CONTENTS

TABLES

APPENDIX
(Refer to EIAR Volume II)

FIGURES
(Refer to EIAR Volume III)

TYN-TOD-ZZ-ZZ-DR-A-8004	Proposed Access Gate and Fencing Details
TYN-TOD-ZZ-ZZ-DR-A-3001	Existing & Proposed Site Elevations (West & North)
TYN-TOD-ZZ-ZZ-DR-A-3002	Existing & Proposed Site Elevations (East & South)
TYN-TOD-ZZ-ZZ-DR-A-4001	Proposed Site Sections
TYN-TOD-ZZ-ZZ-DR-A-4002	Proposed Site Sections

5.0 THE PROPOSED DEVELOPMENT

5.1 Introduction

5.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) provides a detailed description of the Proposed Development, which is an Open Cycle Gas Turbine (OCGT) plant, acoustic barriers, secondary fuel storage and unloading facility, distillate fuel gantry, water storage tanks, surface water drainage system and all associated ancillary development, site works and services ('the Proposed Development') on land to the north of Tynagh Power Station in Derryfrench, Loughrea, Co. Galway.

5.1.2 The Proposed Development includes a 350MW OCGT plant primarily fuelled by natural gas. The plant will operate as a 'peaking plant', spending most of its time on standby, and will be run to compliment renewable power generation technology. The objective of the project is to help maintain security of supply and facilitate the continued expansion of Ireland's renewable generation capacity, by providing support to the electricity network during periods when there is a gap between renewable power generation and power demand.

5.1.3 Details of the reasonable alternatives considered and how the layout was selected to avoid sensitive environmental receptors and infrastructure are presented in Chapter 3: Need and Alternatives of this EIAR.

5.1.4 The Site on which the Proposed Development will be located is to the north of the existing Tynagh Power Station site. The area available for the Proposed Development (the 'red line' planning application area) is 5.53 hectares.

5.1.5 The construction phase of the Proposed Development is outlined in Chapter 5: The Proposed Development, Section 5.3 of this EIAR. A detailed construction programme will be determined by the Engineering and Construction (E&C) contractor who has not yet been appointed, however an outline construction programme is presented within Section 5.3 which includes all key stages and milestones and provides a robust basis for assessment purposes.

5.1.6 With regard to the operational phase, it is envisaged that the Proposed Development will have a design life of at least 25 years. For the purpose of the environmental assessment, the lifetime of the Proposed Development is estimated as 25 years and this is based on the design life of the equipment proposed. The operational requirements of the Proposed Development will inevitably change during its design life and it will be subject to regular reviews to identify potential modifications and amendments that would allow the asset to have a future sustainable use beyond 25 years. Such modifications may include;

1. substitution of natural gas with an alternative fuel such as hydrogen or biofuel; or
2. modification to the operational characteristics to allow the Proposed Development to meet power generation requirements at that point in time.

5.1.7 These modifications may require additional consents and/ or licences and this will be addressed as and when required. At the end of the design life, the Proposed Development would either be decommissioned, or the lifetime could potentially be extended. Decommissioning or extension of the lifetime of the asset would therefore be expected to commence at some point after 2052.

5.1.8 This chapter of the EIAR is supported by the following Figures (refer to EIAR Volume III) which detail the Proposed Development layout and design (***Note***: Full scale drawings have

been included in the planning submission accompanying the EIAR. All drawings included in the EIAR Chapter 5: The Proposed Development have been included at A3 page size for reference purposes. All dimensions have been rounded up to 1 decimal place for reporting and assessment purposes unless otherwise stated):

- TYN-TOD-ZZ-ZZ-DR-A-1004 Proposed Site Plan

- S3577-8310-0004 OCGT Plan
- S3577-8330-0001 OCGT East & West Elevations
- S3577-8330-0002 OCGT North & South Elevations
- S3577-8340-0003 OCGT Sections

- S3577-8310-0005 Proposed Fuel Storage, Treatment & Unloading
- S3577-8330-0004 Fuel Unloading Area Elevations
- S3577-8340-0004 Proposed Fuel Unloading Area Section
- S3577-8340-0002 Distillate Pipe Gantry Typical Section
- S3577-8310-0006 Demin Tank Plan
- S3577-8330-0005 Demin Tank Elevations
- S3577-8340-0005 Proposed Demin Tank Section
- S3577-8310-0007 Firewater Tank Plan
- S3577-8330-0003 Firewater Tank Elevations
- S3577-8340-0006 Proposed Firewater Tank Section

- TYN-NTH-AEC-DRAIN-01 Proposed Drainage Plan

- TYN-TOD-ZZ-ZZ-DR-A-8004 Proposed Access Gate and Fencing Details
- TYN-TOD-ZZ-ZZ-DR-A-3001 Existing & Proposed Site Elevations (West & North)
- TYN-TOD-ZZ-ZZ-DR-A-3002 Existing & Proposed Site Elevations (East & South)
- TYN-TOD-ZZ-ZZ-DR-A-4001 Proposed Site Sections
- TYN-TOD-ZZ-ZZ-DR-A-4002 Proposed Site Sections

5.2 Components of the Proposed Development

5.2.1 The purpose of this EIAR chapter is to provide further detail on the various components of the Proposed Development including structures and infrastructure. All of the various components which make up the Proposed Development are contained within the application area shown on the Proposed Development Plan (refer to Figure TYN-TOD-ZZ-ZZ-DR-A-1004 - Proposed Site Plan, EIAR Volume III) and are described or encompassed within the description of the Proposed Development in the accompanying planning application documents and Planning Statement.

