REPORT

Related Development Environmental Considerations

Bord na Móna, Edenderry

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1. INTRODUCTION

This report has been prepared by AWN Consulting Ltd, a Trinity Consultants Company, on behalf of Bord na Móna, to provide an assessment of EIA-related considerations associated with proposed related development works at the Edenderry Renewable Energy Complex, Co. Offaly.

The report supports the Environmental Impact Assessment Report (EIAR) for the proposed GNI 143 Ballykilleen natural gas transmission pipeline and associated infrastructure. Specifically, it addresses development works within the Edenderry Renewable Energy Complex that are not part of the main pipeline development, but which are functionally and operationally linked to it, and which therefore require consideration under the EIA Regulations as *related development*.

The primary purpose of the proposed development is to facilitate the conversion of the existing Cushaling Peaker Plant from single-fuel (liquid fuel) operation to dual-fuel operation, with natural gas as the primary fuel and liquid fuel retained as a backup. This fuel transition is enabled by the construction of the Ballykilleen Above Ground Installation (AGI) and an internal gas transmission pipeline connecting the AGI to the existing turbine compound, together with associated plant-side modifications.

This report provides a appraisal of specific environmental considerations arising from the related development works at the Edenderry site. It has been prepared to inform the EIAR for the main pipeline project and to assist the EIA project team in understanding the potential environmental effects, regulatory requirements, and consenting implications associated with these works.

In accordance with the scope defined at proposal stage, the assessment includes consideration of:

- the nature and extent of the related development works within the Edenderry Renewable Energy Complex;
- environmental permitting and planning considerations, including potential requirements for amendments to existing consents;
- major accident hazards and Seveso (COMAH) status implications associated with the introduction of natural gas;
- climate impacts arising from the change in fuel source at the Cushaling Peaker Plant; and
- air emissions implications associated with dual-fuel operation.

All assessments presented herein are high-level and preliminary in nature, based on the design information available at the time of reporting.

Table 1-1 Contributors to this Report

Topic	Author(s)
Permitting and Planning Considerations	Jonathan Gauntlett (BSocSc EnvPl, BBA Econ) of AWN Consulting. Jonathan Gauntlett is a Principal Environmental Consultant in the Environment Team at AWN. He holds a Bachelor of Social Science in Environmental Planning and a Bachelor of Business Administration in Economics from Waikato University, New Zealand. Jonathan has over ten years' experience in environmental compliance, planning, and management of Environmental Impact Assessments, licensing, and urban planning. His recent projects involve Strategic Housing Development including EIAR and EIA Screening Reports, Strategic Infrastructure Development (SID), and planning applications for Information and Communications Technology (ICT) facilities; EPA Licence applications for biopharmaceutical and ICT facilities. Jonathan's expertise extends to impact assessment, licensing, environmental compliance, and project management. He has experience working in the environmental consultancy, planning, and regulatory fields from Ireland, the UK, and New Zealand.

Major Accident Hazards	Maeve McKenna is an Associate with AWN. She has a BEng in Chemical Engineering from the Queens University of Belfast and a Masters of Engineering Science in Water and Environmental Engineering from University College Dublin. Maeve is also a Chartered Engineer and a Member of Engineers Ireland. She has 19 years' experience in environmental and process safety assessment and management projects, including hazard identification studies at notified COMAH establishments, and consequence and risk modelling of major accident hazards
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Climate	Ciara Nolan (Senior Air Quality Consultant) holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Science (MIEnvSc). She specialises in the fields of air monitoring, air quality & climate assessments for EIA and air dispersion modelling.

2. DESCRIPTION OF RELATED DEVELOPMENT WORKS

2.1 Overview

The purpose of the GNI 143 Ballykilleen Pipeline to connect from the existing 750mm NB BGE77 pipeline (also known as Pipeline to the West (PTTW)) to the Edenderry Renewable Energy Complex. The Proposed Development is intended to facilitate the conversion of the existing Cushaling Peaker Plants within the Edenderry Renewable Energy Complex from their current single-fuel operation (liquid fuel) to dual-fuel operation, with natural gas as the primary fuel and HVO retained as backup.

To support this transition, a number of related development works will be undertaken within the Edenderry Renewable Energy Complex, subject to final design.

In the context of the GNI 143 Ballykilleen Pipeline and associate development, the works within the Edenderry Renewable Energy Complex constitute "Related Development".

2.2 Plant-Side Modifications

Plant-side modifications will be undertaken within the existing turbine compound to enable operation on natural gas. These works primarily involve the reconfiguration of existing plant, the replacement or modification of equipment, and the installation of new components required for dual-fuel operation.

The plant-side works will include:

- Installation of new gas skids within the turbine area to facilitate gas delivery serving the four turbine units;
- Conversion of the existing fuel system from liquid-fuel-only operation to a dual-fuel configuration, enabling firing on natural gas as the primary fuel;
- Retention of liquid fuel as backup to ensure security of supply and operational flexibility during outages or during periods requiring rapid response;
- Modifications to internal plant pipework, valves and ancillary controls to enable safe and efficient fuel switching;
- Operation of the peaking units on natural gas under normal conditions, without any change in operating hours, operational frequency, plant mode, or overall operational status.

These works will be located entirely within the footprint of the IE site and will be undertaken in close proximity to existing infrastructure.

2.3 ESB Networks Works

Site clearance, demolition, removals and preparatory works will be required to facilitate the development of the Ballykilleen Above Ground Installation (AGI). These works will include the diversion of existing ESB Networks 20 kV power lines where required.

In accordance with per ESB Networks procedures, engagement on diversion design, confirmation of the final diversion method—overhead re-routing or undergrounding—cannot be provided at this stage. Responsibility for progressing the ESB diversion lies with Bord na Móna as the landowner.

Following the granting of planning permission, BnM will submit a formal diversion application to ESB Networks, who will assess feasible rerouting options.

The ESB diversion works are small in scale, localised, and will be confined to the established industrial setting of the site. In this context, these works are not expected to give rise to significant construction impacts.

2.4 Internal Gas Distribution Pipeline

The main construction activity associated with the related development is the installation of the new internal gas transmission pipeline required to connect the Ballykilleen AGI to the turbine compound.

In this context, a preliminary routing assessment has been undertaken by Fingleton White to provide an indicative alignment of the internal gas transmission pipeline for the purposes of cumulative impact assessment. The indicative alignment is subject to further refinement, including additional site investigations, verification of third-party services, and engineering assessments as the project progresses to the detailed design stage. These activities may result in localised adjustments or minor modifications to the proposed route.

Three feasible route options have been identified Option A, Option B, and Option C as shown in Insert 2-1.

Option A (Preferred Route)

- Shortest route (~260 m).
- Minimal interaction with utilities.
- Limited tree/vegetation removal (mainly hedgerow and young trees).
- Avoids major stormwater/foul crossings.
- Traverses a small, forested area but avoids the larger wooded section.

