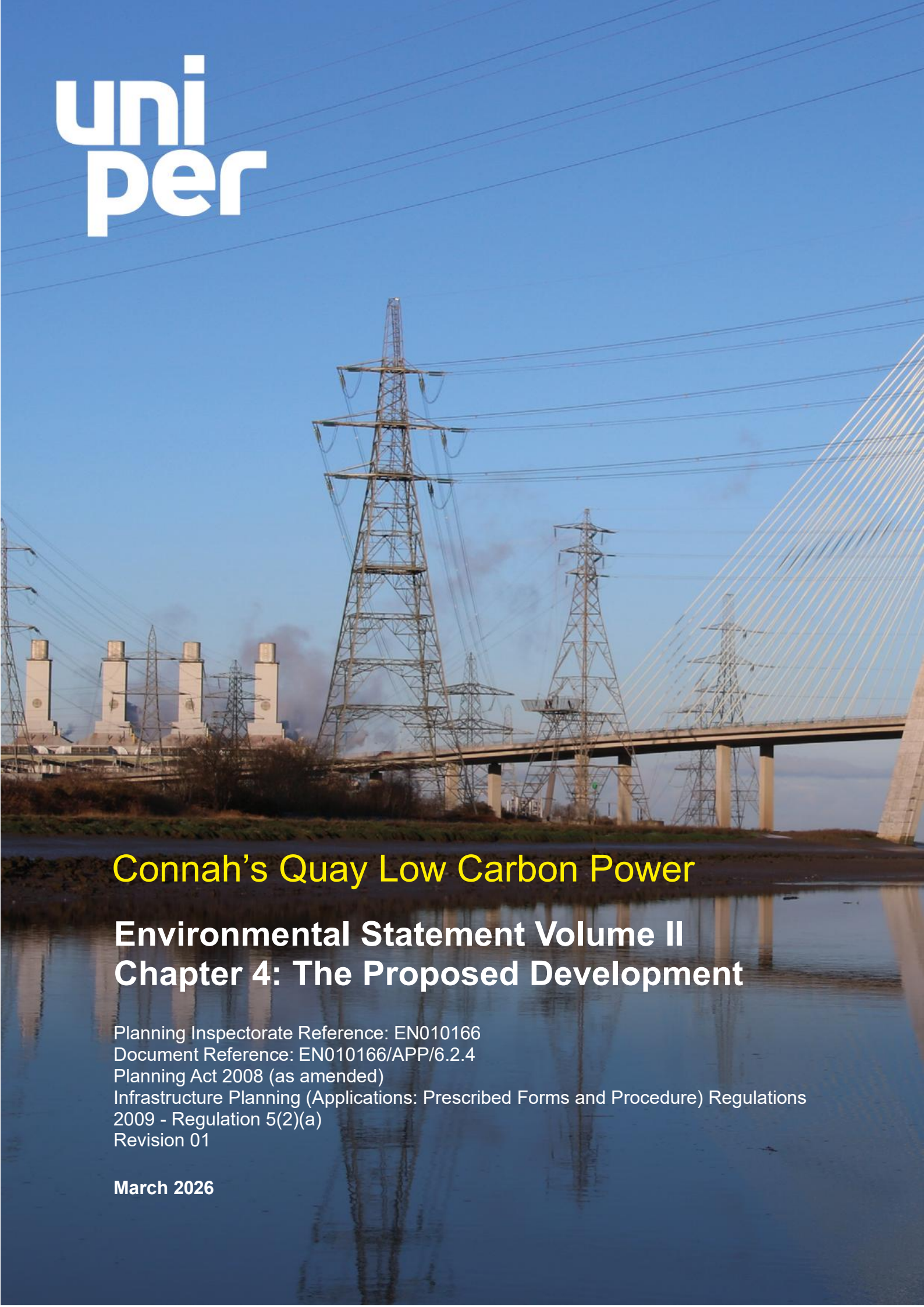


Connah's Quay Low Carbon Power

Environmental Statement Volume II
Chapter 4: The Proposed Development

Planning Inspectorate Reference: EN010166
Document Reference: EN010166/APP/6.2.4
Planning Act 2008 (as amended)
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)
Revision 01

March 2026

Prepared for:

Uniper UK Limited

Prepared by:
AECOM Limited

Table of Contents

Plates

Tables

4. The Proposed Development

4.1 Overview

4.1.1 This chapter of the Environmental Statement (ES) provides a description of the Proposed Development and an indication of the timescales and activities associated with its commissioning, commercial operation (and maintenance) and decommissioning. It explains the parameters for the Proposed Development which have been used to inform the environmental assessments of impacts and effects which are defined in **Chapter 8** to **Chapter 24** (**EN010166/APP/6.2**) of **ES Volume II**.

4.1.2 The terminology used to describe the areas of the Order limits for the different components of the Proposed Development is consistent with those described in **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3**) and **Figure 3-3: Areas described in the ES** (**EN010166/APP/6.3**). An Indicative Layout of the Proposed Development is provided in **Figure 4-1: Indicative Site Layout** (**EN010166/APP/6.3**).

4.1.3 This chapter is supported by **Appendix 4-A: Operation and Maintenance Mitigation Register** (**EN010166/APP/6.4**) which details mitigation measures identified in the ES which relate to the operation and maintenance of the Proposed Development.

4.1.4 This chapter is supported by the following figures in **ES Volume III** (**EN010166/APP/6.3**):

- **Figure 3-3: Areas described in the ES**;
- **Figure 4-1: Indicative Site Layout**; and
- **Figure 4-2: Maximum Parameters**.

4.1.5 The Proposed Development comprises the demolition of an existing gas treatment plant (GTP) and above-ground installation (AGI), store buildings, and contractors' facilities associated within the existing Connah's Quay Power Station and the construction, operation (including maintenance) and decommissioning of a proposed low carbon Combined Cycle Gas Turbine (CCGT) Generating Plant fitted with Carbon Capture Plant (CCP) (hereafter referred to as the Connah's Quay Low Carbon Power (CQLCP) Abated Generating Station) and supporting infrastructure (including a Proposed CO_2 AGI). The Proposed Development would achieve a net electrical output capacity of more than 350 megawatts (MW; referred to as MWe for electrical output), up to a likely maximum of 1,380 MWe (with CCP being operational), onto the national electricity transmission network.

4.1.6 The Proposed Development would be fuelled by natural gas. It is designed to operate with a post-combustion CCP installed and would generally be operated as a dispatchable low carbon generating station. A process schematic for the Proposed Development is shown in **Plate 4-1**. The location of the CQLCP Abated Generating Station makes use of the existing available infrastructure links including electrical grid and gas (specifically the National Grid Electricity Transmission plc (NGET) and National Gas Transmission plc

(NGT) networks) and has been sited to facilitate its connection to the HyNet CO_2 Pipeline Project, which was granted development consent in March 2024[1].

4.1.7 The Proposed Development is defined as a Nationally Significant Infrastructure Project (NSIP) under Section 14(1)(a) of the Planning Act 2008 (the 2008 Act) (Ref 4-1), comprising *"the construction or extension of a generating station"* which falls under Section 15(1) and 15(3A) of the 2008 Act as being in Wales, having a capacity of more than 350 MW and not generating electricity from wind.

4.1.8 Section 115(1)(b), 115(2) and 115(4A) of the 2008 Act also includes provision for associated development which either supports the construction or operation of the principal development (the NSIP) or helps to address its impacts. In summary, the Order limits therefore represent land required for both permanent and temporary works as part of the construction, operation (including maintenance) and decommissioning of the Proposed Development, including mitigation areas, construction land-take, and works to accommodate AIL movements, and the extent of existing assets for which the right(s) to use, repurpose, and/or access are sought.

4.1.9 The remainder of this chapter provides further details of the:

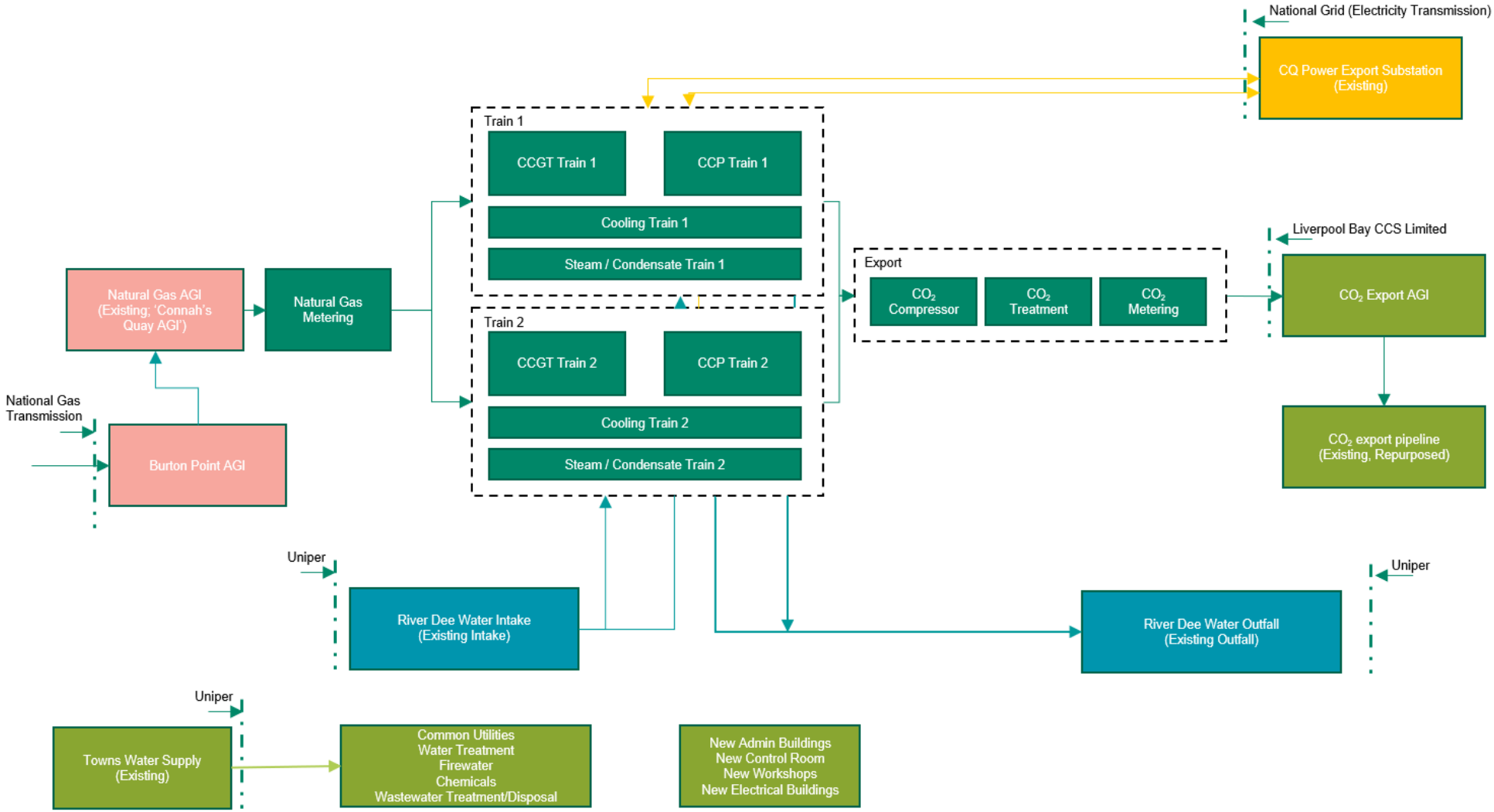
- individual components of the Proposed Development;
- design parameters;
- operation of the Proposed Development (including maintenance);
- decommissioning; and
- works to be consented under a Marine License.

