ROSCOMMON COUNTY COUNCIL

N5 BALLAGHADERREEN TO SCRAMOGE PROPOSED ROAD DEVELOPMENT

Response to Letter from
An Bord Pleanála dated 10 May 2018
requesting Additional Information

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APPENDIX 1 FOLDERS

1 GENERAL

1.1 Introduction

1.1.1 This is the response of Roscommon County Council (RCC) to the request for additional information in relation to the likely effects on the environment of the proposed road development issued by An Bord Pleanála to Roscommon County Council on 10 May 2018.

1.1.2 This response has been prepared with inputs from various members of the Project Team as presented in Section 1.2.3 of the EIAR: The table below outlines the experience and qualifications of these competent experts.

Table 1 Project Team Experience and Qualifications

Topic	Specialist Contributors	Company	Qualifications	Experience (Years)
Design Team	Jim Thorpe	ROD-AECOM	BSc Hons Dip, C.Eng	31
	Barry Corrigan	ROD-AECOM	BSc Hons, Dip EIA, MIEMA CEnv	17
	Richard Spencer	ROD-AECOM	B.Eng. (Civil), C.Eng.	20
Traffic Analysis	Philip Shiels	ROD-AECOM	B.Eng (Hons), CEng MIEI	11
Population	Craig Bullock	Optimize Consultants	MSc Env.Econ.; PhD Env Economics	32
Human Health	Dr Martin Hogan	Corporate Health Ireland	MB. BCh BAO, Dip Child Health, Dip Obstetrics.	30
Biodiversity	Pat Roberts	McCarthy Keville O'Sullivan / ROD-AECOM	BSc Env.Sc, Dip. Countryside Management	12
Soils and Geology	Fintan Buggy	ROD / AECOM	MSc Soil Mechanics; P.E.	36
Hydrology and Hydrogeology	Tony Cawley	Hydro Environmental	BE(Civil), MSc.Eng Hydrology;	27
	Dr Patrick Morrissey	Ltd / ROD-AECOM	MSc Env Eng; Dip Statistics; PhD Groundwater Hydrology	10
Landscape and Visual	Thomas Burns	Brady Shipman Martin	B.Agr.Sc (Land.), Dip.EIA.Mgmt.	27
Photomontages	Nik Hennessy	MacroWorks	BAgrSc, MAgr	18
Noise and Vibration	Dr Stephen Smyth	AWN Consulting Ltd.	BA BAI MIEI MIOA	14
	Ronan Murphy	AWN Consulting Ltd.	BSc Env Management, Dip. Acoustics & Noise Control	10
Air Quality and Climate	Dr Ed Porter	AWN Consulting Ltd.	BSc, PhD Chem, MRSC	
	Dr Avril Challoner	AWN Consulting Ltd.	BEng Env.Eng. HDip Statistics, PhD Env	6

Topic	Specialist Contributors	Company	Qualifications	Experience (Years)
			Chemistry	
Archaeology and Cultural Heritage	Lisa Courtney	Courtney Deery Heritage Consultants	BA Archaeology & Economics; MSc Environmental Resource Management; Dip Management in Organisational Behaviour	21
Architectural Heritage	Rob Goodbody	Historic Building Consultants	BA(Mod); Dip Environmental Planning; MA Local History; Masters in Urban and Building Conservation; Dip Applied Building Repair & Conservation	43
Impacts on Land & Property including Agricultural Impacts	John Bligh	John Bligh & Associates	MSc Environmental Systems; BAgrSc	20
Cumulative Impacts, Interrelationships & Major Accidents and/or Disasters	Barry Corrigan	ROD–AECOM	BSc Hons, Dip EIA, MIEMA CEnv	17
Mitigation Measures	Barry Corrigan	ROD–AECOM	BSc Hons, Dip EIA, MIEMA CEnv	17

2 INTEGRATED CONCEPTUAL HYDROLOGICAL AND HYDROGEOLOGICAL GRAPHICAL MODELS

2.1 Response to Item 1(i)(a) to 1(i)(f)

1. Detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and:

(i) Bellanagare Bog and Cloonshanville Bog European Sites including karst area 2- Leggatinty, the associated Groundwater Bodies and the Carricknabrahar and Owennaforeesha River System.