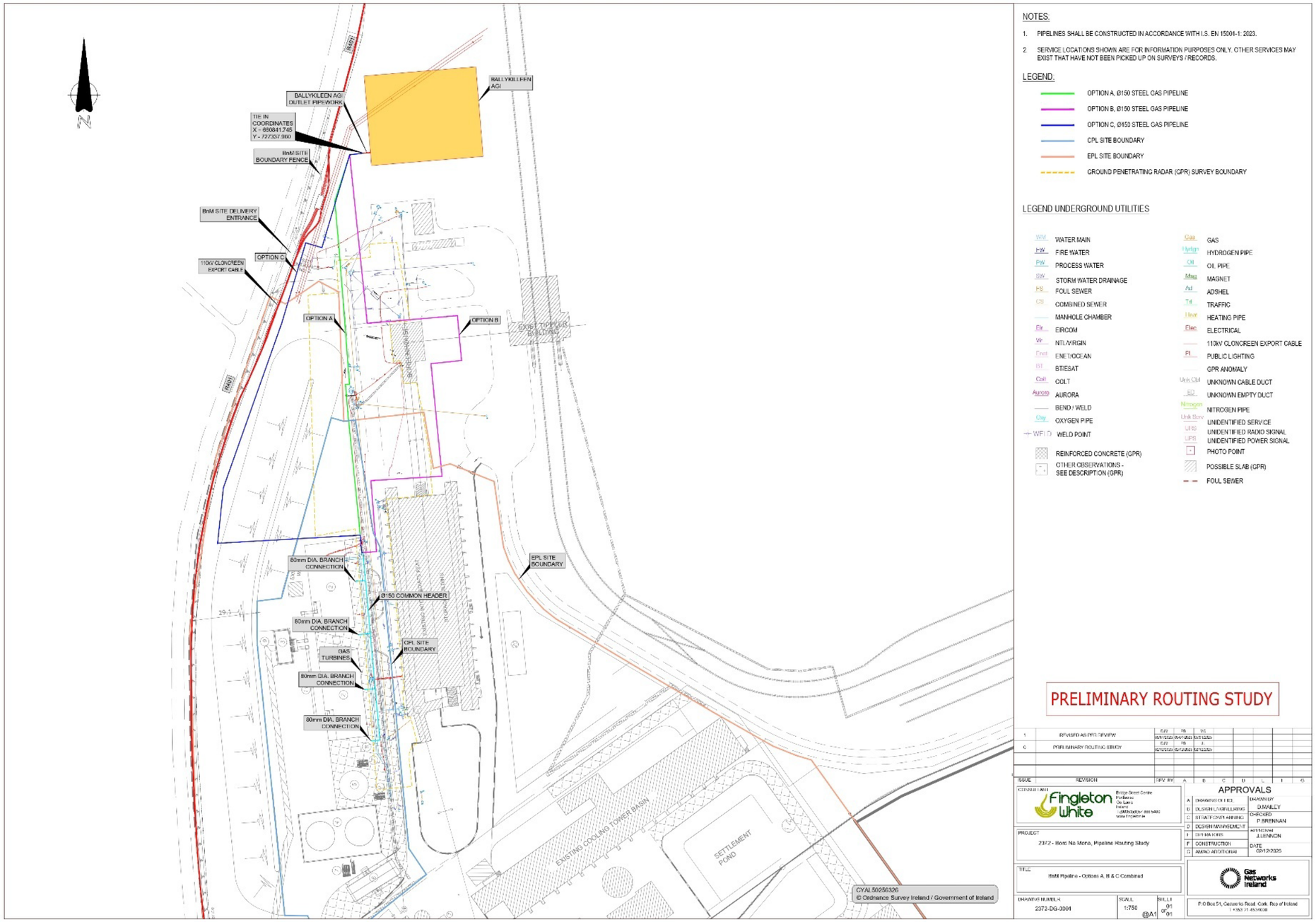
Option B

- Longest route (~342 m).
- Avoids forested area but requires multiple stormwater crossings.
- Greater interaction with existing site services (e.g., LV cables, foul sewer).

Option C

- Medium length (~332 m).
- Runs inside the boundary fence line for 170 m.
- Parallels a 110 kV export cable, posing potential electrical interference concerns.
- More extensive passage through wooded screening areas.

Insert 2-1 Potential Connection from Ballykilleen AGI to Cushaling Peaker Plant



3. ENVIRONMENTAL PERMITTING AND PLANNING CONSIDERATIONS

3.1 Planning Permission / Exempted Development

The related development works associated with the proposed fuel transition at the Edenderry Renewable Energy Complex comprise a series of plant-side modifications, internal utility works, and ancillary construction activities within an established industrial site in the control of Bord na Móna. On the basis of the nature, scale and location of these works, it is anticipated that t the related development is likely to constitute Exempted Development, as defined under Schedule 2 of the Planning and Development Regulations 2001 (as amended).

This position remains subject to confirmation at detailed design stage and, where appropriate, consultation with the relevant planning authority and statutory undertakers.

Table 3-1 below sets out the consideration of the Related Development works against the relevant classes of exempted development under Schedule 2 of the Planning and Development Regulations 2001 (as amended).

Table 3-1 Consideration of Exempted Development - General

Exempted Development Class	Related Development Works
CLASS 16 The erection, construction or placing on land on, in, over or under which, or on land adjoining which, development consisting of works (other than mining) is being or is about to be, carried out pursuant to a permission under the Act or as exempted development, of structures, works, plant or machinery needed temporarily in connection with that development during the period in which it is being carried out.	During the construction phase, temporary works may be required to facilitate the delivery of the development, including temporary plant, machinery, compounds, and welfare facilities. Such works are considered consistent with Class 16 and Class 17 Any such temporary works would be confined to the construction period, removed on completion, and would not result in permanent alteration to the site.
CLASS 17 The erection, construction or placing on land on, in, over or under which, or on land adjoining which, development (other than mining) is being, or is about to be carried out, pursuant to any permission, consent, approval or confirmation granted under the Act or any other enactment or as exempted development, of temporary on-site accommodation for persons employed, or otherwise engaged, in connection with the carrying out of the development, during the period in which it is being carried out	
Development for industrial purposes CLASS 21 (a) Development of the following descriptions, carried out by an industrial undertaker on land occupied and used by such undertaker for the carrying on, and for the purposes of, any industrial process, or on land used as a dock, harbour or quay for the purposes of any industrial undertaking— (i) the provision, rearrangement, replacement or maintenance of private ways or private railways, sidings or conveyors, (ii) the provision, rearrangement, replacement or maintenance of sewers, mains, pipes, cables or other apparatus, (iii) the installation or erection by way of addition or replacement of plant or machinery, or structures of the nature of plant or machinery. (b) Any works for the provision within the curtilage of an industrial building of a hard surface to be used for the purposes of or in connection with the industrial process carried on in the building. Conditions and Limitations: 1. Any such development shall not materially alter the external appearance of the premises of the undertaking. 2. The height of any plant or machinery, or any structure in the nature of plant or machinery, shall not exceed 15 metres above ground level or the height of the plant, machinery or structure replaced, whichever is the greater.	The plant-side works proposed as part of the Related Development include the installation of new gas skids, reconfiguration and replacement of plant, machinery and associated equipment; and conversion of the fuel system to facilitate dual-fuel operation. These works are considered to within Class 21(a) and Class 21(b) which provides for exempted development carried out by an industrial undertaker on land occupied and used for the purposes of an industrial process. The works will be undertaken within the curtilage of existing industrial buildings, will not materially alter the external appearance of the premises. The installation of the internal gas transmission pipeline linking the Ballykilleen AGI to the turbine compound is also considered consistent with Class 21(a)(ii), which permits the provision, rearrangement, replacement or maintenance of sewers, mains, pipes, cables or other apparatus by an industrial undertaker on land used for industrial purposes. The pipeline will not introduce new above-ground structures of significance, will be located within an established industrial environment, and will not materially alter the external appearance of the site.
CLASS 26	

Exempted Development Class	Related Development Works
The carrying out by any undertaker authorised to provide an electricity service of development consisting of the laying underground of mains, pipes, cables or other apparatus for the purposes of the undertaking.	The related development also includes the diversion of existing ESB Networks 20 kV electricity infrastructure, where required to facilitate the Ballykilleen AGI and associated works. Depending on final design, these works may comprise: • the laying underground of electricity cables, which is consistent with Class 26; and/or • the construction or re-routing of overhead electricity lines not exceeding a nominal voltage of 20 kV, which is consistent with Classes 27 and 28, subject to compliance with the applicable limitations. Such works are undertaken by an authorised electricity undertaker and are expressly provided for as exempted development under Schedule 2 of the Regulations.
CLASS 27 The carrying out by any undertaker authorised to provide an electricity service of development consisting of the construction of over-head transmission or distribution lines for conducting electricity at a voltage not exceeding a nominal value of 20kV	
CLASS 28 The carrying out by any undertaker authorised to provide an electricity service of development for the purposes of the undertaking consisting of the construction or erection of an overhead transmission line not more than 40 metres from a position in respect of which permission for such line was granted and which otherwise complies with such permission, but not a line in respect of which a condition attached to the relevant permission imposed a contrary requirement.	