4.1.10 Construction and demolition works for the Proposed Development are described in **Chapter 5: Construction Management and Programme** (**EN010166/APP/6.2**).

4.1.11 **Chapter 7: Planning Policy and Need** (**EN010166/APP/6.2**) sets out the planning policy and need case that underpins decision making in relation to the strategic investment in gas and low carbon electricity generation that is vital in order to replace ageing energy infrastructure, maintain secure energy supplies and meet legally binding environmental targets.

[1] The HyNet CO_2 Pipeline Project will consist of a new pipeline running from the Chester/ Ellesmere Port area to Flint and a repurposed existing pipeline (currently used for natural gas supply) running from Flint to Point of Ayr.

Plate 4-1: Proposed Development Process Schematic



4.2 Components of the Proposed Development

4.2.1 The Proposed Development would include up to two new integrated power generation and carbon capture Trains with a combined net electrical output capacity of more than 350 megawatts (up to a likely maximum of 1,380 Mwe). Each Train comprises the assets required within the Main Development Area for the CCGT plant with CCP to operate, including supporting buildings, structures, infrastructure, and staff facilities; collectively, these assets form the CQLCP Abated Generating Station.

4.2.2 As described in **Chapter 2: Assessment Methodology** (**EN010166/APP/6.2.2**) and **Chapter 5: Construction Management and Programme** (**EN010166/APP/6.2.5**), it is anticipated that the two Trains would be installed in either a phased manner (phased construction) or as a single phase (simultaneous construction) and may share certain facilities, but once commissioned, would be largely independent in operation. Although the Proposed Development comprises up to two Trains, the process description defined herein refers to one single process Train as they would be equivalent to each other.

4.2.3 The main components of the Proposed Development are:

- CQLCP Abated Generating Station, itself comprising;
  - CCGT Generating Plant and associated stacks;
  - post-Combustion CCP and associated stacks;
  - other ancillary buildings and structures;
- CO_2 export pipeline (comprising new and existing elements) and third-party connections at the Flint AGI;
- Other connections to provide gas, electricity and water to the Proposed Development and ancillary infrastructure; and
- Repurposing of purging ponds, cooling water abstraction and discharge infrastructureand, where possible, other existing infrastructure from the existing Connah's Quay Power Station (as shown on the drawing of **Existing Station Shared Infrastructure Drawing** (**EN010166/APP/7.10**).

4.2.4 Further information is provided on each of the key components in the following sections.

CQLCP Abated Generating Station

Combined Cycle Gas Turbine Generating Plant and Associated Stacks

4.2.5 In the CCGT(s) of the CQLCP Abated Generating Station, natural gas fuel would be combusted to drive a gas turbine, which is connected to a generator producing electricity. Natural gas would be supplied to the proposed CCGT unit(s) from the National Transmission System (NatTS) from the existing Burton Point AGI, via an existing Applicant owned and operated pipeline and new assets to be installed at the existing Applicant owned and operated Connah's Quay AGI. At the Connah's Quay AGI, the natural gas

would be conditioned to the required temperature and pressure for combustion in the CCGT. Further details of the gas connection are provided in the **Gas Connection Statement** (**EN010166/APP/7.3**).

4.2.6 Following combustion, the hot product gases enter the gas turbine where they would expand across the blades of the turbine causing it to rotate and drive an electrical generator. As an amount of usable heat remains in the gas turbine exhaust gases, these would be passed into a Heat Recovery Steam Generator (HRSG) (a type of boiler) to recover the useful heat in order to produce steam (at various pressures) to generate further electricity via a separate steam turbine set, and for heating of process streams[2] within the CCP.

4.2.7 When the CCP is being operated the flue gases are expected to be treated with selective catalytic reduction (SCR) to ensure that oxides of nitrogen (NO_x) concentrations remain within the required emissions limits and to prevent the degradation of solvent within the CCP in order to optimise the CO_2 capture efficiency. SCR is a secondary abatement technique typically involving either the injection of ammonia or urea into the flue gas to react with any NO_x present in the presence of a catalyst to create nitrogen and water vapour.

4.2.8 In a conventional CCGT plant, the gas turbine exhaust gases are released from the HRSG via a vertical stack. However, in the Proposed Development, the flue gas post-SCR would be directed into the CCP for the removal of CO_2 from the gas stream during normal (abated) operation. During certain circumstances (described in Section 4.4) including outages of the CCP, it would be possible to discharge exhaust gases through a dedicated stack above the HRSG building. The HRSG stack would be fitted with continuous emissions monitoring system (CEMS) instrumentation and would serve as the bypass stack to the CQLCP Abated Generating Station if run independently of the CCP.

4.2.9 The exhaust steam from the steam turbine would be condensed (cooled) back into water which would then be returned to the HRSG to continue the process. Water used within this steam / water cycle would be treated to minimise the build-up of residual dissolved solids in pipework arising from the continuous evaporation and condensing of water within the cycle. It would be necessary to purge a small amount of the recirculating water (boiler blowdown) intermittently for this purpose. Boiler blowdown water removed from the cycle would be treated on-site in the water treatment plant prior to discharge to the River Dee via a licensed process and replaced with fresh demineralised water. The discharges would be in line with permitted limits controlled via environmental permit(s).

4.2.10 The condensation of steam exiting the steam turbine would be achieved using hybrid wet / dry cooling towers which are specifically designed to minimise the formation of visible plumes, although some may occur dependent on the ambient weather conditions. Cooling water would be

[2] A process stream refers to flow of material moving through a process and/or the physical conduits through which the material moves.

abstracted from the River Dee for use within the cooling towers and condensor as shown in **Plate 4-2**.

4.2.11 The Proposed Development could also be designed to include a system restoration capability, which would enable the CQLCP Abated Generating Station to start-up without any assistance from the National Grid Electricity Transmission System (NGETS), in the event of a total or partial shutdown of Great Britain's electricity transmission system. The Proposed Development could then be used to help restore power to the national grid, if called upon by the National Energy System Operator (NESO). Power stations without this system restoration capability need to draw power from the NGETS to start operation.

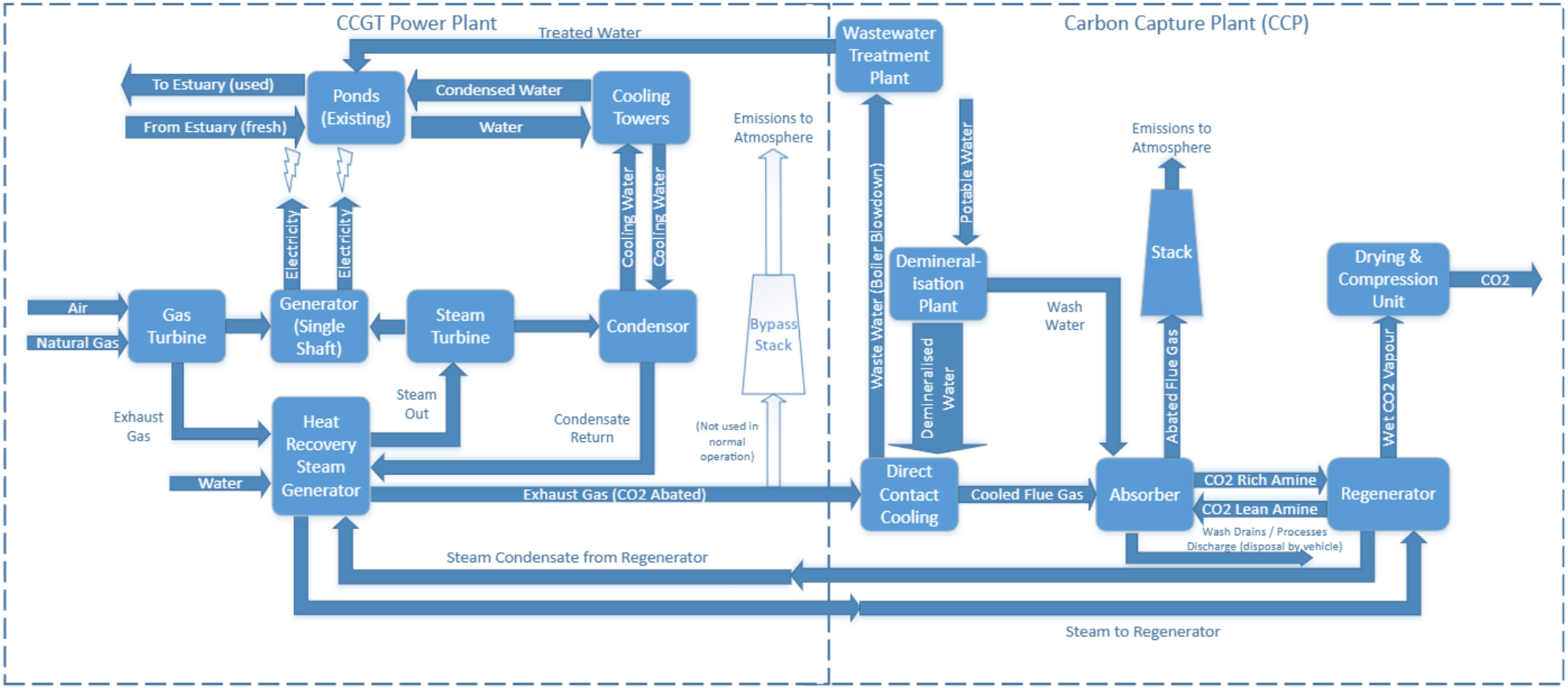
Post-Combustion Carbon Capture Plant and Associated Stacks

