MOTT MACDONALD

Energy for generations

Volume 3 - Technical Appendices

Moneypoint Security of Supply

February 2024

Electricity Supply Board

Volume 3 - Technical Appendices

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A. Team Credentials

MOTT MACDONALD

A. Team Credentials

Chapter	Lead Author	Qualifications	Background
6. Population and Human Health	Niamh Roche	B.Sc. (Hons) Environmental Full Member of Institute of Environmental Science (MIEnvSc) Practitioner Member of the Institute of Environmental Management and Assessment (PIEMA) Chartered Environmentalist (CEnv)	Niamh has over 18 years' experience in the environmental and energy sector. Woking on a wide range of projects from pre-planning to the construction design phase. She has considerable knowledge of key issues and requirements particularly within the fields of energy infrastructure and strategic planning. Niamh Is an experienced project manager of multidisciplinary project teams through the preliminary design, environmental assessment and statutory approval processes for energy infrastructure projects in Ireland.
	Aastha Sethi	M.Sc Environmental Sciences Bachelor of Urban Planning Member of the Institute of Environmental Management and Assessment	Aastha is an environmental scientist with over 4 years' experience in environmental assessment and coordination. She has experience in preparation and co-ordination of Environmental Impact Assessment Reports, Environmental and Planning Reports and Constraints Studies for large-scale infrastructure projects in Ireland including energy and transmission infrastructure, road and transport infrastructure, and wastewater treatment plants. Aastha also has experience in co-ordinating and carrying out stakeholder consultation for various project phases.
7. Air Quality	Chris Mills	MSc, BSc (Hons) MIAQM	Chris is an MSc qualified Environmental Scientist specialising in air quality assessments and leads the air quality team at Mott MacDonald. Chris graduated with an MSc in air pollution management and control from the University of Birmingham in 2007 and has 15 years of experience. Chris has undertaken several air quality assessments using internationally approved methods in a variety of countries for many power related projects. Chris has worked on numerous Energy from Waste plants, assessing them in line with international and national requirements. He also has significant experience working in the middle east and working with Lenders and acting as the Lenders Technical Advisor.
	James Brookes	(MSc) Air Pollution Management and Control BSc (Hons) Environmental Science	James is an environmental scientist with over 10 years' consultancy experience specialising in air quality. James is experienced in undertaking air quality assessments, utilising both monitoring and advanced detailed dispersion modelling techniques for projects including major highway development schemes, small and large scale power generation projects, strategic assessments, environmental permit applications, EIARs and international ESIAs. James has undertaken many air quality assessment for power generation projects both in Ireland and internationally, some of which include Belcamp Peaking Plant in Ireland, Huntstown Power Station Expansion in Ireland, Tilbury Energy From Waste in the UK, Stanley Power Station in The Falkland Islands, Fujairah F3 Independent Power Plant in the UAE and CHP5 in Mongolia.

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8. Climate	Alex Greenwood	MSc Environmental Management BSc (Hons) Biological Sciences (Environmental Biology) Chartered Environmentalist (CEnv) Member of the Institute of Environmental Management and Assessment	Alex has over 14 years experience in environmental assessment, specialising in carbon management. Alex has had author and reviewer roles for multiple EIA and ESIA projects. Multi-sector experience, including major transport projects and the power sector, within the UK, Ireland, and internationally. Experience in data management and analysis for a range of environmental assessments.
9. Noise and Vibration	Andrew Monk-Steel	MSc Automotive Dynamics, Noise and Vibration Beng (Hons) Mechanical Engineering (Design) Member of the Institute of Acoustics Chartered Engineer	Andrew has over 20 years' postgraduate experience of multi-disciplinary consultancy specialising in measurement, prediction and assessment environmental noise and vibration. Currently Andrew is the technical team lead for the acoustic aspects of national and international projects in the power & energy, transportation, utilities and built environment sectors within Mott MacDonald.
10. Biodiversity	Elaine Bennett	PhD University College Cork BSc. University College Cork; C.WEM, CEnv MCWEM, MCIEEM	Elaine has over 20 years of experience in project management, ecological and environmental assessment and reporting. She has supported clients in providing environmental support for a wide variety of large-scale infrastructure, including wastewater treatment plants and pipelines, gas infrastructure, electrical infrastructure, wind farms and cables, solar farms, quarries and greenways. Elaine is a Technical Principal in Environmental Science and manages Environmental Impact Assessment Reports, Environmental Reports, Ecological Assessments and Appropriate Assessments (Screening and Natura Impact Statements).
	Eliot Taylor	PhD Environmental Technology BSc (Hons) Biological Sciences C.WEM, C.Sci, MCIWEM Member of the International Society of Limnology Member of the Freshwater Biological Association Co-Editor in Chief African Journal of Aquatic Science Honorary member of the Board of Association and Supervisory Council Wetlands International	Eliot Taylor is a Senior Associate Ecologist with over 30 years of senior level management experience and extensive technical experience in: assessment of environmental and ecological issues and their remediation, climate change adaptation, water and natural resources management, especially in integrated and transboundary water resources management, ecological and environment and social impact assessment, environmental flow assessment, aquatic ecosystem health and protected site planning and management. Eliot is responsible for the review and authorisation of numerous Appropriate Assessment screenings (AA Stage 1), Natura Impact Statements (NIS Stage II), Ecological Impact Assessment (EcIA) reports, Preliminary Ecological Assessment (PEA) reports, Baseline Survey reports and Constraints reports.
11. Surface Water Resources and Flooding (The Flood Risk Assessment Report and the Drainage Report were prepared by ESB)	Laurence Cload	MEng Civil and Structural Engineering, University of Sheffield. CEng, MICE	Laurence is a Chartered Civil Engineer with over 22 years postgraduate experience of flood risk assessments and hydraulic modelling. Laurence has undertaken flood risk assessments throughout Ireland and overseas, as well as using hydraulic modelling results to design flood protection schemes from conception to completion.
	Rhiannon Izzard	BSc (Hons) Environmental Geoscience, Cardiff University 2018, AIEMA	Rhiannon has been with Mott MacDonald since August 2022, with four years' previous experience in environmental consultancy specialising in in-field data collection, environmental assessment, reporting and planning. Rhiannon has worked on numerous infrastructure projects

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			within the UK and Ireland providing bespoke environmental assessment on a strategic and project-level scale.
12. Land, Soils and Hydrogeology	Aidan Foley	PhD Geological Sciences, University College London. MSc Environmental Sciences, University of East Anglia	Technical Director (Groundwater & Environment) with 24 years' experience. Team leader for group and project hydrogeology/environmental teams and senior regulatory negotiator for environmental compliance and consenting. Specialisms in contaminant transport, karst systems, groundwater chemistry and EIA.
	Hannah Roe	MSc Hydrogeology, University of Birmingham 2022 BSc Geology and Physical Geography, University of Keele 2020	Graduate Hydrogeologist with a MSc in Hydrogeology from the University of Birmingham. After joining Mott MacDonald in 2022, Hannah has been involved with producing various Environmental Impact Assessments including Gort Lowlands Flood Defence Scheme, Poolbeg and Ringsend OGCTs and Tees and Central Mains Pipeline. Experience in tracer testing in karst systems, groundwater quality monitoring, ArcGIS, Groundwater Vistas and PHREEQC.
13. Archaeology, Architectural and Cultural Heritage	Dr. Enda O' Flaherty (Rubicon Heritage Services)	PhD, School of Geography and Archaeology Post-Graduate Diploma in Archaeology Honours Bachelor's Degree in Heritage Studies	Enda has been with Rubicon Heritage Services since 2012. His previous experience includes seven years as a field and research archaeologist, both in Ireland and abroad where he has worked on exciting and diverse projects examining the dynamic nature of human settlement and the significance of landscape to communities in the past. His career to date has equipped him with all the skills associated with pre-planning archaeological assessment from desk based research projects through to full EIAR. In addition, he has professional experience in pre-planning surveying/field walk-overs, pre-excavation testing and all other archaeological skills through to post-excavation reporting and publication. Enda has developed a multidisciplinary approach to landscape studies involving archaeology, physiographical studies, toponymy and documentary sources, which draws out the significance of physical environments for settlement in the past, and helps to understand their role in the cognitive landscape.
	Ciarraí O'Sullivan (Rubicon Heritage Services)	Mphil in Archaeology University College Cork 2018 Bachelor of Arts (Joint-Archaeology & History) University College Cork 2015	Ciarraí has worked as a professional archaeologist since completing her Mphil in archaeology at UCC in 2018. Ciarraí has a well-grounded knowledge of Irish archaeology, both practically and academically. Flagship projects have included her involvement with the M28 Ringaskiddy Road Project excavations, and her Mphil thesis- Territory and community in early medieval Ireland: a landscape project of the Tuatha of Ui Chonaill.
14. The Landscape	Richard Barker (Macro Works)	Irish Landscape Institute Professional Practice Qualification – 2005 MLA – Lincoln University – 2003 PG Diploma Forestry – Canterbury University - 1996 BA Environmental Science – Massey University - 1995	Richard manages the LVIA department in Macro Works undertaking assessment work on a broad spectrum of projects from wind and solar energy to roads and large scale industrial and infrastructural development. Richard has personally completed the landscape and visual assessment of over 90 wind farms 80 solar farms and numerous other commercial and infrastructural projects including more than a dozen SID projects. Consequently, he has considerable oral hearing training and expert witness experience.
	Rory Curtis (Macro Works)	BEng BA GDip LA MILI	Rory Curtis is a Landscape Architect with 10-years of experience in the industry. Rory works for Macro Works Ltd, a specialist LVIA company with over 20-years of experience in the appraisal of effects from a variety of energy, infrastructure and commercial developments. Experience extends to numerous electrical infrastructure developments including transmission lines and substations as well as the assessment of over 120 wind energy developments and 100 solar energy developments. Relevant experience includes

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			LVIA work on six Strategic Infrastructure Developments (SID). Macro Works is also affiliated with the Irish Landscape Institute.
15. Roads and Traffic	John Dooley	IEng, MICE (Incorporated Engineer (1993), Member of the Institution of Civil Engineers (2001)). BA in Management, CILM Diploma in Management	Project Principal and Chartered professional. He has extensive knowledge and experience of public transport, public realm, active travel (cycling and walking), bus priority, traffic and highway engineering schemes leading and collaborating within multi-disciplinary teams, with 30 years + working within local government but predominantly the private sector. An expert in the field of road safety engineering and audit, with significant UK and overseas experience; due diligence, collision reduction engineering, auditing and lecturing
	Malcolm Matheson	MSc in Transport Planning & Engineering (2011) BEng (Hons) in Civil & Environmental Engineering (2009) MCIHT (Member of the Chartered Institution of Highways and Transportation)	Senior Transport Planner with ten years' experience including leading on projects such as transport assessment/appraisal , active travel, traffic modelling, development planning and Transport Chapters in Environmental Impact Assessment Reports. Worked with private sector and public sector including secondments and support to local authority Roads/Highways departments. Active member of CIHT Scotland Regional Committee for five years including a key role in organising and attending learning, knowledge and professional development events.
16. Material Assets, including Waste	David Dray	MEng Civil and Environmental Engineering/University of Liverpool MCIWM Member of the Chartered Institution of Wastes Management CEnv	David is a chartered waste management specialist with 30 years' experience in all aspects of wastes management including waste strategic planning, waste recycling, collection, transfer and disposal. David is experienced in all aspects associated with landfill disposal, from site feasibility, through design, site preparation, supervision, construction quality assurance (CQA), auditing and environmental monitoring and remediation. David has worked on a variety of projects both in the United Kingdom and across the world.
	David Vargas Castro	MSc. Environmental Engineering and Project Management Associated member of the Chartered Institute of Waste Management	Waste and Resources Management consultant in Mott MacDonald, with experience in drafting numerous material assets and waste management chapters for environmental impact assessments. David is an environmental engineer with 8+ years of experience in environmental and health impact assessments, permitting procedures and waste management.
17. Major Accidents and /or Disasters (The Technical Land Use Planning Assessment Report was prepared by the PM Group, on behalf of ESB)	Liam Burke	Chartered Engineer HDip Safety, Health and Welfare at Work (UCC, 2014) MSc Occupational Health, UCC 2017	Specialist experience in construction health and safety (Irish Regulations) including Project Supervisor Design Process (PSDP) and Construction Phase (PSCS) duties, as well as in-house Project Safety Advisor (PSA) duties. Supervision and construction monitoring for numerous project types, including local authority housing, siteworks, commercial, education and healthcare buildings.
	Aastha Sethi	As per Chapter 6	As per Chapter 6
18. Interactions between Environmental Factors	Niamh Roche	As per Chapter 6	As per Chapter 6
	Aastha Sethi	As per Chapter 6	As per Chapter 6
19 Summary of Mitigation Measures	Aastha Sethi	As per Chapter 6	As per Chapter 6
	Rhiannon Izzard	As per Chapter 11	As per Chapter 11

B. Stakeholder Letters and Consultation Record

MOTT MACDONALD

Phoebe Duvall

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Stakeholder pre-application consultation in relation to Strategic Infrastructure Development (SID), in line with the provisions of S.37 of the Planning and Development Act 2000 (as amended) – for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development.

8 September 2023

Dear Ms. Duvall

The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

Under Section 9 of the Electricity Regulation Act, the Commission for Regulation of Utilities (CRU) has a statutory duty to have regard to ensuring security of supply and ensuring that all reasonable demands for electricity are met. Regulation 28 of SI 60 of 2005 – the European Communities (Internal Market in Electricity) Regulations, 2005 puts additional obligations on the CRU and the Transmission System Operator, EirGrid, to ensure security of supply. EirGrid's role includes monitoring and reporting on security of supply, including through the Generation Capacity Statement, and making recommendations to the CRU on measures necessary to cover peak demand and address any

shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

The CRU Sept 2021 information note summarised EirGrid's assessment of an electricity supply deficit over the next four winters (2022/23 - 2025/26), and uncertainty over future auctions being able to meet projected demand, as a result of continuing challenging margins. In addition, it outlined key elements of the programme of actions being undertaken by the CRU, in line with its statutory duties, in cooperation with EirGrid, the Department of Environment, Climate and Communications (DECC), the energy industry and other stakeholders, to provide additional stability and resilience to the Irish energy system, through the retention of old generators and provision of temporary generators.

Eirgrid's All-Island Generation Capacity Statement 2022-2031 (September 2022) continues to foresee shortfalls in generation up to 2031 in all electricity demand scenarios.

Action 3 in the CRU Programme of Actions is "*The extended availability and operation of older generation capacity, on a temporary basis, that was otherwise expected to retire in this timeframe*", including Moneypoint.

To provide a Security of Supply service on a temporary basis, ESB has been requested by EirGrid, to enter into a Temporary Contract Mechanism (TCM) for the continued operation of the existing 900MW Moneypoint thermal generation plant so that it is available to the System Operator to generate in the event of a security of supply emergency from 2024 to 2029.

Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic at Moneypoint', which will see the re-development of the site as a strategic hub for the offshore wind industry and as a location for key grid services. That landmark project will be key to ESB's emergence as a leader in green energy production and in-line with ESB's strategy which aims to achieve zero carbon generation by 2040.

Project Location

The proposed development site at Moneypoint Generating Station is located on the northern shore of the Shannon Estuary in County Clare, approximately 3km west of Killimer and 6km south east of Kilrush. The **planning authority** in whose functional area the site is situated, is **Clare County Council.**

Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

[1] Extracted from CRU Information Paper, Security of Electricity Supply – Programme of Actions, Ref. CRU21115, September 2021

Figure 1: ESB Lands at Moneypoint – Strategic Map

Figure 2: ESB Lands at Moneypoint – Location Map

Moneypoint Generating Station

Moneypoint Generating Station comprises a large complex of structures. Electricity generation occurs at 3 No. c. 300MW rated coal-fired units (Units 1 to 3), which entered service between 1985 and 1987. Moneypoint is primarily a coal fired station, with Heavy Fuel Oil (HFO) used as a start-up fuel and in limited other circumstances.

The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence authorises the following activities:

- Activity 1.1 (IED) / 2.1 (EPA Act 1992, as amended): *"Combustion of fuels in installations with a total thermal input of 50MW or more"*,
- Activity 5.4 (IED) / 11.5 (EPA Act 1992, as amended): *"Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic, Unlicensed Water Disposal and Recovery Activity) Regulations 2008 (SJ. No 524 of 2008) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste"*.

The IE licence contains limits and controls on emissions to air, water, dust, and noise. The licence also includes requirements in relation to monitoring requirements and site operations – including requirements for an Environmental Management System (EMS), energy efficiency, incident response and waste management.

The site also operates in line with the conditions of the applicable Greenhouse Gas Emissions (GHG) Permit (Permit Register Number IE-GHG070-10381-6). Moneypoint is also an Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015.

Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

In recent years, Moneypoint has responded to national demand for electricity – particularly during unscheduled outages of other major generating stations, the Covid-19 pandemic and the prevailing energy crisis. Generating schedules are in place up to 2024 with Moneypoint anticipated to continue to play a key role meeting national electricity demands.

ESB has stated its intention to cease burning coal at Moneypoint as part of the broader company strategy which commits ESB to a zero-carbon future. Furthermore, plans have been announced for the transformation of the Moneypoint site and its re-development as a hub for the offshore renewables sector. This hub is the subject of separate planning consent application.

Description of the Proposed Development

ESB is proposing development consisting of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from late 2024 until 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

3. Construction of 2 No. auxiliary boilers and associated boiler house to supply steam for start-up and HFO heating;
4. Changes to previously permitted Flue Gas Desulphurisation (FGD) by-product and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD by-product landfill, on the east of the site, reaches capacity.
5. Decommissioning and removal of coal handling plant and the demolition of associated buildings with the removal of structures to ground level; and
6. All associated ancillary site development works.

Because the existing generating units have been designed to be fired either partly or fully using HFO no change to the generating units is proposed.

The proposed development will also be supported by an Environmental Impact Assessment Report (EIAR). The EIAR will be prepared with regards to the following guidance documents, along with topic specific guidance and regulations.

- Guidelines on The Information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), 2022);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015); and
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission (EC), 2017).

The EIAR include detailed assessments in relation to:

- Population
- Air Quality and Climate
- Noise and Vibration
- Soils and Geology
- Roads and Traffic
- Biodiversity
- Water
- Human Health and Safety
- Cultural Heritage
- Landscape

An Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) will be prepared in respect of the proposed development, so as to enable the competent authorities to carry out an Appropriate Assessment as required by Article 6(3) of the Habitats Directive and section 177U and 177V of the Planning and Development Act 2000, as amended. Where negative effects on a European site cannot be discounted during the Screening for Appropriate Assessment, a Natura Impact Statement will be prepared.

As part of the statutory consultation process, we invite you to submit comments on the proposed development. We therefore invite you to submit comments, or information relevant to this development, which you would like to see addressed as part of the project delivery process and in the project environmental assessment. We would request that any comments be forwarded to us within 4 weeks of the date of this letter i.e., by 6th October 2023.

In the event that you have no comments concerning this development, we would appreciate your confirmation of same. Thank you in advance for your co-operation. If you have any queries, please do not hesitate in contacting the undersigned.

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MOTT MACDONALD

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Dear Mr. Newton

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In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

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8 September 2023

Dear Sir / Madam

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In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

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shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

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Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic at Moneypoint', which will see the re-development of the site as a strategic hub for the offshore wind industry and as a location for key grid services. That landmark project will be key to ESB's emergence as a leader in green energy production and in-line with ESB's strategy which aims to achieve zero carbon generation by 2040.

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Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

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Figure 1: ESB Lands at Moneypoint – Strategic Map

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Moneypoint Generating Station

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Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

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Paul McGowan

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ESB is proposing development consisting of the following:

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2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

3. Construction of 2 No. auxiliary boilers and associated boiler house to supply steam for start-up and HFO heating;
4. Changes to previously permitted Flue Gas Desulphurisation (FGD) by-product and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD by-product landfill, on the east of the site, reaches capacity.
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6. All associated ancillary site development works.

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The proposed development will also be supported by an Environmental Impact Assessment Report (EIAR). The EIAR will be prepared with regards to the following guidance documents, along with topic specific guidance and regulations.

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An Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) will be prepared in respect of the proposed development, so as to enable the competent authorities to carry out an Appropriate Assessment as required by Article 6(3) of the Habitats Directive and section 177U and 177V of the Planning and Development Act 2000, as amended. Where negative effects on a European site cannot be discounted during the Screening for Appropriate Assessment, a Natura Impact Statement will be prepared.

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Minister Heather Humphreys

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Stakeholder pre-application consultation in relation to Strategic Infrastructure Development (SID), in line with the provisions of S.37 of the Planning and Development Act 2000 (as amended) – for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development.

8 September 2023

Dear Minister Humphreys

The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

Under Section 9 of the Electricity Regulation Act, the Commission for Regulation of Utilities (CRU) has a statutory duty to have regard to ensuring security of supply and ensuring that all reasonable demands for electricity are met. Regulation 28 of SI 60 of 2005 – the European Communities (Internal Market in Electricity) Regulations, 2005 puts additional obligations on the CRU and the Transmission System Operator, EirGrid, to ensure security of supply. EirGrid's role includes monitoring and reporting on security of supply, including through the Generation Capacity Statement, and making recommendations to the CRU on measures necessary to cover peak demand and address any

shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

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Action 3 in the CRU Programme of Actions is "*The extended availability and operation of older generation capacity, on a temporary basis, that was otherwise expected to retire in this timeframe*", including Moneypoint.

To provide a Security of Supply service on a temporary basis, ESB has been requested by EirGrid, to enter into a Temporary Contract Mechanism (TCM) for the continued operation of the existing 900MW Moneypoint thermal generation plant so that it is available to the System Operator to generate in the event of a security of supply emergency from 2024 to 2029.

Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic at Moneypoint', which will see the re-development of the site as a strategic hub for the offshore wind industry and as a location for key grid services. That landmark project will be key to ESB's emergence as a leader in green energy production and in-line with ESB's strategy which aims to achieve zero carbon generation by 2040.

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The proposed development site at Moneypoint Generating Station is located on the northern shore of the Shannon Estuary in County Clare, approximately 3km west of Killimer and 6km south east of Kilrush. The **planning authority** in whose functional area the site is situated, is **Clare County Council.**

Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

[1] Extracted from CRU Information Paper, Security of Electricity Supply – Programme of Actions, Ref. CRU21115, September 2021

Figure 1: ESB Lands at Moneypoint – Strategic Map

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Moneypoint Generating Station

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Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

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Diarmuid Buttimer

Executive Officer
Development Applications Unit
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Leah Kenny

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In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

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Figure 1: ESB Lands at Moneypoint – Strategic Map

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The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence authorises the following activities:

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The site also operates in line with the conditions of the applicable Greenhouse Gas Emissions (GHG) Permit (Permit Register Number IE-GHG070-10381-6). Moneypoint is also an Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015.

Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

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ESB is proposing development consisting of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from late 2024 until 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

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4. Changes to previously permitted Flue Gas Desulphurisation (FGD) by-product and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD by-product landfill, on the east of the site, reaches capacity.
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An Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) will be prepared in respect of the proposed development, so as to enable the competent authorities to carry out an Appropriate Assessment as required by Article 6(3) of the Habitats Directive and section 177U and 177V of the Planning and Development Act 2000, as amended. Where negative effects on a European site cannot be discounted during the Screening for Appropriate Assessment, a Natura Impact Statement will be prepared.

As part of the statutory consultation process, we invite you to submit comments on the proposed development. We therefore invite you to submit comments, or information relevant to this development, which you would like to see addressed as part of the project delivery process and in the project environmental assessment. We would request that any comments be forwarded to us within 4 weeks of the date of this letter i.e., by 6th October 2023.

In the event that you have no comments concerning this development, we would appreciate your confirmation of same. Thank you in advance for your co-operation. If you have any queries, please do not hesitate in contacting the undersigned.

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Stakeholder pre-application consultation in relation to Strategic Infrastructure Development (SID), in line with the provisions of S.37 of the Planning and Development Act 2000 (as amended) – for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development.

8 September 2023

Dear Mr. Phelan

The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

Under Section 9 of the Electricity Regulation Act, the Commission for Regulation of Utilities (CRU) has a statutory duty to have regard to ensuring security of supply and ensuring that all reasonable demands for electricity are met. Regulation 28 of SI 60 of 2005 – the European Communities (Internal Market in Electricity) Regulations, 2005 puts additional obligations on the CRU and the Transmission System Operator, EirGrid, to ensure security of supply. EirGrid's role includes monitoring and reporting on security of supply, including through the Generation Capacity Statement, and making recommendations to the CRU on measures necessary to cover peak demand and address any

shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

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Alison Harvey

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To provide a Security of Supply service on a temporary basis, ESB has been requested by EirGrid, to enter into a Temporary Contract Mechanism (TCM) for the continued operation of the existing 900MW Moneypoint thermal generation plant so that it is available to the System Operator to generate in the event of a security of supply emergency from 2024 to 2029.

Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic at Moneypoint', which will see the re-development of the site as a strategic hub for the offshore wind industry and as a location for key grid services. That landmark project will be key to ESB's emergence as a leader in green energy production and in-line with ESB's strategy which aims to achieve zero carbon generation by 2040.

Project Location

The proposed development site at Moneypoint Generating Station is located on the northern shore of the Shannon Estuary in County Clare, approximately 3km west of Killimer and 6km south east of Kilrush. The **planning authority** in whose functional area the site is situated, is **Clare County Council.**

Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

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Figure 1: ESB Lands at Moneypoint – Strategic Map

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Moneypoint Generating Station

Moneypoint Generating Station comprises a large complex of structures. Electricity generation occurs at 3 No. c. 300MW rated coal-fired units (Units 1 to 3), which entered service between 1985 and 1987. Moneypoint is primarily a coal fired station, with Heavy Fuel Oil (HFO) used as a start-up fuel and in limited other circumstances.

The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence authorises the following activities:

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The site also operates in line with the conditions of the applicable Greenhouse Gas Emissions (GHG) Permit (Permit Register Number IE-GHG070-10381-6). Moneypoint is also an Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015.

Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

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ESB has stated its intention to cease burning coal at Moneypoint as part of the broader company strategy which commits ESB to a zero-carbon future. Furthermore, plans have been announced for the transformation of the Moneypoint site and its re-development as a hub for the offshore renewables sector. This hub is the subject of separate planning consent application.

Description of the Proposed Development

ESB is proposing development consisting of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from late 2024 until 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

3. Construction of 2 No. auxiliary boilers and associated boiler house to supply steam for start-up and HFO heating;
4. Changes to previously permitted Flue Gas Desulphurisation (FGD) by-product and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD by-product landfill, on the east of the site, reaches capacity.
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6. All associated ancillary site development works.

Because the existing generating units have been designed to be fired either partly or fully using HFO no change to the generating units is proposed.

The proposed development will also be supported by an Environmental Impact Assessment Report (EIAR). The EIAR will be prepared with regards to the following guidance documents, along with topic specific guidance and regulations.

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An Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) will be prepared in respect of the proposed development, so as to enable the competent authorities to carry out an Appropriate Assessment as required by Article 6(3) of the Habitats Directive and section 177U and 177V of the Planning and Development Act 2000, as amended. Where negative effects on a European site cannot be discounted during the Screening for Appropriate Assessment, a Natura Impact Statement will be prepared.

As part of the statutory consultation process, we invite you to submit comments on the proposed development. We therefore invite you to submit comments, or information relevant to this development, which you would like to see addressed as part of the project delivery process and in the project environmental assessment. We would request that any comments be forwarded to us within 4 weeks of the date of this letter i.e., by 6th October 2023.

In the event that you have no comments concerning this development, we would appreciate your confirmation of same. Thank you in advance for your co-operation. If you have any queries, please do not hesitate in contacting the undersigned.

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Stakeholder pre-application consultation in relation to Strategic Infrastructure Development (SID), in line with the provisions of S.37 of the Planning and Development Act 2000 (as amended) – for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development.

8 September 2023

Dear Mr. Carroll

The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

Under Section 9 of the Electricity Regulation Act, the Commission for Regulation of Utilities (CRU) has a statutory duty to have regard to ensuring security of supply and ensuring that all reasonable demands for electricity are met. Regulation 28 of SI 60 of 2005 – the European Communities (Internal Market in Electricity) Regulations, 2005 puts additional obligations on the CRU and the Transmission System Operator, EirGrid, to ensure security of supply. EirGrid's role includes monitoring and reporting on security of supply, including through the Generation Capacity Statement, and making recommendations to the CRU on measures necessary to cover peak demand and address any

shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

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Dave Wall

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Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

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Figure 1: ESB Lands at Moneypoint – Strategic Map

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Moneypoint Generating Station

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The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence authorises the following activities:

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Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

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ESB is proposing development consisting of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from late 2024 until 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

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4. Changes to previously permitted Flue Gas Desulphurisation (FGD) by-product and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD by-product landfill, on the east of the site, reaches capacity.
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8 September 2023

Dear Sir / Madam

The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

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The Electricity Supply Board (ESB) is seeking planning consent from An Bord Pleanála for the proposed transition and conversion of the existing c. 900 MW electricity generating station at Moneypoint, Co. Clare, from coal to heavy fuel oil and associated ancillary development. The proposed development is wholly located within the long established existing Moneypoint Generating Station in the townland of Carrowdotia South, County Clare V15 R963. This project is required as a short-term supply capacity measure in order to contribute to Ireland's security of electricity supply for Ireland, up until 2029 when more permanent electricity generation solutions are expected to be delivered.

In accordance with the provisions of Section 37 of the *Planning & Development Act 2000, as amended* the proposed development is likely to be deemed a Strategic Infrastructure Development and an application for permission is expected to be made to An Bord Pleanála in the fourth quarter of 2023.

Need for the Project

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with the Company's "Net Zero by 2040" Strategy and the Government's Project Ireland 2040 plan.

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shortfalls in capacity. The CRU is then required to take such measures as it considers necessary to protect security of supply.[1]

The CRU, working with System Operators, has therefore progressed several measures to support both medium-term and short-term electricity supply and demand balance. CRU September 2021 Programme of Actions was published in tandem with the publication by EirGrid and SONI of the All-Island Generation Capacity Statement 2021. EirGrid has forecast electricity demand and supply in the All Island Generation Capacity Statement 2022 – 2031.

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Action 3 in the CRU Programme of Actions is "*The extended availability and operation of older generation capacity, on a temporary basis, that was otherwise expected to retire in this timeframe*", including Moneypoint.

To provide a Security of Supply service on a temporary basis, ESB has been requested by EirGrid, to enter into a Temporary Contract Mechanism (TCM) for the continued operation of the existing 900MW Moneypoint thermal generation plant so that it is available to the System Operator to generate in the event of a security of supply emergency from 2024 to 2029.

Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic at Moneypoint', which will see the re-development of the site as a strategic hub for the offshore wind industry and as a location for key grid services. That landmark project will be key to ESB's emergence as a leader in green energy production and in-line with ESB's strategy which aims to achieve zero carbon generation by 2040.

Project Location

The proposed development site at Moneypoint Generating Station is located on the northern shore of the Shannon Estuary in County Clare, approximately 3km west of Killimer and 6km south east of Kilrush. The **planning authority** in whose functional area the site is situated, is **Clare County Council.**

Moneypoint Generating Station lies within a larger ESB landholding comprising 180 Ha of land onshore, and 65 Ha of foreshore – see Figure 1 and Figure 2 (with respective areas differentiated in blue).

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Figure 1: ESB Lands at Moneypoint – Strategic Map

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Moneypoint Generating Station

Moneypoint Generating Station comprises a large complex of structures. Electricity generation occurs at 3 No. c. 300MW rated coal-fired units (Units 1 to 3), which entered service between 1985 and 1987. Moneypoint is primarily a coal fired station, with Heavy Fuel Oil (HFO) used as a start-up fuel and in limited other circumstances.

The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence authorises the following activities:

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The site also operates in line with the conditions of the applicable Greenhouse Gas Emissions (GHG) Permit (Permit Register Number IE-GHG070-10381-6). Moneypoint is also an Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015.

Throughout its operation, Moneypoint Generating Station has been maintained and improved to meet relevant environmental standards, and the IE licence reviewed as appropriate.

Set within a rural landscape, the Moneypoint is a significant brownfield landbank long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Since its commissioning, Moneypoint has operated as a coal fuelled power station, meeting on average 25% of national demand. Today, the Station remains an important electricity generation asset. In addition to generating capacity of c.900MW of electricity, it is the largest energy store on the Island - with a capacity to store sufficient coal for three months of running, compared with standard gas generating stations which hold just up to five days of energy storage. As such, the site plays a consistent and key role in the energy strategies for the State. As part of the proposed development this storage capacity of HFO will increase from up to 10 days to 20 days for running at full capacity.

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ESB is proposing development consisting of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from late 2024 until 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
2. Construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes;

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An Appropriate Assessment Screening Report and a Natura Impact Statement (NIS) will be prepared in respect of the proposed development, so as to enable the competent authorities to carry out an Appropriate Assessment as required by Article 6(3) of the Habitats Directive and section 177U and 177V of the Planning and Development Act 2000, as amended. Where negative effects on a European site cannot be discounted during the Screening for Appropriate Assessment, a Natura Impact Statement will be prepared.

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aastha.sethi@mottmac.com

Our Case Number: ABP-317184-23

An Bord Pleanála

ESB
Brendan Allen,
Engineering and Major Projects
One Dublin Airport Central, Dublin Airport
Cloghran
Co. Dublin
K67 XF72

Date: 17 November 2023

Re: Proposed transition and conversion of the existing 900MW electricity generating station from coal to heavy fuel oil and associated ancillary development.
Moneypoint Generating Station, Moneypoint, Co. Clare.

Dear Sir / Madam,

Please be advised that following consultations under section 37B of the Planning and Development Act 2000, as amended, the Board hereby serves notice under section 37B(4)(a) that it is of the opinion that the proposed development falls within the scope of paragraphs 37A(2)(a), (b) and (c) of the Act. Accordingly, the Board has decided that the proposed development would be strategic infrastructure within the meaning of section 37A of the Planning and Development Act 2000, as amended. Any application for permission for the proposed development must, therefore, be made directly to An Bord Pleanála under section 37E of the Act.

Please also be informed that the Board considers that the pre-application consultation process in respect of this proposed development is now closed.

Attached is a list of prescribed bodies to be notified of the application for the proposed development:

- Minister for Housing, Local Government and Heritage
- Minister for Environment, Climate and Communications
- Commission for Regulation of Utilities, Water and Energy
- Clare County Council
- Kerry County Council
- Limerick City and County Council
- The Southern Regional Assembly
- Environmental Protection Agency
- Health and Safety Authority (Seveso)

Teil	**Tel**	(01) 858 8100
Glao Áitiúil	**LoCall**	1800 275 175
Facs	**Fax**	(01) 872 2684
Láithreán Gréasáin	**Website**	www.pleanala.ie
Ríomhphost	**Email**	bord@pleanala.ie

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64 Marlborough Street
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D01 V902

- Transport Infrastructure Ireland
- Uisce Eireann
- An Chomhairle Ealaion
- Failte Ireland
- An Taisce
- The Heritage Council
- Inland Fisheries Ireland
- Ireland Commission for Energy Regulation

Further notifications should also be made where deemed appropriate.

In accordance with section 146(5) of the Planning and Development Act 2000, as amended, the Board will make available for inspection and purchase at its offices the documents relating to the decision within 3 working days following its decision. This information is normally made available on the list of decided cases on the website on the Wednesday following the week in which the decision is made.

In accordance with the fees payable to the Board and where not more than one pre-application meeting is held in the determination of a case, a refund of €3,500 is payable to the person who submitted the pre-application consultation fee. As only one meeting was required in this case, a refund of €3,500 will be sent to you in due course.

The following information relates to challenges to the validity of a decision of An Bord Pleanála under the provisions of the Planning and Development Act 2000, as amended.

Judicial review of An Bord Pleanála decisions under the provisions of the Planning and Development Acts (as amended).

A person wishing to challenge the validity of a Board decision may do so by way of judicial review only. Sections 50, 50A and 50B of the Planning and Development Act 2000 (as substituted by section 13 of the Planning and Development (Strategic Infrastructure) Act 2006, as amended/substituted by sections 32 and 33 of the Planning and Development (Amendment) Act 2010 and as amended by sections 20 and 21 of the Environment (Miscellaneous Provisions) Act 2011) contain provisions in relation to challenges to the validity of a decision of the Board.

The validity of a decision taken by the Board may only be questioned by making an application for judicial review under Order 84 of The Rules of the Superior Courts (S.I. No. 15 of 1986). Sub-section 50(7) of the Planning and Development Act 2000 requires that subject to any extension to the time period which may be allowed by the High Court in accordance with subsection 50(8), any application for judicial review must be made within 8 weeks of the decision of the Board. It should be noted that any challenge taken under section 50 may question only the validity of the decision and the Courts do not adjudicate on the merits of the development from the perspectives of the proper planning and sustainable development of the area and/or effects on the environment. Section 50A states that leave for judicial review shall not be granted unless the Court is satisfied that there are substantial grounds for contending that the decision is invalid or ought to be quashed and that the applicant has a sufficient interest in the matter which is the subject of the application or in cases involving environmental impact assessment is a body complying with specified criteria.

Section 50B contains provisions in relation to the cost of judicial review proceedings in the High Court relating to specified types of development (including proceedings relating to decisions or actions pursuant to a law of the state that gives effect to the public participation and access to justice provisions of Council Directive 85/337/EEC i.e. the EIA Directive and to the provisions of Directive 2001/12/EC i.e. Directive on the assessment of the effects on the environment of certain plans and programmes). The general provision contained in section 50B is that in such cases each party shall bear its own costs. The Court however may award costs against any party in specified circumstances. There is also provision for

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the Court to award the costs of proceedings or a portion of such costs to an applicant against a respondent or notice party where relief is obtained to the extent that the action or omission of the respondent or notice party contributed to the relief being obtained.

General information on judicial review procedures is contained on the following website, www.citizensinformation.ie.

Disclaimer: The above is intended for information purposes. It does not purport to be a legally binding interpretation of the relevant provisions and it would be advisable for persons contemplating legal action to seek legal advice.

If you have any queries in the meantime, please contact the undersigned officer of the Board or email sids@pleanala.ie quoting the above mentioned An Bord Pleanála reference number in any correspondence with the Board.

Yours faithfully,

Lauren Murphy
Executive Officer
Direct Line: 01-8737275

PC09A

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An Bord Pleanála

Board Direction
BD-014579-23
ABP-317184-23

The submissions on file and the inspector's report were considered at a Board Meeting held on the 15/11/2023.

The Board decided having regard to the size, scale and location of the proposed development comprising of the transition and conversion of the 900MW existing electricity generation station at Moneypoint from coal to heavy fuel oil (HFO) with limited run hours from mid-2025 to late 2029 as set out in the plans, particulars and correspondence received by An Bord Pleanála on 24th May 2023, falls within the provisions of the Seventh Schedule of the Planning & Development Act 2000 (as amended), Energy Infrastructure. The Board considered that the proposed development would satisfy the requirements of paragraph (a), (b) and (c) of section 37A(2) of the Planning & Development Act 2000 (as amended) and that a planning application should be made directly to the Board

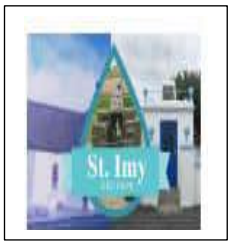
The Board recommended the application documents should be forwarded the list of Prescribed Bodies below for their consultation and consideration for the purposes of Section 37E (3) (c) of the Act:

Minister for Housing, Local Government and Heritage
Minister for Environment, Climate and Communications
Commission for Regulation of Utilities, Water and Energy
Clare County Council
Kerry County Council
Limerick City and County Council
The Southern Regional Assembly
Environmental Protection Agency

Health and Safety Authority (Seveso)
Transport Infrastructure Ireland
Uisce Eireann
An Chomhairle Ealaion
Fáilte Ireland
An Taisce
The Heritage Council
Inland Fisheries Ireland
Ireland Commission for Energy Regulation
Further notifications should also be made where deemed appropriate.

Note 1: The prospective applicant should be advised to submit a standalone document (which may form part of the EIAR) with the planning application, which outlines the mitigation measures, in the interest of convenience and ease of reference.

Board Member _____ **Date:** 15/11/2023
Peter Mullan



Killimer 9th & 10th September 2023

INIS CATHAIGH PASTORAL AREA

Co Parish Priests: Fr Pat Larkin - Tel 0659051093 Mob 087-2300627
Fr Tony Casey - Tel 0659059008 Mob 087-9936950
Fr Peter O'Loughlin - Mob 086-8250016
Pastoral Worker- Ministry of Pastoral Care: Maura Falsey 089-4026161
Parish Safeguarding Representatives: Frances Hassett & Laura Fennell

Newsletter: email carolineylynch@yahoo.com before Midday on Wednesday

Knockerra Church

Saturday 9th September 8 p.m.

Month's Mind
Sean Blake, Granatooha

Saturday 16th September 8 p.m.

|Joh, Peggy & John & Olivia Pyne
Tommy Collins, Tullagower

Killimer Church

Sunday 10th September 10.30 a.m.

Teresa & Peter Daly
Michael & Bridie Boyle (Nee Dixon) & deceased family members

Sunday 17th September 10.30 a.m.

Sunday 24th September 10.30 a.m.

Month's Mind
Ann Lillis, Woodview, Killimer

Pope Francis Monthly Intention

For people living on the Margins: We pray for those persons living on the margins of society, in inhumane life conditions; may they not be overlooked by institutions and never considered of lesser importance

Franciscan Brothers

We extend a very warm welcome to Brother Brian Johnson OSF, The Monastery, Clara who is visiting our parish this weekend 9th & 10th September & preach at both Masses. As you leave after Mass there will be a collection to support the work of the Franciscan Brothers. We encourage your generous support.

Marriage Blessings:

We congratulate & wish many blessings to Adrienne Nugent & Eoin Mac Gearailt who were married in St. Imy's church, Killimer last weekend.

Marriage Blessings

We congratulate & wish many blessings to Niall Culligan & Rebecca Hastings who were married last weekend.

24 Hour Adoration

24 hour adoration is taking place in St. Senan's Church, Knockerra commencing Friday 15th September at 8.00p.m. If anyone wishes to spend some quiet time in prayer, please contact:-
Mary 086 3748065/Ann 087 7618813 or feel free to come at any time that suits you best.

Killimer G.A.A.

The lotto winner this week is Pat McMahon.

Knockerra Church Saturday 16th September

Eucharist Minister: Loretta Moloney
Liturgy Reader: Ann Fitzpatrick

Knockerra Church Flower Rota September

Susie Griffin

Killimer Church Sunday 17th September

Eucharist Minister: Kathleen Crowe & Pat Culligan

Killimer Church Cleaning September

Caroline Brennan, Patsy O'Driscoll, Eve Browne & Marie Kelly.

Knockerra Church

The Holy Rosary is on-going in Knockerra Church every evening at 7 p.m. Praying together is powerful, everyone is welcome.

Knockerra National School

Congratulations to both Lucy Culligan and Levi Davis who received third prize in their age category in the Dan Furey Art Competition.

Knockerra N.S. Clothes Collection

If you are doing a clear out and have any unwanted clothes, we would be delighted to receive them for our Clothes Collection Fundraiser.

World Suicide Prevention Day

September 10th World Suicide Prevention Day is an opportunity to raise awareness of suicide and to promote action through proven means that will reduce the number of suicides and suicide attempts globally. On Sunday September 10th ,we ask you to light a candle near a window at 8 p.m. to show your support for suicide prevention to remember a lost loved one and for the survivors of suicide.

Killaloe Diocese Autumn Pilgrimage To Lourdes

This will take place from 2nd to 7th October. €780 full board. Limited seats available. Booking to Joe Walsh Tours, 89 Harcourt Street, Dublin 2 D02WY88 Tel: 01-2410800 www.joewalshtours.ie

MONTH OF CREATION
The Hazel Nut by Julian of Norwich
'God showed me a little thing, the size of a hazelnut,
lying in the palm of my hand.
I looked upon it and wondered, "What might this be?"
And I was answered, "It is all Creation."
I marvelled how it could last,
for I thought it might suddenly fall to nothing, it was so small.
And I was answered,
"It lasts and ever shall last, for God loves it.'
In this little hazelnut, I saw three truths:
the first is that God made it;
the second is that God loves it;
and the third is that God keeps it safe.'

Moneypoint Neighbours Meeting

Following on from the meeting on the 20th February 2023, we are hosting a meeting with our neighbours next Tuesday evening the 12th September in the Moneypoint Canteen at 7pm. Stephen O'Mahoney (Station Manager) will be giving an update on station activities, while Ronan O'Flynn and E&MP colleagues will give an update on current and future projects. Everyone is welcome to attend. Anyone who wishes to attend, could you please advise the names to Irene (information below) to enable her to prepare a list for access at security.

Irene Power | HSEQ Specialist, Moneypoint Generating Station | ESB, Generation & Trading | T: +353 (0)65 9080423 / +353 (0)86 0856820 | www.esb.ie

Cúil Gaels update

With the summer swiftly passing by, we are now coming to the business part of the season.
Congratulations to our U12s team in winning their Peil na gCailíní final in Éire Óg against Clooney Quin. They played fantastically and had a wonderful season.
Congratulations also to our minor team who won the Minor D shield:.Cúil Gaels 3-9 Corofin 2-9
It was a very close game throughout and the girls played very well, with great teamwork and lovely football. Our scorers were Michaela Neary (1-0), Jessica Kennedy (2-1), Cliodhna McMahon (0-1) and Leah Kelly (0-7, 2 from frees). Everyone played their hearts out with Leah Kelly, Leona and Jessica Kennedy, Orla and Eimear McGee, Aine O'Neill and Cliodhna McMahon in particular driving the team on. Cliodhna, who played in forwards and in goals, had a brilliant save in the dying minutes to keep Corofin out.
Our Junior A team have also been busy and defeated Kildysart at the weekend, 6-14 to 2-4, to progress to the county semi final. The girls have improved with each game and are hoping to drive on towards the final. Keep an eye on the socials for further details of the upcoming semi final.

Irish And PE Grinds

Leaving and Junior Certificate Irish grinds and Leaving Certificate PE grinds available. Contact (087) 6811653 for more information.

Bereavement Information

Anam Cara's upcoming Bereavement Information Evening will take place on Wednesday 13th September in Milford Care Centre. A warm welcome awaits all.

C. Construction Environmental Management Plan (CEMP)

C.1 Resource and Waste Management Plan (RWMP)

C.2 Traffic Management Plan (TMP)

MOTT MACDONALD

Energy for generations

Moneypoint Security of Supply

Appendix C Construction Environmental Management Plan

February 2024

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Moneypoint Security of Supply

Appendix C Construction Environmental Management Plan

February 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
PL	February 2024	A. Sethi	N. Roche	N. Roche	For Planning Consent

Document reference: 229101323_401_6_PL | PL |

Information class: Standard

Contents

Tables

Figures

1 Introduction

1.1 Overview of Proposed Development

Mott MacDonald Ireland Limited (Mott MacDonald) have been appointed by the Electricity Supply Board to prepare this Construction Environmental Management Plan (CEMP) to accompany a Strategic Infrastructure Development application for the continued generation and associated change of fuel type used (ie from coal to Heavy Fuel Oil [HFO]) of Moneypoint Generating Station, Killimer, Kilrush County Clare, V15 R963.

At present Moneypoint Generating Station primarily operates as a coal fired power station. It is proposed to convert its primary fuel source to Heavy Fuel Oil (HFO) with limited run hours from late 2024 until the end of 2029 (hereafter referred to as the "proposed development"). The proposed development will act as an out of market generator of last resort and will operate only when required by the Transmission System Operator (EirGrid) for security of supply reasons.

Moneypoint Generating Station is a strategically important part of the energy generation network across Ireland and contributes to ensuring that energy needs are met nationwide, meeting on average ca.12-15% of national demand. The project aims to ensure that the power station remains viable as an energy generation node until 2029, whereafter ESB intends on transforming the site and redeveloping it as a hub for the offshore renewable sector as part of the ESB's 'Towards Zero' Strategy. The project also aims to deliver the phasing out of fossil fuels under the Programme for Government (2020).

Refer to Figure 1.1 for an overview of the location of Moneypoint Generating Station. The red line boundary represents the SID application boundary and spatial extent of the works within the overall Moneypoint Generating Station complex. The blue line boundary represents ESB's land ownership boundary.

Figure 1.1: Overview Location of the Proposed Development

Source: ESB, Strategic Site Location Map, Drawing reference: QP-000017-65-D451-001-001-000

ESB is proposing a development consisting of the following elements:

1. Transition and conversion of the existing coal fired power station's primary fuel from coal to Heavy Fuel Oil (HFO) for limited hours of operation and a temporary period of five years until the 31 December 2029;
2. Construction of 2no. HFO tanks each with a capacity of 25,000 tonnes (approx. 48.7m diameter x 15m high) and associated bund walls (approx. 5.0m high);
3. Construction of a new boiler house (approx. 24m L x 18m W x 11m H) to house 2no. auxiliary boilers (1no. electric and 1.no distillate, each 22.7MW (thermal output), including:
   - 1no. Blow down vessel (approx. 4.5m wide x 13m high)
   - 1no. Exhaust Stack (approx. 1.0m diameter and 30m H)
   - 1no. Annex structure (approx. 10.0m L x 5m W x 4m H)
4. Construction of an extension to each of the existing 3no. Flue Gas Desulphurisation Absorbers (FGD) - units 1, 2 and 3, to provide additional reclaimed ash unloading facilities (ash injection plant extension), comprising:
   - 1no. conveyor enclosure (approx. 7.0m L x 2.5m W x 22m H)
   - 1no. hopper enclosure (approx. 6m L x 5m W x 6m H)
5. Construction of a reclaimed ash unloading facility at the existing landfill capping batching plant, comprising of a hopper enclosure adjoining the existing batching plant (approx. 14.0m L x 6.5m W x 6.0m H) and conveyor enclosure (approx. 3.5m L x 3.5m W x 11.5m H)
6. Dismantling and removal of 2no. mobile stacker reclaimers and 1no. coal conveyor bridge;
7. Changes to existing permitted Flue Gas Desulphurisation (FGD) by-product and Ash Storage Area (ASA) arrangements (Pl. Ref. 14/373) to utilise spare capacity in the existing ASA [capping layer thickness increase from 0.6m (*minimum*) up to a maximum of 1.6 meters] with an overall proposed reduction in height of the currently permitted ASA by approx. 1.85m; and,
8. All associated ancillary site development works to facilitate the proposed development, including a new lighting arrangement, surface water drainage, internal roads and temporary construction compounds and laydown areas.

1.2 Purpose of this CEMP

The purpose of this Construction Environmental Management Plan (CEMP) is to document and describe the main activities that will be undertaken to facilitate the proposed development and to provide a framework of environmental protection measures that will be implemented prior to commencement of, and throughout the duration of, the proposed works. The CEMP includes all construction activities as listed and the partial dismantling of the coalyard.

This CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the Local Authority to ensure that the measures implemented are effective. The revised document to be then submitted to the Employer. The appointed Contractor will develop a detailed CEMP within the parameters assessed in the application particulars, taking into account any conditions of the statutory approval (which, it is anticipated, will include a requirement for agreement of the content of the CEMP with the relevant planning authority – Clare County Council).

The works will be undertaken by Contractors engaged by ESB. This CEMP will be provided to the appointed Contractor prior to the commencement of works and will be further developed by the appointed Contractor. The appointed Contractor will be required to obtain approval of any updated CEMP by ESB, prior to commencement of any works.

The Contractor's updated CEMP will set out the approach and methodology which the Contractor will follow in scheduling and undertaking the work. It will also incorporate the control (mitigation) measures detailed in this CEMP in addition to any relevant planning conditions, the measures provided in the Natura Impact Statement (NIS) and the Environmental Impact Assessment Report (EIAR) and any commitments given by ESB in relation to environmental protection associated with the activities described in this version.

The primary objective of the CEMP is to safeguard the environment, site personnel and nearby receptors from site activity which may cause harm or nuisance. As such, the CEMP sets out a project framework to ensure that key mitigation measures are translated into measurable actions and are appropriately implemented during the construction phase of the proposed development. As part of this framework, transparent and effective monitoring of the receiving environment during construction will be used to inform and manage on-going activities on site and to demonstrate effectiveness of the measures outlined therein.

A contractual obligation will be included within the tendering processes and implemented on appointment of the Contractor to ensure that the proposed works are developed in compliance with the requirements of the CEMP, EIAR and NIS and relevant planning conditions which will take precedence over this current version of the CEMP in the event of conflicting information.

ESB will monitor the Contractor(s) performance on a regular basis and will undertake the following compliance checks throughout the duration of the construction period:

- Review contractor documents against the requirements of the CEMP
- Undertake regular audits
- Continuously check records
- Set up a contractor reporting structure
- Conduct regular meetings (at least fortnightly) where Environmental Health and Safety is an agenda item

1.3 Structure of this CEMP

The structure of this CEMP is set out below.

- Chapter 1 describes the purpose of this CEMP
- Chapter 2 describes the roles and responsibilities of the construction phase team
- Chapter 3 describes the proposed construction/decommissioning activities
- Chapter 4 describes the control measures that will be implemented
- Chapter 5 includes an Environmental Incident Response Plan
- Chapter 6 describes the training and auditing protocols that will be implemented
- Chapter 7 describes the communications and procedure for complaints

2 Roles and Responsibilities

2.1 About the ESB

The ESB was established in 1927 as a statutory corporation in the Republic of Ireland under the Electricity (Supply) Act 1927. With a holding of 95%, ESB is majority owned by the Irish Government with the remaining 5% held by the trustees of an Employee Share Ownership Plan.

ESB owns and operates assets across the electricity market: from generation, through transmission and distribution to supply. In addition, ESB provides associated services such as supplying gas, using its networks to carry fibre for telecommunications and developing electric vehicle public charging infrastructure.

ESB provides approximately 43% of electricity generation capacity in the Irish all-island market and supplies electricity to approximately 1.4 million customers. ESB Group employs approximately 7,000 people.

ESB's mission is to bring sustainable and competitively priced energy solutions to its customers and its vision is to be Ireland's foremost energy company competing successfully in the all-island market.

ESB will procure and oversee the engineering, design, installation and commissioning of the equipment and ensure that the Moneypoint Generating Station meets all the legislations, regulations, licences, standards and codes applicable to allow for flexible, safe and reliable operation.

2.2 Land Ownership

The proposed development is located on a site owned by ESB within the existing Moneypoint Generating Station complex, on the northern shore of the [Lower] Shannon Estuary within the administrative area of Clare County Council.

2.3 Employer

ESB is the Employer and has the following responsibilities:

- Managing the process towards construction including liaison with stakeholders;
- Undertaking a Client engineering function, including inspections, to ensure that detailed designs, plant, materials and works including scheduling meet the requirements of outline designs and the proposal requirements; and
- Employing an independent Environmental Clerk of Works (EnCoW) to assess the construction of the proposed development and advise the Contractor on the implementation of the agreed CEMP.

2.4 Contractor

Construction of the proposed development is expected to take ca. 21 months from September 2024, subject to grant of planning permission. A Contractor will be appointed for construction works including construction of HFO tanks and bund, construction and commissioning of electrical aux boiler and distillate aux boiler, construction and commissioning of ASA injection and batching plant.

The Contractor will be responsible to ESB for the construction of the equipment foundations, including the excavation and appropriate disposal of excavated material as well as the

construction of the main equipment foundations and any piled foundations needed. The Contractor will manage the excavation of material and the safe disposal of this material to a suitably licenced waste disposal facility. In-situ concrete casting will be fully controlled to ensure that cement bound materials are confined within the formwork.

It is envisaged that the dismantling and removal of the stacker reclaimers and metal steelwork within the coal yard and rising conveyors 13A and 13B to ground level, will be a separate contract. The dismantling process is expected to take 4 months.

2.5 Project Supervisor Design Process / Project Supervisor Construction Stage

ESB will act as Project Supervisor of the Design Process (PSDP) for the initial design phase of this project. Upon their appointment, the Contractor will be appointed to the role of PSDP (where necessary) and will take on the role of Project Supervisor of the Construction Stage (PSCS).

2.6 Site Manager

A Site Manager will be responsible for the day to day running of the site and will direct and oversee the activities of the Contractor and subcontractors throughout the works. The Site Manager will be responsible for programming of the works, will consult regularly with the Employer and will maintain site safety.

2.7 Environmental Supervision and Monitoring

An Environmental Clerk of Works (EnCoW) will be employed by the Contractor to oversee implementation of mitigation. This will include monitoring and auditing the works and contractor programmes and works method statements, to ensure mitigation is correctly implemented.

The Contractor's Environmental Clerk of Works (EnCoW) will have suitable environmental qualifications and the necessary experience and knowledge appropriate to the role. The EnCoW will be delegated sufficient powers under the construction contract so that she / he will be permitted to instruct the Contractor to stop works and apply emergency response mitigation should an environmental incident occur.

The EnCoW will also manage consultation with environmental bodies including the NPWS and IFI. The EnCoW will be responsible for carrying out regular monitoring of the Contractors CEMP and will report monitoring findings in writing to ESB on a regular basis (at least weekly, but immediately in the case of incidents or accidents).

An independent EnCoW will be retained on behalf of the Employers Representative team (ie the ESB), who will review and comment on the pre-construction survey reports, mitigation proposals, monitoring and compliance reports generated by the Contractor's EnCoW. The independent EnCoW will have the necessary experience and knowledge appropriate to the role and will be a member of a relevant professional body, such as the Institute of Environmental Management and Assessment (IEMA).

2.8 Resource Manager

A Resource Manager will be appointed by the Contractor and will be responsible for all aspects of waste management at the different stages of the proposed development, and overall implementation of the construction Resource and Waste Management Plan (RWMP) and associated procedures. A RWMP has been prepared, included in Appendix C.1 of this CEMP, which will remain a 'live' document and it will be reviewed regularly and revised as necessary by the appointed Contractor.

3 Proposed Construction Phase Activities

3.1 Construction Schedule

Construction of the proposed development is expected to take ca. 21 months from September 2024, subject to grant of planning permission.

During this period, the three existing generating units will be undergoing maintenance overhauls. One unit will switch to firing HFO followed by the other two units as stocks of coal are reduced.

As noted previously, a contractor compound and laydown area and associated welfare facilities are long established on the Moneypoint Generating Station site complex. It is proposed to utilise these facilities for the proposed development. As such, no preconstruction or site mobilising works are anticipated prior to commencement of the construction works.

It is anticipated that the construction works will be undertaken in one phase and each element of the works will be constructed sequentially. An indicative schedule is set out in Table 3.1.

Table 3.1: Indicative Construction Programme

Months	Construction Activities
21 Months	**Electrical Aux Boiler followed by Distillate Aux Boiler**
Months 1 to 21	● Auxiliary boiler building and enabling works ● Equipment installation (M&E construction) ● Commissioning
13 Months	**ASA Injection and Batching Plant**
Months 7 to 19	● Absorber and batching civil construction (equipment supply) ● Absorber and batching M&E construction (site erection) ● Commissioning
19 Months	**HFO Tanks Construction**
Months 3 to 21	● HFO tanks construction ● HFO bund construction – Base and floor – Bund walls and ramp

It is proposed to dismantle and remove the stacker reclaimers and metal steelwork within the coal yard and rising conveyors 13A and 13B to ground level, once all coal stocks have been exhausted. These are largely metal structures and dismantling will be by controlled dismantling only. It is envisaged that a separate contract will be required to undertake this element of the works. The dismantling process is expected to take four months and these works will not coincide with the construction works.

3.2 General Site Operations

3.2.1 Working Hours

Construction works will for the most part take place within normal business hours, 07:00-19:00 Monday to Friday, and 08:00-14:00 on Saturday. However, given the urgent need for this project for security of electricity supply there will be a need to undertake some works outside of these times including concrete pours, floating, works inspections and possibly other work. Construction and dismantling works outside the abovementioned construction hours will only be undertaken with prior written approval of the local authority.

3.2.2 Construction Access

All construction traffic will arrive via the N67 national road via the same entrance to the operation site. Heavy Goods Vehicles (HGVs) from outside the local area will be required to access the N67 via the N68 and the M18. Smaller vehicles including Light Goods Vehicles (LGVs) and cars will be permitted to use more local roads to travel to and from the construction site.

3.2.3 Traffic Management

The appointed Contractor will implement and develop the construction Traffic Management Plan (TMP) included in the CEMP (Appendix C.2 of this CEMP), in ongoing consultation with Clare County Council. The TMP will remain a 'live' document which will be implemented as a minimum. The TMP will be reviewed and revised as necessary in consultation and agreement with the local authority to ensure that the measures implemented are effective. The implementation of the TMP will mitigate potential construction traffic impacts on the public road network. All construction activities, including construction traffic, will be managed through the CEMP.

The TMP will ensure that potential impacts resulting from construction traffic on the local community, businesses and other industry adjacent to the site, are minimised. The Contractor will be required to develop their construction Traffic Management Plan to suit the access and egress of the site, their delivery and laydown requirements, expected movements of construction traffic, the size of the Contractor's compound along with their programme of works.

Specific haul routes, details of any oversized loads (if required) and a Traffic Management Plan will be prepared in advance of construction. For abnormal loads, haulage will likely take place outside of peak traffic times and the Contractor may be required to arrange a special escort with An Garda Síochána. Appropriate permits for designated haul routes will be sought and agreed with the Local Authorities during the detailed design phase. It is expected that the auxiliary boilers, boiler stack, cranes and possibly parts of the HFO tanks will be assembled off site and potentially delivered as abnormal load during the construction phase. This TMP will be agreed with Clare County Council, if required.

3.2.4 Temporary Construction Compounds/Laydown Areas

The construction phase will necessitate the provision of a temporary contractor's compound along with welfare facilities. The temporary contractor's compound is located along the western boundary within the existing operational compound.

Existing toilet and washing facilities are located at the established contractor laydown area. Additional toilet and welfare facilities are located across the site, and available for contractors.

Electrical and water connections are available in the Contractor compound for any temporary portacabins etc supplied by the Contractors. The main station canteen is also available to all contractors. Temporary car parking for contractors' vehicles is provided within the temporary contractor's compound.

3.3 Description of Construction Activities

3.3.1 Proposed New HFO Tanks

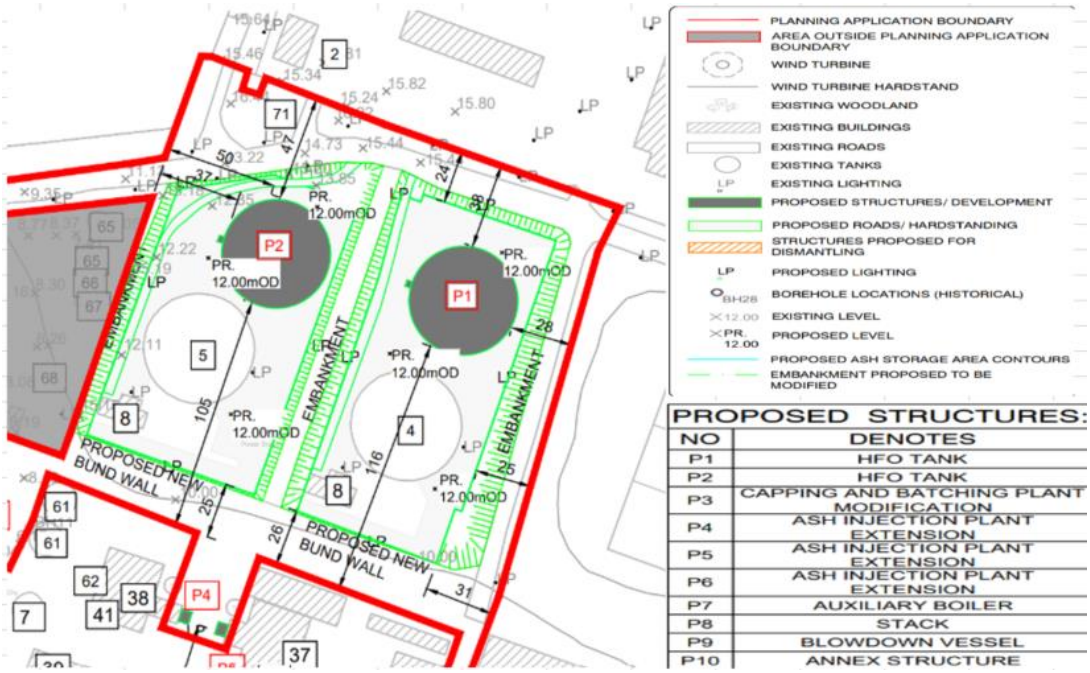
The two new HFO storage tanks are proposed to be located within the existing bunds to the north of the existing tanks, as shown in Figure 3.1. The HFO and auxiliary steam connections will be tied into the existing supply and return pipework and will utilise the existing HFO forwarding pumps and HFO supply line from the Jetty.

The tanks will have a proposed capacity of 25,000 tonnes (ca. 25,773m^3) each. This will result in a total HFO storage capacity of 100,000 tonnes or 20 days of storage running at full capacity.

The proposed tanks will be the same height and diameter as the existing tanks as shown in Planning Drawings QP-000017-65-D451-008-001-000 to QP-000017-65-D451-008-004-000. They will be clad in a similar coated metal finish in Dusty Grey (RAL colour 7037) or similar, to match the colour of the existing tanks.

Existing HFO pumping and piping will be used for the purposes of filling the new and existing HFO tanks as well as supplying the boilers with fuel. Only new connections to the new tanks will be required.

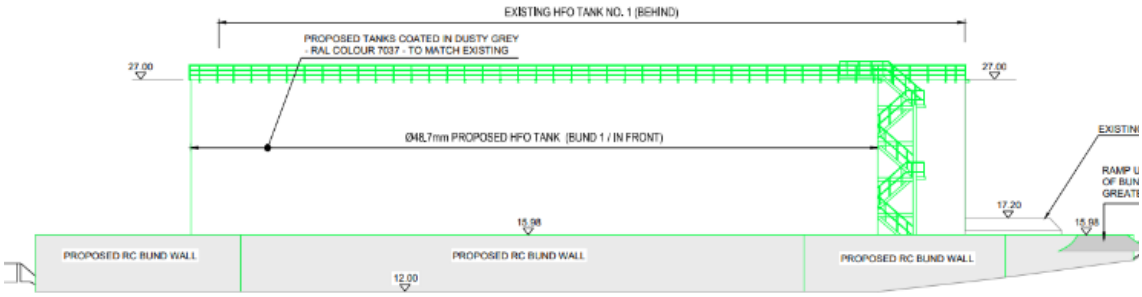
Figure 3.1: Proposed HFO tanks



Source: Extracted from Planning Drawing QP-000017-65-D451-005-001-000

The existing bund will be upgraded to include a concrete floor across the entire bund. New bund walls will be constructed from reinforced concrete to a height of approximately 3.98m (bund 1) to 4.41m (bund 2), to ensure containment volumes of ca. 30,406m^3 and ca. 30,545m^3 respectively. This takes into account 110% of the largest tank oil volume, a potential extreme rainfall event to cover any emergency response periods and an additional 3,981 m^3 for any potential firefighting water to take into account requirements in the Guidance Note to Industry on Fire Water Retention Facilities (EPA, 2019) and CIRIA Guidance C736. Refer to Figure 3.2 for an example elevation of tank 1 and bund 1 and to Section 2 of the Drainage Report (Appendix H.1 of the EIAR) for further details.