3.2 Industrial Emissions Licence

As a result of the proposed fuel transition at the Edenderry Renewable Energy Complex, the related development will be subject to consenting changes under the Industrial Emissions Directive (IED). Bord na Móna currently operates the facility under an Industrial Emissions (IE) Licence (EPA Ref. P0482-04), which authorises the operation of the Cushaling Peaker Plant and associated activities.

The proposed conversion of the peaking units from gas oil operation to dual-fuel operation, with natural gas as the primary fuel, represents a change to the licensed activity. This includes alterations to fuel type, associated emissions profiles, and the applicability of Best Available Techniques (BAT) requirements.

In accordance with the EPA's *Guidance on Requests for Alterations to a Licensed Industrial or Waste Activity* (June 2019), Bord na Móna will be required to engage with the EPA to determine the appropriate regulatory pathway for this change. This is expected to involve either:

- a Technical Amendment, where the EPA is satisfied that the proposed changes are minor in nature and do not result in significant additional environmental impacts; or
- a Licence Review, should the EPA consider that the change materially alters the emissions profile, operating conditions, or environmental risk associated with the activity.

At a minimum, the IE licence will require updating to reflect:

- the introduction of natural gas as a fuel source; and
- revised emission limit values (ELVs) aligned with Best Available Techniques, including the requirements of the Large Combustion Plant BAT Conclusions (BATc) for the combustion of gaseous fuels in gas turbines.

A review of the current IE licence conditions indicates that no existing condition provides for a change in fuel type through agreement with the Agency ('Request for Approval'). Accordingly, the proposed fuel transition cannot be accommodated under the existing IE licence without amendment. A formal alteration to the licence will therefore be required to authorise the use of natural gas and to ensure that the facility continues to operate in accordance with EPA requirements.

- EU-ETS - Greenhouse Gas (GHG) Permit

In addition to the IE licence, the Edenderry Renewable Energy Complex operates under a Greenhouse Gas (GHG) Emissions Permit (EPA Ref. IE-GHG-166-10429-2), issued pursuant to the European Union Emissions Trading System (EU ETS). The proposed fuel transition will necessitate updates to this permit, as the combustion of natural gas represents a change in the fuel source and monitoring requirements at the facility.

The conversion of the Cushaling Peaker Plant to dual-fuel operation, with natural gas as the primary fuel, will require Bord na Móna to formally notify the EPA and seek approval for amendments to the existing GHG permit. These amendments are expected to include:

- the introduction of natural gas as an authorised fuel, alongside the retention of liquid fuel for backup operation;
- revisions to the Monitoring Plan, including updates to fuel-specific emission factors, activity data sources, and calculation methodologies in accordance with EU ETS requirements;
- confirmation of measurement and reporting procedures for natural gas consumption, including metering arrangements and data management systems; and
- any consequential updates to verification, record-keeping, and annual emissions reporting obligations.

The requirement to amend the GHG permit arises directly from the related development works and the operational changes they enable. These updates will ensure continued compliance with EU ETS during the operational phase of the development.

4. MAJOR ACCIDENT HAZARDS STATUS ASSESSMENT

This Technical Note sets out the results of a COMAH status assessment of the Edenderry Energy Complex following conversion of the Peaker Plant to natural gas operation.

The COMAH status is assessed in accordance with the criteria set out in the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015) (COMAH Regulations 2015).

This Technical Note sets out the following:

- Background
- Description
- Assessment of existing COMAH status
- Assessment of COMAH Status Following Conversion to Natural Gas
- Conclusions

4.1 Background

The Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances Regulations 2015) (2015 COMAH Regulations) represent a key piece of legislation in the field of industrial safety and environmental protection. These regulations were implemented in the Ireland to align with the European Union's Seveso III Directive, which aims to prevent and mitigate the consequences of major industrial accidents involving dangerous substances.

COMAH Status

Depending on the maximum quantity of dangerous substances present at an establishment, the following classification may apply:

- Upper tier status
- Lower tier status
- Sub-COMAH status

The provisions of the 2015 COMAH Regulations do not apply to sub-COMAH status facilities. Schedule 1 (Application of the Regulations) sets out the dangerous substance hazard categories (Part 1) and named dangerous substances (Part 2), and qualifying quantities for the application of the lower tier and upper tier requirements of the regulations. Schedule 1 is provided in Appendix A herein.

In addition to qualifying quantities that apply to categories of dangerous substances and named dangerous substances, a factorisation rule, as set out in note 4 to Schedule 1 applies as follows:

4. The following rules governing the addition of dangerous substances, or categories of dangerous substances, shall apply where appropriate:

In the case of an establishment where no individual dangerous substance is present in a quantity above or equal to the relevant qualifying quantities, the following rule shall be applied to determine whether the establishment is covered by the relevant requirements of these Regulations.

These Regulations shall apply to upper-tier establishments if the sum:

q1/QU1 + q2/QU2 + q3/QU3 + q4/QU4 + q5/QU5 + ... is greater than or equal to 1,

where qx = the quantity of dangerous substance x (or category of dangerous substances) falling within Part 1 or Part 2 of this Schedule,

and QUx = the relevant qualifying quantity for dangerous substance or category x from Column 3 of Part 1 or from Column 3 of Part 2 of this Schedule.

These Regulations shall apply to lower-tier establishments if the sum:

q1/QL1 + q2/QL2 + q3/QL3 + q4/QL4 + q5/QL5 + ... is greater than or equal to 1,

where q_x = the quantity of dangerous substance x (or category of dangerous substances) falling within Part 1 or Part 2 of this Schedule,

and QLx = the relevant qualifying quantity for dangerous substance or category x from Column 2 of Part 1 or from Column 2 of Part 2 of this Schedule.

This rule shall be used to assess the health hazards, physical hazards and environmental hazards. It must therefore be applied three times:

(a) for the addition of dangerous substances listed in Part 2 that fall within acute toxicity category 1, 2 or 3 (inhalation route) or STOT SE category 1, together with dangerous substances falling within section H, entries H1 to H3 of Part 1;

(b) for the addition of dangerous substances listed in Part 2 that are explosives, flammable gases, flammable aerosols, oxidising gases, flammable liquids, self-reactive substances and mixtures, organic peroxides, pyrophoric liquids and solids, oxidising liquids and solids, together with dangerous substances falling within section P, entries P1 to P8 of Part 1;

(c) for the addition of dangerous substances listed in Part 2 that fall within hazardous to the aquatic environment acute category 1, chronic category 1 or chronic category 2, together with dangerous substances falling within section E, entries E1 and E2 of Part 1.