Overview

4.2.12 Following the combustion of natural gas in the CCGT, the flue gases would enter a CCP, as shown in **Plate 4-2**. The CCP would be designed to be capable of capturing a minimum of 95% of the CO_2 emissions (by mass) from the generating station as an annual average of all normal operating conditions and will be capable of capturing over 90% operating at full load (subject to completion of FEED verification studies and commercial agreement). At full load operation during every hour of the year, this could equate to a capture of up to 4.7 million tonnes (based on the anticipated likely maximum output capacity of the Proposed Development of 1,380 MWe) of CO_2 per year. When not operating at full load, as the Proposed Development is anticipated to operate in dispatchable mode[3], the Applicant expects to capture around 1.2 million tonnes of CO_2 per year for each Train installed (i.e. approximately 2.4 million tonnes CO_2 per year if both Trains are installed), dependent upon the turbine equipment chosen and the running hours of the plant.

[3] Dispatchable generation refers to sources of electricity whose output can be controlled in response to market needs or requests from power grid operators.

Plate 4-2: Process Schematic of Integrated Power and Carbon Capture Units



Flue Gas Pre-Treatment

4.2.13 Post combustion carbon capture first involves capturing and cooling the exhaust gases from the CCGT units (potentially via a flue gas blower) to the optimal CCP design temperature (approximately 41°C) at which the CO_2 gas can be absorbed by solvent. Therefore, prior to their introduction into the absorber column(s), flue gases from the CCGT would be cooled to the required design temperature using a direct contact cooler (DCC) that quenches the hot flue gases with a fine water spray in a column. The heated water would then be subject to indirect cooling by the hybrid cooling towers, prior to recirculation to the DCC in a closed loop cycle.

Flue Gas Absorption and Release

4.2.14 Once cooled, the flue gases from the generating station would be introduced to one or more absorber column(s), which contain a liquid amine-based chemical solvent, to absorb the CO_2 and remove it from the exhaust gases. The solvent to be used is the subject of ongoing technical studies but would be an aqueous solution of amines. The alkaline nature of the solvent would mean that it would selectively absorb acidic gases such as CO_2.

4.2.15 A flue gas washing unit would be located within the absorber column(s) to remove entrained solvent and potentially ammonia from the flue gases. Following treatment, the CO_2 lean flue gases then pass through a mist eliminator where they are treated to remove entrained mist droplets. A flue gas heater could be included in the absorber column(s). If the heater is required, waste heat from the steam condensate stream would be used to increase the thermal buoyancy of the treated, washed flue gas, before release from the top of the absorber column(s) via dedicated absorber stack(s) for dispersion to the atmosphere.

Solvent Regeneration

4.2.16 The CO_2 rich solvent from the absorber(s) would pass from the bottom of the absorber column(s) to a stripper column for regeneration where heat (steam) would be used to liberate the CO_2 gas from the solvent. The hot CO_2 lean solvent would be returned from the stripper column, potentially via a heat exchanger, to the top of the absorber column(s) to repeat the cycle. The CO_2 gas exiting the top of the stripper column would be passed through a condenser to remove water and solvent vapours before being passed to the CO_2 conditioning / compressor unit.

4.2.17 Within the CCP absorber(s), this solvent reclaiming process concentrates residual impurities. Any accumulations which occur are typically addressed through the use of occasional purging when the accumulations reach a threshold level, rather than through continuous make-up water use and effluent production.

CO_2 Conditioning and Compression

4.2.18 The gaseous CO_2 stream from the CCP would be saturated with water and contain traces of oxygen which would need to be reduced in a gas conditioning facility prior to export to the T&S pipeline. It is envisaged that the captured CO_2 stream would be cooled and partly compressed before the trace oxygen and water are removed. Following treatment, the CO_2 stream

would be compressed to pipeline pressure (to be agreed with the pipeline operator) for export, measured in a metering station and transferred from the Main Development Area for onward transfer and connection. The CO_2 compression area may be shared between both Trains. No on-site storage of compressed CO_2 is expected.

4.2.19 **Plate 4-2** provides a schematic illustration of the CCGT and CCP elements of the CQLCP Abated Generating Station.

Other Ancillary Buildings and Structures

4.2.20 In addition to the CCGT, CCP and associated stacks described above and the electrical, gas (including CO_2 connection) and cooling process / process water described below, the following infrastructure is anticipated to be required as part of the CQLCP Abated Generating Station:

- administration building(s) – these would contain the main reception, offices, staff welfare facilities;
- electrical control room(s) – these would contain the control room and electrical equipment;
- stores and workshops – these would be required for operation and maintenance activities and storage of materials;
- above-ground chemical storage tanks – these would be required for the storage of chemicals required for operation of the CQLCP Abated Generating Station;
- acoustic fencing;
- auxiliary boiler;
- emergency diesel generators and bunded diesel storage tanks;
- heat exchangers;
- fire pumps;
- cooling water pumps;
- above-ground raw and fire water tank;
- demineralised water treatment plant with above-ground storage tank;
- potable water storage tank;
- wastewater treatment plant and building;
- heating, ventilation, and air conditioning equipment, buildings, and distribution pipework;
- mechanical, electrical, gas, telecommunications and water networks, pipework, pipe runs, cables, racks, infrastructure, instrumentation and utilities, including connections between elements of the CQLCP Abated Generating Station;
- pipework, pipe runs, and pipe racks;
- instrumentation and electrical kiosks;
- lighting;

- lubrication oils storage facilities;
- permanent laydown areas and other hardstanding;
- internal access roads;
- gatehouse(s); and
- parking areas (including electric vehicle chargers).

4.2.21 It is expected that the above infrastructure would be (at least in part) shared between the two Trains, as shown in **Figure 4-1: Indicative Site Layout** (**EN010166/APP/6.3**).

CO_2 export and Third-Party Connections

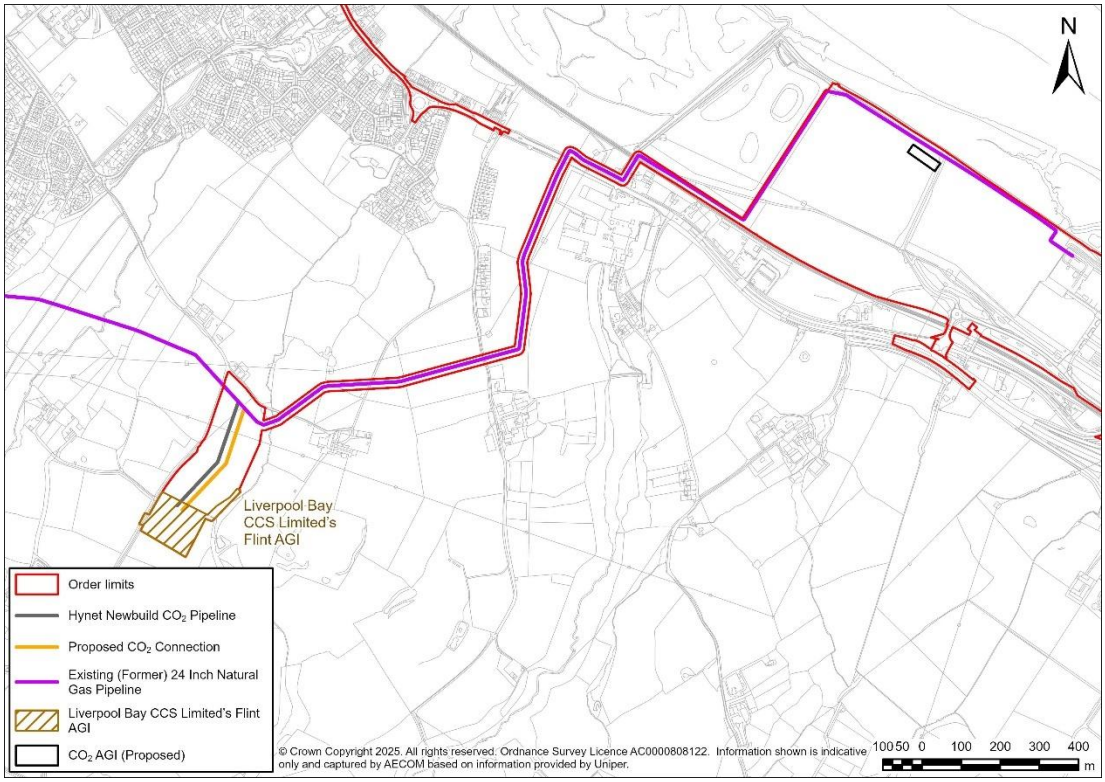
4.2.22 The Proposed Development would connect into nearby CO_2 transport and storage (T&S) infrastructure as part of the HyNet industrial cluster, enabling the captured CO_2 to be safely transported to permanent offshore storage facilities in repurposed depleted offshore gas fields.