Figure 3.2: Proposed Bund Wall NE Elevation – Tank 1



Source: Extracted from Planning Drawing QP-000017-65-D451-008-004-000

Due to the proposed increase in height of the bund walls, the access ramp will be upgraded to ensure a safe gradient is maintained, this ramp from the roadway to the north of the HFO storage area will be raised by ca. 1.4m to allow access into the bund. Lamp posts will also be installed to the permitter of the bund.

3.3.2 Proposed Auxiliary Boilers

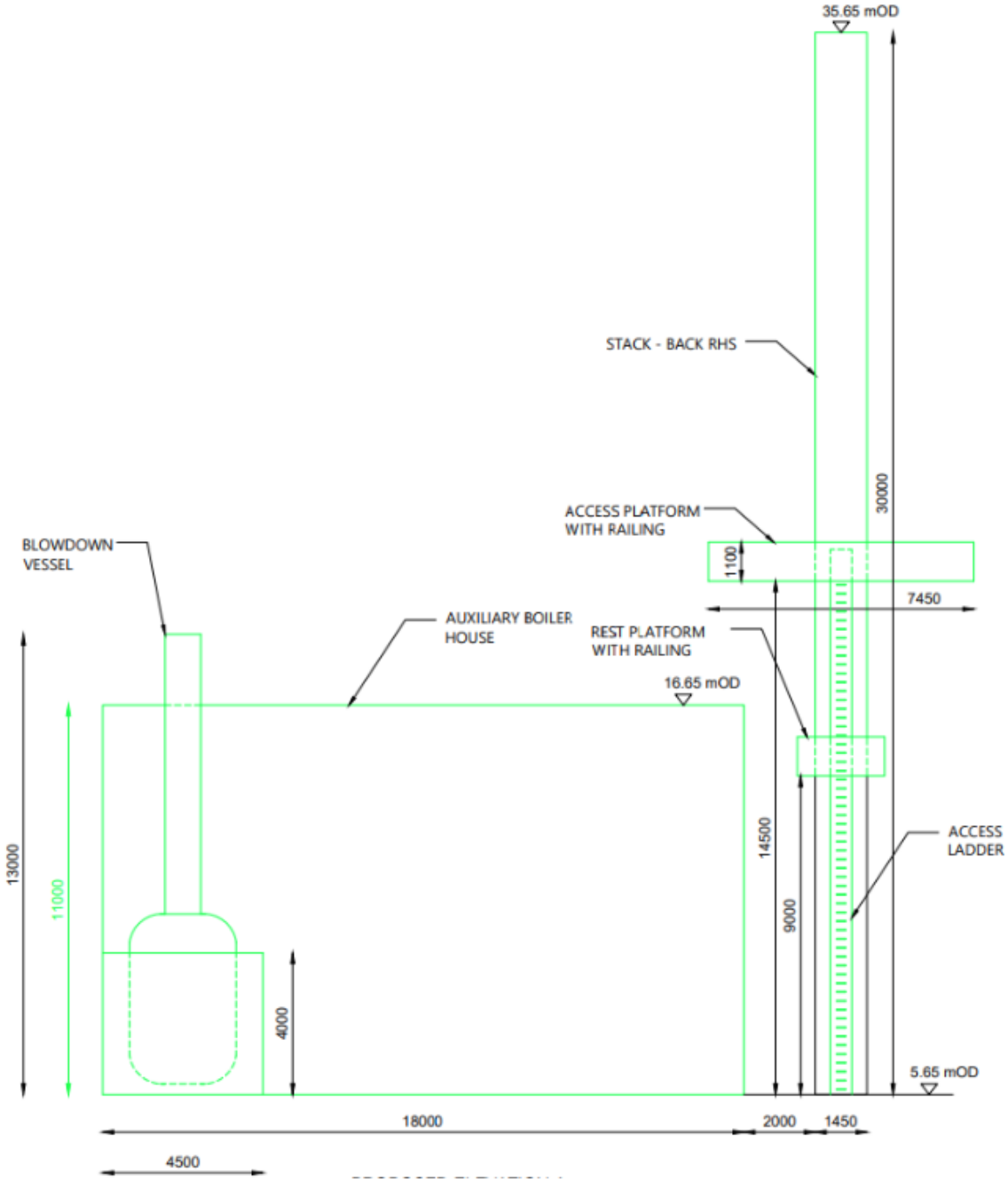
Two (2 No.) new auxiliary boilers are proposed to be located in a new auxiliary boiler house, to the west of Unit 3 boiler house and close to an existing pipe rack with the necessary services. The purpose of these boilers is for HFO and deaerator (D/A) heating, and boiler start up. It is proposed to include one electric and one diesel fired boiler each ca. 22.7MW (thermal output).

It is envisaged that the electric boiler will be the primary auxiliary boiler to be used while the plant is on standby due to its faster start up time and reduced GHG emissions. However, the diesel auxiliary boiler will also start up during times of electricity supply shortfall where the energy for the electric auxiliary boiler may not be available and during multiple unit starts. Designs have been developed on the basis of 15 cold unit starts and 15 warm unit starts but ultimately the number of starts will be dependent on electricity supply and demand and will be controlled by EirGrid.

The proposed diesel auxiliary boiler stack is located at the southwestern corner of the proposed boiler house and is proposed to be 30m in height. This will be metal clad. As required in the IE licence, an access platform for the purposes of emissions monitoring is proposed in line with Guidance Note on Site Safety Requirements for Air Emissions Monitoring (AG1) (EPA, 2020), Air Emissions Monitoring Guidance Note (AG2) (EPA, 2021), Guidance Note on monitoring of Stack Gas Emissions from Medium Combustion Plants (AG11) (EPA, 2021) and EN15259. It is proposed that the platform will be located 14.5m above ground level, 360 degrees around the stack at a depth of 3m from the stack. A railing is provided for at a height of minimum 1.1m above the platform. The platform is proposed to be accessed via an access ladder on the west side of the stack from ground level. The access platform and associated structures will be constructed from galvanized steel. Figure 3.3 shows the proposed elevation for the boiler house. Refer to drawing QP-000017-65-D451-011-001-000 for further details.

The building finish will be clad in metal cladding coated in a Sepia brown (RAL Colour 8014), or similar.

Figure 3.3: Boiler House Northern Elevation



Source: Extracted from Planning Drawing QP-000017-65-D451-011-001-000

3.3.3 Changes to FGD By-product and Ash Storage Area Arrangements

When the existing FGD by-product Landfill Area A reaches full capacity, it is proposed to utilise the spare capacity in the existing ASA to store the FGD by-product. At present bottom ash, which is generated in the furnace and is a much courser ash, is segregated in separate cells within the ASA and discussion are ongoing with block manufacturers regarding using this material as a substitute in low density blocks.

Fly ash, or what is often referred as PFA, is collected form the flue gas and is typically drier and finer. It is stored dry in three storage silos on site, before either being sold to cement manufacturers as a cement substitute or conditioned with water before being landfill in the ASA. Sales of PFA have been dropping over the last number of years due to lower cost of alternatives and the longer transport distances.

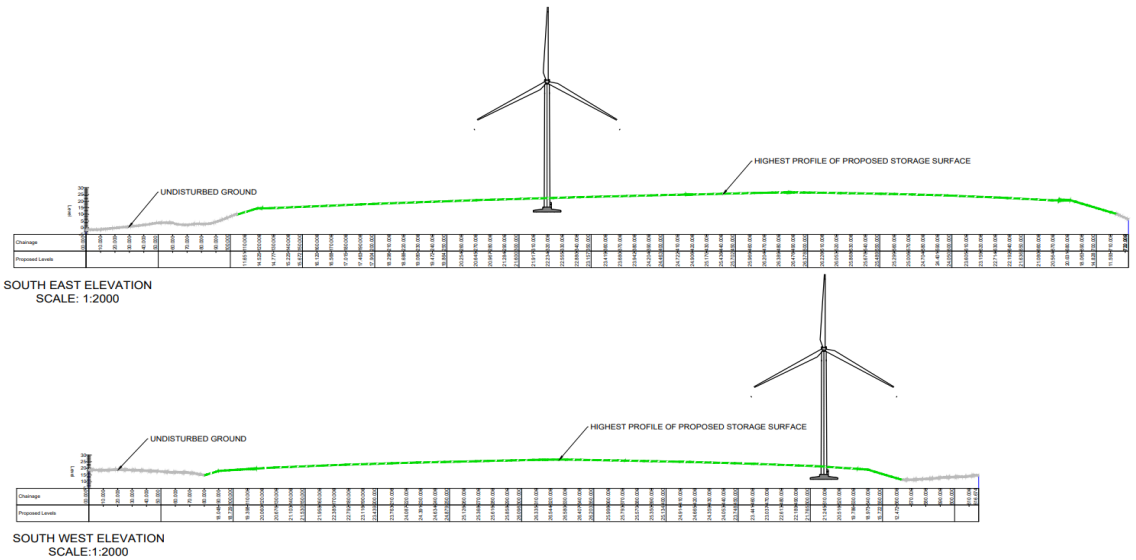
The reclamation of ash from the existing ash area appears to have been considered in the IE licence under Condition 10.6.2 – *"The final capping shall, as and where appropriate, be designed and constructed to facilitate the future recovery of ash deposited in the landfills".* Note that approval will be required from the EPA in accordance with the relevant Waste Regulations.

Given that FGD Landfill Area A is nearing capacity and the land use requirements for area B, FGD by-product produced in the period 2025 to 2029, will require an alternative storage arrangement. Furthermore, relatively little ash and significantly less FGD by-product will be produced in the years 2025-2029 compared with continuous operation fuelled by coal. The ash concentration as a result of HFO combustion is a maximum of 0.15%, compared to coal firing, which has an ash concentration of 7.7% to 9.1%. There will therefore be negligible volumes of ash to be stored once the plant is fuelled using HFO. It is therefore proposed to utilise the spare capacity in the ASA by increasing the cap thickness for the purposes of managing ash and FGD by product for the years between 2025-2029.

It is proposed to increase the thickness of the FGD/Ash capping layer from 0.6 m up to a maximum of 1.6 m in order to store all the FGD by-product produced during the years 2025 to 2029. This coupled with a reduced quantity of ash to be stored overall will result in a reduced height of up to 1.85m when compared to what was granted under permission P14/373 while maintaining the same profile.

It should be noted that the final volume of FGD material produced and therefore the final ASA height will be highly dependent on run hours. As noted previously, EirGrid will have control on how many run hours the plant is operational for and therefore the amount of FGD material produced. The final profile may be at a lower level. As was previously permitted, once complete the final profile will resemble a dome-like shape and will be finished with a layer of topsoil and seeded with meadow grass mix of native provenance, as shown in the Figure 3.4.

Figure 3.4: Proposed ASA Profile (South East and South West Elevation)



Source: Extracted from Planning Drawing QP-000017-65-D451-023-001-000

A chemical/physical analysis is presently ongoing to ensure HFO generated PFA/FGD by-product has similar physical and chemical properties of coal generated material. Periodic sampling and analysis is undertaken and the results submitted to the EPA as a condition of the IEL for their review and agreement.

A feasibility and high-level design study by a materials handling specialist has proposed a reclaimed truck unloading facility to the west of the Batching plant, and direct feed of the wet reclaimed ash upstream of the existing batching mixer into the existing dry PFA feed line. This proposal utilising the existing batching plant and weighbridges will ensure a consistent blended capping material is produced. A summary of the proposed solution:

- Recovered ash from the ASA will be dumped into a lorry unloading hopper to the west of the Batching plant. Dust will not be an issue however a partial housing should be instructed to minimise wind and rain impacts.
- Ash is then fed to a series of rotating disks/shredders which ensure all lumps are broken down and the material is retuned to a fine consistency.
- Conditioned ash is then raised to the 12.3m level and injected into the existing PFA inspection points on mixer A and B.
- Mixing rates will be controlled by varying the speed of the feeder screw. The existing feed control system can be modified to incorporate this new source.
- Any process dust will be vented into the existing extraction system.

3.3.3.1 FGD By-product Batching

ASA site capping and berm construction comprises a mixture of 47.5% fly ash, 47.5% FGD by-product and 5% cement. The capping material is mixed in the batching plant building upstream of the pipe conveyor and truck loading bay, water is added to the mixture to bring the moisture ratio to 15%.

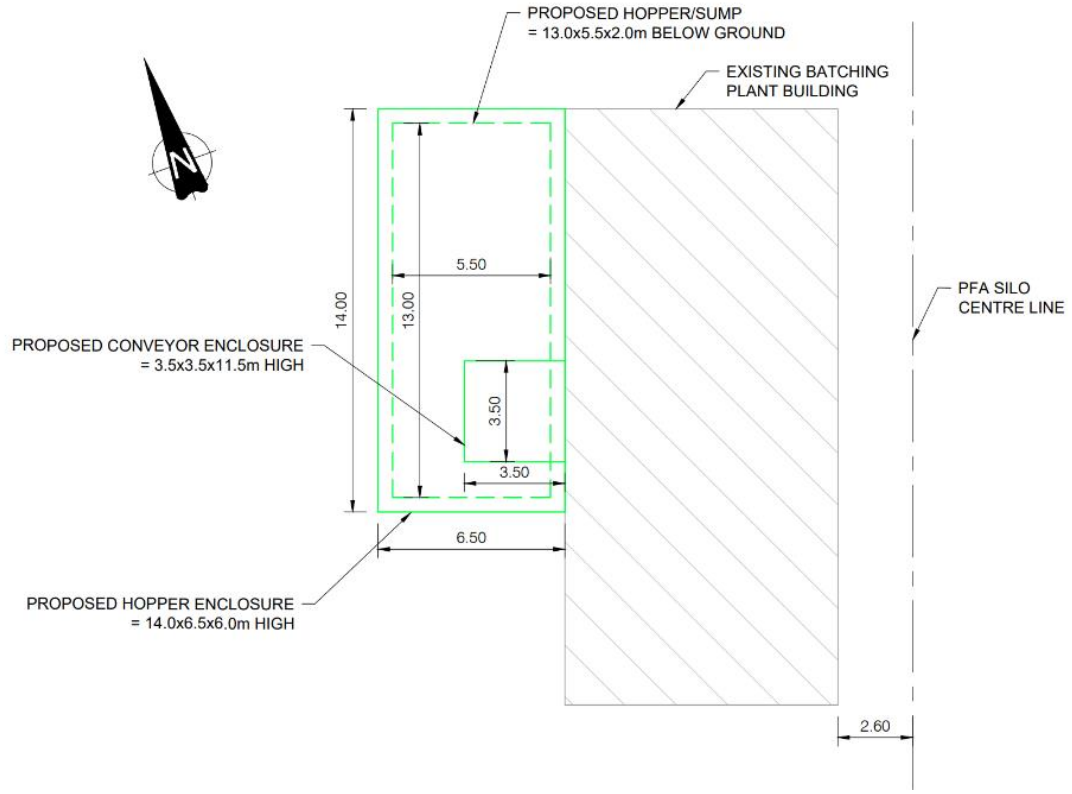
The proposed capping material has been tested and has similar properties and permeability as the existing blend. Minimal leachate is produced through the proposed capping blend and relevant topics will be included in the Annual Landfill Status Report to ensure compliance with Schedule F of the current IE licence.

After the plant begins operation on HFO, an insufficient volume of fly ash for capping material batching will be produced. Hence, ash will need to be reclaimed from the ASA and mixed in accordance with the capping material ratios above. This will ensure consistent minimum permeability rates to those in the existing ASA arrangements.

Fly ash is proposed to be recovered by front loader or excavator at the ASA. It will then be transported by dumper truck to the existing capping material batching plant via the existing underpass under the N67. It is proposed to be tipped into a new hopper sump located adjacent to the existing batching plant. From this hopper it is proposed to be conveyed into the existing batching plant where it will be blended with FGD by product and cement before being returned to the ASA as capping material. Planning Drawing QP-000017-65-D451-015-001-000 shows the proposed modifications to this batching plant as presented in Figure 3.5.

The cladding to this building extension will be a brown cladding (RAL 8014), or similar, to match the existing.

Figure 3.5: Proposed Batching Plant Building & Hopper Modifications



Source: Extracted from Planning Drawing QP-000017-65-D451-015-001-000

3.3.4 Ash Reclamation for FGD System

Ash is required in the flue gas desulphurisation (FGD) system to create a fluidised bed for the process. HFO ash content is up to 0.15% compared with 7.7%-9.1% for coal. Fly ash in the flue gas when fuelled by HFO is therefore significantly reduced and is not sufficient to create fluidised bed conditions in the FGD system. When firing with HFO alone it is proposed to reclaim ash from the ASA for use in the FGD system to create the required fluidised bed conditions.

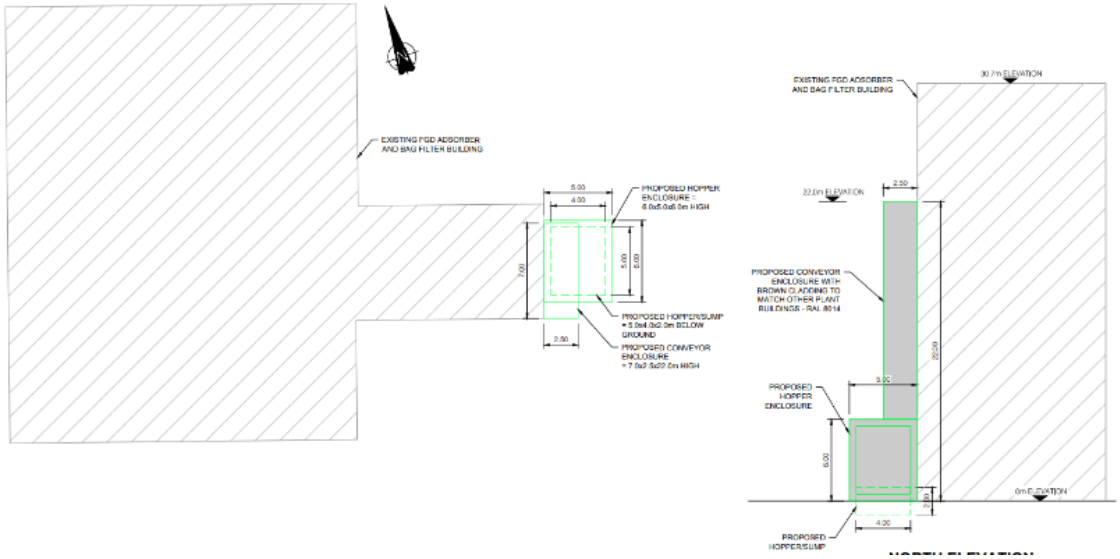
Based on experience, it is likely that approximately 30 tonnes per unit per week of fly ash will be required for bed stability. This equates to approximately 120 tonnes per week, allowing for an additional 30 tonnes for any free lime fluctuations and flexible operations i.e. multiple starts and stops. This approximate 120 tonnes of ash per week will be recovered from the newer fly ash cells using a low loader or excavator and tipper truck. The tipper truck will transport the material via the existing underpass under the N67 to underneath the existing ash storage silos. Once coal firing ceases, these ash storage silos will no longer be in use. From here ash will be transported using a separate low loader to one of the three (3No.) proposed five tonne shovel feed hoppers below the existing 3No. FGD absorbers. This reclaimed ash will then be fed back into the FGD process through a proposed system of bucket conveyors, shredders and screw

conveyors. All of this equipment will be contained within the proposed new building annex. The details on waste generated and waste management are discussed in Chapter 16 Material Assets and Waste Management of the EIAR and Appendix C.1 of this CEMP.

A plan and north elevation of the proposed structure at Unit 1 is presented in Figure 3.6, see Planning Drawing QP-000017-65-D451-016-001-000 for further details.

The proposed building annexes will be clad in a brown cladding (RAL 8014), or similar, to match the existing.

Figure 3.6: FGD Ash Injection – Unit 1



Source: Extracted from Planning Drawing QP-000017-65-D451-016-001-000

3.3.5 Surface Water Drainage

The addition of two new HFO tanks necessitates a refurbishment of the existing earthen HFO bunds. This upgrade will include the addition of an impermeable liner and provision of walls within the bunds. The new floor shall be capped with a 200mm thick reinforced concrete slab.

A network of gullies, aco channels (or similar) and surface water pipelines will be required to convey stormwater to the south of each bund. As with the existing surface water drainage system, discharge of the proposed surface water from the bund areas will be controlled by a manually operated valve. The valve will, as is currently the case, be set to closed position and only opened following inspection in accordance with the IEL conditions to drain each bund. The pathway taken by surface water from here will follow the existing drainage lines to the IEL Surface Water Drain SW2 via an upgraded oil/water separator. The presence and careful management of settling chambers and a shut-off valve upstream of the existing Class 1 full retention oil separator ensure that it will continue to have adequate capacity to treat the additional impermeable area being drained to it.

The proposed auxiliary boiler house, batching plant and FGD ash injection containment building will require roof drainage which will connect into nearby existing surface water drainage but will not necessitate any prior treatment nor flow control measures given the capacity of the downstream drainage network.

For more information on the surface water drainage proposals refer to Chapter 11 Surface Water Resources and Flooding of the EIAR.

3.3.6 Groundworks

3.3.6.1 Groundworks for the HFO Bund

Prior to any groundworks taking place ESB will ensure that:

- Design shall be in accordance with the principles of the CIRIA Guidance on 'Containment Systems for the Prevention of Pollution' (C736F) and take due account of the station's EPA Industrial Emissions Licence.
- The risk arising from filled pipework and tanks in close proximity to the works will be assessed and appropriately managed.
- Subject to condition assessment, existing concrete slab underneath and adjacent to pipework, valves and pump house will either be broken out or remediated to ensure integrity.
- Excavations and rock-breaking of existing gravel surface and existing sub-grade, if required, will be carried out for the foundations of all structures including the bund wall, tank, floor, new access ramp, etc. and for drainage installations.
- Excavated arisings at surface level will be scraped back and set aside for assessment for reuse. If they cannot be reused, they will be removed from site in line with the relevant Waste Management Regulations.

The final sequencing of the works will be determined by the Contractor but it is anticipated that the construction sequence in the HFO bunds will be broadly as follows:

- Clean fill material will be imported and compacted to the required design level.
- A liner material will be laid in accordance with the detailed bund design and manufacturer's requirements together with the installation of the sub-surface drainage system.
- Steel reinforcement will be placed along with form work and associated components for liquid-tight joints in accordance with detailed design.
- The foundations of all structures including the bund wall, tank, floor, new access ramp, etc., will be poured in sections, to be determined by detailed design and the construction methodology.
- The concrete will be required to cure for a period (dependent on detailed design and construction methodology).
- The installation of the land drainage network and the permeable fill surround (located adjacent to the outside of the perimeter wall) will take place in concert with the construction of the bund walls.
- Works on the bund wall, tank, pipework and associated above ground supporting structures and infrastructure will be completed.

3.3.6.2 Groundworks for the Boiler House, Ash Injection Plant and Capping Material Batching Plant

The final sequencing of the works will be determined by the Contractor but it is anticipated that the construction sequence will be broadly as follows:

- Excavations and rock-breaking of existing concrete or gravel surfacing and existing sub-grade, if required, will be carried out for the foundations of all structures.
- Excavated arisings at surface level will be scraped back and set aside for assessment for reuse. If excavated material cannot be reused it will be removed from site along with any demolition waste in line with the relevant Waste Management Regulations.

- Installation of new underground services.
- Clean fill material and blinding will be imported and compacted to the required design level.
- Steel reinforcement will be placed along with formwork in accordance with detailed design.
- Concrete for the foundations of all structures will be poured.
- Works on ground bearing slabs and the above ground structures and infrastructure will be completed in accordance with the Contractors sequencing and methodology.

3.3.7 Plant Construction Works

The Main Contractor will be responsible to ESB for the design and installation of the proposed development. This will include the design, supply, and installation of all equipment and the installation of all equipment foundations.

Most of the new equipment will be skid mounted or containerised elements fabricated off site and delivered finished or for final assembly on site. The main exception to this is the Auxiliary Boiler Building and pipe and cable corridor which will contain the plant pipework (HFO, fire water etc) and cables (power cables, control cables etc) which will have to be fabricated on site. The delivery of abnormal loads on site is discussed in Section 3.2.3.

The Contractor will be responsible to ESB for the construction of the equipment foundations, including the excavation and appropriate disposal of excavated material as well as the construction of the main equipment foundations and any piled foundations needed. The Contractor will manage the excavation of material and the safe disposal of this material to a suitably licenced waste disposal facility. In-situ concrete casting will be fully controlled to ensure that cement bound materials are confined within the formwork.

In-situ concrete casting will be fully controlled to ensure that cement bound materials are confined within the formwork.

In the areas where the HFO bunds and Auxiliary boiler house and stack are to be installed, the existing surface water network will need to be modified and re-routed. Surface water drains will also be re-routed and/or sealed in advance of any concrete being cast.

Trucks, mixers, and concrete pumps that have contained concrete will be washed out in a designated impermeable area to prevent pollution. A designated area for concrete truck / shute washout will be provided on site comprising a lined bund to contain wash out. Concrete waste will be removed at regular intervals (every 2-3 days) and reused on site or disposed off-site with other construction waste materials.

As described above the maximum proposed excavation will not exceed a depth of 1.5m for the foundations for auxiliary boiler house. The maximum proposed excavation depth for the HFO bunds is 400mm. If piled foundations are required, it is envisaged that these would require a similar depth of below ground excavation.

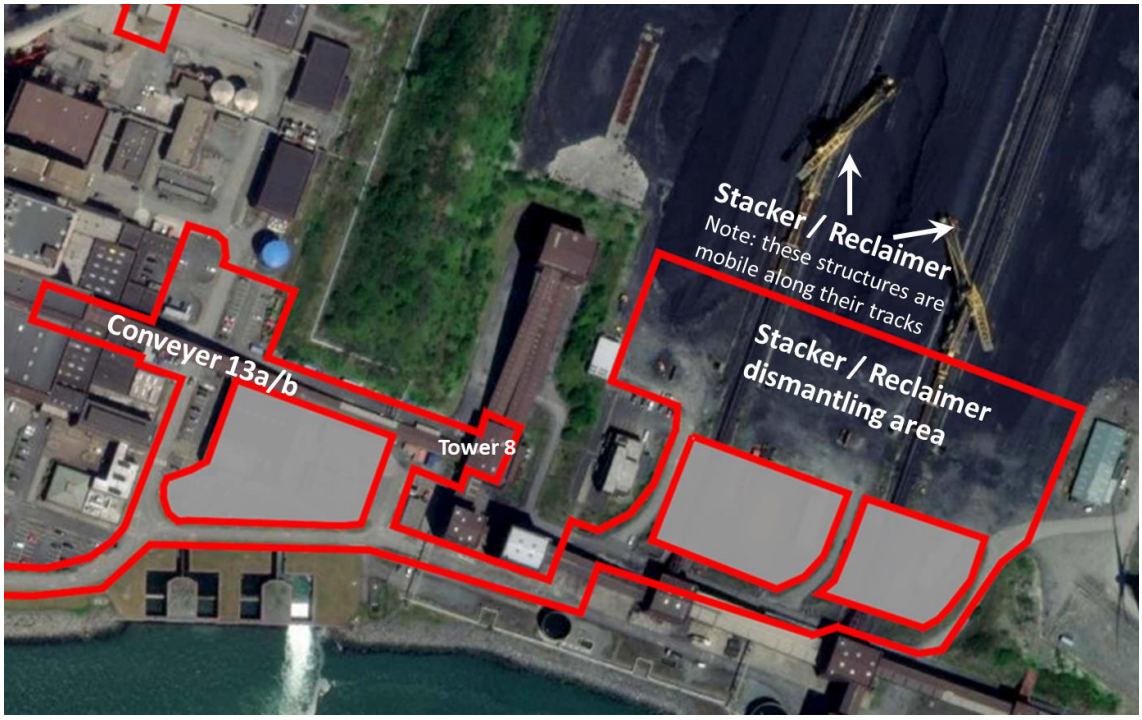
3.3.8 Partial Dismantling and Removal of Coal Handling Plant

The plan is that the coalyard operation will cease in December 2025 as part of the planning application for the proposed development. The expectation is that coal burning will cease at mid-2025 through careful coal stock management. A six month period has been allowed for any residual coal to be used and any coal recovery process to be embarked on in order to minimise coal residual volumes. It is proposed to dismantle and remove the stacker reclaimers within the coal yard and rising conveyors 13A and 13B to ground level. These are largely metal structures and dismantling will be by controlled dismantling only. See Figure 3.7 and Planning Drawing QP-000017-65-D451-003-001-000 to 003-003-000 for further details.

The scope of this planning application includes the main body of each stacker reclaimer along with the intermediate conveyor structure and main machine ballast. Conveyors 13A and 13B run from ground level at Transfer Tower 8 to the top of the Bunker Bay located between the Turbine Hall and Boilers. In addition to the conveyors, the structural supports and the weather housing structure are to be removed. The ground level reclaimer travel tracks are excluded from the scope of this planning application.

All works will be limited to the removal of the above ground plant/structures, to top of slab/ground level. The opening in the side of the main station building bunker bay will be re-cladded following removal of the rising belt conveyor and associated structure.

Figure 3.7: Limited Dismantling of Coal Handling Equipment



Source: ESB QP-000017-65-D451-003-001-000 to 003-003-000 Site Location (Aerial) -1 of 3

3.3.8.1 Closure Tasks and Programmes

The decommissioning and dismantling of the rising conveyors (13A and 13B) and the stacker reclaimers will involve the following tasks:

- Parking of the stacker reclaimers within the works area
- Hazardous Material Survey
- Plant and Equipment Decontamination
- Plant and Equipment Decommissioning
- Dismantle of Coalyard Equipment

Further details on each of these tasks are set out in Section 3.3.6.2 to 3.3.6.6.

3.3.8.2 Parking

The stacker reclaimers are mobile along their tracks. They will first be parked within the proposed works area as shown in Drawing QP-000017-65-D451-005-001-000 and QP-000017-65-D451-006-001-000.

3.3.8.3 Hazardous Insulation Material Surveys

Prior to any works taking place ESB will undertake an inspection to identify the presence of all hazardous materials used in the construction of the structures and within the plant. Such materials can include; asbestos, refractory ceramic fibres, ozone depleting foams, Polychlorinated Biphenyls (PCBs) in transformer oils, etc.

Where possible these will be removed prior to dismantling, however it is anticipated that there will be no hazardous insulating materials in the plant and structures to be demolished, as part of the dismantling works. The use of specialist contractors and the production of task specific method statements in line with relevant legislation and best practice will be implemented as per the CEMP and the RWMP (Appendix C.1). The measures in place in case of encountering hazardous materials are discussed in Chapter 12 Land, Soils and Hydrogeology of the EIAR.

3.3.8.4 Plant and Equipment Decontamination

The two known substances that require removal are remaining coal (dust) and residual oils in machinery (motors, etc.). The structures to be dismantled and decommissioned will be washed down to remove and collect coal which will be disposed of or recycled. All waste will be managed in accordance with the Waste Management Act 1996 and associated regulations. A construction Resource and Waste Management Plan (RWMP) is provided in Appendix C.1 of this CEMP). The level of coal decontamination will be determined to ensure that the demolition methodology does not result in significant airborne organic dust. Any remaining coal dust and coal, not removed previously, will be managed collected, and disposed of by the demolition contractor. Dust monitoring and suppression methods will be in place during demolition.

Oil will be drained, collected, and disposed of from all machinery. It should be noted, however, residues will still be present.

3.3.8.5 Plant and Equipment Decommissioning

All plant and equipment will be isolated and air-gapped from respective services (cabled and piped). Documentation will be provided to confirm isolations.

3.3.8.6 Dismantle of Coalyard Equipment

It should be noted that the selected contractor will be suitably experienced to undertake the dismantling works. A detailed pre-qualification process prior to inviting tenders will be caried out.

Stacker reclaimers will be dismantled in one of two general methods:

- Controlled collapse to ground level for processing, or
- Stacker reclaimers will be pre-weakened (following a detailed structural engineering assessment and justification) and collapsed. Once on the floor the structures will be size reduced utilising shears mounted on demolition excavators and secondary processing by hot cutting.
- Dismantling by large section crane lifts.
- Sections of the structures will be piecemeal removed (following structural assessment to ensure temporary stability is maintained), using at least two cranes, with the items progressively lowered to ground level for further size reduction using hydraulic shears mounted on demolition excavators and secondary processing by hot cutting.

Conveyors 13A and 13B will be dismantled in the following manner.

- Firstly, the length supported above ground level will be lifted down in sections (including support legs), utilising two large mobile cranes with a third smaller support crane, and mobile platforms.
- Each section will be laid down to the east of the power station (adjacent and on the eastern road) where demolition excavators will initially size reduce them prior to secondary processing by hot cutting.
- The opening formed in the eastern elevation of the bunker bay due to the removal of the conveyors will be sealed using sheeting purlins and steel sheeting to match existing (reused from removed conveyors).
- The section from Transfer Tower 8, to approximately halfway to the bunker bay, is located at ground floor level and will be demolished using shears mounted on demolition excavators and secondary processing by hot cutting.

4 Control Measures

4.1 Introduction

The following sections detail the minimum control (mitigation) measures that will be implemented prior to commencement and throughout the duration of the proposed works.

4.2 General Site Environmental Rules

Moneypoint Generating Station site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Register number: P0605-04]. All works undertaken on site will adhere to the conditions of the IE Licence.

Some general environmental site rules are listed below and detailed mitigation and monitoring measures are discussed in Section 4.3.

- The proposed works area will be demarcated, and pollution prevention measures will be implemented prior to commencement of construction works.
- All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site' (C741) and 'Control of water pollution from linear construction projects. Technical guidance' (C648) and under the supervision of an EnCoW.
- Best practice mitigation measures, as outlined in the IAQM guidance 'Guidance on the assessment of dust from demolition and construction' (2023), will be implemented to control the generation of dust during construction works and partial dismantling of the coalyard.
- The Contractor is obliged to comply with Local Authority controls on noise and vibration during construction. All mitigation and monitoring measures will adhere to British Standards Institution BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, 2009 + A1:2014 and British Standards Institution BS 5228 Code of practice for noise and vibration control on construction and open sites –Part 2: Vibration, 2009 + A1:2014.
- All mitigation will be implemented under the supervision of the EnCoW.
- The EnCoW will:
  - Carry out daily inspection of works areas for evidence of pollution, and areas where corrective action is required.
  - Report any signs of pollution or environmental damage to the Project Manager, Site Manager, EnCoW retained on behalf of the Employers Representative team, no matter how small.
  - Report any spills, incidents or near misses that occur on site immediately to the site foreman.
- Refuel only in designated areas with spill kits available.
- Fuels, chemicals, liquid and solid waste will be stored on impermeable surfaces.
- Stockpiled material, comprising soil, earth, stone etc., will be covered in order to prevent surface water runoff.
- Prevent runoff of water or mud from site.
- Do not dispose of anything into the Shannon Estuary, nearby watercourses, or onto land. All waste must be sent to the designated site waste management areas.
- Do not throw litter, all waste must be sent to designated site waste management areas by approved licensed waste management contractor.

- Do not divert plant or machinery outside the authorised working boundaries of the site.
- The Contractor will ensure ongoing compliance with the recognised Environmental Management System Standard to which it is registered (e.g. EN ISO 14001 or equivalent European Standards).
- The Contractor will develop Environmental Procedures to control the potential impacts from the construction phase of the development. These procedures will be made available in the site office and at the main Environment, Health and Safety information points on site.
- All personnel will be familiar with the Environmental Policy which will be made available in the Contractor's office.
- An emergency contact list will be prepared and made available to all construction staff employed. The contact list will be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident. A 24-hour emergency phone number will be maintained for the duration of the construction works. This number will be noted on temporary signage at each works area for cable works, and at the site entrance, at a minimum.
- Emergency access routes will be maintained throughout construction and identify site access points for each working area. These will be developed in partnership with the emergency services and documented as part of the detailed CEMP(s) and Emergency Incident Response Plan.

4.3 Construction Environmental Management

The mitigation and monitoring measures detailed in the EIAR and NIS are listed in Table 4.1 and Table 4.2 respectively.

Table 4.1: Mitigation and Monitoring Measures as detailed in the EIAR

Discipline	Phase	Mitigation and Monitoring
Chapter 6 Population and Human Health		
6.1	Construction	All work will be carried out having regard to international and national legislation, and best practice guidance, as detailed in the topic specific chapters of this Environmental Impact Assessment Report (EIAR).
6.2	Construction	The CEMP will be implemented during the construction phase to safeguard the environment, site personnel, and nearby receptors, i.e. occupiers of residential and commercial properties, from site activities which may cause harm or nuisance.
6.3	Construction	The appointed contractors (in collaboration with ESB) will be required to maintain close liaison with local community representatives and statutory consultees throughout the construction period. This is likely to include circulation of information about ongoing activities; particularly those that could potentially cause disturbance. A telephone number will be provided and persons with appropriate authority to respond to calls and resolve or escalate any problems arising will be available. All construction activities will be managed through the site CEMP and Traffic Management Plan (TMP). There are no specific mitigation measures proposed to ameliorate impacts on population and human health in addition to the measures specified elsewhere in this EIAR.
Chapter 7 Air		
7.1	All Phases	The Moneypoint Generating Station has an appointed community liaison that acts as a point of contact for the local community should any issues arise in the vicinity of the plant that require action from the operator. This role would continue during the proposed development construction, operation and maintenance phases.
7.2	Construction	Best practice mitigation measures to control the generation of dust during demolition of the coalyard as outlined in the IAQM guidance[1] are presented below. Communications: ● develop and implement a stakeholder communications plan that includes community engagement before work commences on site; ● display the name and contact details of person(s) accountable for air quality and dust issue on the Scheme boundary. This may be the environment manager/ engineer or the site manager; ● display the head or regional office contact information; and ● develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions. This DMP can be provided to Clare County Council for approval, if requested.
7.3	Construction	Site management: ● record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken; ● make the complaints log available to Clare County Council when asked; and

[1] Institute of Air Quality Management (2023) *Guidance on the assessment of dust from demolition and construction*.

Discipline	Phase	Mitigation and Monitoring
		• record any exceptional incidents that cause dust and/ or air emissions, either on- or off-site and the action taken to resolve the situation in the log book.
7.4	Construction	Prepare and maintaining the site: • plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible; • fully enclose site or specific operations where there is a potential for dust production and the site is active for an extensive period; • avoid site runoff of water or mud; • keep site fencing, barriers and scaffolding clean using wet methods; • remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site, if they are being re-used on-site cover as described below; and • cover or fencing stockpiles to prevent wind whipping.
7.5	Construction	Waste management: • no burning of waste materials.
7.6	Construction	Mitigation specific to dismantling of Coalyard: • ensure effective water suppression is used during dismantling operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems manually controlled can produce fine water droplets that effectively bring the dust particles to the ground; and • bag and remove any biological debris or damp down such material before dismantling.
7.7	Construction	The following dust monitoring measures are to be implemented during dismantling of the coalyard: • continue to undertake monitoring of dust deposition using mass deposition (Berghoff) gauges at the four existing monitoring sites surrounding the coal yard and Ash Storage Area (ASA). The sampling interval, analytical technique and threshold should remain the same; • undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority, if asked. This will include regular dust soiling checks of surfaces including cars and window sills within 100m of proposed development boundary to ensure dust control measures are effective; • carry out regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the Local Authority when asked; and • increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Chapter 8 Climate		
8.1	Construction	Integrate Greenhouse gas (GHG) emissions reduction from the early design stage, promoting GHG saving opportunities when determining the definitive specifications of products, materials, and layouts, and explore alternatives to achieve the desired development. For example, the proposed development has set a specification to use cement replacers to reduce the embedded emissions in manufacturing the concrete (35% ash as cement replacer), where technically practicable.

Discipline	Phase	Mitigation and Monitoring
8.2	Construction	Take a planned approach focused on GHG emissions reduction, using good construction practices and energy efficient processes and technologies, including the re-use or refurbishing of existing assets.
8.3	Construction	Promote fuel switching or substitution in transport of materials to site, as well as efficient route scheduling with suppliers.
8.4	Construction	Design for decommissioning to reduce wastage of materials and enable reuse of components where appropriate.
Chapter 9 Noise and Vibration		
9.1	Construction	The mitigation measures will adhere to the British Standards Institution BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, 2009 + A1:2014 and British Standards Institution BS 5228 Code of practice for noise and vibration control on construction and open sites –Part 2: Vibration, 2009 + A1:2014. Noise emissions will be minimised at source, in accordance with best practice, to minimise the exposure site personnel to noise from construction and operational plant. However, the existing ELVs and monitoring as required under the IEL will be continued.
9.2	Construction	The CEMP will be implemented during the construction phase to minimise any construction noise and vibration impacts. A CEMP will be implemented during the construction phase in consultation with Clare County Council. The contractor is obliged to comply with Local Authority controls on noise and vibration during construction. This will include (but is not limited to) the setting of limits for the control of noise and vibration from construction activities, the provision of mitigation measures required whilst adopting best practicable means, and any noise or vibration monitoring where significant adverse effects are required to be monitored. A comprehensive noise and vibration monitoring protocol will also be implemented. As part of the CEMP, the Contractor will also develop and implement a stakeholder communications plan which will facilitate community engagement prior to the commencement of construction.
Chapter 10 Biodiversity		
10.1	Construction	● An Environmental Clerk of Works (EnCoW) will be employed to oversee implementation of mitigation and deliver toolbox talks and preconstruction confirmatory ecology surveys, as appropriate. This will include monitoring and auditing works and programmes, as well as works method statements, to ensure mitigation is correctly implemented and that impacts to Key Ecological Receptor (KER) habitats, and other non-made ground habitats, preferably avoided, or at least minimised, where practical. ● The EnCoW will also manage consultation with environmental bodies including the National Parks and Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI). The EnCoW will be responsible for carrying out regular monitoring of the Contractors CEMP and will report monitoring findings in writing to ESB on a regular basis (at least weekly, but immediately in the case of incidents or accidents. ● It will be ensured that the EnCoW is delegated sufficient powers under the construction contract so that they will be able to instruct the Contractor to stop works and to direct the carrying out of emergency mitigation/clean-up operations. ● The EnCoW will also ensure any disturbance licenses are arranged if any significant findings are determined from confirmatory pre-construction surveys. ● The EnCoW will advise on implementation of appropriate mitigation measures, including scheduling of works, and will be included in regular liaison meetings between project teams to ensure that plans are co-ordinated and effects are minimised.
10.2	Construction	Monitoring of Mitigation Measures: ● During construction, monitoring will be carried out, and reported by the EnCoW, with regard for relevant conditions and licenses where required.

Discipline	Phase	Mitigation and Monitoring
		● Monitoring is necessary in close proximity to known bat roost features noted in Sections **Error! Reference source not found.** and **Error! Reference source not found.** and at badger setts found in Section 10.4.4.6 in Chapter 10 of the EIAR. ● The specific intervals at which the monitoring will take place will be determined by the relevant ecologist, having regard for licenses, and planning conditions.
10.3	Construction	Pre-Construction Confirmatory Surveys: ● In advance of any enabling works, the EnCoW will commission pre-construction, confirmatory surveys of identified significant ecological receptors, to update the findings of the surveys outlined in Section 10.4 in Chapter 10 of the EIAR. Such surveys will specifically confirm and update presence, distribution etc. of such receptors. These will then be used to inform any revisions to proposed mitigation plans. The exact nature and number of pre-construction confirmatory surveys will depend on the time that has elapsed between when the original surveys were undertaken and works on the proposed development start. As a minimum, the following will be needed ahead of any works. – Otter holts and couches within 150m; – Badger setts within 150m; – Potential bat roosts within 420m of the development; and – Invasive species within the proposed development site. ● Should a longer period (+> 12 months) elapse between last survey and the start of works, other pre-construction surveys might also be needed, such as: – Demarcated Local Importance (Higher value) habitats and works areas to minimise impacts and monitor works; – Breeding birds within 253m; and – Wintering Birds within 253m. ● The EnCoW will ensure that confirmatory surveys on habitats of Local Importance (Higher value) or higher are caried out in accordance with 'Best Practice Guidance for Habitat Survey and Mapping'. ● The confirmatory otter surveys will be carried out having regard to guidance of the National Roads Authority (NRA). The locations of otter couches noted within the Baseline Ecology report along with areas identified as suitable for otter holting will be thoroughly surveyed. Signs of otter including individual otters, holts, couches/resting sites, spraints and gland secretions, footprints and paths and slides will be recorded. ● The confirmatory badger surveys will be carried out having regard to Surveying Badgers and record signs of badgers including tracks, hair, latrines and setts within the Annex I Broadleaf forestry north of the Moneypoint Generating Station south of the N67 where potentially active badger setts have been identified. The area north of the N67 which includes the ASA and surrounding grass and woody habitats is also to be included within the survey area. The extent of survey area for badger surveys will be defined with regard to Guidelines for the Treatment of Badgers during the Construction of National Road Schemes as 150m beyond all works areas within suitable habitat. ● All surveys will be undertaken by a suitably qualified ecologist(s) will be carried out by an ecologist, but who will have demonstrable experience in the survey and assessment of the feature. The results of pre-construction confirmatory surveys will inform the refinement of mitigation measures (if required) in Contractor method statements, and all results will be incorporated into Contractor's constraint mapping. ● Survey reporting and mapping will also be provided to the Employer's Representative team.
10.4	Construction	Mitigation for the Compensation and Retention of Habitats: ● Scrub (WS1):

Discipline	Phase	Mitigation and Monitoring
		– For the permanent loss of 0.1 hectare of habitat within the Moneypoint Generating Station site, clearance of scrub will be kept to the minimum required to facilitate works with only areas of scrub within the redline boundary permitted to be removed. – For the potential disturbance or temporary loss of up to 1.5 hectares of habitat within the ASA, clearance within scrub habitat will be kept to the minimum required to facilitate ash and FDG by-product storage. ● Broadleaf Woodland (WD1): – For the potential disturbance or temporary loss of up to 0.4 hectares of habitat within the ASA, clearance within woodland habitat will be kept to the minimum required to facilitate ash and FDG by-product storage.
10.5	Construction	Mitigation for the Compensation and Retention of Habitats: ● Habitat Establishment/ Recreation: – On completion of each landfill cell within the ASA, the cell will be capped using an optimised stabilised FGD by-product mixture. It is proposed to increase the thickness of the FGD/Ash capping layer from 0.6 m up to a maximum of 1.6 m in order to store all the FGD by-product produced during the years 2025 to 2029. As was previously permitted, once complete the final profile will resemble a dome-like shape and will be finished with a layer of topsoil and seeded with meadow grass mix of native provenance. – If and where possible, all grassland habitats and (recolonising) bare ground habitats located within the ASA will be reseeded using local seed mixes, where possible, under the supervision and direction of the EnCoW. Plant species of native provenance will be used in all replanting of semi-natural habitats. It is preferable, and from a pure ecology and pollinator perspective, that no reseeding takes place and that the natural seedbank existent within the originally removed and then reinstated topsoil, is allowed to regrow. An appropriate mowing regime will be established to allow for the maintenance of these grassland habitats.
10.5	Construction	Construction Lighting: ● All temporary lighting associated with construction works will be placed strategically by the appointed EnCoW such that illumination beyond the works area is controlled, with light spill eliminated from areas surrounding important resting and foraging habitats such as the shoreline, woody habitats and the disused building identified as having moderate bar roost potential in Section **Error! Reference source not found.** in Chapter 10 of the EIAR. Lighting will be cowled and directional to reduce significant light splay. Column height of lights will be carefully considered to minimise light spill, less than 8m where possible[2].
10.6	Construction	Construction Noise: ● Noise will be sustained over a temporary period, particularly from piling works (if needed) and this has the potential to impact species in the woodland to the north of the site. A noise barrier will, therefore, need to be erected around piling works and/or between the development site and the woodland to the north for the duration of piling works or other particularly noisy operations. ● It is noted that the development of the project design and construction methodology may result in a changes in the mitigation requirements for noise in order to comply with the relevant criteria. The assessment of noise impacts on the KER will be updated during the detailed design stage and the corresponding mitigation requirements will be confirmed based on latest and best available information.
10.7	Construction	Delineation of Works Areas:

[2] BCIrelandGuidelines_Lighting.pdf (batconservationireland.org)

Discipline	Phase	Mitigation and Monitoring
		• Prior to the works commencing, all works area will be demarcated with construction fencing. No construction works will occur outside of the delineated areas.
10.8	Construction	Stockpiling Material: • All excavated material will be stored a minimum of 50m from the Shannon estuary and any drainage ditches hydrologically connected to the watercourse. • Silt fences, or gravel drains, will be positioned around stockpiles to capture surface water runoff. The silt fences and gravel drains will be regularly inspected and maintained. • The base of temporary stockpiles (including excavated and imported material) will be protected by silt fencing. Visual monitoring of the silt fence will be undertaken regularly and after significant rain. Silt fences will be repaired, replaced or reinforced as necessary to prevent migration of silt. • Stockpiled material, comprising soil, earth, stone etc., will be covered in order to prevent surface water runoff. • Sediment control in the construction stage is important to ensure that only high quality, treated runoff leaves the site. Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments will be provided for on-site if required during the construction stage. Erosion control measures include: – Minimising the area of exposed ground and ensuring excavation will not proceed faster than the rate of construction; and – Monitoring of the weather forecast prior to planning excavation works. • Other drainage runoff controls such as settlement tanks, silt fences and silt traps will be temporarily provided adjacent to excavations and installed before starting site clearance and earthworks if deemed necessary by the supervising Engineer.
10.9	Construction	Concrete: The pouring of concrete will be required for foundation works associated with the new fuel tanks and auxiliary boilers. To prevent the runoff of concrete, the following measures will be implemented: • If onsite concrete batching is required, this will need to take place in controlled, bunded area. Dust suppression will be required, and all materials needed for concrete production stored undercover from rain and/or within the bunded area to prevent runoff. Noise suppression techniques will be utilised at the batching plant and/or the plant will be placed within the required noise barrier. • Quick setting concrete mixes will be used, where possible, to reduce the risk of contaminated runoff to nearby watercourses or the Shannon estuary. • Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at a designated, contained, location on site or preferably at an appropriate facility offsite. Any concrete wash water will be retained temporarily on site and prevented from entering the drainage network. The temporary storage will be in place until the management of the wash water (either treatment or disposal) is agreed with the appropriate agency and in accordance with the best practice and the CEMP. • It will be ensured that covers are available for freshly poured concrete and these will be used to avoid wash off in the event of rain. • As it will not be possible to cover the whole HFO bund floor while the concrete is drying, work will have to be undertaken only in a suitable weather window. It should also be noted that the HFO bund is a basin and as long as the shut off valve is closed, there is no possibility of any runoff. Attention will be paid to ensure that the shut off valve is closed during concreting operations. Existing IE Licence Emission Limit Values (ELVs) for all drainage from the site, including for pH on that line (SW2) will be complied with throughout the construction and operational phases. • Waste concrete slurry will be allowed to dry and taken to a licensed waste depot for disposal.

Discipline	Phase	Mitigation and Monitoring
		• Concrete works will be scheduled during dry weather conditions whenever possible to reduce the elevated risk of runoff.
10.10	Construction	Hydrocarbons: • Where mobile equipment is required, e.g., generators, these will be housed in a suitably sized bund/'plant nappy' such that any leaks/spills are intercepted. All mobile equipment used at the proposed stormwater outfall will be stored within a 'plant nappy'. • Any chemicals and/or hydrocarbons required on site during the construction phase will be stored in designated, impermeable areas and be bunded or double skinned. • Fuelling and lubrication of plant and equipment will be carried out on impermeable surfaces or using mobile drip trays and will be restricted to the construction site compound only. No refuelling will be permitted to occur within 50m of the estuary or drainage ditches. • All waste fuels, oils, and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Acts 1996, as amended. • Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment and in when it should be deployed. • Welfare/hygiene facilities will be located within the construction compound and contractor village, a minimum of 50m from any watercourse/drainage ditch. • All water from wheel washes will be captured and removed from site and disposed of in line with Waste Legislation. No water will be discharged into any watercourses or drainage ditches.
10.11	Construction	Mitigation for the protection of Otter: • Should the confirmatory survey result in the requirement for any exclusion zones, these will be established and subsequently monitored by the EnCoW for compliance. • Should holts be identified within 150m of the proposed development the following will, at a minimum, be employed, unless otherwise agreed with the NPWS: – No works will be undertaken within 150m of holts where breeding females or cubs are present. – Works within 150m of such a holt can only take place following consultation and in agreement with the NPWS. – No wheeled or tracked vehicles of any kind will be used within 20m of active but non-breeding holts. – No light work, such as digging by hand or scrub clearance will take place within 15m of such holts, except under license from NPWS. – Identified exclusion zones will be fenced and clearly marked on site prior to any invasive works. – All contractors on site will be made fully aware or the procedures in relation to the holts by the EnCoW.
10.12	Construction	Mitigation for the Protection of Badger: • As outlined previously, and prior to works commencing, a preconstruction survey for badgers will be undertaken. Where active badger setts have been identified within the Zone of Influence (ZoI) of the proposed development, the use of camera monitoring, setting of footprint traps, soft blocking of the sett entrance or similar will be required to confirm their presence. • A description of the setts, i.e., main sett, annex sett, or outlier sett will be provided along with the level of activity at each. This will allow for an understanding of the importance of the setts in the wider context of the local population.

Discipline	Phase	Mitigation and Monitoring
		● As per the Guidelines for the Treatment of Badgers during the Construction of National Road Schemes, where setts have been confirmed, no heavy machinery will be used within 30m (unless carried out under licence from the NPWS). Lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance, and light work, such as digging by hand or scrub clearance, will not take place within 10m of sett entrances. ● None of the above works will be undertaken within 50m of active setts during the breeding season (December to June inclusive). An assumption that the sett is active will apply unless proven otherwise during the course of investigation. Where works may interfere with the badger sett directly, exclusion will take place as per NRA guidelines. ● All identified exclusion zones, as outlined above, will be clearly marked out on site and communicated to all site staff prior to works commencing.
10.13	Construction	Mitigation for the Protection of Bats: ● The design and construction of bat mitigation measures has had regard to relevant documents, including: the NRA's Guidelines for the Treatment of Bats During the Construction of National Road Scheme, the NPWS Bat Mitigation Guidelines for Ireland , and (with specific regard to roosts in trees), the Bat Tree Habitat Key . ● Two bat roost features have been identified as likely to be disturbed by the proposed development. Construction and operational lighting will be sympathetically considered and operational lighting at night will be via automatic sensors and will only activate when needed, focussing on buildings, away from natural areas. ● Any trees that may require felling will be examined for presence / absence of bats or bat roosts immediately prior to felling and any features in trees, identified from ground level as of medium or high suitability, will be climbed and/or accessed by a Mobile Elevated Working Platform. They will be inspected using a digital endoscope to confirm the ground-level rating, and where possible identify presence / absence of roosting bats. Where timing facilitates it (i.e., when felling is being undertaken during the active season for bats from May to September inclusive), emergence surveys may additionally be carried out to confirm presence / absence of roosting bats, subject to the advice of the bat ecologist, and any licence conditions. Where felling does not occur within one day of the examination, trees will need to be re-assessed, unless otherwise agreed with the NPWS.
10.14	Construction	Mitigation for the protection of other mammals protected under the Wildlife Act: ● Implementation of mitigation for breeding birds, is outlined in Measure 10.15, This same mitigation will simultaneously provide protection for pygmy shrew and hedgehog, as the majority of their main breeding seasons run from April-October. Stoat, that breed in May-June (Hayden and Harrington, 2001) will also be covered by the same measure, as will hare, as although they have been recorded breeding in every month, spring to summer is thought to be the peak period.
10.15	Construction	Mitigation for the Protection of Breeding Birds: ● In accordance with Section 40 of the Wildlife Acts, the removal of vegetation which may be used as nesting sites by breeding birds, will be cleared outside of the birds nesting season (1st March to 31st August inclusive). ● Should clearance be required during the bird breeding season, a suitably qualified ecologist will conduct pre-construction surveys to assess risk of disturbance to nesting birds to inform vegetation clearance activity. In the event that pre-construction confirmatory surveys confirm or presume nesting birds are present, an exclusion zone will be established around the nesting bird (to include the risk of abandonment due to indirect disturbance). Within these exclusion zones, no vegetation clearance may proceed until young are fledged, or nesting has failed. Repeat surveys will be required if vegetation has not been cleared within 72 hours of the survey taking place.
10.16	Construction	Mitigation for Breeding Birds and Wintering Wildfowl:

Discipline	Phase	Mitigation and Monitoring
		Breeding birds and Wintering wildfowl have been recorded within the proposed development boundary (on land, mostly around the ASA) and within the 253m ZoI set for disturbance effects. The following mitigation will be implemented to ameliorate noise and visual disturbance effects. ● Noise maybe sustained over a temporary period, particularly from piling works (if needed) and this may impact wintering wildfowl on site. It is therefore recommended that a temporary noise barrier be erected around piling works and/or between the development site and the ASA. ● Ongoing monitoring of the barrier will be undertaken to ensure it is installed correctly and identify any defects for the contractor to remedy. ● All plant shall be operated and maintained in accordance with the manufacturer's recommendations, including use and maintenance of the specific noise reduction measures, such as: – The use of mufflers on pneumatic tools; – Effective exhaust silencers; – Sound reducing enclosures; and – Machines in intermittent use shall be shut down during periods where they are not required. ● Noise modelling that has been conducted to assess likely noise levels during operation have determined that noise levels will be below 55dB and, therefore, will have negligible effects on species. No additional mitigation is therefore proposed during the operational phase.
10.17	Construction	Invasive Species Control Measures: No Third Schedule Invasive Species were identified within the ZoI proposed development, although, there is potential for invasive species to have become established within or adjacent to the works areas following baseline surveys, and before construction. As a result: ● Prior to works commencing, a full invasive species survey will be carried out. The pre-construction invasive species survey will be carried out within the works areas, including compound locations and laydown areas, and along proposed access routes to identify the presence of all invasive species within and adjacent to works areas. ● The invasive species survey will be carried out during the appropriate growing season (May – October). The findings of this invasive species survey will be incorporated into the measures below, by the Contractor's EnCoW and any specialists. ● Any stands of invasive species recorded within the ZoI will be clearly marked out as restricted areas. Such exclusion zones will incorporate a 4m buffer, appropriate to the species found, such that below ground growth is accounted for (4m for Japanese knotweed, buffer not required for other species). No works will be carried out within the exclusion zones unless approved by the EnCoW. ● The EnCoW will carry out a toolbox talk for all construction personnel. This will provide information on how to identify and manage invasive species and will take place prior to works commencing in any areas where Invasive Species have been recorded. ● All machinery will be steam-cleaned prior to entering and before leaving site.
Chapter 11 Surface Water Resources and Flooding		
11.1	Construction	An Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works.
11.2	Construction	Construction activities will be managed to prevent impacts to surface waters: ● Concrete wash water will be retained temporarily on site, and prevented from entering the drainage network. The temporary storage will be in place until the management of the wash water (either treatment or disposal) is agreed, in accordance with the best practice and the CEMP. ● Refuelling will be undertaken using purpose designed equipment bunded to prevent leaks. Should any fuels or other liquids spill or leak from any vehicles these will be cleaned immediately, and any affected soils excavated and removed.

Discipline	Phase	Mitigation and Monitoring
		• Excavations for service runs will be managed using control measures such as bunding areas to prevent surface runoff and protecting drains.
11.3	Construction	All construction works will be carried out in accordance with the CEMP which defines the measures to ensure that any contaminants resulting from the removal, dismantling, excavation, or construction will not enter the surface water drainage system.
11.4	Construction	Wet concrete operations adjacent to watercourses will be avoided where possible.
11.5	Construction	Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at a designated, contained, location on site or preferably at an appropriate facility offsite, and remote from watercourses.
11.6	Construction	Where works on other projects in vicinity of proposed development occur in parallel appropriate mitigation measures, within the parameters assessed in this EIAR (including the scheduling of works and regular liaison meetings between project teams) will be implemented to ensure that plans are co-ordinated, and impacts are minimised.
11.7	Construction	All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site' (C741) and 'Control of water pollution from linear construction projects Technical guidance' (C648) and the IEL.
11.8	Construction	In order to reduce the risk of contamination arising as a result of spills or leakages on land, measures including, but not limited to, the following will be employed. • All collected waste will be managed in accordance with the Waste Management Act 1996, and associated Regulations. • In accordance with Condition 8.4 of the IEL, waste and materials shall be stored in designated areas, protected as may be appropriate against spillage and leachate run-off. The waste and materials shall be clearly labelled and appropriately segregated. • Refuelling of plant, equipment and vehicles will be carried out on impermeable surfaces or using mobile drip trays where it's not possible to provide an impermeable surface. • All tanks and drums will be bunded in accordance with established best practice guidelines. • Spill kits will be provided at all compound locations and carried by all crews during excavation works.
11.9	Construction	Sediment control in the construction stage is important to ensure that only high quality, treated runoff leaves the site. Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments will be provided for on-site if required during the construction stage. Erosion control measures include: • Minimising the area of exposed ground and ensuring excavation will not proceed faster than the rate of construction. • Monitoring of the weather forecast prior to planning excavation works.
11.10	Construction	Other drainage runoff controls such as settlement tanks, silt fences and silt traps will be temporarily provided adjacent to excavations and installed before starting site clearance and earthworks if deemed necessary by the supervising Engineer.
Chapter 12 Land, Soils and Hydrogeology		
12.1	Construction	As detailed within the CEMP (Section 2.7), the Environmental Clerks of Works (EnCoW) will be responsible for identifying any ground contamination during the construction phase. Surveys for visual or olfactory evidence of contamination will take place regularly during excavations and works will be stopped for further investigation if any evidence is encountered.
12.2	Construction	Any contaminated soils, sediment or groundwater that is encountered will be managed in accordance with best practice guidelines. Any contamination discovered during the construction will be assessed using a Contaminated Land Risk Assessment (CLRA). Where a significant risk to

Discipline	Phase	Mitigation and Monitoring
		human health or controlled waters is identified the contamination will be remediated on-site or excavated, appropriately classified and disposed of as waste. Contamination management will comply with all relevant legislation and be undertaken in consultation with the EPA and any other relevant authorities as outlined in this CEMP.
12.3	Construction	Asbestos Containing Material (ACM) will, if identified, be stored separately from other contaminated material to prevent mixing of asbestos with other contaminated materials.
12.4	Construction	Storage of contaminated material, if encountered on-site, will be avoided where possible. If storage on site is necessary, contaminated material will be strictly segregated into designated bunded areas where contaminants cannot leach into the underlying ground.
12.5	Construction	If uncontaminated material is to be stored on site, consultation with the EPA will be undertaken prior to commencing storage, to ensure that any relevant authorisations are obtained and that spoil is managed, at all times, in accordance with all relevant legislation.
12.6	Construction	During construction the contractor will implement an environmental management plan which will set out control measures and procedures to ensure potentially polluting activities are controlled and managed. These measures will include, but are not limited to, the following: ● Fuel storage – bunded tanks to prevent spillages and designated fuelling areas with spillage control. ● Chemical storage – all potentially polluting chemicals will be stored in secure weatherproof enclosures with spill kits. ● Concrete washout will be established. ● Should dewatering be required any discharges will be treated to remove contaminants and silt and disposed of in accordance with EPA requirements. ● The site will be kept secure to prevent vandalism which can lead to pollution from stored liquids. ● Any spillages will be cleared immediately by excavating and disposing of affected soils in accordance with the Waste Management Act 1996, and associated regulations. ● The base of temporary stockpiles (including excavated and imported material) will be protected by silt fencing. Visual monitoring of the silt fence will be undertaken regularly and after significant rain. Silt fences will be repaired, replaced or reinforced as necessary to prevent migration of silt.
12.7	Construction	The CEMP will include emergency procedures to prevent adverse impacts in the event of a pollution event arising from accidents and disasters.
12.8	Construction	Routine monitoring of the site to ensure potentially contaminating activities remain under control. Monitoring will include daily visual monitoring of any surface water outfalls.
12.9	Construction	Prior to commencement of the development, the appointed Contractor will implement a construction Resource and Waste Management Plan (Appendix C.1 of this CEMP) in accordance with the Best Practice Guidelines for the preparation of resource and waste management plans for construction and demolition projects (EPA, 2021). This will ensure that optimum levels of waste prevention, reduction, reuse, recycling and recovery are achieved throughout the duration of the proposed development. Waste sent off site for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the proposed development site to an authorised site of recovery / disposal in a manner which will not adversely affect the environment. Wastewater will be disposed offsite in accordance with the Waste Management Act 1996, and associated regulations, in agreement with the EPA.
12.10	Construction	Prior to any works taking place ESB will undertake an inspection to identify the presence of all hazardous materials used in the construction of the rising conveyor and the stacker reclaimers structures and within the plant. Such materials can include; asbestos, refractory ceramic fibres, ozone depleting foams, Polychlorinated Biphenyls (PCBs) in transformer oils, etc. Where possible these will be removed prior to dismantling, however it is

Discipline	Phase	Mitigation and Monitoring
		anticipated that there will be no hazardous insulating materials in the plant and structures to be demolished, as part of the dismantling works. The use of specialist contractors and the production of task specific method statements in line with relevant legislation and best practice will be implemented as per the CEMP and the RWMP (Appendix C.1). Any unexpected ground contamination identified during the proposed works will be the subject of a remediation strategy which may entail additional monitoring.
Chapter 13 Architecture, Archaeology and Cultural Heritage		
13.1	Construction	Although no excavations are proposed within the ASA, should this occur, a suitably qualified archaeological consultant will monitor groundworks under license to the National Monuments Service Section of the Department of Housing, Local Government and Heritage, in the event that excavation areas are deeper than the earliest ash deposits at the Ash Storage Area. Should any archaeological material be encountered, works will cease, and the County Archaeologist and National Monuments Service shall be notified. A strategy will be proposed to the County Archaeologist and National Monuments Service to suitably record any archaeological material identified, and preserve any archaeological material in situ, where possible. Where preservation in situ cannot be achieved, either in whole or in part, then a programme of archaeological excavation will be proposed, to ensure the preservation by record of the area of the development that will be directly impacted upon. Further work will then only be carried out following consultations with the County Archaeologist and the National Monuments Service.
Chapter 15 Traffic and Transport		
15.1	Construction	The temporary effects of construction, regardless of the assessed level of significance, will be mitigated through adoption of a regulated and approved Traffic Management Plan (TMP). The general purpose of a TMP is optimise the efficiency and safety of all traffic activities generated by the proposed development and thus maintain suitable amenity and safety for local communities and other roads users. Operational traffic associated with the proposed development will be similar to that of the existing development. Nonetheless, it is recognised as good practice to implement a Workplace Travel Plan (WTP) to promote sustainable transport use and discourage single vehicle occupancy travel.
Traffic Management Plan (TMP)		
15.2	Construction	The appointed contractor will agree temporary traffic management measures then adopt and monitor an appropriate way of working in consultation with Clare County Council, the appointed contractor, TII and/or their Agents and An Garda Síochána as appropriate. Construction activity generated vehicles (with the exception of site personnel in cars and vans) will travel on pre-defined routes to and from the relevant sites to reduce effects on existing local traffic.
15.3	Construction	During the construction phase, signage will be installed to warn road and recreational route users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic.
15.4	Construction	Car sharing will be promoted to construction personnel by the contractor during the induction process.
15.5	Construction	In order to reduce the potential for mud and other debris being deposited onto the local road network in the vicinity of worksite accesses, wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at a designated, contained, location on site or preferably at an appropriate facility offsite, and remote from watercourses. This will minimise the amount of deleterious material deposited on the road surface and the appointed contractor will ensure that the nearest public road will be kept clear of debris by monitoring and then utilising a road sweeper where necessary.