The relevant provisions of these Regulations apply where any of the sums obtained by (a), (b) or (c) is greater than or equal to 1

Note 6 of Schedule 1 describes how the regulations apply to dangerous substances with properties giving rise to more than one classification:

6. In the case of dangerous substances with properties giving rise to more than one classification, for the purposes of these Regulations the lowest qualifying quantities shall apply. However, for the application of the rule in Note 4, the lowest qualifying quantity for each group of categories in Notes 4(a), 4(b) and 4(c) corresponding to the classification concerned shall be used.

4.2 Description

The proposed GNI 143 Ballykilleen Pipeline will facilitate the conversion of the existing Cushaling Peaker Plant within the Edenderry Renewable Energy Complex from current single-fuel operation (liquid fuel, primarily hydrotreated vegetable oil (HVO)) to dual-fuel operation, with natural gas as the primary fuel and HVO retained as backup.

Within the site boundary, 3 No. pipeline route options are considered as detailed in Table 4-1 and as illustrated on Insert 2-1.

Table 4-1. Natural Gas Pipeline Inventory

Parameter	Units	Option A	Option B	Option C
Pipeline length downstream of the AGI	metres	260	342	332
Pipeline diameter	Millimetres	150	150	150
Gas volume	Cubic metres	4.59	6.04	5.87
Operating pressure	barg	36.5	36.5	36.5
Operating temperature	Deg C	8.8 (Note 1)	8.8	8.8
Density at operating temperature and pressure	kg/m^3	27.872	27.872	27.872
Mass of natural gas within pipe length	kg	128	168	164
Mass of natural gas within pipe length	tonnes	0.128	0.168	0.164

Note 1: Mean temperature from 1991 – 2020 at Mullingar Synoptic Metrological Station, 30 Year Averages - Met Éireann - The Irish Meteorological Service

4.3 Assessment of Existing COMAH Status

The inventory of chemicals at Edenderry Renewable Energy Complex is detailed in Table 4-2 which provides the following information:

- Type (fuel/chemical/gas etc)
- Substance
- Quantity
- Storage type
- Material Safety Data Sheet reference
- CAS number
- Classification and hazard statements
- COMAH dangerous substance according to the named dangerous substances and categories of dangerous substances listed in Schedule 1 of the COMAH Regulations 2015
- COMAH classification
- COMAH named substance in Part 2, Schedule 1, COMAH Regulations 2015
- COMAH category in Part 1, Schedule 1, COMAH Regulations 2015