5.2.2 The Proposed Development will include the following main components:

- Open Cycle Gas Turbine (OCGT) unit, 40m emissions stack and balance of plant;
- Acoustic barriers;
- Secondary fuel storage and unloading facility;
- Distillate fuel gantry;
- Water Storage Tanks; and
- Surface Water Drainage system.

5.2.3 The Proposed Development will have separate connections to this infrastructure, by way of a new Above Ground Installation (AGI) to connect to the existing high pressure gas pipeline to the west, and a new bay within the existing electricity substation to the south. Both the AGI and new bay in the substation are not being applied for in the planning application for the Proposed Development (as they will be applied for by the gas network and and electricity network provider respectively) and they are therefore not detailed in this EIAR Chapter, however the AGI and new bay in the substation and associated connections are assessed in this EIAR as part of the Overall Project Site.

5.2.4 The construction phase of the Proposed Development will comprise:

- Temporary construction and laydown areas comprising hardstanding, laydown, and open storage areas;
- Temporary facilities and stores;
- Materials and plant storage;
- Contractor compounds and construction staff office and welfare facilities;
- Temporary vehicle parking facilities;
- Security fencing and gates;
- External lighting; and
- Signage.

5.2.5 In connection with and in addition to the above, the following infrastructure will be included:

- Internal roads;
- External lighting;
- Security fencing and gates; and

- Utilities, pipes, cables and connection to existing surface water drainage systems, oil-water separators, including channelling, culverting, crossings and works to existing drainage ditches and systems.

5.2.6 The Proposed Development elements are described in detail below.

Open Cycle Gas Turbine (OCGT) Unit

5.2.7 The Proposed Development will include one (1 no.) OCGT unit, comprising a single gas turbine and a single alternating current (AC) generator. The generator and gas turbine will be housed in separate acoustic enclosures with ventilation ducts.

5.2.8 The electrical energy output of the OCGT will be limited to 350MW, this will be achieved via:

- The grid connection agreement having a maximum export capacity (i.e., 350MW);
- The electrical systems will be sized to the maximum export load (i.e., 350MW) (i.e., transformer, generator and cables); and
- The gas turbine will be designed, installed and controlled to deliver the specific energy output that is proposed (i.e., 350MW). This is an essential part of maximising the efficiency and performance of the machine.

5.2.9 The turbine and ancillary plant elements (including the gas and distillate fuel skids etc.) will have a containerised control module which will house the turbine controls and a containerised electrical module which will supply power to the turbine and its associated auxiliary systems. The turbine will have a transformer to step up its generating power to a level suitable for export to a new bay in the existing onsite electrical substation.

5.2.10 The turbine will use forced air-cooling radiators to manage heat from the lubrication oil and other essential systems when operational.

5.2.11 The gas turbine package will be located externally within the Site. The turbine will fire primarily natural gas to generate power, however it also has the functionality to fire on locally stored back-up (distillate fuel or Hydrotreated Vegetable Oil (HVO)), transported to site via HGV tanker and stored on Site in an above ground tank. Operation using distillate fuel is only in the exceptional event of a loss of pressure in the gas transmission system and other generation sources on the transmission grid not being able to meet demand, and during fuel security compliance tests (to confirm the readiness of the turbine to respond to a call to fire on distillate fuel in the event of an emergency).

5.2.12 The OCGT unit has been specified to comply with the emissions requirements of the Industrial Emissions (IE) Directive without supplemental emissions abatement such as selective catalytic reduction. Consequently, the flue gases generated will pass directly from the gas turbine unit to a flue stack structure.

5.2.13 The power generating unit and associated equipment will have a footprint of approximately 5,300m^2 (refer to EIAR Volume III, Figure S3577-8310-0004).

Emissions Stack

5.2.14 The proposed 1 no. emissions stack will be 40.0m high (top of stack will be at 107.5m AOD) and 9.0m in diameter (8.0m internal width) and will be constructed for the OCGT, to the north of the proposed gas turbine refer to EIAR Volume III, Figure S3577-8310-0004). The top of the flue will be stainless steel lined to avoid corrosion. Detailed air dispersion

modelling has been carried out to inform the stack height and is discussed within Chapter 7: Air Quality and Climate and presented in detail in Appendix 7A in EIAR Volume II. Details and elevations of the proposed emissions stack are presented on the following figures (refer to EIAR Volume III):

- S3577-8330-0001 OCGT East & West Elevations
- S3577-8330-0002 OCGT North & South Elevations
- S3577-8340-0003 OCGT Sections
- TYN-TOD-ZZ-ZZ-DR-A-4001 Proposed Site Sections
- TYN-TOD-ZZ-ZZ-DR-A-4002 Proposed Site Sections

5.2.15 Flue gases from an OCGT can be up to 600°C in temperature and the emissions stack structure includes a number of measures to accommodate such a high temperature gas. The stack will be double skinned with a layer of insulation between the inner and outer cylinders to the stack. This minimises heat transfer to the surrounding structure and reduces discolouration of the stack exterior over time.

5.2.16 A combination of the high exhaust gas temperature, low NOx content, and absence of visible combustion particulates mean that the proposed OCGT plant will not form a visible plume. The exhaust temperature is such that water vapour in the flue gas is unlikely to condense close to the stack structure before dispersal, even during times of very low ambient temperature. The OCGT is compliant with current best available techniques for NOx limits meaning the characteristic yellow tint to the flue gases from the presence of high levels of NOx will not be visible.

5.2.17 The stack structure will include a continuous emissions monitoring system (CEMS) that will be mounted at height at stack exit. The system will be accessible via a fixed platform, 30m high, attached to the stack. Emissions from the stack will be monitored continuously using the CEMS and reported in accordance with the requirements for the operation of the Proposed Development under an IE License which will be applied for in due course.