Discipline	Phase	Mitigation and Monitoring
15.6	Construction	The appointed contractor could employ a number of sub-contractors, and all will fall under the umbrella of the TMP and will have an obligation to adhere to the Plan; this obligation will form part of the procurement process and will be written into any contract of employment.
15.7	Construction	Compliance will be monitored by the Project Manager, on behalf of the appointed contractor, via spot checks to ensure that vehicles follow the measures set out in the TMP and recording of any complaints. The appointed contractor will be required to stipulate that all contractors disseminate these rules to their sub-contractors. The appointed Contractor will nominate a person to be responsible for the co-ordination of all elements of traffic and transport, except community liaison during the construction process, a nominated Liaison Officer.
15.8	Construction	ESB will appoint a Community Liaison Contact. The Community Liaison Contact will be the direct point of contact for the developer organisation with the local community. Accordingly, local residents and business holders can contact the Community Liaison Contact for general information purposes or to discuss specific matters pertaining to traffic management or site operation. The Community Liaison Contact will regularly liaise with the nominated Liaison Officer.
15.9	Construction	If the construction phase of any notably sized development(s) appears likely to overlap with the proposed development, the appointed contractor will seek to liaise with the appropriate developer organisation regarding the scheduling of deliveries to identify potential means of reducing the effects of combined construction. Prior to commencement of construction, and during the construction phase, engagement with the proponents of other developments will continue and where there is potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings between project teams to ensure that plans are co-ordinated and impacts on population and human health are minimised. The specific detail will be developed by the appointed contractor within the parameters assessed in this EIAR.
Chapter 16 Material Assets, including Waste		
16.1	Construction	Where feasible, materials would be delivered on a just-in-time basis to avoid damage or contamination that would lead to waste generation.
		All suitable excavated material would be reused in the construction of the proposed development, wherever feasible. This aims to reduce the requirement to import materials for construction and to reduce the need to remove surplus materials from site. It is envisaged studies to be carried out to determine the suitability of materials to be reused within the proposed development. Stones from the HFO bund are likely to be not contaminated and, therefore, are anticipated to be reused within the proposed development. The envisaged studies include: ● A Generic Quantitative Risk Assessment that will assess the risk to onsite and offsite environmental and human health receptors ● A soil/material waste classification report looking at the material around the HFO tanks and elsewhere within the red line boundary that is to be removed and classifying this material ● A material reuse plan to look at the fill material around the HFO tanks and adjudge its suitability to be used as fill material during the construction works
16.2	Construction	Where site-won material is not available or suitable for reuse, secondary or recycled materials would be procured, where available and feasible.
16.3	Construction	Temporary stockpiling of fill materials prior to incorporation in the proposed development would be avoided where possible, to ensure double handling and damage is minimised and therefore avoidance of waste. However, where required, materials would be stockpiled in accordance with best practice and managed appropriate to limit the likelihood of damage or contamination.

Discipline	Phase	Mitigation and Monitoring
16.4	Construction	Pre-cast elements would be used, where technically feasible, to ensure efficient use of materials and avoid the generation of waste arisings from off-cuts.
16.5	Construction	The waste hierarchy and circular economy principles would be implemented throughout the construction phase to minimise disposal and maximise reuse and recycling of waste arisings. Mitigation measures for reuse and recycling of waste include (but are not limited to): ● Reusing excavated soils on site, where possible. ● Recycling of inert materials by crushing, blending and subsequent reuse, as an aggregate. ● Providing on site facilities to separate out waste to enable the recovery of material through recycling. ● Where waste must be taken to a recycling or disposal site, the contractor would ensure that the site has the appropriate permits. In addition, the suitable facility would be located as close to the works as possible to minimise the impacts of transportation, in particular the release of carbon emissions. The contractor would identify the closest and relevant treatment and disposal sites. ● Waste arisings sent off site for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the proposed development site to an authorised site of recovery/disposal in accordance with the Waste Management Act 1996 and associated amendments and regulations and in a manner which will not adversely affect the environment. ● All contaminated/hazardous waste (including soil) would be identified for proper management and transferred/disposed of to an adequate waste management facility. These materials will be stored separately to any non-hazardous material to avoid cross-contamination.
16.6	Construction	A non-exhaustive list of waste management facilities sites is provided in Table 16.10 in Chapter 16 of the EIAR. The ability for waste arisings to be deposited at these sites would be dependent on the conditions imposed on the sites by the relevant licence or permit. There may be other facilities in the vicinity of the proposed development that may be used.
16.7	Construction	Best practice would be to minimise the generation of waste as much as possible in accordance with the waste hierarchy principles and to incorporate circular economy principles, wherever it is technically appropriate and economically feasible. The use of the CEMP and Resource and Waste Management Plan (RWMP) would seek to implement these waste hierarchy and circular economy principles. Therefore, wherever technically appropriate and economically feasible, adequate mitigation measures will be applied to the proposed development and, therefore, the potential effects would be minimised. The CEMP and RWMP will be available for inspection at all reasonable times for examination by the Local Authority.
Chapter 17 Major Accidents and/or Disasters		
17.1	Construction	In the different stages of the project lifetime several best practice mitigation measures will be implemented, relevant to major accidents and disasters, as detailed through the CEMP to ensure minimal impacts relating to Major Accidents and/or emergencies.

Table 4.2: Mitigation and Monitoring Measures as detailed in the NIS

	Mitigation and Monitoring
4N1.1	Pre-Construction Confirmatory Surveys: ● Given the dynamic distribution of species and habitats over time (e.g., due to other land clearance works), significant changes can arise between baseline surveys informing this NIS (2023), and construction. For example, otters may establish new holts or occupy previously inactive holes excavated by other animals; invasive species distribution, or dispersal by humans, animals, or water may have taken place etc. ● In advance of any enabling works, the Environmental Clerk of Works (EnCoW) will commission pre-construction, confirmatory surveys of identified significant ecological receptors, to update the findings of the surveys outlined in Section 10.4 in Chapter 10 of the EIAR. Such surveys will specifically confirm and update presence, distribution etc. of such receptors. These will then be used to inform any revisions to proposed mitigation plans. The exact nature and number of pre-construction confirmatory surveys will depend on the time that has elapsed between when the original surveys were undertaken and works on the proposed development start. As a minimum, the following will be needed ahead of any works: – Otter holts and couches within 150m. ● Should a longer period (+> 12 months) elapse between last survey and the start of works, other pre-construction surveys might also be needed, such as: – Breeding birds within 253m; and – Wintering Birds within 253m. ● Survey reporting and mapping will also be provided to the Employer's Representative team.
N1.2	Construction Lighting: ● All temporary lighting associated with the construction works will be placed strategically by the appointed EnCoW, such that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay.
N1.3	Noise: ● Noise will be sustained over a temporary period, particularly from piling works (if needed) and dismantling of the coal yard, and this has the potential to impact species using the shoreline. A noise barrier will, therefore, need to be erected around piling works and/or between the development site and the shoreline for the duration of piling works or other particularly noisy operations. ● It is noted that the development of the project design and construction methodology may result in a changes in the mitigation requirements for noise in order to comply with the relevant criteria. The assessment of noise impacts on the Key Ecological Receptors (KER) will be updated during the detailed design stage and the corresponding mitigation requirements will be confirmed based on latest and best available information.
N1.4	Delineation of Works Areas: ● Prior to the works commencing, the works area will be demarcated with construction fencing. No construction works will occur outside of the delineated areas.
N1.5	Stockpiling Material: ● All excavated material will be stored a minimum of 50m from the Shannon estuary and any drainage ditches hydrologically connected to the watercourse. ● Silt fences, or gravel drains, will be positioned around stockpiles to capture surface water runoff. The silt fences and gravel drains will be regularly inspected and maintained. ● The base of temporary stockpiles (including excavated and imported material) will be protected by silt fencing. Visual monitoring of the silt fence will be undertaken regularly and after significant rain. Silt fences will be repaired, replaced or reinforced as necessary to prevent migration of silt. ● Stockpiled material, comprising soil, earth, stone etc., will be covered in order to prevent surface water runoff.

	Mitigation and Monitoring
	● Sediment control in the construction stage is important to ensure that only high quality, treated runoff leaves the site. Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments will be provided for on-site if required during the construction stage. Erosion control measures include: – Minimising the area of exposed ground and ensuring excavation will not proceed faster than the rate of construction. – Monitoring of the weather forecast prior to planning excavation works. – Other drainage runoff controls such as settlement tanks, silt fences and silt traps will be temporarily provided adjacent to excavations and installed before starting site clearance and earthworks if deemed necessary by the supervising Engineer.
N1.6	Concrete: The pouring of concrete will be required for foundation works associated with the new fuel tanks. To prevent the runoff of concrete, the following measures will be implemented: ● If onsite concrete batching is required, this will need to take place in controlled, bunded area. Dust suppression will be required, and all materials needed for concrete production stored undercover from rain and/or within the bunded area to prevent runoff. Noise suppression techniques will be utilised at the batching plant and/or the plant will be placed within the required noise barrier. ● Quick setting concrete mixes will be used, where possible, to reduce the risk of contaminated runoff to nearby watercourses or the Shannon estuary. ● Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at a designated, contained, location on site or preferably at an appropriate facility offsite. Any concrete wash water will be retained temporarily on site, and prevented from entering the drainage network. The temporary storage will be in place until the management of the wash water (either treatment or disposal) is agreed with the appropriate agency and in accordance with the best practice and the CEMP. ● It will be ensured that covers are available for freshly poured concrete and these will be used to avoid wash off in the event of rain. ● As it will not be possible to cover the whole HFO bund floor while the concrete is drying, work will have to be undertaken only in a suitable weather window. It should also be noted that the HFO bund is a basin and as long as the shut off valve is closed, there is no possibility of any runoff. Attention will be paid to ensure that the shut off valve is closed during concreting operations. Existing IE Licence Emission Limit Values (ELVs) for all drainage from the site, including for pH on that line (SW2) will be complied with throughout the construction and operational phases. ● Waste concrete slurry will be allowed to dry and taken to a licensed waste depot for disposal. ● Concrete works will be scheduled during dry weather conditions whenever possible to reduce the elevated risk of runoff.
N1.7	Hydrocarbons: ● Where mobile equipment is required, e.g. generators, these will be housed in a suitably sized bund/'plant nappy' such that any leaks/spills are intercepted. All mobile equipment used at the proposed stormwater outfall will be stored within a plant nappy. ● Any chemicals and/or hydrocarbons required on site during the construction phase will be stored in designated, impermeable areas and be bunded or double skinned. ● Fuelling and lubrication of plant and equipment will be carried out on impermeable surfaces or using mobile drip trays and will be restricted to the construction site compound only. No refuelling will be permitted to occur within 50m of the estuary or drainage ditches. ● All waste fuels, oils, and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Acts 1996, as amended. ● Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment and in when it should be deployed.

Mitigation and Monitoring
● Welfare/hygiene facilities will be located within the construction compound and contractor village, a minimum of 50m from any watercourse/drainage ditch. ● All water from wheel washes will be captured and removed from site and disposed of in line with Waste Legislation. No water will be discharged into any watercourses or drainage ditches.

5 Environmental Incident Response Plan

5.1 Introduction

In the unlikely event of an incident, the Environmental Incident Response Plan will ensure that any incident is dealt will effectively, and that the response is timely and appropriate. This plan will be further developed by the appointed Contractor, in line with the mitigation measures detailed in the EIAR and NIS for the proposed development, to describe the procedures, lines of authority and processes that will be followed to ensure that all incident response efforts are prompt, efficient and appropriate to the particular incident.

5.2 Plan Objectives

The objectives of the plan are:

- To ensure the health and safety of all workers on site;
- To minimise environmental effects;
- To devise response procedures; and
- To establish procedures for an effective response to the incident which minimises effects on the environment and the health and wellbeing of personnel.

5.3 Implementation of the Plan

Risks and appropriate responses for incidents will be reviewed and updated regularly to ensure that all risks and response mechanisms are included within the plan. It will identify the risks associated with health and safety and the environment and will evolve throughout the project lifecycle, with inputs from the contractor / PSCS and sub-contractors.

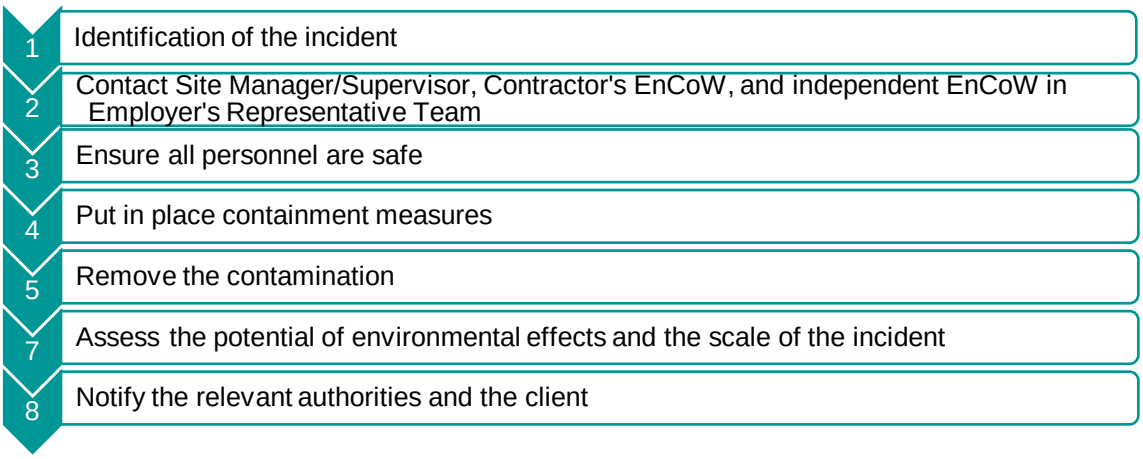
5.4 Environmental Emergency Response Plan

The mitigation measures specified in the EIAR and NIS will minimise / avoid environmental pollution. However, procedures must be in place in the unlikely event of an incident. The following are required to ensure that the project / site / activity risks are known to all personnel on site:

- Identify all activities related to the project which have the potential to cause an incident;
- Conduct a risk assessment for each activity;
- Ensure effective planning of the works and the required equipment to deliver EIAR mitigation requirements;
- Contact details for those contacts detailed in Section 5.5 to be distributed to personnel and displayed on site; and
- Training of staff/personnel in relation to response procedures, including drills.

In the unlikely event of an incident, the response will follow the following steps:

Figure 5.1: Incident Response Procedure



An example of emergency response actions required, in the event of a spillage is as follows:

1. If safe, stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
2. If safe, contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
3. Cover or bund off any vulnerable areas where appropriate.
4. If possible, clean up as much as possible using the absorbent spills materials.
5. Do not hose the spillage down or use any detergents.
6. Contain any used absorbent material in weather tight containers bins/bags so that further contamination is limited.
7. Notify the Site Manager so that used absorbent material can be disposed of using a licensed Waste Contractor, and
8. An accident investigation should be performed in accordance with procedures and the report sent to the Site Manager.

All works in the vicinity of the incident must be ceased until such a time as the Site Manager notifies personnel that it is safe to proceed with the works. The Contractor's EnCoW will be responsible for formulating any corrective actions that are required (e.g. repairs silt fencing in the event of damage from extreme weather) in consultation with the Contractor and relevant stakeholders.

For each incident, the following will be reported:

- Location of the incident;
- Time and date;
- Scale of the incident;
- Nature of the incident and source-pathway and receptor;
- Remediation measures undertaken;
- Name of the personnel who reported the incident; and
- Any other relevant details.

The Site Manager will keep a log of all environmental incidents on file, and these will be made available to the Local Authority, the independent EnCoW within the Employer's Representative Team and other agencies, as required, such as the Inland Fisheries Ireland or the Environmental Protection Agency.

5.5 Emergency Contact List

An emergency contact list will be displayed at prominent and suitable locations at construction sites during the proposed works. An example is provided in Table 5.1, and this will be further developed to include contact details for key personnel with environmental responsibilities, as detailed in Chapter 2 of this CEMP.

Table 5.1: Emergency Services and Authorities Contact Details

Emergency Services	Contact Telephone Number
Ambulance / Fire Service	999 or 112
Clare County Council Fire Services	065 682 1616
Clare County Council Environment Department	065 684 6331
National Parks and Wildlife Services	01 539 3218
Environmental Protection Agency	053 916 0600
ESB Emergency	1800 372 999 / 21 238 2410
Bord Gáis Emergency	1800 20 50 50
Uisce Éireann Emergency	1800 278 278
Health and Safety Authority	0818 289 389

6 Training and Auditing

6.1 Environmental Induction and Awareness

All site personnel will receive environmental induction and awareness training in conjunction with site safety training. The environmental training and awareness training will ensure that staff are familiar with the principles of the CEMP, the environmental aspects and potential impacts associated with their activities, the controls in place to mitigate said impacts. Prior to working in areas of particular sensitivity, the Contractor's EnCoW will give a toolbox talk to site personnel. All site personnel will be trained in relation to incident response procedures and drills will be undertaken to ensure timely and effective responses to incidences.

All signed training records will be held on site for future inspection.

6.2 CEMP Reviews and Auditing

Internal and external auditing will facilitate the assessment of the effectiveness of the CEMP and compliance against regulatory and legislative requirements. Audit reports will be produced identifying examples of good practice, opportunities for improvement, non-conformances, and corrective actions taken, as appropriate. Recommendations for follow-up audits will also be provided. The findings of the audits will be reported to the Site Manager, the Contractor and the EnCoW.

The EnCoW will bring any changes required to the CEMP to the attention of the Contractor. A report on each change to the CEMP will be appended to the CEMP. The EnCoW will monitor and track any changes in environmental legislation and any changes required will be brought to the attention of the Site Manager and Contractor. Changes to the CEMP may also arise due to changes in activities and measures contained in the CEMP may need to be updated / altered to take account of this.

The EnCoW will carry out regular reviews of the CEMP to ensure that the Contractor is conducting the works in compliance with the EIAR, NIS and any conditions arising.

The CEMP, environmental inspection reports and audit records will be maintained for inspection.

7 Communications and Complaints

7.1 Communication and Engagement

Communication with the public and other stakeholders will be a two-way mechanism, to ensure awareness of the project and to share information.

The appointed Contractor will nominate a person to be responsible for the co-ordination of all elements of traffic and transport, except community liaison during the construction process, a nominated Liaison Officer.

ESB will appoint a Community Liaison Contact. The Community Liaison Contact will be the direct point of contact for the developer organisation with the local community. Accordingly, local residents and business holders can contact the Community Liaison Contact for general information purposes or to discuss specific matters pertaining to traffic management or site operation.

The Community Liaison Contact will regularly liaise with the nominated Liaison Officer.

7.2 Environmental Complaints

A formal complaints procedure will be developed and implemented by the Contractor. Signage will be provided at site entrances or on perimeter hoarding locations showing details of whom to contact in the event of a complaint.

The Contractor will:

- Assess what corrective and preventive action is required.
- Carry out further investigation if necessary.
- Provide a response within a reasonable timescale.
- Notify the relevant stakeholder of the proposed corrective and preventive actions to be adopted.
- On completion of the corrective action and following agreement that the complaint has been adequately addressed; the Site Manager will close the case and record the date of closure. The complaints register will include details of the preventative measures undertaken to avoid a reoccurrence and will be agreed with the EnCoW.
- The Contractor will additionally communicate the specifics of any environmental complaint to the ESB Site Manager.

Appendices

C.1 Resource and Waste Management Plan

Moneypoint Security of Supply

Appendix C.1 Resource and Waste Management Plan

January 2024

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Moneypoint Security of Supply

Appendix C.1 Resource and Waste Management Plan

January 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
PL	January 2024	D. Vargas	S. Stone	D. Dray	For Planning Consent

Document reference: 229101323 | 401_7 | PL |

Information class: Standard

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1 Introduction

1.1 Overview of the Proposed Activities

Mott MacDonald Ireland Limited (Mott MacDonald) have been appointed by the Electricity Supply Board to prepare and lodge a planning application for the continued generation and redevelopment of Moneypoint Generating Station. The Electricity Supply Board, hereafter referred to as ESB or 'the Applicant', are required to submit a strategic infrastructure development application to An Bord Pleanála under Section 37E of the Planning and Development Act 2000 (as amended) for the project.

At present Moneypoint Generating Station primarily operates as a coal fired power station, it is proposed to convert its primary fuel source to heavy fuel oil (HFO) with limited run hours from late 2024 until the end of 2029 (hereafter referred to as the "proposed development"). The proposed development will act as an out of market generator of last resort and will operate only when required by the Transmission System Operator (EirGrid) for security of supply reasons.

This Resource and Waste Management Plan (RWMP) has been prepared on behalf of the Electricity Supply Board (ESB) by Mott MacDonald in support of the planning application for the continued generation and redevelopment of Moneypoint Generating Station. The RWMP has been prepared in accordance with waste management guidance and principles, as outlined in *Best practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects* (EPA, 2021). This RWMP is prepared for the proposed construction works and the partial dismantling of the coalyard, as described below.

Moneypoint Generating Station lies on the northern shore of the [Lower] Shannon Estuary, in the townland of Carrowdotia North, Carrowdotia South and Ballymacrinan, County Clare, and is located approximately 4km southeast from Kilrush, the nearest town, and approximately 1.8km west of Killimer village.

Moneypoint Generating Station lies within a larger ESB landholding comprising approximately 180 hectares of land onshore and approximately 65 hectares within the nearshore. The extent of land above the (historic) high water mark within ESB's ownership is presented in Figure 1.1. The red line boundary indicates the planning application boundary of the proposed development whereas the blue line boundary indicates the ownership boundary of ESB. There are no works proposed below the (historic) high water mark (i.e. within the nearshore) as part of the proposed development.

Set within a rural landscape, Moneypoint is a significant 'industrial' landbank, long associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure.

Figure 1.1: Moneypoint Generating Station – Strategic Location Map

Source: ESB, Strategic Site Location Map, Drawing reference: QP-000017-65-D451-001-001-000

The Moneypoint Generating Station site operates, and will continue to operate, under the existing Industrial Emissions licence (Registration Number: P0605-04), regulated by the Environmental Protection Agency (EPA).

The proposed development will comprise of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel from coal to Heavy Fuel Oil (HFO) for limited hours of operation and a temporary period of five years until the 31 December 2029;
2. Construction of 2no. HFO tanks each with a capacity of 25,000 tonnes (approx. 48.7m diameter x 15m H) and associated bund walls (approx. 5.0m high);
3. Construction of a new boiler house (approx. 24m L x 18m W x 11m H) to house 2no. auxiliary boilers (1no. electric and 1.no distillate, each approx. 22.7MW (thermal output), including:
   - 1no. blow down vessel (approx. 4.5m wide x 13m high)
   - 1no. exhaust Stack (approx. 1.0m diameter and 30m H)
   - 1no. annex structure (approx. 10.0m L x 5m W x 4m H)
4. Construction of an extension to each of the existing 3no. Flue Gas Desulphurisation Absorbers (FGD) - units 1, 2 and 3, to provide additional reclaimed ash unloading facilities (ash injection plant extension), comprising:
   - 1no. conveyor enclosure (approx. 7.0m L x 2.5m W x 22m H)
   - 1no. hopper enclosure (approx. 6m L x 5m W x 6m H)
5. Construction of a reclaimed ash unloading facility at the existing landfill capping batching plant, comprising a hopper enclosure adjoining the existing batching plant (approx. 14.0m L x 6.5m W x 6.0m H) and conveyor enclosure (approx. 3.5m L x 3.5m W x 11.5m H)
6. Dismantling and removal of 2no. mobile stacker reclaimers and 1no. coal conveyor bridge;

7. Changes to existing permitted Flue Gas Desulphurisation (FGD) by-product and Ash Storage Area (ASA) arrangements (Pl. Ref. 14/373) to utilise spare capacity in the existing ASA [capping layer thickness increase from 0.6m (*minimum*) up to a maximum of 1.6 m] with an overall proposed reduction in height of the currently permitted ASA by approx. 1.85m; and,
8. All associated ancillary site development works to facilitate the proposed development, including a new lighting arrangement, surface water drainage, internal roads and temporary construction compounds and laydown areas.

The proposed works do not include any changes to the generating units, beyond normal maintenance. These have been designed to fire either fully or partially with HFO. There will also be no change to the existing boilers, turbines, transformers or associated equipment. Each unit is connected to the national grid through the existing 400KV/220kV substations. No changes to the HFO forwarding systems and electricity transmission infrastructure will be required to facilitate the proposed transition to HFO. All works will occur within the ESB Moneypoint Generating Station complex. No works or changes are proposed at the existing loading jetty area.

An Environmental Impact Assessment Report (EIAR) has been prepared as part of the planning application and a Construction Environmental Management Plan (CEMP) is included in Appendix C of the EIAR. Further construction details are included in the EIAR and CEMP.

1.2 Purpose of this RWMP

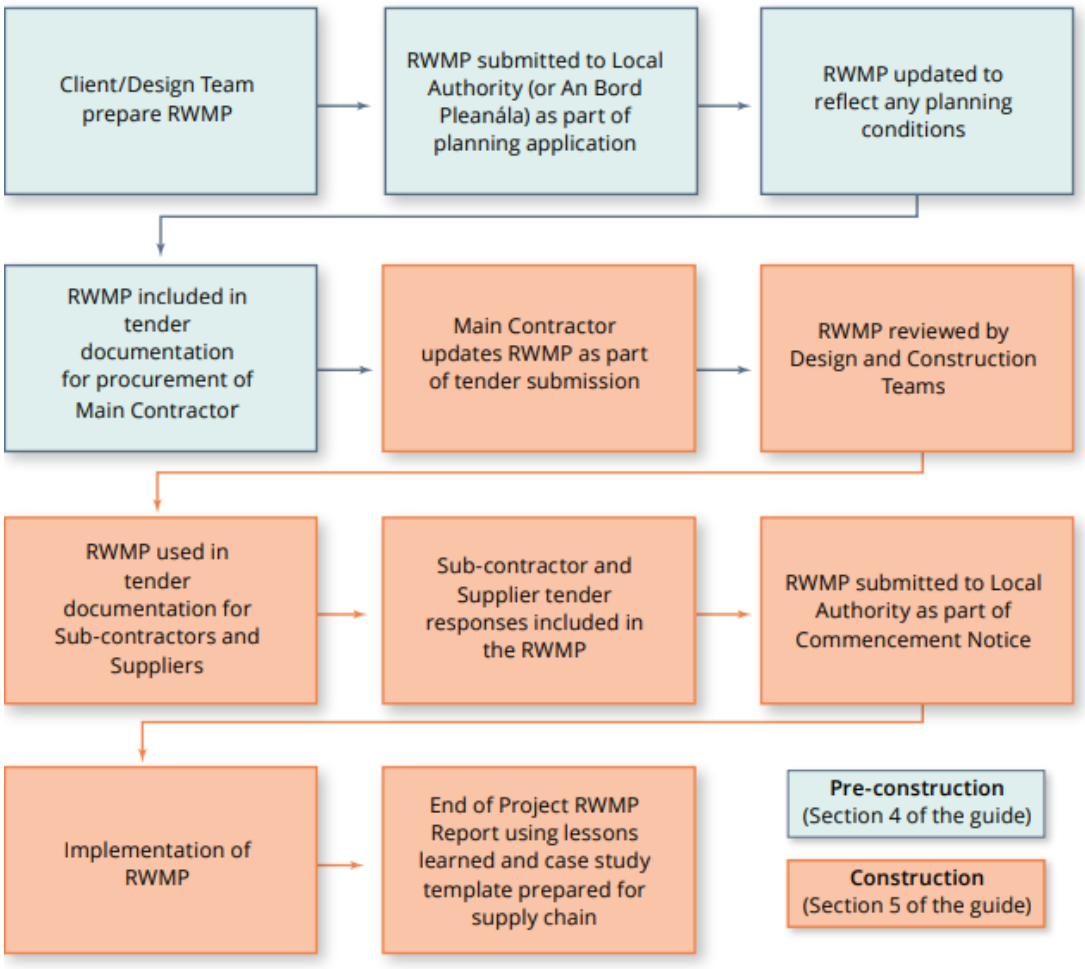
This RWMP will remain a 'live' document which will be reviewed regularly and revised as necessary and appropriate. Where the proposed development design scope is subject to change, the RWMP will be updated to reflect any changes, as necessary. The RWMP will be developed in agreement with the local planning authority, in the context of finalising detailed design of the proposed development, to ensure that optimum levels of waste prevention, reduction, reuse, recycling, and recovery are achieved throughout the duration of the proposed development. Litter management will also be included.

Best practice suggests that the RWMP approach should be applied from the early design stages and carried forward and revised throughout the project delivery process. This ensures cost savings are maximised by considering waste minimisation initiatives and identifying opportunities to reduce, reuse or recycle waste materials and improve resource efficiency during the earliest design stage.

The requirement to develop, maintain and operate a detailed RWMP will form part of the contract documents for proposed construction works for the project. It is envisaged that a separate contract will be required to undertake the partial dismantling of coalyard and the appointed Contractor will be responsible for developing the RWMP for this element of the works.

On commencement of the project, the Contractor to undertake the works will be responsible for the development of a RWMP and the implementation of all necessary protocols and measures to ensure regulatory compliance, including the provision of data to local authority to enable fulfilment of reporting obligations. The RWMP will be developed and agreed in line with the process presented in Figure 1.2.

Figure 1.2: Process Lifecycle of Construction Resource and Waste Management Plan



Source: Figure 3-1; Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects (EPA, 2021)

The Contractor will be required to regularly revisit the RWMP throughout the lifecycle of the project so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and to ensure that data is collected on an ongoing basis so that it is as accurate as possible.

The Contractor will be required to:

- Reduce the use of virgin resources;
- Keep materials in use at the highest possible value at all times and for as long as possible in the economy;
- Reduce the amount of waste generated where it cannot be eliminated completely; and
- Reuse and then recycle as much as possible, once it is not possible to reduce the waste any further.

This RWMP has been prepared for the proposed development is classified as a Tier 2 project. The guidelines state that:

"Developments below the following thresholds may be classed as Tier 1 development: …

- *Demolition projects generating in total less than 100m^3 in volume of construction and demolition (C&D) waste.*

Developments above these thresholds are classed as Tier-2 projects."

This RWMP has been prepared with reference to, and taking account of, the following legislation, plans and waste management guidance documents:

- The Waste Management Act 1996 as amended and associated Regulations
- The Litter Pollution Act 1997
- SP133 Waste Minimisation in Construction (CIRIA, 1997)
- Design Out Waste: A Design Team Guide to Waste Reduction in Construction and Demolition Projects (EPA, 2015)
- The Southern Region Waste Management Plan 2015 – 2021 (Southern Waste Region, 2015)
- Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects (EPA, 2021)
- Employer's Minimum Environmental Requirements for Construction and Demolition Projects and Related Works and Activities (ESB, 2023)

1.3 Structure of this RWMP

Design Out Waste (EPA, 2015) notes that the preparation of a Waste Management Plan within the early design and feasibility phases provides a framework to carry out design reviews, and should be used as an implementation, benchmarking, monitoring and reporting tool throughout the overall construction process.

This RWMP has been prepared in line with the recommendations of the Best Practice Guidelines (EPA, 2021) for Tier 2 projects and consequently addresses the following:

- Introduction
- Roles and Responsibilities
- Proposed Activities
- Design Approach
- Key Materials, Quantities and Costs:
  - Waste forecasting: Analysis of the waste arising / materials surpluses
  - Specific waste management objectives for the project
  - Proposed strategies and associated costs: Methods proposed for prevention, reuse and recycling of wastes
  - Materials logistics
- Site Management:
  - Monitoring procedures: Auditing and record keeping
  - Proposals for education of workforce and plan dissemination programme
- Site Infrastructure
- Construction Resource and Waste Inventory Template

1.4 Irish Waste Management Targets

The EU Waste Framework Directive (Directive 2008/98/EC) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery. It also includes definitions for when waste ceases to be waste and becomes a secondary raw material (end-of-waste criteria) and how to distinguish between waste and by-products. The Directive was transposed into Irish law by the Waste Directive Regulations 2011 (S.I. No. 126 of 2011).

The EU Waste Framework Directive (2008/98/EC) required Member States to take the necessary measures to achieve the minimum recycling/recovery target of 70% by weight for non-hazardous C&D waste by 2020, excluding naturally occurring materials. The Directive specified that such a target should be achieved by preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other material.

The Contractor will be obliged to aim for an overall recycling rate of 70% of C&D material, in accordance with EU targets under Waste Framework Directive (2008/98/EC) as well as regional waste management targets.

1.5 Waste Management Regulatory and Policy Requirements

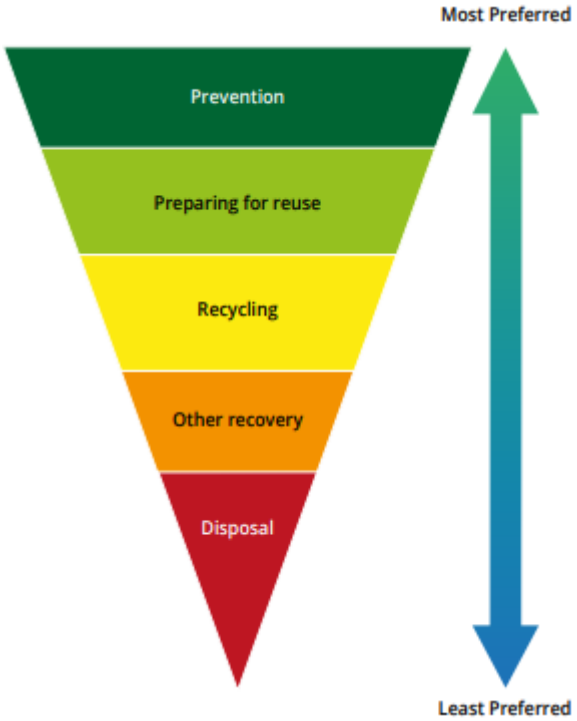
The revised legislative framework on waste (Directive (EU) 2018/851) entered into force in July 2018 and sets clear targets for reduction of waste and establishes long-term path for waste prevention and waste treatment. The Directive has been transposed into Irish law through the European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020).

In Ireland, the primary waste legislation is the Waste Management Act 1996, as amended, and Section 32 of the Act places a general obligation on the holder of waste to comply with legislation and ensure all wastes are managed within the requirements of the Act.

The Waste Framework Directive defines waste as *"any substance or object that the holder discards or intends to or is required to discard".*

The foundation of EU waste management is the five-step "waste hierarchy", established in the Waste Framework Directive. It establishes an order of preference for managing and disposing of waste. The Waste Hierarchy described in the framework prioritises prevention over reuse, recycling, recovery and disposal. The approach has been adopted in the EPA 2021 guidelines, as illustrated in Figure 1.3.

Figure 1.3: Waste Hierarchy



Source: EPA, 2021

The primary legislative instruments that govern waste management in Ireland relevant to the proposed development are as follows:

- Waste Management Act 1996 (S.I. No. 10 of 1996), as amended. Sub-ordinate legislation to this Act includes:
  - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
  - Waste Management (Collection Permit) Regulations S.I No. 820 of 2007 as amended 2008 (S.I No 87 of 2008)
  - Waste Management (Facility Permit and Registration) Regulations, S.I No. 821 of 2007 as amended 2008 (S.I No. 86 of 2008)
  - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004), 2010 and (S.I. No. 350 of 2010)
  - Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) as amended 2004 (S.I. No. 871 of 2004), 2006 (S.I. No. 308 of 2006) and 2007 (S.I. No. 798 of 2007)
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  - Waste Management (Landfill Levy) (Amendment) Regulations 2012 (S.I. No. 221 of 2012), as amended 2015 (S.I. No. 189 of 2015)
  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2011
  - Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. 113 of 2008)
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009), as amended 2015 (S.I. 190 of 2015)
- Protection of the Environment Act 2003 (S.I. No. 413 of 2003)
- Litter Pollution Act 1997 (S.I. No. 12 of 1997)
- Circular Economy and Miscellaneous Provisions Act 2022 (S.I. No. 26 of 2022)

The Southern Region Waste Management Plan 2015 – 2021[1] (the latest regional plan at time of writing), which includes County Clare, outlines the strategy for waste management in the southern regions. The Plan notes the following:

"To date the European Commission has not developed specific regulations governing the end of waste criteria for C&D waste, therefore the EPA is allowed to decide on a case by case basis."

"Given the sharp decrease in the number of operational landfills nationally, which have been a significant outlet for C&D waste in the past, alternative recovery options will be required in future years".

The proposed development will also comply with the Circular Economy and Miscellaneous Provisions Act 2022 and the core principles of circular economy as below[2]:

- Designing out of waste and negative externalities - Finding suitable measures to firstly avoid generating waste (prevention and minimisation), before focusing on recovering. The choice and planned use of products are considered with their end of life in mind.

[1] Southern Waste Region (n.d.). Southern Region Waste Management Plan 2015-2021 & Associated Reports [online]. Available at: http://www.southernwasteregion.ie/content/southern-region-waste-management-plan-2015-2021-associated-reports Accessed January 2024

[2] Ellen MacArthur Foundation (n.d.) Circular economy introduction [online] Available at: https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview Accessed December 2023

- Keeping products and materials in use at the highest possible value at all times - Ensure products and materials can be kept in circulation within the economy without becoming waste. Strategies include renting rather than buying, repairing, remanufacturing, keeping products in use for longer by reusing, sharing, reselling, and ultimately recycling as a last alternative.
- Regenerating the natural ecosystem - Regenerate the natural ecosystems by returning valuable nutrients to the biosphere (soils, waters and atmosphere). Biological (or organic) materials such as wood, food and water, can be incorporated into the ecosystem and re-generated through biological processes.

1.6 Existing Industrial Emissions Licence

The Moneypoint Generating Station site operates, and will continue to operate, under the existing Industrial Emissions licence (Register Number: P0605-04), regulated by the Environmental Protection Agency (EPA). ESB made a Request Technical Amendment for Best Available Techniques (BAT) Conclusions to the EPA on 15 December 2023 to include the proposed development under the IE licence.

ESB will continue to comply with Condition 7 (Resource Use and Energy Efficiency) and Condition 8 (Materials Handling) of existing IE licence P0605-04, which relate to resource and waste management.

2 Roles and Responsibilities

2.1 Client and Key Personnel

ESB is the Employer with the following responsibilities:

- Manage the process towards construction including liaison with stakeholders.
- Undertake a Client Engineering function, including inspections, to ensure that detailed designs, plant, materials and works including scheduling meet the requirements of outline designs and the proposal requirements.
- Ensure that the Contractor employs an independent Environmental Clerk of Works (EnCoW) to assess the construction of the proposed development and advise the Contractor on the implementation of the agreed Contractor's RWMP.

A Contractor will be appointed by ESB following a tendering process. The appointed Contractor will be responsible for the Health and Safety of site workers, as well as the implementation of this RWMP.

The following sections provide further detail on roles and responsibilities.

2.2 Resource Manager

A Resource Manager will be appointed by the Contractor who will ensure that the objectives and measures contained within this RWMP are implemented to achieve the associated target reuse/ recycling rates.

The Resource Manager will:

- Be responsible for all aspects of waste management at the different stages of the proposed development, and overall implementation of the RWMP and associated procedures.
- Be technically competent and appropriately trained. Facilitate effective communication of the waste management objectives with all operatives associated with the project (including site staff, external contractors and suppliers).
- Keep records of the quantities of waste / surplus materials generated and the costs associated with waste generation and management.
- Ensure that reporting and recording requirements are met, and all necessary resources are in place to support the implementation of the plan.

Another key objective of the Resource Manager will be the maintenance of accurate records on the quantities of waste / surplus materials generated and the real cost (including purchasing) associated with waste generation and management. The recording of summary information will further assist the implementation of the plan.

2.3 Future Role of the Contractor

The appointed Contractor will be responsible for the Health and Safety of site workers and the completion of the works to the satisfaction of the Employer.

All works shall be carried out in a safe manner and in compliance with all the requirements of the Safety, Health and Welfare at Work Act 2005; Safety, Health and Welfare at Work (Construction) Regulations (S.I. No. 291 of 2013) and any other subsequent Health and Safety regulations, amendments, publications and legislation and any other guidance notes issued by the Health and Safety Authority.

2.4 Other Parties and Key Personnel

2.4.1 Project Supervisor Design Process / Project Supervisor Construction Stage

ESB will act as Project Supervisor of the Design Process (PSDP) for the initial design phase of this project. Upon their appointment, the Contractor will be appointed to the role of PSDP and will take on the role of Project Supervisor of the Construction Stage (PSCS). The Contractor will be appointed to the role of PSDP and PSCS for the installation, commissioning, testing of all equipment, and handover.

2.4.2 Site Manager

A Site Manager will be responsible for the day to day running of the site and will direct and oversee the activities of the Contractor and subcontractors throughout the works. The Site Manager will be responsible for programming of the works, will consult regularly with the Employer and will maintain site safety.

2.5 Contact Details

As detailed previously the requirement to develop, maintain and operate a detailed RWMP will form part of the contract documents for the project and will be updated by the appointed Contractor in advance of the commencement of construction activities on site. At that time the table below will be updated to provide the description and roles of key personnel for the detailed design and construction phase.

Table 2.1: Contact Details of Site Personnel and their Roles Template

Organisation	Role	Name	Contact Number	Email
To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed
To be confirmed	To be confirmed	To be confirmed	To be confirmed	To be confirmed

3 Design Approach

3.1 Proposals for Managing Waste Arisings

Waste arisings will be managed in accordance with the principles outlined in the Waste Hierarchy as illustrated in Figure 1.3.

In order of priority, the Waste Hierarchy sets out the most desirable approaches to waste management in the following order:

1. Prevention
2. Reduction / Minimisation
3. Reuse
4. Recycle
5. Other Recovery (including energy recovery)
6. Disposal

Only authorised Waste Contractors with appropriate waste collection permits issued by the National Waste Collection Permit Office will be authorised to collect waste streams from the proposed development. Waste will only be transferred to facilities authorised to treat or dispose of the material in accordance with the requirements of the Waste Management Act 1996 (as amended) and associated Regulations.

Copies of all permits and licences will be retained with other waste-related documentation. Comprehensive waste descriptions will be provided on all documentation.

3.1.1 Opportunity for Prevention and Reduction

Opportunities for the prevention of waste will be considered throughout all stages of the project. The modular and factory-built nature of the equipment encourages resource efficiency by reducing waste generated during the construction process. Furthermore, the appointed Contractor will plan the construction process to eliminate / reduce waste; specifically, careful planning will minimise the volume arising on site, facilitate the use of reclaimed materials in the works and influence wastage caused by poor materials handling.

Design Out Waste (EPA, 2015) notes that 33% of all onsite waste is due to a failure to implement waste reduction measures during the design stages. Materials logistics, specifically the avoidance of overstocking of materials, is a critical factor for material optimisation in preventing wasted material. A review assessment of this plan and detailed design plans will inform the appropriate quantities of materials required for the project thereby minimising, and potentially preventing, the generation of certain waste streams. In accordance with Best Practice Guidelines (EPA, 2021) and Design Out Waste (EPA, 2015), the following measures will be implemented at a minimum:

- Materials will be ordered on an ‘as needed’ basis to prevent over-supply to site.
- Materials required will be purchased in shape, dimensions, and form that minimise the creation of excessive scrap waste on site.
- Storage and handling procedures and systems will be introduced to minimise generation of damaged materials / waste e.g. deliveries will remain unpacked until ready for use and sufficient space will be made available for manoeuvring of machinery.

- The correct sequence of operations will be determined and implemented to prevent using more materials than estimated due to damage or incorrect operation, as well as to enhance the reuse of materials onsite.
- Agreements will be made with suppliers, where possible, to ensure take back / buy back of surplus and sub-standard / rejected materials.
- The Contractor will assign individual responsibility (through appropriate contractual arrangements) to sub-contractors, where applicable, for the purchase of raw materials and for the management of wastes arising from their activities.

Alongside the above measures, Table 3.1 below identifies additional measures that will be considered to be implemented, where appropriate, to ensure that the proposed development utilises resources efficiently and to minimise waste generated on site.

Table 3.1: Potential Additional Measures for Waste Prevention and Reduction

Planning waste minimisation during construction	Waste prevention and reduction measures	Responsibility[3]	Date action commenced
Design	Ensure design considerations take into account the five principles for Resource Efficient design and circular economy: ● Design for Reuse and Recovery ● Design for offsite Construction ● Design for Materials Optimisation ● Design for Resource Efficient Procurement ● Design for Deconstruction and Flexibility (for the future) ● Design for Longevity ● Consider standardisation and/or modulation ● Identify potential industrial symbiosis opportunities[4]	Designer/project manager	From the design outset
Construction methods	Sequencing the works such that reuse of materials can be undertaken.	Project manager /principal contractor	During design and planning stages and implemented during the construction.
	Use of prefabricated or pre-cast elements which reduce on site waste through off cuts and storage damage		
	Minimise the depth of excavation and reuse any excavated material on site or on local developments		
Materials	Assess the quantities of materials required on site.	Project manager /principal contractor	During construction planning and throughout the project construction.
	Procure from suppliers with reduced and recyclable packaging		During design and throughout the procurement/ construction stages of the project.

[3] It is the responsibility of ESB to appoint a principal contractor for the purposes of the RWMP if one or more contractors are working on this project.

[4] Providing waste or by-product from construction to another business that can utilise the material.

Planning waste minimisation during construction	Waste prevention and reduction measures	Responsibility[3]	Date action commenced
	Provide secure storage to minimise the generation of damaged materials/theft.		
	Keep deliveries packaged until they are ready to be used.		
	Inspect deliveries on arrival.		
	Increase the use of recycled content; this could include traditional use of recovered material such as crushed concrete waste and by procuring mainstream manufactured products with higher recycled content than their peers.		

It is expected that any waste generated will be recycled off site in accordance with the CEMP, RWMP and regulatory requirements, where feasible. Waste will only be sent for recovery or disposal if no other reasonable economically or technically feasible alternative can be found.

3.1.2 Opportunity for Reuse/ Recycling

Material that is generated will be reused on site or salvaged for subsequent reuse to the greatest extent possible or recycled. Disposal will only be considered as a last resort. Initiatives will be put in place to maximise the efficient use/reuse of materials.

Appropriate and adequate waste segregation areas will be provided at secure locations on site. The number and size of containers and the number of uplifts required will be determined at a later stage in the project. The Contractor will ensure that containers are not filled beyond the maximum loading capacity of the collection vehicle. Effective inspection, containment and control measures will be implemented to ensure that no litter escapes from the construction site. Litter pickers will be employed within the construction site as required.

3.1.2.1 Decommissioning

Partial dismantling of coalyard (i.e. stacker reclaimers and rising conveyor bridges) will be required as part of proposed development works at Moneypoint Generating Station. Material and coal (from the wash down of structures) arising from the dismantling process will be carefully stored and segregated to be sent off site for further treatment (where required) to be recycled and/or recovered at authorised facilities, where possible.

If any material deemed acceptable is produced from the enabling works e.g. good quality topsoil, this will be stored and re-laid within the proposed development. If this is not possible, it will be sent for reuse elsewhere or alternatively for further treatment or processing at an appropriately permitted facility offsite.

3.1.2.2 Concrete

The Contractor will be encouraged to process demolished concrete to be reused as general fill.

3.1.2.3 Soils

All soil material will be tested following a waste sampling strategy. In an event that contaminated soil material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material and disposed of appropriately. The Contractor

will have regard to the information collected including conceptual site modes, risk assessment and identified reuse and remediation strategies.

Soil will be reused where possible. All soil extracted (whether contaminated or not) will be stockpiled and stored appropriately at the proposed development. A contractor has been appointed by ESB for testing of materials to determine contamination levels and suitability for reuse within the proposed development. The following are anticipated to be undertaken at the proposed development:

- A Generic Quantitative Risk Assessment that will assess the risk to onsite and offsite environmental and human health receptors.
- A Soil/Materials Waste Classification Report looking at the material around the HFO tanks and elsewhere within the redline boundary that is to be removed and classifying the material.
- A Material Reuse Plan to look at the fill material around the HFO tanks and assess its suitability to be used as a fill material during works.

3.1.2.4 Hazardous Waste

Waste fuel and oil and nominally empty containers will be appropriately contained and stored in designated areas on drip trays to prevent loss through drips and spills. Paints will be stored in appropriate containers in designated areas on drip trays. Where practicable, non-hazardous paints will be used.

Hazardous wastes will be collected by appropriately authorised Waste Contractors for recovery or disposal as appropriate. Nominally empty containers will not be sent for disposal unless a determination can be made that the residual content does not include hazardous waste.

Any Asbestos Containing Materials (ACM) from plant and buildings will be safely identified and removed by an approved Specialist Asbestos Contractor.

3.1.2.5 Scrap Metal

Scrap metal will be sent to an appropriately authorised Waste Contractor for recycling.

3.1.2.6 Bitumen/Tarmacadam

Opportunities for bitumen / tarmacadam recycling will be investigated. For example, they can be taken up and reused or recycled for paths, construction storage space and hard standing for plant. If no alternatives are available, the waste arising will be sent for disposal.

3.1.2.7 Unacceptable Materials

Other unusable construction waste materials will be collected in receptacles with mixed construction waste materials, for subsequent separation and recycling at an offsite facility.

3.1.2.8 Miscellaneous Waste Arisings

Small volumes of a variety of waste streams will be generated including packaging waste, plastic pipe and cable cut-offs, and mixed municipal type waste. The generation of surplus waste streams will be minimised through careful planning; however, it will not be possible to eliminate all surplus waste arisings. Where waste is produced the following separation and storage methods will be used:

- Cardboard will be flattened, and paper and cardboard containers will be covered to prevent ingress of water.
- Plastic will be segregated at source and kept as clean as possible prior to placement in a covered container.

- Paper, cardboard and plastics will be recycled whereas mixed municipal waste arising will be sent for disposal.

3.2 Offsite Construction

Use of offsite manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). Where technically feasible and economically viable, offsite prefabricated elements will be considered to minimise waste arisings and material assets use. Offsite prefabricated elements would allow for volumes of off-cuts and onsite breakages and the likelihood of over-ordering and wasting of materials to be reduced.

4 Key Materials, Quantities and Cost

4.1 Analysis of Waste Arisings

The main waste stream arisings (including surplus materials) which are likely to be generated during the construction phase are presented in Table 4.1. The List of Waste (LoW) codes are identified using the EPA publication Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-hazardous (2019).

According to the publication, waste can have one of the three entry types: Non-hazardous; Hazardous (marked with an asterisk); Mirror – either hazardous or non-hazardous.

Table 4.1: Waste types and associated LoW Codes

Waste Type	LoW Code[5]	Description	Waste Classification
Concrete, bricks tiles and ceramics	17 01 01	Concrete	Non-hazardous
	17 01 02	Bricks	Non-hazardous
	17 01 03	Tiles and ceramics	Non-hazardous
	17 01 06*	Mixtures of or separate fractions of concrete bricks tiles and ceramics containing hazardous substances	Hazardous
	17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	Non-hazardous
Wood, glass and plastic	17 02 01	Wood	Non-hazardous
	17 02 02	Glass	Non-hazardous
	17 02 03	Plastic	Non-hazardous
	17 02 04*	Glass, plastic and wood containing or contaminated with hazardous substances	Hazardous
Bituminous mixtures, coal tar and tarred products	17 03 01*	Bituminous mixtures containing coal tar	Hazardous
	17 03 02	Bituminous mixtures	Non-hazardous
	17 03 03	Coal tar and tarred products	Non-hazardous
Metals (including their alloys)	17 04 01	Copper, bronze brass	Non-hazardous
	17 04 02	Aluminium	Non-hazardous
	17 04 03	Lead	Non-hazardous
	17 04 04	Zinc	Non-hazardous
	17 04 05	Iron and steel	Non-hazardous
	17 04 06	Tin	Non-hazardous
	17 04 07	Mixed metals	Non-hazardous
	17 04 09*	Metal waste contaminated with hazardous substances	Hazardous
	17 04 10*	Cables containing oil, coal, tar and other hazardous substances	Hazardous

[5] The selected List of Waste (LoW) codes provided are provisional only. In a number of instances more than one code may be considered appropriate. Care should be taken to ensure that the waste collectors permit includes all LoW codes specified in the appropriate documentation. In addition, there will be a requirement for a technically competent person to assess waste as it arises and to make a determination as to the classification of the material in accordance with the Hazardous Waste List.

Waste Type	LoW Code[5]	Description	Waste Classification
	17 04 11	Cables other than those mentioned in 17 04 10	Non-hazardous
Soil (including excavated soil from contaminated sites), stones and dredging spoil	17 05 03*	Soil and stones containing hazardous substances	Hazardous
	17 05 04	Soil and stones other than those mentioned in 17 05 03	Non-hazardous
	17 05 05*	Dredging spoil containing hazardous substances	Hazardous
	17 05 06	Dredging spoil other than those mentioned in 17 05 05	Non-hazardous
	17 05 07*	Track ballast containing hazardous substances	Hazardous
	17 05 08	Track ballast other than those mentioned in 17 05 07	Non-hazardous
Insulation materials and asbestos-containing construction materials	17 06 01*	Insulation material containing asbestos	Hazardous
	17 06 03	Other insulation materials consisting of or containing hazardous substances	Non-hazardous
	17 06 04	Insultation materials other than those mentioned in 17 06 01 and 17 06 03	Non-hazardous
	17 06 05	Construction material containing asbestos	Non-hazardous
Gypsum based construction material	17 08 01	Gypsum-based construction materials contaminated with hazardous substances	Non-hazardous
	17 08 02	Gypsum-based construction material other than those mentioned in 17 08 01	Non-hazardous
Other construction and demolition wastes	17 09 01	Construction and demolition wastes containing mercury	Non-hazardous
	17 09 02*	Construction and demolition wastes containing PCBs	Hazardous
	17 09 03*	Other construction and demolition wastes (including mixed wastes) containing hazardous substances	Hazardous
	17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	Mirror non-hazardous

Note: The table may be subject to change in the construction phase content review.

4.2 Waste Management Targets

The Contractor will be obliged to aim for an overall recycling rate of at least 70% of C&D material (exact target to be confirmed), in accordance with EU targets under Waste Framework Directive (2008/98/EC) as well as regional waste management targets. Waste management targets for anticipated waste arisings regarding reuse / recycling / recovery and disposal rates are presented in Table 4.2 below. A Construction Resource and Waste Inventory Template is included in Appendix A of this RWMP.

Table 4.2: Waste management targets

Waste Type	Reuse / Recovery %	Recycling %	Disposal %
Concrete	To be confirmed	To be confirmed	To be confirmed
Bricks	To be confirmed	To be confirmed	To be confirmed
Tiles and ceramics	To be confirmed	To be confirmed	To be confirmed
Wood	To be confirmed	To be confirmed	To be confirmed
Glass	To be confirmed	To be confirmed	To be confirmed
Plastic	To be confirmed	To be confirmed	To be confirmed
Bituminous mixtures	To be confirmed	To be confirmed	To be confirmed
Coal tar and tarred products	To be confirmed	To be confirmed	To be confirmed
Copper, bronze brass	To be confirmed	To be confirmed	To be confirmed
Aluminium	To be confirmed	To be confirmed	To be confirmed
Lead	To be confirmed	To be confirmed	To be confirmed
Zinc	To be confirmed	To be confirmed	To be confirmed
Iron and steel	To be confirmed	To be confirmed	To be confirmed
Tin	To be confirmed	To be confirmed	To be confirmed
Cables	To be confirmed	To be confirmed	To be confirmed
Soil and stones	To be confirmed	To be confirmed	To be confirmed
Dredging spoil	To be confirmed	To be confirmed	To be confirmed
Track ballast	To be confirmed	To be confirmed	To be confirmed
Asbestos	To be confirmed	To be confirmed	To be confirmed
Gypsum	To be confirmed	To be confirmed	To be confirmed
Mercury	To be confirmed	To be confirmed	To be confirmed
Polychlorinated biphenyls (PCBs)	To be confirmed	To be confirmed	To be confirmed

4.3 Waste Management Costs

4.3.1 Financial Cost Associated with Waste

An outline of the costs associated with different aspects of waste management is provided below. The total cost of implementing the RWMP will have to take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

4.3.2 Reuse / Recovery

Waste sent off site for recovery will only be conveyed by an authorised Waste Contractor and transported from the proposed development to an authorised site of recovery/disposal in a manner which will not adversely affect the environment. All employees will be required to comply with the obligations under the RWMP.

Reusing of materials on site will reduce disposal costs. Inert soils, gravel and stones which cannot be reused on site may be classified as a by-product (under Article 27 of the 2011 Waste Directive Regulations). This material may be used as capping material for ASA, or for the reinstatement of quarries, subject to approvals by the EPA. This material is often taken free of charge for such purposes, or when used as capping in landfills will not attract the landfill tax levy, thereby reducing final waste disposal costs.

4.3.3 Recycling

All metals are recyclable and can earn a rebate which can offset collection and transportation costs. Clean, uncontaminated cardboard and certain hard plastics can be recycled. Waste Contractors will charge considerably less to take segregated wastes such as recyclable waste from a site than mixed waste. Timber can be recycled as chipboard.

If wastes are segregated, Waste Contractors typically charge considerably less as sorting and processing costs are reduced.

4.3.4 Disposal Charge

The total cost of waste management associated with the proposed development will be calculated in regard to the purchase costs of materials, handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be recorded for the range of C&D materials and waste arising.

A template for the recording of costs is provided in Table 4.3. This record will be live and will be developed as the project progresses.

Table 4.3: Indicative Costs Breakdown for Waste Management Template

Waste Type	Estimated Quantity (Tonnes)	Estimated Cost (€/tonnes)
Quantity of Material – Excavated	26,120	To be confirmed
Quantity of Material- Excluding Excavation	To be confirmed	To be confirmed
Quantity of Material Reused	1,034	To be confirmed
Purchase Cost	To be confirmed	To be confirmed
Materials Handling Costs	To be confirmed	To be confirmed
Material Storage Costs	To be confirmed	To be confirmed
Material Transportation Costs	To be confirmed	To be confirmed
Material Treatment Costs	To be confirmed	To be confirmed
Total Waste Management Cost	To be confirmed	To be confirmed
Unit Waste Management Cost	To be confirmed	To be confirmed

Note: The table is subject to change during the construction phase.

Source: ESB, 2023

Waste sent off site for disposal will only be conveyed by an authorised Waste Contractor and transported from the proposed development to an authorised permitted site of recovery / disposal in a manner which will not adversely affect the environment. A letter of acceptance from a licensed facility will be required prior any waste being removed from the proposed development. All employees will be required to comply with the obligations under the RWMP.

4.4 Waste Treatment and Disposal Options

There are a limited number of operational waste facilities present in County Clare and currently there are three EPA licensed waste facilities (excluding landfill sites) which may be suitable to receive waste from the proposed development. These are listed in Table 4.4. If waste cannot be received within County Clare, waste facilities in neighbouring counties will need to be considered.

Table 4.4: EPA Waste Management Licensed Facilities

Active Licence No.	Facility Type	Name of the Facility	County	Location
W0041-01*	Hazardous waste facility	Enva Ireland Limited	Clare	Enva Ireland Limited (Shannon), Smithstown Industrial Estate, Shannon, Clare.
W0253-01*	Materials recovery facility	Clean (Irl) Refuse & Recycling Co	Clare	Clean (Irl) Refuse & Recycling Co., Ballinagun West, Cree, County Clare, Clare.
W0150-01	Waste transfer station	Clare County Council	Clare	Scarriff Civic Amenity Centre, Fossa Beg, Feakle Road, Scarriff, Clare.
W0170-01	Recycling Centre and Waste transfer station	Clare County Council	Clare	Lisdeen Recycling Centre & Transfer Station, Cemetery Road, Lisdeen, Kilkee, Clare.

*Waste Licence now deemed Industrial Emissions Licence

Source: EPA Licence Portal (2023)[6]

Currently there are three operational landfill sites in Ireland which accept C&D wastes, one of which is an EPA licensed landfill site in County Clare. These are listed in Table 4.5.

Table 4.5: EPA Licensed Landfills

Active Licence No.	Facility type	Name of the facility	Location	Capacity of C&D waste for disposal/recovery (Maximum tonnes per annum)	Additional notes
W0146-01	Landfill	Knockharley Landfill Limited	Knockharley Landfill, Knockharley, Navan, (Includes Townlands of Tuiterath & Flemingstown), Meath.	285,000[7]	Capacity for 25,000 tonnes per annum of C&D waste for recovery[8]
W0165-02	Landfill	Ballynagran Residual Landfill Co. Wicklow	Ballymurtagh Landfill Facility, Ballymurtagh, Ballygahan Upper, Ballygahan Lower, Tinnahinch, Wicklow.	112,500[9]**	Capacity of 28,000 tonnes per annum of C&D waste for recovery[8]
W0109-02*	Landfill	Drehid Waste	Inagh Landfill, Ballyduff Beg, Inagh, Clare.	2,000[10]	No C&D waste disposal and limited waste for the purpose of daily cover, site

[6] Environmental Protection Agency (2023) Search for a Waste application, licence or environmental information [online]. Available at: https://epawebapp.epa.ie/terminalfour/waste/index.jsp?disclaimer=yes&Submit=Continue. Last accessed December 2023

[7] Environmental Protection Agency (2023) Industrial Emission Licence – Knockharley Landfill Limited [online]. Available at: https://epawebapp.epa.ie/terminalfour/waste/waste-view.jsp?regno=W0146-01. Accessed January 2024.

[8] Environmental Protection Agency (2022) Waste infrastructure in Ireland [online]. Available at: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/infrastructure/. Accessed January 2024.

[9] Environmental Protection Agency (2020) W0165-02 Industrial Emission Licence Ballynagran Residual Landfill [online]. Available at: https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=W0165-02. Accessed January 2024.

[10] Environmental Protection Agency (2014) W0109-02 Industrial Emission Licence – Drehid Waste Management Facility [online]. Available at: https://epawebapp.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=W0109-02. Accessed January 2024.

Active Licence No.	Facility type	Name of the facility	Location	Capacity of C&D waste for disposal/recovery (Maximum tonnes per annum)	Additional notes
		Management Facility Co. Kildare			construction and landfill restoration[10]

Source: EPA 2023[7], 2022[9] and 2013[10, 10] Note: *Waste Licence now deemed Industrial Emissions Licence **Figure does not include household waste capacity

5 Implementation of the RWMP

This section outlines the key practice of the implementation of RWMP including training delivered to site personnel, record keeping and communications, and waste auditing.

5.1 Site Personnel

All site personnel will be instructed about the objectives of the RWMP and informed of the responsibilities to effectively implement the plan. Where waste prevention, source segregation, material reuse techniques, and best practice guidelines apply, each member of staff will be given instructions on how to comply with the RWMP.

Roles and Responsibilities of Resource Manager, Contractor and other key personnels have been detailed in Section 2.

5.2 Training

Copies of the RWMP will be made available to all relevant personnel on site. The Resource Manager will arrange for all site personnel to receive training on the objectives of the plan and materials management. The topics to be covered will include:

- Project programme and requirements
- Project commitments and targets
- Health and safety requirements
- Materials to be segregated
- Segregation systems and protocol
- Arrangements for the storage and handling of reusable materials and recyclables
- Instruction on hazardous wastes and the dangers of each hazardous waste
- Document control requirements

Toolbox talks on resource management will be provided on a regular basis to ensure that site personnel are aware of the resource management practices associated with their work and the appropriate control measures that are required to carry out their work in compliance with this RWMP.

5.3 Record Keeping and Communications

A system will be developed to ensure that all details of generation, movement and treatment of C&D waste is recorded. Where practicable, a computerised monitoring tool will be employed to assist in facilitating waste reduction via benchmarking. As such, this system will enable the Contractor to measure and record the quantity of waste generated and identify wastage more readily as well as identify successes or failures as measured against performance targets. An indicative template is provided in Appendix A of this RWMP.

Verifiable and validated tracking and authorisation documentation will be maintained for all wastes destined for reuse, recovery, recycling, other recovery (including energy recovery) or disposal. Justification will also be provided where a disposal option has been employed.

In addition, a record will be kept of all materials as they arrive on site detailing the assignment of specific uses within the works. This will enable the monitoring of the quantity and type of waste produced at various stages throughout the project.

All waste material will be managed in accordance with the Waste Management Act 1996 (as amended) and associated Regulations e.g., all hauliers will hold waste licences and/or Certificates of Registration (COR) for the specified LoW codes and the appropriate local authority at the final destination. Waste will only be sent to facilities authorised to accept, treat and / or dispose of the material. Copies of all waste accreditations relevant to the waste treatment / collection will be retained with other waste records.

Additionally, waste records will be reported on annual basis to EPA as part of the Annual Environmental Report required for the IE Licence and reported for the purpose of the Pollutant Release and Transfer Register (under the Pollutant Release and Transfer Regulation (EC) No 166/2006), where relevant.

5.4 Communications

The Resource Manager will be responsible for internal reporting of resource statistics to the Employer. This will include performance relative to agreed targets and objectives which will be included as an agenda item at site meetings.

The Resource Manager will engage with County Clare Council and the EPA on any site inspection or enforcement audits undertaken at the site. All follow-up actions and corrective actions will be logged and reported to County Clare Council.

The Resource Manager will engage with other stakeholders (the public, etc.) as appropriate in relation to the resource management on site.

Upon completion of construction, the Resource Manager will prepare a final report summarising the outcomes of resource management processes adopted, the total reuse and recovery figures and the final destinations of all resources taken off-site. This report will be issued to the Employer and Clare County Council.

5.5 Waste Auditing

The effectiveness of this plan, and its implementation, will be subject to routine audits by the Resource Manager throughout the duration of the project. The purpose of the waste audit is to highlight the problems that waste can cause and the benefits of prevention and minimisation.