Table 4-2. Chemical Inventory at Edenderry Power Station

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
Liquid Fuel	HVO Fuel (Tank 1)	1,200,000	Litres	Bulk Tank	Certa Version 3.0 31/01/2023	Hydrogenated Vegetable Oil / Renewable hydrocarbon (diesel type fraction)	928771-01-1	Aspiration Hazard -- Category 1 H304 May be fatal if swallowed and enters airways	No	-	-	-
Liquid Fuel	HVO Fuel (Tank 2)	1,200,000	Litres	Bulk Tank	Certa Version 3.0 31/01/2023	Hydrogenated Vegetable Oil / Renewable hydrocarbon (diesel type fraction)	928771-01-1	Aspiration Hazard -- Category 1 H304 May be fatal if swallowed and enters airways	No	-	-	-
Liquid Fuel	Diesel	3,000	Litres	Bulk Tank	Emo 01-Dec-14	Fuels, Marked Gas Oil	68334-30-5 (100), 91-20-3 (<1)	Aspiration Hazard -- Category 1 H304 May be fatal if swallowed and enters airways Skin corrosion/irritation -- Category 2 H315 – Causes skin irritation Acute toxicity, Inhalation -- Category 4 H332 –Harmful if inhaled Carcinogenicity -- Category 1B H350 – May cause cancer by inhalation Specific target organ toxicity (repeated exposure) -- Category 2 H373 -- May cause damage to organs through prolonged or repeated exposure Hazardous to the aquatic environment, chronic toxicity -- Category 2 H411 -- Toxic to aquatic life with long lasting effects.	Yes	Hazardous to the aquatic environment, chronic toxicity -- Category 2 H411 -- Toxic to aquatic life with long lasting effects.	Yes	-
Liquid Fuel	Diesel	300,000	Litres	Bulk Tank								
Liquid Fuel	Diesel	70,000	Litres	Bulk Tank								
Chemical	Bulk HCL (SG 1.18)	50	Tonnes	Bulk Tank	Fluid Science Ltd. Version 1.4 07/12/2019	Hydrochloric Acid 28 - 36%,	Not given EC Index No. 017-002-01-X EC-No. 231-595-7	Corrosive to metals, Category 1 H290 May be corrosive to metals Skin corrosion/irritation, Category 1A H314 Causes severe skin burns and eye damage Serious eye damage/eye irritation, Category 1 H318 Causes serious eye damage	No	-	-	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
								Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation H335 May cause respiratory irritation				
Chemical	Bulk Caustic (SG 1.328)	23	Tonnes	Bulk Tank	Occidental Chemical Corporation, SDS No. M32415, 23-May-17	Caustic Soda Liquid	Water 48.5 - 94.5 % CAS# 7732-18-5 Sodium Hydroxide 5.5 - 51.5 % CAS# 10331-73-2 Sodium Chloride 0 – 35% CAS# 7647-14-5	Corrosive to Metals Mixing with water may cause splattering and release of heat GHS: CONTACT HAZARD - SKIN: Category 1B - Causes severe skin burns and eye damage GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage GHS: TARGET ORGAN TOXICITY (SINGLE EXPOSURE): Category 3 - May cause respiratory irritation HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD: Category 3 - Harmful to aquatic life	No	-	-	-
Chemical	Sodium Bicarbonate	30	Tonnes	Bulk Tank	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Sodium hydrogen carbonate	144-55-8	Eye Irrit. 2 H319 Causes serious eye irritation Skin Irrit. H315 Causes skin irritation STOT SE H335 May cause respiratory irritation Acute Tox. 4 H332 Harmful if inhaled Eye Dam 1 Causes serious eye damage, Eye Irrit. 2A H319 Causes serious eye irritation	No	-	-	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
Chemical	Urea Tank Level (NOX)	60,000	Litres	Bulk Tank	Yara Version 7.0 11.04.2023	Nox Care Urea Solution 40%	There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section	The product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended	No	-	-	-
Chemical	Small HCL storage (SG 1.18)	2,500	Litres	Bulk Tank	Fluid Science Ltd. Version 1.4 07/12/2019	Hydrochloric Acid 28 - 36%,	Not given EC Index No. 017-002-01-X EC-No. 231-595-7	Corrosive to metals, Category 1 H290 May be corrosive to metals Skin corrosion/irritation, Category 1A H314 Causes severe skin burns and eye damage Serious eye damage/eye irritation, Category 1 H318 Causes serious eye damage Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation H335 May cause respiratory irritation	No	-	-	-
Chemical	Small NaoH storage (SG 1.328)	2,500	Litres	Bulk Tank	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Sodium hydroxide	1310-73-2	Skin Corr. 1A H314 Causes severe skin burns and eye damage Met. Corr. 1 H290 May be corrosive to metals Eye Dam. 1 H318 Causes serious eye damage	No	-	-	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
Chemical	Steamate NA1324 (S.G. 1.02)	1,500	Litres	Bulk Tank	Veolia Version 5.5 07/06/2023	STEAMATE NA 1324	13326-32-6 10 - <25% 141-43-5 3- 5%	Skin corrosion/irritation Category 1B H314 Causes severe skin burns and eye damage Serious eye damage/eye irritation Category 1 H318 Causes serious eye damage Specific target organ toxicity - single exposure Category 3 respiratory tract irritation H335 May cause respiratory irritation Hazardous to the aquatic environment, long-term aquatic hazard Category 3 H412 Harmful to aquatic life with long lasting effects	No	-	-	-
Chemical	Cortrol OS5601 (S.G. 1.013)	1,500	Litres	Bulk Tank	Veolia Version 9.10 19/02/2024	CORTROL OS5601	Carbohydrazide 5 - <10 % 497-18-7 207-837-2	Skin sensitisation Category 1 H317 - May cause an allergic skin reaction.	No	-	-	-
Chemical	Depositrol PY5203A (S.G. 1.20)	1,500	Litres	Bulk Tank	Veolia Version 3.7 04/06/2023	DEPOSITROL PY5203A	Polycarboxylate in water The components are not hazardous or are below required disclosure limits.	This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.	No	-	-	-
Chemical	SpectrusOX120	220	kg	200L Drum	Veolia Version 7.0 07/03/2023	SPECTRUS OX1201	Sodium bromide 30 - < 40% 7647-15-6	Reproductive toxicity Category 2 H361 - Suspected of damaging fertility or the unborn child Specific target organ toxicity - single exposure Category 3 narcotic effects H336 - May cause drowsiness or dizziness Specific target organ toxicity - repeated exposure Category 2 (central nervous system) H373 - May cause damage to organs (central nervous system) through prolonged or repeated exposure	No	-	-	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
Chemical	Spectrus Biodispersant BD1550	220	kg	200L Drum	Veolia Version 4.7 21/05/2023	SPECTRUS BD1551E	Aqueous alkaline solution of organic salts and polymer The components are not hazardous or are below required disclosure limits	This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended	No	-	-	-
Chemical	Caustic Soda (Solid)	2	Tonnes	25kg Bag	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Sodium hydroxide	1310-73-2	Skin Corr. 1A H314 Causes severe skin burns and eye damage Met. Corr. 1 H290 May be corrosive to metals Eye Dam. 1 H318 Causes serious eye damage	No	-	-	-
Chemical	HCL (New Demin System B7502)	300	Litres	Bulk Tank	Veolia Version 8.6 29/07/2024	BIOMATE 5702	7681-52-9 10 - <20% 497-19-8 1 - <3 % 1310-73-2 0.5 – 2 %	Corrosive to metals Category 1 H290 May be corrosive to metals Skin corrosion/irritation Category 1B H314 Causes severe skin burns and eye damage Serious eye damage / eye irritation Category 1 H318 Causes serious eye damage Hazardous to the aquatic environment, acute aquatic hazard Category 1 H400 Very toxic to aquatic life	Yes	Hazardous to the aquatic environment, acute aquatic hazard Category 1 H400 Very toxic to aquatic life	-	E1
Chemical	Bisulfite Concentrate (New Demin System DCL30)	300	Litres	Bulk Tank	Veolia Version 7.3 16/02/2024	BETZDEARBORN DCL30	7631-90-5 30 - <40 % 7446-09-5 <1 %	Acute toxicity, oral H302 Harmful if swallowed	No	-	-	-
Chemical	Anti-Scalant (New Demin System MCD704i)	100	Litres	Bulk Tank	Veolia Version 1.12 19/04/2024	HYPERSPERSE MDC704I	20592-85-2 12 - <20	Corrosive to metals Category 1 H290 May be corrosive to metals	No	-	-	-
Chemical	CIP Flushing Agent (New Demin System MCT515E)	1	m3	IBC tank	Veolia Version 4.2 25/03/2024	KLEEN MCT515E	139-89-9 5 - <10 584-08-7 5 - <10 497-19-8 3 - <5 EC939-625-7 1 - <3 130-73-2 0.5 - <2 5064-31-3 <=1	Corrosive to metals Category 1 H290 May be corrosive to metals Skin corrosion/irritation Category 1 H314 Causes severe skin burns and eye damage Serious eye damage / eye irritation Category 1 H318 Causes serious eye damage	No	-	-	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
Chemical	CIP Flushing Agent (New Demin System MCT113)	1	m3	IBC tank	Veolia Version 2.2 25/03/2024	KLEEN MCT113	77-92-9 10 - <20 64-18-6 5 - <10 79-14-1 5 - <10 139-89- 5 - <10 5064-31-3 <=1 50-00-0 <=0.1	Corrosive to metals Category 1 H290 May be corrosive to metals Skin corrosion/irritation Category 1B H314 Causes severe skin burns and eye damage Serious eye damage / eye irritation Category 1 H318 Causes serious eye damage	No	-	-	-
Gas	Propane gas	500	kg	50kg Compressed Cylinder	BOC SDS No. 000010021747 Version 3.3 06.10.2023	Propane	74-98-6	Flammable gas Category 1A H220: Extremely flammable gas Gases under pressure Liquefied gas H280: Cotntains gas under pressure, may explode if heated	Yes	Flammable gas Category 1A H220: Extremely flammable gas	No	P2
Gas	Nitric Oxide	300	kg	50kg Compressed Cylinder	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Nitrogen monoxide	10102-43-9	Ox. Gas 1 H270 May cause or intensity fire; oxidiser Skin Corr. 1B H314 Causes severe skin burns and eye damage Acute Tox. 1 H330 Fatal if inhaled Press. Gas (Comp.) H280 Contains gas under pressure, may explode if heated Eye Dam. 1 H318 Causes serious eye damage STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure	Yes	Ox Gas 1 H270 May cause or intensify fire; oxidiser Acute Tox. 1 H330 Fatal if inhaled	No	H1 P4
Gas	Nitrogen	50	kg	90kg Compressed Cylinder	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Nitrogen	7727-37-9	Not classified as hazardous according to Regulation (EC) No.1272/2008:	No	-	-	-
Gas	Argon	1,500	kg	100kg Compressed Cylinder	Air Products SDS Number 003A Rev 5 2021-01	Argon	7440-37-1	Gases under pressure. Compressed gas H280: Contains gas under pressure. May explode if heated	No	-	-	-
Gas	Oxygen	400	kg	100kg Compressed Cylinder	Air Products SDS Number 097A Rev 5 2021-02	Oxygen	7782-44-7	Oxidizing gases - Category 1 H270: May cause or intensify fire; oxidiser Gases under pressure - Compressed gas	Yes	Oxidizing gases - Category 1 H270: May cause or intensify fire; oxidiser	Yes	-

