Connah's Quay Low Carbon Power

Environmental Statement Volume II Chapter 5: Construction Management and Programme

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5. Construction Management and Programme

5.1 Overview

5.1.1 This chapter of the Environmental Statement (ES) describes the construction phase of the Proposed Development. This includes information on the anticipated construction programme, timings, methods of working and management.

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

- **Figure 5-1: Key Plan – Indicative Construction Work Areas**;
- **Figure 5-2: Demolition Areas**;
- **Figure 5-3: Construction Areas**; and
- **Figure 5-4: Abnormal Load Routing Options**.

5.1.3 This chapter is supported by the following appendices in **ES Volume IV** (**EN010166/APP/6.4**):

- **Appendix 5-A: Environmental Screening of Accommodation Works**.

5.1.4 A **Framework Construction Environmental Management Plan** (**CEMP**) (**EN010166/APP/6.5**) has been prepared to describe the specific mitigation measures to be followed to control and reduce impacts on the environment and local community during the construction phase, inclusive of the site enabling works. The **Framework CEMP (EN010166/APP/6.5)** has been developed taking into account the environmental assessments presented in **Chapters 8** to **23** of this **ES** (**EN010166/APP/6.2**). In addition, a **Framework Construction Traffic Management Plan** (**CTMP**) (**EN010166/APP/6.6**) and **Framework Construction Workers Travel Plan** (**CTWP**) (**EN010166/APP/6.7**) have been prepared to describe measures related to the management of construction related traffic.

5.2 Construction Programme

Overview of Construction Scenarios

5.2.1 As described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**), the Proposed Development comprises the demolition of an existing gas treatment plant (GTP) and above-ground installation (AGI), store buildings, and contractors' facilities associated with 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 with Carbon Capture Plant (CCP) (hereafter referred to as the Connah's Quay Low Carbon Power (CQLCP) Abated Generating Station) and supporting infrastructure. 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 (MW; referred to as Mwe for electrical output) and 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.

5.2.2 Construction of the Proposed Development either could be undertaken in a combined single phase where both CCGTs with CCPs are constructed simultaneously (hereafter referred to as simultaneous construction), or in two phases where each CCGT with CCP is constructed in isolation (hereafter referred to as phased construction). An indicative construction programme has been developed for both of these construction scenarios (**Table 5-1** and **Table 5-2**). A detailed construction programme would be prepared by the Principal contractor(s) once appointed.

5.2.3 The undertaker would appoint one or more Principal contractor(s) for the construction of respective stages (phases) of the Proposed Development.

Construction Programme and Phasing

5.2.4 As described in **Chapter 2: Assessment Methodology** (**EN010166/APP/6.2.2**), construction of the Proposed Development could, subject to securing the necessary development consent, start as early as Quarter Q4 2026. However, considering that the DCO would allow construction to commence up to five years from the date of consent, construction activities may commence as late as Q4 2031 (depending on market needs and financing). For this reason, a scenario whereby construction commences later in the programme, in late 2031 (five years after the DCO could have been granted) has also been considered as a reasonable worst-case for some technical assessments.

5.2.5 Focused use of the Rochdale Envelope approach, outlined in the Planning Inspectorate (PINS) Advice Note 9 (Ref 5-1), has been made, taking into consideration that either a phased approach or simultaneous construction could be adopted, with associated requirements for laydown areas.