The audits will focus on material inputs to the project (assignment of materials to specific uses within the works) and the waste outputs for each operation, identifying additional opportunities for waste reduction, reuse and recycling. The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

The audit findings will reflect the success or failure of reaching performance targets and subsequent Action Plans will be developed to address any issues and highlight corrective actions that may be taken in relation to management policies or site practices in order to bring about further waste reductions. Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

6 Site Infrastructure

Measures associated with onsite signage, separation, and storage for handling and managing of waste and resources that will be implemented include:

1. Prior to construction, the site layout will be reviewed by ESB to ensure that the proposed Waste Storage Areas (WSAs) have adequate space for storage and handling. A temporary WSA has been designated to stockpile waste, which will be in an area close to the existing weighbridge.
2. WSAs include stockpiles, skips or secure containers for hazardous materials. All WSAs will be assessed as fit for purpose and suitably contained, or bunded as require.
3. The WSA will be set out to reduce any potential impact on sensitive human or natural environments and a suitable buffer will be applied to mitigate any impact.
4. Labelling and signage will be used onsite to inform personnel of key WSA requirements and restrictions, with clear signage provided on all WSAs.
5. Signage will provide information to assist good resource practice across the site.

A. Construction Resource and Waste Inventory Template

Table A.1: Construction Resource and Waste Inventory template

LoW Code		Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes) (non-waste)	Recycled (tonnes) (waste)	Recovered [11] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
17 01 Concrete, bricks tiles and ceramics	17 01 01	Concrete								
	17 01 02	Bricks								
	17 01 03	Tiles and Ceramics								
	17 01 06*	Mixtures of or separate fractions of concrete bricks tiles and ceramics containing hazardous substances								
	17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06								
17 02 wood, glass and plastic	17 02 01	Wood								
	17 02 02	Glass								
	17 02 03	Plastic								
	17 02 04*	Glass, plastic and wood containing or contaminated with hazardous substances								
17 03 bituminous mixtures,	17 03 01*	Bituminous Mixtures containing coal tar								

[11] Recovery includes energy recovery, backfilling and other recovery.

LoW Code		Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes) (non-waste)	Recycled (tonnes) (waste)	Recovered [11] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
coal tar and tarred products	17 03 02	Bituminous Mixtures								
	17 03 03	Coal tar and tarred products								
17 04 metals (including their alloys)	17 04 01	Copper, Bronze, Brass								
	17 04 02	Aluminium								
	17 04 03	Lead								
	17 04 04	Zinc								
	17 04 05	Iron and Steel								
	17 04 06	Tin								
	17 04 07	Mixed Metals								
	17 04 09*	Metal waste contaminated with hazardous substances								
	17 04 10*	Cables containing oil, coal, tar and other hazardous substances								
	17 04 11	Cables other than those mentioned in 17 04 10								
17 05 soil (including excavated soil from contaminated sites), stones and	17 05 03*	Soil and stones containing hazardous substances								
	17 05 04	Soil and stones other than those mentioned in 17 05 03								

LoW Code		Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes) (non-waste)	Recycled (tonnes) (waste)	Recovered [11] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
dredging spoil	17 05 05*	Dredging spoil containing hazardous substances								
	17 05 06	Dredging spoil other than those mentioned in 17 05 05								
	17 05 07*	Track ballast containing hazardous substances								
	17 05 08	Track ballast other than those mentioned in 17 05 07								
17 06 Insulation materials and asbestos-containing construction materials	17 06 01*	Insulation material containing asbestos								
	17 06 03	Other insulation materials consisting of or containing hazardous substances								
	17 06 04	Insultation materials other than those mentioned in 17 06 01 and 17 06 03								
	17 06 05	Construction material containing asbestos								

LoW Code		Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes) (non-waste)	Recycled (tonnes) (waste)	Recovered [11] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
17 08 gypsum based construction material	17 08 01	Gypsum-based construction materials contaminated with hazardous substances								
	17 08 02	Gypsum-based construction material other than those mentioned in 17 08 01								
17 09 other construction and demolition wastes	17 09 01	Construction and demolition wastes containing mercury								
	17 09 02*	Construction and demolition wastes containing PCBs								
	17 09 03*	Other construction and demolition wastes (including mixed wastes) containing hazardous substances								
	17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03								
Other resources and wastes		Other resources (non-waste materials) (specify as needed)								

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) (non-waste)	Reused (tonnes) (non-waste)	Recycled (tonnes) (waste)	Recovered [11] (tonnes) (waste)	Disposed (tonnes) (waste)	Unit Cost Rate (€/tonne)	Total Cost (€)
	Other wastes (specify as needed)								

Note: The table is to be completed during the construction phase.

Source: ESB, Resource and Waste Inventory (2023)

C.2 Traffic Management Plan

MOTT MACDONALD

Energy for generations

Moneypoint Security of Supply

Traffic Management Plan

January 2024

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Traffic Management Plan

January 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
PL	January 24	E Fatahiany	M Matheson	J Dooley	For Planning Consent

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Information class: Standard

Contents

Tables

Figures

1 Introduction

This construction phase Traffic Management Plan (TMP) has been developed to support the planning application for the continued generation and associated change of fuel type used (ie from coal to Heavy Fuel Oil [HFO]) of Moneypoint Generating Station. At present Moneypoint Generating Station primarily operates as a coal fired power station. It is proposed to convert its primary fuel source to Heavy Fuel Oil (HFO) with limited run hours from late 2024 until the end of 2029 (hereafter referred to as the “proposed development”).

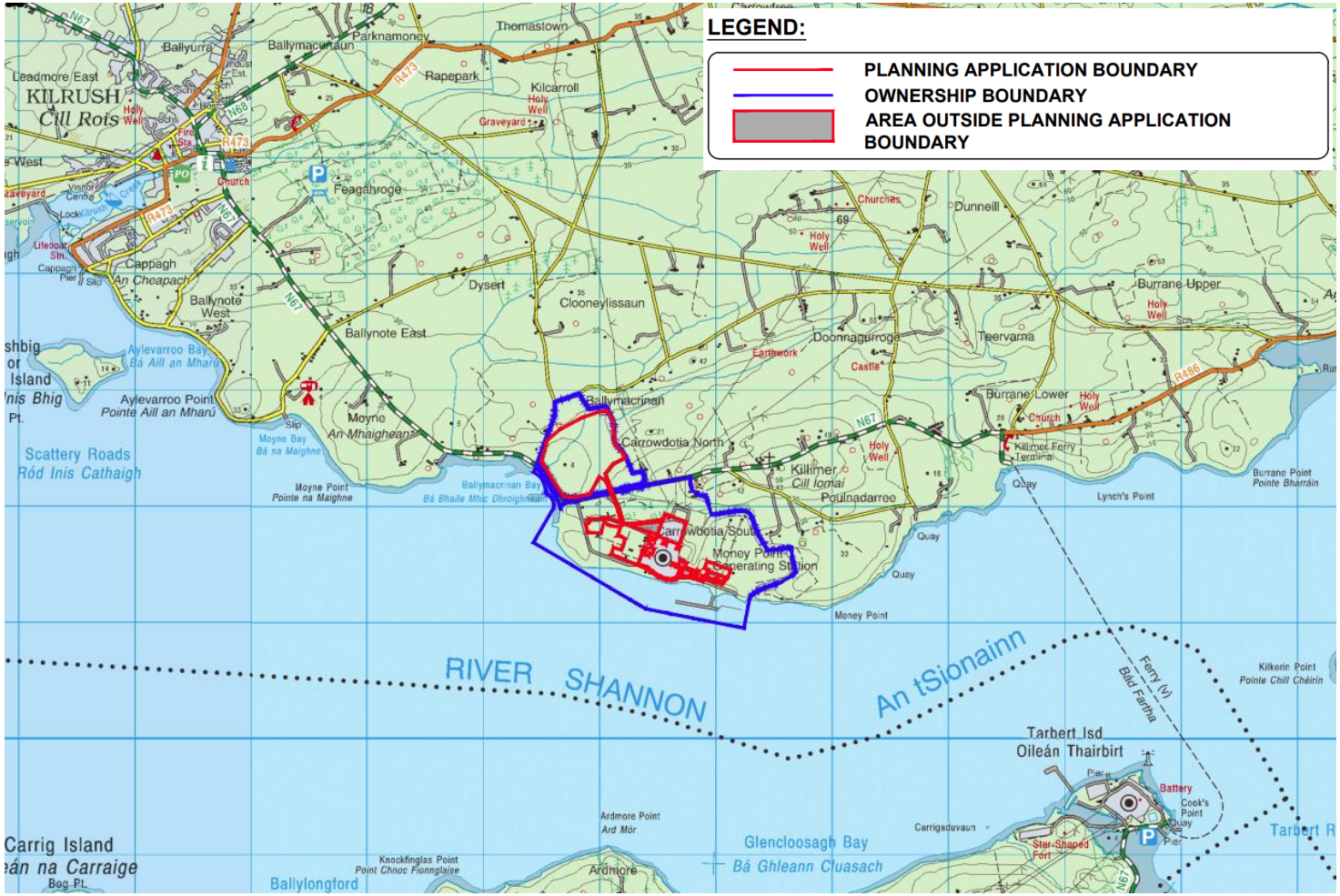
This TMP provides details of proposed traffic management measures and associated interventions to be implemented during the construction phase of the proposed development to minimise potential disruption and enhance road safety.

1.1 General

This TMP will remain a ‘live’ document which will be updated in response to any relevant conditions of the Approval, and to reflect the detailed design of the approved development – in collaboration and agreement with the relevant Planning and Roads Authority, i.e., Clare County Council. It will be reviewed regularly and revised as necessary to ensure that the measures implemented are effective and remain within the parameters assessed in the Environmental Impact Assessment Report (EIAR) submitted with the application for approval of the proposed development.

This TMP considers anticipated development generated traffic movements on the proposed traffic routes likely to be used for construction access. Figure 1.1 depicts the proposed development site context of the existing Moneypoint Generating Station and the designation of the proposed development work areas.

Figure 1.1: Site Context Plan



Source: ESB, Strategic Site Location Map, Darwing Reference, QP-000017-65-D451-001-001-000

1.2 Structure of this report

- **Section 2** outlines the background context attributed to the proposed development,
- **Section 3** lists the proposed traffic management mitigation measures over the course of the construction phase of the proposed development,
- **Section 4** presents the measures to monitor and implement the TMP; and
- **Section 5** provides a summary statement for the TMP.

2 Construction Traffic

2.1 Construction Programme

The commencement date is subject to the date of grant of planning permission, pre-commencement obligations and progression of the design to construction stage. The key stages and activities within the construction programme and construction working hours are discussed hereafter.

The timing of stages and activities are approximate based upon experience of similar projects, providing a guide, rather than a definitive programme of events. This timeline may vary depending on the time of year, weather conditions and the availability of specialised equipment. If feasible, the Main Engineering, Procurement and Construction (EPC) Contractor may seek to improve upon the programme duration.

It is envisaged that construction of the proposed development will commence in September 2024 and will be completed in approximately 21 months. It is envisaged that a separate contract will be required to undertake partial dismantling of the coalyard. The dismantling process is expected to take four months.

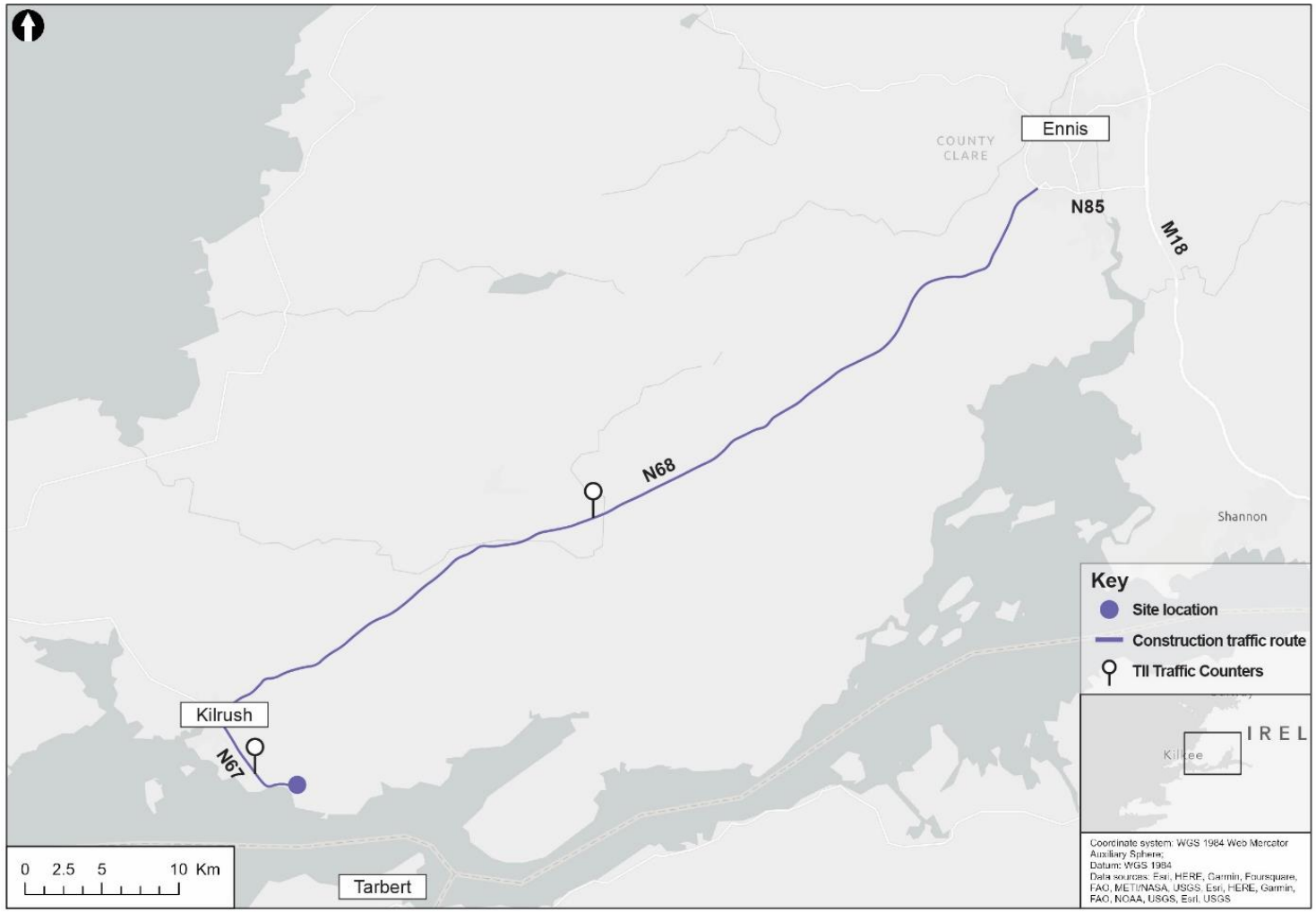
Further detail regarding the construction programme can be found in Chapter 4 of the EIAR.

2.2 Construction Traffic

The construction traffic movements will comprise those associated with the movement of construction personnel and Heavy Good Vehicles (HGVs) transporting construction materials or plant.

HGV traffic will access the proposed development from the N67 and N68 national secondary routes via Kilrush. Figure 2.1indicates the main construction HGV traffic route between the N68 (Ennis) to the proposed development.

Figure 2.1: Main Construction Route



Source: Mott MacDonald and ESB

2.3 Proposed Development Access

The proposed development site vehicular access is situated on the N67 (the existing main vehicular access for Moneypoint Generating Station).

During the construction of the proposed development, it is expected that cranes or other long vehicles could also obtain access/egress to the proposed development site using the N67.

2.3.1 General Construction Vehicle & Personnel Movements

A maximum daily workforce of approximately 90-100 people is expected during the peak period for construction works on site. However, typical daily workforce requirements will be notably less than this.

A vehicle occupancy rate of 1.25 is assumed and in the worst-case scenario this would result in a peak daily requirement of 70-80 vehicles (approximately 140-160 two-way movements per day). This would mean a requirement for up to 80 temporary car parking in the worst-case scenario.

The proposed working hours for the construction phase are summarised in Table 2.1. construction works will take place outside these hours unless such work is required under exceptional circumstances or is carried out with the prior written approval of the local authority.

Table 2.1: Construction Working Hours – Normal Operations & HGV Movements

Day	Working Hours
Monday to Friday	07:00 – 19:00
Saturday	08:00 – 14:00
Sunday or Bank Holiday	N / A

Source: Moneypoint HFO Power Stations EIAR Chapter 1 to 5, August 2023, Mott MacDonald & ESB

The predicted number of HGV traffic movements (note: one trip = two movements, i.e., one delivery and one return journey) generated by construction activity are summarised in Table 2.2.

Table 2.2: Summary of Envisaged Construction Plant Movements

Year	Month	Description	HGVs	Movements	Duration (Months)	Frequency (Avg Movements/Day)
2024 to 2025	1 – 17	HFO Unit Conversion / Maintenance	≈100	≈200	17	≈1
2024 to 2026	5 – 21	Aux Boiler and Enabling Works	≈250	≈500	17	≈2
2025 to 2026	12 - 21	Equipment Install	≈150	≈300	10	≈2
2024 to 2026	3- 21	HFO Tanks and Associated Bunds	≈1000	≈2000	19	≈5
2025 to 2026	9 -19	ASA Reclamation of FGB and Batching Plant	≈150	≈300	11	≈2
2024 to 2025	4 - 11	Soil / Bulk Material Movements Off Site	≈1050	≈2100	8	≈12
		Months 1 – 3	≈60	≈40	3	≈1
		Months 4 – 7	≈1350	≈2700	4	≈31
		Months 8 - 21	≈1250	≈2500	14	≈9

Source: Moneypoint HFO Power Stations EIAR Chapter 1 to 5, August 2023, Mott MacDonald & ESB

For abnormal loads, haulage will be scheduled, as far is reasonably practicable, to occur outside of peak network traffic periods and in accordance with regulatory requirements, noting that the Contractor may be required to arrange a special escort with An Garda Síochána. Appropriate permits for designated haul routes will be sought and agreed with the relevant authorities during the detailed design phase. It is expected that the auxiliary boilers, boiler stack, cranes, and possible parts of the heavy fuel oil (HFO) tanks will be assembled off site and potentially delivered as an abnormal load during the construction phase. However, consideration will be for oversized loads to be transported by marine vessel directly to the proposed development site. The precise load arrangements and delivery methods will not be known until construction tender stage is complete.

Specific traffic management requirements and localised arrangements will be developed by the appointed Contractor(s) and will be agreed in advance of implementation with the appropriate reviewing authority/ies.

3 Measures Identified to Minimise Traffic Impacts

3.1 General

Local vehicle routes have been reviewed with the principal aim being to minimise potential disruption to local communities, local traffic routes and routes situated either on or in the vicinity of the proposed development. There are several traffic management measures proposed to minimise potentially disruptive impacts associated with construction traffic. These measures are hereafter described.

3.1.1 Time Control

It is proposed that construction activities will occur over a 12-hour working day on Monday to Friday from 07:00 – 19:00 and a 6-hour working day on Saturday from 08:00-14:00. Some activities may occasionally occur outside of these core hours; however, they will be limited to inspection, testing and if necessary, emergency works. The appointed Contractor will plan and manage deliveries and collections from the site to minimise potential disruption on the surrounding road network and to minimise the impact on local community day-to-day life particularly during network peak traffic hours.

The appointed Contractor will liaise with Clare County Council upon confirmation of the intended construction programme to ensure (as far as is reasonably practicable) that no conflict with planned road works in the vicinity of the site occurs.

Deliveries will be scheduled, as far as is reasonably practicable, to avoid network peak hours and will follow the designated haulage route thus avoiding passing any sensitive community receptors.

3.1.2 Transportation Protocol

All Contractors will adhere to the agreed TMP, and any relevant conditions of approval imposed by Clare County Council.

All construction vehicles associated with the proposed development will:

- display a unique identification number shown on a plate clearly visible.
- be securely sealed.
- record origin, destination, and route of the vehicle.
- display and ensure vehicle identifications including registration plates are clearly visible.

Drivers of all construction vehicles will:

- access their destination worksite via an approved route; this is to be determined by the approved Contractor in conjunction with the administering local authority.
- observe speed limits.
- drive in a safe and courteous manner with due care and consideration for other road users both vehicular and pedestrians.
- adhere to the hours of operation detailed by the TMP.
- not deliberately wait or stack on any public road.

The appointed Contractor will maintain a management system whereby the following records are retained and made available on request to Clare Clare County Council.

- the number of vehicles arriving and leaving their destination.
- all complaints received regarding transport and resultant action taken.
- all instances where a protocol has been breached and resultant action taken.

ESB will supply the following information to Clare Clare County Council, which will be treated in confidence:

- action to be taken when a protocol is breached; and
- a log of vehicle movements.

3.1.3 Wheel Wash and Road Cleaning / Sweeping

To reduce the potential for mud and other debris being deposited onto the local road network in the vicinity of the proposed development, the appointed Contractor will ensure that a truck wash is provided. The appointed Contractor will ensure the truck wash will be placed in a remote location away from watercourses to stop any contamination of the local watercourses. This cleansing regime will minimise the amount of deleterious material deposited on the road surface and the appointed Contractor will ensure that the nearest public road will be kept clear of debris by monitoring and then utilising a road sweeper, where necessary.

3.1.4 Speed Restrictions

All construction personnel, including Contractor managed HGV drivers, will be briefed on the absolute requirement to adhere to posted speed limits on public roads through induction sessions and through regular briefings (toolbox talks). Other parties responsible for site deliveries will also be instructed per the requirement for compliance with posted speed limits on all roads.

Speed limit posted within the worksite will be considered as mandatory and therefore will be complied with.

3.1.5 Temporary Signage

During the construction phase, signage will be installed to warn road and / or recreational route users to the presence of the works access and the associated likely presence of construction traffic.

General information signage will be installed to inform road and / or recreational route users and local communities of the nature and location of the works, including contact details should they require additional information.

Examples of temporary (construction phase) traffic signage are shown in Figure 3.1.

Figure 3.1: Temporary Traffic Signage Examples

Source: Traffic Signs Manual Chapter 8

Temporary signage will be formally agreed with the relevant Road Authority prior to installation and commencement of construction traffic activities. All signing will also be provided in accordance with current version of Traffic Signs Manual[1] Chapters 4, 5, 6 and 8 as appropriate.

3.1.6 Temporary Traffic Management

It is not envisaged that any road closures or diversion routes will be required.

3.1.7 Parking for Vehicles of Site Personnel, Operatives and Visitors

To minimise potential inconvenience to the local community in terms of obstructive parking, adequate car parking for permanent site personnel, visitors and deliveries will be provided within the site compound. Adequate vehicle parking space will be provided on-site, and car parking will not be permitted on any public road network adjacent to the site, so that sight lines are maintained and to minimise potential for obstruction and delay for other road users. The requirement for construction personnel not to park their private vehicles on public roads will be a mandated requirement and advised to all construction personnel prior to commencement of works and reinforced via ‘toolbox talks’.

Vehicle sharing will be promoted to construction personnel by the Contractor during the induction process.

[1] https://www.trafficsigns.ie/tsm-cur

4 TMP Implementation and Monitoring

4.1 General

The implementation and monitoring of the TMP will be the responsibility of the appointed Contractor. Further evolution of this TMP will be required during the detailed proposed development planning stages and potentially during the construction phase.

The appointed Contractor may employ several sub-contractors, and in such circumstances sub-contractors' traffic related activities will fall under the requirements of the TMP and therefore sub-contractor personnel and sub-contractor managed construction vehicle drivers will have an obligation to adhere to the TMP. This obligation will form part of the procurement process and will be written into any relevant employment or commissioning contract.

Compliance will be monitored by the Contractor's Project Manager, to ensure that vehicles follow the measures set out in the TMP and to record any complaints arising.

Non-compliance with the TMP will constitute a breach of contract, and action will be taken against the Contractor should repeated non-compliance continue. Details of the proposed monitoring and enforcement regime will be supplied to Clare Clare County Council upon request.

4.2 Responsibilities

The appointed Contractor will nominate a person to be responsible for the co-ordination of all elements of traffic and transport, except community liaison during the construction process, a nominated Liaison Officer.

ESB will appoint a Community Liaison Contact. The Community Liaison Contact will be the direct point of contact for the developer organisation with the local community. Accordingly, local residents and business holders can contact the Community Liaison Contact for general information purposes or to discuss specific matters pertaining to traffic management or site operation.

The Community Liaison Contact will regularly liaise with the nominated Liaison Officer.

Contact details for the Liaison Officer and Community Liaison Contact will be made available to relevant parties and more generally to the local community prior to commencement of works on-site.

The appointed Contractor (or their appointed agent) will review the number of site personnel, traffic numbers, and the construction programme as the proposed development progresses. Any proposed or unplanned substantive changes will be discussed and agreed with Clare Clare County Council as far as is reasonably practicable.

As necessary, meetings will be held by the appointed Contractor with Clare Clare County Council to discuss the TMP including any relevant issues raised by the local community.

4.3 Transport Co-ordination

The appointed Contractor will be responsible for the co-ordination of all elements of HGV transport to and from the worksites. The appointed Contractor (or their appointed agents) will be responsible for co-ordination and liaison with sub-contractors, Clare Clare County Council, TII and emergency services. ESB will be responsible for co-ordination and liaison with the local community.

The Liaison Officer will inform Clare Clare County Council (or agents thereof) of any important matters that could affect traffic movement by means of reports issued at regular intervals or by day-to-day reports of any substantial, essential changes to transport plans necessitated by circumstances.

4.4 Communication and Consultation

As set out in Section 4.2, the ESB will nominate a Community Liaison Contact to act as a point of contact with the local community. The Community Liaison Contact will be responsible for keeping the local community informed of progress on the site and warning them of upcoming activities which could give rise to increased construction vehicle movements. The Community Liaison Contact will work in tandem with the appointed Contractor's Liaison Officer.

The Community Liaison Contact will be able to attend community meetings to provide a report and to be on hand to answer any questions that the local community may have. Contact details will be provided for the Community Liaison Contact (telephone number and email address) and will be made available locally so that members of the public have an opportunity to ask questions and provide feedback.

The appointed Contractor will utilise local media channels to circulate information regarding traffic management and the movement of abnormal loads, where necessary.

Signs will be erected on fences surrounding the construction compound to provide contact details of the appointed Contractor's Project Manager. These contact details will also be provided directly to the emergency services.

4.5 Liaison with Other Projects

It is recognised that the construction phase associated with the proposed development could coincide with the construction of other proposed developments whereby construction related traffic will travel through the same area and use the same public roads.

If the construction phase of any notably sized development(s) appears likely to overlap with the proposed development, the appointed Contractor will seek to liaise with the appropriate developer organisation regarding the scheduling of deliveries to identify potential means of reducing the effects of combined construction.

Prior to commencement of construction, and during the construction phase, engagement with the proponents of other developments (including Transport Infrastructure Ireland, the IDA, Irish Water and Clare Clare County Council) will continue and where there is potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings between project teams to ensure that plans are co-ordinated and impacts on population and human health are minimised. The specific detail will be developed by the appointed contractor within the parameters assessed in the EIAR.

4.6 TMP Review

The TMP, as a 'live document', will be reviewed on a regular basis by the appointed Contractor prior to and during the construction phase of the proposed development and will be developed accordingly within the parameters assessed in the EIAR. The TMP will be subject to change during the proposed development's evolution which will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation, which in some cases changes may require approval by Clare Clare County Council.

5 Summary Statement

This TMP represents a commitment to satisfy reviewing authority requirements and sets out proposed traffic management and contingency planning measures to enhance road safety and limit adverse effects of construction traffic on the existing road network and the communities it serves. It is anticipated that once the Contractors are appointed, further useful information will become available, including a finalised construction programme, and such details will be submitted to Clare Clare County Council for information and / or agreement as appropriate.

D. Technical Land Use Planning Report

HFO Project Technical Landuse Planning Report

ESB Moneypoint Generating Station
EHS Support
IE0311713-23-RP-0002, Issue: A

Issue date: 09 Jan 2024

Document Sign Off

HFO Project Technical Landuse Planning Report

ESB Moneypoint Generating Station
EHS Support
IE0311713-23-RP-0002, Issue A

File No:IE0311713.23.140

CURRENT ISSUE					
Issue No: A	Date: 09 Jan 2024	Reason for issue: Planning			
Sign Off	Originator	Checker	Reviewer	Approver	Customer Approval (if required)
Print Name	ORLA.DUGGAN	BRENDA.MADDEN		ORLA.DUGGAN	
Signature	**Authorised Electronically**				
Date	09.01.2024	09 Jan 2024		09 Jan 2024	

PREVIOUS ISSUES							
Issue No	Date	Originator	Checker	Reviewer	Approver	Customer	Reason for issue

Contents

1 Introduction

ESB Moneypoint Generating Station is applying to An Bord Pleanála for planning permission to implement proposed changes on site. The proposed changes (see Section 2.4) will facilitate the switch to use of Heavy Fuel Oil (HFO) as the primary fuel at the site, from coal which is currently the primary fuel. The transition period will be between October 2024 and December 2025.

2 Information Required under Third Schedule of the Major Accident Regulations

This section provides the information specified in the Third Schedule of the Major Accident Regulations (i.e. the Third Schedule of the European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2006 (S.I. No. 74 of 2006)). This information is to be included in the planning application as required under Article 134 of the Planning & Development Regulations 2001-2022.

2.1 Name of the operator and Address of the Establishment

Electricity Supply Board
Carrowdotia
Killimer
Kilrush
Co. Clare
V15 R963

2.2 Registered place of business of the operator

27 Fitzwilliam Street Lower
Dublin 2
D02KT92

2.3 Person in Charge of the Establishment

Stephen O'Mahoney, Station Manager is the person in charge of the establishment.

2.4 Activity of the Installation

Currently the installation activity is electricity generation with coal as the primary fuel.

It is proposed to change the primary fuel from coal to HFO – the transition period will be between October 2024 and December 2025.

In accordance with Section 37E of the Planning and Development Act 2000 (as amended), the Electricity Supply Board (ESB), intend to apply to An Bord Pleanála for PERMISSION for development within the existing Moneypoint Generating Station complex, in the townlands of Carrowdotia North, Carrowdotia South, and Ballymacrinan, Killimer, Kilrush, County Clare (Eircode V15 R963).

The proposed development will comprise of the following:

1. Transition and conversion of the existing coal fired power station's primary fuel from coal to Heavy Fuel Oil (HFO) for limited hours of operation and a temporary period of five years until the 31st December 2029;
2. Construction of 2 no. HFO tanks each with a capacity of 25,000 tonnes (approx. 48.7m diameter x 15m H) and associated bund walls (approx. 5.0m high);
3. Construction of a new boiler house (approx. 24m L x 18m W x 11m H) to house 2 no. auxiliary boilers (1 no. electric and 1 no. distillate, each 22.7MW (thermal output), including:
   - 1 no. Blow down vessel (approx. 4.5m wide x 13m high)

- 1 no. Exhaust Stack (approx. 1.0m diameter and 30m H)
- 1 no. Annex structure (approx. 10.0m L x 5m W x 4m H)

4. Construction of an extension to each of the existing 3 no. Flue Gas Desulphurisation Absorbers (FGD) - units 1, 2 and 3, to provide additional reclaimed ash unloading facilities, comprising:
   - 1 no. conveyor enclosure (approx. 7.0m L x 2.5m W x 22m H)
   - 1 no. hopper enclosure (approx. 6m L x 5m W x 6m H)
5. Construction of a reclaimed ash unloading facility at the existing landfill capping batching plant, comprising of a hopper enclosure adjoining the existing batching plant (approx. 14.0m L x 6.5m W x 6.0m H) and conveyor enclosure (approx. 3.5m L x 3.5m W x 11.5m H)
6. Dismantling and removal of 2no. mobile stacker reclaimers and 1no. coal conveyor bridge;
7. Changes to existing permitted Flue Gas Desulphurisation (FGD) and ash storage area (ASA) arrangements (Pl. Ref. 14/373) to utilise spare capacity in the existing ASA [capping layer thickness increase from 0.6m (*minimum*) up to a maximum of 1.6 meters] with an overall proposed reduction in height of the currently permitted ASA by approx. 1.85m; and,
8. All associated ancillary site development works to facilitate the proposed development, including a new lighting arrangement, surface water drainage, internal roads and temporary construction compounds and laydown areas.

Moneypoint Generating Station is licensed by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref: P0605-04). The proposed development includes works located entirely within the IE licenced boundary of Moneypoint Generating Station which is an Upper-tier establishment to which the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (the COMAH Regulations) apply.

The planning application is accompanied by an Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS).

Only changes no. 1 - 3 above involve changes to the storage or use of COMAH substances – i.e. HFO and Diesel. These changes are the focus of this Technical Land use Planning assessment.

2.5 Dangerous Substance Information

Based on the proposed changes outlined in Section 2.4 this section provides information on the dangerous substances or category of substances involved; and the quantity and physical form of the dangerous substance or substances involved.

The only proposed change to the site's inventory of COMAH substances in the increase in storage of HFO from 50,000 tonnes (in 2 tanks) to 100,000 tonnes (in 4 tanks).

2.6 Environment of the Establishment

The immediate environment of the establishment (elements liable to cause a major accident or to aggravate the consequences thereof):

The ESB Moneypoint site is located at National Grid Co-ordinates 102800E; 152045N, in Co. Clare. The site is located on the north bank of the River Shannon Estuary, 5km east of Kilrush. Access is available to the site by road and by sea.

2.6.1 Significant Local Infrastructure

There are no motorways, rail networks, stations or airports within a 1km radius of the Moneypoint generating station. The N67 road is the nearest national secondary road to the site and allows access to the site.

The jetty at Moneypoint is a large and specialised structure designed specifically to off-load coal from bulk ships with displacement weights of up to 177,000 tonnes and it also unloads HFO.

2.6.2 Land Use within 1km of the Site

The land use within a 1km radius of the facility is a mixture of residential and agriculture. There are no commercial or industrial facilities within 1km radius of the facility. The nearest church is located in the village of Killimer approximately 2km from the site and the nearest schools are located in Knockerra, Burrane and Kilrush.

2.6.3 Land Use within 10km of the Site

The land use within 10km of the site includes a number of local villages and towns on both the north and south sides of the River Shannon Estuary. A significant portion of the estuary itself lies within this area.

The other significant fuel storage facilities in this area are the SSE Generation Ireland Ltd. establishment (Tarbert Power Station) and the National Oil Reserves Agency Tank Farm, both located across the Shannon Estuary in Tarbert. The Tarbert-Killimer Car Ferry is also a significant transport route in this area, linking the two sides of the estuary.

2.6.4 Natural Heritage

The Shannon Estuary is a very important and sensitive ecosystem. The entire area is designated as a Special Area of Conservation (SAC) as part of a network of sites across Europe under the Habitats Directives - Lower River Shannon SAC 002165. A “special area of conservation” means a site of Community importance designated by a Member State pursuant to Article 4(4) of the Habitats Directive.

All of the Shannon Estuary as far west as Foynes is also designated as a Special Protection Area (SPA) – as part of a network of sites across Europe that are protected under the Birds Directive - River Shannon and River Fergus Estuaries SPA 004077. A “special protection area” means an area classified pursuant to Article 4(1) or 4(2) of the Birds Directive.

2.7 Other Local Establishments

The name of any establishment in proximity where the likelihood and the possibility or consequences of a major accident may be increased because of its location and inventory of dangerous substances:

There are no establishments in proximity to ESB Moneypoint that have a significant inventory of dangerous substances – i.e. there are no COMAH establishments in proximity. The nearest Lower Tier COMAH establishment is Exolum Shannon Ltd. in Foynes Harbour and is located 20km from the ESB Moneypoint site. The nearest Upper Tier COMAH establishments are the National Oil Reserves Agency Ltd. & SSE Generation Ireland Ltd. establishments, both of which are located approximately 3km from the ESB Moneypoint site, across the Shannon Estuary in Tarbert. These three COMAH establishments are too far from the ESB Moneypoint site to increase the possibility or consequences of a major accident at the ESB Moneypoint site, or vice versa.

2.8 Map showing Establishment Location

Maps of 1:2,500 showing the site location, boundary and immediate environment are included in the planning application drawings – ESB drawing numbers QP-000017-65-D451-002-001-000; QP-000017-65-D451-002-002-000; and QP-000017-65-D451-002-003-000 Site Location Sheets 1-3.

3 Technical Land-use Planning Assessment

3.1 COMAH Scenarios for TLUP Assessment

Based on the activities and dangerous substance inventories presented in Section 2, and with reference to the HSA TLUP Guidance, the COMAH scenarios included in this assessment are provided in Table 3.1.

3.2 Consequence Modelling Inputs

As stated above the modelled scenarios and the specific inputs relating to each are set out in Table 3.1. The more general model inputs are provided in the following sections.

3.2.1 Weather

As per the HSA TLUP Guidance all scenarios are modelled under D5 and F2 weather conditions.

D5 denotes a D stability category (Neutral – little sun and high wind or overcast/windy night) and a wind speed of 5m/s. D5 conditions are modelled in combination with an ambient temperature of 15°C.

F2 denotes an F stability category (Stable – Night with moderate clouds and light/moderate winds) and a wind speed of 2m/s. F2 conditions are modelled in combination with an ambient temperature of 10°C.

3.2.2 Terrain Conditions

In accordance with Section 2.5.7 of the HSA TLUP Guidance a roughness length of 0.1m has been conservatively selected.

3.2.3 Height of Interest

The modelling endpoints have been determined at a height of interest of 1.5m to represent average head height of a person standing at ground level.

3.2.4 Thermal Radiation Endpoints

In accordance with Section 2.3.1 of the HSA TLUP Guidance the modelling has been carried out to determine the distances to the following thermal radiation endpoints.

- 8.02kW/m^2: represents a 1% fatality risk outdoors
- 10.9kW/m^2: represents a 10% fatality risk outdoors
- 15.9kW/m^2: represents a 50% fatality risk outdoors
- 31.5kW/m^2: represents a 99% fatality risk outdoors

Table 3.1: Consequence Modelling Scenarios & Input Data

	LOCATION & CONSEQUENCE TYPE	Proposed Representative Inventory of COMAH Substances for Consequence Modelling	Type of Model	Temp	Pressure	Release Aperture	Height of Release	No. of Vessels	Tank Head (m)	Bund Size
1	**HFO TANKS**									
1.1	Pool Fire	25,000 tonnes HFO (one tank)	Leak + Ignition	55C	Atmos.	1. Instantaneous 2. Release through 50mm pipe over 30mins	0.5m	4	13.6	9,971m2
2	**DIESEL TANK**									
2.1	Pool Fire	300 tonnes Diesel (one tank)	Leak + Ignition	20C	Atmos.	1. Instantaneous 2. Release through 50mm pipe over 30mins	0.5m	2	6.5	560m2
3	**HFO MARINE TANKER UNLOADING**									
3.1	Pool Fire	153 tonnes HFO (release for 15mins)	Leak + Ignition	60C	6barg	1. Full rupture of 100mm diam loading/unloading line 2. 10% leak of 100mm diam loading/unloading line	0.5m	1	N/A	Unbunded
4	**DIESEL ROAD TANKER**									
4.1	Pool Fire	25.5 tonnes Diesel	Leak + Ignition	20C	Atmos.	1. Instantaneous 2. Release through 50mm pipe	0.5m	1	3.5	Unbunded
5	**DIESEL ROAD TANKER UNLOADING**									
5.1	Pool Fire	25.5 tonnes Diesel	Leak + Ignition	20C	4barg	1. Full rupture of 100mm diam loading/unloading line 2. 10% leak of 100mm diam loading/unloading line	0.5m	1	N/A	Unbunded

3.3 Consequence Modelling Results

3.3.1 Scenario 1.1: HFO Tanks – Pool Fire

With reference to Section 3.6.4 of the HSA TLUP Guidance fire and explosion events are not considered for Category 3 substances, unless they are co-located in the same bund as Category 1 or Category 2 substances. HFO is classified as a Category 3 substance and although it is not co-located with a Category 1 or 2 substances the site propane tank is located close to the HFO bund wall. Therefore conservatively the impact of leak and ignition from a HFO tank, resulting in a pool fire, has been considered. Details of the representative release scenario are set out in Table 3.1.

It is noted that a release of the entire contents of a 25,000 tonne HFO tank over 10mins is not considered to be significantly different from catastrophic failure. Therefore the scenario of release over 10mins is not considered as a standalone scenario.

It is also considered that a leak aperture of 10mm as prescribed in the HSA TLUP Guidance is too small for this tank size, so a leak aperture of 50mm has been considered.

Table 3.2: Results for Scenario 1.1 due to Catastrophic Rupture

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	194	191
10% Fatality	10.9	173	169
50% Fatality	15.9	151	146
99% Fatality	31.5	120	110

Table 3.3: Results for Scenario 1.1 due to 50mm Leak over 30mins

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	202	198
10% Fatality	10.9	181	176
50% Fatality	15.9	158	153
99% Fatality	31.5	128	117

The site boundary is approximately 330m from the Tank Farm at its nearest point. As can be seen from Tables 3.2 & 3.3, none of the endpoints of interest extend beyond the site boundary. This is shown in Figure 3.1. Therefore there are no Land-use Planning implications associated with this scenario.

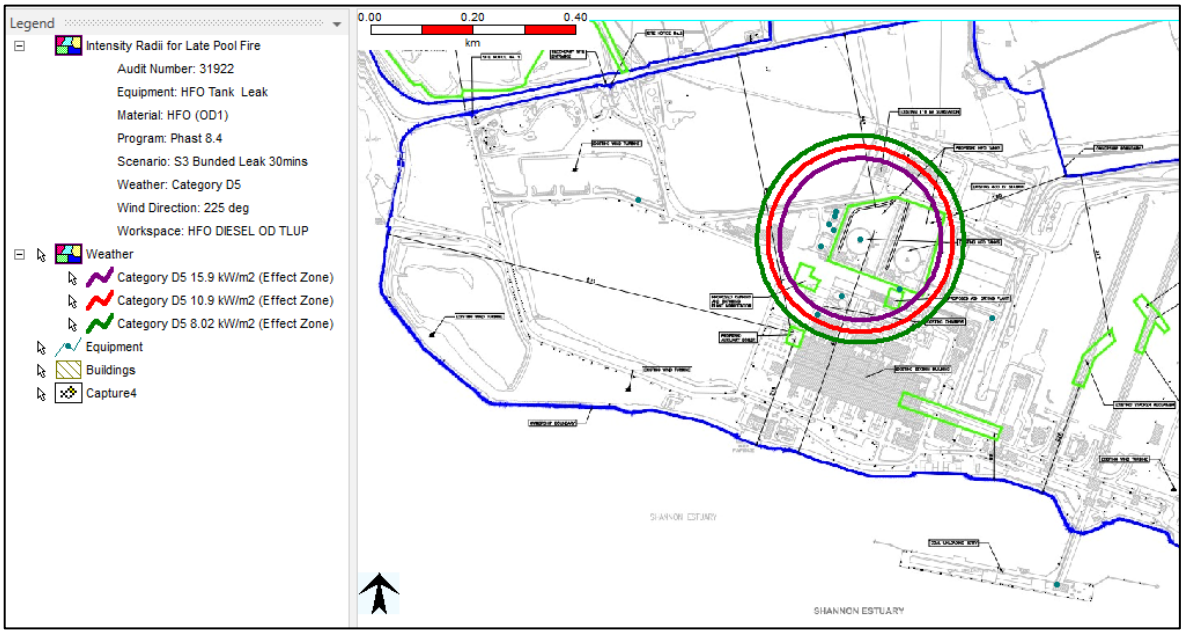


Figure 3.1: Worst Case HFO Late Pool Fire at Tank Farm

3.3.2 Scenario 2.1: Diesel Tank – Pool Fire

With reference to Section 3.6.4 of the HSA TLUP Guidance fire and explosion events are not considered for Category 3 substances, unless they are co-located in the same bund as Category 1 or Category 2 substances. Diesel is classified as a Category 3 substance and although it is not co-located with a Category 1 or 2 substances the site propane tank is located close to the Diesel bund wall. Therefore conservatively the impact of leak and ignition from a Diesel tank, resulting in a pool fire, has been considered. Details of the representative release scenario are set out in Table 3.1.

It is noted that a release of the entire contents of a 300 tonne Diesel tank over 10mins is not considered to be significantly different from catastrophic failure (release aperture of approx. 35cm would be needed to achieve this discharge). Therefore the scenario of release over 10mins is not considered as a standalone scenario.

It is also considered that a leak aperture of 10mm as prescribed in the HSA TLUP Guidance is too small for this tank size, so a leak aperture of 50mm has been considered.

Table 3.4: Results for Scenario 2.1 due to Catastrophic Rupture

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	236	232
10% Fatality	10.9	210	205
50% Fatality	15.9	182	175
99% Fatality	31.5	145	132

Table 3.5: Results for Scenario 2.1 due to 50mm Leak

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	73	70
10% Fatality	10.9	65	62
50% Fatality	15.9	56	53
99% Fatality	31.5	44	40

The site boundary is approximately 380m from the Diesel Tanks at its nearest point. As can be seen from Tables 3.4 & 3.5, none of the endpoints of interest extend beyond the site boundary. This is shown in Figure 3.2. Therefore there are no Land-use Planning implications associated with this scenario.

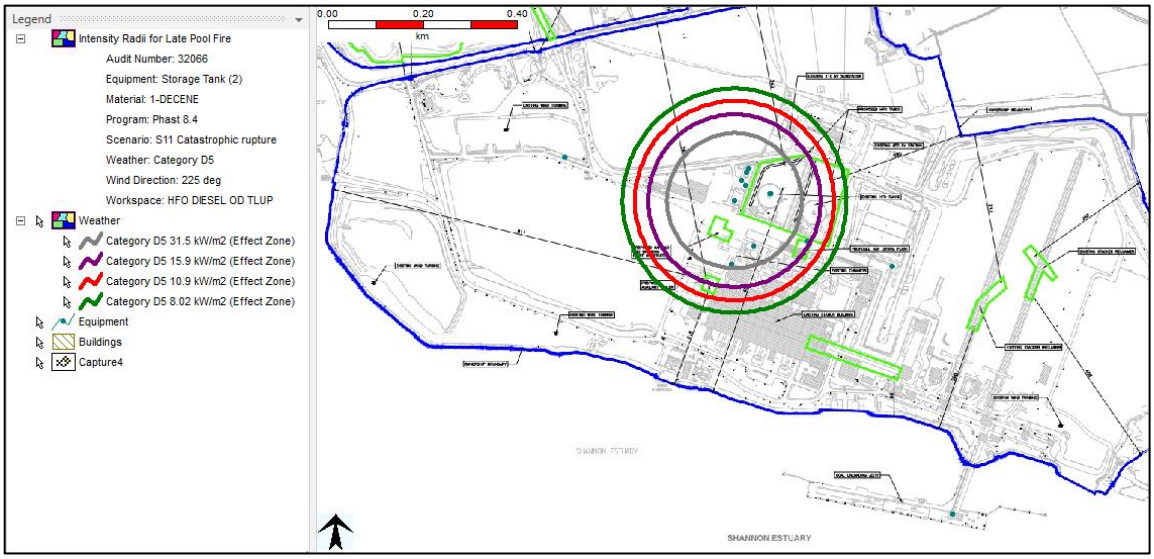


Figure 3.2: Worst Case Diesel Late Pool Fire

3.3.3 Scenario 3.1: HFO Marine Tanker Unloading – Pool Fire

With reference to Section 3.6.4 of the HSA TLUP Guidance fire and explosion events are not considered for Category 3 substances. HFO is classified as a Category 3 substance, however the impact of leak and ignition from the unloading of a HFO marine tanker, resulting in a pool fire, has conservatively been considered. Details of the representative release scenario are set out in Table 3.1. It is assumed that a full rupture of the unloading arm could leak for no more than 15mins before pumping is stopped.

Table 3.6: Results for Scenario 3.1 due to Full Rupture of Unloading Line 100mm

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	402	394
10% Fatality	10.9	363	353
50% Fatality	15.9	321	309
99% Fatality	31.5	260	248

Table 3.7: Results for Scenario 3.1 due to 10% Leak of Unloading Line 10mm

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	113	109
10% Fatality	10.9	103	97
50% Fatality	15.9	91	85
99% Fatality	31.5	76	66

The land site boundary to the west is approximately 1,000m from the Jetty at its nearest point. To the east the boundary is approximately 300m from the Jetty at its nearest point. However to the east lies Moneypoint Quarry and the endpoints of interest extend slightly into this location. As can be seen from Tables 3.6 & 3.7 none of the endpoints of interest extend to the site boundary to the west. This is shown in Figure 3.3.

The Land-use Planning implications of this scenario are considered further in Section 4.1.

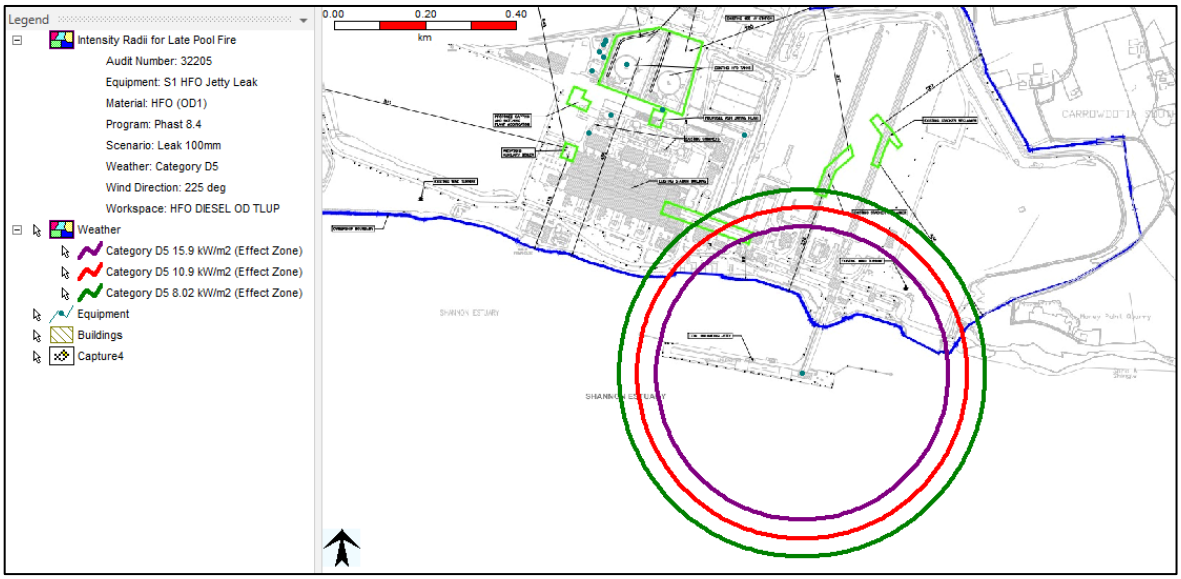


Figure 3.3: Late Pool Fire at the Jetty due to marine tanker unloading

3.3.4 Scenario 4.1: Diesel Road Tanker – Pool Fire

With reference to Section 3.6.4 of the HSA TLUP Guidance fire and explosion events are not considered for Category 3 substances. Diesel is classified as a Category 3 substance, however the impact of leak and ignition from the failure of a Diesel road tanker while on site resulting in a pool fire, has conservatively been considered. Details of the representative release scenario are set out in Table 3.1.

Table 3.8: Results for Scenario 4.1 due to Catastrophic Failure

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	225	218
10% Fatality	10.9	200	193
50% Fatality	15.9	174	166
99% Fatality	31.5	137	125

Table 3.9: Results for Scenario 4.1 due to 50mm diameter Leak

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	223	220
10% Fatality	10.9	199	195
50% Fatality	15.9	173	167
99% Fatality	31.5	136	125

The site boundary is approximately 380m from the Tanker Unloading area at its nearest point. As can be seen from Tables 3.8 & 3.9 none of the endpoints of interest extends this distance. However it is noted that a Diesel Tanker could fail en route from the site entrance to the Tanker Unloading area so the effects of a tanker pool fire are depicted in Figure 3.4 as occurring halfway from the site entrance/boundary to the Unloading area. It is concluded that there are no Land-use Planning implications associated with this scenario.

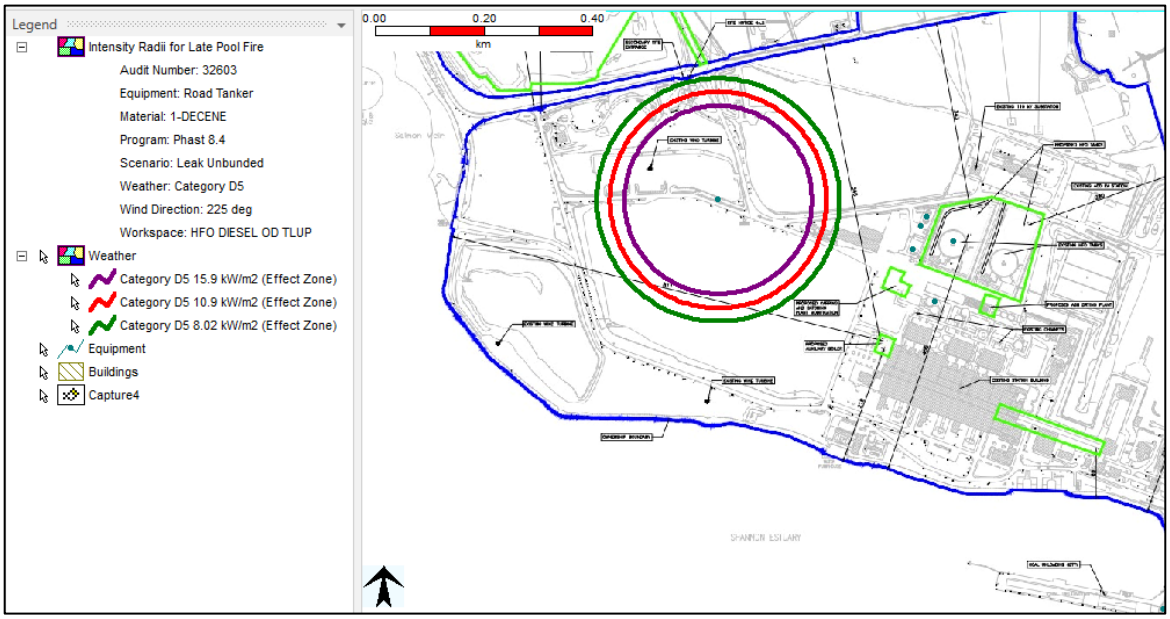


Figure 3.4: Late Pool Fire due to Tanker failure halfway to Unloading area

3.3.5 Scenario 5.1: Diesel Road Tanker Unloading – Pool Fire

With reference to Section 3.6.4 of the HSA TLUP Guidance fire and explosion events are not considered for Category 3 substances. Diesel is classified as a Category 3 substance, however the impact of leak and ignition from the unloading of a Diesel road tanker, resulting in a pool fire, has conservatively been considered. Details of the representative release scenario are set out in Table 3.1.

Table 3.10: Results for Scenario 4.1 due to Full Rupture of Unloading Line 100mm

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	242	236
10% Fatality	10.9	218	211
50% Fatality	15.9	191	184
99% Fatality	31.5	158	145

Table 3.11: Results for Scenario 4.1 due to 10% Leak of Unloading Line 10mm

Endpoint Pool Fire	kW/m^2	Distance to Endpoint (m)	
		D5	F2
1% Fatality	8.02	108	105
10% Fatality	10.9	97	94
50% Fatality	15.9	85	81
99% Fatality	31.5	70	62

The site boundary is approximately 380m from the Tanker Unloading area at its nearest point. As can be seen from Tables 3.10 & 3.11 none of the endpoints of interest extend this distance, therefore there are no Land-use Planning implications. This is shown in Figure 3.5.

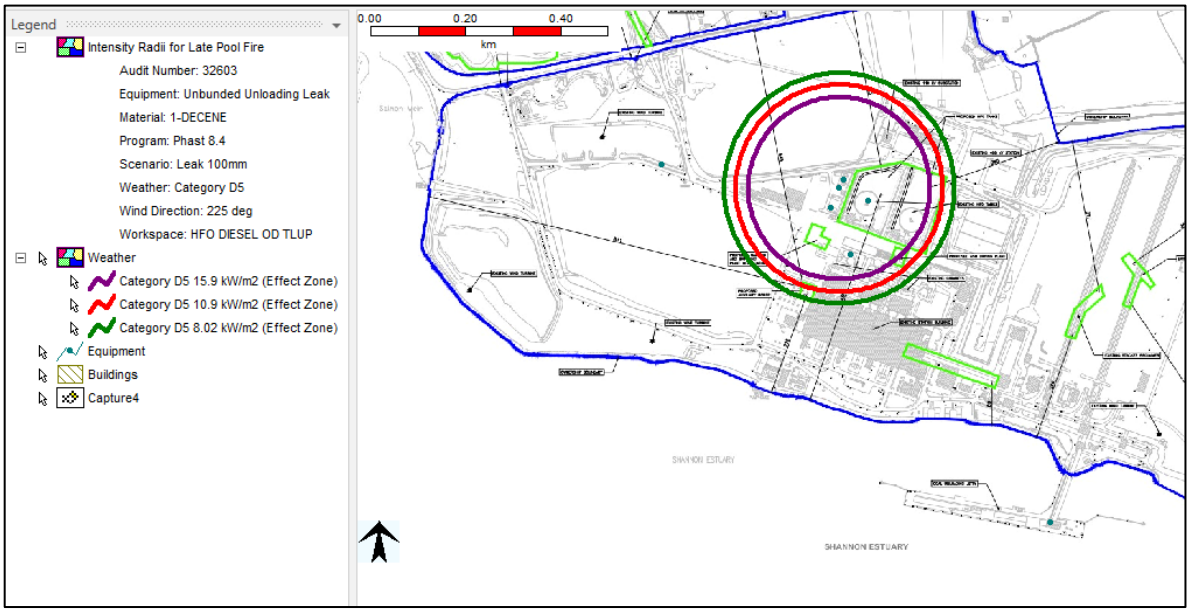


Figure 3.5 Late Pool Fire at the Tanker Unloading area

3.4 Major Accident to the Environment (MATTE) Assessment

Section 1.8 of the HSA TLUP Guidance states:

In the context of LUP, the prevention of MATTEs will be the primary objective and it is expected that accident pathways will be prevented. Where this is not practicable, or in the context of significant modifications at existing COMAH establishments, the assessment of major accidents to the environment focuses on the specific risks to sensitive receptors within the local environment, the extent of consequences to such receptors and the ability of such receptors to recover: environmental damage may be relatively long-lasting but is not necessarily irreversible. Recovery of habitats within a reasonable period of time is possible, depending on the dangerous substance involved.

Significant assessment of the proposed development at the ESB Moneypoint site has been undertaken, namely in the following assessments:

- Environmental Impact Assessment Report (EIAR) (included in the planning application)
- Appropriate Assessment Screening Report (included in the planning application)

These reports consider the potential impacts of the development on sensitive offsite environmental receptors, and secondary and tertiary containment measures on site to prevent accident pathways.

In relation to potential Major Accidents to the Environment and with reference to the site's existing COMAH Safety Report a MATTE Assessment is set out in the following sections.

3.4.1 Environmental Hazard Assessment

Any release of HFO or diesel outside a bund may be able to reach local environmental receptors via the following pathways:

- Spill during transfer from marine → jetty → Shannon Estuary
- Spill to ground → groundwater → Shannon Estuary/local groundwater sources (wells)
- Spill to ground → soil → Onsite land contamination
- Spill to ground → site drainage system → Shannon Estuary

Figure 3.6: *Image of the Moneypoint site on the Shannon Estuary*

With respect to potential leaks to soil/ground from equipment, pipework and tanks containing HFO and diesel, these would comprise releases or leaks outside bunds onto unpaved or gravelled areas, and also in the unlikely event of bund failure or overtopping.

Any liquids in the site's drainage system pass through an interceptor before being released from the site. It is possible that very large spills of HFO or diesel could overflow the interceptor.

With respect to consequence assessment potential environmental release major accident hazard scenarios break down into two different types of accidents to produce the following the representative environmental release scenarios:

a) Catastrophic tank failure would result in a significantly larger HFO or diesel spill than the other scenarios identified. Therefore, the first worst-case representative accident scenario chosen for a HFO or diesel release is catastrophic HFO tank failure followed by overtopping. In the event of an ensuing fire the generation of firewater could exacerbate the severity of the release to the environment

b) Release of HFO during transfer from a marine tanker is the only release likely to directly reach an aquatic environment. Therefore, the second worst-case representative accident scenario chosen for a HFO release is line failure during transfer from a marine tanker

3.4.2 Detailed Source-Pathway-Receptor Assessment

The two worst-case environmental release scenarios identified in Section 5.1 above are discussed and assessed in the following sections in further detail.

The consequence of any such release scenarios must be balanced against the extremely low likelihood of the scenario occurring (refer to quantitative frequencies calculated in Section 4 of report), taking into account the various control measures implemented by ESB Moneypoint to prevent and mitigate any such releases.

1. **Catastrophic Failure of a HFO tank followed by over-topping of a bund and potentially subsequent ignition and fire leading to release to the environment of HFO and firewater run-off**

Source

The source of the release is one of the 25,000 tonne HFO tanks. The catastrophic rupture would mean an instantaneous release of this quantity. The HFO will be in the liquid phase and at a maximum temperature of 50°C.

The release would be mitigated by the bund and deployment of available spill containment materials as detailed in Section 5 of the site's Safety Report. However, it is acknowledged that the possibility for the effective deployment of containment materials would be limited in the event of a catastrophic release due its volume and the short timeframe in which it would occur. The impact of the release would also be mitigated by the fact that the liquid HFO would cool rapidly once released and would become semi-solid in nature once ambient temperature was reached. In this state it would be likely to clog potential pathways (e.g. drains and interceptors).

The direction of release would effectively be from the north to south of the site, in the direction of the Shannon Estuary. A site plan showing the station layout and site levels was reviewed. It indicates that the HFO tanks and bunds have a floor level of 12.5m O.D. (ordnance datum). To the north of the tanks the ground level increases to 14.0m O.D. at the 400kV Switchhouse. To the south of the tanks the ground level decreases to 5.2m O.D. where the main station buildings are situated. The drawing indicates that the ground level remains effectively flat at 5.2m O.D. from south of the HFO tanks to the southern edge of the site and the Estuary. Therefore it is concluded that ground levels at the site (not withstanding obstacles and site drainage) will generally tend to direct liquid flow towards the south of the site, in the direction of the Shannon Estuary.

In the event that the released HFO is ignited, in accordance with the site's emergency response procedures the fire would be fought using both firewater and foam blanketing. Eight million gallons of firewater is stored at the ESB Moneypoint site. Under fire conditions the potential for contaminated run-off to enter pathways and receptors is greatly increased.

Pathways

The identified pathways to the environment are as follows:

a) Ground (soil & groundwater) - the ground around the HFO bunds consists of gravel over underlying subgrade (also in the bunds) and concreted site areas. As part of the HFO project the bund internals will be upgraded with concrete floors. As detailed in the ESB Fuel Oil Tank Bund Report (PA619-R42-1)[1] the viscosity and density of the HFO will significantly impede both its horizontal and vertical migration. The density of HFO which is similar to water will impede the displacement of the water in the soil pore spaces. In Section 4 of the site's Safety Report it is noted that groundwater body in this area is of Extreme Vulnerability. This is due to the potential for major faults or fissures in the bedrock. Therefore despite the immobility of HFO there is some potential for it to reach groundwater

b) Site Drainage – the site surface water drainage system is the most direct pathway available to a HFO release. All drains around the HFO storage area incorporate interceptors but these are likely to be overwhelmed in the event of a catastrophic release. In addition the mobility of the HFO release in the drainage system is likely to be facilitated by the presence of firewater run-off in the event of release and fire scenario. There are no shut-off valves on the outfalls of the drains which all lead to the Shannon Estuary. There is also no divert system or firewater retention area at the site.

c) Air – it is also acknowledged that in the event of a fire the resulting combustion gases and smoke would be released into the local air. The exact pathway of the airborne release would depend predominantly on wind and weather conditions at the time. Under prevailing wind conditions it is expected that the airborne releases would be blown in a north-easterly direction towards the villages and townlands of Killimer, Tarmon. Ennis is approximately 40km from the site and Shannon Airport is approximately 35km away, to the northwest. It is also noted that the southern edge of the Burren is approximately 40km from the site to the north.

[1] ESB Fuel Oil Tank Bunds Report on Appraisal of Fitness-for-Purpose, No. PA619-R42-1, March 2004

Receptors

The identified environmental receptors are as follows:

a) Land – there is potential for contamination of the soil under the site. As discussed above the potential for HFO to migrate into and contaminate soil is limited and it is considered that any resulting requirement for contaminated soil removal would be limited and achievable.

b) Groundwater sources - As detailed in the Fuel Oil Tank Bund Report (PA619-R42-1) the groundwater flow beneath the site is from north to south towards the Shannon Estuary. All local wells are located to the north of the site and therefore are at little or no risk of contamination.

c) Shannon Estuary

This receptor is the most significant with respect to its vulnerability.

The River Shannon is the largest river in Ireland. It rises in County Cavan and flows for ca. 260km before entering the Shannon Estuary at Limerick City. Hydrometric data for the River Shannon indicates a long term average flow rate of 209 m^3/s. The river becomes tidal a short distance upstream of Limerick city.

The Shannon Estuary itself forms the largest estuarine complex in Ireland covering an area of 500km^2 of navigable water, and extending for 100km from Limerick City at its head to its seaward limits marked by Loop Head, County Clare to the north and Kerry Head, County Kerry to the south. The mouth of the estuary is over 15 km wide, narrowing to just over 3 km between Kilcredaun and Kilconly Headlands.

The relatively deep water and shelter from the Atlantic Ocean has led to the development of the estuary as an important centre for industry, imports and exports for Ireland. The Estuary area is a multi-functional zone, with the waters and adjoining lands supporting a range of functions, uses and activities. Most notable are:

- Shipping/Port functions
- Industry/Marine related Industry
- Fishing/Aquaculture
- Marine Tourism, Leisure and Recreation
- Energy generation
- Fuel Storage
- Aviation
- Heritage and Landscape
- Valuable Habitats and Species including a designated Special Protection Area (SPA) and Special Area of Conservation (SAC).

The multi-functional use and importance of the Estuary has led the local authorities to develop and publish the *Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary 2013 – 2020* which will be incorporated into the relevant County and City Development Plans. The purpose of the plan is to guide the future management and development of the Shannon Estuary and ensure that the full potential of the estuary can be harnessed in a sustainable manner.

A description of the Shannon Estuary SAC and SPA is given in Table 3.12 below based on information provided on the National Parks & Wildlife Service (NPWS) website.

There are no designated Natural Heritage Areas (NHAs) located in the Shannon Estuary, but there are a number of proposed Natural Heritage Areas (pNHAs) which have not yet been statutorily proposed or designated. These are areas considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. NHAs are also designated to conserve and protect nationally important landforms, geological or

geomorphological features. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

As discussed in Section 5 of the site's Safety Report the Shannon Estuary Anti-Pollution Team (SEA-PT) Oil Spill Plan would be implemented in the event of a release to the Estuary. The team have a number of response options available, depending on the circumstances of the spill. These include use of booms, skimmers (mechanical, vacuum, oliophilic) and absorbents for containment and collection of the oil, and chemical dispersants for dispersing the pollutants.