Type	Substance	Max Quantity	Unit	Storage	MSDS Reference	Substance name (MSDS)	CAS#	Classification/Hazard Statements	COMAH Dangerous Substance	COMAH Classification	COMAH Named Substance	COMAH Category
								H280: Contains gas under pressure, may explode if heated				
Gas	Carbon Dioxide	200	kg	100kg Compressed Cylinder	BOC SDS No. 000010021714 Version 2.0 11.12.2017	Carbon dioxide	124-38-9	Gases under pressure. Liqufied gas H280: Contains gas under pressure. May explode if heated	No	-	-	-
Gas	Acetylene	500	kg	100kg Compressed Cylinder	European Chemicals Agency Chemicals Database https://chem.echa.europa.eu/ accessed 26/03/2025	Acetylene	74-86-2	Flam. Gas 1 H220 Extremely flammable gas Press. Gas H280 Contains gas under pressure. May explode if heated	Yes	Flam. Gas 1 H220 Extremely flammable gas	Yes	-
Oils	Gearbox oil	800	Litres	200L Drum	ExxonMobil 03-Jun-22	Mobil Jet Oil 254	1330-78-5 1 - < 3%	Reproductive toxicant (fertility): Category 2 H361 Suspected of damaging fertility	No	-	-	-
Oils	Turbine Oil	800	Litres	200L Drum	Shell Version 1.15 2024.06.05	Shell Turbo Oil T 46	64742-54-7 90 - 100% 90-30-2 0.1 - 0.24% 3115-49-9 0.01 - 0.09%	Based on available data this substance / mixture does not meet the classification criteria.	No	-	-	-
Other	Hydrosoft Granulated Salt	2	Tonnes	25kg Bag	Brenntag UK & Ireland Version 2.0 03/02/2012	Salt (Sodium Chloride) - Granular / PDV / Tablets	7647-14-5	Not a dangerous substance according to GHS.	No	-	-	-
Other	Limestone silo tonnage (DCS)	150	Tonnes	N/A	ROTH Version 4.1 en 3/06/2022	Calcium carbonate ≥99 %, p.a., precipitated	471-34-1	This substance does not meet the criteria for classification in accordance with Regulation No 1272/ 2008/EC	No	-	-	-
Other	Sand silo tonnage (DCS) for Boiler Bed	60	Tonnes	N/A	Aggregate Industries Version 4.1 en 14.06.2021	Silica Sand	14808-60-7	Not classified as hazardous according to Regulation (EC) No.1272/2008:	No	-	-	-
Other	150t Sand silo (DCS) (Sand + Haulage)	150	Tonnes	N/A	None available	-	-	Assume not classified as hazardous according to Regulation (EC) No. 1272/2008	No	-	-	-
Other	Biomass Silo level (DCS)	90	m3	N/A	None available	-	-	Assume not classified as hazardous according to Regulation (EC) No. 1272/2008	No	-	-	-
Other	Glysatin G30 Ready Mix	1,000	Litres	IBC	BASF Version 2.3 01.12.2022	GLYSANTIN® g30 Ready Mix/50 pink also suitable for electric vehicles	107-21-1 >=25% - < 50% 17265-14-4 >=1% - < 3% 1310-73-2 >=0.1% - < 0.2%	Acute Tox. 4 (oral) H302 Harmful if swallowed STOT RE (Kidney) 2 H373 May cause damage to organs Kidney) through prolonged or repeated exposure	No	-	-	-

The inventory of dangerous substances that are included in Scheule 1 of the COMAH Regulations 2015 is detailed in Table 4-3.

Table 4-3 also details the following:

- COMAH Classification
- S.I. 209 of 2015 (COMA Regulations 2015) Schedule 1 Part 1 category with lowest threshold or Part 2 Named substances
- S.I. 209 of 2015 (COMA Regulations 2015) Schedule 1 Part 1 other category
- Maximum Inventory in tonnes (q)
- Lower tier threshold in tonnes (Q1)
- Upper tier threshold quantity in tonnes (Q2)
- q/Q1 fraction of lower tier threshold
- q/Q2 fraction of upper tier threshold

It is noted that nitric oxide is classified under 2 No. COMAH categories, H1 Acute Toxic and P4 Oxidising Gas. The upper and lower tier threshold quantities for H1 Acute Toxic are lower than for P4 oxidising gases (see Appendix A) therefore in accordance with Note 6 to schedule 1 nitric oxide is included in the H1 Acute Toxic category.

Table 4-4 details the factorisation calculation to determine the COMAH Status of Edenderry Power Station.

Table 4-3. Existing COMAH Inventory at Edenderry Power Station

Substance	CAS #	Physical form	COMAH Classification	S.I. 209 of 2015 Schedule 1 Part 1 category with lowest threshold or Part 2 Named Substance	S.I. 209 of 2015 Schedule 1 Part 1 - other categories	Maximum Inventory	Units	Relative Density	q Max. quantity (tonnes)	Q1 Lower tier threshold (Column 2, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	Q2 Upper tier threshold (Column 3, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	q/Q1 Fraction of lower tier threshold	q/Q2 Fraction of upper tier threshold
Named substances													
19 Acetylene	74-86-2	Gas	Flam. Gas 1	Named substance	P2	50	Kg	n/a	0.50	5	50	0.100	0.010
25 Oxygen	7782-44-7	Liquefied gas	Oxidizing gases - Category 1	Named substance	P4	400	Kg	n/a	0.40	200	2000	0.002	0.0002
34 Petroleum products and alternative fuels (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams) (d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)	68334-30-5 (100), 91-20-3 (<1)	Liquid	Hazardous to the aquatic environment, chronic toxicity - Category 2	Named substance	E2	373,000	Litres	0.88 RD @ 15 degC	328.24	2500	25000	0.131	0.013
H1 ACUTE TOXIC													
Nitric Oxide	10102-43-9	Gas	Acute Toxicity Category 1 Oxidizing gases - Category 1	H1	P4	300	Kg	n/a	0.30	5	20	0.060	0.015
H2 ACUTE TOXIC													
No substances within this category													
H3 STOT SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE STOT SE Category 1													
No substances within this category													
P1a EXPLOSIVES													
No substances within this category													
P1b EXPLOSIVES													
No substances within this category													
P2 Flammable Gases, Category 1 or 2													
Propane gas	74-98-6	Gas	Flammable gas Category 1A	P2	-	500	kg	n/a	0.500	10	50	0.050	0.010
P3a FLAMMABLE AEROSOLS													
No substances within this category													
P3B FLAMMABLE AEROSOLS													
No substances within this category													
P4 OXIDISING GASES													
No substances within this category													
P5a FLAMMABLE LIQUIDS													
No substances within this category													
P5b FLAMMABLE LIQUIDS													
No substances within this category													

Substance	CAS #	Physical form	COMAH Classification	S.I. 209 of 2015 Schedule 1 Part 1 category with lowest threshold or Part 2 Named Substance	S.I. 209 of 2015 Schedule 1 Part 1 - other categories	Maximum Inventory	Units	Relative Density	q Max. quantity (tonnes)	Q1 Lower tier threshold (Column 2, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	Q2 Upper tier threshold (Column 3, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	q/Q1 Fraction of lower tier threshold	q/Q2 Fraction of upper tier threshold
P5c FLAMMABLE LIQUIDS													
No substances within this category													
P6a SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES													
No substances within this category													
P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES													
No substances within this category													
P7 PYROPHORIC LIQUIDS AND SOLIDS													
No substances within this category													
P8 OXIDISING LIQUIDS AND SOLIDS													
No substances within this category													
E1 HAZARDOUS TO THE AQUATIC ENVIRONMENT													
BIOMATE 5702	7681-52-9 10 - <20 497-19-8 1 - <3 1310-73-2 0.5 - 2	Liquid	Hazardous to the aquatic environment, acute aquatic hazard Category 1	E1	-	300	Litres	1.21 RD@ 21 degC	0.363	100	200	0.004	0.002
E2 HAZARDOUS TO THE AQUATIC ENVIRONMENT													
No substances within this category													
O1 SUBSTANCES OR MIXTURES WITH HAZARD STATEMENT EUH014													
No substances within this category													
O2 SUBSTANCES AND MIXTURES WHICH IN CONTACT WITH WATER EMIT FLAMMABLE GASES, CATEGORY 1													
No substances within this category													
O3 SUBSTANCES OR MIXTURES WITH HAZARD STATEMENT EUH029													
No substances within this category													

