		●		●	●	●		●		

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Below the anticipated principal interactions together with mitigation measures have been summarised.

17.2 Assessment of Interactions and Cumulative Impact

17.2.1 Human Beings and Socio-Economic

The operation at the Srahmore Peat Deposition site would occur for a relatively short duration, to allow for the import and deposition of the 75,000m^3 of peat from the on-shore pipeline development.

Overall, the proposed development will have a positive temporary impact on the socio economy of this area. This will take the form of direct and indirect job creation and retention during the peat deposition activity. This positive socio-economic impact is in addition to other elements of the Corrib Gas Field development.

17.2.2 Human Beings, Visual Impact and Flora and Fauna

The Srahmore site is currently covered by the rehabilitation plan prepared by Bord na Móna as part of the original Planning Permission and Waste Licence for the Srahmore Peat Deposition site. The existing Rehabilitation Plan for the Srahmore Peat Deposition site, was reviewed in light of this development proposal. Owing to the similarity of the activities

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proposal, the existing Rehabilitation Plan remains unchanged and will continue to provide the objective for successfully rehabilitation in the event of Approval being granted. There are no potential negative impacts on terrestrial ecology and the overall cumulative impact on flora and fauna will be positive. The rehabilitation of the cutover peat lands will have a positive impact on the landscape character and scenic value, and consequently will benefit human beings enjoyment of the visual appearance of the landscape. The rehabilitation of the peatlands will also have a consequential benefit to the flora and fauna of the region.

17.2.3 Human Beings, Traffic and Air Quality

The impact on human beings and air quality has been assessed specifically in Section 11 of this Volume of the EIS. This assessment has concluded that the cumulative impact of peat deposition within the Srahmore site will have a negligible impact on the receiving environment including humans. The activities will be removed significantly from any existing dwellings.

Traffic importing peat from the on-shore pipeline development and the Srahmore Peat Deposition site will utilise the public road network. Road maintenance works have previously been undertaken and further preventative maintenance and repair works will be undertaken on the pubic road network as required during the construction phase. The benefits of the road improvement works will remain for all road users following the completion of the peat deposition activities.

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The air quality assessment has considered the potential impact of dust and hydrocarbon combustion emissions during the haulage of peat from the on-shore pipeline development and the Srahmore Peat Deposition site. During operations all vehicles will be covered to minimise dust emissions from vehicles and strict road haulage guidelines will be adhered to by the haulage contractor, as detailed in the On-shore Pipeline Traffic Management Plan (reproduced in Appendix 16.1 of this Volume of the EIS). The proximity of an EPA Licensed Peat Deposition site to the site from which the peat will originate ultimately reduces haul distance and therefore reduces fuel consumption and emissions to the atmosphere, as compared to other alternative disposal sites.

17.2.4 Human Beings, Soils and Geology, Aquatic Ecology and Hydrology

Potential negative impacts of sediment laden run-off, elevated suspended solids in waters and /or pollution incidents have been outlined in Section 7. The potential cumulative effect of uncontrolled discharges from the site would be to reduce the fish catch in the Muinhin/Owenmore/Tullaghan Fisheries. This could in turn affect tourism and local enjoyment of the watercourses. The mitigation measures employed to prevent this happening are detailed in Section 7 and 9 of this report and take account of the consultations with the NWRFB, the EPA and the NPWS (formally Dúchas) as part of this application and

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the original application (to which the existing planning permission relates). Based on the control measures employed, there will be no impact on the overall salmonid productivity within the Owenmore catchment and therefore no cumulative impact on tourism or enjoyment of the water resource.

The potential impact of the development will be significantly lessened by the fact that activities within the site will only be undertaken during appropriate weather conditions. The potential cumulative impact is considered to be low to negligible.

17.2.5 Human Beings, Visual Impact and Traffic

There will be a temporary negative impact during the deposition phase. Noise, traffic levels and visual impact caused by the haulage trucks may temporarily affect people locally.