5.2.6 The final programme for construction would be determined by the Principal contractor(s) but is anticipated to include the following main phases:

- a site enabling works phase, including preparation of construction laydown areas and demolition of the existing gas treatment plant (GTP), existing GTP above-ground installation (AGI), and existing stores building, which would be undertaken over a six to nine-month period;
- construction activities for the Proposed CO_2 Connection (civil and integration works), which would be expected to be completed within approximately nine months;
- earthworks (site preparations) to provide a level development platform where this is required for new permanent infrastructure within the Main Development Area, which would be expected to take six to nine months;
- the main civil works phase and civil, mechanical, electrical and integration works, which would be expected to be completed within approximately two to two and a half years (for each single Train in a

phased construction) or up to approximately three and a half years (in the event of simultaneous construction);

- construction activities for the Water Connection (minor upgrade/repair and integration works), which would be expected to be completed within approximately three to five months; and
- commissioning of the CQLCP Abated Generating Station ahead of commercial operation, which may take up to one year (per single Train in phased construction) or up to two years (both Trains in simultaneous construction).

5.2.7 The indicative programmes to illustrate a phased construction and single phase of construction works are shown in **Table 5-1** and **Table 5-2** respectively.

5.2.8 Further details of each of these phases are provided in Section 5.3.

Table 5-1: Indicative Phased Construction and Commissioning Programme

	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7				Years 8				Year 9			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Site enabling works (both Trains)																																				
Works to Proposed CO_2 Connection Corridor																																				
Earthworks / Site preparation (both Trains)																																				
Main civil works (Train 1, Train 2)																																				
Mechanical equipment installation works (Train 1, Train 2)																																				
Electrical equipment installation works (Train 1, Train 2)																																				
Integration with existing power station (Train 1, Train 2)																																				
Works within the Water Connection Corridor																																				
Commissioning and Commercial Operation (Train 1, Train 2)																																				

Key: Both Trains | Train 1 | Train 2

Table 5-2: Indicative Simultaneous Construction and Commissioning Programme

Construction Activity	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Site enabling Works (trigger commencement of DCO)	■	■	■																	
Works to Proposed CO_2 Connection Corridor				■	■	■														
Earthworks / Site preparation (both Trains)				■	■	■														
Main civil works (both Trains)					■	■	■	■	■	■	■	■	■							
Mechanical equipment installation works (both Trains)						■	■	■	■	■	■	■	■	■	■					
Electrical equipment installation works (both Trains)							■	■	■	■	■	■	■	■	■	■				
Integration with existing power station (both Trains)									■	■	■	■	■	■	■	■	■	■		
Works within the Water Connection Corridor					■	■														
Commissioning (both Trains)												■	■	■	■		■	■	■	■