Table 4-4. COMAH Factorisation Calculation at Edenderry Power Station Based on Existing COMAH Inventory

Group	What do you add	Lower tier factorisation calculation	Upper tier factorisation calculation	Rule
H (Health)	Part 1: H1, H2, H3 and Part 2: Acute Category 1, 2 or 3 (inhalation route), STOT SE Category 1	**0.060**	**0.015**	> 1
P (Physical)	Part 1: P1 to P8 and Part 2: Explosives, flammable gases, flammable aerosols, oxidising gases, flammable liquids, self-reactive substances and mixtures, organic peroxides, pyrophoric liquids and solids, oxidising liquids and solids	**0.152**	**0.020**	> 1
E (Environment)	Part 1: E1 and E2 and Part 2: hazardous to the aquatic environment acute category 1, chronic category 1 or chronic category 2	**0.135**	**0.015**	> 1

4.4 Assessment of COMAH Status Following Conversion of the Peaker Plant to Natural Gas

Following conversion of the Peaker Plant to natural gas, the maximum inventory of dangerous substances (assuming natural gas pipeline route option B is installed) that are included in Scheule 1 of the COMAH Regulations 2015 is detailed in Table 4-5.

The inventory of natural gas within pipework at the GNI AGI is excluded as it is assumed that the AGI, which will be owned and maintained by GNI, would be located outside of the operational COMAH boundary in the event that the Edenderry Renewable Energy Complex become a COMAH establishment.

Table 4-6 details the factorisation calculation to determine the COMAH Status of Edenderry Renewable Energy Complex following conversion of the Peaker Plant to natural gas.

Table 4-5. COMAH Inventory Following Conversion of Peaker Plant to Natural Gas

Substance	CAS #	Physical form	COMAH Classification	S.I. 209 of 2015 Schedule 1 Part 1 category with lowest threshold or Part 2 Named Substance	S.I. 209 of 2015 Schedule 1 Part 1 - other categories	Maximum Inventory	Units	Relative Density	q Max. quantity (tonnes)	Q1 Lower tier threshold (Column 2, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	Q2 Upper tier threshold (Column 3, Part 1, Schedule 1, S.I. 209 of 2015) (tonnes)	q/Q1 Fraction of lower tier threshold	q/Q2 Fraction of upper tier threshold
Named substances													
18 Liquefied flammable gases, Category 1 or 2 (including LPG) and **natural gas** (see note 19)	74-82-8	Gas	Flam. Gas 1	Named substance	P2	168	Kg	n/a	0.168	50	200	0.003	0.001
19 Acetylene	74-86-2	Gas	Flam. Gas 1	Named substance	P2	50	Kg	n/a	0.50	5	50	0.100	0.010
25 Oxygen	7782-44-7	Liquefied gas	Oxidizing gases - Category 1	Named substance	P4	400	Kg	n/a	0.40	200	2000	0.002	0.0002
34 Petroleum products and alternative fuels (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams) (d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)	68334-30-5 (100), 91-20-3 (<1)	Liquid	Hazardous to the aquatic environment, chronic toxicity - Category 2	Named substance	E2	373,000	Litres	0.88 RD @ 15 degC	328.24	2500	25000	0.131	0.013
H1 ACUTE TOXIC													
Nitric Oxide	10102-43-9	Gas	Acute Toxicity Category 1 Oxidizing gases - Category 1	H1	P4	300	Kg	n/a	0.30	5	20	0.060	0.015
P2 Flammable Gases, Category 1 or 2													
Propane gas	74-98-6	Gas	Flammable gas Category 1A	P2	-	500	kg	n/a	0.500	10	50	0.050	0.010
E1 HAZARDOUS TO THE AQUATIC ENVIRONMENT													
BIOMATE 5702	7681-52-9 10 - <20 497-19-8 1 - <3 1310-73-2 0.5 - 2	Liquid	Hazardous to the aquatic environment, acute aquatic hazard Category 1	E1	-	300	Litres	1.21 RD@ 21 degC	0.363	100	200	0.004	0.002

Table 4-6. COMAH Factorisation Calculation at Edenderry Power Station Based on Existing COMAH Inventory

Group	What do you add	Lower tier factorisation calculation	Upper tier factorisation calculation	Rule
H (Health)	Part 1: H1, H2, H3 and Part 2: Acute Category 1, 2 or 3 (inhalation route), STOT SE Category 1	0.060	0.015	> 1

P (Physical)	Part 1: P1 to P8 and Part 2: Explosives, flammable gases, flammable aerosols, oxidising gases, flammable liquids, self-reactive substances and mixtures, organic peroxides, pyrophoric liquids and solids, oxidising liquids and solids	**0.155**	**0.021**	> 1
E (Environment)	Part 1: E1 and E2 and Part 2: hazardous to the aquatic environment acute category 1, chronic category 1 or chronic category 2	**0.135**	**0.015**	> 1

4.5 Conclusion

Based on existing operations at Edenderry Renewable Energy complex, it is concluded that:

- The maximum inventory of named substances (acetylene, oxygen, petroleum products) in Part 2 of Schedule 1 of the COMAH Regulations 2015 does not exceed the lower tier threshold quantities in Column 2, Part 1, Schedule 1 of the COMAH Regulations 2015 (S.I. 209 of 2015)
- The total inventory of any category of dangerous substance at Edenderry Power Station in Part 1 of Schedule 1 of the COMAH Regulations 2015 does not exceed the lower tier threshold quantities in Column 2, Part 1, Schedule 1 of the COMAH Regulations 2015 (S.I. 209 of 2015)
- The lower tier factorisation calculation total is < 1;
- Edenderry Renewable Energy Complex is classified as a **sub-COMAH status facility**. The provisions of the COMAH Regulations 2015 do not currently apply.

In the event that the Peaker Plant is converted to natural gas it is concluded that the Edenderry Renewable Energy Complex will remain a **sub-COMAH status facility** and the provisions of the COMAH Regulations 2015 will not apply.

5. CLIMATE IMPACT REVIEW

AWN Consulting, a Trinity Consultants Company, has prepared this technical note to support the associated Environmental Impact Assessment Report (EIAR) Climate Chapter. This note specifically addresses the change in fuel source to the Cushaling Peaker Plant, and qualitatively assesses the resulting change in operational greenhouse gas (GHG) emissions, specifically CO_2 emissions, and potential climate impacts.

5.1 Qualitative Operational Assessment

Impacts to climate will occur as a result of GHG emissions from the combustion of gas oil or natural gas in the Cushaling Peaker Plant.

The facility holds an Industrial Emissions Directive (IED) licence from the Environmental Protection Agency (EPA) (IE Licence Reg. No. P0482-04). The facility is currently licenced to operate using gas oil as its primary fuel source. The facility operates as a peaking unit, and therefore, is not required to operate continuously, operational hours vary with demand throughout the year. The total number of operational hours as well as the quantity of gas oil used and power generated annually over the previous 5 years, 2020 – 2024, are outlined in Table 5-1.