Table 3.12: Description of Shannon SAC and SPA

Site Name	Description
Lower River Shannon Special Area of Conservation (SAC) Site Code: 002165	The Lower River Shannon Special Area of Conservation (Site Code: 002165) is a large site that encompasses the lower reaches of the River Shannon extending from just south of Lough Derg at its eastern end to a line drawn from Loop Head to Kerry Head at the west. The site is a candidate SAC selected for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is a candidate SAC selected for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for floating river vegetation, Molinia meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, Salicornia mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays all habitats listed on Annex I of the E.U. Habitats Directive. This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitat lagoon, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter. Site-specific conservation objectives are set which aim to define favourable conservation conditions for the Lower Shannon Estuary SAC. The objectives include restoring the following: Freshwater Pearl Mussel , Freshwater Pearl Mussel , Sea Lamprey, Salmon, Condition of Coastal lagoons, Atlantic salt meadows (Glauco-Puccinellietalia maritimae), Otter , Condition of Mediterranean salt meadows (Juncetalia maritimi), Condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) The objectives also include maintaining the: 1. Brook Lamprey 2. Condition of River Lamprey 3. Condition of Sandbanks which are slightly covered by sea water all the time 4. Condition of Mudflats and sandflats not covered by seawater at low tide condition of large shallow inlets and bays 5. Favourable conservation condition of Reefs 6. Favourable conservation condition of Perennial vegetation of strong banks 7. Favourable conservation condition of Vegetated sea cliffs 8. Favourable conservation condition of Salicornia and other annuals colonizing mud and sand 9. Favourable conservation condition of Bottlenose Dolphin 10. Favourable conservation condition of Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachiion vegetation

Site Name	Description
	11. Favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt laden soils (Molinion caeruleae) 12. Favourable conservation condition of Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
River Shannon and River Fergus Estuaries Special Protection Area (SPA) Site Code: 004077	The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site has vast expanses of intertidal flats. The main macro-invertebrate community present is a Macoma Scrobicularia-Nereis community which provides a rich food resource for the wintering birds. The site provides both feeding and roosting areas for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Habitat quality for most of the estuarine habitats is good. The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (mean of 59,183 for the 4 seasons 1996-97 to 1999/00), a concentration easily of international importance. Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn. Regular species include Blacktailed Godwit, Whimbrel and Greenshank. This site is of great ornithological interest, being of international importance on account of the numbers of wintering birds it supports. It also supports internationally important numbers of three species, i.e. Dunlin, Black-tailed Godwit and Redshank. In addition, there are 16 species that have populations of national importance. Also of note is that three of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. Site-specific conservation objectives are set which aim to define favourable conservation conditions for the River Shannon and River Fergus Estuaries. The main objective is to maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. The objective is to maintain the favourable conservation condition for the following: Cormorant, Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank, Black-headed Gull

d) Human receptors/buildings – human and buildings would be adversely affected by the smoke and combustion gases released during a significant HFO fire. However the released materials would not persist in the environment and would be significantly dispersed by prevailing weather conditions. In addition humans would be inclined to limit their exposure by moving indoors, closing windows etc. until the release had dissipated. This potential impact is not considered as significant as liquid release of HFO and associated firewater.

2. **HFO Transfer Line Failure during marine transfer and subsequent release directly to the Shannon Estuary**

Source

The source of the release is up to 50,000 tonnes of HFO in a marine tanker. This scenario considers a 50mm, 7barg pressurised leak from the delivery pipeline near the jetty, most probably at the unloading arm. Given the high level of surveillance at the jetty during unloading it has been estimated that the transfer could be stopped within 10 minutes and therefore less than 30 tonnes of HFO would be released. The HFO will be in the liquid phase and at a maximum temperature of 60°C.

The release could potentially be mitigated by the sump under the jetty and unloading arm which can contain up to 19m^3 of oil. However due to the high pressure nature of the transfer a significant jetted release is likely and therefore it may not be retained by the sump. Direct release of a significant portion of the 30 tonnes directly into the Estuary is possible. A release onto the jetty surface could be mitigated by the deployment of available spill containment materials as detailed in Section 5 of the site's Safety Report.

Pathways

The identified pathway to the environment is as follows:

a) Direct – in the case of a release at the jetty during the transfer operation the pathway to the Estuary will be direct via jetting or run-off from the surface of the jetty.

Receptors

The identified environmental receptor is as follows:

a) Shannon Estuary – this receptor is the most significant with respect to its vulnerability. Refer to prior description of Shannon Estuary above.

Review of Hammer Effect as a Potential Initiator of HFO pipeline failure

At the request of the HSA the potential for 'hammer effect' during marine transfer of HFO has been reviewed. Hammer effect occurs when a blockage is encountered in a pipeline in which a fluid is being pumped. The impact of the moving fluid against the blockage causes a pressure wave in the pipeline which can result in noise, vibration and potentially pipe damage and collapse. In the case of the HFO pipeline hammer effect could cause the line failure as described above. This section reviews the technical and organisational measures in place during marine transfer to assess whether or not they are sufficient to minimise the risk of hammer effect.

The following documentation has been reviewed as part of this assessment:

- P&ID for the HFO delivery pipeline
- MPBM-NP-039 Procedure for Unloading Ships
- Heavy Fuel Oil (CAS No. 68476-33-5) Properties on ECHA website[2]

Based on review of the above documents it has been determined that there is a potential for 2 types of blockage to occur – 1) a closed valve in the line; 2) solidified HFO in the line or 3) loss of power or pump failure. These potential causes are discussed as follows:

[2] https://echa.europa.eu/brief-profile/-/briefprofile/100.064.230, last accessed 03.01.2024

With reference to the pipeline P&ID there are 3 no. motorised valves and 1 no. manual valve on the delivery line. These align with the unloading procedure description: 2 no. motorised tank inlet valves; 1 no. motorised delivery line valve; 1 no. manual valve at the unloading arm.

- The timing and sequencing for opening the valves is set out in the unloading procedure. The setting of the valves is recorded on the Shore Side unloading checklist.
- Motorised valves are normally operated by the central control room from DCS under instruction from the Bulk Materials Front Line Manager. The motorised valves could also be operated from the Coalyard control room if required. Activities in both control rooms are under the control of the Front Line Manager during unloading and communication between the rooms is continuous
- The relevant valves are not closed until the transfer is completed and the temperature in the pipeline is below 40°C (pumping temperature is approximately 55°C)
- The unloading procedure is very manual and carried out by experienced operators. Continuous visual checks are made of position of valves, pumping flows / arrangements, correct oil tank and levels etc. Valve positions are also displayed on DCS.
- The valves on the HFO transfer line are all on the site's Safety Critical Component list and are maintained accordingly.

In the case of the potential for solidified HFO to be present in the line to cause a blockage, this is avoided through the use of trace heating and purging of the line after delivery, as follows:

- The pipework excluding the unloading arm at the jetty is fully insulated.
- The trace heating is confirmed as operational by the electrical supervisor at electrical house where the trace heating is switched on. The process of switching on and confirming the trace heating is working normally starts a week prior to expected delivery of oil ship, therefore there is sufficient time available to identify and address any issues with the heating.
- The residual HFO in the pipeline is heated to 55°C via the trace heating which is almost twice the melting point (approx. 30°C) of the oil. This ensures that the oil is fully liquefied prior to pumping. The temperature is verified by temperature sensors in the line.
- After the delivery the full transfer pipeline is purged. This removes at least 50% of the oil in the pipeline so that at the start of the next transfer it is at most half full.

In addition to the specific operational measures taken to eliminate blockages in the transfer pipeline, the transfer pumping is started slowly and a low pressure until it is visually confirmed that the HFO is flowing into the correct storage tank. Only when the transfer is fully established, is the pumping rate/pressure increased fully. There are also flexible sections within the line to allow for some movement of the pipeline without risk of damage, during the fuel transfer activity.

In the case of a power or pump failure there are non-return valves in the line to prevent backflow against the pump. Also the electrical valves will fail in position (as opposed to failing closed and blocking the line).

A marine transfer of HFO is a significant undertaking for the site. It is intensively planned, monitored and supervised. Within the history of the site there is no record of any issue with respect to hammer effect during the HFO delivery operation. Based on the measures outlined above, and on the fact that they have proven effective over the operational life of the site, it is concluded that the measures are sufficient and that potential for hammer effect is as low as reasonably practicable.

3.4.3 Qualitative Assessment of Extent and Severity of the Environmental Consequences

1. General

From the above source-pathway-receptor discussion it is concluded that the most significant environmental consequence is the potential for released HFO and associated firewater to be released into the Shannon Estuary. There is limited potential for the release to migrate into onsite soil and underlying ground water. In the case of ground water contamination the ultimate receptor

is the Estuary due to the direction of groundwater flow in the area. Airborne releases of combustion gases will be quickly dispersed and the effects will be short-lived.

It is very difficult to predict the extent and severity of a release to the Shannon Estuary as it will depend on all the factors outlined above – release amount, release location, if firewater is generated, if spill containment materials can be successfully deployed on site, relative density of the HFO and the estuarine waters, position of the tides at the time of release & weather conditions. However, it is clear that there is the potential for very significant volumes of both HFO and firewater to be generated under catastrophic release conditions and due to the lack of on-site containment facilities (i.e. retention areas) there is also a significant potential for considerable volumes of these releases to reach the Estuary via the pathways described above.

2. Relevant Properties of Heavy Fuel Oil (HFO)

The relevant hazard statements, ecological and physico-chemical properties of HFO with respect to an environmental release, based on Safety Data Sheet information, are summarised in Table 3.13 below:

Table 3.13: *Relevant Hazard statements, Ecological and physico-chemical properties of Heavy Fuel Oil (HFO)*

Property	Description
Hazard Statements	H410: Very toxic to aquatic life with long lasting effects H400: Very toxic to aquatic life
Appearance	Brown to Black. Viscous Liquid.
Odour	Hydrocarbon / Oily
Density	0.97 to 1.01 g/cm^3 at 15 ºC
Water Solubility	Negligible, Predominantly Hydrophobic
n-octanol/water partition coefficient (log Pow)	3 - 7
Acute Toxicity	Expected to be very toxic: LL/EL/IL50 < 1mg/l (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract) Fish: Harmful: LL/EL/IL50 10-100mg/l Aquatic Invertebrates: Toxic: LL/EL/IL50 1-10mg/l Algae: Very Toxic: LL/EL/IL50 < 1 mg/l Microorganisms: Expected to be practically non-toxic: LL/EL/IL50 > 100mg/l
Chronic Toxicity	Fish: NOEC/NOEL > 0.01 ≤ 0.1mg/l Invertebrates: NOEC/NOEL > 0.1 ≤ 1mg/l
Persistence and degradability	The volatile constituents will oxidise rapidly by photochemical reactions in air. Major constituents are inherently biodegradable.
Bioaccumulative Potential	Contains constituents with the potential to bioaccumulate
Mobility	Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. May accumulate in sediments. Sinks in fresh water, but will float on seawater and form a slick. Contains volatile constituents
Result of the PBT and vPvB assessment	The substance does not fulfil all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB
Other Adverse Effects	Films formed on water may affect oxygen transfer and damage organisms. May cause physical fouling of aquatic organisms.

Another relevant property with respect to heavy fuel oil is its limited flow potential at lower temperatures. A publication by HELCOM[3] suggests the pour point (the temperature below which the oil becomes a semi-solid and will not flow) for heavy fuel oils is often 30ºC or higher, and therefore many heavy fuel oils will act as viscous semi-solids after being spilled and cooled at ambient temperatures.

3. Ecological Effects of Environmental Releases of HFO

As described above, the Shannon Estuary is a designated SAC and SPA, and therefore has high ecological value. A significant release of HFO to the Shannon Estuary could affect the habitats, flora and fauna in a number of different ways including:

Toxic effects, both acute and chronic: HFO is classified as very toxic to aquatic organisms.

Physical contact effects: Oil can cause physical fouling of birds and aquatic organisms. With respect to birds, in the event of an oil spill, the oil coats their feathers, hampering their ability to fly, float and stay warm. Oil can be transferred from birds' plumage to the eggs they are hatching. Oil can smother eggs by sealing pores in the eggs and preventing gas exchange. It affects other animals such as otters as they won't be able stay warm if they can't clean their fur. Freshwater organisms are at risk of being smothered by oil that is carried by the current. A film formed on water may also affect oxygen transfer resulting in damage to organisms.

Destruction of habitats and food resources: Oil spilled in rivers often collects along the banks, where the oil clings to plants and grasses. The animals that ingest these contaminated plants may also be affected. The number of bird breeding and the nestling habitats can be reduced by an oil spill. Species that are not directly in contact with oil can be harmed by a spill. Predators that consume contaminated prey can be exposed to oil through ingestion. As oil contamination gives fish and other animals an unpleasant taste and smell, predators can refuse to eat their prey and begin to starve. Sometimes, a local population of prey organisms are destroyed, leaving no food resources for predators. Oil floats on water and affects those animals who live on or at the surface of the water or the surrounding land. Some components of HFO have the potential to bioaccumulate, which means that harmful components could be concentrated in the food chain. However based on safety data sheet information, while some constituents have the potential to bioaccumulate, HFO does not fulfil all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT (Persistent Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)

Due to the very toxic nature of HFO in the aquatic environment (Hazard Statements H400/H410 - see Section 3 and Attachment 2 of the site's Safety Report) and high sensitivity of the Shannon Estuary as a SAC and SPA, it is considered that the severity and duration of effects could be very high with respect to vulnerable habitats, flora and fauna.

4. Impact of HFO Release

A stated above, it is very difficult to predict the extent and severity of a release to the Shannon Estuary as it will depend on a number of different factors including release amount, release location, if firewater is generated, if spill containment materials can be successfully deployed on site, relative density of the HFO and the estuarine waters, position of the tides at the time of release & weather conditions.

With respect to persistence and biodegradability, HFO safety data sheet information outlined in Table 3.13 above indicates that the volatile constituents will oxidise rapidly by photochemical reactions in air, that the major constituents are inherently biodegradable, and that HFO does not fulfil all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

As stated in Table 3.13 above, based on safety data sheet information HFO tends to sink in fresh water, but will float on sea water and form a slick. However, as detailed in the Fuel Oil Tank Bund

[3] Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM) (2004) Guidance on Issues to High Density/Heavy Oil. HELCOM Response 4/2004.

Report (PA619-R42-1) due to the similarity between the density of HFO and water it is very difficult predict how a release into the Estuary would behave. The released HFO could sink, float or have neutral buoyancy. The higher density of saltwater may make it more likely that the HFO would float but it is also noted that the site is located in the transitional zone of the estuary. Therefore extra density of the water due to sea-salt content is likely to be limited.

Due to its limited flow potential at lower temperatures, it is probable that once the HFO is released and cools down due to ambient and estuarine temperatures, it will become a viscous semi-solid which will limit its flow/mobility.

It is considered that the greatest impact of a HFO release would be the environmental and ecological impact on the Shannon Estuary. It is considered unlikely that human health would be significantly affected, directly or indirectly. Air-borne effects would be short-lived and could be mitigated by avoidance of affected outdoor areas. As indicated above well source contamination is unlikely given the direction of groundwater flow in the area towards the Shannon Estuary. Commercial fishing and recreational activities such as sailing and swimming could be significantly curtailed.

As stated above, it is extremely difficult to predict the extent and severity of a release to the Shannon Estuary and thus the ecological impact. However it is clear that there is the potential for very significant volumes of both HFO and firewater to be generated under catastrophic release conditions and due to the lack of on-site containment facilities (i.e. retention areas) there is also a significant potential for considerable volumes of these releases to reach the Estuary via the pathways described above. It is estimated that potentially several hectares could be affected by the initial release and as a result of dispersion. Due to the very toxic nature of HFO in the aquatic environment and high sensitivity of the Shannon Estuary as a SAC and SPA it is concluded that severity and duration of effects would be very high with respect to vulnerable flora and fauna.

With respect to the criteria set out in Annex VI of the Seveso Directive 96/82/EC for notification of an accident to the European Commission it is considered that a release to the Shannon Estuary from one of the scenarios detailed above could fall under the following reportable category and constitute a Major Accident to the Environment (MATTE):

3. *Immediate damage to the environment*

   significant or long-term damage to freshwater and marine habitats(*)

   — 2 ha or more of a coastline or open sea,

4 Technical Land-use Planning Impacts

4.1 Individual Risk of Fatality

Based on the consequence modelling results in Section 3 of this report it is concluded that there is the potential for off-site effects associated with Scenario 3.1 Marine Tanker Unloading - Pool Fire only, due to full rupture of a 100mm unloading arm.

The significance of the potential offsite impacts depends on the extent of the potential consequences and the probability of the scenarios occurring.

HFO is conservatively considered as a Category 2 Flammables for the purpose of this assessment. With reference to Section 3.6.5 of the HSA TLUP Guidance the frequency of a pool fire from the Full Rupture of Unloading Line (100mm) is taken as 3×10^{-8} per hour for an unloading arm.

There could be up to 24 HFO deliveries to site per year and each unloading operation takes approximately 24 hours to complete – i.e. approximately 576 unloading hours per year.

Therefore the likelihood of a loss of containment at the delivery arm is taken as 1.7×10^{-5} per year.

The ignition probability for a Category 2 flammable liquid is taken as 0.01 from Table 21 of the HSA TLUP Guidance.

Therefore the likelihood of a loss of containment + ignition at the delivery arm is taken as 1.7×10^{-7} per year.

With reference to Section 1.4 of the HSA TLUP Guidance on Advice on New Establishments, the maximum tolerable risk of fatality to a member of the public is 1×10^{-6} per year; and to a person working at an off-site location is 5×10^{-6} per year.

With reference to Section 3.3.3 it is concluded that members of the public could not be affected by Scenario 3.1. There is the potential for persons at work at the Moneypoint Quarry to be affected by Scenario 3.1 but with reference to Figure 3.3 the likelihood is considered to be no greater than 1% risk of fatality.

Therefore the overall likelihood of an offsite fatality at the Moneypoint Quarry, in the event of a loss of containment + ignition at the delivery arm, is taken as 1.7×10^{-9} per year.

This is significantly less than the risk tolerance of 5×10^{-6} per year for an individual at an offsite work location and is therefore deemed acceptable with respect to Land-Use Planning.

4.2 Societal Risk of Fatality

Section 1.7 of HSA TLUP Guidance has been reviewed for consideration of Societal Risk. This section of the guidance states that *there are times when the risk of multiple fatalities from an accident – societal risk – should be taken into account more explicitly* (i.e. than has been considered in Section 4.1 above). Examples given of when this would be the case are 1) proposed significant off-site population density, or 2) where there is already a significant population residing/working within the risk zone. From review of Figure 3.3 (Scenario 3.1) it is concluded that a significant offsite population is not present within the risk zones and therefore a detailed societal risk assessment is not required.

4.3 MATTE Risk

With reference to Section 3.4 of this report a Major Accident to the Environment (MATTE) has been considered with respect to the criteria set out in Annex VI of the Seveso Directive 96/82/EC for notification of an accident to the European Commission.

It is considered that a release to the Shannon Estuary from one of the two representative worst-case environmental release scenarios identified, could fall under the following reportable category and constitute a MATTE:

> *3. Immediate damage to the environment*
>
> *significant or long-term damage to freshwater and marine habitats(*)*
>
> *— 2 ha or more of a coastline or open sea,*

Under Section 1.8 of the HSA TLUP Guidance it is required to categorise potential MATTEs in accordance with the CDOIF methodology[4]. With reference to this methodology it is considered that the above reportable category corresponds to the following CDOIF Categories:

- Severity of Harm Category of 2: Severe
  - Receptor Type – Marine
  - Extent of Impact - 2-20ha littoral or sublittoral zone, 100-1000ha of open sea benthic community, 100-1000 dead sea birds (500-5000 gulls), 5-50 dead/significantly impaired sea mammals
- Harm Duration Category of 3: Long Term
  - Surface Water – greater than 10 years

These categories lead to an overall MATTE categorisation of MATTE B.

The likelihoods of the two representative worst-case environmental release scenarios are considered as follows:

a) Catastrophic HFO tank failure – 4.95×10^{-6} per year (Table 44 of HSA TLUP Guidance**)**

b) HFO release during transfer from a marine tanker – 1.7×10^{-5} per year (Section 4.1 of this report)

Therefore the overall risk is:

4.95×10^{-6} per year x 4 tanks = 2×10^{-5} per year

+ 1.7×10^{-5} per year

= 3.7×10^{-5} per year

This likelihood exceeds the broadly acceptable risk level for a MATTE B set out in Table 6 of the HSA TLUP Guidance. Additional Technical Measures are set out in Section 5.

[4] https://www.sepa.org.uk/media/219154/cdoif_guideline__environmental_risk_assessment_v2.pdf, last accessed 03.01.2024

5 Additional Technical Measures

With reference to Section 4 of this report it is concluded that the level of risk associated with the potential for a MATTE warrants the implementation of Additional Technical Measures to mitigate the risk.

Significant safety and environmental protection measures are being taken as part of the HFO project, outlined as follows:

- The design and construction of the two new HFO tanks and associated pipework & controls, will be carried out to current best practice engineering standards (EN.14015:2004 Specification for manufacture of vertical steel welded non-refrigerated storage tanks with butt-welded shells for the petroleum industry). The design will be carried out by specialist contractors with extensive experience in the provision of large tanks to the petroleum industry.
- All new fuel pipelines (HFO and Diesel) will be located above ground to minimize corrosion potential and facilitate NDT testing.
- The HFO bunds are being fully upgraded with raised bund walls and concrete floors for environmental protection
- A control interlock modification will be implemented as part of the HFO project to ensure that the HFO tanks cannot be heated above 55˚C. This control modification will be implemented on all tanks - the two existing and the two new HFO Tanks. The current high temperature alarms will be adjusted down below the interlock setting of 55˚C, with an independent high-high alarm on each tank set at 55˚C.
- New fire-fighting detection systems to be installed in both HFO forwarding pump houses.
- Full life-time assessment and inspection program are presently being carried out on all HFO, Diesel, Propane and Auxiliary Steam pipework.
- HFO Unloading arm is undergoing a comprehensive service and overhaul.
- 10 Year Tanks inspections have been completed in 2018 and 2022 and both existing tanks are in good condition.

6 Conclusion

Based on the Technical Land-use Planning assessment presented in this report, it is concluded that the risk of a major accident at the ESB Moneypoint site as a result of the proposed development is acceptably low with respect to the Land-use Planning criteria (as set out in the HSA TLUP Guidance).

E. Air Quality Supporting Information

MOTT MACDONALD

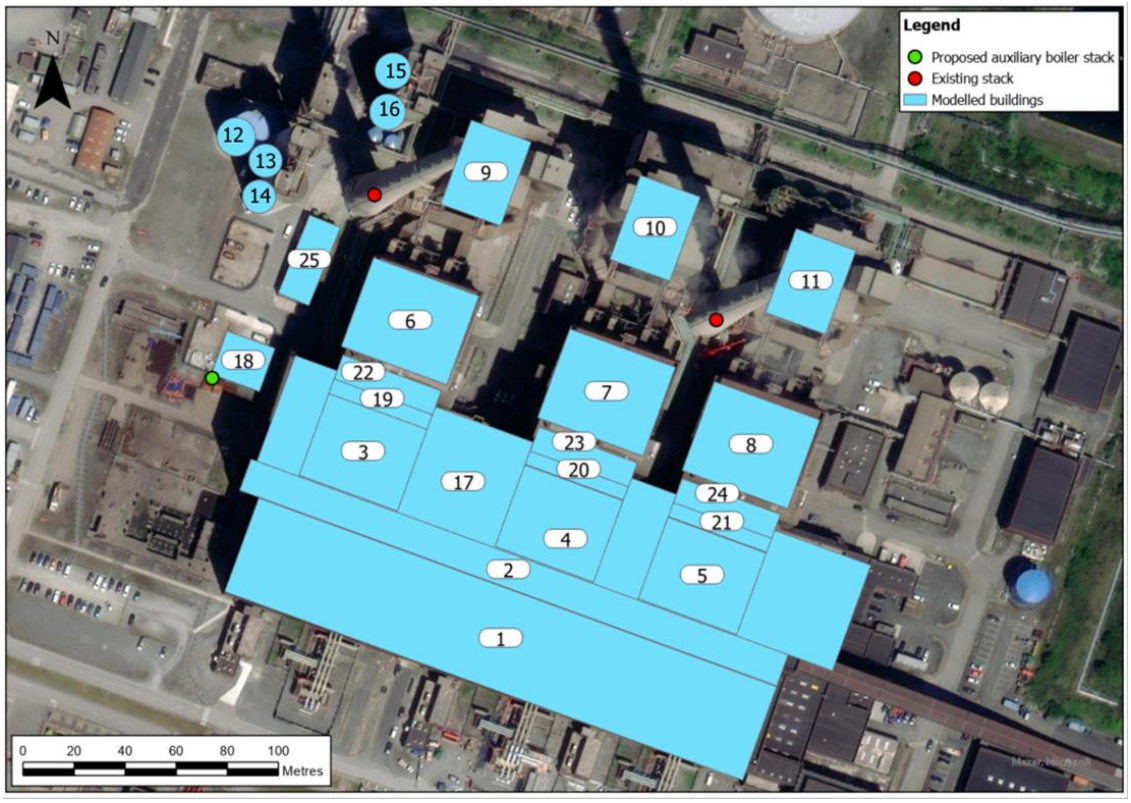
E.1 Modelled Buildings

Table E.1: Building Dimensions used within the Assessment

Figure ID	Name	X (m)	Y (m)	Height (m)	X-Length (m)	Y-Length (m)	Angle (°)
1	Engine Room	471249	5828599	33	216	39	340
2	Bunker bay	471254	5828625	49	224	13	340
3	Boiler Unit 3	471195	5828672	65	41	34	340
4	Boiler Unit 2	471271	5828644	65	41	34	340
5	Boiler Unit 1	471328	5828624	65	41	34	340
6	ESP 3	471213	5828724	33	44	37	340
7	ESP 2	471290	5828696	33	44	37	340
8	ESP 1	471347	5828675	33	44	37	340
9	FGD 3	471243	5828782	50	25	35	340
10	FGD 2	471309	5828760	50	25	35	340
11	FGD 1	471370	5828739	50	25	35	340
12	Industrial Water Tank	471145	5828796	24	15	-	-
13	FGD Product Silo 1	471156	5828786	47	13	-	-
14	FGD Product Silo 2	471154	5828772	47	13	-	-
15	Burnt lime silo 1	471206	5828822	47	14	-	-
16	Burnt lime silo 2	471204	5828805	47	14	-	-
17	Control building	471273	5828648	18	240	44	340
18	Proposed auxiliary boiler	471148	5828708	11	20	18	340
19	Air heating structure 3	471202	5828693	33	41	10	340
20	Air heating structure 2	471279	5828665	33	41	10	340
21	Air heating structure 1	471335	5828645	33	41	10	340
22	SCR 3	471204	5828699	49	41	10	340
23	SCR 2	471281	5828670	49	41	10	340
24	SCR 1	471337	5828650	49	41	10	340
25	Waste recycling building	471174	5828747	5	13	33	338

Notes: Coordinate system: UTM Zone 29 North. X and Y coordinates are for the centroid position of each building

Figure E.1: Buildings Included in the Model



Source: Mott MacDonald, 2023

E.2 Ecological Receptors

Table E.2: Ecological Designated Sites Considered within the Assessment

Site Name	Site Designation	Site Code
Lower River Shannon SAC	SAC	2165
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	SPA	2130
River Shannon and River Fergus Estuaries SPA	SPA	2298
Mid-Clare Coast SPA	SPA	1257
Ballyallia Lough SPA	SPA	1774
Tralee Bay Complex SPA	SPA	2269
Illaunonearaun SPA	SPA	717
Kerry Head SPA	SPA	2280
Carrowmore Point to Spanish Point and Islands SAC	SAC	1021
Kilkee Reefs SAC	SAC	2264
Tullaher Lough And Bog SAC	SAC	2343
Carrowmore Dunes SAC	SAC	2250
Newhall and Edenvale Complex SAC	SAC	2091
Ballyallia Lake SAC	SAC	14
Moanveanlagh Bog SAC	SAC	2351
Akeragh, Banna and Barrow Harbour SAC	SAC	332
Bunnaruddee Bog NHA	NHA	1352
Cragnashingaun Bogs NHA	NHA	2400
Lough Acrow Bogs NHA	NHA	2421
Lough Naminna Bog NHA	NHA	2367
Moyreen Bog NHA	NHA	2361
Slievecallan Mountain Bog NHA	NHA	2397
Carrigkerry Bogs NHA	NHA	2399
Illaunonearaun NHA	NHA	1014
White Strand	pNHA	1007
St.Senan's Lough	pNHA	1025
Tarbert Bay	pNHA	1386
Ballylongford Bay	pNHA	1332
Pouladatig Cave	pNHA	637
Cahircalla Wood	pNHA	1001
Lough Cleggan	pNHA	1331
Derrygeeha Lough	pNHA	1141
Cloonsnaghta Lough	pNHA	1004
Gortglass Lough	pNHA	1015
Cahiracon Wood	pNHA	1000
Fergus Estuary And Inner Shannon, North Shore	pNHA	2048
Inner Shannon Estuary – South Shore	pNHA	111
Barrigone	pNHA	2296
Moanveanlagh Bog	pNHA	2037
Cashen River Estuary	pNHA	1340
Farrihy Lough	pNHA	2257

Site Name	Site Designation	Site Code
Carrowmore Point To Spanish Point And Islands	pNHA	1021
Carrowmore Marsh	pNHA	1007
Clonderalaw Bay	pNHA	584
Scattery Island	pNHA	1911
Poulnasherry Bay	pNHA	1774
Tullaher Lough And Bog	pNHA	1776
Newhall And Edenvale Complex	pNHA	2091
Ballyallia Lake	pNHA	440
Glenastar Wood	pNHA	1431
Akeragh, Banna And Barrow Harbour	pNHA	585
Beal Point	pNHA	1335
Sturamus Island	pNHA	1436

E.3 Modelled Impacts at Ecological Receptors

Table E.3: Annual Mean NOx and SO_2 PC Results at Ecological Receptors (µg/m^3)

Receptor	Scenario 1				Scenario 2			
	NO_x		SO_2		NO_x		SO_2	
	PC	PC as % of AQS	PC	PC as % of AQS	PC	PC as % of AQS	PC	PC as % of AQS
River Shannon and River Fergus Estuaries SPA	0.3	0.9%	0.3	1.4%	1.2	4.1%	0.3	1.3%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	0.1	0.2%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Mid-Clare Coast SPA	0.1	0.4%	0.1	0.5%	0.1	0.3%	0.1	0.4%
Ballyallia Lough SPA	0.0	0.2%	0.0	0.2%	0.0	0.1%	0.0	0.2%
Kerry Head SPA	0.0	0.1%	0.0	0.1%	0.0	0.1%	0.0	0.1%
Tralee Bay Complex SPA	0.0	0.1%	0.0	0.1%	0.0	0.1%	0.0	0.1%
Illaunonearaun SPA	0.1	0.3%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Lower River Shannon SAC	0.3	0.9%	0.3	1.4%	1.2	3.9%	0.3	1.3%
Tullaher Lough And Bog SAC	0.1	0.5%	0.1	0.7%	0.1	0.4%	0.1	0.5%
Carrowmore Point to Spanish Point and Islands SAC	0.1	0.3%	0.1	0.5%	0.1	0.3%	0.1	0.4%
Carrowmore Dunes SAC	0.1	0.4%	0.1	0.5%	0.1	0.3%	0.1	0.4%
Newhall and Edenvale Complex SAC	0.1	0.2%	0.1	0.3%	0.0	0.2%	0.0	0.2%
Ballyallia Lake SAC	0.0	0.2%	0.0	0.2%	0.0	0.1%	0.0	0.2%
Moanveanlagh Bog SAC	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.1%
Akeragh, Banna and Barrow Harbour SAC	0.0	0.1%	0.0	0.1%	0.0	0.1%	0.0	0.1%
Kilkee Reefs SAC	0.1	0.5%	0.1	0.7%	0.1	0.4%	0.1	0.5%
Bunnaruddee Bog NHA	0.1	0.2%	0.1	0.3%	0.0	0.1%	0.0	0.2%
Cragnashingaun Bogs NHA	0.1	0.3%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Slievecallan Mountain Bog NHA	0.1	0.2%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Lough Naminna Bog NHA	0.1	0.2%	0.1	0.3%	0.0	0.2%	0.0	0.2%
Lough Acrow Bogs NHA	0.1	0.2%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Moyreen Bog NHA	0.1	0.2%	0.1	0.3%	0.1	0.2%	0.0	0.2%
Carrigkerry Bogs NHA	0.1	0.2%	0.1	0.3%	0.0	0.2%	0.0	0.2%
Illaunonearaun NHA	0.1	0.3%	0.1	0.4%	0.1	0.2%	0.1	0.3%
St.Senan's Lough pNHA	0.2	0.7%	0.2	1.1%	0.2	0.8%	0.2	1.0%
Clonderalaw Bay pNHA	0.3	0.9%	0.3	1.3%	0.3	0.9%	0.2	1.1%
Tarbert Bay pNHA	0.1	0.4%	0.1	0.7%	0.1	0.5%	0.1	0.6%
Ballylongford Bay pNHA	0.1	0.4%	0.1	0.6%	0.1	0.5%	0.1	0.6%
Scattery Island pNHA	0.2	0.5%	0.2	0.8%	0.2	0.5%	0.1	0.7%
Poulnasherry Bay pNHA	0.2	0.7%	0.2	1.0%	0.2	0.6%	0.2	0.8%
Tullaher Lough And Bog pNHA	0.1	0.5%	0.1	0.7%	0.1	0.4%	0.1	0.5%
Carrowmore Point To Spanish Point And Islands pNHA	0.1	0.3%	0.1	0.5%	0.1	0.3%	0.1	0.4%
White Strand/Carrowmore Marsh pNHA	0.1	0.3%	0.1	0.5%	0.1	0.3%	0.1	0.4%

Receptor	Scenario 1				Scenario 2			
	NO_x		SO_2		NO_x		SO_2	
	PC	PC as % of AQS	PC	PC as % of AQS	PC	PC as % of AQS	PC	PC as % of AQS
Fergus Estuary And Inner Shannon, North Shore pNHA	0.1	0.3%	0.1	0.5%	0.1	0.3%	0.1	0.4%
Pouladatig Cave pNHA	0.1	0.2%	0.1	0.3%	0.0	0.1%	0.0	0.2%
Newhall And Edenvale Complex pNHA	0.1	0.2%	0.1	0.3%	0.0	0.2%	0.0	0.2%
Cahircalla Wood pNHA	0.1	0.2%	0.1	0.3%	0.0	0.1%	0.0	0.2%
Lough Cleggan pNHA	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.2%
Ballyallia Lake pNHA	0.0	0.2%	0.0	0.2%	0.0	0.1%	0.0	0.2%
Derrygeeha Lough pNHA	0.2	0.6%	0.2	0.9%	0.2	0.5%	0.1	0.7%
Cloonsnaghta Lough pNHA	0.1	0.4%	0.1	0.6%	0.1	0.3%	0.1	0.4%
Gortglass Lough pNHA	0.1	0.4%	0.1	0.6%	0.1	0.3%	0.1	0.4%
Cahiracon Wood pNHA	0.1	0.3%	0.1	0.5%	0.1	0.3%	0.1	0.4%
Glenastar Wood pNHA	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.2%
Sturamus Island pNHA	0.1	0.3%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Inner Shannon Estuary - South Shore pNHA	0.1	0.2%	0.1	0.4%	0.1	0.2%	0.1	0.3%
Barrigone pNHA	0.1	0.2%	0.1	0.3%	0.1	0.2%	0.0	0.2%
Moanveanlagh Bog pNHA	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.1%
Cashen River Estuary pNHA	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.1%
Akeragh, Banna And Barrow Harbour pNHA	0.0	0.1%	0.0	0.1%	0.0	0.1%	0.0	0.1%
Farrihy Lough pNHA	0.1	0.4%	0.1	0.6%	0.1	0.3%	0.1	0.4%
Beal Point pNHA	0.0	0.1%	0.0	0.2%	0.0	0.1%	0.0	0.1%

Notes: PC: Process contribution

PCs presented to at least one significant figure to show results are greater than 0 and is not an indication of model accuracy.

NOx AQS (critical level) is 30µg/m^3; SO_2 AQS (critical level) is 20µg/m^3

Table E.4: Annual Mean NOx and SO_2 PEC Results at Ecological Receptors (µg/m^3)

Receptor	Scenario 1				Scenario 2			
	NO_x		SO_2		NO_x		SO_2	
	PEC	PEC as % of AQS	PEC	PEC as % of AQS	PEC	PEC as % of AQS	PEC	PEC as % of AQS
River Shannon and River Fergus Estuaries SPA	9.7	32.4%	1.7	8.7%	10.6	35.5%	1.7	8.6%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	9.5	31.7%	0.3	1.5%	9.5	31.6%	0.3	1.4%
Mid-Clare Coast SPA	9.5	31.8%	0.3	1.6%	9.5	31.7%	0.3	1.5%
Ballyallia Lough SPA	9.5	31.6%	0.5	2.5%	9.5	31.5%	0.5	2.5%
Kerry Head SPA	9.5	31.5%	0.2	1.1%	9.4	31.5%	0.2	1.1%
Tralee Bay Complex SPA	9.4	31.5%	0.3	1.4%	9.4	31.5%	0.3	1.3%
Illaunonearaun SPA	9.5	31.7%	0.2	1.2%	9.5	31.7%	0.2	1.1%
Lower River Shannon SAC	9.7	32.4%	1.7	8.7%	10.6	35.3%	1.7	8.6%
Tullaher Lough And Bog SAC	9.6	31.9%	0.3	1.6%	9.5	31.8%	0.3	1.5%
Carrowmore Point to Spanish Point and Islands SAC	9.5	31.7%	0.3	1.5%	9.5	31.7%	0.3	1.4%
Carrowmore Dunes SAC	9.5	31.8%	0.3	1.6%	9.5	31.7%	0.3	1.5%
Newhall and Edenvale Complex SAC	9.5	31.6%	0.3	1.5%	9.5	31.6%	0.3	1.4%
Ballyallia Lake SAC	9.5	31.6%	0.7	3.7%	9.5	31.5%	0.7	3.6%
Moanveanlagh Bog SAC	9.5	31.5%	0.3	1.5%	9.5	31.5%	0.3	1.5%
Akeragh, Banna and Barrow Harbour SAC	9.4	31.5%	0.2	1.2%	9.4	31.5%	0.2	1.2%
Kilkee Reefs SAC	9.6	31.9%	0.4	2.2%	9.5	31.8%	0.4	2.0%
Bunnaruddee Bog NHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.5%
Cragnashingaun Bogs NHA	9.5	31.7%	1.5	7.7%	9.5	31.6%	1.5	7.6%
Slievecallan Mountain Bog NHA	9.5	31.7%	1.5	7.7%	9.5	31.6%	1.5	7.6%
Lough Naminna Bog NHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.6%
Lough Acrow Bogs NHA	9.5	31.7%	1.5	7.7%	9.5	31.6%	1.5	7.6%
Moyreen Bog NHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.6%
Carrigkerry Bogs NHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.6%
Illaunonearaun NHA	9.5	31.7%	1.5	7.7%	9.5	31.7%	1.5	7.7%
St.Senan's Lough pNHA	9.6	32.1%	1.7	8.4%	9.7	32.2%	1.7	8.3%
Clonderalaw Bay pNHA	9.7	32.3%	1.7	8.7%	9.7	32.3%	1.7	8.4%
Tarbert Bay pNHA	9.6	31.9%	1.6	8.0%	9.6	31.9%	1.6	7.9%
Ballylongford Bay pNHA	9.6	31.8%	1.6	8.0%	9.6	31.9%	1.6	7.9%
Scattery Island pNHA	9.6	32.0%	1.6	8.1%	9.6	31.9%	1.6	8.0%
Poulnasherry Bay pNHA	9.6	32.1%	1.7	8.3%	9.6	32.0%	1.6	8.2%
Tullaher Lough And Bog pNHA	9.6	31.9%	1.6	8.0%	9.5	31.8%	1.6	7.9%
Carrowmore Point To Spanish Point And Islands pNHA	9.5	31.7%	1.6	7.8%	9.5	31.7%	1.5	7.7%

Receptor	Scenario 1				Scenario 2			
	NO_x		SO_2		NO_x		SO_2	
	PEC	PEC as % of AQS	PEC	PEC as % of AQS	PEC	PEC as % of AQS	PEC	PEC as % of AQS
White Strand/Carrowmore Marsh pNHA	9.5	31.8%	1.6	7.8%	9.5	31.7%	1.5	7.7%
Fergus Estuary And Inner Shannon, North Shore pNHA	9.5	31.7%	1.6	7.8%	9.5	31.7%	1.5	7.7%
Pouladatig Cave pNHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.5%
Newhall And Edenvale Complex pNHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.6%
Cahircalla Wood pNHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.5%
Lough Cleggan pNHA	9.5	31.6%	1.5	7.6%	9.5	31.5%	1.5	7.5%
Ballyallia Lake pNHA	9.5	31.6%	1.5	7.6%	9.5	31.5%	1.5	7.5%
Derrygeeha Lough pNHA	9.6	32.0%	1.6	8.2%	9.6	31.9%	1.6	8.0%
Cloonsnaghta Lough pNHA	9.5	31.8%	1.6	7.9%	9.5	31.8%	1.6	7.8%
Gortglass Lough pNHA	9.5	31.8%	1.6	7.9%	9.5	31.7%	1.6	7.8%
Cahiracon Wood pNHA	9.5	31.7%	1.6	7.8%	9.5	31.7%	1.5	7.7%
Glenastar Wood pNHA	9.5	31.6%	1.5	7.6%	9.5	31.5%	1.5	7.5%
Sturamus Island pNHA	9.5	31.7%	1.5	7.7%	9.5	31.6%	1.5	7.6%
Inner Shannon Estuary - South Shore pNHA	9.5	31.7%	1.5	7.7%	9.5	31.6%	1.5	7.6%
Barrigone pNHA	9.5	31.6%	1.5	7.6%	9.5	31.6%	1.5	7.6%
Moanveanlagh Bog pNHA	9.5	31.5%	1.5	7.5%	9.5	31.5%	1.5	7.5%
Cashen River Estuary pNHA	9.5	31.5%	1.5	7.5%	9.5	31.5%	1.5	7.5%
Akeragh, Banna And Barrow Harbour pNHA	9.4	31.5%	1.5	7.4%	9.4	31.5%	1.5	7.4%
Farrihy Lough pNHA	9.5	31.8%	1.6	7.9%	9.5	31.7%	1.6	7.8%
Beal Point pNHA	9.5	31.6%	1.5	7.5%	9.5	31.5%	1.5	7.5%

Notes: PEC: Predicted environmental concentration

PECs presented to at least one significant figure to show results are greater than 0 and is not an indication of model accuracy.

NOx AQS (critical level) is 30µg/m^3; SO_2 AQS (critical level) is 20µg/m^3
Ambient concentrations (Acs) for the SAC and SPA sites were taken from APIS. For the NHA and pNHA sites, the maximum AC out of the SAC and SPA sites has been applied on a precautionary basis.

Table E.5: Critical Load PC Results – Nitrogen Deposition

Receptor	N Deposition (kgN/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive nitrogen critical load class	Minimum nitrogen deposition critical load	PC	PC as % of AQS	PC	PC as % of AQS
River Shannon and River Fergus Estuaries SPA	Shifting coastal dunes	5	0.2	3.2%	0.2	3.2%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	Northern wet heath: Calluna-dominated wet heath (upland moorland)	20	0.0	0.2%	0.0	0.2%
Mid-Clare Coast SPA	Shifting coastal dunes	5	0.1	1.3%	0.1	1.0%
Ballyallia Lough SPA	Low and medium altitude hay meadows	15	0.0	0.2%	0.0	0.1%
Kerry Head SPA	Low and medium altitude hay meadows	5	0.0	0.3%	0.0	0.2%
Tralee Bay Complex SPA	Low and medium altitude hay meadows	5	0.0	0.2%	0.0	0.2%
Illaunonearaun SPA	Pioneer, low-mid, mid-upper saltmarshes	20	0.0	0.2%	0.0	0.2%
Lower River Shannon SAC	Pioneer, low-mid, mid-upper saltmarshes	5	0.2	3.2%	0.2	3.2%
Tullaher Lough And Bog SAC	Raised and blanket bogs	5	0.1	1.7%	0.1	1.3%
Carrowmore Point to Spanish Point and Islands SAC	Pioneer, low-mid, mid-upper saltmarshes	5	0.1	1.1%	0.0	0.9%
Carrowmore Dunes SAC	Shifting coastal dunes	5	0.1	1.3%	0.1	1.0%
Newhall and Edenvale Complex SAC	Broadleaved deciduous woodland	10	0.1	0.6%	0.0	0.4%
Ballyallia Lake SAC	No comparable habitat with established critical load estimate available	NA	NA	NA	NA	NA
Moanveanlagh Bog SAC	Raised and blanket bogs	5	0.0	0.4%	0.0	0.3%
Akeragh, Banna and Barrow Harbour SAC	Pioneer, low-mid, mid-upper saltmarshes	5	0.0	0.2%	0.0	0.2%
Kilkee Reefs SAC	Designated feature/feature habitat not sensitive to eutrophication	NA	NA	NA	NA	NA
Bunnaruddee Bog NHA	NA	5	0.0	0.6%	0.0	0.5%
Cragnashingaun Bogs NHA	NA	5	0.0	0.9%	0.0	0.7%
Slievecallan Mountain Bog NHA	NA	5	0.0	0.9%	0.0	0.7%
Lough Naminna Bog NHA	NA	5	0.0	0.7%	0.0	0.6%
Lough Acrow Bogs NHA	NA	5	0.0	0.9%	0.0	0.7%
Moyreen Bog NHA	NA	5	0.0	0.7%	0.0	0.5%
Carrigkerry Bogs NHA	NA	5	0.0	0.6%	0.0	0.5%
Illaunonearaun NHA	NA	5	0.0	1.0%	0.0	0.8%
St.Senan's Lough pNHA	NA	5	0.1	2.5%	0.1	2.3%
Clonderalaw Bay pNHA	NA	5	0.2	3.1%	0.1	2.7%

Receptor		N Deposition (kgN/ha/year)				
			Scenario 1		Scenario 2	
	Relevant/Most sensitive nitrogen critical load class	Minimum nitrogen deposition critical load	PC	PC as % of AQS	PC	PC as % of AQS
Tarbert Bay pNHA	NA	5	0.1	1.5%	0.1	1.3%
Ballylongford Bay pNHA	NA	5	0.1	1.5%	0.1	1.4%
Scattery Island pNHA	NA	5	0.1	1.9%	0.1	1.6%
Poulnasherry Bay pNHA	NA	5	0.1	2.4%	0.1	2.0%
Tullaher Lough And Bog pNHA	NA	5	0.1	1.7%	0.1	1.3%
Carrowmore Point To Spanish Point And Islands pNHA	NA	5	0.1	1.1%	0.0	0.9%
White Strand/Carrowmore Marsh pNHA	NA	5	0.1	1.2%	0.0	1.0%
Fergus Estuary And Inner Shannon, North Shore pNHA	NA	5	0.1	1.1%	0.0	0.9%
Pouladatig Cave pNHA	NA	5	0.0	0.6%	0.0	0.5%
Newhall And Edenvale Complex pNHA	NA	5	0.1	1.2%	0.0	0.9%
Cahircalla Wood pNHA	NA	5	0.0	0.7%	0.0	0.5%
Lough Cleggan pNHA	NA	5	0.0	0.5%	0.0	0.4%
Ballyallia Lake pNHA	NA	5	0.0	0.5%	0.0	0.4%
Derrygeeha Lough pNHA	NA	5	0.1	2.1%	0.1	1.7%
Cloonsnaghta Lough pNHA	NA	5	0.1	1.4%	0.1	1.1%
Gortglass Lough pNHA	NA	5	0.1	1.3%	0.1	1.0%
Cahiracon Wood pNHA	NA	5	0.1	1.1%	0.0	0.9%
Glenastar Wood pNHA	NA	5	0.0	0.5%	0.0	0.4%
Sturamus Island pNHA	NA	5	0.0	0.9%	0.0	0.7%
Inner Shannon Estuary - South Shore pNHA	NA	5	0.0	0.9%	0.0	0.7%
Barrigone pNHA	NA	5	0.0	0.7%	0.0	0.6%
Moanveanlagh Bog pNHA	NA	5	0.0	0.4%	0.0	0.3%
Cashen River Estuary pNHA	NA	5	0.0	0.4%	0.0	0.3%
Akeragh, Banna And Barrow Harbour pNHA	NA	5	0.0	0.2%	0.0	0.2%
Farrihy Lough pNHA	NA	5	0.1	1.3%	0.1	1.0%
Beal Point pNHA	NA	5	0.0	0.4%	0.0	0.4%

Notes: PC: Process contribution

PCs presented to at least one significant figure to show results are greater than 0 and is not an indication of model accuracy.
The minimum critical load for SAC and SPA sites have been taken from the most sensitive feature listed on the APIS website.
The minimum critical load applied to the NHA and pNHA sites has been assumed to be 5 kgN/ha/year.
'NA' indicates no habitat information available on APIS

Table E.6: Critical Load PEC Results – Nitrogen Deposition

Receptor	N Deposition (kgN/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive nitrogen critical load class	Minimum nitrogen deposition critical load	PEC	PEC as % of CL	PEC	PEC as % of CL
River Shannon and River Fergus Estuaries SPA	Shifting coastal dunes	5	7.3	145.3%	7.3	145.4%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	Northern wet heath: Calluna-dominated wet heath (upland moorland)	20	7.7	38.5%	7.7	38.4%
Mid-Clare Coast SPA	Shifting coastal dunes	5	4.4	88.0%	4.4	87.7%
Ballyallia Lough SPA	Low and medium altitude hay meadows	15	5.3	35.1%	5.3	35.1%
Kerry Head SPA	Low and medium altitude hay meadows	5	5.1	102.7%	5.1	102.7%
Tralee Bay Complex SPA	Low and medium altitude hay meadows	5	4.5	90.5%	4.5	90.4%
Illaunonearaun SPA	Pioneer, low-mid, mid-upper saltmarshes	20	3.9	19.3%	3.8	19.2%
Lower River Shannon SAC	Pioneer, low-mid, mid-upper saltmarshes	5	7.3	145.3%	7.3	145.4%
Tullaher Lough And Bog SAC	Raised and blanket bogs	5	4.4	87.9%	4.4	87.5%
Carrowmore Point to Spanish Point and Islands SAC	Pioneer, low-mid, mid-upper saltmarshes	5	4.4	87.0%	4.3	86.8%
Carrowmore Dunes SAC	Shifting coastal dunes	5	4.4	88.0%	4.4	87.7%
Newhall and Edenvale Complex SAC	Broadleaved deciduous woodland	10	9.2	91.9%	9.2	91.8%
Ballyallia Lake SAC	No comparable habitat with established critical load estimate available	NA	NA	NA	NA	NA
Moanveanlagh Bog SAC	Raised and blanket bogs	5	5.2	105.0%	5.2	104.9%
Akeragh, Banna and Barrow Harbour SAC	Pioneer, low-mid, mid-upper saltmarshes	5	4.5	90.5%	4.5	90.4%
Kilkee Reefs SAC	Designated feature/feature habitat not sensitive to eutrophication	NA	NA	NA	NA	NA
Bunnaruddee Bog NHA	NA	5	9.2	183.3%	9.2	183.2%
Cragnashingaun Bogs NHA	NA	5	9.2	183.6%	9.2	183.4%
Slievecallan Mountain Bog NHA	NA	5	9.2	183.6%	9.2	183.4%
Lough Naminna Bog NHA	NA	5	9.2	183.4%	9.2	183.3%
Lough Acrow Bogs NHA	NA	5	9.2	183.6%	9.2	183.4%
Moyreen Bog NHA	NA	5	9.2	183.4%	9.2	183.3%
Carrigkerry Bogs NHA	NA	5	9.2	183.4%	9.2	183.2%
Illaunonearaun NHA	NA	5	9.2	183.7%	9.2	183.5%
St.Senan's Lough pNHA	NA	5	9.3	185.2%	9.3	185.0%
Clonderalaw Bay pNHA	NA	5	9.3	185.9%	9.3	185.4%

Receptor	N Deposition (kgN/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive nitrogen critical load class	Minimum nitrogen deposition critical load	PEC	PEC as % of CL	PEC	PEC as % of CL
Tarbert Bay pNHA	NA	5	9.2	184.2%	9.2	184.1%
Ballylongford Bay pNHA	NA	5	9.2	184.2%	9.2	184.1%
Scattery Island pNHA	NA	5	9.2	184.6%	9.2	184.3%
Poulnasherry Bay pNHA	NA	5	9.3	185.1%	9.2	184.7%
Tullaher Lough And Bog pNHA	NA	5	9.2	184.4%	9.2	184.0%
Carrowmore Point To Spanish Point And Islands pNHA	NA	5	9.2	183.8%	9.2	183.6%
White Strand/Carrowmore Marsh pNHA	NA	5	9.2	183.9%	9.2	183.7%
Fergus Estuary And Inner Shannon, North Shore pNHA	NA	5	9.2	183.8%	9.2	183.6%
Pouladatig Cave pNHA	NA	5	9.2	183.4%	9.2	183.2%
Newhall And Edenvale Complex pNHA	NA	5	9.2	183.9%	9.2	183.6%
Cahircalla Wood pNHA	NA	5	9.2	183.4%	9.2	183.2%
Lough Cleggan pNHA	NA	5	9.2	183.3%	9.2	183.1%
Ballyallia Lake pNHA	NA	5	9.2	183.3%	9.2	183.1%
Derrygeeha Lough pNHA	NA	5	9.2	184.8%	9.2	184.4%
Cloonsnaghta Lough pNHA	NA	5	9.2	184.1%	9.2	183.8%
Gortglass Lough pNHA	NA	5	9.2	184.0%	9.2	183.8%
Cahiracon Wood pNHA	NA	5	9.2	183.8%	9.2	183.6%
Glenastar Wood pNHA	NA	5	9.2	183.2%	9.2	183.1%
Sturamus Island pNHA	NA	5	9.2	183.6%	9.2	183.4%
Inner Shannon Estuary - South Shore pNHA	NA	5	9.2	183.6%	9.2	183.4%
Barrigone pNHA	NA	5	9.2	183.4%	9.2	183.3%
Moanveanlagh Bog pNHA	NA	5	9.2	183.1%	9.2	183.0%
Cashen River Estuary pNHA	NA	5	9.2	183.1%	9.2	183.0%
Akeragh, Banna And Barrow Harbour pNHA	NA	5	9.1	182.9%	9.1	182.9%
Farrihy Lough pNHA	NA	5	9.2	184.0%	9.2	183.8%
Beal Point pNHA	NA	5	9.2	183.2%	9.2	183.1%

Notes: PEC: Predicted environmental concentration

PECs presented to at least one significant figure to show results are greater than 0 and is not an indication of model accuracy.
The minimum critical load for SAC and SPA sites have been taken from the most sensitive feature listed on the APIS website.
The minimum critical load applied to the NHA and pNHA sites has been assumed to be 5 kgN/ha/year.
Background rates of nitrogen deposition for the SAC and SPA sites were taken from APIS. For the NHA and pNHA sites, the maximum background deposition rate out of the SAC and SPA sites has been applied on a precautionary basis.
'NA' indicates no habitat information available on APIS

Table E.7: Critical Load PC Results – Acid Deposition

Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PC	PC as % of AQS	PC	PC as % of AQS
River Shannon and River Fergus Estuaries SPA	Freshwater	0.375	0.044	11.9%	0.042	11.3%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	Acid grassland	0.509	0.012	2.3%	0.009	1.8%
Mid-Clare Coast SPA	Acid grassland	0.448	0.018	3.9%	0.014	3.1%
Ballyallia Lough SPA	Unmanaged Broadleafed/Coniferous Woodland	5.085	0.007	0.1%	0.005	0.1%
Kerry Head SPA	Calcareous grassland (using base cation)	0.43	0.004	0.9%	0.003	0.7%
Tralee Bay Complex SPA	Acid grassland	0.398	0.003	0.8%	0.002	0.6%
Illaunonearaun SPA	NA	NA	NA	NA	NA	NA
Lower River Shannon SAC	Perennial vegetation of stony banks	0.311	0.044	14.3%	0.042	13.7%
Tullaher Lough And Bog SAC	Calcareous grassland (using base cation)	0.427	0.022	5.3%	0.018	4.1%
Carrowmore Point to Spanish Point and Islands SAC	Acid grassland	0.448	0.015	3.3%	0.011	2.6%
Carrowmore Dunes SAC	Calcareous grassland (using base cation)	0.452	0.018	3.9%	0.014	3.1%
Newhall and Edenvale Complex SAC	Unmanaged Broadleafed/Coniferous Woodland	4.851	0.019	0.4%	0.014	0.3%
Ballyallia Lake SAC	NA	NA	NA	NA	NA	NA
Moanveanlagh Bog SAC	Calcareous grassland (using base cation)	0.46	0.005	1.2%	0.004	0.9%
Akeragh, Banna and Barrow Harbour SAC	Acid grassland	0.398	0.003	0.8%	0.002	0.6%
Kilkee Reefs SAC	NA	NA	NA	NA	NA	NA
Bunnaruddee Bog NHA	NA	0.311	0.008	2.7%	0.007	2.1%
Cragnashingaun Bogs NHA	NA	0.311	0.012	3.9%	0.010	3.1%
Slievecallan Mountain Bog NHA	NA	0.311	0.012	3.9%	0.010	3.1%
Lough Naminna Bog NHA	NA	0.311	0.010	3.2%	0.007	2.4%
Lough Acrow Bogs NHA	NA	0.311	0.012	3.7%	0.009	2.8%
Moyreen Bog NHA	NA	0.311	0.009	3.0%	0.007	2.3%

Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PC	PC as % of AQS	PC	PC as % of AQS
Carrigkerry Bogs NHA	NA	0.311	0.009	2.8%	0.007	2.2%
Illaunonearaun NHA	NA	0.311	0.013	4.2%	0.010	3.3%
St.Senan's Lough pNHA	NA	0.311	0.035	11.1%	0.031	9.9%
Clonderalaw Bay pNHA	NA	0.311	0.042	13.6%	0.035	11.4%
Tarbert Bay pNHA	NA	0.311	0.021	6.7%	0.018	5.8%
Ballylongford Bay pNHA	NA	0.311	0.020	6.5%	0.018	5.8%
Scattery Island pNHA	NA	0.311	0.025	8.2%	0.022	6.9%
Poulnasherry Bay pNHA	NA	0.311	0.032	10.4%	0.027	8.6%
Tullaher Lough And Bog pNHA	NA	0.311	0.022	7.2%	0.018	5.6%
Carrowmore Point To Spanish Point And Islands pNHA	NA	0.311	0.015	4.7%	0.011	3.7%
White Strand/Carrowmore Marsh pNHA	NA	0.311	0.016	5.3%	0.013	4.1%
Fergus Estuary And Inner Shannon, North Shore pNHA	NA	0.311	0.015	4.8%	0.012	3.7%
Pouladatig Cave pNHA	NA	0.311	0.009	2.7%	0.006	2.0%
Newhall And Edenvale Complex pNHA	NA	0.311	0.019	6.0%	0.014	4.5%
Cahircalla Wood pNHA	NA	0.311	0.009	2.9%	0.007	2.2%
Lough Cleggan pNHA	NA	0.311	0.007	2.3%	0.005	1.7%
Ballyallia Lake pNHA	NA	0.311	0.007	2.4%	0.005	1.7%
Derrygeeha Lough pNHA	NA	0.311	0.028	9.0%	0.022	7.1%
Cloonsnaghta Lough pNHA	NA	0.311	0.019	6.0%	0.014	4.7%
Gortglass Lough pNHA	NA	0.311	0.018	5.7%	0.014	4.4%
Cahiracon Wood pNHA	NA	0.311	0.015	4.8%	0.012	3.7%
Glenastar Wood pNHA	NA	0.311	0.007	2.3%	0.005	1.8%
Sturamus Island pNHA	NA	0.311	0.012	4.0%	0.010	3.1%

Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PC	PC as % of AQS	PC	PC as % of AQS
Inner Shannon Estuary – South Shore pNHA	NA	0.311	0.012	3.7%	0.009	2.9%
Barrigone pNHA	NA	0.311	0.010	3.2%	0.007	2.4%
Moanveanlagh Bog pNHA	NA	0.311	0.006	1.8%	0.004	1.3%
Cashen River Estuary pNHA	NA	0.311	0.005	1.8%	0.004	1.3%
Akeragh, Banna And Barrow Harbour pNHA	NA	0.311	0.003	1.0%	0.002	0.8%
Farrihy Lough pNHA	NA	0.311	0.018	5.7%	0.014	4.4%
Beal Point pNHA	NA	0.311	0.006	2.0%	0.005	1.5%

Notes: PC: Process contribution

PCs PECs presented to three decimal places for comparison against the critical loads for acid and is not an indication of model accuracy.
The minimum CLMaxN for SAC and SPA sites have been taken from the most sensitive feature listed on the APIS website.
The minimum CLMaxN applied to the NHA and pNHA sites has been taken from the most sensitive feature listed on APIS for the SAC and SPA sites considered in this assessment.
'NA' indicates no habitat information available on APIS

Table E.8: Critical Load PEC Results – Acid Deposition

Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PEC	PC as % of AQS	PEC	PEC as % of AQS
River Shannon and River Fergus Estuaries SPA	Freshwater	0.375	0.554	147.9%	0.552	147.3%
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	Acid grassland	0.509	0.512	100.5%	0.509	100.1%
Mid-Clare Coast SPA	Acid grassland	0.448	0.293	65.3%	0.289	64.5%
Ballyallia Lough SPA	Unmanaged Broadleafed/Coniferous Woodland	5.085	0.346	6.8%	0.344	6.8%
Kerry Head SPA	Calcareous grassland (using base cation)	0.43	0.338	78.6%	0.337	78.3%
Tralee Bay Complex SPA	Acid grassland	0.398	0.302	75.9%	0.301	75.7%
Illaunonearaun SPA	NA	NA	NA	NA	NA	NA
Lower River Shannon SAC	Perennial vegetation of stony banks	0.311	0.554	178.3%	0.552	177.6%
Tullaher Lough And Bog SAC	Calcareous grassland (using base cation)	0.427	0.293	68.7%	0.289	67.6%
Carrowmore Point to Spanish Point and Islands SAC	Acid grassland	0.448	0.280	62.4%	0.276	61.7%
Carrowmore Dunes SAC	Calcareous grassland (using base cation)	0.452	0.293	64.7%	0.289	63.9%
Newhall and Edenvale Complex SAC	Unmanaged Broadleafed/Coniferous Woodland	4.851	0.579	11.9%	0.574	11.8%
Ballyallia Lake SAC	NA	NA	NA	NA	NA	NA
Moanveanlagh Bog SAC	Calcareous grassland (using base cation)	0.46	0.344	74.8%	0.343	74.6%
Akeragh, Banna and Barrow Harbour SAC	Acid grassland	0.398	0.302	75.9%	0.301	75.7%
Kilkee Reefs SAC	NA	NA	NA	NA	NA	NA
Bunnaruddee Bog NHA	NA	0.311	0.579	186.3%	0.578	185.7%
Cragnashingaun Bogs NHA	NA	0.311	0.583	187.5%	0.581	186.7%
Slievecallan Mountain Bog NHA	NA	0.311	0.583	187.5%	0.581	186.7%
Lough Naminna Bog NHA	NA	0.311	0.581	186.8%	0.578	186.0%
Lough Acrow Bogs NHA	NA	0.311	0.583	187.3%	0.580	186.4%
Moyreen Bog NHA	NA	0.311	0.580	186.6%	0.578	185.9%

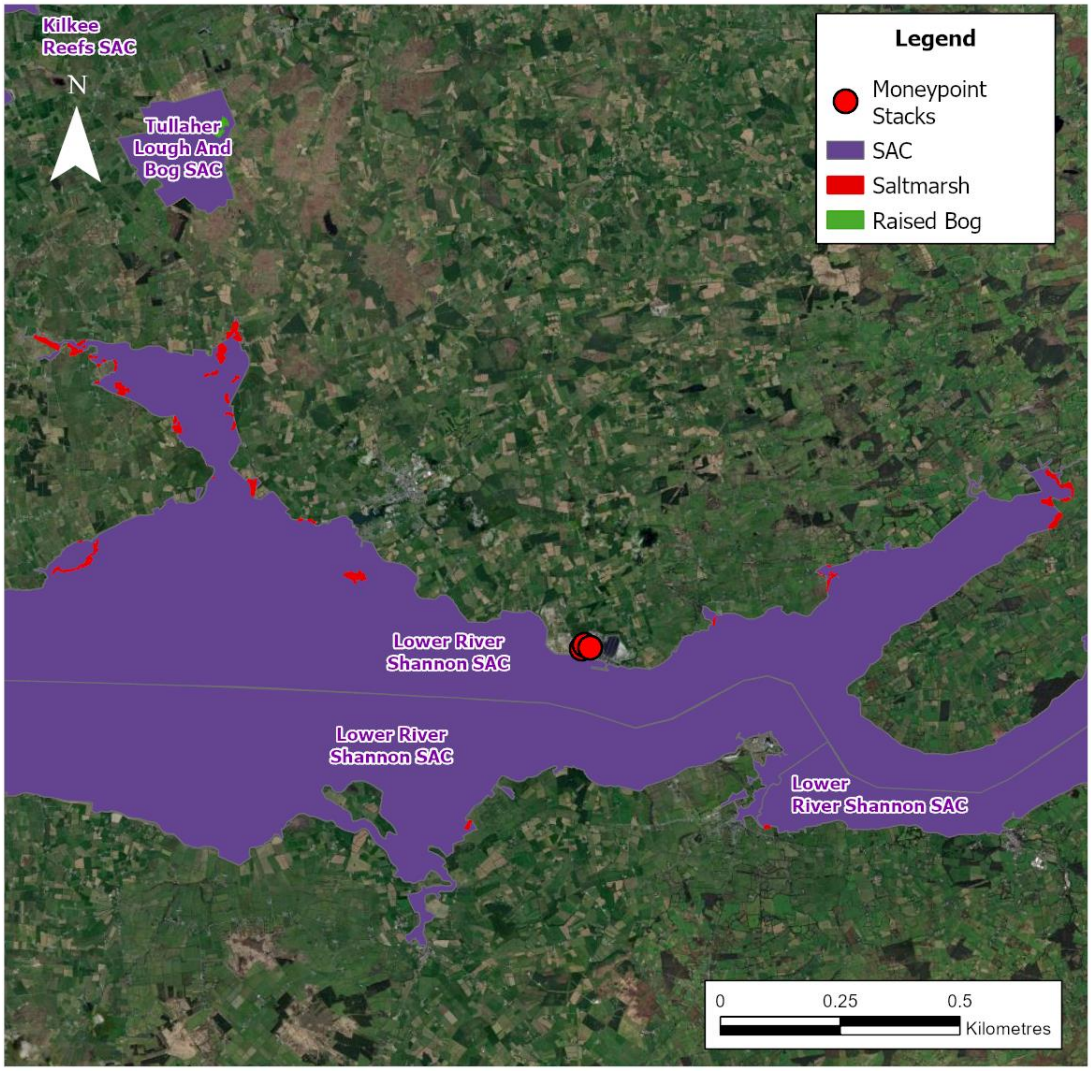
Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PEC	PC as % of AQS	PEC	PEC as % of AQS
Carrigkerry Bogs NHA	NA	0.311	0.580	186.4%	0.578	185.8%
Illaunonearaun NHA	NA	0.311	0.584	187.8%	0.581	186.9%
St.Senan's Lough pNHA	NA	0.311	0.606	194.7%	0.602	193.5%
Clonderalaw Bay pNHA	NA	0.311	0.613	197.2%	0.606	195.0%
Tarbert Bay pNHA	NA	0.311	0.592	190.3%	0.589	189.4%
Ballylongford Bay pNHA	NA	0.311	0.591	190.1%	0.589	189.4%
Scattery Island pNHA	NA	0.311	0.596	191.8%	0.593	190.5%
Poulnasherry Bay pNHA	NA	0.311	0.603	194.0%	0.598	192.2%
Tullaher Lough And Bog pNHA	NA	0.311	0.593	190.8%	0.589	189.2%
Carrowmore Point To Spanish Point And Islands pNHA	NA	0.311	0.586	188.3%	0.582	187.3%
White Strand/Carrowmore Marsh pNHA	NA	0.311	0.587	188.9%	0.584	187.7%
Fergus Estuary And Inner Shannon, North Shore pNHA	NA	0.311	0.586	188.4%	0.583	187.3%
Pouladatig Cave pNHA	NA	0.311	0.580	186.3%	0.577	185.6%
Newhall And Edenvale Complex pNHA	NA	0.311	0.590	189.6%	0.585	188.1%
Cahircalla Wood pNHA	NA	0.311	0.580	186.5%	0.578	185.8%
Lough Cleggan pNHA	NA	0.311	0.578	185.9%	0.576	185.3%
Ballyallia Lake pNHA	NA	0.311	0.578	186.0%	0.576	185.3%
Derrygeeha Lough pNHA	NA	0.311	0.599	192.6%	0.593	190.7%
Cloonsnaghta Lough pNHA	NA	0.311	0.590	189.6%	0.585	188.3%
Gortglass Lough pNHA	NA	0.311	0.589	189.3%	0.585	188.0%
Cahiracon Wood pNHA	NA	0.311	0.586	188.4%	0.583	187.3%
Glenastar Wood pNHA	NA	0.311	0.578	185.9%	0.576	185.4%
Sturamus Island pNHA	NA	0.311	0.583	187.6%	0.581	186.7%

Receptor	Acid Deposition (keq/ha/year)					
			Scenario 1		Scenario 2	
	Relevant/Most sensitive acidity critical load class	Minimum CLMaxN	PEC	PC as % of AQS	PEC	PEC as % of AQS
Inner Shannon Estuary – South Shore pNHA	NA	0.311	0.583	187.3%	0.580	186.5%
Barrigone pNHA	NA	0.311	0.581	186.8%	0.578	186.0%
Moanveanlagh Bog pNHA	NA	0.311	0.577	185.4%	0.575	185.0%
Cashen River Estuary pNHA	NA	0.311	0.576	185.4%	0.575	184.9%
Akeragh, Banna And Barrow Harbour pNHA	NA	0.311	0.574	184.6%	0.573	184.4%
Farrihy Lough pNHA	NA	0.311	0.589	189.3%	0.585	188.0%
Beal Point pNHA	NA	0.311	0.577	185.6%	0.576	185.1%

Notes: PEC: Process contribution

PECs presented to three decimal places for comparison against the critical loads for acid and is not an indication of model accuracy.
The minimum CLMaxN for SAC and SPA sites have been taken from the most sensitive feature listed on the APIS website.
The minimum CLMaxN applied to the NHA and pNHA sites has been taken from the most sensitive feature listed on APIS for the SAC and SPA sites considered in this assessment.
'NA' indicates no habitat information available on APIS

Figure E.2: Saltmarsh and Raised Bog Habitat Areas where the Nitrogen Deposition PC Exceeds 1% of the Minimum CL



Source: Mott MacDonald, 2023

F. Noise and Vibration Supporting Information

F.1 Calculation Methodology – Construction Noise

British Standard 5228 has been adopted for the assessment of effects at noise sensitive receptors during construction phase.