2.1.1 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Bellanagare Bog and Cloonshanville Bog European Sites, including Karst Area 2 Leggatinty, the associated Groundwater bodies and the Carricknabrahar and Owennaforeesha River system has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 1a and 1b in Folder 1 included with this response.

2.1.2 Figure 1a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section A-A, showing Bellanagare Bog, the proposed road development, some karst features, and Cloonshanville Bog. The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.1.3 Figure 1b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.1.4 There are no significant lacunae or gaps in the data or information required to carry out the environmental assessments. There has been extensive survey, investigation and assessment carried out by competent experts in relation to the hydrological and hydrogeological environment for the proposed road development. These are described in the EIAR Volume 2 Sections 9.2 and 10.2 and in particular include the following:

- Walkover surveys
- Aerial Survey Photography
- LiDAR Data (2015)
- Ground Investigations
- GSI Establishment of Groundwater Zones of Contribution
- Project Water Quality Monitoring
- Project Groundwater Level Monitoring (over a number of years)
- Dye-Tracer Tests
- Publically available and comprehensive GIS information from sources such as Geological Survey of Ireland, Environmental Protection Agency, Office of Public Works, National Parks and Wildlife Service.

This has ensured that sufficient detail is available to allow environmental assessment to be carried out, potential impacts to be identified and assessed and where required protection and mitigation measures to be designed and included in the proposed road development.

2.2 Response to Item 1(ii)(a) to 1(ii)(f)

1. Detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and:

(ii) Zones of Contribution of Peak-Mantua, Cloonyquinn/Curracreigh and Polecat Group Water Schemes including the karst area 3 -Kilvoy, Corry East and Cloonyeffer.

2.2.1 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Zones of Contribution of Peak-Mantua Group Water Scheme has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 2a and 2b in Folder 1 included with this response.

2.2.2 Figure 2a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section B-B, going through the entire Zone of Contribution of Peak-Mantua and extending past the proposed road development through the deepest cut in this area. The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.2.3 Figure 2b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.2.4 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Zones of Contribution of Cloonyquinn/ Curracreigh and Polecat Group Water Schemes in the vicinity of the Karst Area 3 – Kilvoy, Corry East and Cloonyeffer has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 3a and 3b in Folder 1 included with this response.

2.2.5 Figure 3a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section C-C, going through the entire Zone of Contribution of Polecat and part of that of Cloonyquinn and extending past the proposed road development through the deepest cut in the Cloonyeffer area. The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.2.6 Figure 3b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.2.7 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Zones of Contribution of Polecat Group Water Schemes in the vicinity of the cut at circa Ch 23500 has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 4a and 4b in Folder 1 included with this response.

2.2.8 Figure 4a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section D-D, going through the entire Zone of Contribution of Polecat the proposed road development through the cut at circa Ch 23500 which is located within the ZOC. The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.2.9 Figure 4b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.2.10 There are no significant lacunae or gaps in the data or information required to carry out the environmental assessments. There has been extensive survey, investigation and assessment carried out by competent experts in relation to the hydrological and hydrogeological environment for the proposed road development. These are described in the EIAR Volume 2 Sections 9.2 and 10.2 and in particular include the following:

- Walkover surveys
- Aerial Survey Photography
- LiDAR Data (2015)
- Ground Investigations
- GSI Establishment of Groundwater Zones of Contribution
- Project Water Quality Monitoring
- Project Groundwater Level Monitoring (over a number of years)
- Dye-Tracer Tests
- Publically available and comprehensive GIS information from sources such as Geological Survey of Ireland, Environmental Protection Agency, Office of Public Works, National Parks and Wildlife Service.

This has ensured that sufficient detail is available to allow environmental assessment to be carried out, potential impacts to be identified and assessed and where required protection and mitigation measures to be designed and included in the proposed road development.