Table 5-1. Operational Data for Facility using Gas Oil

Year	Estimated Hours of Operation	Actual Gas Oil Consumption (tonnes)	Power Generation (MWh)
2024	137	2102.7	7960.3
2023	33	429.75	1898.1
2022	527	7797.22	30570.8
2021	395	5810.9	22928.5
2020	147	2236.54	8500.8

For the purposes of this assessment the following formula has been applied in order to calculate the tonnes of CO_2 emitted by the plant when operating using gas oil and natural gas:

$$\text{Emissions (kg CO}_2\text{)} = \frac{\text{Electricity output (kWh}_e\text{)}}{\text{Net electrical efficiency (\%)}} \times \text{SEAI Emissions Factor } \left(\frac{\text{kgCO}^2}{\text{kWh}} \text{fuel}\right)$$

The peaker plant has an overall potential power output of 116 MW_e, this is estimated to remain relatively similar when operating using natural gas. The overall electrical efficiency of the peaker units is c.35% when operating on either gas oil or natural gas.

The assessment has used the emission factors for gas oil and natural gas as published by the Sustainable Energy Authority Ireland (SEAI)[1]. A figure of 0.2639 $kgCO_2/kWh$ was used for gas oil and a figure of 0.2035 $kgCO_2/kWh$ was used for natural gas.

In order to ensure the assessment remained conservative, the maximum operational hours for the plant over the 5-year period (2020 – 2024) have been used in the assessment, i.e. 527 hours (see Table 5-1). This has been used to compare emissions when operating using gas oil and natural gas to ensure consistency in the approach.

Based on 527 hours of operation and 116 MW_e a figure of 61,132,000 kWh_e has been used in the assessment. Table 5-2 below details the predicted tonnes of CO_2 emitted for both the gas oil and natural gas scenarios.

[1] https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors

Table 5-2. Estimated Tonnes CO_2 Emitted - Gas Oil vs Natural Gas

	GAS OIL		NATURAL GAS	
Electricity output	61,132,000	kWh	61,132,000	kWh
Electrical efficiency of turbines	35%	efficiency	35%	efficiency
SEAI Emission Factor	0.2639	$kgCO_2/kWh$	0.2035	$kgCO_2/kWh$
Quantity CO_2 emitted	46,093,528	$kgCO_2$	35,543,891	$kgCO_2$
	46,094	**tCO_2**	**35,544**	**tCO_2**

As can be seen in Table 5-2, emissions when operating using natural gas are predicted to be lower than when operating using gas oil. There is a potential reduction of 10,550 tCO_2 based on the above parameters. This figure will vary depending on the actual hours of operation, but overall, emissions of CO_2 when the plant is operating using natural gas will be lower than the current gas oil scenario. Additionally, the carbon intensity of natural gas will decrease in the future in line with integration of renewables such as biomethane.

The Electricity Sector has a 2030 carbon budget of 3 $MtCO_2e$. Emissions (as per Table 5-2) from the peaker plant when operating using gas oil are approximately 1.5% of the 2030 electricity sector budget. In comparison, emissions from the peaker plant when operating using natural gas (as per Table 5-2) are predicted to be 1.2% of the 2030 electricity sector budget.

The purpose of the proposed upgrade of the facility is to reduce CO_2 emissions from the Cushaling Peak Plant. As per the above assessment, the change in fuel type from gas oil to natural gas will result in reduced CO_2 emissions and an associated reduced climate impact.

The proposed pipeline development will facilitate the conversion to natural gas as the primary fuel for the facility thereby allowing for the transition to a lower carbon intensive fuel and the associated climate benefits. This directly aligns the facility with Ireland's 2050 Net-Zero trajectory.

The cumulative operational phase effects of the change in fuel source are predicted to be ***long-term***, ***direct***, ***positive*** and ***not significant***.

6. AIR EMISSIONS REVIEW

6.1 Introduction

Bord na Móna (BnM) are planning to convert the existing liquid fuel-powered peaking plant, at its Renewable Energy Complex, located just south of Edenderry, Co. Offaly, to natural gas as the primary fuel source to reduce carbon dioxide (CO_2) emissions. The conversion of the Peaker Plant to dual-fuel operation involves upgrading two peaker units, each containing two turbines, to operate on both liquid fuel and natural gas. As part of the works, a 23 km pipeline will be constructed to connect the transmission grid to a new Above Ground Installation (AGI), which will serve as the gas supply point for the Edenderry site. From the AGI, a dedicated pipeline will link to the peaker units. Within the plant, four gas metering skids, one per turbine, will be installed along with associated gas piping, instrumentation, and control integration. Additional modifications include enhancements to fire protection systems with gas detection and valve control, and commissioning of dual-fuel components to support flexible and secure operation.

AWN Consulting, a Trinity Consultants Company, has prepared this technical note to support the associated Environmental Impact Assessment Report (EIAR) Air Quality Chapter. This note specifically addresses the change in fuel source to the Cushaling Peaker Plant, and qualitatively assesses the resulting change in operational emissions and potential air quality impacts.

6.2 Qualitative Operational Assessment

In order to reduce the risk to human health and the environment from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" (AQS) are health or environmental-based levels for which additional factors may be considered. The ambient air quality limit values for pollutants are set out in *Annex I* of *Directive (EU) 2024/2881.*

Air quality has the potential to be impacted through pollutant emissions from the on-site gas turbines. The facility currently holds an Industrial Emission (IE) Licence from the Environmental Protection Agency (IE Licence Reg. No. P0482-04). This assessment relates to the plant activity at the site under the current licence (ref. P0482-04). The IE licence for the facility sets out a number of emission limit values for the main emission points on site, the gas turbines being emission points A2-1, A2-2, A2-3 and A2-4. These emission limit values are in place to reduce negative impacts to ambient air quality. Table 6-1 shows the emission limit values for emissions to air as stated in Technical Amendment D of the IE licence.

Table 6-1 - Emission Limits in Licence

Emission Point	Parameter	Emission Limit Value (mg/m^3)
A1-1 (Main Boiler)	Oxides of sulphur	220
	Nitrogen oxides (as NO_2)	175
	Dust	18
A2-1, A2-2, A2-3, A2-4	Nitrogen oxides (as NO_2)	90 (250 mg/m^3 if operational less than 500 hours per year)
	Dust	10 (not applicable if operational less than 500 hours per year)
	Carbon monoxide (CO)	100 (not applicable if operational less than 500 hours per year)
	Oxides of sulphur	66 (not applicable if operational less than 500 hours per year)

Currently, the plant is licenced to operate using gas oil as its primary fuel. The total quantity of gas oil used during operation in 2024 was 2,102.7 tonnes. All gas oil will be replaced by natural gas. There will be no change to either emission points or stack placement. Although there are currently no proposed changes to the licence, as set out in *566/2012 - European Union (Large Combustion Plants) Regulations*

2012, Schedule 2 Section 6, the emission limit value for NO_x for turbines operating using natural gas is 50mg/m^3, lower than the current 90 mg/m^3 (or 250 mg/m^3 if operational less than 500 hours per year) limit values for A2-1, A2-2, A2-3 and A2-4 in the current IE licence.

During combustion, natural gas releases significantly less nitrogen oxides (NO_x), sulphur dioxide (SO_2) and dust (particulate matter (PM) (both PM less than 10 microns and PM less than 2.5 microns known as PM_{10} and $PM_{2.5}$)) than the currently licenced liquid fuel. Therefore, it is expected that the change in fuel source will result in a reduction in NO_x, SO_2, PM_{10} and $PM_{2.5}$.

The site is currently in compliance with the emission limit values set out in the IE licence. The site will be required to amend its IE licence to include updated emission limit values for the turbines when operating using natural gas, which will be lower than the current limit values. Therefore, the change in fuel source for the site will not result in increased air emissions in comparison to the existing emissions. The operational air quality effects of the change in fuel source are predicted to be ***long-term***, ***direct***, ***localised***, ***positive*** and ***significant***.