The calculation assumptions include:

- Method for activity $L_{Aeq,T}$ in Appendix F.2.2 of BS 5228
- List of plant for each of the construction activity
- Quantity and utilisation corrections of the plant
- Combined noise levels of all plants for each construction activity
- Distances between the boundary of the construction activities and receptors
- 50% of soft and hard ground attenuation
- Stationary plant.

F.2 Calculation Methodology – Operational Noise

The operational noise assessment implements the procedures of ISO 9613-2[1] using a three-dimensional acoustic model developed using DataKustik CadnaA software.

The model includes:

- Noise source elements which represent operational activities
- Topographic data
- Screening elements such as buildings and plant enclosures
- Downward-curving propagation path (downwind) according to ISO 9613-2
- Exhaust velocity and temperature of the stack has been considered according to VDI-guideline 3733[2]
- Sensitive receptor elements at first floor level
- Ground absorptive (G=0.5)
- Temperature (10 °C) and Humidity (70%)

[1] ISO 9613 (1996) Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'.

[2] VDI 3733 (1996) Noise at pipes.

Table F.1: List of Noise Sources considered within the Acoustic Model for the Operation of the Proposed Development

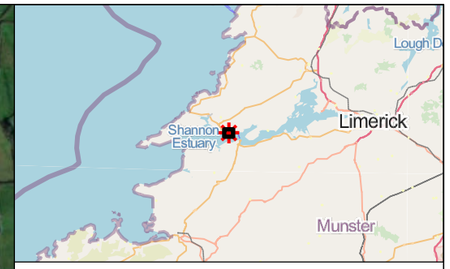
Item #	Description	Reference/ Remarks	Number of items	Octave band centre frequency (Hz)								Sound power level dB(A)
				63	125	250	500	1k	2k	4k	8k	
01	Capping material batching plant	BS5228 #D.6.9	1	108	109	102	101	98	97	88	82	104
02	Hopper and conveyor system	BS5228 #C.10.21	3	101	103	101	101	98	96	94	87	104
03	Auxiliary boiler	Bies and Hansen [3]	2	97	92	86	85	83	81	81	81	89
04	Auxiliary boiler stack at 30m hight [1]		1	100	95	89	88	86	84	84	84	92
05	New profile of FGD By-product Landfill	BS5228 #C.6.27 and C.6.12	1	103	97	95	93	91	89	84	76	96

Remark: [1] With assumption of 25 m/s of exhaust velocity and 265 °C exhaust temperature and both boilers operate at the same time

Source: Mott MacDonald

[3] Engineering Noise Control, Theory and practice, David A. Bies and Colin H. Hansen, fourth edition 2009

G. Biodiversity Supporting Information



- Planning Boundary
- BL3 - Building and other surfaces
- ED2 - Spoil and Bareground
- ED2/BL3 - Spoil and bare ground/ Building and artificial surfaces
- FL7 - Reservoir
- FL8 - Other artificial lakes and ponds
- GS1 - Dry calcareous and neutral grassland
- GS2 - Dry meadows and grassy verges
- WD1 - (Mixed) broadleaved woodland
- WN1/WN2
- WS1 - Scrub
- National Survey of Native Woodland Releves

Projection: Transverse Mercator; Datum: IRENET95

Data sources: Esri Community Maps Contributors, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

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ESB Energy for generations

Moneypoint Security of Supply

Habitat Mapping

Drawn	GIS Checked	Checked	Approved
X Wan	E Tiri	E Tiri	E Taylor
Scale at A3	Status	Revision	Security
1:10,000	INF	03	STD

229100682-MMD-GIS-DR-0004

0 400 800 Meters

Table G.1: European Sites within the 120km ZoI of the Proposed Development

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
Special Protection Area (SPA)		
River Shannon and River Fergus Estuaries SPA 004077 (NPWS 2012)	6m	• Cormorant (*Phalacrocorax carbo*) breeding + wintering • Whooper Swan (*Cygnus cygnus*) wintering • Light-bellied Brent Goose (*Branta bernicla hrota*) wintering • Shelduck (*Tadorna tadorna*) wintering • Wigeon (*Anas Penelope*) wintering • Teal (*Anas crecca*) wintering • Pintail (*Anas acuta*) wintering • Shoveler (*Anas clypeata*) wintering • Scaup (*Aythya marila*) wintering • Ringed Plover (*Charadrius hiaticula*) wintering • Golden Plover (*Pluvialis apricaria*) wintering • Grey Plover (*Pluvialis squatarola*) wintering • Lapwing (*Vanellus vanellus*) wintering • Knot (*Calidris canutus*) wintering • Dunlin (*Calidris alpina*) wintering • Black-tailed Godwit (*Limosa limosa*) wintering • Bar-tailed Godwit (*Limosa lapponica*) wintering • Curlew (*Numenius arquata*) wintering • Redshank (*Tringa tetanus*) wintering • Greenshank (*Tringa nebularia*) wintering • Black-headed Gull (*Chroicocephalus ridibundus*) wintering • Wetlands
Mid-Clare Coast SPA 004182 (NPWS 2014)	14.5km	• A017 Cormorant (*Phalacrocorax carbo*) • A045 Barnacle Goose (*Branta leucopsis*) • A137 Ringed Plover (*Charadrius hiaticula*) • A144 Sanderling (*Calidris alba*)

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• A148 Purple Sandpiper (*Calidris maritima*) • A149 Dunlin (*Calidris alpina alpina*) • A169 Turnstone (*Arenaria interpres*) • A999 Wetlands
Illaunonearaun SPA 004114 (NPWS, 2022)	15km	• Barnacle Goose (*Branta leucopsis*)
Kerry Head SPA 004189 (NPWS 2022)	24.5km	• A009 Fulmar Fulmarus glacialis • A346 Chough Pyrrhocorax pyrrhocorax
Loop Head SPA 004119 (NPWS 2022)	31km	• A188 Kittiwake *Rissa tridactyla* • A199 Guillemot *Uria aalge*
Cliffs of Moher SPA 004005 (NPWS 2022)	35km	• A009 Fulmar *Fulmarus glacialis* • A188 Kittiwake *Rissa tridactyla* • A199 Guillemot *Uria aalge* • A200 Razorbill *Alca torda* • A204 Puffin *Fratercula arctica* • A346 Chough Pyrrhocorax pyrrhocorax
Tralee Bay Complex SPA 004188 (NPWS 2014)	36.5km	• A038 Whooper Swan *Cygnus cygnus* • A046 Brent Goose *Branta bernicla hrota* • A048 Shelduck *Tadorna tadorna* • A050 Wigeon *Anas penelope* • A052 Teal *Anas crecca* • A053 Mallard *Anas platyrhynchos* • A054 Pintail *Anas acuta* • A062 Scaup *Aythya marila* • A130 Oystercatcher *Haematopus ostralegus* • A137 Ringed Plover *Charadrius hiaticula* • A140 Golden Plover *Pluvialis apricaria* • A141 Grey Plover *Pluvialis squatarola* • A142 Lapwing *Vanellus vanellus* • A144 Sanderling *Calidris alba* • A149 Dunlin *Calidris alpina alpina* • A156 Black-tailed Godwit *Limosa limosa* • A157 Bar-tailed Godwit *Limosa lapponica*

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• A160 Curlew *Numenius arquata* • A162 Redshank *Tringa totanus* • A169 Turnstone *Arenaria interpres* • A179 Black-headed Gull *Chroicocephalus ridibundus* • A182 Common Gull *Larus canus* • A999 Wetlands
Magheree Islands SPA 004125 (NPWS, 2022)	44km	• A014 Storm Petrel *Hydrobates pelagicus* • A018 Shag *Phalacrocorax aristotelis* • A045 Barnacle Goose *Branta leucopsis* • A182 Common Gull *Larus canus* • A193 Common Tern *Sterna hirundo* • A194 Arctic Tern *Sterna paradisaea* • A195 Little Tern *Sterna albifrons*
Dingle Peninsula SPA 004153 (NPWS, 2022)	60.8km	• A009 Fulmar (*Fulmarus glacialis*) • A103 Peregrine (*Falco peregrinus*) • A346 Chough (*Pyrrhocorax pyrrhocorax*)
Blasket Island SPA 004008 (NPWS, 2022)	91km	• A009 Fulmar *Fulmarus glacialis* • A013 Manx Shearwater *Puffinus puffinus* • A014 Storm Petrel *Hydrobates pelagicus* • A018 Shag *Phalacrocorax aristotelis* • A183 Lesser Black-backed Gull *Larus fuscus* • A184 Herring Gull *Larus argentatus* • A188 Kittiwake *Rissa tridactyla* • A194 Arctic Tern *Sterna paradisaea* • A200 Razorbill *Alca torda* • A204 Puffin *Fratercula arctica* • A346 Chough *Pyrrhocorax pyrrhocorax*
Skelligs SPA 004007 (NPWS 2022)	117km	• A009 Fulmar *Fulmarus glacialis* • A013 Manx Shearwater *Puffinus puffinus* • A014 Storm Petrel *Hydrobates pelagicus* • A016 Gannet *Morus bassanus* • A188 Kittiwake *Rissa tridactyla* • A199 Guillemot *Uria aalge*

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• A204 Puffin *Fratercula arctica*
004003 Puffin Island SPA	107km	• Fulmar (*Fulmarus glacialis*) [A009]
004029 Castlemaine Harbour SPA	55km	• Red-throated Diver (*Gavia stellata*) [A001] • Cormorant (*Phalacrocorax carbo*) [A017] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wigeon (*Anas penelope*) [A050] • Mallard (*Anas platyrhynchos*) [A053] • Pintail (*Anas acuta*) [A054] • Scaup (*Aythya marila*) [A062] • Common Scoter (*Melanitta nigra*) [A065] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Sanderling (*Calidris alba*) [A144] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Redshank (*Tringa totanus*) [A162] • Greenshank (*Tringa nebularia*) [A164] • Turnstone (*Arenaria interpres*) [A169] • Chough (*Pyrrhocorax pyrrhocorax*) [A346] • Wetland and Waterbirds [A999]
004031 Inner Galway Bay SPA	59km	• Black-throated Diver (*Gavia arctica*) [A002] • Great Northern Diver (*Gavia immer*) [A003] • Cormorant (*Phalacrocorax carbo*) [A017] • Grey Heron (*Ardea cinerea*) [A028] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Red-breasted Merganser (*Mergus serrator*) [A069] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Sandwich Tern (*Sterna sandvicensis*) [A191] • Common Tern (*Sterna hirundo*) [A193] • Wetland and Waterbirds [A999]
004144 High Island, Inishshark and Davillaun SPA	116km	• Fulmar (*Fulmarus glacialis*) [A009] • Barnacle Goose (*Branta leucopsis*) [A045] • Arctic Tern (*Sterna paradisaea*) [A194]
004152 Inishmore SPA	54km	• Kittiwake (*Rissa tridactyla*) [A188] • Arctic Tern (*Sterna paradisaea*) [A194] • Little Tern (*Sterna albifrons*) [A195] • Guillemot (*Uria aalge*) [A199]
004154 Iveragh Peninsula SPA	72km	• Fulmar (*Fulmarus glacialis*) [A009] • Peregrine (*Falco peregrinus*) [A103] • Kittiwake (*Rissa tridactyla*) [A188] • Guillemot (*Uria aalge*) [A199] • Chough (*Pyrrhocorax pyrrhocorax*) [A346]
004155 Beara Peninsula SPA	108km	• Fulmar (*Fulmarus glacialis*) [A009] • Chough (*Pyrrhocorax pyrrhocorax*) [A346]
004159 Slyne Head to Ardmore Point Islands SPA	76km	• Barnacle Goose (*Branta leucopsis*) [A045] • Sandwich Tern (*Sterna sandvicensis*) [A191] • Arctic Tern (*Sterna paradisaea*) [A194] • Little Tern (*Sterna albifrons*) [A195]
004170 Cruagh Island SPA	113km	• Manx Shearwater (*Puffinus puffinus*) [A013] • Barnacle Goose (*Branta leucopsis*) [A045]
004175 Deenish Island and Scariff Island SPA	110km	• Fulmar (*Fulmarus glacialis*) [A009] • Manx Shearwater (*Puffinus puffinus*) [A013] • Storm Petrel (*Hydrobates pelagicus*) [A014] • Lesser Black-backed Gull (*Larus fuscus*) [A183] • Arctic Tern (*Sterna paradisaea*) [A194]
004181 Connemara Bog Complex SPA	72km	• Cormorant (*Phalacrocorax carbo*) [A017] • Merlin (*Falco columbarius*) [A098]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Golden Plover (*Pluvialis apricaria*) [A140] • Common Gull (*Larus canus*) [A182]
004182 Mid-Clare Coast SPA	15km	• Cormorant (*Phalacrocorax carbo*) [A017] • Barnacle Goose (*Branta leucopsis*) [A045] • Ringed Plover (*Charadrius hiaticula*) [A137] • Sanderling (*Calidris alba*) [A144] • Purple Sandpiper (*Calidris maritima*) [A148] • Dunlin (*Calidris alpina*) [A149] • Turnstone (*Arenaria interpres*) [A169] • Wetland and Waterbirds [A999]
004231 Inishbofin, Omey Island and Turbot Island SPA	109km	• Corncrake (*Crex crex*) [A122]
Special Areas of Conservation (SAC)		
Lower River Shannon SAC 002165 (NPWS 2012)	6m	• Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150]* • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]* • *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] • *Petromyzon marinus* (Sea Lamprey) [1095]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• *Lampetra planeri* (Brook Lamprey) [1096] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Salmo salar* (Salmon) [1106] • *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] • *Lutra lutra* (Otter) [1355]
000020 Black Head Poulsallagh Complex SAC	44km	• Reefs [1170] • Perennial vegetation of stony banks [1220] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Alpine and Boreal heaths [4060] • *Juniperus communis* formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] • Petrifying springs with tufa formation (*Cratoneurion*) [7220] • Limestone pavements [8240] • Submerged or partially submerged sea caves [8330] • *Petalophyllum ralfsii* (Petalwort) [1395]
000036 Inagh River Estuary SAC	36km	• Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
000090 Glengarriff Harbour and Woodland SAC	93km	• Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] • *Geomalacus maculosus* (Kerry Slug) [1024] • *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] • *Lutra lutra* (Otter) [1355] • *Phoca vitulina* (Harbour Seal) [1365]
000093 Caha Mountains SAC	91km	• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Natural dystrophic lakes and ponds [3160] • Northern Atlantic wet heaths with *Erica tetralix* [4010]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• European dry heaths [4030] • Alpine and Boreal heaths [4060] • Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] • Blanket bogs (* if active bog) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • *Geomalacus maculosus* (Kerry Slug) [1024] • *Trichomanes speciosum* (Killarney Fern) [1421]
000212 Inishmaan Island SAC	51km	• Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Machairs (* in Ireland) [21A0] • European dry heaths [4030] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] • Limestone pavements [8240]
000213 Inishmore Island SAC	52km	• Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170] • Humid dune slacks [2190] • Machairs (* in Ireland) [21A0] • European dry heaths [4030] • Alpine and Boreal heaths [4060]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] • Limestone pavements [8240] • Submerged or partially submerged sea caves [8330] • *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
000268 Galway Bay Complex SAC	59km	• Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Turloughs [3180] • *Juniperus communis* formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] • Alkaline fens [7230] • Limestone pavements [8240] • *Lutra lutra* (Otter) [1355] • *Phoca vitulina* (Harbour Seal) [1365]
000278 Inishbofin and Inishshark SAC	120km	• Coastal lagoons [1150] • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • *Halichoerus grypus* (Grey Seal) [1364]
000324 Rosroe Bog SAC	92km	• Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the *Rhynchosporion* [7150]
000328 Slyne Head Islands SAC	101km	• Reefs [1170] • *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] • *Halichoerus grypus* (Grey Seal) [1364]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
000330 Tully Mountain SAC	113km	• European dry heaths [4030] • Alpine and Boreal heaths [4060]
000332 Akeragh, Banna and Barrow Harbour SAC	36km	• Annual vegetation of drift lines [1210] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] • European dry heaths [4030]
000335 Ballinskelligs Bay and Inny Estuary SAC	96km	• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • *Petalophyllum ralfsii* (Petalwort) [1395]
000343 Castlemaine Harbour SAC	53km	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170] • Humid dune slacks [2190] • Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] • *Petromyzon marinus* (Sea Lamprey) [1095] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Salmo salar* (Salmon) [1106] • *Lutra lutra* (Otter) [1355] • *Petalophyllum ralfsii* (Petalwort) [1395]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
000365 Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	53km	• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Juniperus communis formations on heaths or calcareous grasslands [5130] • *Calaminarian* grasslands of the *Violetalia calaminariae* [6130] • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Blanket bogs (* if active bog) [7130] • Depressions on peat substrates of the *Rhynchosporion* [7150] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] • *Taxus baccata* woods of the British Isles [91J0] • *Geomalacus maculosus* (Kerry Slug) [1024] • *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] • *Euphydryas aurinia* (Marsh Fritillary) [1065] • *Petromyzon marinus* (Sea Lamprey) [1095] • *Lampetra planeri* (Brook Lamprey) [1096] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Salmo salar* (Salmon) [1106] • *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] • *Lutra lutra* (Otter) [1355] • *Trichomanes speciosum* (Killarney Fern) [1421] • *Najas flexilis* (Slender Naiad) [1833] • *Alosa fallax killarnensis* (Killarney Shad) [5046]
000370 Lough Yganavan and Lough Nambrackdarrig SAC	64km	• Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • *Geomalacus maculosus* (Kerry Slug) [1024]
000375 Mount Brandon SAC	57km	• Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] • Blanket bogs (* if active bog) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • *Margaritifera* margaritifera (Freshwater Pearl Mussel) [1029] • *Trichomanes speciosum* (Killarney Fern) [1421]
001021 Carrowmore Point to Spanish Point and Islands SAC	17km	• Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Petrifying springs with tufa formation (*Cratoneurion*) [7220]
001228 Aughrusbeg Machair and Lake SAC	114km	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Northern Atlantic wet heaths with *Erica tetralix* [4010]
001251 Cregduff Lough SAC	91km	• Transition mires and quaking bogs [7140] • *Najas flexilis* (Slender Naiad) [1833]
001257 Dog's Bay SAC	90km	• Annual vegetation of drift lines [1210] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • European dry heaths [4030]
001275 Inisheer Island SAC	48km	• Coastal lagoons [1150] • Reefs [1170] • European dry heaths [4030] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Limestone pavements [8240]
001309 Omey Island Machair SAC	112km	• Machairs (* in Ireland) [21A0] • Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp*. [3140] • *Petalophyllum ralfsii* (Petalwort) [1395]
001311 Rusheenduff Lough SAC	116km	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • *Najas flexilis* (Slender Naiad) [1833]
001879 Glanmore Bog SAC	102km	• Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] • Blanket bogs (* if active bog) [7130] • *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] • *Trichomanes speciosum* (Killarney Fern) [1421]
002034 Connemara Bog Complex SAC	69km	• Coastal lagoons [1150] • Reefs [1170] • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Natural dystrophic lakes and ponds [3160] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Depressions on peat substrates of the *Rhynchosporion* [7150] • Alkaline fens [7230] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • *Euphydryas aurinia* (Marsh Fritillary) [1065] • *Salmo salar* (Salmon) [1106]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• *Lutra lutra* (Otter) [1355] • *Najas flexilis* (Slender Naiad) [1833]
002070 Tralee Bay and Magharees Peninsula, West to Cloghane SAC	43km	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170] • Humid dune slacks [2190] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-*Padion*, *Alnion incanae*, *Salicion albae*) [91E0] • *Lutra lutra* (Otter) [1355] • *Petalophyllum ralfsii* (Petalwort) [1395]
002074 Slyne Head Peninsula SAC	98km	• Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Machairs (* in Ireland) [21A0] • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
		• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp*. [3140] • European dry heaths [4030] • *Juniperus communis* formations on heaths or calcareous grasslands [5130] • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] • Alkaline fens [7230] • *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] • *Petalophyllum ralfsii* (Petalwort) [1395] • *Najas flexilis* (Slender Naiad) [1833]
002111 Kilkieran Bay and Islands SAC	66km	• Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Machairs (* in Ireland) [21A0] • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] • *Lutra lutra* (Otter) [1355] • *Phoca vitulina* (Harbour Seal) [1365] • *Najas flexilis* (Slender Naiad) [1833]
002118 Barnahallia Lough SAC	111km	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • *Najas flexilis* (Slender Naiad) [1833]
002119 Lough Nageeron SAC	83km	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • *Najas flexilis* (Slender Naiad) [1833]
002129 Murvey Machair SAC	93km	• Machairs (* in Ireland) [21A0] • *Petalophyllum* ralfsii (Petalwort) [1395]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
002130 Tully Lough SAC	114km	• Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] • *Najas flexilis* (Slender Naiad) [1833]
002158 Kenmare River SAC	97km	• Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • European dry heaths [4030] • *Juniperus communis* formations on heaths or calcareous grasslands [5130] • *Calaminarian* grasslands of the *Violetalia calaminariae* [6130] • Submerged or partially submerged sea caves [8330] • *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] • *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] • *Lutra lutra* (Otter) [1355] • *Phoca vitulina* (Harbour Seal) [1365]
002172 Blasket Islands SAC	87km	• Reefs [1170] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • European dry heaths [4030] • Submerged or partially submerged sea caves [8330] • *Phocoena phocoena* (Harbour Porpoise) [1351] • *Halichoerus grypus* (Grey Seal) [1364]
002185 Slieve Mish Mountains SAC	44km	• Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Blanket bogs (* if active bog) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • *Trichomanes speciosum* (Killarney Fern) [1421]

Site Name and Code	Distance from proposed development (at closest point)	Qualifying Interests / Special Conservation Interests (SCI) of the European Site (* denotes priority habitat)
002250 Carrowmore Dunes SAC	15km	• Reefs [1170] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014]
002261 Magharee Islands SAC	42km	• Reefs [1170]
002262 Valencia Harbour/Portmagee Channel SAC	92km	• Mudflats and sandflats not covered by seawater at low tide [1140] • Large shallow inlets and bays [1160] • Reefs [1170]
002263 Kerry Head Shoal SAC	38km	• Reefs [1170]
002264 Kilkee Reefs SAC	16km	• Large shallow inlets and bays [1160] • Reefs [1170] • Submerged or partially submerged sea caves [8330]
002265 Kingstown Bay SAC	109km	• Large shallow inlets and bays [1160]
002998 West Connacht Coast SAC	104km	• *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]

Table G.2: Planning History in Respect to Relevant Developments

Project	Planning Reference	Location	Date Submitted or Granted	Development Description	Potential for in-combination effects
Prospect to Tarbert Cable Project	23350 (Kerry County Council) / 23195 (Clare County Council)	Tarbert Substation (Co. Kerry) / Kilkerrin Point LCIM to Prospect Substation (Co. Clare)	Granted by Kerry CC 17/0124: Clare CC decision made 13/12/23 (awaiting final grant)	The proposed development will comprise works to Tarbert substation compound and associated 220 kV switchgear bay/ An extension of the existing Kilkerin Point 220 kV Line Cable Interface Mast (LCIM) compound/A new fibre optic cable measuring an approximate length of 8.9km routed between Kilkerin Point LCIM compound (townland of Lakyle North) and Prospect 220 kV substation (townland of Ballygeery West)	No – following the implementation of mitigation measures for both projects, it is not likely that significant in combination effects would occur. Likewise, following implementation of mitigation, operational effects are not likely to be significant.
Tarbert temporary generation plant (not constructed)	EE08.315838	Tarbert Power Station, Tarbert, Island, Co. Clare	29/03/2023 (Recommendations signed by the Minister)	The Designated Development consists of the installation of three OCGT units which will collectively have the capacity to generate 150 Mwe of temporary emergency electricity, site development and associated ancillary works required for the operation of the plant. The plant will operate as an emergency plant, with a maximum running time of 500 hours per annum, spending the majority of time on standby, and will be run to meet emergency security of supply needs while complementing renewable power generation sources.	No – this development is across the estuary and is not likely to have significant effects on the estuary. In terms of operational effects, the air quality model produced for the proposed development included for the operation of the temporary Tabert generation plant and effects from NOx and SOx were deemed neglibile. Therefore the construction and operation of the temporary generating plant is not likely to result in significant in combination effects.
Kilpaddoge high inertia synchronous compensator (not constructed)	21549	Kilpaddoge, Tarbert, Co. Kerry	Granted – 20/08/2021	A high inertia synchronous compensator (HISC) compound containing 1 no. HISC unit enclosed within a steel-clad framed style structure (12.1m max height). Located on lands where a grid stabilisation facility was previously permitted under planning register no 19/115.	No – this development is across the estuary and would not have significant construction or operational effects following the implementation of mitigation and therefore there are no likely significant in combination effects.
Cross Shannon Cable Project (construction phase – 2022/2023)	ABP-307798-20	Between Kilpaddoge Electrical Substation, Co. Kerry and Moneypoint 400 kV Electrical Substation, Co. Clare	Approved – 04/06/2021	Proposed 400 kV electricity transmission cables, extension to the existing Kilpaddoge Electrical Substation and associated works, between the existing Moneypoint 400 kV Electrical Substation in the townland of Carrowdoita South County Clare and existing Kilpaddoge 220/110kV Electrical Substation in the townland of Kilpaddoge County Kerry.	No - The construction of the cable is underway and is not likely to coincide with the construction of the proposed development. Once operational, the cable is unlikely to have effects that would act in combination with the proposed development, resulting in significant effects.

Project	Planning Reference	Location	Date Submitted or Granted	Development Description	Potential for in-combination effects
Kilpaddoge BESS (not constructed)	18/878 and ABP appeal Ref. PL08.305739	Kilpaddoge, Tarbert, Co. Kerry	Grant permission with revised conditions – 10/02/2020	Ten-year permission for the construction of a Battery Energy Storage System (BESS) Facility, to include up to 26 no. self-contained battery container units and associated works.	No – this development is across the estuary and would not have construction or operational effects within the estuary and therefore there are no likely significant in combination effects.
Kilpaddoge Peaker Plant (operational)	13138 / 20850	Kilpaddoge, Tarbert, Co. Kerry	Granted 21/10/2013 and 16/12/2020 respectively	Construct an electricity peaker power generating plant / change the energy source for the charging of the battery energy storage system (BESS) containers from diesel to charging off the national grid	No – located across the estuary from Moneypoint. Due to the confined nature of the site and separation distance from the proposed development, these projects are not likely to act in combination to produce significant effects.
Tarbet BESS (not constructed)	18392	Tabert Power Station, Co. Kerry	Granted 18/02/2019	Battery storage facility within a total site area of up to 2.278ha, to include 50 no. self-contained battery container units.	No – this development is across the estuary and would not have construction or operational effects within the estuary and therefore there are no likely significant in combination effects.
ESB's Green Atlantic @ Moneypoint – Offshore Wind Farm	ABP – PC03.312734	Moneypoint Generating Station, Co. Clare	Pre-application submitted 14/02/2022	Floating offshore wind farm of 1,400MW will be developed off the coast of counties Clare and Kerry in two phases by ESB.	No – ESB noted that the Green Atlantic @ Moneypoint project would succeed the proposed development and details of the project are not known at the time of writing this EIAR. There are no project interdependencies between the subject proposed development and Green Atlantic @ Moneypoint. Green Atlantic @ Moneypoint will be subject to a separate planning consent application. It was noted that the estimate timelines will not overlap with the proposed development.
Moneypoint Hub SI Works	Maritime Area Regulatory Authority (MARA) – LIC230008	Lower River Shannon SAC	Application submitted 23 November 2023 – Decision pending	The SI works include geophysical, geotechnical and environmental investigations in both the terrestrial (land-based) and the marine environments	These SI works to be carried out in the estuary are scheduled for 2024 but will not coincide with the start of operation of the proposed development. The proposed works are temporary and limited in scale. Following the implementation of mitigation measures for the SI and those specified for the proposed development, significant in-combination effects are not likely to occur.

H.1 Drainage Report

Moneypoint Security of Supply Project

ESB Generation and Trading

Drainage and Services Report

Document No.: QP-000017-65-R460-001-000

Date: December 2023

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Prepared by:	Harry Griffin	Date: December 2023
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Title:	Flextech, Hydro, Geospatial & Water Manager	

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Change History of Report

Date	New Revision	Author	Summary of Change

Executive Summary

This report covers all aspects of surface water for the the proposed Security of Supply Project within Moneypoint Generating Station. The ITM co-ordinates for the site are 719700 (Easting) and 733660 (Northing).

The project will in brief involve conversion of the station's power generation from coal to heavy fuel oil (HFO) with additional storage capacity to ensure the station can maintain the running hours required to maintain security of supply. The addition of two new HFO tanks necessitates a refurbishment of the existing earthen HFO bunds. This upgrade will include the addition of an impermeable liner on the floors and provision of walls within the bunds. The new floor shall be capped with a 200 mm thick reinforced concrete slab.

A network of gullies, aco channels and surface water pipelines will be required to convey stormwater to the south of each bund. As with the existing surface water drainage system, discharge of the proposed surface water outside of the bunded area will be controlled by a manually operated valve. The valve will as currently be generally closed and only opened following visual inspection to drain each bund. The pathway taken by surface water from here will follow that currently taken by water from the bund with no additional modifications necessary. The presence and careful management of settling chambers and a shut-off valve upstream of the existing Class 1 full retention oil separator ensure that it will continue to have adequate capacity to treat the additional impermeable area being drained to it.

The proposed auxiliary boiler house, batching plant and flue gas desulfurisation (FGD) ash injection containment building will require roof drainage which will connect into nearby existing surface water drainage but will not necessitate any prior treatment nor flow control measures given the capacity of the downstream drainage network.

There will be boiler blowdown from the proposed auxiliary boiler house which will need to be discharged to the station's drainage network. Boiler blowdown is water intentionally wasted from a boiler to avoid concentration of impurities during continuing evaporation of steam. The discharge of this process water will be controlled such that the current flow limits and emission limit values on the SW2 network are not exceeded.

Water supply to the auxiliary boiler house will be provided by the existing supply to the adjacent main power station complex.

There are no foul water proposals required as part of this development.

Contents

1 Introduction

1.1 Background

In the late 1970's, ESB developed the coal-fired power-station at the Moneypoint site, a significant brownfield landbank long-associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure. Moneypoint Generating Station comprises a large complex of structures. Electricity generation occurs at 3 no. c. 300MW rated coal-fired units, which entered service between 1985 and 1987. A service road was developed beneath the N67, linking the station with the northern 50 ha parcel of land, where the station's ash storage facility was developed. While primarily a coal-fired station, Heavy Fuel Oil (HFO) is used as a start-up fuel and in limited circumstances. Coal and oil are delivered to Moneypoint by ship via the dedicated jetty located on the southern boundary of the site. HFO, as distillate is delivered to the site by road. The HFO is contained in two storage tanks, with capacity for 50,000 tonnes for back-up and starter fuel.

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with Company's 'Towards Zero' Strategy and the Government's Project Ireland 2040 plan. Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic @ Moneypoint' which will see the development of the site as a strategic resource for the offshore wind industry and as a location for key grid services. In the context of generation forecasts and public policy in relation to security of supply, EirGrid has engaged with ESB to ensure Moneypoint will be available for on-demand generation from the end of 2025. Having regard to the co-firing capability of the existing station - and having evaluated a range of fuel options, ESB has determined that the 2025-2029 phase of generating activity should be fuelled by HFO. It is anticipated that the Station will transition through a period of co-firing from a point in late 2024 to the mid 2025 during which coal stocks will be exhausted. From mid 2025 until late 2029, operating under the terms of a new service agreement with EirGrid, under this proposal the station will rely entirely on HFO and switch to a regime of limited generation. At the end of 2029, it is anticipated that generation will cease at Moneypoint and – subject to the relevant consents, the station will be decommissioned.

1.2 Project Description

This conversion from coal to HFO for generation requires minimal physical works and alterations to the existing station and can occur without delay or interruption to generating activity. ESB proposes to also remove / dismantle items of coal handling equipment. The proposed Security of Supply Project development consists of:

- transition and conversion of the existing coal fired power station's primary fuel to HFO with limited run hours (described in terms of generating hours, per unit, per year) from mid 2025 until late 2029;
- construction of 2 No. of HFO tanks, each with a capacity of 25,000 tonnes, bringing the total volume of HFO storage on site to 100,000 tonnes. The tanks will be built

adjacent to the existing oil tanks – see Annex A, and located within the existing earthen bunds within which new bund structures will be constructed;

- construction of a new boiler house to house 2 No. auxiliary boilers to supply steam for start-up and HFO heating, including:
    - 1 no. blow down vessel
    - 1 no. exhaust stack
    - 1 no. annex structure;
- Construction of an extension to each of the existing 3no. Flue Gas Desulphurisation Absorbers (FGD) - units 1, 2 and 3, to provide additional reclaimed ash unloading facilities, comprising:
    - 1no. conveyor enclosure
    - 1no. hopper enclosure;
- Construction of a reclaimed ash unloading facility at the existing landfill capping batching plant, comprising of a hopper enclosure adjoining the existing batching plant and conveyor enclosure;
- changes to previously permitted Flue Gas Desulphurisation (FGD) and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD landfill, on the east of the site, reaches capacity;
- Dismantling and removal of 2no. mobile stacker reclaimers and 1no. coal conveyor bridge;
- Changes to existing permitted Flue Gas Desulphurisation (FGD) and ash storage area (ASA) arrangements (Pl. Ref. 14/373) to utilise spare capacity in the existing ASA [capping layer thickness increase from 0.6m (minimum) up to a maximum of 1.6 meters] with an overall proposed reduction in height of the currently permitted ASA by approx. 1.85m; and,
- All associated ancillary site development works to facilitate the proposed development, including a new lighting arrangement, surface water drainage, internal roads and temporary construction compounds and laydown areas..

Because the existing generating units have been designed to be fired either partly or fully using HFO no change to the generating units is proposed. HFO will continue to be transported to the site via ship to the existing berth, and as such there are no proposed changes to these existing port facilities and no works are to take place within the foreshore area.

No construction activities are proposed for any greenfield areas of the site including those areas under forestry. All works will be located fully within the existing ESB landholding at Moneypoint.

2 Surface Water

2.1 Existing Surface Water Drainage

The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04]. The IE licence contains limits and controls on emissions to air, water, dust, and noise. The licence also includes requirements in relation to monitoring requirements and site operations – including requirements for an Environmental Management System (EMS), energy efficiency, incident response and waste management.

Bund 1 is rectangular on plan and encloses an area measuring approximately 70 m x 150 m. Bund 2 is also rectangular on plan but with a truncated north-west corner. The bunds are enclosed by perimeter embankments with a crest level of 14.7 m O.D (Figure 2.1). The construction make-up of the two bunds (known as Bund 1 (East) and Bund 2 (West)) is shown in Figure 2.2 and Figure 2.3.

An existing surface water drainage network serves all areas to be developed in the Station. The existing HFO bunds have been sized to contain 110% of the maximum volume of oil that can be contained in their respective storage tanks. The basis for much industry practice in the past – as set out in CIRIA Report C736: '*Containment systems for the prevention of pollution*' - has been the 110% rule where a single bulk liquid tank is bunded, as is currently the case at Moneypoint. The existing 110% recommendation for single tanks and hydraulically linked multi-tank installations implies a margin of 10%. The recommendation for other multi-tank installations, the 25% rule, is based on the assumption that it is unlikely that more than one tank will fail at any one time. The 10% margin has been interpreted by industry and regulators to cover a range of factors including an allowance for rain that might collect in the bund and reduce its net capacity, or for rain that might fall in coincident with, or immediately following, the failure of the primary containment.

The HFO bunds currently are only partially drained with an impermeable 100 mm thick reinforced concrete floor extending northward from the southern end of the bunds to the storage tanks with drainage channels collecting rainwater falling on the tanks themselves around their bases.

Figure 2.1 Aerial view of HFO Bunds with extent of impermeable areas in yellow outline

Figure 2.2 Existing floors to the south of the storage tanks in each HFO bund

Away from the above-ground pipework, pumphouse and tank, both bunds are permeable. The floor of the permeable areas of the bunds are lined with 100 mm thickness of 40 mm washed gravel placed directly on the underlying subgrade. Rainwater falling on these areas is not connected to the station's drainage network and instead drains into the ground naturally.

A series of Percolation tests were carried out by ESB International (now ESB Engineering and Major Projects) in the floor of the bunds during March 2004 and July 2018. The tests aimed to assess the permeability of the natural ground below the washed gravel. The test pits revealed that some Made Ground (sandy gravel) was present below the washed gravel

layer at some parts of the bund. In order to isolate the permeability of the natural ground from the more permeable washed gravel and sandy gravel Made Ground, a 300 mm x 300 mm (plan) x 400 mm high steel box was made up for insertion in a pocket excavated through the gravel/Made Ground. The box was filled with water, the sides of the box serving to prevent lateral flow through the gravel / Made Ground. Fine sand was used to seal the base edges of the box from the surrounding ground. The rate of water level drop in the box was monitored over time. The subgrade was unsaturated and the calculation of permeability by conventional means is therefore difficult. The permeability of the subgrade was therefore calculated using the conservative assumption that the average hydraulic gradient during the test was 1.0 and that flow escaped only through the floor of the box. As anticipated, the permeabilities revealed during the tests are variable reflecting the variations in bedrock across the bund as identified in the original site investigation. On the basis of these results the underlying subgrade was considered to be of high permeability.

Figure 2.3 Existing hardstanding floors of earthen HFO Bunds

Discharge of surface water from the bunds is managed by a manually-controlled valve situated 0.75 m below the floor and 3.5 m north of both pumphouse buildings. An extended spindle brings the handwheel for operation to a comfortable height for operation. The valve is generally closed and only opened following visual inspection to drain each bund. The water then discharges by gravity to the south into a settling chamber which also contains surface water drained from the diesel compound immediately to the west of the HFO bunds.

Valves at either end of a glass-reinforced plastic Class 1 full retention oil separator control the passage of water through it to ensure it is fully capable of capturing hydrocarbons. The interceptor is regularly serviced by the station's waste management provider Enva. From here the treated surface water is discharged by gravity to the final outfall point on the Shannon estuary. The final outfall point also acts as a sampling point as required under the station's IE Licence. The existing drainage network is subject to 3-yearly testing and repair works to maintain their performance as required by the IE Licence.

There are no drainage ditches or watercourses in the vicinity of the bund area.

2.2 Surface Water Drainage Proposals

The addition of two new HFO tanks necessitates a refurbishment of the existing earthen HFO bunds that have been in place since their construction in 1982/83 under the general civil works contract for the station development. This upgrade will include the addition of an impermeable liner and provision of walls within the bunds. The new floor shall be capped

with a 200 mm thick reinforced concrete slab. The floor shall be suitable for the retention, without leakage, of oil products to a level matching the top of the new proposed bund walls.

A network of gullies, aco channels, land drains and surface water pipelines will be required to convey stormwater to the south of each bund. As with the existing surface water drainage system, discharge of the proposed surface water outside of the bunded area will be controlled by a manually operated valve. The valve will as currently be generally closed and only opened following visual inspection to drain each bund. The pathway taken by surface water from here will follow that currently taken by water from the bund with no additional modifications necessary. The presence and careful management of settling chambers and a shut-off valve upstream of the existing Class 1 full retention oil separator ensure that it will continue to have adequate capacity to treat the additional impermeable area being drained to it.

The proposed auxiliary boiler house will require roof drainage, which will connect into the nearby existing surface water drainage network but will not necessitate any prior treatment nor flow control measures given the capacity of the downstream drainage network.

Similarly the roofs of the batching plant and FGD ash injection containment building will also be drained to the existing drainage network without the need for water treatment measures nor alterations to the existing drainage network.

The site drainage proposals are illustrated in Annex A.

2.3 Water Volumes

The proposed HFO bunds will effectively increase the contributing impermeable area drained to the downstream drainage network. For Bund 1 (east), the existing impermeable area drained, including the HFO storage tank, is 3,750 m^2. The refurbishments to the bund will effectively increase the area drained to 10,600 m^2.

For Bund 2 (west), the existing impermeable area drained, including the storage tank, is 3,700m^2. The refurbishments to the bund will effectively increase the area drained to 10,170 m^2.

In line with CIRIA Report C736: '*Containment systems for the prevention of pollution*', the refurbished bunds have been sized such that in the event of a major spill event, they will be able to contain the full volume of one of the tanks (25,000 tonnes or 27,773 m^3) plus recommended allowances for firefighting and cooling water, firefighting agents, dynamic effects and rainfall. Specifically in relation to rainfall, it is recommended that an uncovered bund be able to contain the 10% Annual Exceedance Probability (i.e. 1 in 10-year) event of duration equal to 24-hours plus duration of the incident plus eight days (or other period appropriate to the particular site circumstances).

With regard to managing extreme rainfall events, the valves controlling discharge from the bunds will not be open except following regular inspections. As such, discharges will be controlled and will not be supplementing peak stormwater flows in the rest of the drainage network. The existing interceptor between the bunds and the final outfall to Shannon Harbour will continue to be regularly serviced to ensure that it is capable of managing the controlled outflows from the modified bunds.

The auxiliary boiler house roof is to occupy an open area immediately to the west of the main power station complex that is not currently connected to the surface water drainage network. The building will occupy an area of 432 m^2 (24 m x 18 m). Roof drainage is to be connected to the existing drainage network immediately to the north which ultimately discharges to the SW2 outfall into Shannon Harbour (see Annex A). This will effectively be a small addition to the overall area drained on this network.

2.4 Water Quality

Surface water discharge quality was a major consideration in the formulation of the proposals for the development. The drainage design has been formulated to limit the impact of the proposed development using the Best Management Practices of SuDS.

2.4.1 Construction Stage

As part of the overall construction methodology, sediment and water pollution control risks arising from construction-related surface water discharges will be considered. All works carried out as part of the development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor shall cooperate fully with Clare CC and ESB in this regard.

Sediment control in the construction stage is important to ensure that only high quality, treated runoff leaves the site. Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments will be provided for on-site if required during the construction stage. Erosion control measures include:

- Minimising the area of exposed ground and ensuring excavation will not proceed faster than the rate of construction.
- Monitoring of the weather forecast prior to planning excavation works.
- Providing impermeable mats (plastic sheeting) as covers to mounded excavated material and open excavations during periods of heavy rainfall.

Other drainage runoff controls such as settlement tanks, silt fences and silt traps will be temporarily provided adjacent to excavations and installed before starting site clearance and earthworks if deemed necessary by the supervising Engineer.

All construction support related activities including office and welfare facilities will be contained within the Contractor's compound and laydown areas. Typical temporary site services such as power, sewage and potable water shall be readily available to the Contractor's compound and laydown area.

2.4.2 Operational Stage

During the operational phase of the proposed development, runoff from the proposed HFO bunds will be treated to remove sediments and pollutants prior to discharge from site as it does currently.

As stated previously, a glass-reinforced plastic Class 1 full retention oil separator is regularly serviced by a the station's waste management provider Enva. The interceptor is 17 m^3 internal volume of closed cylindrical shape, 2.4 m diameter and 3.6 m in length. It has upstream and downstream sluice valves on 225 mm diameter pipework. It operates as

a Class 1 coalescing filter interceptor with automatic closing operated via 2 no. floats contained within 300 mm diameter filter housing. The full flow passing through the unit passes through 2 no. double-sleeved foam filter socks approx. 600 mm length x 300 mm internal diameter. These filter socks prevent sludge and solids from entering the outlet chamber which sits on the bottom of the interceptor.

From here the treated surface water is discharged by gravity to the final outfall point on the Shannon estuary. The final outfall point also acts as a sampling point as required under the station's IE Licence. The existing drainage network is subject to 3-yearly testing and repair works to maintain their performance as required by the IE Licence.

3 Process Water

3.1 Existing Process Water

The Moneypoint site is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0605-04] and has a number of process water discharge points subject to a monitoring regime. The SW2 drainage network currently discharges surface water from station road and roof drainage as well as boiler blowdown and ash tank overflow.

3.2 Proposed Process Water

The only process water effluent released from the proposed development will be via the boiler blowdown vessel at the proposed auxiliary boiler house. Boiler blowdown is water intentionally wasted from a boiler to avoid concentration of impurities during continuing evaporation of steam. This effluent discharge will be controlled such that the overall discharge to the Shannon Estuary at SW2 will not exceed the flow limits of 25 m^3/hour or 400 m^3/day. In addition to this, the current emission limit values associated with discharge at SW2 will continue to be complied with (i.e. for pH, mineral oil, suspended solids and Ammonia (as N)).

4 Water Supply

4.1 Existing Water Supply

There is an extensive water supply network serving the main power station.

4.2 Proposed Water Supply

Water supply will be required for the proposed auxiliary boiler house. This will be provided via the existing supply to the adjacent main power station complex.

5 Foul Water

5.1 Existing Foul Water

There is an extensive foul wastewater network serving the main power station.

5.2 Proposed Foul Water

There are no foul water proposals as part of the proposed development.

Annex A Drainage Layout Drawings

- QP-000017-65-D451-009-001 (latest revision) Proposed Drainage Layout Sheet 1 of 3
- QP-000017-65-D451-009-002 (latest revision) Proposed Drainage Layout Sheet 2 of 3
- QP-000017-65-D451-009-003 (latest revision) Proposed Drainage Layout Sheet 3 of 3

N

MH 111A
CL: 5.86
IL: 2.19

MH 111
CL: 6.20
IL: 2.10

MH 110
CL: 6.30
IL: 2.22

REFUSE COMPACTOR

WASTE OIL SUMP (DISUSED)

OFFICE

OFFICE

VEHICLE WASH

E.S.B. ELECTRICIANS STORE

SITE CANTEEN BLOCK

STORES

OIL INTERCEPTOR No. 2

SURFACE WATER DISCHARGE POINT

PROPOSED CAPPING AND BATCHING PLANT MODIFICATION

INDUSTRIAL WATER TANK

FGD PRODUCT SILO 1

FGD PRODUCT SILO 2

Chy

CHIMNEY NO.2

BURNT LIME SILO 2

I.D. FA HOUS

ELECTRO

PRECIPITA

NO.2

SCR UNIT 3

HO 13

PROPOSED AUX BOILER

TRANSFORMER UNIT 3

UNIT 3 BOILER

CASCADE TRAFOS 3C 3B 3A

CASCADE BUILDING

UT3

UTC3

T 400 3

DOSAGE TANKS

SURFACE WATER AMMONIA TANK

BUSMAIN PIT

PUMP

UNLO

KEY PLAN:
SCALE: N.T.S.

NOTES:

1. DRAWING ONLY DISPLAYS SURFACE WATER DRAINAGE NETWORK SW2 FOR CLARITY AS THIS NETWORK SHALL BE CONNECTED INTO FROM MODIFIED HFO BUND AND PROPOSED AUXILIARY BOILER HOUSE

LEGEND

- EXISTING SURFACE WATER DRAINS CONNECTING FROM PROPOSED DEVELOPMENT AREAS TO OUTFALL — EXS
- SURFACE WATER MANHOLE — SW 1
- EX. GULLY — GY
- OIL INTERCEPTOR
- PROPOSED SURFACE WATER
- CONCRETE ENCASED SURFACE WATER
- PROPOSED SURFACE WATER MANHOLE — SW 1
- PROPOSED GULLY — GY
- PROPOSED ACO
- PROPOSED AJ — AJ
- PROPOSED RWP — RWP
- PROPOSED CATCHPIT — CP
- PROPOSED LAND DRAIN
- PROPOSED WATER SUPPLY — W
- PROPOSED PROCESS WATER DISCHARGE
- PROPOSED STRUCTURES/ DEVELOPMENT
- PROPOSED ROADS/ HARDSTANDING

SCALE 1:500
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O.S.I. 1:5000 VECTORS TILE NUMBERS 4789 & 4790 ARE SHOWN ON THIS DRAWING

REV	DATE	REVISION DESCRIPTION	DRN	PROD	VER	APP
000	12.2023	ISSUED FOR PLANNING	AB	HG	ED	JH

PURPOSE OF ISSUE - PRELIMINARY UNLESS INDICATED

CLIENT APPROVAL ☐ PLANNING ☒ TENDER ☐ CONSTRUCTION ☐ AS-BUILT ☐

CLIENT: ESB GENERATION & TRADING

PROJECT: MONEYPOINT SECURITY OF SUPPLY PROJECT

CONTRACT:

DRAWING TITLE: PROPOSED DRAINAGE PLAN
SHEET 1 OF 3

PRODUCTION UNIT: Civil, Environmental & Renewable Engineering

Energy for generations

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Engineering and Major Projects is a division of ESB

DRAWN	PRODUCED	VERIFIED	APPROVED	APPROVAL DATE
A.Butur	H. Griffin	E. Dunphy	J. Haverty	Dec 2023

CLIENT REF	NO. OF SHTS	SIZE	SCALE
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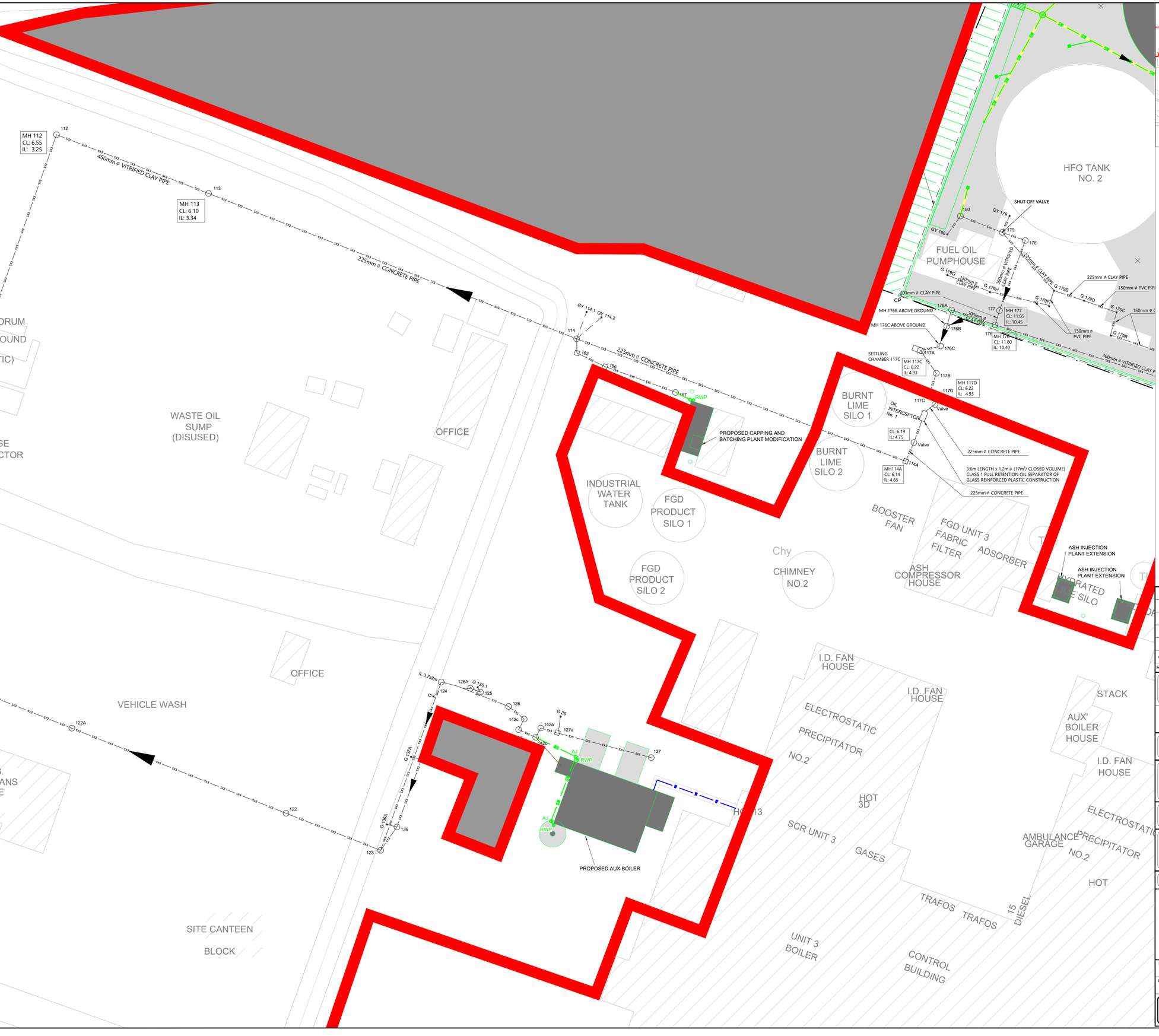
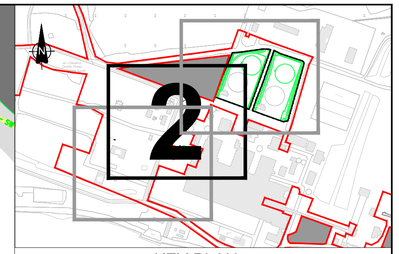
DRAWING NUMBER: QP-000017-65-D451-009-001-000 SHEET REV





KEY PLAN:
SCALE: N.T.S.

NOTES:

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- PROPOSED SURFACE WATER
- CONCRETE ENCASED SURFACE WATER
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- PROPOSED AJ — AJ
- PROPOSED RWP — RWP
- PROPOSED CATCHPIT — CP
- PROPOSED LAND DRAIN
- PROPOSED WATER SUPPLY — W
- PROPOSED PROCESS WATER DISCHARGE
- PROPOSED STRUCTURES/ DEVELOPMENT
- PROPOSED ROADS/ HARDSTANDING

SCALE 1:500

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O.S.I. 1:5000 VECTORS TILE NUMBERS 4789 & 4790 ARE SHOWN ON THIS DRAWING

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CLIENT APPROVAL ☐ PLANNING ☒ TENDER ☐ CONSTRUCTION ☐ AS-BUILT ☐

CLIENT: ESB GENERATION & TRADING

PROJECT: MONEYPOINT SECURITY OF SUPPLY PROJECT

CONTRACT:

DRAWING TITLE: PROPOSED DRAINAGE PLAN
SHEET 2 OF 3

PRODUCTION UNIT: Civil, Environmental & Renewable Engineering

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A.Butur	H. Griffin	E. Dunphy	J. Haverty	Dec 2023

CLIENT REF	NO. OF SHTS	SIZE	SCALE
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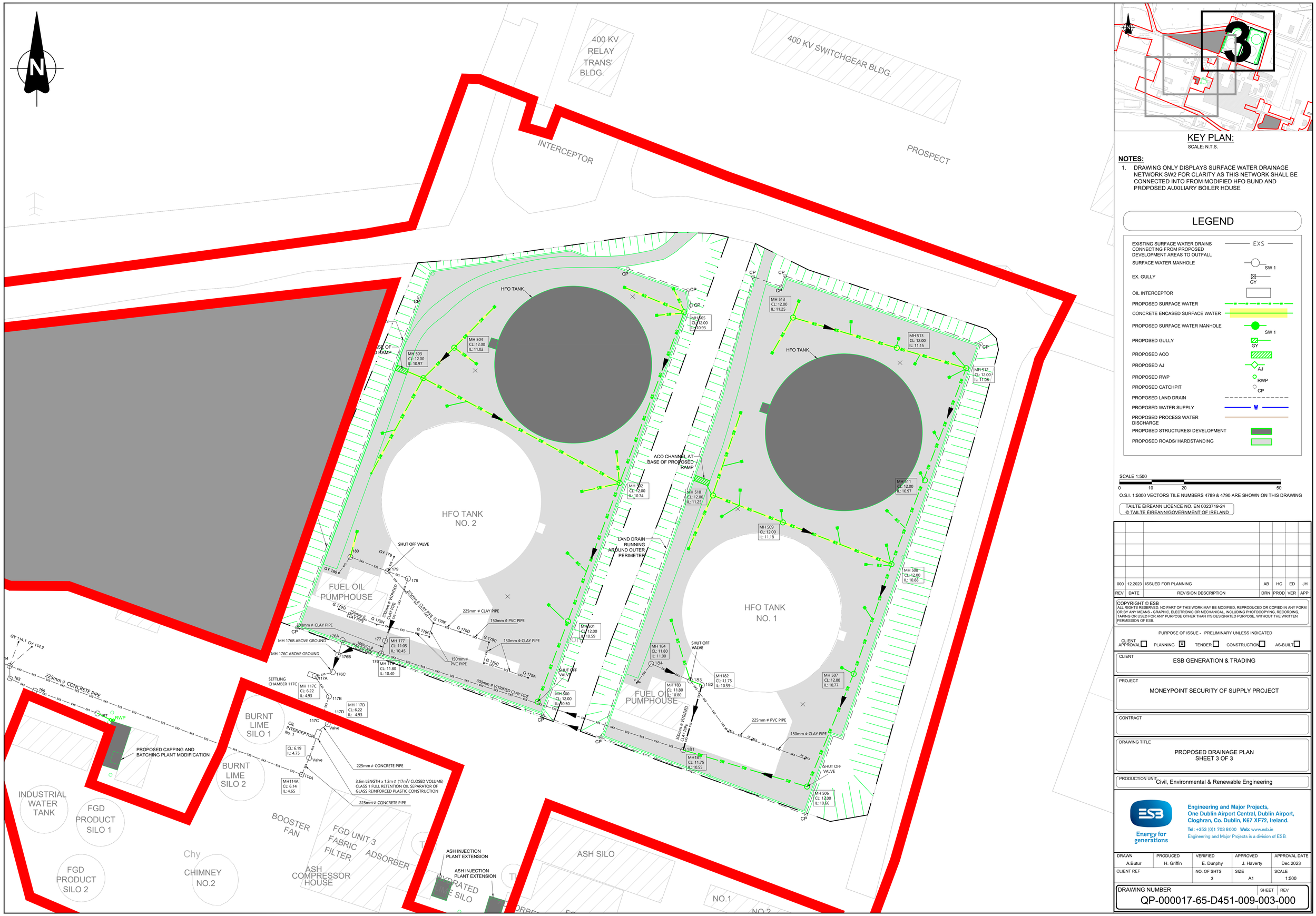
DRAWING NUMBER: QP-000017-65-D451-009-002-000 | SHEET | REV | 000



KEY PLAN:
SCALE: N.T.S.

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PROJECT: MONEYPOINT SECURITY OF SUPPLY PROJECT

CONTRACT:

DRAWING TITLE: PROPOSED DRAINAGE PLAN SHEET 3 OF 3

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		3	A1	1:500

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H.2 Flood Risk Assessment Report

Moneypoint Security of Supply Project

ESB Generation and Trading

Flood Risk Assessment

Document No.: QP-000017-65-R460-002-000

Date: January 2024

Engineering and Major Projects, One Dublin Airport Central, Dublin Airport, Cloghran, Co. Dublin, K67 XF72, Ireland.

Phone +353 (0)1 703 8000

www.esb.ie

File Reference:	QP-000017-65	
Client / Recipient:	ESB Generation and Trading	
Project Title:	Moneypoint HFO Project	
Report Title:	Flood Risk Assessment	
Report No.:	QP-000017-65-R460-002	
Revision No.:	000	
Prepared by:	Harry Griffin	Date: January 2024
Title:	Senior Team Lead Water & Geospatial	
Verified by:	Rory McGowan	Date: January 2024
Title:	Senior Team Lead	
Approved by:	John Haverty	Date: January 2024
Title:	Flextech, Hydro, Geospatial & Water Manager	

Template Used: T-020-017-Engineering and Major Projects Report Template

Change History of Report

Date	New Revision	Author	Summary of Change

Contents

1 Introduction

This Flood Risk Assessment addresses proposed works to enable full conversion of Moneypoint Generating Station from coal to heavy fuel oil (HFO) for electricity generation. The subject site is located within the townland of Carrowdotia South, Carrowdotia North and Ballymacrinan on the northern shore of the Shannon Estuary in County Clare, approximately 4km to the south east of the town of Kilrush in County Clare.

This Flood Risk Assessment was prepared in accordance with *'The Planning System and Flood Risk Management - Guidelines for Planning Authorities*' issued by the Department of Environment, Heritage and Local Government in November 2009. Flood risk from fluvial, coastal, surface water and groundwater sources has been assessed based on existing available information.

1.1 Background

In the late 1970's, ESB developed the coal-fired power-station at the Moneypoint site, a significant brownfield landbank long-associated with the generation of electricity and associated activities including fuel management, wind energy generation and electrical infrastructure. Moneypoint Generating Station comprises a large complex of structures. Electricity generation occurs at three c. 300MW rated coal-fired units, which entered service between 1985 and 1987. A service road was developed beneath the N67, linking the station with the northern 50 ha parcel of land, where the station's ash disposal facility was developed. While primarily a coal-fired station, HFO is used as a start-up fuel and in limited circumstances. Coal and oil are delivered to Moneypoint by ship via the dedicated jetty located on the southern boundary of the site. HFO, as distillate is delivered to the site by road. The HFO is contained in two storage tanks, with capacity for 50,000 tonnes for back-up and starter fuel.

ESB has stated its intention to cease coal fired production at Moneypoint in 2025 in-line with Company's 'Towards Zero' Strategy and the Government's Project Ireland 2040 plan. Furthermore, ESB has identified the Moneypoint site as the location for a new renewable energy hub – the 'Green Atlantic @ Moneypoint' which will see the development of the site as a strategic resource for the offshore wind industry and as a location for key grid services. In the context of generation forecasts and public policy in relation to security of supply, EirGrid has engaged with ESB to ensure Moneypoint will be available for on-demand generation from the end of 2025. Having regard to the co-firing capability of the existing station - and having evaluated a range of fuel options, ESB has determined that the 2025-2029 phase of generating activity should be fuelled by HFO. It is anticipated that the Station will transition through a period of co-firing from a point in late 2024 to the mid 2025 during which coal stocks will be exhausted. From mid 2025 until late 2029, operating under the terms of a new service agreement with EirGrid, under this proposal the station will rely entirely on HFO and switch to a regime of limited generation. At the end of 2029, it is anticipated that generation will cease at Moneypoint and – subject to the relevant consents, the station will be decommissioned.