4.2.23 Following compression, metering and composition monitoring by the Applicant, CO_2 would be transferred into the Proposed CO_2 AGI (to be operated by Liverpool Bay CCS Limited; located within the Main Development Area) which would control the entry of CO_2 into the T&S network. The Proposed CO_2 AGI would include moisture analysers, a High Integrity Pressure Protection System (HIPPS) and a Pipeline Inspection Gauge (PIG) launcher.

4.2.24 Liverpool Bay CCS Limited would use a tie-in to their existing 24-inch natural gas pipeline (which is currently redundant) and follows a route west and north-west of the Main Development Area from the Existing GTP AGI within the Main Development Area (to be demolished) for approximately 27 kilometers (km) to the Point of Ayr Gas Terminal. Use of this pipeline for supply of natural gas from Liverpool Bay to the existing Connah's Quay GTP ceased in 2023 and, since this time, the pipeline has been maintained at pipeline pressure with natural gas.

4.2.25 Liverpool Bay CCS Limited are an undertaker within the **Draft DCO** (**EN010166/APP/3.1**) for works to connect the CQLCP Generating Station to the T&S infrastructure (see **Plate 4-3**). As explained above, to provide the connection to the T&S infrastructure, the Proposed Development includes construction, operation and maintenance of a new gas pipeline (Proposed CO_2 Connection), maintenance and operation of the existing gas pipeline (Repurposed CO_2 Connection) and connection works at the Flint AGI. The Proposed Development also includes the eventual decommissioning of the Repurposed CO_2 Connection, Proposed CO_2 Connection and associated infrastructure.

Plate 4-3: Route for CO_2 Export via the Repurposed CO_2 Connection Corridor from the Main Development Area



4.2.26 The Proposed Development would utilise approximately 3 km of the existing natural gas pipeline within the Main Development Area, Repurposed CO_2 Connection Corridor, and Proposed CO_2 Connection Corridor terminating at a point south of Pentre Ffwrndan, east of Allt-Goch Lane for the transportation of CO_2. From this point, the existing natural gas pipeline would then connect into a new proposed CO_2 pipeline (Proposed CO_2 Connection), that is around 422 m in length[4], to connect into Liverpool Bay CCS Limited's Flint AGI. An additional extension to the existing natural gas pipeline would be provided within the Main Development Area to connect to the Proposed CO_2 AGI.

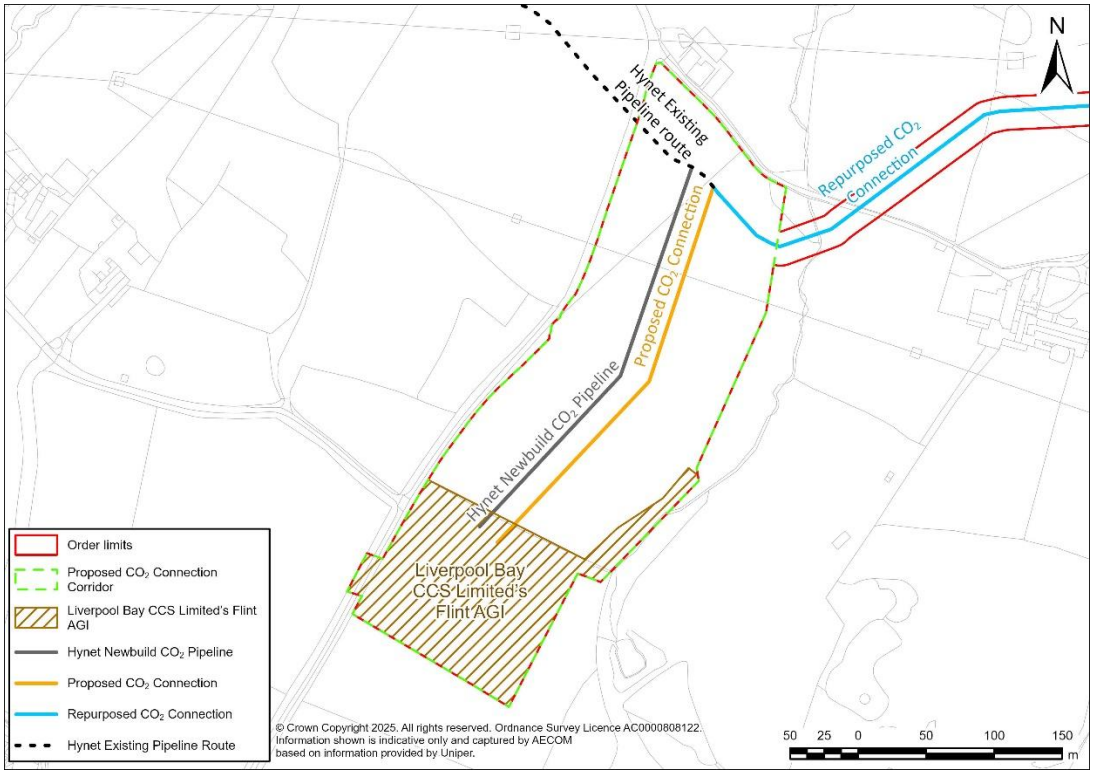
4.2.27 The remaining approximately 24 km of the existing pipeline between Liverpool Bay CCS Limited's Flint AGI and the Point of Ayr Gas Terminal shall be repurposed for transport of CO_2 under the HyNet CO_2 Pipeline Project. Liverpool Bay CCS Limited's Flint AGI (aside from additional equipment and tie-in for the Proposed Development) shall be constructed under the HyNet CO_2 Pipeline Project.

4.2.28 Liverpool Bay CCS Limited has confirmed that the Repurposed CO_2 Connection Corridor pipeline infrastructure is in a suitable condition for re-use. A corridor of up to 24.4 m (up to 12.2 m either side of the indicative centre line as shown on **Figure 3-2** (**EN010166/APP/6.3**)) is included.

[4] In **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3**), the Proposed CO_2 Connection Corridor is described as 455 m in length. This is due to the Proposed CO_2 Connection Corridor including both Liverpool Bay CCS Limited's Flint AGI and suitable space for working areas to construct the Proposed CO_2 Connection, in addition to the Proposed CO_2 Connection itself.

4.2.29 The interfaces between the Proposed Development and the HyNet CO_2 Pipeline Project are shown in **Plate 4-4**.

Plate 4-4: Interface between the Repurposed CO_2 Connection and Proposed CO_2 Connection (Proposed Development) and Liverpool Bay CCS Limited's Flint AGI (HyNet CO_2 Pipeline Project)



4.2.30 The Proposed CO_2 Connection pipeline is expected to be similar to the existing pipeline in the Repurposed CO_2 Connection Corridor (i.e. an approximately 610 mm diameter, below-ground pipeline). The exact location and routing of the Proposed CO_2 Connection within the identified corridor will be determined during detailed design. The CO_2 Connection Corridor is shown on **Figure 3-2: Areas Described in the ES** (**EN010166/APP/6.3**) which allows for flexibility in the routing of the pipeline (and for construction laydown and access routes). The tie-in point to the main HyNet CO_2 Pipeline Project will be at Liverpool Bay CCS Limited's Flint AGI.

4.2.31 It is expected that the short section of the existing pipeline between the tie-in points of the Proposed CO_2 Connection Corridor and the newbuild element of the HyNet CO_2 Pipeline Project would be sealed and left in-situ.

4.2.32 Downstream of the Liverpool Bay CCS Limited's Flint AGI, the Proposed HyNet CO_2 Pipeline Project has been consented to repurpose the existing natural gas pipeline to transport CO_2 to the Point of Ayr Terminal. This stretch of pipeline from the Liverpool Bay CCS Limited's Flint AGI to the Point of Ayr Terminal, the offshore CO_2 export pipeline and the CO_2 store itself within the depleted oil and gas fields in Liverpool Bay do not form part of the Proposed Development.

4.2.33 **Chapter 24: Cumulative and Combined Effects** (**EN010166/APP/6.2.24**) provides further information on the assessment of cumulative impacts and

effects of the HyNet CO_2 Pipeline Project including connection into the proposed Liverpool Bay CCS Limited's Flint AGI.

Other Connections and Ancillary Infrastructure

Natural Gas (Fuel) Connection and Treatment Infrastructure

4.2.34 Natural gas would be used as the fuel for the operation of the CQLCP Abated Generating Station. Natural gas would be supplied through the existing Burton Point AGI and the Applicant's pipeline to the existing Connah's Quay AGI. As described in the **Gas Connection Statement** (**EN010166/APP/7.3**), a new 600 mm pipe diameter spur would be provided to tie-in to the existing Connah's Quay AGI and supply the proposed CQLCP Abated Generating Station. The tie-in would include new natural gas filters, a pressure reduction station (PRS), metering and conditioning equipment, as required for the supply of gas to the CCGT unit(s).

Electrical Connection Works

4.2.35 As described in the **Electricity Grid Connection Statement** (**EN010166/APP/7.2**), the existing electrical infrastructure within and adjacent to the Order limits comprises 400 kilovolt (kV) and 132 kV overhead lines as well as underground cables and apparatus that serve the existing NGET 400 kV substation and the Scottish Power Energy Networks 132 kV substation.

4.2.36 In order to export electricity from the Proposed Development, engagement is proposed with NGET to identify any upgrades to existing apparatus that may be required. A new connection would be required from the Train(s) within the Proposed Development to the Applicant's existing 400 kV banking compound, which would be used to connect the Proposed Development to the existing 400 kV NGET substation located south-east of the Main Development Area. The area covered by the Electrical Connection Corridor is shown on sheet 7 of **Figure 3-3: Areas Described in the ES** (**EN010166/APP/6.3**) and the **Indicative Electrical Connection Plans** (**EN010166/APP/7.16**).

4.2.37 No new overhead lines are proposed as part of the Proposed Development.

Water Connection Works

4.2.38 The Proposed Development would require a source of cooling water for heat rejection purposes. Process water would also be required in order to provide make-up to the steam / water cycle for the CCGT and CCP. There would also be a requirement for water for domestic and sanitary use.