2.3 Response to Item 1(iii)(a) to 1(iii)(f)

1. Detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and:

(iii) Annaghmore Lough SAC including karst areas 4 -Tullyloyd and 5-Cregga and the Ovaun Stream;

2.3.1 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Annaghmore Lough SAC including karst area 4 -Tullyloyd and the Ovaun Stream has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 5a and 5b in Folder 1 included with this response.

2.3.2 Figure 5a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section E-E, going through Clooncullaan Lake (upper and lower), the Tullyloyd Wetland KERs north of the lake, the proposed road development and part of the ZOC of Polecat. The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.3.3 Figure 5b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.3.4 The detailed integrated conceptual hydrological and hydrogeological graphical models comprising the interpreted areas of interaction between the proposed N5 and Annaghmore Lough SAC including karst area 5 -Cregga has been prepared by the project Hydrology and Hydrogeology Expert (see Table 1 of this document for qualifications) and is labelled as Figures 6a and 6b in Folder 1 included with this response.

2.3.5 Figure 6a deals with Items 1(a), and (b), and shows the model in plan, the location of the section and a section, labelled Section F-F, going through Annamore Lough, Karst Area 5 Cregga, the proposed road development at the cutting at circa Ch. 37100, Greywood Hill and the commercial quarry operating on the east side of the hill (Hanly Brothers). The topographical contours and the interpreted groundwater flow directions are also shown. A view box shows the cross-section in the vicinity of the road in more

detail. Larger scale view boxes provide an overview of the Groundwater bodies and the River Sub-Basin Catchments in the broader area.

2.3.6 Figure 6b deals with items 1(c), 1(e), and 1(f) and shows view boxes of the proposed mitigation measures, drainage and diversion details and of the specific mitigation measures from the Construction Erosion and Sediment Control Plan. This Figure also includes text boxes summarising the assessment of potential impacts and annualised water balance calculations for each area.

2.3.7 There are no significant lacunae or gaps in the data or information required to carry out the environmental assessments. There has been extensive survey, investigation and assessment carried out by competent experts in relation to the hydrological and hydrogeological environment for the proposed road development. These are described in the EIAR Volume 2 Sections 9.2 and 10.2 and in particular include the following:

- Walkover surveys
- Aerial Survey Photography
- LiDAR Data (2015)
- Ground Investigations
- GSI Establishment of Groundwater Zones of Contribution
- Project Water Quality Monitoring
- Project Groundwater Level Monitoring (over a number of years)
- Dye-Tracer Tests
- Publically available and comprehensive GIS information from sources such as Geological Survey of Ireland, Environmental Protection Agency, Office of Public Works, National Parks and Wildlife Service.

This has ensured that sufficient detail is available to allow environmental assessment to be carried out, potential impacts to be identified and assessed and where required protection and mitigation measures to be designed and included in the proposed road development.

3 RESPONSE TO ITEM 2

3.1 2016 IGSL Ground Investigation Report

3.1.1 Three copies of the 2016 IGSL Ground Investigation Factual Report have been included with this response. This has been presented in Folder 2a and 2b.

3.1.2 The results of the factual report were shown in graphical format in Figures 8.21 to 8.24 of Volume 3 of the Environmental Impact Assessment Report (EIAR). The findings of the ground investigations and associated testing are summarised in the EIAR Volume 2 Chapter 8 Soils and Geology.

3.1.3 The data and information from the various ground investigations and tests were used by several of the Environmental Factor specialists in the environmental assessments of the proposed road development; most notably the Hydrology and Hydrogeology specialist as described in Chapters 9 and 10 of the EIAR.

4 RESPONSE TO ITEM 3

4.1 Photomontages from Sensitive Receptors

4.1.1 Photomontages have been prepared by Macroworks (see Section 1.1.2 above for qualifications and experience) for each of the six locations listed in An Bord Pleanála's letter dated 10 May 2018. The location from which each photomontage was taken was based on the sensitive receptors in the vicinity of the listed locations that were assessed as being among those with the highest visual impact rating at that location by the Landscape and Visual specialist.