However it is anticipated that the development will occur over a limited operating programme, so the duration of the activity will be limited. Section 16.3.12 of this Volume of the EIS outlines the detailed mitigation measures to be put in place to limit the impact on local people and visitors caused by traffic, and so it is not expected that there will be any significant negative cumulative impacts.

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The Traffic Impact Assessment presented in this Volume of the EIS has taken account of the cumulative impact of all traffic associated with the construction of the on-shore pipeline together with traffic associated with material imports and workforce movements for the Bellanaboy Bridge Terminal site and the Srahmore Peat Deposition Site.

Preventative maintenance and repair works are proposed for the local road network that will impact positively on public road users following the completion of the works.

In addition there will be minimum negative impact due to the peat deposition on site due to the distance of the site from houses. Local people are familiar with activity on the Bord na Móna production areas and so the perception of an impact will be limited.

The overall effect is to ensure no adverse landscape and visual impact from the proposed development after cessation of peat importation works. After a short period vegetative cover will result in the deposition area blending with the surrounding landscape.

17.2.6 Human Beings and Climate

The proposed development will occur to facilitate the construction of the On-Shore Pipeline development and the subsequent use of an indigenous gas supply. The assessment of climate has determined that the deposition of peat at the Srahmore site will have a negligible impact on the climate and therefore no resultant impact on human beings.

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17.2.7 Human Beings, Soils and Geology and Archaeology

Previous archaeological investigations within the Srahmore Peat Deposition site have not uncovered any remnants or artefacts of archaeological value.

However, archaeological monitoring of any further excavations into the soil and geological environment will be undertaken within the Srahmore Peat Deposition site. Should any materials be uncovered, this will ultimately add to the historical knowledge base and impact positively on the understanding of the cultural heritage of the region for locals and historians.

17.2.8 Flora and Fauna, Soils and Geology, Hydrogeology and Hydrology

The deposition of peat within the Srahmore site will result in a cumulative impact on the soil and geological environment, flora and fauna environment, the hydrogeological environment and the hydrological environment if control measures are not imposed. However, the existing infrastructure and working methodology has been employed successfully previously and has demonstrated that peat deposition can be conducted in a manner that will not result in peat instability or mobilisation. Therefore, the risk of cumulative adverse impacts arising from peat deposition within the Srahmore site is considered low.

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17.2.9 Human Beings, Noise, Traffic and Flora and Fauna

The potential for noise impacts arises from the haulage of peat in Heavy Goods Vehicles on the public road network and activity of plant and equipment within the Srahmore Peat Deposition site. The noise impact assessment indicates that the cumulative impact of the peat haulage and deposition will not be perceptible to existing receptors.

Within the Srahmore site, there is anticipated to be a very localised and minor impact as a result of the noise and travel of machinery on fauna. This impact will occur only for the duration of deposition works. The Flora and Fauna report proposes monitoring to ensure the impacts are minimised.

17.2.10Traffic and Soil and Geology

The potential for impact on public roads as a result of haulage of peat material has been assessed. The traffic management proposals include preventative road maintenance and repair works and operational controls to ensure the haulage of peat does not result in a cumulative adverse impact on the public road network.

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17.2.11Interactions with other developments

In addition to the above development and the assessment of cumulative impacts associated with the construction of the Corrib Gas Field development, a number of other developments have been identified as likely to be in operation at the same time.

1) The continued demolition and dismantling of the ESB peat-fired power station at Béal Átha Liag (Bellacorick); and
2) The development of a wind farm on cutover peatlands at Béal Átha Liag (Bellacorick)_.

17.3 Conclusion

While there is potential for the above impacts to interact and result in a cumulative impact, it is unlikely, as a result of the various mitigation measures proposed, that any of these cumulative impacts will result in significant environmental degradation in the environs of the Srahmore Peat Deposition site. The duration of works associated with the Peat Deposition is relatively short and the volume of peat relatively low, especially when compared to the quantum of peat previously successfully transported to and deposited at the site during 2005 and 2007. The level of cumulative impact on human beings and the natural environment is assessed as low.