Cooling Water Abstraction and Discharge

4.2.39 The cooling method for both the CCGT and CCP would be through recirculating hybrid cooling. Cooling water would be abstracted from and discharged to the River Dee, in line with the current process and permitting requirements for the existing Connah's Quay Power Station (though through a new permit specific to the Proposed Development).

4.2.40 Subject to minor modification and alteration, the Proposed Development would utilise the existing Connah's Quay Power Station cooling water abstraction and discharge infrastructure located within the River Dee. Upgrades to the existing cooling water intake equipment to meet current legislative requirements including the Eels (England and Wales) Regulations 2009 (Eels Regulations) (Ref 4-2) would be required. This would comprise installation of new 2 mm eel screens on existing inlets subject to legislative control within a Marine License as described in Section 4.6. The Water Connection Corridor is shown on sheet 7 of **Figure 3-3: Areas Described in the ES** (**EN010166/APP/6.3**) and covers the area required for use, maintenance and repurposing of the existing infrastructure.

4.2.41 As outlined in **Chapter 2: Assessment Methodology** (**EN010166/APP/6.2.2**), it is recognised that the existing Connah's Quay Power Station would not operate at its full installed capacity (four CCGT units) concurrently with the Proposed Development. Therefore, in the event of phased construction, the Train 1 of the Proposed Development and up to two existing Connah's Quay Power Station CCGT units could require cooling water at the same time; or following simultaneous construction (or in the event of phased construction, following commercial operation of Train 2), only the Proposed Development would have demand for abstracted cooling water. The Applicant proposes to maintain the permitted abstraction and discharge parameters as far as reasonably practicable, e.g. abstraction would continue to be limited to periods around high water in line with the current abstraction licence. Abstraction and discharge would be regulated by Natural Resources Wales (NRW) through the Abstraction License and Environmental Permit respectively as required for operation of the Proposed Development.

4.2.42 It is anticipated that abstraction would be intermittent and limited to no more than three hours per tide around high water (one hour before and two hours after). Purge discharge would be no more than three hours commencing on the ebb tide one hour after high water. Cooling water would be abstracted at a rate of up to 3.04 cubic metres per second (m^3/s) and up to 33 megalitres (ML) per high tide. This assumption is regulated through the permit and licensing process and would be consistent with current arrangements for cooling water abstraction and discharge at the existing Connah's Quay Power Station.

4.2.43 This periodic abstraction and discharge requires storage capacity for make-up and purge water via holding ponds within the Main Development Area. The existing Connah's Quay Power Station cooling water make-up and purge tanks (as shown in **Existing Station Shared Infrastructure Drawing** (**EN010166/APP/7.10**)) would be utilised with upgrades to existing pumps and pipework within the Main Development Area, as required. New cooling water supply and purge pipelines (either above or below ground) would then be constructed to link into the proposed cooling towers and CCP.

4.2.44 Following discussion with NRW, it has been confirmed that the Proposed Development would require a separate Marine Licence for works between

Mean High Water Springs (MHWS)[5] and 12 nautical miles from the shore. Further details on this are provided in **Consents and Agreement Position Statement** (**EN010166/APP/3.3**).

Processes Wastewater

4.2.45 A number of potential sources of wastewater would arise from the CQLCP Abated Generating Station including (but not limited to):

- neutralised effluent streams from the demineralisation plant;
- blowdown from the CCP and CCGT;
- treated effluent from the CCP; and
- contaminated surface water arising from process areas, that may contain chemicals such as oils or flue gas treatment products.

4.2.46 These could either be collected for transfer off-site or alternatively treated to meet environmental quality standards (EQS) for ammonia and other substances in an on-site waste water treatment plant, prior to discharge to the River Dee. The discharge would be regulated by NRW through the Environmental Permit required for the operation of the Proposed Development.

4.2.47 Disposal by vacuum truck operated by specialist contractor would be utilised for process wastewater and any other new contaminant streams which would otherwise require a variation to the Environmental Permit (i.e. amine).

Drainage and Surface Water Attenuation

4.2.48 The Proposed Development has been designed to provide a drainage system that protects the environment from accidental discharges including segregation of clean water / rainwater and firewater from potentially contaminated water and / or firefighting chemicals.

4.2.49 Surface water would be appropriately segregated and contaminated surface water will be treated prior to discharge via the same system as the processes wastewater stream. An **Outline Surface Water Drainage Strategy** has been developed and is provided in **Appendix 13-D** (**EN010166/APP/6.4**). In the absence of detailed modelling, it is currently proposed that following attenuation (if required), surface water site drainage would be discharged to the River Dee via a new surface water outfall (the Proposed Surface Water Outfall) adjacent to the existing outfall (the Existing Surface Water Outfall). Surface water drainage options will be further considered and assessed at detailed design stage, including through detailed modelling, to determine whether surface water from the Proposed Development could be discharged via existing piped surface water drainage systems. The final design of the Proposed Surface Water Outfall will be subject to various technical assessments to identify the most appropriate solution. Further information on the conceptual drainage strategy is provided

[5] The height of mean high water springs is the average throughout the year (when the average maximum declination of the moon is 23.5°) of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest. The height of the mean low water springs is the average height obtained by the two successive low waters during the same period (Ref 4-3).

in the **Appendix 13-C: Flood Consequences Assessment** (**EN010166/APP/6.4**).

Domestic and Sanitary Effluent

4.2.50 Black and grey wastewater (i.e. non-cooling and non-process wastewater) from the existing Connah's Quay Power Station is currently directed to an underground septic tank system for storage and settling (as treatment). Current permitted practice is to treat sewage on site and discharge treated sewage waters with main cooling water purge discharge to the River Dee. Due to sub-optimal operation of one of the existing systems, this is currently emptied periodically by a specialist contractor (approximately once per six-month period). It is expected that the Proposed Development would utilise a new similar system for black and grey wastewater including foul drainage from permanent welfare facilities, with treated black and grey wastewater either to be discharged to the River Dee with main cooling water purge discharge or to be removed by specialist contractor.

Potable / Towns Water

4.2.51 Works to tie the Proposed Development into the existing towns water pipelines within the existing Connah's Quay Power Station site and connections to fire and raw water storage tanks form part of the Proposed Development within the Main Development Area. The location of these works is shown on the **Indicative Towns Water Connection Plans** (**EN010166/APP/7.19**).

Culverted Watercourses

4.2.52 Works to divert existing culverted watercourses (Oakenholt Brook, Old Rockcliffe Brook, Kelsterton Brook) within the footprint of the CQLCP Abated Generating Station and supporting infrastructure, where necessary, forms part of the Proposed Development within the Main Development Area. There would be no new surface water tie-ins to these watercourses.

De-Mineralised Water

4.2.53 A water supply from Welsh Water would be used to provide make-up water to the steam / water cycle. This water would be treated in a new demineralisation plant to remove dissolved solids prior to entering the steam / water cycle. There would be on-site storage of demineralised water produced in the demineralisation plant. The demineralisation plant and storage would be located within the extent of the CQLCP Abated Generation Station.

Chemical and Material Storage

4.2.54 A number of chemicals would be required to be transported to, stored and used at the CQLCP Abated Generating Station. The extent of the CQLCP Abated Generating Station would therefore contain chemical storage facilities including a road tanker unloading area(s). Where any substance could pose a risk to the environment through an uncontrolled release (e.g. surface water drains), the substance would be stored within appropriate containment facilities including impermeable concrete surfaces, isolated drainage areas and appropriately designed and sized bunds.

4.2.55 Chemical storage would be regulated by NRW through an Environmental Permit that would be required for the operation of the Proposed Development and the inventory of materials to be stored within the extent of the CQLCP Abated Generating Station would be developed through the detailed design. The requirement for a storage tank for the solvent is to be determined following completion of FEED studies. However, where storage of hazardous materials, individually or in-combination, exceeds the relevant thresholds, separate permissions would be sought from the Health and Safety Executive (HSE) and the local planning authority as appropriate for their storage, under the Planning (Hazardous Substances) Regulations 2015 (Ref 4-4) and Control of Major Accident Hazards Regulations 2015 (COMAH) (Ref 4-5) regimes.

4.2.56 The following chemicals are anticipated to be used within the process and stored within the extent of the CQLCP Abated Generating Station:

- solvent that would remove the CO_2 from the gas stream in the CCP. The process includes equipment for reclaiming used solvent within the process, but make-up will be required;
- power plant treatment chemicals (which may include ammonia or urea (for SCR));
- capture plant treatment chemicals (which may include sodium hydroxide, sulphuric acid and hydrogen for (generator cooling and deoxygenation of the product CO_2 stream)); and
- cooling tower chemicals (biocides, anti-scalants, bio-dispersants, corrosion inhibitors).

4.2.57 Other chemicals required for routine cleaning, maintenance and emergency firefighting uses would also be required.

4.2.58 Taking into consideration raw materials and chemicals required for process inputs, operational wastes that require storage within the CQLCP Abated Generating Station are likely to comprise:

- waste from site offices (paper, plastic, cardboard);
- waste from the CCGT (industrial waste including paper, plastic, cardboard, worn and damaged metal items, waste oil, detergents cleaning chemicals); and
- waste from the CCP (reclaimer sludge, acid wash purge, reflux purge, effluent).

Maintenance Laydown Area

4.2.59 An area to the south-west of the CQLCP Abated Generating Station, within the Main Development Area, would be permanently cleared of vegetation during construction and these areas would be maintained as permanent facilities for laydown and temporary compounds for contractors during periods of routine maintenance. This would include the levelling of ground and the installation of hardstanding and / or modular structures. The maintenance laydown area would have surface water drainage and is included within **Appendix 13-D: Outline Surface Water Drainage Strategy**

(**EN010166/APP/6.4**). If required, chemical storage and containment facilities for hazardous materials will be installed as described in the previous section.

4.3 Design Parameters

4.3.1 The design evolution of the Proposed Development followed an iterative process, based on environmental assessments and consultation with statutory and non-statutory consultees. The evolution of the Proposed Development's design to date is outlined in **Chapter 6: Project Alternatives** (**EN010166/APP/6.2.6**).