4.1.2 Nine sets of photomontages have been prepared covering the six listed locations. Each photomontage set comprises four photomontages:

- Existing situation
- Redline of the proposed road development
- The proposed road development at opening year
- The proposed road development at opening year + 7 years (post establishment of landscape planting).

4.1.2 The Photomontages are included in Folder 3 included with this response. In addition, SK-311, also included in Folder 3, gives the plan location for each of the photomontages.

5 RESPONSE TO ITEM 4

5.1 Introduction

5.1.1 Section 18.4.10 of the EIAR describes how the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters are taken into account in environmental factors.

5.1.2 This section provides further clarity and description of the assessments of the vulnerability of the proposed road development to risks associated with major accidents and/ or disasters which are relevant to the project and the assessments of the direct and indirect significant effects arising from same on the environmental factors listed in Article 3(1) of the EIA Directive. The assessments have been carried out by the relevant environmental factor specialists, are described in detail in the appropriate chapters, and collated and summarised below.

5.1.3 The assessments have been carried out having regard to the following legislation and guidance documents:

- Directive 2011/92/EU, as amended (EIA Directive)
- Directive 2007/60/EC (Floods Directive)
- Directive 2012/18/EU (Control of major-accident hazards involving dangerous substances)
- Directive 2000/60/EC (Water Framework Directive)
- Directive 2006/118/EC (Groundwater Directive)
- Directive 2008/68/EC, as amended (The inland transport of dangerous goods)
- European Communities (Carriage of Dangerous Goods by Road and Use of Transportable Pressure Equipment) Regulations 2011
- Guidelines on Information to be Contained in Environmental Impact Assessment Reports, (Draft), August 2017, EPA
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report, 2017, European Commission
- Risk Assessment and Mapping Guidelines for Disaster Management, Commission Staff Working Paper, SEC(2010) 1626, 2010, European Commission
- Adaptation Planning; Developing Resilience to Climate Change in the Irish Transportation Sector, 2017, Department of Transport, Tourism and Sport
- Strategy for Adapting to Climate Change on Ireland's Light Rail and National Road Network (PSF-ENW-0003), 2017, TII
- TII Publications, Standard and Technical
- The National Preliminary Flood Risk Assessment, 2012, Office of Public Works

5.2 Vulnerability of the proposed road development to risks associated with major accidents and/ or disasters

5.2.1 It is considered that the main areas of potential for major accidents and/or disasters relevant to the project are:

5.2.2 Proximity to Seveso sites

There are no Seveso (COMAH) sites near the proposed road development, with the nearest Seveso site being Florgas Ireland Ltd, located in Ballyhaunis, approximately 23km west of the western tie-in. Therefore, there is no likely significant impact as a result of an accident or disaster at this plant, as is discussed in Chapter 6 of the EIAR Population and Human Health.

5.2.3 Risk of Flooding

As detailed in Chapters 4 and 10 of the EIAR the road drainage for the proposed road development has been designed in accordance with the principles outlined in the TII/NRA Design Manual for Roads and

Bridges (DMRB) and CIRIA which takes account of anticipated climate change factors. The principal objectives for the proposed road drainage system include:

- To ensure the speedy removal of surface water from the road pavement in order to provide safe driving conditions;
- To mimic, in as far as is practical, the existing greenfield drainage regime, particularly in relation to runoff rates and watercourse outfalls, while at the same time providing improved water quality treatment by means of wetland ponds prior to discharge;
- To ensure that the impact of the drainage outfalls on the receiving waters is negligible;
- To minimise the impact of runoff on the receiving environment; and
- To provide effective sub-surface drainage to maximise longevity of the road pavement and associated earthworks.

5.2.4 The road drainage has been designed to accommodate, without surcharge, a once in 1 year storm event with a maximum rainfall intensity of 50mm per hour. The design is checked against a five-year storm intensity to ensure that surcharge levels do not exceed the levels of chamber covers.