A cumulative impact assessment of the Corrib Gas Field Development, which includes the deposition of peat at Srahmore, has been completed and is provided in Chapter 17 of the Corrib Onshore Pipeline (Volume 1).

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17.4 Do Nothing Scenario

If the proposed development did not proceed, there would be no cumulative impacts associated with the Srahmore Peat Deposition site on other developments.

17.5 Mitigation Measures

The Traffic Management Plan for the Onshore Pipeline development provides operating procedures and protocols to ensure operations do not impact on users of the public road network and ultimately on human beings. Extensive environmental studies and impact assessments have been undertaken for the various aspects of the on-shore pipeline development (including the Srahmore Peat Deposition site). Extensive mitigation measures and operating procedures are proposed to ameliorate the impact of the development on the environment. With respect to the Srahmore Peat Deposition site, environmental monitoring is established and on-going to assess the performance of the site, to review impacts and to assess other issues arising during the operation and stabilisation phases. This is reported to the EPA in the form of Annual Environmental Reports.

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17.6 Monitoring

It is not proposed that any monitoring will be undertaken specifically for cumulative impacts. However, monitoring is and will be undertaken, where required, for the individual phases of the Srahmore Peat Deposition site project. The monitoring of the environmental performance of the site is submitted to the EPA in the form of an Annual Environmental Report.

17.7 Reinstatement and Residual Impacts

There will be no reinstatement undertaken specifically for cumulative impacts. Reinstatement measures will be implemented where required.

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18 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

18.1 Introduction

Bord na Móna are the owners of the Srahmore Peat Deposition Site. They are responsible for the management and control of the existing Waste Licence and the Planning compliance of the existing site.

Bord na Móna seeks to conduct all aspects of its business in an environmentally sensitive manner. It is committed to the compilation of information on all aspects of its impact on the environment, and making this information available to the public.

A Environmental Management System (EMS) has been prepared for the Srahmore Peat Deposition site and is included in Appendix 18.1, Book 3 of this Volume 3 of the EIS. The EMS for this development specifically addresses the following impacts:

- Discharges to water
- Emissions to atmosphere
- Waste disposal/minimisation
- Noise, vibration, odour, dust and visual effects
- Use of natural resources
- Natural environment and ecosystem effects
- Continuous environmental improvement programmes

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The environmental management system is monitored and continually improved. A system of regular environmental audits has been established, and the company will continue to invest in research into its impact on the natural environment.

The EPA carried out site inspections at Srahmore in September 2005 and June 2007 in line with the current Waste Licence for the site. Details of these are included in Appendix 18.2, Book 3 of this Volume 3 of the EIS.

18.2 Srahmore Site Operation

The EMS includes the following elements.

18.2.1 Incident reporting & investigation

The Srahmore Peat Deposition site EMS includes documented procedures to control the reporting and investigation of incidents.

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18.2.2 Roles and Responsibilities

Bord na Móna have defined environmental roles and responsibilities for Srahmore Peat Deposition staff and these have been documented in the EMS and in individual job descriptions. The roles and responsibilities refer to each component of the EMS.

18.2.3 Training and Competence

Ensuring that staff are competent to operate responsibly from an environmental point of view is a critical means of control. The EMS ensures the appointment of suitably competent staff and covers the development and implementation of training programmes to ensure that environmental control requirements are understood and applied.

18.2.4 Document Control

The control of EMS documents is the responsibility of the site supervisor who has been assigned in accordance 18.2.2 above.

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18.2.5 Records

Records provide the evidence of conformance with the requirements of the EMS and of the achievement of the objectives and targets in the Improvement Programmes. The EMS specifies these records that are generated for these purposes, and control their creation, storage, assessment and retention.

The EMS will be updated in line with any future planning conditions and review of the existing waste licence conditions.

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