4.3.2 At the time of writing (March 2026), there are currently two competitive front-end engineering designs (FEED) under consideration by the Applicant. Therefore, the design of the Proposed Development will continue to be refined until the completion of the detailed design stage in accordance with the parameters outlined in this chapter and the design principles detailed in the **Design Principles Document** (**EN010166/APP/7.8)**. The horizontal limits of deviation for works are shown on the **Works Plans** (**EN010166/APP/2.4**) that accompany the Application.

4.3.3 A number of the design aspects and features of the Proposed Development cannot be confirmed until the Principal Contractor(s) has been appointed. For example, the building sizes may vary depending on the Principal Contractor(s) selected and their specific configuration and selection of plant. As explained in **Chapter 2: Assessment Methodology** (**EN010166/APP/6.2.2**), focused use of the Rochdale Envelope approach has been adopted to define appropriate parameters for use in the EIA within this ES.

4.3.4 Wherever an element of flexibility is maintained, each environmental discipline has considered which scenario represents a worst-case for potential environmental effects and that scenario has been described and assessed in the associated topic specific chapters (**Chapters 8** to **23** (**EN010166/APP/6.2**)) and reported in the ES. Where necessary for assessment, assumptions have been made to provide a reasonable worst-case assessment. **Table 4-1** sets out the maximum dimensions currently envisaged for the principal components of the Proposed Development which have been used as the basis for the various technical assessments undertaken and presented in this ES. Although design work is ongoing, maximum parameters (heights of tallest elements and footprints/ massing) have been devised to enable the EIA to provide a robust assessment based on a reasonable and appropriate worst-case option. The maximum parameters for the principal components of the Proposed Development are set out in the **Design Principles Document** (**EN010166/APP/7.8**) and are illustrated on the **Works Plans** (**EN010166/APP/2.4**) and the **Parameter Plans** (**EN010166/APP/2.4**).

4.3.5 According to available light detection and ranging (LiDAR) data (Ref 4-6), typical ground levels of approximately 6 m to 8 m AOD are present within the Main Development Area where the Trains are proposed and within the Electrical Connection Corridor. For the purposes of this ES, within **Table 4-1**, indicative maximum heights of buildings and other structures are given in m

above-ground level (AGL) and in m AOD according to the areas (zone) of the Proposed Development as shown in **Figure 4-2: Maximum Parameters** (**EN010166/APP/6.3**). These parameters take into account the current anticipated ground raising of 7.4 m AOD and minimum finished floor design level of 7.7 m AOD across the Operational Footprint, which includes the critical operational infrastructure associated with the CQLCP Abated Generating Station. To provide a conservative basis for assessment (in **Chapter 10: Traffic and Transport** (**EN010166/APP/6.2.10**), **Chapter 15: Landscape and Visual Amenity** (**EN010166/APP/6.2.15**) and **Chapter 23: Materials and Waste** (**EN010166/APP/6.2.23**) assessments described in this ES), this minimum level of 7.4 m AOD ground raising and 7.7 m AOD minimum finished floor level is assumed across the Operational Footprint as shown on **Figure 4-2: Maximum Parameters** (**EN010166/APP/6.3**)).

Table 4-1: Main Dimensions[6] of CQLCP Abated Generating Station and Maintenance Laydown Area

Zone (see Plate 4-5 and Figure 4-2; ES Volume III - EN010166/APP/6.3)	Component of the Proposed Development	Maximum Footprint (m^2) / Maximum Diameter (m)	Maximum Height (m) AGL	Maximum Height (m) AOD
1A	CCGT Buildings	6,700 per Train 13,400 (both Trains)	50	57.4
1B	HRSG Buildings	3,450 per Train 6,900 (both Trains)	50	57.4
1B	HRSG Stack(s)	Up to 8 m (internal diameter)	130	137.4
1C	Control, Administration Buildings and Workshops	3,500	16	23.4
1D	CCP Absorbers	375 per absorber	92	99.4
1D	CCP Absorber Stack	Up to 7 m (internal diameter)	145 (including stack	152.4 (including stack)

[6] Main dimensions include roof mounted plant (e.g. air intakes/ filters) but exclude external support structures including (but not limited to) ladders, platforms, external piping and structural supports.

Zone (see Plate 4-5 and Figure 4-2; ES Volume III - EN010166/APP/6.3)	Component of the Proposed Development	Maximum Footprint (m^2) / Maximum Diameter (m)	Maximum Height (m) AGL	Maximum Height (m) AOD
1E	CCP CO_2 Stripper	180	65	72.4
1E	CCP CO_2 Stripper external diameter	15 m		
1F	Cooling and CO_2 Compression Infrastructure	26,450	25	32.4
1G	Proposed CO_2 AGI	2,800	6	13.4
1H	Other Ancillary Buildings and Structures within the CQLCP Abated Generating Station[7], as set out in Paragraph 4.2.20, and Maintenance Laydown Area	64,470	10	17.4

4.3.6 The CCP absorber stack(s) and HRSG stacks would be the tallest elements of the Proposed Development. As indicated in **Table 4-1**, a maximum height of 145 m AGL for the absorber stack(s) (i.e. 152.4 m AOD), a maximum height of 130 m AGL for the HRSG stacks (i.e. 137.4 m AOD) and a maximum height of 92 m AGL for the CCP absorbers (i.e. 99.4 m AOD) has been considered in this ES. All other structures within the CQLCP Abated Generating Station would be 65 m AGL or less.

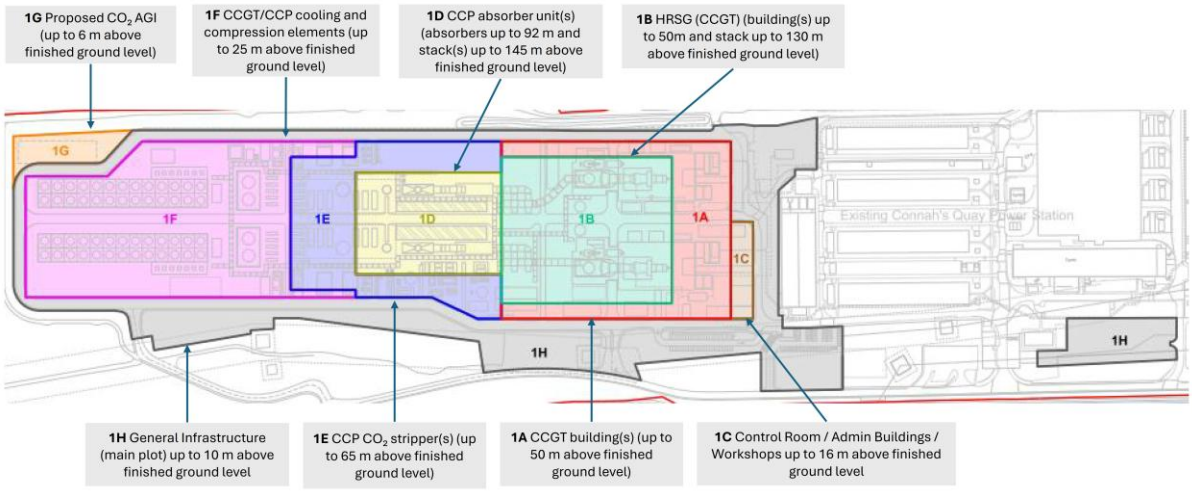
4.3.7 An indicative layout of the Main Development Area is provided in **Figure 4-1: Indicative Site Layout** (**EN010166/APP/6.3**). The exact positions of the absorber and HRSG stack(s) cannot be fixed until the detailed design stage as they will depend on the final choice of technology by the Principal

[7] Other Ancillary Buildings and Structures may also be located within parameter boxes 1A to as these are general supporting assets.

Contractor and overall plant configuration and optimisation. The absorber stack(s) and HRSG stack(s) could be located anywhere within a defined area (parameter 1D and 1B, respectively) within the extent of the CQLCP Abated Generating Station.

4.3.8 A standard 10 m AGL maximum height has been applied for general infrastructure, areas of which interact with existing infrastructure and assets/ structures that will remain through construction of the Proposed Development. Where restrictions on height of development to below 10 m AGL are known to apply within the area of general infrastructure, these lower maximum AGL heights will be complied with through design of the Proposed Development.

Plate 4-5: Details of Maximum Parameters Based on Tallest Components and Indicative Site Layout



4.4 Proposed Development Operation

Hours of Operation

4.4.1 The Proposed Development would operate flexibly during its lifetime with hours of operation driven by the dynamics of the energy market. The CQLCP Abated Generating Station has been designed to be capable of operating 24 hours per day, seven days per week, with programmed offline periods for maintenance.

Staffing

4.4.2 Operation of the Proposed Development is anticipated to create approximately 56 permanent operational roles for Train 1 and a total of approximately 66 permanent operational roles once both Trains are operational. Temporary and contractor employees associated with maintenance activities would also be employed, as required. Plant operative staff would typically work on a regular shift pattern.

4.4.3 Staff would be required on a shift basis to be spread over a 24-hour period. Conservatively, this could equate to up to 132 vehicle movements (i.e. 66

vehicles in and out accessing the CQLCP Abated Generating Station and/or Maintenance Laydown Area) per day.

Maintenance Outages

4.4.4 During planned maintenance outages, which are likely to occur approximately once every four years (per Train), it is envisaged that there could be approximately 300 additional temporary contractors / maintenance workers within the CQLCP Abated Generating Station and/or Maintenance Laydown Area, for a period of approximately two months. It is anticipated that similar or equivalent practices to reduce traffic associated with staff during construction would also be applied for maintenance workers during operation and specified in a worker travel plan for operation or similar management plan. With such practices in place, it is anticipated that this could equate to up to an additional 250 vehicle movements (i.e. an additional 125 vehicles in/ out accessing the CQLCP Abated Generating Station and/or Maintenance Laydown Area) per day to those identified in paragraph 4.4.3. These additional movements would occur for approximately two months every four years (per Train). It is envisaged that full maintenance outages would not occur at both Trains at the same time; where infrastructure is shared between Trains then the maintenance outage of a single Train may require a short outage affecting both Trains, but this would be carried out by the additional temporary contractors / maintenance workers undertaking the maintenance outage of the single Train (and would not require further additional temporary contractors / maintenance workers).