Air Intake

5.2.18 The OCGT requires large volumes of filtered air during operation. Filtration of the air is vital for its efficient and reliable operation.

5.2.19 The air intake structure will draw in air via louvres on its surface and will pass it through up to two layers of filtration during operation to remove entrained particles from the air. As the filters become loaded with entrained particles they will require periodic cleaning or replacement. This will be completed when the gas turbine unit is offline.

5.2.20 The proposed air intake will be 15m in height and 26m in width and 13.3m in depth, or 20.8m in depth including the duct to the rear, and is raised 12m above the ground. Details and elevations of the proposed emissions stack are presented on the following figures (refer to EIAR Volume III):

- S3577-8310-0004 OCGT Plan
- S3577-8330-0001 OCGT East & West Elevations
- S3577-8330-0002 OCGT North & South Elevations
- TYN-TOD-ZZ-ZZ-DR-A-4001 Proposed Site Sections

- TYN-TOD-ZZ-ZZ-DR-A-4002 Proposed Site Sections
- S3577-8340-0003 OCGT Sections

5.2.21 During cold weather, the air intake structures may be prone to icing up which reduces air flow though the structure and consequently the power output of the OCGT. To mitigate ice build-up on the structure it will incorporate de-icing equipment that during operation will either use induction elements or hot air to warm of the surface of the intake structure preventing ice build-up. This system is only expected to operate when the OCGT is running.

Fin Fan Coolers

5.2.22 A bank of fin fan coolers will be situated to the east of the OCGT. The bank of fin fan coolers will have a length of 24.0m, a width of 8.0m and a height of 7.0m (refer to EIAR Volume III, Figure Ref: S3577-8310-0004). The steam is condensed externally finned tubes which are cooled by a current or air blown over them by the fin fan coolers.

5.2.23 The fin fan coolers are required to provide cooling to the gas turbine lube oil and control oil systems, the generators, and the transformers. The fin fan coolers circulate water in a closed loop between these systems and the external radiators.

5.2.24 The coolers comprise variable speed fans that draw air over banks of finned tubes through which the hot water from the operational equipment is circulated. The finned tube banks will be mounted horizontally and at a height above the ground to allow space for air to be drawn in from under the banks by the fans.

5.2.25 The speed of the fans varies to match the cooling requirements of the power generating equipment. This minimises the noise impact of the fans and reduces power load during operation.

Main and Auxiliary Transformers

5.2.26 Power generated by the gas turbine generator will be stepped up from the generator voltage to 220 kV and exported via the existing 220 kV substation to the immediate south of the Site (refer to EIAR Volume III, Figure Ref: TYN-TOD-ZZ-ZZ-DR-A-1004).

5.2.27 The required 220kV OCGT GSU (Grid Step Up) transformer bay will consist of the following:

- 220kV Disconnectors (DISC) also known as Isolators;
- 220kV Earth Switches (E/SW);
- 220kV Cable Sealing Ends (CSE);
- 220kV Protection and Metering Current Transformers (CT);
- 220kV Protection and Metering Voltage Transformers (VT); and
- Protection and Control linked into the main OCGT generator relay room.

5.2.28 The power requirements of the project will be taken from the export power connection and will be stepped down for local usage via an auxiliary transformer. The auxiliary transformer is expected to be significantly smaller (typically less than 1% the design rating of the main transformer). Two ancillary transformers will also be required to start the OCGT unit.

Fire Suppression Skid

5.2.29 The OCGT is installed in ventilated and acoustical insulated enclosures. In the event of a fire or significant natural gas build up in one of these enclosures, an inert gas purging system will be initiated to displace air from the enclosure (refer to EIAR Volume III, Figure Ref: S3577-8310-0004).

5.2.30 The inert gas proposed for use will be carbon dioxide (CO_2). The carbon dioxide will be stored in a bank of pressurised cylinders adjacent to the OCGT.

Ignition Propane Store

5.2.31 The OCGT includes the functionality to fire on locally stored distillate fuel in the exceptional event of a loss of pressure in the gas transmission system and other generation sources on the transmission grid not being able to meet demand, and during fuel security compliance tests (to confirm the readiness of the turbine to respond to a call to fire on distillate fuel in the event of an emergency).

5.2.32 The OCGT cannot start on distillate fuel however and propane gas is required to aid start-up.

5.2.33 The quantity of propane required compared to the normal fuel consumption of the OCGT is relatively small. Propane will be stored in a bank of pressurised cylinders adjacent to the OCGT (refer to EIAR Volume III, Figure Ref: S3577-8310-0004).

Fire Water Tank

5.2.34 A fire water tank with a capacity of 1,000m^3 is required to comply with the requirements of the IE License. The fire water storage tank will be located to the west of the OCGT (between the OCGT and the AGI) as part of the full site fire safety system (refer to EIAR Volume III, Figure Ref: S3577-8310-0004). Gaseous extinguishing systems will also be provided for use on electrical systems.

5.2.35 Refer to Figures S3577-8310-0007, S3577-8330-0003, and S3577-8340-0006, for the Firewater Plan, Elevations, and Section respectively (refer to EIAR Volume III).

Gas AGI Connection

5.2.36 The existing Tynagh Power Station AGI connects the existing Tynagh CCGT Power Station with the gas transmission network.

5.2.37 A gas pipeline (internal to the site) will connect the proposed OCGT to a new AGI compound, located to the west of the plant. This gas pipeline will be approximately 185m long.