1.2 Project Description

This conversion from coal to HFO for generation requires minimal physical works and alterations to the existing station and can occur without delay or interruption to generating activity. ESB proposes to also remove / demolish items of coal handling equipment. The proposed Security of Supply Project development consists of:

- transition and conversion of the existing coal fired power station's primary fuel to Heavy Fuel Oil (HFO) with limited run hours (described in terms of generating hours, per unit, per year) from mid 2025 until late 2029 when Moneypoint Generating Station will cease generation. Final decommissioning of the Station will be subject of a separate grant of planning permission;
- construction of 2 No. of HFO tanks with an additional cumulative capacity of 50,000 tonnes, bringing the total volume of HFO storage on site to 100,000 tonnes. The tanks will be built adjacent to the existing oil tanks, and located within the existing earthen bunds within which new bund structures will be constructed;
- construction of 2 No. auxiliary boilers (c. 16 MW thermal) and associated boiler house to supply steam for start-up and HFO heating;
- changes to previously permitted Flue Gas Desulphurisation (FGD) and ash landfilling arrangements to utilise spare capacity in the existing ash storage area (ASA), located to the north of the N67 road when the existing FGD landfill, on the east of the site, reaches capacity;
- decommissioning and removal of coal handling plant and the demolition of associated buildings with the removal of structures to ground level; and
- all associated ancillary site development works.

Because the existing generating units have been designed to be fired either partly or fully using HFO no change to the generating units is proposed. HFO will continue to be transported to the site via ship to the existing berth, there are no proposed changes to these existing port facilities.

No construction activities are proposed for any greenfield areas of the site including those areas under forestry. All works will be located fully within the existing ESB landholding at Moneypoint.

1.3 Scope

This assessment considers the following in subsequent sections:

2	The Planning Guidelines.
3	The location, topography and use of the existing site.
4	Review of data on recorded historic floods.
5.3	Risk of flooding to the proposed development from flood flow from neighbouring watercourses.
5.4	Risk of flooding from coastal sources.
5.5	Risk of flooding from direct rainfall.

5.6 Risk of flooding from groundwater.

6.1 The impact of surface water runoff from the development on the flow regimes in neighbouring watercourses.

6.2 Loss of floodplain.

2 Planning Guidelines

2.1 2009 Guidelines in relation to Flood Risk Management

In November 2009 the Department of Environment, Heritage and Local Government issued a guideline document to Planning Authorities in relation to Flood Risk Management.

These Guidelines set out the policy on development and flood risk in Ireland and provide a framework for the integration of flood risk assessment into the planning process. The objective is to ensure that flood risk is taken into account at all stages in the planning process and as a result to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere; and
- Ensure effective management of residual risks for development permitted in floodplains.

The Guidelines set out a staged approach for the consideration of flood risk in relation to developments as follows: -

"*Stage 1: Flood risk identification – to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels;"*

"*Stage 2: Initial flood risk assessment – to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped;" and*

"Stage 3: Detailed flood risk assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures."

The Guidelines classify developments into three vulnerability classes based on the effects of flooding

i) Highly vulnerable development;

ii) Less vulnerable development; and

iii) Water compatible development.

Essential infrastructure such as power station infrastructure are classed as highly vulnerable developments.

The Guidelines classify Land areas within three flood zones based on the probability of flooding. Flood zones are defined as follows in the Guidelines:

Zone A is at highest risk. In any one year, Zone A has a 1 in 100 year (1%) chance of flooding from rivers and a 1 in 200 year (0.5%) chance of flooding from the sea.

Zone B is at moderate risk. The outer limit of Zone B is defined by the 1 in 1,000 year (or 0.1%) flood from rivers and the sea.

Zone C is at low risk. In any one year, Zone C has less than 1 in 1,000 year (<0.1%) chance of flooding from rivers, estuaries or the sea.

In the identification of flood zones, no account should be taken of any flood relief walls or embankments.

Development Classification	**Flood Zone A (High Probability of Flooding)**	**Flood Zone B (Moderate Probability of Flooding)**	**Flood Zone C (Low Probability of Flooding)**
Highly Vulnerable Development	Justification Test	Justification Test	Appropriate
Less Vulnerable Development	Justification Test	Appropriate	Appropriate
Water-Compatible Development	Appropriate	Appropriate	Appropriate

Table 2-1 Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test (reproduced from Table 3.2 of Planning Guidelines)

Table 2-1, which is reproduced from the guideline document to Planning Authorities in relation to Flood Risk Management states that essential infrastructure, which according to the same document includes developments "*such as primary transport and utilities distribution, including: electricity generating power stations*" should be located within Flood Zone C. Subsequent sections of this Flood Risk Assessment document will consider the Flood Zone assignment for the proposed site.

Table 2-1 refers to the use of a Justification Test under certain circumstances. In cases where there are insufficient sites available to locate a development in the appropriate low flood risk zone, the guideline document allows for consideration of sites within flood risk zones. A Justification Test is then required to assess such proposals in the light of proper planning and sustainable development objectives.

2.2 OPW Climate Change Sectoral Adaption Plan 2019

The 2009 Planning Guidelines recommend that climate change be factored into consideration for flood risk assessments, although there is no national guideline on how to account for the additional risk. Specific advice on the expected impacts of climate change and the allowances to be provided for future flood risk management in Ireland is given in the OPW Climate Change Sectoral Adaption Plan 2019.

Climate change along with other future changes (e.g. urbanisation, forestation, etc.) are taken into account with two scenarios in particular considered:

- Mid-Range Future Scenario (MRFS) – typical values of 20% for flood flow and 500 mm for Mean Sea Level rise will be considered.

- High-End Future Scenario (HEFS) – typical values of 30% for flood flow and 1000 mm for Mean Sea Level rise will be considered.

The allowances should be applied to 1% Annual Exceedance Probability (AEP) fluvial, 0.5% AEP tidal and 0.1% AEP fluvial and tidal values with greater climate change allowances tested for resilience purposes.

2.3 Clare County Development Plan 2023-2029 Strategic Flood Risk Assessment

An interim version of the latest Clare County Development Plan (CDP) Strategic Flood Risk Assessment (SFRA) is available online through Volume 10c Strategic Flood Risk Assessment -Clare County Development Plan 2023-2029 (INTERIM) (clarecoco.ie) (Accessed 31st August 2023).

The purpose of this work is to provide a broad assessment of flood risk to inform strategic land-use planning decisions, in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities and Technical Appendices, 2009, and these Guidelines were issued under the Planning and Development Act 2000 and recognise the significance of proper planning to manage flood risk.

The Justificiation Tests conducted within the SFRA for the West Clare Municipal District did not encompass the site of Moneypoint Generating Station. The nearest settlement considered was Kilrush several kilometres to the northwest.

Specifically in relation to climate change, the SFRA recommends that where a development is "*critical or extremely vulnerable (e.g. hospitals, major sub-stations, blue light services*")… the impact of climate change on 0.1% AEP flows should be applied., and greater climate change allowances tested for resilience purposes.

Development vulnerability	Fluvial climate change allowance (increase in flows)	Tidal climate change allowance (increase in sea level)	Storm water / surface water
Less vulnerable	20%	0.5m (MRFS)	20% increase in rainfall
Highly vulnerable	20%	0.5m (MRFS)	
Critical or extremely vulnerable (e.g. hospitals, major sub-stations, blue light services)	30%	1.0m (HEFS)	
Note: there will be no discounting of climate change allowances for shorter lifespan developments.			

Table 2-2 Climate change allowances by vulnerability and flood source according to Clare CDP SFRA

If one is to assume that the Security of Supply Project is critical infrastructure and its short lifespan cannot be discounted, the most conservative allowances in Table 2-2 Climate change allowances by vulnerability and flood source according to Clare CDP SFRAshould be applied for the development.

3 Moneypoint Security of Supply Project Site

The proposed development is located entirely within the boundaries of Moneypoint Generating Station in the townlands of Carrowdotia South, Carrwodotia North and Ballymacrinan in Co. Clare as indicated in Figure 3.1 and Figure 3.2. The general topography of the site slopes slightly from north to south, draining towards the Shannon Estuary. A topographical survey carried out on the site as part of this assessment indicates ground levels of 5.65 – 7 mOD in the main station complex and up to 12 m OD in the HFO bunds. Note; all levels in this report are to OD Malin.

While the site red line boundary extends southwards toward the Estuary, the most southerly part of the site being developed (i.e. excluding coal infrastructure that is to be dismantled and existing internal roadways) is the proposed auxiliary boiler house approx. 200 m to the north of the Estuary.

Figure 3.1 Moneypoint Security of Supply Project Site Location

Figure 3.2 Moneypoint Security of Supply Project Site Boundary

4 Historical Flooding

The review of historic flooding was undertaken using the Office of Public Works (OPW) website www.floodinfo.ie.

This website www.floodinfo.ie forms a record of all available flood records held by the OPW, all local authorities and other relevant state organisations such as the Environmental Protection Agency and the Department of Environment Heritage and Local Government. This website represents the most comprehensive database of historical flood information in this country, with the caveat that not all flood events may be on the portal.

A coastal flooding event was recorded in January 2014, which affected the N67 national road which runs parallel to the Ash Storage Area (Flood ID 12970 - Flooding at Carrowdotia). This flood also affected Kilrush to the northwest.

Kilrush and Cappagh (4 km northwest of the development) have previously been identified by a Clare County Council area engineer as a location vulnerable to recurring flooding and it is the only other area in the locality with a history of recurrent flooding.

There is no record of flooding to the Generating Station itself, based on consultation with ESB staff, since construction in the early 1980s.

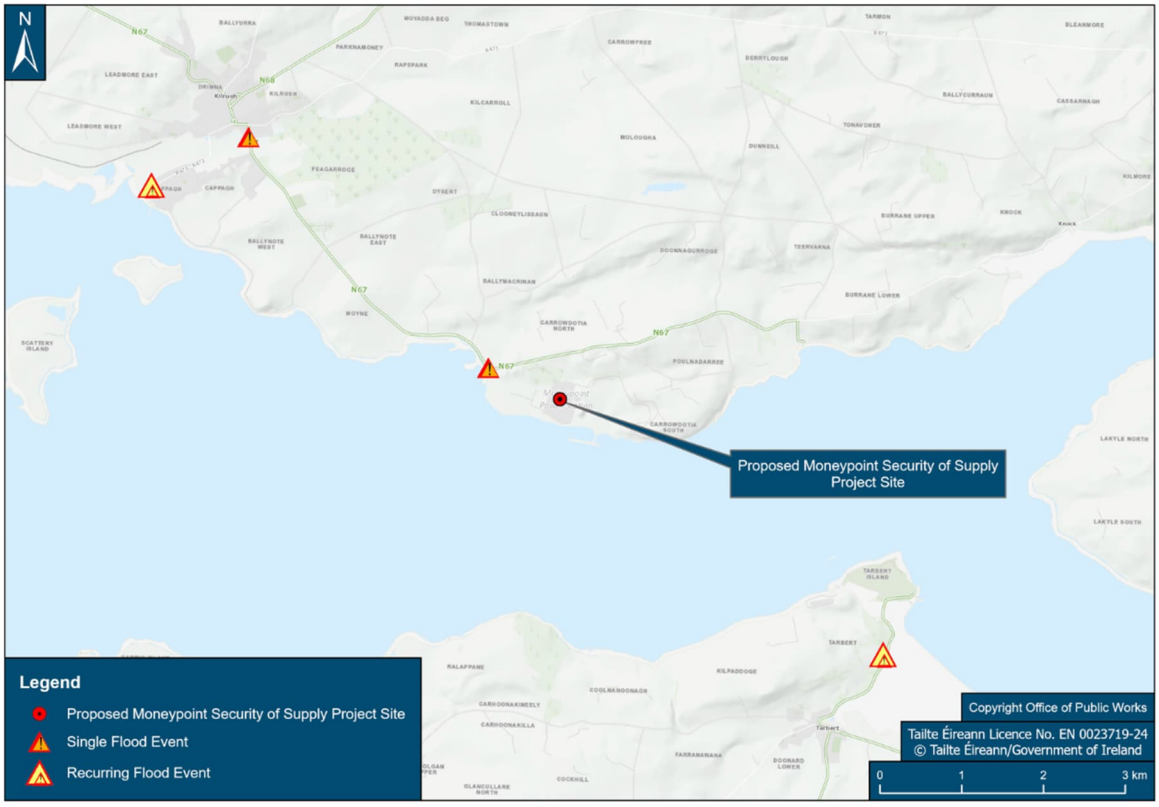


Figure 4.1 Historical Flood Map downloaded from www.floodinfo.ie

5 Flooding Risk

5.1 Catchment Flood Risk Assessment Management Studies

As part of Ireland's obligations under the EU "Floods" Directive, the OPW engages in the generation of new mapping which will provide predictive estimates of the extent of floodplains as part of its Catchment Flood Risk Assessment Management Studies (CFRAMS). This programme was undertaken on a River Basin District basis. The Shannon CFRAM programme was carried out between 2011 and 2016. Finalised flood maps were released through floodinfo.ie in April 2018.

5.1.1 CFRAMS Fluvial Mapping

The CFRAM maps present indicative extents of lands at risk of flooding, predicted flood depths and predicted water levels in watercourses. The mapping indicates the following:

- Indicative extent of lands with 1 in 10 chance of flooding in any given year.
- Indicative extent of lands with 1 in 100 chance of flooding in any given year (generally corresponds with Flood Zone A as defined in Section 2 above).
- Indicative extent of lands with 1 in 1000 chance of flooding in any given year (generally corresponds with Flood Zone B as defined in Section 2 above).

There is currently no CFRAMS mapping available for the proposed site.

5.1.2 CFRAMS Coastal Mapping

The proposed development is located close to the Shannon Estuary within the Shannon River Basin District.

For the Shannon CFRAMS Project, there was no published coastal mapping which included the exact location of the proposed site in Moneypoint as the station site was not included as an Area for Further Assessment (AFA). The nearest available mapping and modelled coastal / tidal levels are located at;

1. Kilrush Marina which is located approximately 6 km north west of the site, and
2. Tarbert, in the vicinity of the Tarbert Power Station which is located approximately 3 km south east of the proposed site.

The flood extents for these sites under the HEFS are shown in Figure 5.1. The 0.1% AEP tidal flooding event flood levels at Kilrush are predicted to reach 3.58 m OD under what is termed the current scenario.

For areas not considered as AFA's such as Moneypoint Gnerating Station complex, the National Coastal Flood Hazard provides indicative coastal flood extents for a range of scenarios (discussed in section 5.3).

Figure 5.1 Shannon CFRAMS Coastal Flood Mapping for HEFS

5.2 National Indicative Fluvial Mapping

The www.floodinfo.ie maps 'National Indicative Fluvial Mapping' (NIFM) layer presents the modelled extents of fluvial flooding during a theoretical flood event with estimated probability occurrences of both 1% and 0.1% in contrast to information based on actual floods which have occurred historically.

This data has been produced for catchments greater that 5 km^2 in areas where CFRAMS Programme flood maps were not produced. Floodinfo.ie provides guidance notes on the use of NIFM to assess flood risk and states that –

"*The maps only provide an indication of areas that may be prone to flooding. They are not necessarily locally accurate and should not be used as the sole basis for defining the Flood Zones nor for making decisions on planning applications*."

When providing guidance on the accuracy of the NIFM, the floodinfo.ie guidance notes state that the NIFM is not as accurate as the CFRAMS mapping and that it should only be considered for zoning or development purposes. The guidance also notes the NIFM should not be used to assess the flood risk associated with individual properties or point locations, as is the case with this planning application.

Nonetheless, the available NIFM mapping does not identify any fluvial flooding in the vicinity of the development for present day or future scenarios.

5.3 National Coastal Flood Hazard Mapping

This data is an update of the extreme water level estimation undertaken as part of the Irish Coastal Protection Strategy Study (ICPSS) between 2004 and 2013. The data underlying

the 2021 mapping for Moneypoint at the nearest National Coastal Extreme Water Level Estimation Point S10 in the Shannon Estuary has been sourced from floodinfo.ie. and is summarised in Table 5-1.

AEP	Present Day m OD	MRFS m OD	HEFS mOD
0.1%	3.57	4.07	4.57

Table 5-1 National Coastal Extreme Water Level Estimation Point S10 (Shannon Estuary at Moneypoint)

The interactive mapping associated with these predicted levels are presented on the floodinfo.ie Coastal Map portal and reproduced for the 0.1% AEP HEFS in Figure 5.2. This suggests partial inundation of parts of the site at this level. However, drone survey data for the station collected over the past 2 years indicates a consistently higher ground levels in the station complex and at the ash storage area. This is discussed further in section 5.5.

The "National Coastal Flood Hazard Mapping 2021 Flood Mapping Methodology Report" states the following in relation to uncertainties associated with the mapping outputs –

"*Due to the various sources of potential inaccuracies in the flood extent and depth maps, a quantitative assessment of their accuracy has not been carried out. A qualitative assessment of the maps was carried out as part of the quality control process. The flood extent and depth maps are therefore suitable for the assessment of flood risk at a strategic scale only, and should not be used to assess the flood hazard and risk associated with individual properties or point locations, or to replace a detailed flood risk assessment*."

Figure 5.2 National Coastal Flood Hazard Mapping for HEFS (floodinfo.ie, accessed 18/12/2023)

5.4 Fluvial Flood Risk

The Moneypoint site is located within the Shannon River Basin District; however, it is not located within the catchment of any significant watercourse. The mapped watercourses in the vicinity of the site are shown in Figure 5.3. The proposed works has a small uphill local catchment of approximately 0.42 km^2, which drains to the River Shannon Estuary.

Figure 5.3 Watercourses in the vicinity of Moneypoint site

A watercourse is shown as running through the Ash Storage Area in the north-west corner of the site. The watercourse has an upstream catchment of 3.5 km^2 and an estimated median annual flow rate of 1.1 m^3/s according to the OPW Flood Studies Update online portal (Figure 5.4). Since the development of the Area in the 1980s, when the land was drained, bunded and landscaped, this local watercourse no longer takes an overland path through here. Instead it is culverted through the Area to a collection chamber which also collects other surface water arriving at the external boundary of the bunded Area before discharging to the estuary. The collection chamber acts as a surface water monitoring point for the station's Industrial Emissions Licence where monthly samples of pH and suspended solids are recorded.

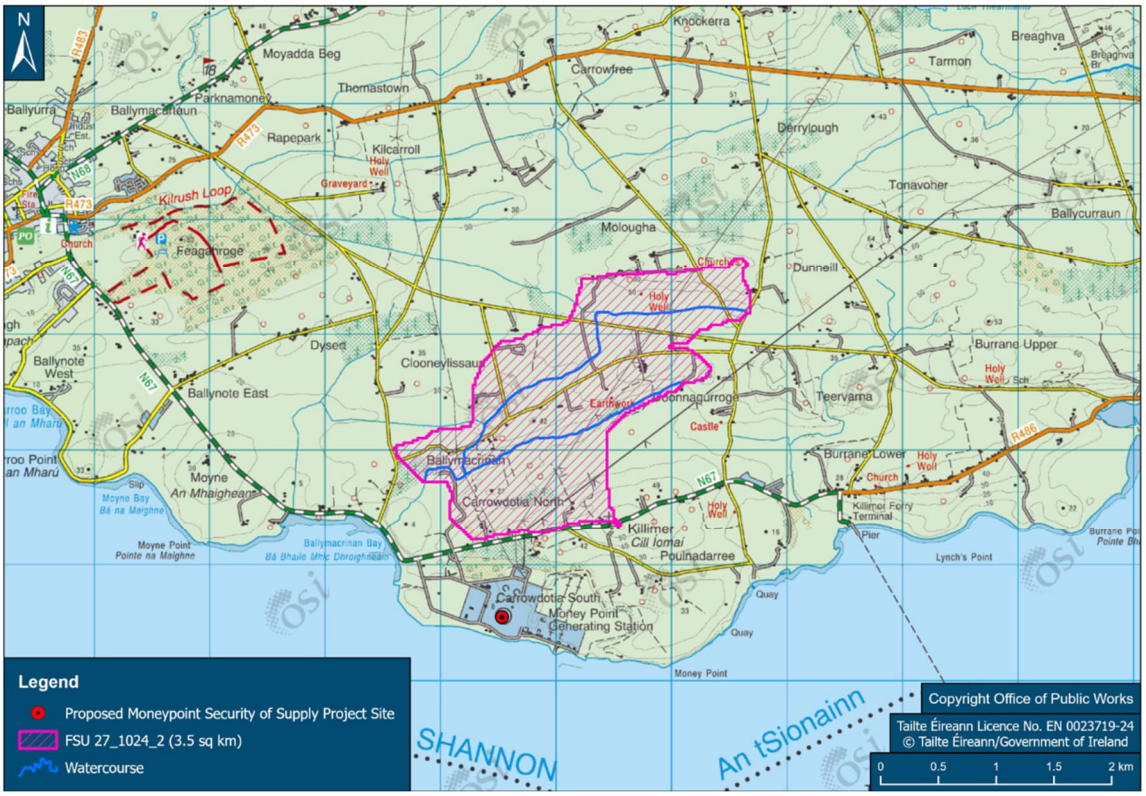


Figure 5.4 Fluvial Catchment upstream of Ash Storage Area

There have been no issues with the management of fluvial flood waters in the Area in the approximately 40 years since its construction and is not of concern with regard to flood risk. The culvert under the Area includes an inlet screen and a number of inspection chambers along its subsurface route and is subject to an inspection and maintenance regime from the station. A natural pre-existing pond a short distance upstream of the culvert inlet also serves to attenuate flow rates and settle out solids before entering the culvert. The topography of the land in the vicinity of the culvert inlet is such that were the culvert blocked or flooded it would stay confined to the pond and fields in the immediate vicinity (Figure 5.5 and Figure 5.6). The levels in the area of the culvert inlet and pond are significantly lower than the ash storage area (minimum level 14 mOD) by approximately 9 m. The closest properties to the area are more than 15 m above the level of the culvert inlet (i.e. >20 mOD).

There is nonetheless a residual risk of the culvert being blocked at some point in the lifetime of the development to be considered. Such an event would not pose a risk to any infrastructure inside or outside of the site application boundary due to local topography with potential floodwaters restricted to low-lying fields. It is estimated based on a combination of surveyed levels and Tailte Éireann topography that a continuous flow equivalent to the median annual flood flow (1.1 m^3/s) can be retained in the event of a blockage for up to 9 days without water levels rising to a level such that water would flow out of this low-lying valley via a narrow flow path at 12 mOD running to the south and meeting the N67 national road from where floodwaters would flow westward along the road to the ocean. As such, Moneypoint Generating Station, proposed development and other properties would be protected in such an unlikely event by this emergency flow path. It should be emphasised though that a blockage would in reality be monitored and addressed in a matter of hours by station staff.

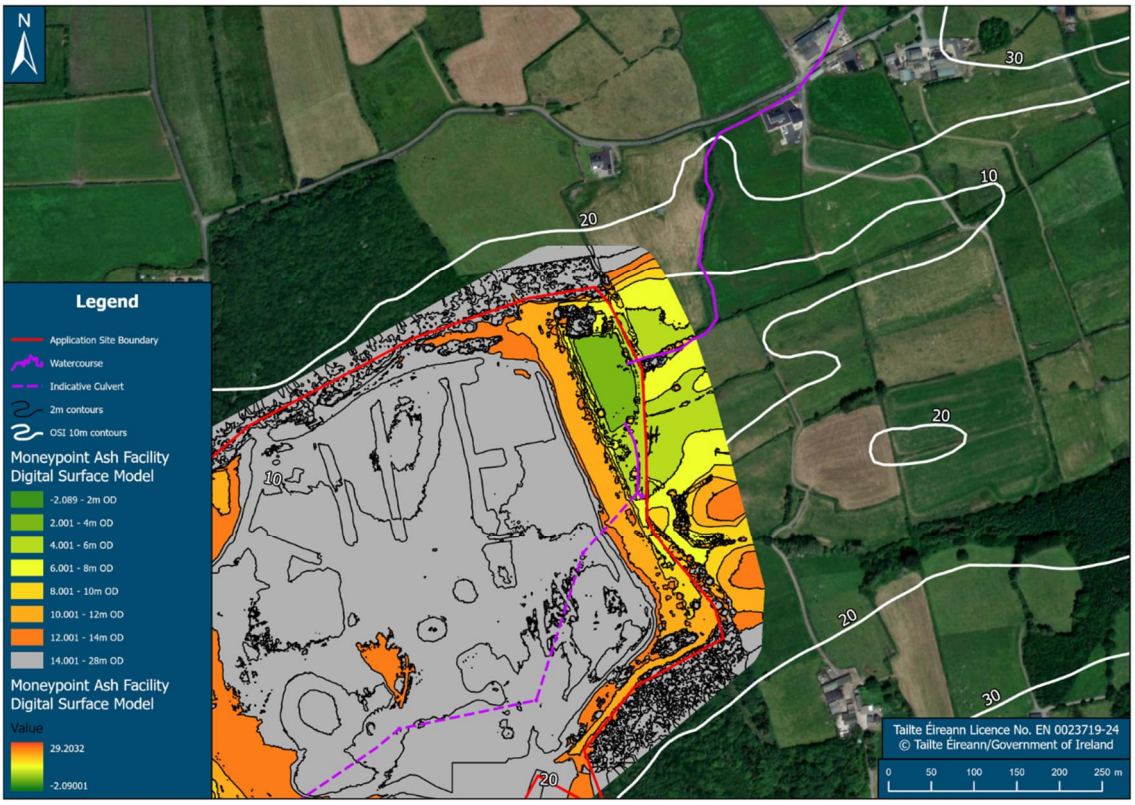


Figure 5.5 Surveyed levels in vicinity of Ash Storage Area

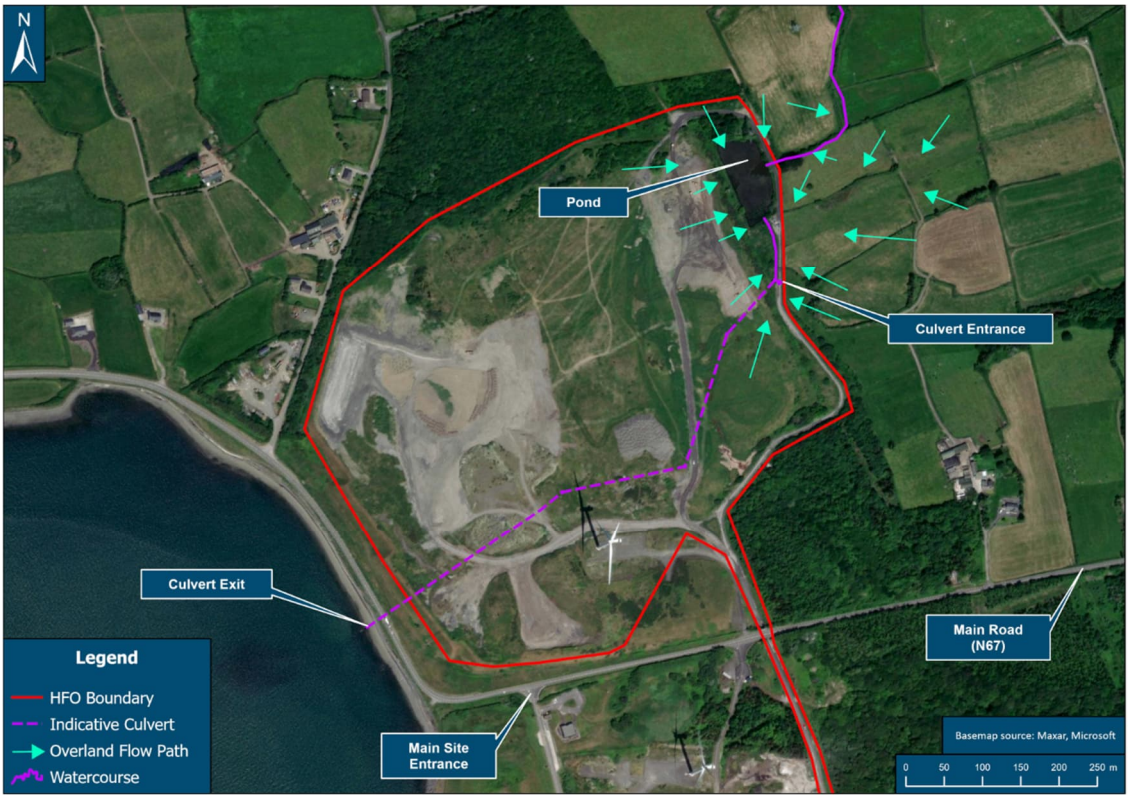


Figure 5.6 Indicative overland flow paths in relation to culverted watercourse

For the main station site, the topography of the land is such that there is an elevated area between the site and the nearby watercourses. This, therefore, significantly reduces the risk of fluvial flooding. Due to the distance of the proposed development from any existing

watercourses (with the exception of the Ash Storage Area where the watercourse is culverted below), fluvial flooding is not considered a significant risk to the site.

5.5 Coastal Flood Risk

The application site is located within the River Shannon Catchment and is located approximately at its closest point 50 m from the Shannon Estuary (from the proposed works at the Ash Stoarge Area). At this location, the River Shannon is tidal due to its proximity to the Atlantic Ocean. The existing levels at the site vary from approximately 5.65 m OD to 7 m OD in the main station complex up to 12 mOD at the HFO bunds and higher again at the Ash Storage Area.

The 0.1% AEP coastal flooding event flood levels at Kilrush are predicted to reach 3.58 m OD under what is termed the current scenario. This is very similar to the equivalent flood level modelled at the National Coastal Extreme Water Level Estimation Point S10 just to the south of Moneypoint (3.57 m OD). The current scenario does not account for climate change and the Clare CDP SFRA recommends allowance for a 1000 mm mean sea level rise under a High-End Future Scenario for critical infrastructure (per section 2.2), a criteria which is assumed to be appropriate for this development. Where climate change is to be included, the resultant predicted coastal flood level of 4.58 m OD is still lower than any areas of the site being developed. Contour data extracted from ESB drone survey surface data for the site indicates the only area within the red line boundary below the 0.1% AEP HEFS level are the pond to the north of the ash storage area, which is significantly below the ash storage area itself (Figure 5.7). Note also that small areas in the station complex indicated as below the flood level are exposed basement areas below the floor level such as adjacent to the west of the main generating station building.

Figure 5.7 Levels below 0.1% AEP HEFS at Moneypoint

The coastal flood level is more than a metre below the proposed 5.65 m OD finished floor level of the proposed auxiliary boiler house. The 1.07 m freeboard is more than sufficient to account for any potential wave action. The Clare County Development Plan 2023-2029 SFRA recommends freeboard allowance of at least 300 mm. Given the distance of the development from the coastline, the 1.07 m freeboard is expected to be sufficient. The modifications to the batching plant and modifications to the FGD ash injection plant are at existing site levels that are slightly higher, approximately 6 m OD. The HFO bunds are elevated above the main station complex with floor levels of 12 m OD.

It can be concluded that coastal / tidal flooding does not pose a risk to the Security of Supply development.

5.6 Pluvial Flood Risk

The proposed development will substantially increase the impermeable area of the existing site and hence surface water runoff from the site will be increased.

For HFO Bund 1 (east), the existing impermeable area drained, including the HFO storage tank, is 3,750 m^2. The refurbishments to the bund will effectively increase the area drained to 10,600 m^2. For HFO Bund 2 (west), the existing impermeable area drained is 3,700 m^2. The refurbishments to the bund will effectively increase the area drained to 10,170 m^2. The new auxiliary building will occupy an area of 432 m^2 on ground that is currently free draining.

This can present an increased risk of pluvial flooding on site and downstream if not managed properly. Consideration has been given to the existing surface water runoff route on site and the drainage characteristics in order to develop an appropriate site drainage system to minimise impacts that increased discharge from the site may have.

The proposed surface water drainage system will be designed to best practice providing protection from surface runoff (pluvial flooding) due to direct rainfall. The drainage proposals are discussed in more detail in the Drainage and Services Report which is submitted as part of this planning application.

5.7 Groundwater Flood Risk

The Geological Survey of Ireland (GSI) mapping indicates that the site is underlain by the Central Clare Group, consisting of sandstone, siltstone & mudstone, with bedrock suspected to be close to the surface in some areas. This bedrock is indicated to be a locally important groundwater resource which is moderately productive only in local zones. The groundwater is indicated to be of high to extreme vulnerability to contamination. There are no karst landforms at or near the proposed development.

The available mapping would suggest the proposed development would be unlikely to be impacted by groundwater. As such, groundwater is not considered to be significant with regard to flood mechanisms in the area.

6 Impact of Development on Current Flood Regime in the Area

6.1 Impact of Site Surface Water Runoff

All surface runoff to be discharged from the site is to be collected in a dedicated drainage network. The site surface water drainage system has been designed to best practice to provide protection to the site from surface runoff due to direct rainfall.

Details of the proposed surface water drainage system are available in the Drainage and Services Report submitted as part of this application.

6.2 Loss of floodplain

The site is not located in a floodplain. The only portion of the entire red-line boundary below the 0.1% AEP HEFS coastal flood level is an existing pond to the north of the ash-storage area which will be undisturbed by the proposed development.

7 Conclusions

Having reviewed the available OPW flood mapping and model results, the results from the National Coastal Flood Hazard Mapping and the output of a detailed topographical survey of the site and surrounding lands, the following conclusions can be drawn;

- The topographic survey shows the site is currently elevated from the modelled coastal flood levels at Kilrush Marina.
- The results of the OPW CFRAMS study indicate that the predicted 0.1% AEP (Annual Exceedance Probability) coastal flood levels at the neareast assessed areas to Moneypoint for the High-End Future Scenario (4.58 mOD) are below the lowest ground levels at the site (5.65 mOD). The results of the National Coastal Flood Hazard Mapping indicate that the predicted 0.1% AEP coastal flood level of the Shannon is 3.57 mOD. Including a climate change factor of +1000 mm, the predicted Shannon level is 4.57 mOD, which is 1.07 m below the lowest proposed development level of 5.65 mOD. Given the setting of the site and proposed development in relation to the coastline the freeboard is deemed sufficient to be in line with the Planning Guidelines.
- There is no significant fluvial, groundwater or pluvial flood risk at the site with the exception of the small area within the red line boundary to the northeast of the ash storage area. The minor watercourse culverted underneath the ash storage area has no history of flooding and is subject to an inspection and maintenance regime ensuring that risk of blockages that could affect the area to the north of the area are minimised. There is nonetheless a residual risk of the culvert being blocked at some point in the lifetime of the development. Such an event would not pose a risk to any infrastructure inside or outside the site application boundary due to local topography with potential floodwaters restricted to low-lying fields. The residual risk here is considered acceptable.

Based on the assessment undertaken, there is no significant risk of flooding to the proposed development. It is reasonable to conclude that the site of the proposed works lies within Flood Zone C as defined by 'The Planning System and Flood Risk Management - Guidelines for Planning Authorities'. Therefore, in accordance with these guidelines the proposed development is considered to be 'appropriate' and no specific flood mitigation is required.

The proposed development will not increase the current flood risk in the catchment.

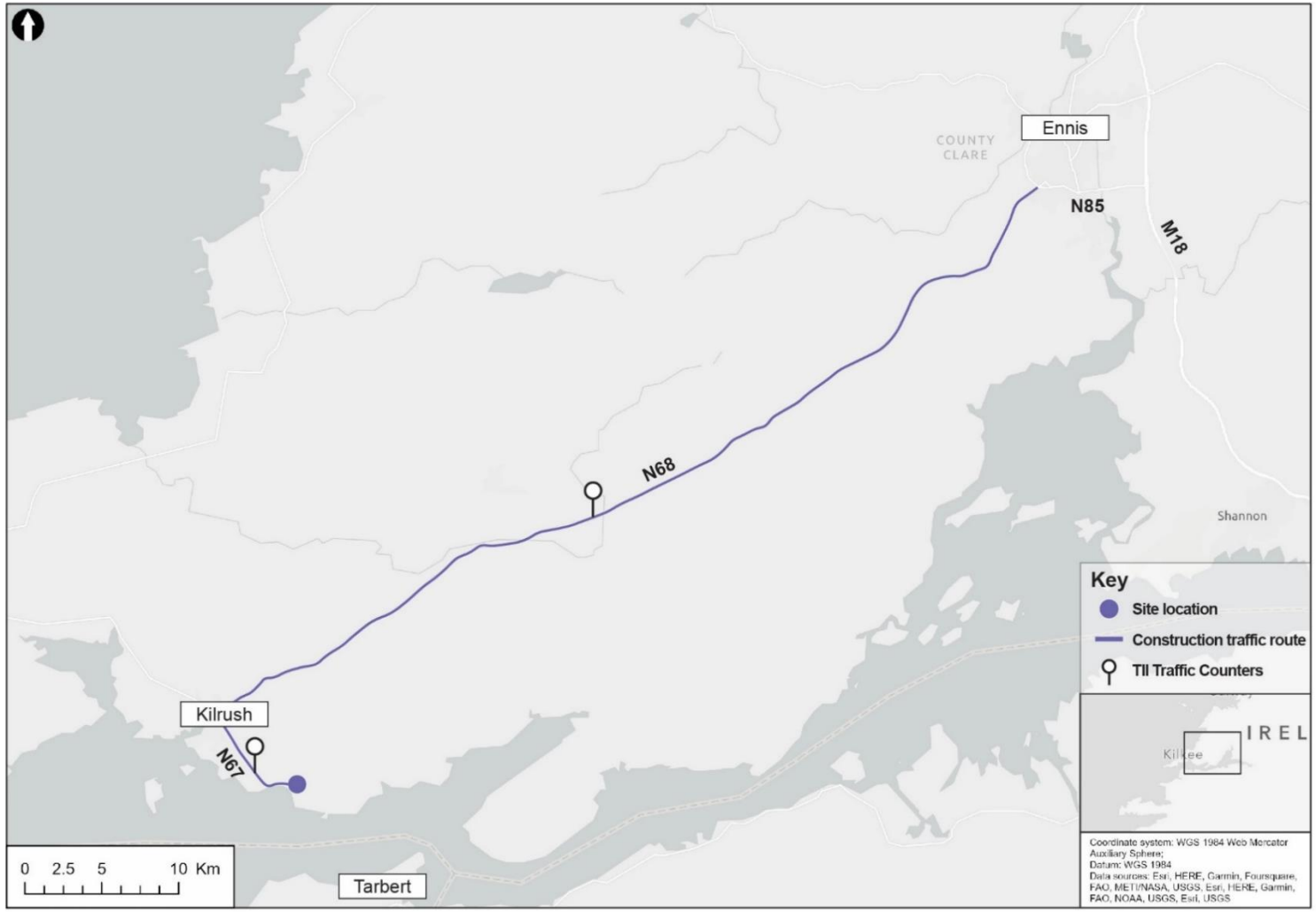
I. Traffic and Transport Supporting Information

MOTT MACDONALD

Table I.1: Core Guidance Summary

Document Title	Source and Year	Guidance Detail
Guidelines on the Information to be Contained in Environmental Impact Reports	Environmental Protection Agency (EPA) (2022)	These guidelines provide advice of best practice, principles and practice of developing an EIAR. Specific reference to transport assessment includes: "Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure." & "The provision of new access facilities (e.g. links to motorways) or the upgrading of existing facilities (e.g. road widths, bridges and junctions) carried out by other parties can give rise to significant environmental effects" The importance of a Construction Management Plan is acknowledged in this document. These are often provided to supplement the project description and to set out specific details of the construction plan. While inclusion of full details may not be practicable at pre-consent stage, it should set out the environmental envelope within which the project will be built, including working areas, hours of work, principal construction methods and phases, volumes of materials, traffic and environmental controls.
Traffic and Transport Assessment Guidelines	Transport Infrastructure Ireland (TII) (2014)	The guidelines provide guidance for scoping and developing traffic and transport assessment requirements to support development proposals. The guidelines outline the need for assessment of public transport, walking and cycling networks, rather than singularly focussing on the road network. The focus of these guidelines relates to operational traffic aspects.
The Institute of Environmental Management and Assessment Guidelines: Environmental Assessment of Traffic & Movement (e)	The Institute of Environmental Management and Assessment (IEMA) (2023)	The guidelines provide internationally referable guidance specific to best practice in transport Environmental Impact Assessment (EIA) process and practice.
Rural Road Link Design, (DN-GEO-03031)	TII Publications (2017)	The TII document provides guidance for assessing rural road capacities.

Figure I.1: Traffic and Transport Study Area



Source: ESB, TII, Mott MacDonald and ESRI (with various sources, as noted on the plan)

Traffic Survey Data - N67

Weekly Volume Report NRA 000000001671 2022-01-01 to 2022-12-31

Site Name TMU N67 120.0 E
Site ID 000000001671
Grid 100730153443
Description N67 Between Kilrush Ferry and Kilrush,

Lanes Each Lane
Time Period 1 hour
Class Any
Exclude data: Holidays

Weekly Volume Report NRA 000000001671 2022-01-01 to 202

Site Name TMU N67 120.0 E
Site ID 000000001671
Grid 100730153443
Description N67 Between Kilrush

Lanes Each Lane
Time Period 1 hour
Class BUS
Exclude Holidays

Lanes Each Lane
Time Period 1 hour
Class **HGV_RIG**
Exclude Holidays

All directions

	<--	Average of each					-->	Average		Total		Average		Total	Average	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day
00:00:00	2	2	2	3	3	5	7	2	3	1191		0	0		0	0
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06:00:00	30	31	29	30	29	18	8	30	25	8860		0	0	66	1	1
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13:00:00	111	116	122	117	117	111	100	116	113	40309		1	1	258	3	2
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15:00:00	99	98	104	111	141	95	93	111	106	37693		1	1	206	2	2
16:00:00	154	150	150	144	132	94	87	146	130	46159		1	1	245	3	2
17:00:00	103	107	114	107	103	80	81	107	99	35259		1	1	256	2	2
18:00:00	80	79	88	87	86	72	78	84	81	28957		0	0	54	1	1
19:00:00	56	63	66	66	69	61	63	64	64	22644		0	0	120	1	1
20:00:00	41	40	44	44	48	44	43	43	43	15447		0	0	46	1	0
21:00:00	25	25	27	30	31	28	23	28	27	9602		0	0	16	0	0
22:00:00	12	12	12	14	17	15	13	13	14	4810		0	0	5	0	0
23:00:00	4	5	5	5	10	8	6	6	6	2208		0	0	3	0	0
07-19	1188	1207	1255	1240	1276	996	874	1235	1149	408125		10	9	3237	33	27
06-22	1340	1366	1421	1410	1452	1147	1011	1400	1308	464678		11	10	3485	35	29
06-24	1356	1383	1438	1429	1479	1170	1030	1419	1328	471696		11	10	3493	36	30
00-24	1368	1394	1449	1442	1492	1188	1052	1431	1342	476843		11	10		36	30
am Peak	07:00:00	07:00:00	07:00:00	07:00:00	10:00:00	11:00:00	11:00:00	07:00:00	10:00:00			10:00:00	10:00:00		11:00:00	11:00:00
Peak Volume	110	116	117	117	119	103	95	114	102			2	2		5	4
pm Peak	16:00:00	16:00:00	16:00:00	16:00:00	15:00:00	12:00:00	13:00:00	16:00:00	16:00:00			12:00:00	12:00:00		12:00:00	12:00:00
Peak Volume	154	150	150	144	141	115	100	146	130			1	1		5	4

All Northbound

	<--	Average of each					-->	Average		Total		Average		Total	Average	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day

00:00:00	1	1	1	1	1	2	3	1	1	450		0	0		0	0
01:00:00	0	0	0	0	0	1	2	0	1	279		0	0		0	0
02:00:00	0	0	0	0	0	1	1	0	0	178		0	0		0	0
03:00:00	0	0	1	1	1	1	1	0	1	189		0	0		0	0
04:00:00	1	1	1	1	1	1	1	1	1	360		0	0	1	0	0
05:00:00	3	2	2	2	2	2	1	2	2	690		0	0	4	0	0
06:00:00	5	5	5	6	6	4	3	5	5	1742		0	0	3	0	0
07:00:00	22	22	24	22	22	15	8	22	19	6778		0	0	8	0	0
08:00:00	41	40	41	42	40	17	12	41	33	11728		0	0	116	2	2
09:00:00	42	44	44	47	47	34	16	45	39	13882		0	0	48	1	1
10:00:00	52	54	56	56	65	52	35	57	53	18833		2	2	588	1	1
11:00:00	45	49	51	47	55	53	56	50	51	18188		1	1	491	2	2
12:00:00	50	53	57	56	58	61	53	55	56	19818		0	0	83	2	2
13:00:00	59	61	62	62	61	59	53	61	60	21216		0	0	88	1	1
14:00:00	42	41	46	47	52	51	45	46	46	16466		0	0	26	1	1
15:00:00	51	49	54	61	84	49	46	60	57	20078		0	0	29	1	1
16:00:00	97	97	96	88	74	46	41	90	77	27236		0	0	54	1	1
17:00:00	59	60	65	59	53	38	38	59	53	18839		1	1	179	1	1
18:00:00	45	43	49	47	46	36	35	46	43	15270		0	0	30	1	0
19:00:00	33	37	39	37	41	32	33	37	36	12758		0	0	105	1	1
20:00:00	20	20	21	23	26	23	21	22	22	7882		0	0	34	0	0
21:00:00	12	11	13	14	14	14	11	13	13	4538		0	0	9	0	0
22:00:00	5	5	5	5	7	6	5	5	5	1953		0	0	1	0	0
23:00:00	1	1	2	2	3	4	2	2	2	825		0	0	2	0	0
07-19	606	613	642	635	657	511	438	631	587	208332		5	5	1740	15	13
06-22	675	686	720	715	743	584	507	709	662	235252		6	5	1891	17	14
06-24	681	693	727	722	754	594	514	716	670	238030		6	5	1894	17	14
00-24	687	697	732	728	759	601	524	722	676	240176		6	5		17	14
am Peak	10:00:00	10:00:00	10:00:00	10:00:00	10:00:00	11:00:00	11:00:00	10:00:00	10:00:00			10:00:00	10:00:00		08:00:00	11:00:00
Peak Volume	52	54	56	56	65	53	56	57	53			2	2		2	2
pm Peak	16:00:00	16:00:00	16:00:00	16:00:00	15:00:00	12:00:00	12:00:00	16:00:00	16:00:00			17:00:00	17:00:00		12:00:00	12:00:00
Peak Volume	97	97	96	88	84	61	53	90	77			1	1		2	2

All Southbound

	<--	Average of each					-->	Average		Total	Average		Total	Average	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day
00:00:00	2	1	1	2	2	3	4	1	2	741	0	0		0	0
01:00:00	1	0	0	1	1	2	3	1	1	423	0	0		0	0
02:00:00	0	0	0	0	0	1	2	0	1	201	0	0	1	0	0
03:00:00	0	0	0	1	1	1	2	0	1	230	0	0		0	0
04:00:00	1	1	1	1	1	1	1	1	1	370	0	0		0	0
05:00:00	3	3	3	4	4	3	1	3	3	1036	0	0	1	0	0
06:00:00	26	25	24	24	23	13	5	24	20	7118	0	0	63	1	0
07:00:00	88	94	94	95	86	25	9	91	70	24730	0	0	145	1	1
08:00:00	38	39	41	38	36	17	15	38	32	11260	0	0	66	1	1
09:00:00	31	31	32	32	30	26	22	31	29	10399	0	0	86	1	1
10:00:00	57	52	51	53	54	43	37	53	49	17527	0	0	58	1	1
11:00:00	44	42	44	45	52	49	39	45	45	16036	0	0	89	3	2
12:00:00	46	50	51	50	51	54	46	50	50	17672	1	1	218	3	3
13:00:00	52	55	60	54	56	51	47	55	54	19093	0	0	170	1	1
14:00:00	43	46	48	46	48	47	45	46	46	16431	1	1	196	1	1
15:00:00	48	49	50	50	56	46	47	51	50	17615	0	0	177	1	1

16:00:00	57	53	54	56	58	48	46	56	53	18923		1	1	191	1	1
17:00:00	43	47	50	47	51	42	43	48	46	16420		0	0	77	1	1
18:00:00	36	36	39	39	40	36	43	38	38	13687		0	0	24	1	0
19:00:00	24	26	27	30	28	30	30	27	28	9886		0	0	15	0	0
20:00:00	20	20	22	22	22	21	21	21	21	7565		0	0	12	0	0
21:00:00	13	14	15	15	16	14	12	15	14	5064		0	0	7	0	0
22:00:00	7	7	7	8	10	9	8	8	8	2857		0	0	4	0	0
23:00:00	3	3	3	3	6	5	3	4	4	1383		0	0	1	0	0
07-19	582	595	612	605	619	485	436	603	563	199793		4	4	1497	17	14
06-22	665	680	701	695	709	563	505	691	646	229426		5	4	1594	19	16
06-24	675	690	711	707	725	576	516	702	658	233666		5	5	1599	19	16
00-24	681	696	717	715	733	587	528	709	666	236667		5	5		19	16
am Peak	07:00:00	07:00:00	07:00:00	07:00:00	07:00:00	11:00:00	11:00:00	07:00:00	07:00:00			07:00:00	07:00:00		11:00:00	11:00:00
Peak Volume	88	94	94	95	86	49	39	91	70			0	0		3	2
pm Peak	16:00:00	13:00:00	13:00:00	16:00:00	16:00:00	12:00:00	13:00:00	16:00:00	13:00:00			12:00:00	12:00:00		12:00:00	12:00:00
Peak Volume	57	55	60	56	58	54	47	56	54			1	1		3	3

Northbound

	<--	Average of each					-->	Average		Total		Average		Total	Average	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day
00:00:00	1	1	1	1	1	2	3	1	1	450		0	0		0	0
01:00:00	0	0	0	0	0	1	2	0	1	279		0	0		0	0
02:00:00	0	0	0	0	0	1	1	0	0	178		0	0		0	0
03:00:00	0	0	1	1	1	1	1	0	1	189		0	0		0	0
04:00:00	1	1	1	1	1	1	1	1	1	360		0	0	1	0	0
05:00:00	3	2	2	2	2	2	1	2	2	690		0	0	4	0	0
06:00:00	5	5	5	6	6	4	3	5	5	1742		0	0	3	0	0
07:00:00	22	22	24	22	22	15	8	22	19	6778		0	0	8	0	0
08:00:00	41	40	41	42	40	17	12	41	33	11728		0	0	116	2	2
09:00:00	42	44	44	47	47	34	16	45	39	13882		0	0	48	1	1
10:00:00	52	54	56	56	65	52	35	57	53	18833		2	2	588	1	1
11:00:00	45	49	51	47	55	53	56	50	51	18188		1	1	491	2	2
12:00:00	50	53	57	56	58	61	53	55	56	19818		0	0	83	2	2
13:00:00	59	61	62	62	61	59	53	61	60	21216		0	0	88	1	1
14:00:00	42	41	46	47	52	51	45	46	46	16466		0	0	26	1	1
15:00:00	51	49	54	61	84	49	46	60	57	20078		0	0	29	1	1
16:00:00	97	97	96	88	74	46	41	90	77	27236		0	0	54	1	1
17:00:00	59	60	65	59	53	38	38	59	53	18839		1	1	179	1	1
18:00:00	45	43	49	47	46	36	35	46	43	15270		0	0	30	1	0
19:00:00	33	37	39	37	41	32	33	37	36	12758		0	0	105	1	1
20:00:00	20	20	21	23	26	23	21	22	22	7882		0	0	34	0	0
21:00:00	12	11	13	14	14	14	11	13	13	4538		0	0	9	0	0
22:00:00	5	5	5	5	7	6	5	5	5	1953		0	0	1	0	0
23:00:00	1	1	2	2	3	4	2	2	2	825		0	0	2	0	0
07-19	606	613	642	635	657	511	438	631	587	208332		5	5	1740	15	13
06-22	675	686	720	715	743	584	507	709	662	235252		6	5	1891	17	14
06-24	681	693	727	722	754	594	514	716	670	238030		6	5	1894	17	14
00-24	687	697	732	728	759	601	524	722	676	240176		6	5		17	14
am Peak	10:00:00	10:00:00	10:00:00	10:00:00	10:00:00	11:00:00	11:00:00	10:00:00	10:00:00			10:00:00	10:00:00		08:00:00	11:00:00
Peak Volume	52	54	56	56	65	53	56	57	53			2	2		2	2

pm Peak	16:00:00	16:00:00	16:00:00	16:00:00	15:00:00	12:00:00	12:00:00	16:00:00	16:00:00			17:00:00	17:00:00		12:00:00	12:00:00
Peak Volume	97	97	96	88	84	61	53	90	77			1	1		2	2
Southbound																
	<--	Average of each					-->	Average		Total		Average		Total	Average	
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day
00:00:00	2	1	1	2	2	3	4	1	2	741		0	0		0	0
01:00:00	1	0	0	1	1	2	3	1	1	423		0	0		0	0
02:00:00	0	0	0	0	0	1	2	0	1	201		0	0	1	0	0
03:00:00	0	0	0	1	1	1	2	0	1	230		0	0		0	0
04:00:00	1	1	1	1	1	1	1	1	1	370		0	0		0	0
05:00:00	3	3	3	4	4	3	1	3	3	1036		0	0	1	0	0
06:00:00	26	25	24	24	23	13	5	24	20	7118		0	0	63	1	0
07:00:00	88	94	94	95	86	25	9	91	70	24730		0	0	145	1	1
08:00:00	38	39	41	38	36	17	15	38	32	11260		0	0	66	1	1
09:00:00	31	31	32	32	30	26	22	31	29	10399		0	0	86	1	1
10:00:00	57	52	51	53	54	43	37	53	49	17527		0	0	58	1	1
11:00:00	44	42	44	45	52	49	39	45	45	16036		0	0	89	3	2
12:00:00	46	50	51	50	51	54	46	50	50	17672		1	1	218	3	3
13:00:00	52	55	60	54	56	51	47	55	54	19093		0	0	170	1	1
14:00:00	43	46	48	46	48	47	45	46	46	16431		1	1	196	1	1
15:00:00	48	49	50	50	56	46	47	51	50	17615		0	0	177	1	1
16:00:00	57	53	54	56	58	48	46	56	53	18923		1	1	191	1	1
17:00:00	43	47	50	47	51	42	43	48	46	16420		0	0	77	1	1
18:00:00	36	36	39	39	40	36	43	38	38	13687		0	0	24	1	0
19:00:00	24	26	27	30	28	30	30	27	28	9886		0	0	15	0	0
20:00:00	20	20	22	22	22	21	21	21	21	7565		0	0	12	0	0
21:00:00	13	14	15	15	16	14	12	15	14	5064		0	0	7	0	0
22:00:00	7	7	7	8	10	9	8	8	8	2857		0	0	4	0	0
23:00:00	3	3	3	3	6	5	3	4	4	1383		0	0	1	0	0
07-19	582	595	612	605	619	485	436	603	563	199793		4	4	1497	17	14
06-22	665	680	701	695	709	563	505	691	646	229426		5	4	1594	19	16
06-24	675	690	711	707	725	576	516	702	658	233666		5	5	1599	19	16
00-24	681	696	717	715	733	587	528	709	666	236667		5	5		19	16
am Peak	07:00:00	07:00:00	07:00:00	07:00:00	07:00:00	11:00:00	11:00:00	07:00:00	07:00:00			07:00:00	07:00:00		11:00:00	11:00:00
Peak Volume	88	94	94	95	86	49	39	91	70			0	0		3	2
pm Peak	16:00:00	13:00:00	13:00:00	16:00:00	16:00:00	12:00:00	13:00:00	16:00:00	13:00:00			12:00:00	12:00:00		12:00:00	12:00:00
Peak Volume	57	55	60	56	58	54	47	56	54			1	1		3	3

Event key: QC Failure | QC Outlier | QC Atypical | Events | Special | Holiday | Offline

Weekends and defined holidays

Notes on data:

Weekly (7-day) averages are calculated as the average of workday values and weekend values, weighted in the proportion 5:2.

Holidays & Events:

Start	End	Type	Lanes	Included	Description
03/01/2022 00:00	03/01/2022 23:59	Holiday	-	No	Holiday
17/03/2022 00:00	17/03/2022 23:59	Holiday	-	No	Holiday
18/04/2022 00:00	18/04/2022 23:59	Holiday	-	No	Holiday
02/05/2022 00:00	02/05/2022 23:59	Holiday	-	No	Holiday
06/06/2022 00:00	06/06/2022 23:59	Holiday	-	No	Holiday
01/08/2022 00:00	01/08/2022 23:59	Holiday	-	No	Holiday

	31/10/2022 00:00	31/10/2022 23:59	Holiday	-	No	Holiday
	26/12/2022 00:00	26/12/2022 23:59	Holiday	-	No	Holiday
	27/12/2022 00:00	27/12/2022 23:59	Holiday	-	No	Holiday

2-12-31

Lanes Each Lane
Time Period 1 hour
Class **HGV_ART**
Exclude Holidays

HGV COMBINED (ADD CELLS)

HGV & PSV (ADD CELLS)

HGV COMBINED AS %

HGV & PSV AS %

Total	Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
8	0	0	6	0	0	14	0	0	14	0%	0%	1%	0%	0%	1%
4	0	0	1	0	0	5	0	0	5	0%	0%	1%	0%	0%	1%
5	0	0	6	0	0	11	0	0	12	0%	0%	3%	0%	0%	3%
13	0	0	14	0	0	27	0	0	27	0%	0%	6%	0%	0%	6%
8	0	0	57	0	0	65	0	0	66	0%	0%	9%	0%	0%	9%
31	1	1	370	1	1	401	1	1	406	17%	20%	23%	17%	20%	24%
193	2	2	646	3	3	839	3	3	905	10%	12%	9%	10%	12%	10%
536	1	1	406	3	3	942	3	3	1095	3%	3%	3%	3%	3%	3%
899	2	2	668	5	5	1567	6	6	1749	6%	8%	7%	8%	9%	8%
545	3	2	880	5	4	1425	5	4	1559	7%	6%	6%	7%	6%	6%
752	3	3	947	6	5	1699	8	7	2345	5%	5%	5%	7%	7%	6%
1383	2	2	728	7	6	2111	9	8	2691	7%	6%	6%	9%	8%	8%
1530	2	2	682	7	6	2212	8	7	2513	7%	6%	6%	8%	7%	7%
846	2	2	627	5	4	1473	6	5	1731	4%	4%	4%	5%	4%	4%
688	2	2	586	4	4	1274	5	5	1496	4%	4%	4%	5%	5%	5%
719	2	2	588	4	4	1307	5	5	1513	4%	4%	3%	5%	5%	4%
736	1	1	435	4	3	1171	5	4	1416	3%	2%	3%	3%	3%	3%
630	1	1	268	3	3	898	4	4	1154	3%	3%	3%	4%	4%	3%
319	1	1	222	2	2	541	2	2	595	2%	2%	2%	2%	2%	2%
399	0	0	128	1	1	527	1	1	647	2%	2%	2%	2%	2%	3%
150	0	0	69	1	0	219	1	0	265	2%	0%	1%	2%	0%	2%
71	0	0	29	0	0	100	0	0	116	0%	0%	1%	0%	0%	1%
35	0	0	6	0	0	41	0	0	46	0%	0%	1%	0%	0%	1%
14	0	0	2	0	0	16	0	0	19	0%	0%	1%	0%	0%	1%
9583	23	20	7037	56	47	16620	66	56	19857	5%	4%	4%	5%	5%	5%
10396	26	22	7909	61	51	18305	72	61	21790	4%	4%	4%	5%	5%	5%
10445	26	22	7917	62	52	18362	73	62	21855	4%	4%	4%	5%	5%	5%
10514	28	24	8371	64	54	18885	75	64	18885	4%	4%	4%	5%	5%	4%
	10:00:00	10:00:00		10:30:00	10:30:00		10:15:00	10:15:00		10:22:30	10:22:30		10:11:15	10:11:15	
	3	3		8	7		10	10		18	17		21	27	
	12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00	
	2	2		7	6		9	8		16	14		25	22	

Total	Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count

4	0	0	2	0	0	6	0	0	6	0%	0%	1%	0%	0%	1%
3	0	0		0	0	3	0	0	3	#DIV/0!	0%	1%	#DIV/0!	0%	1%
3	0	0	3	0	0	6	0	0	6	#DIV/0!	#DIV/0!	3%	#DIV/0!	#DIV/0!	3%
9	0	0	13	0	0	22	0	0	22	#DIV/0!	0%	12%	#DIV/0!	0%	12%
4	0	0	35	0	0	39	0	0	40	0%	0%	11%	0%	0%	11%
10	0	0	38	0	0	48	0	0	52	0%	0%	7%	0%	0%	8%
18	0	0	56	0	0	74	0	0	77	0%	0%	4%	0%	0%	4%
114	0	0	80	0	0	194	0	0	202	0%	0%	3%	0%	0%	3%
631	1	1	326	3	3	957	3	3	1073	7%	9%	8%	7%	9%	9%
228	2	2	602	3	3	830	3	3	878	7%	8%	6%	7%	8%	6%
358	2	2	554	3	3	912	5	5	1500	5%	6%	5%	9%	9%	8%
639	1	1	343	3	3	982	4	4	1473	6%	6%	5%	8%	8%	8%
570	1	1	225	3	3	795	3	3	878	5%	5%	4%	5%	5%	4%
418	1	1	311	2	2	729	2	2	817	3%	3%	3%	3%	3%	4%
278	1	1	350	2	2	628	2	2	654	4%	4%	4%	4%	4%	4%
315	1	1	374	2	2	689	2	2	718	3%	4%	3%	3%	4%	4%
336	1	1	294	2	2	630	2	2	684	2%	3%	2%	2%	3%	3%
423	1	1	212	2	2	635	3	3	814	3%	4%	3%	5%	6%	4%
161	1	1	183	2	1	344	2	1	374	4%	2%	2%	4%	2%	2%
285	0	0	104	1	1	389	1	1	494	3%	3%	3%	3%	3%	4%
80	0	0	62	0	0	142	0	0	176	0%	0%	2%	0%	0%	2%
30	0	0	20	0	0	50	0	0	59	0%	0%	1%	0%	0%	1%
12	0	0	6	0	0	18	0	0	19	0%	0%	1%	0%	0%	1%
6	0	0	1	0	0	7	0	0	9	0%	0%	1%	0%	0%	1%
				0	0	0									
4471	13	11	3854	28	24	8325	33	29	10065	4%	4%	4%	5%	5%	5%
4884	13	12	4096	30	26	8980	36	31	10871	4%	4%	4%	5%	5%	5%
4902	13	12	4103	30	26	9005	36	31	10899	4%	4%	4%	5%	5%	5%
4935	14	12		31	26	4935	37	31	4935	4%	4%	2%	5%	5%	2%
	09:00:00	09:00:00		08:30:00	10:00:00		09:15:00	10:00:00		08:52:30	10:00:00		08:56:15	09:30:00	
	2	2		4	4		6	6		10	10		12	16	
	15:00:00	15:00:00		13:30:00	13:30:00		14:15:00	14:15:00		13:52:30	13:52:30		14:03:45	14:03:45	
	1	1		3	3		4	4		7	7		11	11	

Total	Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
4	0	0	4	0	0	8	0	0	8	0%	0%	1%	0%	0%	1%
1	0	0	1	0	0	2	0	0	2	0%	0%	0%	0%	0%	0%
2	0	0	3	0	0	5	0	0	6	#DIV/0!	0%	2%	#DIV/0!	0%	3%
4	0	0	1	0	0	5	0	0	5	#DIV/0!	0%	2%	#DIV/0!	0%	2%
4	0	0	22	0	0	26	0	0	26	0%	0%	7%	0%	0%	7%
21	1	1	332	1	1	353	1	1	354	33%	33%	34%	33%	33%	34%
175	2	2	590	3	2	765	3	2	828	13%	10%	11%	13%	10%	12%
422	1	1	326	2	2	748	2	2	893	2%	3%	3%	2%	3%	4%
268	1	1	342	2	2	610	2	2	676	5%	6%	5%	5%	6%	6%
317	1	1	278	2	2	595	2	2	681	6%	7%	6%	6%	7%	7%
394	1	1	393	2	2	787	2	2	845	4%	4%	4%	4%	4%	5%
744	1	1	385	4	3	1129	4	3	1218	9%	7%	7%	9%	7%	8%
960	2	1	457	5	4	1417	6	5	1635	10%	8%	8%	12%	10%	9%
428	1	1	316	2	2	744	2	2	914	4%	4%	4%	4%	4%	5%
410	1	1	236	2	2	646	3	3	842	4%	4%	4%	7%	7%	5%
404	1	1	214	2	2	618	2	2	795	4%	4%	4%	4%	4%	5%

400	0	0	141	1	1	541	2	2	732	2%	2%	3%	4%	4%	4%	
207	0	0	56	1	1	263	1	1	340	2%	2%	2%	2%	2%	2%	
158	0	0	39	1	0	197	1	0	221	3%	0%	1%	3%	0%	2%	
114	0	0	24	0	0	138	0	0	153	0%	0%	1%	0%	0%	2%	
70	0	0	7	0	0	77	0	0	89	0%	0%	1%	0%	0%	1%	
41	0	0	9	0	0	50	0	0	57	0%	0%	1%	0%	0%	1%	
23	0	0		0	0	23	0	0	27	0%	0%	1%	0%	0%	1%	
8	0	0	1	0	0	9	0	0	10	0%	0%	1%	0%	0%	1%	
				0	0	0										
5112	11	9	3183	28	23	8295	32	27	9792	5%	4%	4%	5%	5%	5%	
5512	13	11	3813	32	27	9325	37	31	10919	5%	4%	4%	5%	5%	5%	
5543	13	11		32	27	5543	37	32	7142	5%	4%	2%	5%	5%	3%	
5579	14	12		33	28	5579	38	33	5579	5%	4%	2%	5%	5%	2%	
	06:00:00	06:00:00		08:30:00	08:30:00		07:45:00	07:45:00		08:07:30	08:07:30		07:03:45	07:03:45		
	2	2		5	4		5	6		10	10		12	16		
	12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		
	2	1		5	4		7	5		12	9		19	14		