Routine and Emergency Access / Egress

4.4.5 Permanent access to the CQLCP Abated Generating Station and/or Maintenance Laydown Area for workers and deliveries during operation would be via an existing access to the Connah's Quay Power Station site (Access to Main Development Area) along Uniper Way from Kelsterton Road via the A548. Access from Kelsterton Road is via two roundabouts and crosses the North Wales Main Line railway (an operational rail line located in tunnel section beneath the access road). A new security gatehouse and parking would be provided at the entrance to the CQLCP Abated Generating Station for staff and visitors.

4.4.6 An existing dedicated access road to the wildlife hides for Deeside Naturalists' Society (DNS) members is currently provided by the Applicant and would be re-routed within the Main Development Area. This re-routed permanent dedicated access road would be installed during or following the completion of construction works within the Main Development Area Laydown Areas as a single-track tarmac road approximately 10 m to the west / south-west of the perimeter road of the CQLCP Abated Generating Station as shown on **Figure 4-1: Indicative Site Layout** (**EN010166/APP/6.3**). Suitable security fencing would be installed and landscaping would be undertaken within the space between the DNS access road and perimeter road.

4.4.7 An alternative (emergency) gated and controlled access to the Main Development Area (Alternative Access to Main Development Area) and access to the Construction and Indicative Enhancement Area (C&IEA)

(Access to C&IEA) is also available from either Uniper Way, or the B5129 Kelsterton Road south of the existing NGET 400 kV substation. This would only be used in emergencies.

Heavy Goods Vehicle Movements and Traffic

4.4.8 HGVs would use the Access to Main Development Area from Kelsterton Road to access the CQLCP Abated Generating Station. Operational traffic movements are described within the Transport Assessment (**Appendix 10-A: Transport Assessment EN010166/APP/6.4**). In summary, it is anticipated that during the operational phase of the Proposed Development, total HGV movements at the CQLCP Abated Generating Station would be up to 35 in and 35 out per week (i.e. an average of 5.8 in and 5.8 out per day based on a typical six day week for deliveries). Of these, up to 23 HGV movements in/out would be associated with delivery of consumables and up to 12 HGV movements in/out would be associated with the removal of process wastewater.

Operating Modes

4.4.9 Following commissioning, the Proposed Development is designed to be operated in dispatchable mode i.e. being able to export power to match the anticipated intermittency of renewable power in the future power market.

4.4.10 The primary operating mode is anticipated to be with CO_2 emissions from the CCGT units abated (i.e. with CCP operational). This is because the Dispatchable Power Agreement (DPA) that the Applicant is seeking, incentivises electricity generation with carbon capture. However, it is anticipated that there would also be a number of limited scenarios in which the CCGT may need to operate without the CCP including:

- Unabated Scenario 1: on commissioning, in the event that the downstream T&S network is unavailable;
- Unabated Scenario 2: during operation, to meet electricity demand when the CCP is offline (e.g. due to outages of the T&S network); and
- Unabated Scenario 3: During a NatTS (electrical) total or partial shutdown event, in which the plant is called upon to support system restoration.

4.4.11 These scenarios would be controlled via an Environmental Permit which would specify releases permitted in other than normal operating conditions (OTNOC) to be agreed with NRW, as well as proposed CO_2 monitoring, measurement and reporting of CO_2 emissions. Unabated operation of the Proposed Development is not anticipated to be frequent or occur over the long term.

4.4.12 Outside of these circumstances, it is expected that the CCGT would not operate unabated. The CCP would be designed to be capable of capturing a minimum of 95% of the CO_2 emissions (by mass) from the generating station as an annual average of all normal operating conditions and will be capable of capturing over 90% operating at full load (subject to completion of FEED verification studies and commercial agreement). Further details are provided in paragraph 4.2.12 above.

4.4.13 The Proposed Development would require an Environmental Permit and would comply with this under the Environmental Permitting (England and Wales) Regulations 2016 (Ref 4-7) so that the impacts of emissions to air, soil, surface and groundwater, to the environment and human health will be minimised and avoided using BAT as far as reasonably practicable. Engagement is ongoing with NRW on the Environmental Permit application. As more detail is provided from the ongoing FEED studies, the Environmental Permit application is expected in mid-2025. This timeline has been agreed with NRW.

4.4.14 The Proposed Development would be operated in line with appropriate standards and the operator will implement and maintain an Environmental Management System (EMS) which will be certified to International Organisation for Standardisation (ISO) 14001 (Ref 4-8). The EMS would outline requirements and procedures required to ensure that the Proposed Development is operating to the appropriate standard.

CO_2 Venting

4.4.15 During normal daily operation, there would be no venting of captured CO_2 from the Proposed Development. However, some infrequent controlled maintenance activities could require temporary venting of small amounts of CO_2. In the event that venting of CO_2 from the CCP is required (e.g. where the composition of gas is not suitable for the T&S network, or the T&S network is unavailable) it may be necessary to release CO_2. It is currently expected that venting would be via the HRSG stack; however, safe release points would be identified following detailed design and would be controlled via the Environmental Permit for the Proposed Development.

4.4.16 No venting would be required along the Repurposed or Proposed CO_2 Connections. Controlled venting could be required as part of maintenance at the Proposed CO_2 AGI or at Liverpool Bay CCS Limited's Flint AGI.

Maintenance

4.4.17 The objective of plant maintenance is to ensure the Proposed Development including utility connections operates safely and reliably.

4.4.18 Routine maintenance would be planned and scheduled via the maintenance management system with major outages occurring approximately once every four years (per unit) depending on the nature of plant operations in that period. The contractors would access the Proposed Development via the Access to the Main Development Area from Kelsterton Road. Maintenance laydown facilities would be included within the indicative layout for the CQLCP Abated Generating Station, Maintenance Laydown Area, and within the extent of the existing Connah's Quay Power Station.

4.4.19 In relation to the CO_2 and gas connections, if required, pipeline inspection plans would be prepared and Pipeline Inspection Gauge (pig) launching and receiving facilities for intelligent pigging operations would be considered.

4.4.20 The CO_2 Connections and AGIs on this route would not require permanent staffing or personnel presence. The Proposed CO_2 AGI would not include any major machinery. The AGI comprises mainly piping and static equipment

elements with isolation valves, instruments, and minor utilities. Routine maintenance of the AGI is expected to be minor and consist of lubrication, replacement of seals and calibration of instruments.

4.4.21 No maintenance dredging would be carried out to the Water Connection Corridor, in line with existing operation (in which silt is extracted from cooling water on land only) and the limited scope of works during construction. Instead, in the operational phase it is assumed that the proposed intake and outfall infrastructure would be kept clear through the use of a compressed air blasting system or by back flush, and if required a jet washing system which would be incorporated into the design. The air blast and jet washing activities would only take place on a falling tide to return the silt removed to the estuary sediment budget. Should these options not be sufficient to maintain clean flow through the screen, screens would be removed and replaced by spare screens for mechanical cleaning on land may be required.

4.4.22 Above-ground assets in the Water Connection Corridor would be visually inspected with a recurrence aligned with the requirements of supplier equipment.

4.4.23 It is expected that the programme of inspection and maintenance of the CO_2 pipelines from the Proposed CO_2 AGI and Liverpool Bay CCS Limited's Flint AGI would align with HyNet CO_2 Pipeline Project's routine programme of inspection and maintenance and in accordance with best practice and regulatory requirements. **Table 4-2** sets out the anticipated maintenance and inspection activities for the CO_2 connections and their frequencies.

Table 4-2: Routine Maintenance Activities and Frequency for the CO_2 connections

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
CO_2 Repurposed and Proposed pipelines	Vantage point survey including pipeline easement.	Weekly
	Aerial survey using helicopters.	Fortnightly
	Electrical equipment, safety and protection devices and status checks.	Every six months
	Complete line walk.	Annually
	Coating defect survey.	Every four years
	Pipeline in-line inspection (using pig).	An initial baseline survey upon commissioning and then every five years

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
CP system	Check the operation and condition of the transformer rectifier units.	Monthly
	Measure drain-point potential, the current of drainage stations and Alternating Current (AC) levels from the highest select points along the pipeline system.	Monthly
	Measure the: Electrical continuity from the bonding devices and grounding systems; Settings and function from the safety and protection devices; and Instant-off potentials at all composition monitoring posts.	Twice annually
	Close interval potential survey and Direct Current (DC) voltage gradient survey.	Typically, every four years
Proposed CO_2 AGI	Security visit.	Weekly
	Maintenance visit.	Quarterly
	Visual survey of valve surface works, instruments, and electrical equipment.	Every three months
	Stroke testing and lubrication of valves.	Every 12 months
	High integrity pressure protection system testing.	Every 12 months
	PIG launcher / receiver	External – 12 months

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
	Inspections.	Internal – 24 months

External Lighting

4.4.24 Some external lighting would be required to ensure the CQLCP Abated Generating Station can operate safely at all times. A **Lighting Strategy** has been prepared and submitted as part of the Application (**EN010166/APP/7.22**) which has been developed in accordance with the recommendations for Outdoor Workplaces in British Standard BS EN 12464-2 (Ref 4-9). The objective of the operation lighting is to support safe site access and egress, in addition to undertaking specific tasks safely, efficiently and accurately when insufficient daylight is available.