5.2.38 While the internal gas connection and AGI compound location are included as part of the Proposed Development, the gas Above Ground Installation (AGI) connection equipment will be designed and applied for separately by the gas networks operator. The gas AGI compound will be designed to gas network operator specifications and will be similar in nature to the existing AGI on site. It will include a pressure reduction station, preheating equipment, metering equipment and various shutoff and control valves.

Electrical Substation Connection

5.2.39 The OCGT will be connected to the existing Tynagh Power Station electrical substation (located to the immediate south) via buried cables that will be approximately 250m long.

5.2.40 While the internal electrical connections are included in the Proposed Development, the addition of a new 220kV bay and a new 220kV bus section to the existing substation will be designed and applied for separately and constructed by the electricity networks operator.

Underground Services (inc. Electrical Cabling)

5.2.41 Underground gas pipework and electricity cabling connections will be laid between the Gas AGI and the OCGT, and between the OCGT and the electricity substation (refer to EIAR Volume III, Figure TYN-TOD-ZZ-ZZ-DR-A-1004).

5.2.42 Natural gas will be forwarded from the AGI to the OCGT via a buried gas pipe approximately 300m long.

5.2.43 The OCGT will be connected to the existing electrical substation via buried cables that will be approximately 250m long.

5.2.44 Power and communications supplies to the AGI and OCGT will be provided by cables buried in parallel with the gas pipework route.

Acoustic Barriers

5.2.45 An acoustic barrier will be provided as follows - a 7.0m high acoustic barrier around the fin fan cooler, a 8.0m high acoustic barrier around the transformers, and a 10.0m high barrier around the generator, turbine, diffuser and stack base (refer to EIAR Volume III, Figure S3577-8310-0004). This configuration allows for a reduction in the noise emissions from the OCGT, whilst allowing sections of barrier to be removable for maintenance purposes when the plant is non operational.

Secondary Fuel Storage and Unloading Facility

5.2.46 The proposed plant will be required under the Grid Code to maintain a secondary fuel supply of approximately 6,100m^3 (5,200t) of back up fuel (distillate or HVO) which will be contained in a tank within a bunded area. The purpose of this secondary fuel is to ensure that power can still be supplied to the electricity network in the event of an interruption to supply from the gas connection. The secondary fuel will only be used in the unlikely event that both the gas connection is unavailable and other generation sources on the transmission grid cannot meet demand.

5.2.47 A fuel treatment plant will be required to remove any contaminates from the secondary fuel that may accumulate during storage, which will be collected in a tank contained within the bunded area prior to its safe disposal.

5.2.48 The secondary fuel will be received via road tanker at a new offloading station located to the east of the bunded tank and transferred to the tank via new offloading pumps. This area will include a drainage system which will link into the existing power station drainage system with interceptors to capture any potential oil spills (refer to EIAR Volume III, Figure S3577-8310-0005).

5.2.49 A fuel forwarding pump set will forward the secondary fuel from the storage area to the plant when required. The pumps and fuel treatment plant are in a building adjacent to the

tank. The secondary fuel storage facility and associated equipment will have a footprint of approximately 2000m^2.

5.2.50 Refer to Figures S3577-8340-0004 and S3577-8330-0004 for the Proposed Fuel Unloading Area Section and Fuel Unloading Area Elevations respectively (refer to EIAR Volume III).

Distillate Fuel Gantry

5.2.51 A gantry will carry the fuel forwarding and return lines to the OCGT from the secondary fuel storage area and from the fuel offloading area and will comprise a ground level and, at internal haul road crossing, 6m tall frames, totalling approximately 10m long and 2m wide (refer to EIAR Volume III, Figure S3577-8310-0005 and Figure S3577-8340-0002).

5.2.52 The overhead gantry layout will not impede vehicle access within the site. The frame will be fabricated from carbon steel with either a galvanised or painted corrosion protection coating.

Demineralised water tank

5.2.53 The proposed plant will have a 6,000m^3 demineralised water storage tank which will be used for power augmentation of the gas turbine to achieve 350MW output. This will be sufficient water for 3 days continuous operation at base load.

5.2.54 Refer to Figures S3577-8310-0006, S3577-8330-0005, and S3577-8340-0005, for the Demineralised Water Tank Plan, Elevations, and Section respectively (refer to EIAR Volume III).

Surface and Foul Water Drainage

5.2.55 The Proposed Development, while a separate facility to the existing Tynagh Power Station, will be located to its immediate north.

5.2.56 A sufficiently sized surface water drainage system will be provided to connect with the existing Tynagh Power Station Surface Water drainage infrastructure. With regard to surface water drainage refer to Figure TYN-NTH-AEC-DRAIN-01 for the Proposed Drainage Plan (refer to EIAR Volume III).

5.2.57 The Proposed Development will not lead to an increase in staff and therefore there will be no additional foul water generated (either from sanitation or process water) and as a result there will be no requirement for increased foul water management at the site over and above existing facilities.

Site Access and Internal Access Roads

5.2.58 The existing site access off LP4310 Gurtymadden (note - some public documents refer to this road as Gortymadden) to Tynagh Road will be used for construction personnel, traffic and the existing Tynagh Power Station staff. Security fencing, CCTV and other security measures including external lighting will be installed within the Site, for health, safety, and security purposes.

5.2.59 Internal roadways will be hard surfaced with drainage systems to manage surface water runoff and pollution risk.

Security Fencing and Boundary Treatments

5.2.60 The perimeter of the Site will be surrounded by palisade security fencing 2m in height. There will also be additional security fencing around specific areas of the site for added security and safety.