Total	Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
4	0	0	2	0	0	6	0	0	6	0%	0%	1%	0%	0%	1%
3	0	0		0	0	3	0	0	3	#DIV/0!	0%	1%	#DIV/0!	0%	1%
3	0	0	3	0	0	6	0	0	6	#DIV/0!	#DIV/0!	3%	#DIV/0!	#DIV/0!	3%
9	0	0	13	0	0	22	0	0	22	#DIV/0!	0%	12%	#DIV/0!	0%	12%
4	0	0	35	0	0	39	0	0	40	0%	0%	11%	0%	0%	11%
10	0	0	38	0	0	48	0	0	52	0%	0%	7%	0%	0%	8%
18	0	0	56	0	0	74	0	0	77	0%	0%	4%	0%	0%	4%
114	0	0	80	0	0	194	0	0	202	0%	0%	3%	0%	0%	3%
631	1	1	326	3	3	957	3	3	1073	7%	9%	8%	7%	9%	9%
228	2	2	602	3	3	830	3	3	878	7%	8%	6%	7%	8%	6%
358	2	2	554	3	3	912	5	5	1500	5%	6%	5%	9%	9%	8%
639	1	1	343	3	3	982	4	4	1473	6%	6%	5%	8%	8%	8%
570	1	1	225	3	3	795	3	3	878	5%	5%	4%	5%	5%	4%
418	1	1	311	2	2	729	2	2	817	3%	3%	3%	3%	3%	4%
278	1	1	350	2	2	628	2	2	654	4%	4%	4%	4%	4%	4%
315	1	1	374	2	2	689	2	2	718	3%	4%	3%	3%	4%	4%
336	1	1	294	2	2	630	2	2	684	2%	3%	2%	2%	3%	3%
423	1	1	212	2	2	635	3	3	814	3%	4%	3%	5%	6%	4%
161	1	1	183	2	1	344	2	1	374	4%	2%	2%	4%	2%	2%
285	0	0	104	1	1	389	1	1	494	3%	3%	3%	3%	3%	4%
80	0	0	62	0	0	142	0	0	176	0%	0%	2%	0%	0%	2%
30	0	0	20	0	0	50	0	0	59	0%	0%	1%	0%	0%	1%
12	0	0	6	0	0	18	0	0	19	0%	0%	1%	0%	0%	1%
6	0	0	1	0	0	7	0	0	9	0%	0%	1%	0%	0%	1%
				0	0	0									
4471	13	11	3854	28	24	8325	33	29	10065	4%	4%	4%	5%	5%	5%
4884	13	12	4096	30	26	8980	36	31	10871	4%	4%	4%	5%	5%	5%
4902	13	12	4103	30	26	9005	36	31	10899	4%	4%	4%	5%	5%	5%
4935	14	12		31	26	4935	37	31	4935	4%	4%	2%	5%	5%	2%
	09:00:00	09:00:00		08:30:00	10:00:00		09:15:00	10:00:00		08:52:30	10:00:00		08:56:15	09:30:00	
	2	2		4	4		6	6		10	10		12	16	

	15:00:00	15:00:00		13:30:00	13:30:00		14:15:00	14:15:00		13:52:30	13:52:30		14:03:45	14:03:45	
	1	1		3	3		4	4		7	7		11	11	
Total	**Average**		**Total**	**Average**		**Total**	**Average**		**Total**	**Average**		**Total**	**Average**		**Total**
Count	**Workday**	**7 Day**	**Count**	**Workday**	**7 Day**	**Count**	**Workday**	**7 Day**	**Count**	**Workday**	**7 Day**	**Count**	**Workday**	**7 Day**	**Count**
4	0	0	4	0	0	8	0	0	8	0%	0%	1%	0%	0%	1%
1	0	0	1	0	0	2	0	0	2	0%	0%	0%	0%	0%	0%
2	0	0	3	0	0	5	0	0	6	#DIV/0!	0%	2%	#DIV/0!	0%	3%
4	0	0	1	0	0	5	0	0	5	#DIV/0!	0%	2%	#DIV/0!	0%	2%
4	0	0	22	0	0	26	0	0	26	0%	0%	7%	0%	0%	7%
21	1	1	332	1	1	353	1	1	354	33%	33%	34%	33%	33%	34%
175	2	2	590	3	2	765	3	2	828	13%	10%	11%	13%	10%	12%
422	1	1	326	2	2	748	2	2	893	2%	3%	3%	2%	3%	4%
268	1	1	342	2	2	610	2	2	676	5%	6%	5%	5%	6%	6%
317	1	1	278	2	2	595	2	2	681	6%	7%	6%	6%	7%	7%
394	1	1	393	2	2	787	2	2	845	4%	4%	4%	4%	4%	5%
744	1	1	385	4	3	1129	4	3	1218	9%	7%	7%	9%	7%	8%
960	2	1	457	5	4	1417	6	5	1635	10%	8%	8%	12%	10%	9%
428	1	1	316	2	2	744	2	2	914	4%	4%	4%	4%	4%	5%
410	1	1	236	2	2	646	3	3	842	4%	4%	4%	7%	7%	5%
404	1	1	214	2	2	618	2	2	795	4%	4%	4%	4%	4%	5%
400	0	0	141	1	1	541	2	2	732	2%	2%	3%	4%	4%	4%
207	0	0	56	1	1	263	1	1	340	2%	2%	2%	2%	2%	2%
158	0	0	39	1	0	197	1	0	221	3%	0%	1%	3%	0%	2%
114	0	0	24	0	0	138	0	0	153	0%	0%	1%	0%	0%	2%
70	0	0	7	0	0	77	0	0	89	0%	0%	1%	0%	0%	1%
41	0	0	9	0	0	50	0	0	57	0%	0%	1%	0%	0%	1%
23	0	0		0	0	23	0	0	27	0%	0%	1%	0%	0%	1%
8	0	0	1	0	0	9	0	0	10	0%	0%	1%	0%	0%	1%
				0	0	0									
5112	11	9	3183	28	23	8295	32	27	9792	5%	4%	4%	5%	5%	5%
5512	13	11	3813	32	27	9325	37	31	10919	5%	4%	4%	5%	5%	5%
5543	13	11		32	27	5543	37	32	7142	5%	4%	2%	5%	5%	3%
5579	14	12		33	28	5579	38	33	5579	5%	4%	2%	5%	5%	2%
	06:00:00	06:00:00		08:30:00	08:30:00		07:45:00	07:45:00		08:07:30	08:07:30		07:03:45	07:03:45	
	2	2		5	4		5	6		10	10		12	16	
	12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00		12:00:00	12:00:00	
	2	1		5	4		7	5		12	9		19	14	

Traffic Survey Data - N68

Weekly Volume Report NRA 000000001681 2022-01-01 to 2022-12-31

Site Name	TMU N68 030.0 E
Site ID	000000001681
Grid	114611162757
Description	N68 Between Ennis and Kilrush, Ballyduneen, Co. Clare

Lanes	Each Lane
Time Period	1 hour
Class	Any
Exclude data:	Holidays

Class **ALL**

IMPORT

Lanes	Each Lane
Time	1 hour
Class	**BUS**
Exclude	Holidays

IMPORT

Lanes	Each Lane
Time	1 hour
Class	**HGV_RIG**
Exclude	Holidays

All directions

	<--	Average of each					-->	Average		Total		Average		Total	Average		Total
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day	Count
00:00:00	15	13	15	16	19	24	24	16	18	6294		0	0	8	0	0	34
01:00:00	9	8	8	8	9	15	17	8	11	3754		0	0	6	0	0	52
02:00:00	8	7	6	6	7	10	12	7	8	2838		0	0	2	0	0	17
03:00:00	5	5	5	5	5	7	9	5	6	2058		0	0	2	0	0	40
04:00:00	12	10	9	9	9	9	7	10	9	3244		0	0	4	0	0	81
05:00:00	45	38	34	35	31	20	10	36	30	10594		0	0	9	2	1	423
06:00:00	140	129	124	123	114	48	26	126	100	35055		1	1	304	3	2	734
07:00:00	281	288	273	272	250	95	47	273	215	75092		1	1	269	6	5	1693
08:00:00	307	319	297	307	275	132	71	301	244	84892		1	1	286	9	7	2301
09:00:00	234	253	235	248	225	177	120	239	213	74366		0	1	185	9	7	2460
10:00:00	222	231	228	239	228	252	189	230	227	79280		0	0	134	10	8	2769
11:00:00	233	239	237	245	251	296	249	241	250	87093		0	0	160	10	8	2725
12:00:00	237	249	248	252	278	349	318	253	276	96842		0	0	165	9	7	2534
13:00:00	248	260	267	269	309	352	351	271	294	103184		0	0	154	9	7	2332
14:00:00	252	259	266	276	327	343	342	277	296	103858		1	0	172	9	7	2527
15:00:00	280	290	295	310	391	334	325	314	319	111551		1	1	192	9	7	2367
16:00:00	344	346	356	369	434	313	328	371	356	124609		0	1	209	7	6	2028
17:00:00	395	417	415	414	449	300	329	419	389	135596		1	1	462	6	5	1785
18:00:00	285	310	318	323	373	262	312	323	313	110010		1	1	210	3	3	910
19:00:00	163	174	184	197	263	189	239	197	202	70775		0	0	79	2	1	513
20:00:00	110	120	126	136	177	139	165	135	140	48936		1	0	159	1	1	349
21:00:00	78	83	93	101	125	92	97	97	96	33719		0	0	73	1	1	242
22:00:00	41	46	58	58	77	57	54	56	56	19828		1	1	342	0	0	141
23:00:00	23	27	32	32	50	37	27	33	33	11583		0	0	73	0	0	74
07-19	3319	3461	3437	3523	3790	3206	2982	3511	3393	1186373		8	7	2598	97	76	26431
06-22	3809	3967	3964	4081	4469	3675	3510	4066	3931	1374858		10	9	3213	103	81	28269
06-24	3873	4040	4055	4170	4595	3768	3591	4155	4020	1406269		11	10	3628	104	82	28484
00-24	3967	4121	4132	4248	4674	3855	3671	4237	4102	1435051		11	10	3659	106	84	29131
am Peak	08:00:00	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	08:00:00	11:00:00			06:00:00	06:00:00		10:00:00	10:00:00	
Peak Volume	307	319	297	307	275	296	249	301	250			1	1		10	8	
pm Peak	17:00:00	17:00:00	17:00:00	17:00:00	17:00:00	13:00:00	13:00:00	17:00:00	17:00:00			17:00:00	17:00:00		14:00:00	12:00:00	
Peak Volume	395	417	415	414	449	352	351	419	389			1	1		9	7	

All Westbound

	<--	Average of each	-->	Average		Total		Average		Total	Average		Total

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day	Count
00:00:00	9	9	11	11	13	16	13	11	12	4219		0	0	1	0	0	20
01:00:00	6	6	5	6	6	9	8	6	7	2324		0	0	3	0	0	48
02:00:00	3	3	3	3	3	6	7	3	4	1387		0	0	1	0	0	11
03:00:00	2	2	2	2	2	4	5	2	3	930		0	0	1	0	0	23
04:00:00	4	3	2	3	2	3	2	3	3	999		0	0		0	0	42
05:00:00	10	9	9	9	9	8	3	9	8	2887		0	0	4	1	1	302
06:00:00	32	32	31	32	32	21	12	32	28	9611		1	1	275	1	1	260
07:00:00	109	114	111	107	104	44	21	109	87	30377		0	0	84	4	3	1105
08:00:00	132	137	130	130	120	53	31	130	105	36393		0	0	119	5	4	1298
09:00:00	107	122	114	118	107	78	55	114	100	34931		0	0	60	5	4	1419
10:00:00	101	106	111	111	105	124	91	107	107	37465		0	0	65	6	4	1541
11:00:00	106	113	118	120	126	157	121	117	123	42915		0	0	63	5	4	1395
12:00:00	111	120	121	125	141	197	149	124	138	48393		0	0	53	4	3	1200
13:00:00	119	125	125	133	163	201	156	133	146	51206		0	0	63	3	3	918
14:00:00	120	123	124	136	172	192	142	135	145	50791		0	0	75	4	3	993
15:00:00	136	140	144	152	215	186	127	158	158	55163		0	0	89	3	3	928
16:00:00	162	166	173	186	249	171	118	188	176	61366		0	0	83	3	2	801
17:00:00	223	235	239	234	278	159	121	242	213	74260		0	0	103	2	2	574
18:00:00	179	199	201	209	247	141	120	208	186	65283		0	0	80	1	1	388
19:00:00	87	99	105	120	176	99	92	118	112	39102		0	0	30	1	1	214
20:00:00	60	66	73	84	119	74	69	81	78	27402		0	0	18	0	0	169
21:00:00	45	49	57	64	81	53	45	60	57	19855		0	0	15	0	0	106
22:00:00	23	27	35	37	52	34	28	35	34	12001		1	1	266	0	0	73
23:00:00	15	17	22	21	37	23	17	23	22	7784		0	0	12	0	0	43
07-19	1605	1701	1709	1762	2026	1702	1252	1765	1683	588543		3	3	937	46	36	12560
06-22	1829	1947	1976	2061	2433	1949	1470	2056	1957	684513		4	4	1275	49	38	13309
06-24	1866	1992	2034	2119	2522	2006	1515	2114	2013	704298		5	4	1553	49	39	13425
00-24	1901	2025	2067	2152	2558	2052	1554	2148	2050	717044		5	4		51	40	13871
am Peak	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	11:00:00	08:00:00	11:00:00			06:00:00	06:00:00		10:00:00	10:00:00	
Peak Volume	132	137	130	130	126	157	121	130	123			1	1		6	4	
pm Peak	17:00:00	17:00:00	17:00:00	17:00:00	17:00:00	13:00:00	13:00:00	17:00:00	17:00:00			22:00:00	22:00:00		12:00:00	12:00:00	
Peak Volume	223	235	239	234	278	201	156	242	213			1	1		4	3	

All Eastbound

	<--	Average of each					-->	Average		Total		Average		Total	Average		Total
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day	Count
00:00:00	6	4	4	5	5	7	10	5	6	2075		0	0	7	0	0	14
01:00:00	3	2	2	2	3	6	9	3	4	1430		0	0	3	0	0	4
02:00:00	4	4	4	3	4	5	5	4	4	1451		0	0	1	0	0	6
03:00:00	3	3	3	3	3	3	4	3	3	1128		0	0	1	0	0	17
04:00:00	8	7	7	6	6	6	4	7	6	2245		0	0	4	0	0	39
05:00:00	34	29	25	26	22	13	7	27	22	7707		0	0	5	0	0	121
06:00:00	107	97	93	91	82	27	14	94	73	25444		0	0	29	2	1	474
07:00:00	173	174	162	164	146	51	27	164	128	44715		1	1	185	2	2	588
08:00:00	175	182	167	177	155	80	40	171	139	48499		1	0	167	4	3	1003
09:00:00	127	131	121	130	118	99	65	125	113	39435		0	0	125	4	3	1041
10:00:00	121	124	117	128	123	128	98	123	120	41815		0	0	69	4	4	1228
11:00:00	127	126	119	124	125	139	129	124	127	44178		0	0	97	5	4	1330
12:00:00	127	129	127	127	137	152	169	129	138	48449		0	0	112	5	4	1334
13:00:00	129	135	143	137	146	152	195	138	148	51978		0	0	91	5	4	1414

14:00:00	132	136	142	140	155	151	199	141	151	53067		0	0	97	6	4	1534
15:00:00	144	150	152	158	175	148	198	156	161	56388		0	0	103	5	4	1439
16:00:00	182	180	183	183	185	142	210	183	181	63243		0	0	126	5	4	1227
17:00:00	172	181	177	180	171	141	208	176	176	61336		1	1	359	4	3	1211
18:00:00	106	111	117	114	126	121	192	115	127	44727		0	0	130	2	1	522
19:00:00	76	75	79	77	87	90	147	79	90	31673		0	0	49	1	1	299
20:00:00	51	54	53	52	59	65	96	54	61	21534		0	0	141	1	1	180
21:00:00	33	34	36	38	44	40	52	37	39	13864		0	0	58	0	0	136
22:00:00	18	19	23	21	25	23	26	21	22	7827		0	0	76	0	0	68
23:00:00	9	9	10	10	12	14	10	10	11	3799		0	0	61	0	0	31
07-19	1714	1760	1727	1761	1764	1503	1731	1746	1709	597830		5	5	1661	51	40	13871
06-22	1981	2019	1988	2019	2036	1726	2040	2009	1973	690345		6	6	1938	55	43	14960
06-24	2007	2048	2021	2050	2073	1762	2076	2041	2006	701971		6	6	2075	55	43	15059
00-24	2067	2097	2065	2095	2117	1803	2117	2089	2052	718007		6	6	2096	56	44	15260
am Peak	08:00:00	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	08:00:00	08:00:00			08:00:00	07:00:00		11:00:00	11:00:00	
Peak Volume	175	182	167	177	155	139	129	171	139			1	1		5	4	
pm Peak	16:00:00	17:00:00	16:00:00	16:00:00	16:00:00	12:00:00	16:00:00	16:00:00	16:00:00			17:00:00	17:00:00		14:00:00	14:00:00	
Peak Volume	182	181	183	183	185	152	210	183	181			1	1		6	4	

Westbound

	<--	Average of each					-->	Average		Total		Average		Total		
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day	Count
00:00:00	9	9	11	11	13	16	13	11	12	4219		0	0	1	0	0	20
01:00:00	6	6	5	6	6	9	8	6	7	2324		0	0	3	0	0	48
02:00:00	3	3	3	3	3	6	7	3	4	1387		0	0	1	0	0	11
03:00:00	2	2	2	2	2	4	5	2	3	930		0	0	1	0	0	23
04:00:00	4	3	2	3	2	3	2	3	3	999		0	0		0	0	42
05:00:00	10	9	9	9	9	8	3	9	8	2887		0	0	4	1	1	302
06:00:00	32	32	31	32	32	21	12	32	28	9611		1	1	275	1	1	260
07:00:00	109	114	111	107	104	44	21	109	87	30377		0	0	84	4	3	1105
08:00:00	132	137	130	130	120	53	31	130	105	36393		0	0	119	5	4	1298
09:00:00	107	122	114	118	107	78	55	114	100	34931		0	0	60	5	4	1419
10:00:00	101	106	111	111	105	124	91	107	107	37465		0	0	65	6	4	1541
11:00:00	106	113	118	120	126	157	121	117	123	42915		0	0	63	5	4	1395
12:00:00	111	120	121	125	141	197	149	124	138	48393		0	0	53	4	3	1200
13:00:00	119	125	125	133	163	201	156	133	146	51206		0	0	63	3	3	918
14:00:00	120	123	124	136	172	192	142	135	145	50791		0	0	75	4	3	993
15:00:00	136	140	144	152	215	186	127	158	158	55163		0	0	89	3	3	928
16:00:00	162	166	173	186	249	171	118	188	176	61366		0	0	83	3	2	801
17:00:00	223	235	239	234	278	159	121	242	213	74260		0	0	103	2	2	574
18:00:00	179	199	201	209	247	141	120	208	186	65283		0	0	80	1	1	388
19:00:00	87	99	105	120	176	99	92	118	112	39102		0	0	30	1	1	214
20:00:00	60	66	73	84	119	74	69	81	78	27402		0	0	18	0	0	169
21:00:00	45	49	57	64	81	53	45	60	57	19855		0	0	15	0	0	106
22:00:00	23	27	35	37	52	34	28	35	34	12001		1	1	266	0	0	73
23:00:00	15	17	22	21	37	23	17	23	22	7784		0	0	12	0	0	43
07-19	1605	1701	1709	1762	2026	1702	1252	1765	1683	588543		3	3	937	46	36	12560
06-22	1829	1947	1976	2061	2433	1949	1470	2056	1957	684513		4	4	1275	49	38	13309
06-24	1866	1992	2034	2119	2522	2006	1515	2114	2013	704298		5	4	1553	49	39	13425
00-24	1901	2025	2067	2152	2558	2052	1554	2148	2050	717044		5	4		51	40	13871

am Peak	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	11:00:00	08:00:00	11:00:00			06:00:00	06:00:00		10:00:00	10:00:00	
Peak Volume	132	137	130	130	126	157	121	130	123			1	1		6	4	
pm Peak	17:00:00	17:00:00	17:00:00	17:00:00	17:00:00	13:00:00	13:00:00	17:00:00	17:00:00			22:00:00	22:00:00		12:00:00	12:00:00	
Peak Volume	223	235	239	234	278	201	156	242	213			1	1		4	3	

Eastbound

	<--	Average of each					-->	Average		Total		Average		Total	Average		Total
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day	Count		Workday	7 Day	Count	Workday	7 Day	Count
00:00:00	6	4	4	5	5	7	10	5	6	2075		0	0	7	0	0	14
01:00:00	3	2	2	2	3	6	9	3	4	1430		0	0	3	0	0	4
02:00:00	4	4	4	3	4	5	5	4	4	1451		0	0	1	0	0	6
03:00:00	3	3	3	3	3	3	4	3	3	1128		0	0	1	0	0	17
04:00:00	8	7	7	6	6	6	4	7	6	2245		0	0	4	0	0	39
05:00:00	34	29	25	26	22	13	7	27	22	7707		0	0	5	0	0	121
06:00:00	107	97	93	91	82	27	14	94	73	25444		0	0	29	2	1	474
07:00:00	173	174	162	164	146	51	27	164	128	44715		1	1	185	2	2	588
08:00:00	175	182	167	177	155	80	40	171	139	48499		1	0	167	4	3	1003
09:00:00	127	131	121	130	118	99	65	125	113	39435		0	0	125	4	3	1041
10:00:00	121	124	117	128	123	128	98	123	120	41815		0	0	69	4	4	1228
11:00:00	127	126	119	124	125	139	129	124	127	44178		0	0	97	5	4	1330
12:00:00	127	129	127	127	137	152	169	129	138	48449		0	0	112	5	4	1334
13:00:00	129	135	143	137	146	152	195	138	148	51978		0	0	91	5	4	1414
14:00:00	132	136	142	140	155	151	199	141	151	53067		0	0	97	6	4	1534
15:00:00	144	150	152	158	175	148	198	156	161	56388		0	0	103	5	4	1439
16:00:00	182	180	183	183	185	142	210	183	181	63243		0	0	126	5	4	1227
17:00:00	172	181	177	180	171	141	208	176	176	61336		1	1	359	4	3	1211
18:00:00	106	111	117	114	126	121	192	115	127	44727		0	0	130	2	1	522
19:00:00	76	75	79	77	87	90	147	79	90	31673		0	0	49	1	1	299
20:00:00	51	54	53	52	59	65	96	54	61	21534		0	0	141	1	1	180
21:00:00	33	34	36	38	44	40	52	37	39	13864		0	0	58	0	0	136
22:00:00	18	19	23	21	25	23	26	21	22	7827		0	0	76	0	0	68
23:00:00	9	9	10	10	12	14	10	10	11	3799		0	0	61	0	0	31
07-19	1714	1760	1727	1761	1764	1503	1731	1746	1709	597830		5	5	1661	51	40	13871
06-22	1981	2019	1988	2019	2036	1726	2040	2009	1973	690345		6	6	1938	55	43	14960
06-24	2007	2048	2021	2050	2073	1762	2076	2041	2006	701971		6	6	2075	55	43	15059
00-24	2067	2097	2065	2095	2117	1803	2117	2089	2052	718007		6	6	2096	56	44	15260
am Peak	08:00:00	08:00:00	08:00:00	08:00:00	08:00:00	11:00:00	11:00:00	08:00:00	08:00:00			08:00:00	07:00:00		11:00:00	11:00:00	
Peak Volume	175	182	167	177	155	139	129	171	139			1	1		5	4	
pm Peak	16:00:00	17:00:00	16:00:00	16:00:00	16:00:00	12:00:00	16:00:00	16:00:00	16:00:00			17:00:00	17:00:00		14:00:00	14:00:00	
Peak Volume	182	181	183	183	185	152	210	183	181			1	1		6	4	

Event key: QC Failure | QC Outlier | QC Atypical | Events | Special | Holiday
Weekends and defined holidays

Notes on data:

Weekly (7-day) averages are calculated as the average of workday values and weekend values, weighted in the proportion 5:2.

Holidays & Events:

Start	End	Type	Lanes	Included	Description
03/01/2022 00:00	03/01/2022 23:59	Holiday	-	No	Holiday
17/03/2022 00:00	17/03/2022 23:59	Holiday	-	No	Holiday
18/04/2022 00:00	18/04/2022 23:59	Holiday	-	No	Holiday
02/05/2022 00:00	02/05/2022 23:59	Holiday	-	No	Holiday

	06/06/2022 00:00	06/06/2022 23:59	Holiday	-	No	Holiday
	01/08/2022 00:00	01/08/2022 23:59	Holiday	-	No	Holiday
	31/10/2022 00:00	31/10/2022 23:59	Holiday	-	No	Holiday
	26/12/2022 00:00	26/12/2022 23:59	Holiday	-	No	Holiday
	27/12/2022 00:00	27/12/2022 23:59	Holiday	-	No	Holiday

IMPORT

Lanes Each Lane
Time 1 hour
Class **HGV_ART**
Exclude Holidays

HGV COMBINED (ADD CELLS)

HGV & PSV (ADD CELLS)

HGV COMBINED AS %

HGV & PSV AS %

Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
1	1	256	1	1	290	1	1	298	6%	6%	5%	6%	6%	5%
0	0	157	0	0	209	0	0	215	0%	0%	6%	0%	0%	6%
0	0	43	0	0	60	0	0	62	0%	0%	2%	0%	0%	2%
0	0	81	0	0	121	0	0	123	0%	0%	6%	0%	0%	6%
1	1	277	1	1	358	1	1	362	10%	11%	11%	10%	11%	11%
2	2	693	4	3	1116	4	3	1125	11%	10%	11%	11%	10%	11%
4	3	1102	7	5	1836	8	6	2140	6%	5%	5%	6%	6%	6%
6	5	1594	12	10	3287	13	11	3556	4%	5%	4%	5%	5%	5%
6	5	1674	15	12	3975	16	13	4261	5%	5%	5%	5%	5%	5%
7	5	1755	16	12	4215	16	13	4400	7%	6%	6%	7%	6%	6%
6	5	1679	16	13	4448	16	13	4582	7%	6%	6%	7%	6%	6%
6	5	1667	16	13	4392	16	13	4552	7%	5%	5%	7%	5%	5%
6	5	1670	15	12	4204	15	12	4369	6%	4%	4%	6%	4%	5%
6	5	1622	15	12	3954	15	12	4108	6%	4%	4%	6%	4%	4%
6	5	1640	15	12	4167	16	12	4339	5%	4%	4%	6%	4%	4%
6	4	1539	15	11	3906	16	12	4098	5%	3%	4%	5%	4%	4%
4	3	1075	11	9	3103	11	10	3312	3%	3%	2%	3%	3%	3%
3	2	800	9	7	2585	10	8	3047	2%	2%	2%	2%	2%	2%
2	2	528	5	5	1438	6	6	1648	2%	2%	1%	2%	2%	1%
1	1	342	3	2	855	3	2	934	2%	1%	1%	2%	1%	1%
1	1	218	2	2	567	3	2	726	1%	1%	1%	2%	1%	1%
1	0	169	2	1	411	2	1	484	2%	1%	1%	2%	1%	1%
1	0	159	1	0	300	2	1	642	2%	0%	2%	4%	2%	3%
1	1	268	1	1	342	1	1	415	3%	3%	3%	3%	3%	4%
64	50	17243	161	126	43674	169	133	46272	5%	4%	4%	5%	4%	4%
70	55	19074	173	136	47343	183	145	50556	4%	3%	3%	5%	4%	4%
72	56	19501	176	138	47985	187	148	51613	4%	3%	3%	5%	4%	4%
76	60	21008	182	144	50139	193	154	53798	4%	4%	3%	5%	4%	4%
09:00:00	09:00:00		09:30:00	09:30:00		07:45:00	07:45:00		08:37:30	08:37:30		08:48:45	08:48:45	
7	5		17	13		18	18		35	31		42	49	
12:00:00	12:00:00		13:00:00	12:00:00		12:30:00	12:00:00		12:45:00	12:00:00		12:37:30	12:00:00	
6	5		15	12		21	17		36	29		57	46	

Average		Total	Average		Total	Average		Total	Average		Total	Average		Total

Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
0	0	90	0	0	110	0	0	111	0%	0%	3%	0%	0%	3%
0	0	21	0	0	69	0	0	72	0%	0%	3%	0%	0%	3%
0	0	12	0	0	23	0	0	24	0%	0%	2%	0%	0%	2%
0	0	27	0	0	50	0	0	51	0%	0%	5%	0%	0%	5%
1	1	215	1	1	257	1	1	257	33%	33%	26%	33%	33%	26%
2	1	457	3	2	759	3	2	763	33%	25%	26%	33%	25%	26%
2	2	560	3	3	820	4	4	1095	9%	11%	9%	13%	14%	11%
3	2	865	7	5	1970	7	5	2054	6%	6%	6%	6%	6%	7%
4	3	1014	9	7	2312	9	7	2431	7%	7%	6%	7%	7%	7%
3	2	854	8	6	2273	8	6	2333	7%	6%	7%	7%	6%	7%
3	2	715	9	6	2256	9	6	2321	8%	6%	6%	8%	6%	6%
3	2	753	8	6	2148	8	6	2211	7%	5%	5%	7%	5%	5%
3	2	821	7	5	2021	7	5	2074	6%	4%	4%	6%	4%	4%
3	2	832	6	5	1750	6	5	1813	5%	3%	3%	5%	3%	4%
3	2	796	7	5	1789	7	5	1864	5%	3%	4%	5%	3%	4%
3	2	762	6	5	1690	6	5	1779	4%	3%	3%	4%	3%	3%
2	2	556	5	4	1357	5	4	1440	3%	2%	2%	3%	2%	2%
1	1	385	3	3	959	3	3	1062	1%	1%	1%	1%	1%	1%
1	1	253	2	2	641	2	2	721	1%	1%	1%	1%	1%	1%
1	0	162	2	1	376	2	1	406	2%	1%	1%	2%	1%	1%
0	0	119	0	0	288	0	0	306	0%	0%	1%	0%	0%	1%
0	0	92	0	0	198	0	0	213	0%	0%	1%	0%	0%	1%
0	0	107	0	0	180	1	1	446	0%	0%	1%	3%	3%	4%
1	1	223	1	1	266	1	1	278	4%	5%	3%	4%	5%	4%
			0	0	0									
32	25	8606	78	61	21166	81	64	22103	4%	4%	4%	5%	4%	4%
35	27	9539	84	65	22848	88	69	24123	4%	3%	3%	4%	4%	4%
36	28	9869	85	67	23294	90	71	24847	4%	3%	3%	4%	4%	4%
39	31	10691	90	71	24562	95	75	24562	4%	3%	3%	4%	4%	3%
08:00:00	08:00:00		09:00:00	09:00:00		07:30:00	07:30:00		08:15:00	08:15:00		08:07:30	08:07:30	
4	3		10	7		11	10		21	17		25	27	
13:00:00	13:00:00		12:30:00	12:30:00		12:45:00	12:45:00		12:37:30	12:37:30		12:41:15	12:41:15	
3	2		7	5		10	7		17	12		27	19	

Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
0	0	166	0	0	180	0	0	187	0%	0%	9%	0%	0%	9%
0	0	136	0	0	140	0	0	143	0%	0%	10%	0%	0%	10%
0	0	31	0	0	37	0	0	38	0%	0%	3%	0%	0%	3%
0	0	54	0	0	71	0	0	72	0%	0%	6%	0%	0%	6%
0	0	62	0	0	101	0	0	105	0%	0%	4%	0%	0%	5%
1	1	236	1	1	357	1	1	362	4%	5%	5%	4%	5%	5%
2	2	542	4	3	1016	4	3	1045	4%	4%	4%	4%	4%	4%
3	2	729	5	4	1317	6	5	1502	3%	3%	3%	4%	4%	3%
2	2	660	6	5	1663	7	5	1830	4%	4%	3%	4%	4%	4%
3	3	901	7	6	1942	7	6	2067	6%	5%	5%	6%	5%	5%
4	3	964	8	7	2192	8	7	2261	7%	6%	5%	7%	6%	5%
3	3	914	8	7	2244	8	7	2341	6%	6%	5%	6%	6%	5%
3	2	849	8	6	2183	8	6	2295	6%	4%	5%	6%	4%	5%
3	2	790	8	6	2204	8	6	2295	6%	4%	4%	6%	4%	4%

3	2	844	9	6	2378	9	6	2475	6%	4%	4%	6%	4%	5%
3	2	777	8	6	2216	8	6	2319	5%	4%	4%	5%	4%	4%
2	1	519	7	5	1746	7	5	1872	4%	3%	3%	4%	3%	3%
2	1	415	6	4	1626	7	5	1985	3%	2%	3%	4%	3%	3%
1	1	275	3	2	797	3	2	927	3%	2%	2%	3%	2%	2%
1	1	180	2	2	479	2	2	528	3%	2%	2%	3%	2%	2%
0	0	99	1	1	279	1	1	420	2%	2%	1%	2%	2%	2%
0	0	77	0	0	213	0	0	271	0%	0%	2%	0%	0%	2%
0	0	52	0	0	120	0	0	196	0%	0%	2%	0%	0%	3%
0	0	45	0	0	76	0	0	137	0%	0%	2%	0%	0%	4%
			0	0	0									
32	25	8637	83	65	22508	88	70	24169	5%	4%	4%	5%	4%	4%
35	27	9535	90	70	24495	96	76	26433	4%	4%	4%	5%	4%	4%
35	28	9632	90	71	24691	96	77	26766	4%	4%	4%	5%	4%	4%
38	30	10317	94	74	25577	100	80	27673	4%	4%	4%	5%	4%	4%
10:00:00	10:00:00		10:30:00	10:30:00		09:15:00	08:45:00		09:52:30	09:37:30		09:56:15	09:48:45	
4	3		9	7		10	10		19	17		23	27	
14:00:00	12:00:00		14:00:00	13:00:00		14:00:00	12:30:00		14:00:00	12:45:00		14:00:00	12:37:30	
3	2		9	6		12	8		21	14		33	22	

Average		Total	Average		Total	Average		Total	Average		Total	Average		Total
Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count
0	0	90	0	0	110	0	0	111	0%	0%	3%	0%	0%	3%
0	0	21	0	0	69	0	0	72	0%	0%	3%	0%	0%	3%
0	0	12	0	0	23	0	0	24	0%	0%	2%	0%	0%	2%
0	0	27	0	0	50	0	0	51	0%	0%	5%	0%	0%	5%
1	1	215	1	1	257	1	1	257	33%	33%	26%	33%	33%	26%
2	1	457	3	2	759	3	2	763	33%	25%	26%	33%	25%	26%
2	2	560	3	3	820	4	4	1095	9%	11%	9%	13%	14%	11%
3	2	865	7	5	1970	7	5	2054	6%	6%	6%	6%	6%	7%
4	3	1014	9	7	2312	9	7	2431	7%	7%	6%	7%	7%	7%
3	2	854	8	6	2273	8	6	2333	7%	6%	7%	7%	6%	7%
3	2	715	9	6	2256	9	6	2321	8%	6%	6%	8%	6%	6%
3	2	753	8	6	2148	8	6	2211	7%	5%	5%	7%	5%	5%
3	2	821	7	5	2021	7	5	2074	6%	4%	4%	6%	4%	4%
3	2	832	6	5	1750	6	5	1813	5%	3%	3%	5%	3%	4%
3	2	796	7	5	1789	7	5	1864	5%	3%	4%	5%	3%	4%
3	2	762	6	5	1690	6	5	1779	4%	3%	3%	4%	3%	3%
2	2	556	5	4	1357	5	4	1440	3%	2%	2%	3%	2%	2%
1	1	385	3	3	959	3	3	1062	1%	1%	1%	1%	1%	1%
1	1	253	2	2	641	2	2	721	1%	1%	1%	1%	1%	1%
1	0	162	2	1	376	2	1	406	2%	1%	1%	2%	1%	1%
0	0	119	0	0	288	0	0	306	0%	0%	1%	0%	0%	1%
0	0	92	0	0	198	0	0	213	0%	0%	1%	0%	0%	1%
0	0	107	0	0	180	1	1	446	0%	0%	1%	3%	3%	4%
1	1	223	1	1	266	1	1	278	4%	5%	3%	4%	5%	4%
			0	0	0									
32	25	8606	78	61	21166	81	64	22103	4%	4%	4%	5%	4%	4%
35	27	9539	84	65	22848	88	69	24123	4%	3%	3%	4%	4%	4%
36	28	9869	85	67	23294	90	71	24847	4%	3%	3%	4%	4%	4%
39	31	10691	90	71	24562	95	75	24562	4%	3%	3%	4%	4%	3%

08:00:00	08:00:00		09:00:00	09:00:00		07:30:00	07:30:00		08:15:00	08:15:00		08:07:30	08:07:30		
4	3		10	7		11	10		21	17		25	27		
13:00:00	13:00:00		12:30:00	12:30:00		12:45:00	12:45:00		12:37:30	12:37:30		12:41:15	12:41:15		
3	2		7	5		10	7		17	12		27	19		
Average		Total	Average		Total	Average		Total	Average		Total	Average		Total	
Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	Workday	7 Day	Count	
0	0	166	0	0	180	0	0	187	0%	0%	9%	0%	0%	9%	
0	0	136	0	0	140	0	0	143	0%	0%	10%	0%	0%	10%	
0	0	31	0	0	37	0	0	38	0%	0%	3%	0%	0%	3%	
0	0	54	0	0	71	0	0	72	0%	0%	6%	0%	0%	6%	
0	0	62	0	0	101	0	0	105	0%	0%	4%	0%	0%	5%	
1	1	236	1	1	357	1	1	362	4%	5%	5%	4%	5%	5%	
2	2	542	4	3	1016	4	3	1045	4%	4%	4%	4%	4%	4%	
3	2	729	5	4	1317	6	5	1502	3%	3%	3%	4%	4%	3%	
2	2	660	6	5	1663	7	5	1830	4%	4%	3%	4%	4%	4%	
3	3	901	7	6	1942	7	6	2067	6%	5%	5%	6%	5%	5%	
4	3	964	8	7	2192	8	7	2261	7%	6%	5%	7%	6%	5%	
3	3	914	8	7	2244	8	7	2341	6%	6%	5%	6%	6%	5%	
3	2	849	8	6	2183	8	6	2295	6%	4%	5%	6%	4%	5%	
3	2	790	8	6	2204	8	6	2295	6%	4%	4%	6%	4%	4%	
3	2	844	9	6	2378	9	6	2475	6%	4%	4%	6%	4%	5%	
3	2	777	8	6	2216	8	6	2319	5%	4%	4%	5%	4%	4%	
2	1	519	7	5	1746	7	5	1872	4%	3%	3%	4%	3%	3%	
2	1	415	6	4	1626	7	5	1985	3%	2%	3%	4%	3%	3%	
1	1	275	3	2	797	3	2	927	3%	2%	2%	3%	2%	2%	
1	1	180	2	2	479	2	2	528	3%	2%	2%	3%	2%	2%	
0	0	99	1	1	279	1	1	420	2%	2%	1%	2%	2%	2%	
0	0	77	0	0	213	0	0	271	0%	0%	2%	0%	0%	2%	
0	0	52	0	0	120	0	0	196	0%	0%	2%	0%	0%	3%	
0	0	45	0	0	76	0	0	137	0%	0%	2%	0%	0%	4%	
			0	0	0										
32	25	8637	83	65	22508	88	70	24169	5%	4%	4%	5%	4%	4%	
35	27	9535	90	70	24495	96	76	26433	4%	4%	4%	5%	4%	4%	
35	28	9632	90	71	24691	96	77	26766	4%	4%	4%	5%	4%	4%	
38	30	10317	94	74	25577	100	80	27673	4%	4%	4%	5%	4%	4%	
10:00:00	10:00:00		10:30:00	10:30:00		09:15:00	08:45:00		09:52:30	09:37:30		09:56:15	09:48:45		
4	3		9	7		10	10		19	17		23	27		
14:00:00	12:00:00		14:00:00	13:00:00		14:00:00	12:30:00		14:00:00	12:45:00		14:00:00	12:37:30		
3	2		9	6		12	8		21	14		33	22		

Moneypoint Constructuion Traffic Data

Source: ESB

Construction Activity and Vehicles	2024						2025												2026									
	M1	M2	M3	M4	M5	M6	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
HFO Unit Conversion / Maintenance	**Unit 1**									**Unit 2 and 3**																			
HGV per month	8	8	8	8						8	8	8	8	8	8	8													
Cars/ vans per month	330	330	330	330	110					330	330	330	330	330	330	330	110												
Aux Boiler and Enabling works			**Boiler Build and Aux Material Delivery to Site**																**Commission**										
HGV per month					12	24	48	48	24	20	12	12	12	12					12	8	8								
Cars and Vans per month					110	264	264	264	220	220	176	176	176	110	22	22	22	22	88	88	44								
Equipment Install																													
HGV - Per month												12	12	28	28	24	16	12	8	8	8								
Cars and vans per month												66	66	110	110	110	110	110	110	66	44								
Abnormal Loads per month														1	1	1													
							HFO Tanks Construction																						
HFO Tanks and Associated Bunds				**Tank Base Civil**					**Bund Walls and Floor - Civil**																					
HFO Tanks Construction																													
HGV per month			0	0	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	8	0	0	0	0	0	0	0	
Cars and Vans per month					110	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440	110								
Bund Base and Floor																													
HGV per month			12	48	92	92	48	12																					
Cars and vans per month			110	330	330	330	330	44																					
Bund walls and ramp																													
HGV per month								12	12	12	72	72	72	72	24	24	24	24	24	24									
Cars and Vans per month								32	32	32	32	32	32	32	32	32	32	32	32	32									
							Equipment Supply											**Commission**											
ASA Reclamation for FGD and batching plant														**Site Erection**															
Absorber and batching civil construction																													
HGV per month									4	8	20	20	6					8	8										
Cars and vans per month									88	88	88	88	88					44	44										
Absorber and batching M&E Construction																													
HGV per month														12	12	12	12	8	4										
Cars and Vans per month														88	132	132	132	88	88										
Soil / Bulk Material Movements Off Site				**HFO Bund**																									
						Boiler House				**Ancillary**																			
HGV per month	0	0	0	247	247	195	259	74	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cars and Vans per month				4	4	4	4	4	4																				
Total HGVs per Month	8	8	20	303	355	323	367.4	158	52	68	132	136	122	144	84	80	64	64	68	52	24	0	0	0	0	0	0	0	
Total Cars / Vans per month	330	330	440	664	664	1038	1038	784	784	1110	1066	1132	1132	1110	1066	1066	846	736	802	626	198	0	0	0	0	0	0	0	

Total vehicles per month and corresponding Personnel Equivalent (PE)

HGV per month for construction activity	8	8	20	56	108	128	108	84	52	60	124	136	122	144	84	80	64	64	68	52	24	0	0	0	0	0	0	0	0
HGVs per month for soil movement	0	0	0	247	247	195	259	74	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total HGVs required per month	**8**	**8**	**20**	**303**	**355**	**323**	**367**	**158**	**52**	**68**	**132**	**136**	**122**	**144**	**84**	**80**	**64**	**64**	**68**	**52**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Personnel Equivalent for HGV per month	**8**	**8**	**20**	**303**	**355**	**323**	**367**	**158**	**52**	**68**	**132**	**136**	**122**	**144**	**84**	**80**	**64**	**64**	**68**	**52**	**24**								
Cars and vans per month for construction	330	330	440	660	660	1034	1034	780	780	1110	1066	1132	1132	1110	1066	1066	846	736	802	626	198	0	0	0	0	0	0	0	0
Cars and vans per month for soil movement	0	0	0	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total cars and vans required per month	**330**	**330**	**440**	**664**	**664**	**1038**	**1038**	**784**	**784**	**1110**	**1066**	**1132**	**1132**	**1110**	**1066**	**1066**	**846**	**736**	**802**	**626**	**198**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Personnel Equivalent for Cars & vans/ month	**413**	**413**	**550**	**830**	**830**	**1298**	**1298**	**980**	**980**	**1388**	**1333**	**1415**	**1415**	**1388**	**1333**	**1333**	**1058**	**920**	**1003**	**783**	**248**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Average Monthly Peak Daily number of Vehicles	
Peak day HGV Numbers	17
Peak day cars and vans	51
Total Number of Vehicles Peak Day	**68**

Average Number of Vehicles Expected Over the Construction Period	
Average day HGV Numbers	6
Average Day Cars and Vans	38
Average Number of Vehicles	**43**

Average monthly Peak daily Personnel Equivalent Expected	
Peak day HGV (PE)	17
Peak day Cars and vans (PE)	64
Total number of people for peak day	**81**

Average Personnel expected over the construction period	
Avg day HGV (PE)	6
Avg day Cars and vans (PE)	47
Average number of people for HGVs and Cars and vans	**53**

Notes

1. The vehicles listed above is for construction phase of the project only.
2. An occupancy rate of 1.25 is assumed for cars and vans.

3. Total Working days in a month assumed to be 22.
4. Total working weeks in a month assumed to 4.
5. Total working days in the construction phase is 462.
6. It is assumed that December has 16 working days.

7. It is assumed that soil export will take place as follows:
- Over 16 weeks for HFO bund.
-Over 12 weeks for Boiler House.
-Over 8 weeks for ancillary other construction.
1 week in Dec has been excluded from all estimates to account for Christmas .
8. It is estimated that construction will start in July of 2024.

Total Exported Bulk

Eleme	Material category	Export (Tonnes)	HGV req
HFO Bu	Bulk	####	986
Aux Bo	Bulk	729	38
Ancilla	Bulk	304	16

No of HGV to transport total export bulk materials	1041

J. Archaeology, Architectural and Cultural Heritage Supporting Information

Plate 1 - View of Location of CH031 (Salmon Weir), facing SW

Plate 2 - View of Location of CH031 (Salmon Weir), facing SW

Plate 3 - Location of CH025 (stream, possibly culverted), facing SW

Plate 4 - View of CH021 (Jetty), facing W

Plate 5 - Location of CH023 (Townland boundary), facing NNW

Plate 6 - Location of CH026 (Limekiln), facing SW

Plate 7 - View of CH024 (Coastal area of archaeological potential), facing NW

Plate 8 - Overview of southern portion of Ash Storage Area, facing N

Plate 9 - View of Location of CH030, facing W

Plate 10 - View of Location of CH029, facing W

Plate 11 - View of Location of CH027 and CH028, facing SE

Plate 12 - View of northern boundary of deveopment from CH027 to CH028, facing NE

Plate 13 - View from development towards CH001, facing NW

Plate 14 - View of Location of CH022, facing SE

Plate 15 - View of northern portion of Ash Storage Area, facing SE

Plate 16 - View of Runoff Lagoon, facing N

Plate 17 - View of Access Road, facing SE

Plate 18 - View of eastern portion of Ash Storage Area, facing NE

Plate 19 - View of Linking Road, facing SE

Plate 20 - View of Moneypoint Power Station, facing S

K. Photomontages

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LVIA PHOTOMONTAGES

Moneypoint Security of Supply

This book contains imagery for the viewpoints chosen for the LVIA study

January 2024

LVIA I TVIA I Landscape Design I Visibility Analysis I Glint and Glare I Verified Photomontages I CGI I Shadow Flicker Analysis

INDEX

LVIA Viewpoints:

Viewpoint 1 - Existing View + Outline View
Viewpoint 1 - Permitted Montage View + Proposed Montage View
Viewpoint 1 - Permitted Mitigated View + Proposed Mitigated View

Viewpoint 2 - Existing View + Outline View
Viewpoint 2 - Permitted Montage View + Proposed Montage View
Viewpoint 2 - Permitted Mitigated View + Proposed Mitigated View

Viewpoint 3 - Existing View + Outline View
Viewpoint 3 - Permitted Montage View + Proposed Montage View
Viewpoint 3 - Permitted Mitigated View + Proposed Mitigated View

Viewpoint 4:
Viewpoint 4a - Existing View + Outline View
Viewpoint 4a - Permitted Montage View + Proposed Montage View
Viewpoint 4a - Permitted Mitigated View + Proposed Mitigated View
Viewpoint 4b - Existing View + Outline View

Viewpoint 5 - Existing View + Outline View
NB - There is no Montage or Mitigated Montage View for this viewpoint

Viewpoint 6 - Existing View + Outline View
NB - There is no Montage or Mitigated Montage View for this viewpoint

Viewpoint 7 - Existing View + Outline View
NB - There is no Montage or Mitigated Montage View for this viewpoint

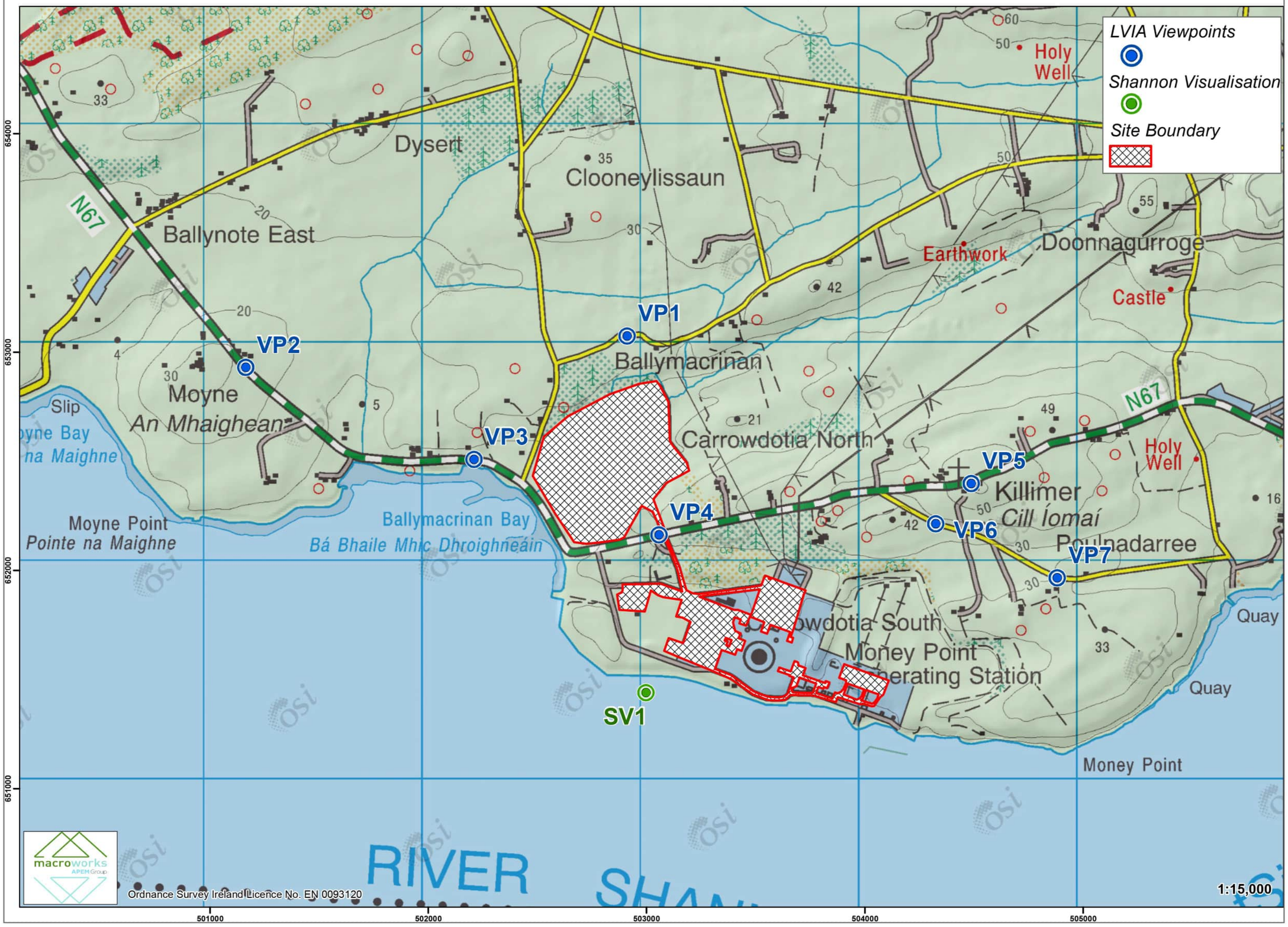
NB - The Permitted Montage View depicts the Permitted Ash Storage Area Ref: 14373

Supplementary Visualisation:

Shannon Visualisation 1 - Existing View + Outline View
Shannon Visualisation 1 - Proposed Montage View

NB - The Permitted Ash Storage Area Ref: 14373 and the Proposed Ash Storage is not visible from this location
SV1 is not a viewshed reference point. It was prepared to illustrate the nature of the views likely to be possible from the Shannon Estuary. This visualisation was created to provide a representation on the approximate relative position and scale of the proposed development in relation to existing features based on existing imagery captured from the River Shannon. It does not purport to conform to the stardard set by the Landscape Institute Technical Guidance Note TGN 06/19 Visual Representation. It does not form part of the LVIA or photomontage set.

LVIA viewpoints and Supplementary Visualisation viewpoint selected for the Moneypoint Security of Supply



Local road, Ballymacrinay VP1

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502910	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	653074	Camera:	Canon 1-D Mark II digital SLR	Time:	12:21
Direction of View	179° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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APEM Group

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502910	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	653074	Camera:	Canon 1-D Mark II digital SLR	Time:	12:21
Direction of View	179° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502910	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	653074	Camera:	Canon 1-D Mark II digital SLR	Time:	12:21
Direction of View	179° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Imagery depicting the view towards the site (Existing and Outline)

N67 national road, Moyne VP2

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	501163	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652930	Camera:	Canon 1-D Mark II digital SLR	Time:	12:36
Direction of View 119°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Easting (ITM):	501163	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652930	Camera:	Canon 1-D Mark II digital SLR	Time:	12:36
Direction of View 119°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Easting (ITM):	501163	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652930	Camera:	Canon 1-D Mark II digital SLR	Time:	12:36
Direction of View 119°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Imagery depicting the view towards the site (Existing and Outline)

N67 national road, Ballymacrinay VP3

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502208	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652509	Camera:	Canon 1-D Mark II digital SLR	Time:	12:43
Direction of View 103°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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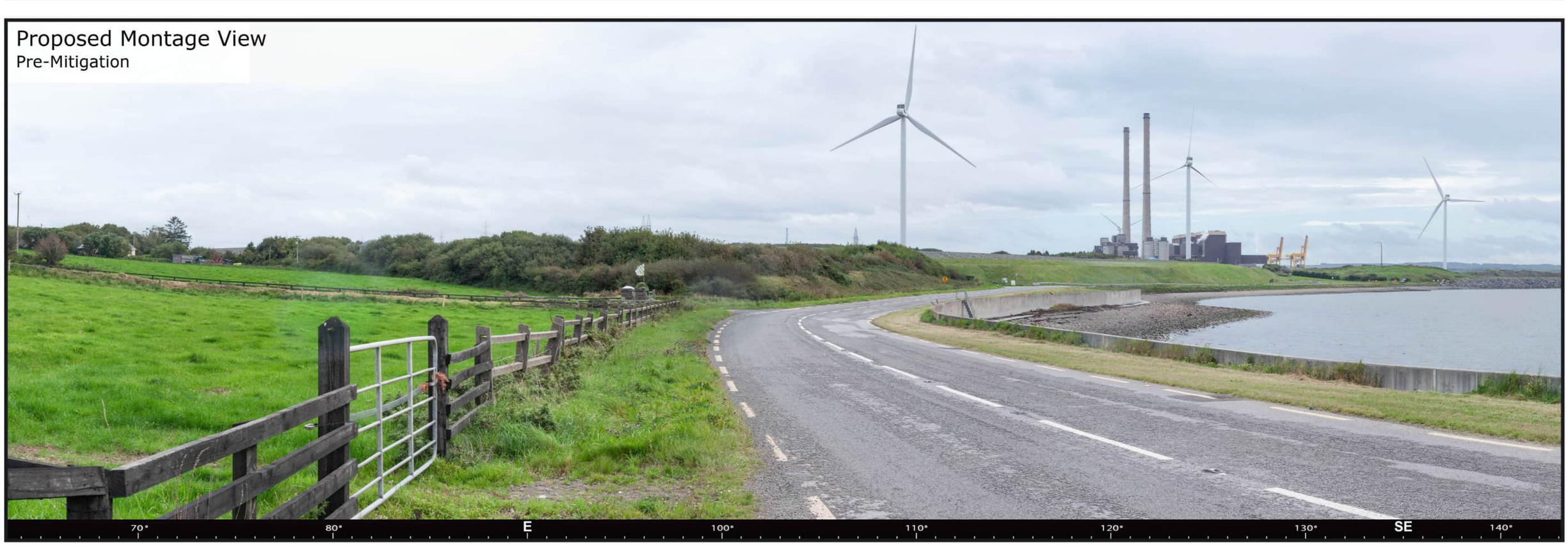

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502208	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652509	Camera:	Canon 1-D Mark II digital SLR	Time:	12:43
Direction of View 103°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

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Easting (ITM):	502208	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652509	Camera:	Canon 1-D Mark II digital SLR	Time:	12:43
Direction of View 103°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Existing View

Outline View

indicating physical position and scale of the permitted and proposed development irrespective of screening

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Easting (ITM):	503056	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652163	Camera:	Canon 1-D Mark II digital SLR	Time:	12:10
Direction of View	11° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Permitted Montage View
Pre-Mitigation

Proposed Montage View
Pre-Mitigation

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

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Easting (ITM):	503056	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652163	Camera:	Canon 1-D Mark II digital SLR	Time:	12:10
Direction of View	11° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

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Easting (ITM):	503056	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652163	Camera:	Canon 1-D Mark II digital SLR	Time:	12:10
Direction of View	11° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Moneypoint Security of Supply

Imagery depicting the view towards the site (Existing and Outline)

N67 national road, Carrowdotia North VP4b

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	503056	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652163	Camera:	Canon 1-D Mark II digital SLR	Time:	12:10
Direction of View 134°	E of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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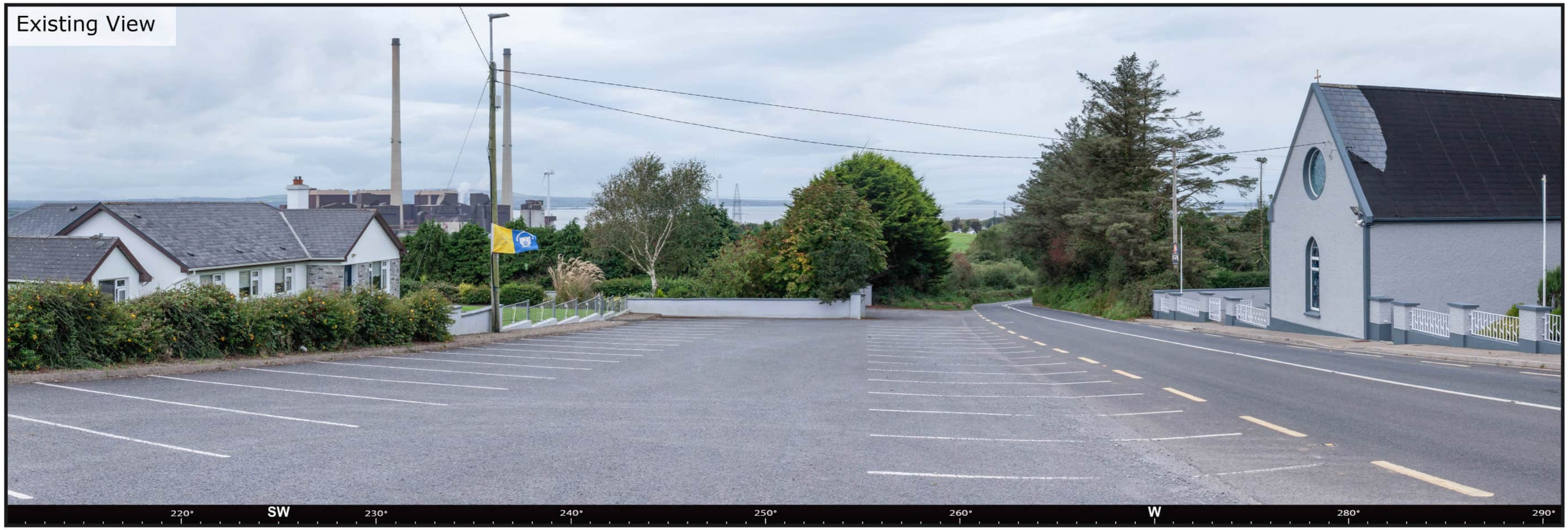
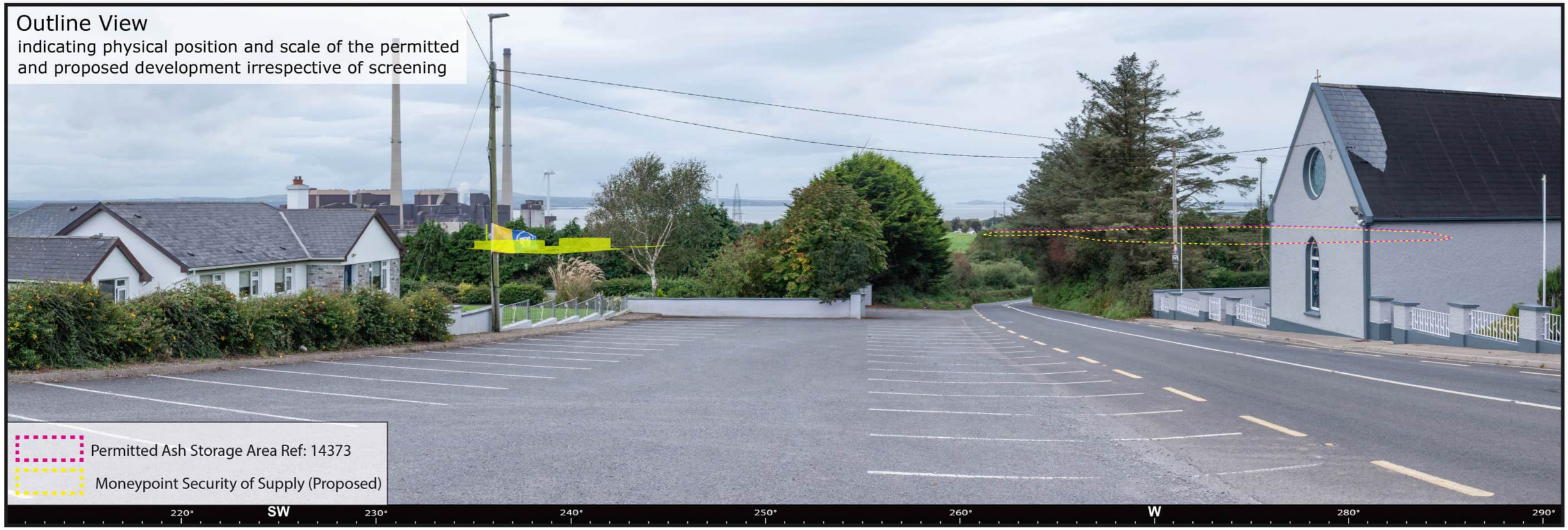
Moneypoint Security of Supply

Imagery depicting the view towards the site (Existing and Outline)

N67 national road, Carrowdotia South VP5





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To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	504487	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652399	Camera:	Canon 1-D Mark II digital SLR	Time:	11:50
Direction of View	109° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Imagery depicting the view towards the site (Existing and Outline)

Local road, Carrowdotia South VP6

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	504326	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	652214	Camera:	Canon 1-D Mark II digital SLR	Time:	11:56
Direction of View	123° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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Imagery depicting the view towards the site (Existing and Outline)

Local road, Poulnadarree VP7

These are 80° panoramic montages captured and presented in accordance with the guidance set by the British Landscape Institute 2011 - Advice Note 01/11.

To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	504881	Lens:	50mm / Full Frame Sensor	Date:	2023/09/06
Northing (ITM):	651967	Camera:	Canon 1-D Mark II digital SLR	Time:	12:02
Direction of View	97° W of Grid North	Camera Height:	1.7m Above Ground Level		
Angle of View:	80°				

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SUPPLEMENTARY VISUALISATION

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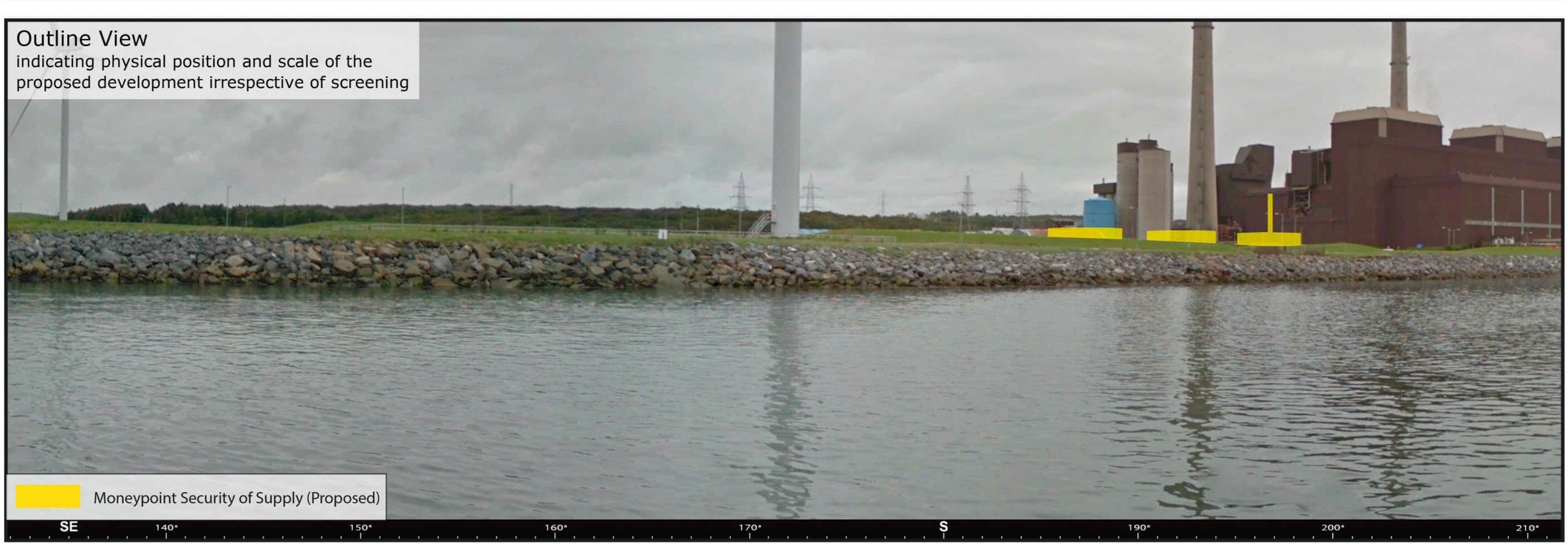
Imagery depicting the view towards the site (Existing and Outline)

Shannon Estuary SV1



To view these panoramas on a flat surface one must move from left to right along its length whilst maintaining a perpendicular viewing direction and the specified correct viewing distance of 30cm. To see this entire panoramic scene in reality would necessitate turning one's head through 40°.

Easting (ITM):	502996	
Northing (ITM):	651441	
Direction of View 172°	E of Grid North	
Angle of View:	80°	

This visualisation was created to provide a representation on the approximate relative position and scale of the proposed development in relation to existing features based on existing imagery captured from the River Shannon. It does not purport to conform to the stardard set by the Landscape Institute Technical Guidance Note TGN 06/19 Visual Representation. It does not form part of the LVIA or photomontage set.

Date: 09/2018

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Easting (ITM):	502996
Northing (ITM):	651441
Direction of View 172°	E of Grid North
Angle of View:	80°

This visualisation was created to provide a representation on the approximate relative position and scale of the proposed development in relation to existing features based on existing imagery captured from the River Shannon. It does not purport to conform to the stardard set by the Landscape Institute Technical Guidance Note TGN 06/19 Visual Representation. It does not form part of the LVIA or photomontage set.

Date: 09/2018

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