Landscaping and Biodiversity

4.4.25 The design of the Proposed Development is being undertaken giving careful consideration to the setting of the Construction and Operation Area and location of sensitive receptors in order to minimise impacts on landscape and biodiversity. Opportunities have been sought to use existing infrastructure where possible and to minimise areas of permanent habitat loss. Where temporary disturbance / loss cannot be avoided during the construction phase, the Proposed Development has include provision for landscaping, planting and biodiversity mitigation and enhancement works. The details of the proposed landscape masterplan are set out within the **Outline Landscape and Ecological Management Plan** (**LEMP**) (**EN010166/APP/6.9**) for areas within the Order limits, and within the **Curlew Mitigation Strategy** (**EN010166/APP/6.13**) for areas outside of the Order limits. A **Green Infrastructure Statement** (**EN010166/APP/6.11**) has been prepared to consider the proposed habitat creation inside and outside of the Order limits with regards to Net Benefit for Biodiversity.

Mitigation within Construction and Operation Area

4.4.26 Following construction, the Main Development Area and C&IEA construction laydowns areas (as described in **Chapter 5: Construction Management and Programme** (**EN010166/APP/6.2.5**)) together with reinstated areas of the Construction and Operation Area that have been used for construction, would be used for ecological mitigation. The **Outline LEMP** (**EN010166/APP/6.9**) identifies the following measures:

- 6.12 ha of Open Mosaic Habitat reinstatement within the C&IEA following the completion of the construction works;
- 4.34 ha of Open Mosaic Habitat creation within the C&IEA following the completion of the construction works;
- 0.06 ha of saltmarsh reinstatement within the C&IEA during the construction phase;
- 0.13 ha of saltmarsh creation within a previous area of braken, within the C&IEA during the construction phase;

- 1.72 ha of species poor grassland enhanced to species-rich grassland within the Main Development Area and ecological safeguard zone at the start of construction;
- 6.41 ha of species-poor grassland grassland creation within the Main Development Area, at the start of construction;
- 8.52 ha of species-poor grassland reinstatement within the Main Development Area, following the completion of the construction works;
- 2.07 ha of Other Broadleaved Woodland creation within a previous area of species poor grassland, within the Main Development Area following the completion of the construction works; and
- 0.05 ha of Other Broadleaved Woodland reinstatement within the Main Development Area, following the completion of the construction works.

4.4.27 The **Outline LEMP** (**EN010166/APP/6.9**) also identifies an outline programme of of management and monitoring of the establishment of all planting noted above.

Mitigation outside of Construction and Operation Area

4.4.28 As identified in the **Curlew Mitigation Strategy** (**EN010166/APP/6.13**) and **Offsite Net Benefit for Biodiversity and Green Infrastructure Strategy** (**EN010166/APP/6.14**), the Applicant is in the process of securing 56.3 ha of land, known as Gronant Fields, approximately 22.2 km north of the Main Development Area at Prestatyn. The grid reference for the approximate centre of Gronant Fields is SJ 08228 83684. This area would be used to create the following habitats through enhancement of the existing habitats:

- Woodland – 2.49 ha;
- Individual Trees – 5; and
- Scrub – 3.33 ha.

4.4.29 The **Curlew Mitigation Strategy** (**EN010166/APP/6.13**) and **Offsite Net Benefit for Biodiversity and Green Infrastructure Strategy** (**EN010166/APP/6.14**) also identify an outline programme of management and monitoring of the establishment of all habitat enhancement noted above.

Operational Mitigation

4.4.30 A number of commitments relating to the operational phase of the Proposed Development are made throughout the **ES** (**EN010166/APP/6.2**). A summary of these commitments is provided in **Appendix 4-A: Operation and Maintenance Mitigation Register** (**EN010166/APP/6.4**).

4.5 Decommissioning

4.5.1 As described in **Chapter 2: Assessment Methodology and Consultation** (**EN010166/APP/6.2**), each Train of the Proposed Development would have an operational life of up to 30 years. It is, however, expected that the Proposed Development would have some residual life remaining after this operational life, and an investment decision would then be made based on the market conditions prevailing at that time.

4.5.2 On this basis, decommissioning activities are currently anticipated to commence after 2060 (Train 1, if a phased construction approach is adopted) and after 2065 (Train 2 if a phased construction approach is adopted, or Train1 and Train 2 if simultaneous construction is adopted).

4.5.3 For the purposes of the ES, at the end of its operational life, it is anticipated that the Proposed Development would be shut down, with all above-ground structures on the Main Development Area removed, and the ground remediated as required to facilitate future re-use. It is also assumed that cooling water infrastructure within the River Dee and all buried assets of the Proposed Development would be left in-situ and the associated pipework treated and filled. Any removal contractor would have a legal obligation to consider decommissioning and removal under the Construction (Design and Management) Regulations 2015, or the equivalent prevailing legislation at that time.

4.5.4 It is anticipated that timescales for decommissioning and removal of the Proposed Development could be similar to, or slightly shorter than, its construction and would require provision of office accommodation and welfare facilities.

4.5.5 A Decommissioning Plan (including a Decommissioning Environmental Management Plan (DEMP)) will be produced at the time of decommissioning, pursuant to a Requirement of the **Draft DCO** (**EN010166/APP/3.1**). The DEMP would include an outline programme of works, would consider all potential environmental risks and contain guidance on how risks can be removed, mitigated or managed, accounting for potential future changes to baseline conditions. This would include procedure on how surface water drainage should be managed during decommissioning and removal.

4.5.6 Prevention of contamination is a specific requirement of the Environmental Permit for the operation of the Proposed Development and therefore it is being designed such that it would not create any new areas of ground contamination or pathways to receptors as a result of construction or operation. The contractor would safely isolate all plant and equipment prior to the removal of residual hazardous substances, purging of pipelines and cleaning and certification of equipment following removal of chemicals. Relevant plant and equipment would then be removed to ground level. It is expected that the hardstanding and sealed concrete areas would be left in place. Should decommissioning of above-ground assets result in the lowering of ground to below the ground level of the Proposed Development for that given location, these areas would be backfilled to the ground level of the Proposed Development for that given location to leave a levelled area.

4.5.7 Decommissioning activities would be conducted in accordance with the appropriate guidance and legislation at the time of the Proposed Development's closure. The bulk of the plant and equipment would have some limited residual value as scrap or recyclable materials, and the removal contractor would be encouraged to use materials that could be recycled. All decommissioning activities would be undertaken in accordance with the waste hierarchy. Materials and waste produced during decommissioning and removal would be stored in segregated areas to

maximise reuse and recycling. All materials that cannot be reused or recycled would be removed from the Construction and Operation Area and transferred to suitably permitted waste recovery/disposal facilities. It is anticipated that a large proportion of the materials resulting from removal would be recycled.

4.5.8 Upon completion of the decommissioning programme, including any remediation works that might be required, NRW would be invited to witness a post-decommissioning inspection by site staff. All records from the decommissioning process would be made available for inspection by NRW or other relevant statutory bodies, in accordance with the Environmental Permit requirements.

4.5.9 In the light of the control measures set out above that would form part of the proposed DEMP, unless otherwise stated, decommissioning is not anticipated to present any significant environmental effects beyond those that have been assessed for the construction phase of the Proposed Development.

4.6 Elements of the Proposed Development to be Consented under a Marine Licence

4.6.1 In Wales, the Marine and Coastal Access Act 2009 (MCAA) (Ref 4-10) provides that a Marine Licence is required for certain licensable activities within the UK Marine Area. This is defined as any area "within the seaward limits of the territorial sea adjacent to the United Kingdom", which is regarded as any area seaward of the normal tidal limit of any tidally influenced water body. This includes intertidal zones, which are periodically exposed by the tide and subtidal zones which are always submerged.

4.6.2 In Wales, a standalone Marine Licence Application must be prepared as they cannot be deemed within the body of the DCO (i.e. a Deemed Marine Licence). NRW is the body responsible for issuing, revoking, and enforcing a Marine Licence.

4.6.3 Works carried out in the Water Connection Corridor below mean high-water springs (MHWS) that are assessed in **Chapter 12: Marine Ecology**, **Chapter 16: Physical Processes** and **Chapter 18: Marine Heritage** (**EN010166/APP/6.2**) (referred to herein as in-river works) that includes the replacement of eel screens on the existing Connah's Quay Power Station cooling water intake require a separate Marine Licence. Engagement regarding the Marine Licence have been held with NRW Marine Licensing Team and is reported in the **Consents and Agreements Position Statement** (**EN010166/APP/3.3**) that accompanies the Application and the **NRW Statement of Common Ground** (**EN010166/APP/8.2**).

References

Ref 4-1 HMSO (2008). Planning Act 2008 [online]. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents (Accessed 29/07/2025).

Ref 4-2 The Eels (England and Wales) Regulations 2009 (SI 2009/3344). London: HMSO [online]. Available at: https://www.legislation.gov.uk/uksi/2009/3344/contents/made (Accessed 29/07/2025).

Ref 4-3 National Tidal and Sea Level Facility at the University of Liverpool (2025). Definitions of tidal levels and other parameters [online]. Available at: https://ntslf.org/tides/definitions (Accessed 29/07/2025).

Ref 4-4 Planning (Hazardous Substances) Regulations 2015 (SI 2015/627). London: HMSO [online]. Available at: https://www.legislation.gov.uk/uksi/2015/627/contents/made (Accessed 29/07/2025).

Ref 4-5 Control of Major Accident Hazards Regulations 2015 (SI 2015/483). London: HMSO [online]. Available at: https://www.legislation.gov.uk/uksi/2015/483/contents/made (Accessed 29/067/2025).

Ref 4-6 Welsh Government (2022) Data Map Wales LiDAR Viewer 2022 [online]. Available at: https://datamap.gov.wales/maps/lidar-viewer/view#/ (Accessed 29/07/2025).

Ref 4-7 Environmental Permitting (England and Wales) Regulations 2016 (SI 2016/1154). London: HMSO [online]. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made (Accessed 29/07/2025).

Ref 4-8 ISO, 2015; ISO 14001:2015 Environmental management systems: Requirements with guidance for use. Geneva: ISO.

Ref 4-9 "BS EN 12464-2 Lighting of work places - Outdoor work places," British Standards Institution (BSI), 2024.

Ref 4-10 Marine and Coastal Access Act 2009. [online]. Available at: https://www.legislation.gov.uk/ukpga/2009/23 (Accessed 29/07/2025).