5.2.61 The area containing the gas AGI will be enclosed by security fencing. The area containing the electrical substation is currently fenced with an access gate and will remain unchanged. There will be double fencing in some locations such as between the perimeter fencing and the AGI area.

5.2.62 Refer to Figure TYN-TOD-ZZ-ZZ-DR-A-8004 for the Proposed Access Gate and Fencing Details (refer to EIAR Volume III).

External Lighting

5.2.63 External lighting will provide safe working conditions in all areas of the Site whilst reducing light pollution and the visual impact on the local environment. This will be achieved by the use of luminaires that eliminate the upward escape of light.

Temporary Construction Laydown Area and Contractor Compounds

5.2.64 The construction and laydown area will be provided at the Overall Project Site and the principal contractor will secure the area with temporary fencing, set up initial site accommodation and welfare facilities, and connect into the existing services on the existing Tynagh Power Station Site. To ensure site security, there will be a single point of entry to the Site for all construction personnel. Laydown requirements and construction phasing will be developed during the detailed design phase by the E&C contractor.

5.2.65 Construction access to the Site will be from the existing site access to the west of the Site, from the LP4310 Tynagh Road.

5.2.66 It is expected that the extent of HGV movements will vary at different stages of the construction works in response to the activities taking place at any given time. Typical levels during the construction phase will be above the operational level. Construction levels would be assessed against TII guidance which recommends an assessment if there is a change exceeding 10% annual average daily traffic (AADT) on affected roads.

5.3 Proposed Development - Construction Phase

5.3.1 The Applicant will appoint an Engineering and Construction (E&C) Contractor for the main works. The contractor will appoint subcontractors to undertake all the specific construction and civil works. The Applicant is committed to ensure a safe working environment for all employees and contractors.

Construction Programme

5.3.2 The construction phase will be 18 – 24 months, the final details of which will be determined by the E&C Contractor and presented in a Construction Environmental Management Plan (CEMP) which will be agreed by the planning authority. An Outline CEMP is presented in Appendix 5A (refer to EIAR Volume II).

Table 5.1: Construction Phase Programme

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
ACTIVITES	Site Surveys																					
	Design Update																					
						Civil Works and delivery of equipment																
												Installation of mechanical equipment										
																		Testing and commissioning				

Source – Fichtner Consulting Engineers Limited

5.3.3 The earthwork stage of the Proposed Development will not require significant excavation. There will be a fill requirement (21,000m^3) for the Site of the Proposed Development, however this material will be imported. The engineering requirements result in no export of soils or material from Site.

5.3.4 Following construction of the development platform to 67.5mAOD using imported fill, and regrading of the made ground to the north, pilling would be installed, and a foundation cast to meet the requirements of the OCGT plant developed. On completion of this stage of the works, the OCGT unit will be delivered to site for installation on the new foundations. The OCGT unit is expected to be delivered to site on a propelled modular transporter and will likely be skidded onto the new foundations using a heavy-duty lifting frame erected on site. After this work has been completed, the lifting frame will be dissembled and removed from site.

5.3.5 It is proposed to install the air intake to the south of the gas turbine unit. The configuration allows the OCGT to draw fresh air. The air intake will arrive on site partially assembled and will be assembled at ground level before being lifted into its final position by mobile cranes.

5.3.6 The emissions stack for the OCGT unit will be mounted on a foundation installed on the site. It will be made up of modular steel sections which will be stacked on each other to achieve the design height of the emissions stack. The modular sections will be raised to the height required using a mobile or temporary tower crane. Fixing of the sections to each other will be completed manually via scaffolding access.

Construction Programme Overlap

5.3.7 In November 2021, a planning application and EIAR were submitted to Galway County Council (GCC) for a separate development project, a 299MW OCGT plant on the western portion of the existing Tynagh Power Station site. Submitted Development Ref: 21/2192 proposes to demolish the existing Tynagh Power Station site workshop, administration building and car park, relocate these items to the brownfield lands to the immediate north of the Tynagh Power Station facility and develop a separate OCGT plant on the western part of the Power Station Site.

5.3.8 Submitted Development Ref: 21/2192 is currently awaiting determination by An Bord Pleanála (PL 07.313538) following a Third Party appeal against Galway County Council's decision to grant permission. For further details of the Submitted Development please refer to EIAR Chapter 4, EIAR Volume I.

5.3.9 Subject to planning approval being obtained for the Submitted Development Ref: 21/2192, the Applicant intends to build out and operate both Submitted Development Ref: 21/2192 and the Tynagh North OCGT; the Submitted Development Ref: 21/2192 within Tynagh Power Station is expected to begin development at the start of Q2 2023. The construction period of the Submitted Development would therefore potentially overlap for three months with the construction period of the Proposed Development, Tynagh North. Chapter 14 of this EIAR and Appendix 14H sets out the construction period overlap between the

Proposed Development (Tynagh North) and the Submitted Development Ref: 21/2192 which could occur for 3 months between November 2024 – January 2025. In the event of an overlap of the 3 months the total daily traffic assessed (and considered acceptable) within the EIAR Chapter 14: Traffic chapter is higher than the cumulative traffic during the overlap and, therefore, the trips during the overlap period do not need to be assessed separately. The results of showed that the traffic remains within road capacity and therefore no significant cumulative impact is expected.

Construction Site Management

5.3.10 Construction works would typically take place during the hours of 0700hrs to 1900hrs (Monday to Friday) and 0700hrs to 1300hrs (Saturday) with the exception of commissioning and specific engineering works (e.g., concrete pours) which could take place outside these hours, as and when agreed with the planning authority.