5.2.5 In assessing the risk of climate change, the risk of flooding was investigated for the proposed development, accounting for the estimated 100 year flood flow and allowing for statistical error and a 20% allowance for the potential effects of climate change. This measure was also applied for all crossings of watercourses with each being approved by the Office of Public Works (OPW) through Section 50 applications. There is a potential to increase peak flow rates and runoff volumes due to the increased impermeable area associated with the proposed road development and the collecting drainage system which discharges at outfall points. The implementation of sustainable drainage systems (SUDs) through the incorporation of engineered attenuation ponds and controlled discharges at all outfalls will control storm runoff rates to Greenfield flood runoff rates so as not to exacerbate flooding and flood risk in the receiving watercourses. This will mitigate negative impacts on flood risk in the receiving streams from road runoff.

5.2.6 The proposed development has been designed to include a storm water conveyance system. The proposed storm water system will convey rainfall runoff from the road to attenuation ponds located adjacent to the proposed development. Storm water attenuation storage has been sized to accommodate the 100 year storm event which represents a higher design standard than the 50 year return period recommended in the TII/NRA Guidelines. The flood risk of the proposed development has been assessed at sensitive locations which may have a history of flooding particularly adjacent to water courses and in low-lying areas. Attenuation ponds have not been located within the known extents of floodplains or lands which are prone to flooding. There will therefore be a slight to imperceptible residual impact from the proposed road development with respect to flooding.

5.2.7 No negative residual impacts on flood risk due to loss of conveyance are anticipated at river and stream crossings. All culvert design flows provided for include large factors for uncertainty associated with flood estimation in small ungauged catchments and thus the proposed culvert sizes are considered to be conservatively large and in all cases substantially exceed the existing culvert sizes on such streams and therefore avoid any conveyance capacity issues. There will be a slight to imperceptible residual impact from the proposed road development.

5.2.8 This loss of floodplain storage where the proposed road development crosses such areas is minor relative to the catchment flood flows and will result in no perceptible impact on flood levels either locally upstream or downstream and therefore will have negligible impact on flood risk at these locations. There will be a slight to imperceptible residual impact from the proposed road development.

5.2.9 A flood risk assessment has been undertaken for the proposed road development by the project Hydrology and Hydrogeology Specialist (see section 1.1.2 above). All bridge structures will be designed with a capacity to pass the estimated 100 year flood flow with appropriate allowances for statistical error and climate change. For all of the river crossings, hydraulic flood modelling was carried out to estimate the design flood level and potential impact of the proposed road development. All of the

proposed culvert/ bridge crossings were assessed and found to have a low residual flood risk being generously sized for flood flows and culvert/ bridge soffit freeboard clearance.

Table 2 Predicted Design Flood Levels and Flood Flows at Each of the Major River Crossings (0.01% Annual Exceedance Probability)

River Name	Chainage (m)	Lowest adjacent road level	0.01% AEP Flood Level (mOD)	0.01% AEP Flood Flow (m^3/s)
Carricknabrahar River	10+130	80.933	79.46	40.3
Owenaforeesha River	14+540	71.006	67.46	30.7
Owenur River	30+800	51.248	48.30	49.2
Strokestown River	51+250	44.099	40.65	5.0
Scramoge River	52+875	43.681	40.67	87.8

5.2.10 The flood risk is scored as low, medium or high with no further mitigation measures proposed for low, minor mitigation for medium and re-design recommended for high risk. All of the proposed culvert/ bridge crossings were assessed and found to have a low residual flood risk being generously sized for flood flows and culvert/ bridge soffit freeboard clearance. The findings of the Flood Risk Assessment are summarised in Table 3 below. This assessment indicates minimal flood risk to the Proposed Road Development as discussed in Chapter 10.