5.3 Construction Methods

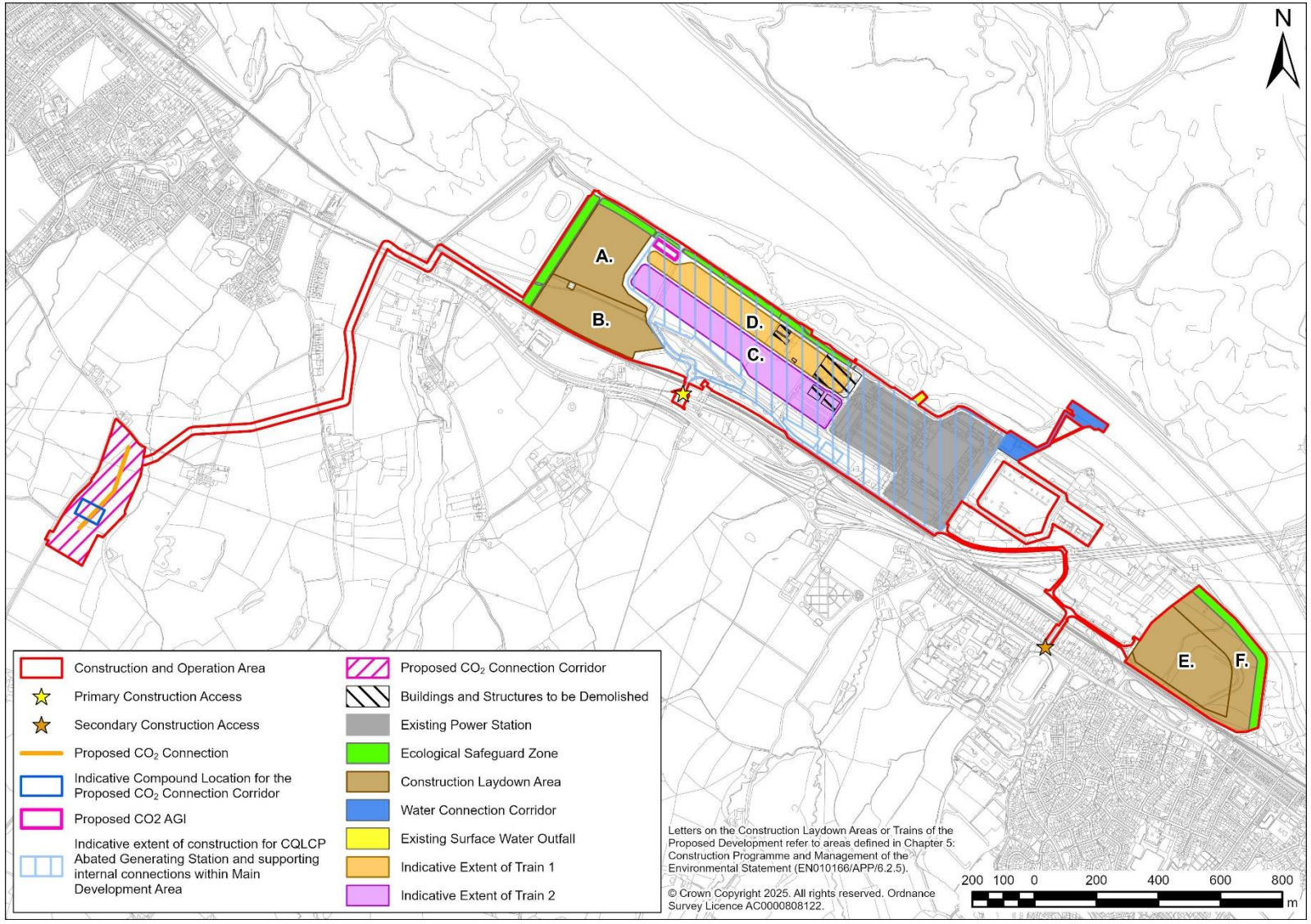
Overview

5.3.1 An indicative construction methodology has been prepared for the Proposed Development based on experience gained on similar developments and professional judgment. A CEMP would be prepared by each of the Principal contractor(s) once appointed and the respective works would be managed in accordance with their respective CEMP. Each CEMP would be subject to approval by the local planning authority and would be prepared in accordance with the **Framework CEMP** (**EN010166/APP/6.5**).

5.3.2 Construction works would be undertaken in accordance with relevant safety requirements and regulations, including the Construction (Design and Management) Regulations 2015 (Ref 5-2) (CDM Regulations 2015).

5.3.3 Construction activities are focused on the Construction and Operation Area (which comprises the Main Development Area, the Construction and Indicative Enhancement Area (C&IEA), the Proposed Carbon Dioxide (CO_2) Connection Corridor, the Water Connection Corridor, the Surface Water Outfall Area, the Electrical Connection Corridor, the Access to C&IEA, the Alternative Access to Main Development Area, and Main Development Area Access Works Area). These areas are described further in **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3**) and shown on **Figure 5-1: Key Plan – Indicative Construction Work Areas** (**EN010166/APP/6.3**) (reproduced in **Plate 5-1** below).

Plate 5-1: Key plan for construction of the Proposed Development



5.3.4 For the purposes of this ES (and in particular for the noise and vibration assessment presented in **Chapter 9: Noise and Vibration** (**EN010166/APP/6.2.9**)), reasonable worst-case estimates have been made of the types and numbers of plant and machinery likely to be used in the Construction and Operation Area during the construction period, as well as the potential use of piling for foundations of the main structures. These estimates are detailed in **Appendix 9-C: Construction Noise Assessment Effects and Assumptions** (**EN010166/APP/6.4**).