5.3.11 It is likely that some construction activities will be required to continue for 24 hours for limited durations. The facility may be operational at any point during a 24-hour period during commissioning (and operation). Commissioning will take place in the final six months of the programme.

5.3.12 Where on-site works are to be conducted outside the core hours, they will comply with any restrictions agreed with the planning authorities, in particular regarding control of noise and traffic. 24 hour working or quiet working for certain activities has therefore been assessed in Chapter 11: Noise and Vibration, which sets out specific mitigation and control measures required to prevent disturbance from night-time construction activities.

5.3.13 Lighting for night-time working will be downward facing and directed towards the centre of the Site so as to minimise any nuisance outside of the Site in relation to views from residential receptors or light disturbance to ecological receptors.

Construction Site Access

5.3.14 It is expected that the extent of HGV movements will vary at different stages of the construction works in response to the activities taking place at any given time. The peak HGV movements are expected in Months 01 to Month 03 with a maximum of 59HGV arrivals trips per day. Therefore, not exceeding the DMRB screening criteria (of 200 HGV movements per day).

5.3.15 Levels of employment will vary throughout the construction period however the peak staffing occurs in Month 05 to Month 16 when 200 staff will be required. Based on a 1.5 car occupancy, it is expected that there will be a maximum of 133 staff vehicle arrivals per day during this month. Parking will be made available at the Overall Project Site to allow all construction staff vehicles to park at once.

Construction Site Compound

5.3.16 At the outset, the construction area will be secured with temporary fencing and the E&C contractor will set up the initial site accommodation and welfare facilities, including temporary services on the site. To ensure site security, there will be a single point of entry to the Overall Project Site for all construction personnel. The compound will not be for long term storage of materials and storage will be for the duration of the construction phase only.

5.3.17 At the end of each shift, mobile plant will be returned to a secure overnight plant storage area within one of the proposed construction compounds where drip trays will be utilised under the various types of plant.

5.3.18 Storage areas for flammable/ toxic/ corrosive materials will be located in a separate, locked, impermeable bunded and fenced off area. Material data sheets will be available for all these materials and the COSHH (Control of Substances Hazardous to Health) assessments kept within the relevant Risk Assessment for the task, all subject to the Applicant's approval.

5.3.19 Construction temporary site lighting is proposed to enable safe working on the construction site in hours of darkness. Construction temporary lighting will be arranged so that glare is minimised outside the construction site.

5.3.20 A Detailed CEMP will be prepared by the contractor prior to construction works commencing in accordance with standard planning condition requirements. The oCEMP which frames the contents of the final CEMP is included in Appendix 5A (refer to EIAR Volume II).

Construction Phase Waste Management

5.3.21 Concrete pours will be required for the construction of the facility. A concrete wash-out facility will be provided on Site and will be clearly signposted, self-contained, and leak-proof. Where the facility is required to be emptied, the contaminated waters will be taken off site for treatment and disposal at a suitably licenced facility. These works will be in accordance with Section 6 of the oCEMP.

5.3.22 Waste will be generated during all stages of the construction works. A Site Waste Management Plan (to be incorporated into the final CEMP) will be prepared and all relevant contractors will be required to seek to minimise waste arising at source and, where such waste generation is unavoidable, to maximise its recycling and reuse potential. Recycling of materials will take place off-site at appropriately licensed facilities where noise and dust are more easily managed and less likely to impact on surrounding properties.

5.3.23 All waste removal from Site will be undertaken by fully licensed waste carriers and taken to licensed waste facilities. Copies of all Waste Transfer Notes and Hazardous Waste Consignment Notes for wastes removed from site will be retained by the contractor for the required timeframe under legislation.

Community Consultation and Liaison

5.3.24 There shall be an ongoing commitment by the Applicant to maintain community consultation and liaison throughout the construction period. Signage will be provided at the Site entrance which shall have a Project contact telephone number where the public will be able to leave messages in relation to the Proposed Development construction phase. A liaison officer will be appointed to manage the calls/ messages and any subsequent actions pertaining to these. Further information on community consultation and liaison is outlined in Appendix 5A (refer to EIAR Volume II) in the oCEMP.

General Mitigation

5.3.25 Works will be undertaken in accordance with the following environmental management technical guidance documents:

- *Control of water pollution from linear construction projects. Technical guidance* (C648) (CIRIA, May 2006);
- *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (C532) (CIRIA 2001);

- *Environmental good practice on site pocket book* (C762) (CIRIA, 2016); and
- *Best Practice Guidelines for The Preparation of Resource Management Plans for Construction & Demolition Projects.* (EPA, 2021).

5.3.26 In addition to the documents above, a series of UK guidance documents (which are accepted best practice guidance) are available and provide useful advice for environmental management measures, these include:

- *GPP 1: Understanding your environmental responsibilities - good environmental practices* (October 2020);
- *GPP 2: Above ground oil storage tanks* (January 2018);
- *GPP 5: Works and maintenance in or near water* (February 2018);
- *PPG 6: Working at construction and demolition sites* (2012);
- *GPP 8: Safe storage and disposal of used oils* (July 2017);
- *GPP 21: Pollution incident response planning* (June 2021); and
- *GPP 22: Dealing with spills* (October 2018).

5.4 Proposed Development – Commissioning & Operational Phase

Environmental Licence

5.4.1 The Proposed Development will comply with the requirements of the European Union (Large Combustion Plants) Regulations 2012 S. I. No. 566 of 2012 under its IE Licence (to be applied for) so that any impacts of emissions to air, soil, surface and groundwater, and effects on the environment and human health, will be minimised and avoided where possible.