Table 3 Flood Risk Assessment Summary: Road Vertical Alignment

Section	Chainage	Comment on Flood Risk Areas	Overall Flood Risk	Mitigation
A: Local Stream	1+1000 – 5+697	Minimal Flood Risks	Low	None
B: Carricknabrahar River	10+000 – 24+198	Minimal Flood Risks	Low	None
B:Owenaforeesh River		Minimal Flood Risks	Low	None
C: Owenur River	30+000 – 40+511	Minimal Flood Risks	Low	None
D: Strokestown River	50+000 – 54+357	Minimal Flood Risks	Low	None
D: Scramoge River		Minimal Flood Risks	Low	None

5.2.11 Risk of an accident leading to spillage

The risk of an accident on the road and same leading to a spillage, with consequential potential impacts on water quality, biodiversity and human health, is also considered in the Traffic and Hydrology Chapters of the EIAR. While the proposed road development forecasts a reduction of 324 collisions over the 30 year scheme appraisal period, mitigation measures put in place to prevent the contamination of watercourses through sealed drainage systems as described in Chapter 10 and through the fitting of pollution control facilities at proposed outfalls, will prevent water pollution arising from any potential spillages caused by accidents on the proposed road development.

5.2.12 As detailed in Chapter 4 of the EIAR all pollution control facilities and attenuation areas will be fitted with a penstock or similar restriction at the outfall to the receiving channel. The overall risk assessment to quantify the likelihood of a serious accidental spillage indicates a cumulative risk for the entire road length to be very small at 1 in 250 year risk and with individual outfalls having a considerably lower risk (DMRB Volume II Section 3 Part 10).

5.2.13 The impact from accidental spillages on stream outfalls will be reduced by the use of treatment forebays incorporated within the attenuation pond upstream of the outfall which allows time for the appropriate emergency and other services to deal with any incident and the provision of a penstock on the pond outflow which can be closed off in the event of a serious pollution incident arising.

5.2.14 Traffic Accident requiring closure of the proposed N5

Due to the continued presence of the existing N5 which will remain in place following the construction of the proposed road development, although it will be downgraded to a lower status of road, any major road traffic accident requiring the closure of a section of the proposed N5 will be temporary in nature and the receiving road network will be capable of receiving the volume of diverted traffic. The population and properties along the existing N5 that would be affected by this temporary diversion currently experience similar traffic levels on a daily basis and therefore any impacts will be short term and not significant.

5.2.15 Biodiversity

A linear infrastructure project of this nature has the potential to introduce and / or spread invasive alien species (IAS) to the area. In an uncontrolled scenario, this risk is associated with plant, machinery and personnel moving onto or within the site from previous sites containing IAPS. As detailed in Chapter 7 of the EIAR walkover surveys were undertaken and only one stand of the non-native invasive species Japanese Knotweed (Fallopia japonica) was recorded on the proposed road development in the townland of Vesnoy (Ch. 51+250). Avoidance and control measures have been put in place in Section 7.6.1 of the EIAR to ensure that IAS are not spread onto or within the site. These include a pre construction survey, an IAS Management Plan and Biosecurity protocols during the construction phase.

5.2.16 Ground Stability

Ground stability has been assessed in Chapter 8 of the EIAR Soils and Geology. Generally, the western half of the proposed road development consists of a landscape that is gently undulating and characterised by areas of peat deposits, while eastern half consists of a drumlin landscape peat found in the areas of low lying ground between drumlin peaks. There are no bog/ soft ground areas located on slopes that could be at risk of landslide due to the proposed works.

5.2.17 The majority of the project is located in glacial tills and appropriate drainage measures have been included in the proposed road development to ensure ground stability in these areas.

5.2.18 The material deposit areas pose a potential risk to water quality and biodiversity should there be a soil failure leading to some of this material slipping into adjacent watercourses. This risk was assessed as part of the geotechnical design of the proposed road development. Each material deposit area is being provided with an engineered bund, founded on firm material or rock, and constructed of engineering grade fill as show in Plate 8.6 in the EIAR. In addition, the maximum height and slope angle on the fill material has been specified in the EIAR to ensure stability.

5.3 Conclusion

5.3.1 There are either no significant risks, or measures have been included in the proposed road development to remove the risks, from Seveso sites, flooding, major traffic accidents requiring road closure, accidents involving a spillage, spread of invasive species, or ground stability. Therefore, there are no residual likely significant adverse environmental effects arising from the project due to risks of major accidents and/or disasters.

Appendix 1 Folders