5.4.2 The Site will be operated in line with the IE Licence (to be applied for) and appropriate standards, and the operator will implement and maintain an Environment Management System (EMS) which will be certified to International Standards Organisation (ISO) 14001. The EMS will establish the requirements and procedures required to ensure that the Site is operating to the appropriate standard.

5.4.3 Sampling and analysis of pollutants will be carried out where required including monitoring of exhaust emissions levels using Continuous Emission Monitoring Systems (CEMS) prior to discharge from the stack, in accordance with the Industrial Emission (IE) Licence.

Hazard Prevention and Emergency Planning

5.4.4 Measures to prevent the risks of fire, flooding, spillages or other potentially major incidents will be embedded in the design of the Proposed Development.

5.4.5 Measures to prevent potentially major incidents include:

- Compliance with all relevant health, safety and environmental legislation;
- Design, build and operation in accordance with good industry practice;
- Regular maintenance and inspections to reduce the risk of equipment failures;
- Bunded or double-skinned storage areas for liquid chemicals;

- Regular maintenance and Site housekeeping to reduce the likelihood of leakages and improve leakage detection; and
- Spill kits stored on Site.

5.4.6 A site-specific Health and Safety Plan (to be included in final CEMP) covering the works, commissioning and operation will be prepared to ensure compliance with relevant health and safety legislation.

5.4.7 Procedures will be in place to clearly outline the responsibilities, actions and communication channels for operational staff and personnel on how to deal with emergencies should they occur. Staff will also receive the level of training required for their role and position. This will include dealing with events such as fires, spillages, flooding, etc. Such measures will be included in the site operating and management system and regulated by EPA through the IE Licence for the site.

Start-Up and Shut-Down

5.4.8 The Proposed Development will be started and stopped automatically, under the supervision of trained operators. This will be in response to the requirements of the electricity grid operator, EirGrid's, request for power. The plant is specifically designed to start-up, shut-down and ramp (change its output) rapidly in response to the requirement for power from the electricity grid.

Fuel

5.4.9 The OCGT will fire primarily natural gas to generate power, however the turbine will also have the functionality to fire on locally stored back up fuel (distillate fuel or HVO).

5.4.10 Operation using distillate fuel is only expected to occur during an emergency scenario (such as loss of natural gas transmission pipeline pressure during a period of high electricity demand) and during short grid code compliance tests to confirm the readiness of the turbines to respond to a call to fire on locally stored distillate fuel as a backup.

Commissioning Stage

5.4.11 The commissioning stage is similar to the operational stage but may have a greater number of start-ups and shut-downs. Commissioning takes place in two stages: construction completion and commissioning.

5.4.12 Construction completion includes pipe work testing, electrical testing, and checking of safety systems. Commissioning takes place once gas is available to the site and involves operating the OCGT facility with fuel and verifying that the technology functions correctly. There will be a campaign of performance testing at the end of this period, verifying that the facility meets its contractual performance guarantees. The facility can then be presented for independent certification.

5.4.13 Once tests are complete and the certificates are issued, the facility will be deemed ready for commercial operation.

Maintenance

5.4.14 Routine maintenance will be undertaken in accordance with maintenance manuals provided by the construction contractor.

5.4.15 The OCGT will be subject to one inspection by the manufacturer per annum. During this time the OCGT will be shut down and manufacturer personnel will be deployed to site to complete the works. The annual inspection may take between three days (most years)

and 17 days (every five years) for the OCGT unit. These works are likely to take place during the summer months when the units are least likely to be operated. During this maintenance period, maintenance on balance of plant will also be undertaken.

5.5 Proposed Development – Decommissioning Phase

5.5.1 It is envisaged that the Proposed Development will have a design life of at least 25 years. At the end of the design life, the Proposed Development would either be decommissioned, or the lifetime could potentially be extended. Decommissioning or extension of the lifetime of the asset would therefore be expected to commence at some point after 2052.

5.5.2 At the end of its operating life, all above-ground equipment associated with the Proposed Development will be decommissioned and removed from the Site. Prior to removing the plant and equipment, all residues and operating chemicals will be cleaned out from the plant and disposed of at a suitably licenced facility.

5.5.3 The bulk of the plant and equipment will have some limited residual value as scrap or recyclable materials and will be recycled at the time.

5.5.4 Prevention of contamination is a specific requirement of the IE Licence for the operation of the Proposed Development and therefore the development has been designed such that it will not create any new areas of ground contamination or pathways to receptors as a result of construction or operation. Once the plant and equipment have been removed to ground level the hardstanding and sealed concrete areas will be left in place.

5.5.5 A Decommissioning Plan (including a Decommissioning Environmental Management Plan) will be produced and agreed with EPA as part of the permit surrender process ahead of any permit surrender. A Decommissioning Environmental Management Plan will consider in detail all potential environmental risks on the site and contain guidance on how risks can be removed or mitigated. Site closure planning and liability risk assessment will be within the IE licence for the Site and will typically include a requirement for any removal of soils, buildings, plant and equipment, and remedial actions would be undertaken under a Decommissioning Management Plan, part of a Closure, Restoration and Management Plan (CRAMP). Typically, the EPA insists on a financial bond to underwrite the CRAMP and usually with an EPA bond template. Separately under the IE licence, the applicant will likely have to prepare an Environmental Liabilities Risk Assessment which will require provision of financial provision with the EPA to cover any liabilities of past and present activities. The ELRA is typically underwritten with an Impairment Environmental Insurance policy.

5.5.6 During decommissioning and demolition there will be a requirement for office, accommodation and welfare facilities which will be located adjacent to the Power Station Site. Decommissioning activities will be conducted in accordance with the appropriate guidance and legislation at the time of the Proposed Development closure.

5.5.7 The Decommissioning Plan will include an outline programme of works. It is anticipated that it would take approximately two years to decommission the Site.

5.6 Hours of Operation

Construction Phase

5.6.1 Details of the construction phase are provided in Section 5.3 of this EIAR chapter.

Commissioning & Operational Phase

5.6.2 The Proposed Development comprises gas fired generation and will act as a peaking plant with the purpose of starting up quickly if needed to ensure security of supply to electricity users. The generation of power from the gas fired generation will be on demand to respond rapidly to fluctuations in supply (e.g., when the wind is not blowing/ adding to power generation). While it will be required to potentially come into operation at any time of the day or night, it is considered that the requirement to meet demand will be at peak demand AM and PM periods of the day.

5.6.3 Routine and non-routine maintenance operations will take place as and when required. Routine maintenance operations will be scheduled to take place during the daytime hours and will only extend into the night-time and/ or weekends should this prove necessary to maintaining the continuity of the process. Any non-routine maintenance and repair operations will be undertaken as and when they arise.

5.6.4 The OCGT will be subject to one inspection by the manufacturer per annum. Staffing during these inspections are considered likely to peak at 20 and shift patterns will generally be two shifts, 10 hours per shift, seven days per week. Shifts will normally commence at 0800hrs and 2000hrs. These works are likely to take place during the summer months when the units are least likely to be operated. During this maintenance period maintenance on balance of plant will be undertaken which may peak at 10 additional people during the same period. The number of vehicles required for OCGT outages would not exceed the vehicles numbers for construction and therefore no additional assessment has been undertaken. Any non-routine maintenance and repair operations will be undertaken as and when they arise.

Decommissioning Phase

5.6.5 Decommissioning working hours would be generally similar to those of the construction stage, typically Monday to Friday 0700hrs to 1900hrs and Saturday 0700hrs to 1300hrs.

5.6.6 Full details of the decommissioning stage would be presented in a Decommissioning Plan (including a Decommissioning Environmental Management Plan) to be produced and agreed with the planning authority as part of the future IE Licence and site surrender process.

5.7 Operational Phase Transport Movements

5.7.1 Operational traffic movements are detailed within the EIAR Chapter 14: Traffic. In summary it is anticipated that during the operational phase, the gas generation plant will fire primarily on natural gas to generate power. Natural gas is piped to the Tynagh Power Station Site and there will be no vehicle movements associated with this operational method.

5.7.2 In an emergency scenario (when operating with distillate fuel), the maximum number of HGV vehicle movements (in one direction) that could arrive on Site over a day would be up to 60 No. HGV vehicles. However, these are not expected to be a regular occurrence.

5.7.3 Distillate fuel delivery and acceptance by road would be limited to the delivery hours of 0700hrs and 1900hrs and no delivery of fuel would take place on Sundays or at night, except in the case of extended emergency operation.

5.7.4 There will be no additional staffing requirements at the Tynagh Power Station to staff the Proposed Development. staff travel. The existing power station compliment of staff will be sufficient for normal operation.

5.8 Staffing

Construction Phase

5.8.1 Levels of employment will vary throughout the construction phase, with peak levels of employment likely to be approximately 200. Staff will comprise engineering, management, skilled and semi-skilled workers during the 18 – 24 months construction programme. A number of indirect employment opportunities would also be created in a variety of different trades as a result of the construction and operation phases of the development.

5.8.2 Chapter 14 of this EIAR and Appendix 14H sets out the construction period overlap between the Proposed Development (Tynagh North) and the Submitted Development Ref: 21/2192 which, if occurs, could be for 3 months between November 2024 – January 2025. In the event of an overlap of the 3 months the total daily traffic assessed (and considered acceptable) within the EIAR Chapter 14: Traffic chapter is higher than the cumulative traffic during the overlap and, therefore, the trips during the overlap period do not need to be assessed separately. The results of showed that the traffic remains within road capacity and therefore no significant cumulative impact is expected.

5.8.3 Local businesses may benefit from the opportunity to supply materials and plant and equipment during the construction phase which will represent a significant capital investment.

Operational Phase

5.8.4 During the operational phase, the Proposed Development will be operated, maintained, and managed by suitably qualified and trained personnel. There will be a high degree of automation in the Proposed Development with all processes controlled from a shared central control room which will also serve the existing Power Station. No additional operational staff would be required for the Proposed Development over and above the compliment of staff that will operate the existing Tynagh Power Station and the Submitted Development Ref: 21/2192.

5.9 References

Construction Industry Research and Information Association (April 2016) Environmental good practice on site pocket book. Technical guidance (C762).

Construction Industry Research and Information Association (January 2015) Environmental good practice on site guide (C741).

Construction Industry Research and Information Association (January 2001) Control of water pollution from construction sites: guidance for consultants and contractors (C532D).

Construction Industry Research and Information Association (May 2006) Control of Water Pollution from Linear Construction Projects Technical Guidance (C648D).

Environment Agency, Northern Ireland Environment Agency and Scottish Environment Protection Agency (2012) PPG 6: Working at construction and demolition sites.

Environmental Protection Agency (April 2021) Best Practice Guidelines for The Preparation of Resource Management Plans for Construction & Demolition Projects.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (October 2020) GPP 1: Understanding your environmental responsibilities - good environmental practices.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (January 2018) GPP 2: Above ground oil storage tanks.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (February 2018) GPP 5: Works and maintenance in or near water.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (2017) GPP 8: Safe storage and disposal of used oils.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (June 2021) GPP 21: Pollution incident response planning.

Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (October 2018) GPP 22: Dealing with spills.