Site Enabling Works

Preliminary Works including Demolition / Dismantling

5.3.5 The preliminary works would include:

- erection of site fencing (including acoustic fencing) and notices;
- environmental surveys and ground investigations including any remedial work, if required;
- demolition of the GTP, existing ENI AGI, and existing stores building (and removal of temporary modular structures) within the Main Development Area (refer to **Figure 5-2** (**EN010166/APP/6.3**)), including removal of:
  - low-level structures (below 25 m in height), including the compressor building, switchroom and control building, which would be disassembled using ground-based plant with hydraulic pincer attachments;
  - high-level structures (which are typically over 25 m in height) which would be disassembled and brought to ground level in a controlled manner, either using a crane or wire-rope pulling methods. Once at ground level, ground-based plant would dismantle and sort materials from high-level structures; and
- site clearance and ground preparation (including temporary drainage), including removal of redundant services and other below-ground obstructions, including:
  - concrete structures, including floor slabs, foundations, and plinths, and other below-ground obstructions such as redundant services to subgrade[1] level (excluding removal of piles), which would be removed by using ground-based plant with hydraulic peckers, with crushing and separation of concrete and steel reinforcement;
- set-up of contractors' village with temporary modular structures;
- provision of environmental mitigation measures (including installation of temporary amphibian and reptile fencing and measures to prevent birds nesting within the construction site); and
- diversion and laying of services (including surface water drainage).

5.3.6 Given the nature of the former operations and underlying fill materials within the Main Development Area a preliminary ground investigation was carried

[1] In reference to soils or works below the existing ground level, 'subgrade' refers to the lowest depth of the existing development.

out in January 2025 following discussions with Natural Resources Wales. The findings of this investigation will be incorporated into the detailed design of the Proposed Development. The soil and groundwater results from the site investigation are further discussed in **Chapter 13: Water Environment and Flood Risk** (**EN010166/APP/6.2.13**).

5.3.7 The C&IEA would be used during the enabling works in preparation for laydown. Activities would include the breaking up and removal of hardstanding, concrete, and metal, or the placement of materials, to create a level working area as required. Any materials brought to site for laydown enabling works would be removed following construction in accordance with principles identified in Section 5.10.

5.3.8 Impacts relating to the handling, movement and temporary storage of soils, that would be disturbed for temporary laydown, would be managed in accordance with the measures detailed in the **Framework CEMP** (**EN010166/APP/6.5**) as detailed in Section 5.7. These include a method statement for the works to include soil handling and storage proposals, a restoration specification and a post-works survey to confirm condition. Temporary drainage systems would be designed to provide suitable protection measures for watercourses including a suitable stand-off distance. The **Framework CEMP** (**EN010166/APP/6.5**) outlines these and other measures to be put in place during construction.

5.3.9 As the temporary modular structures to be removed as described above are used by contractors for the existing Connah's Quay Power Station, an alternative location for this contractors' village would be established during preliminary works. This would be located in an area of existing hardstanding south-east of the existing education centre within the Main Development Area, as shown on the **Indicative Design Site Layout** (**EN010166/APP/7.11**). The contractors' village would be comprised of temporary modular structures. Vehicle parking for the contractors' village would be provided by the existing adjacent car park. The contractors' village would be accessed on foot only. The contractors' village would be in place for the duration of construction.

De-watering

5.3.10 If water is encountered during below ground construction, such as following heavy rains or in locations of high/shallow-depth ground water, suitable de-watering methods would be used.

5.3.11 For smaller scale de-watering (such as after periods of heavy rainfall), most local de-watering would be by portable pump discharging to ground through suitable de-silting arrangements. Where required, local soil saturation levels would be monitored to prevent water-logging adjacent areas.

5.3.12 Where larger volumes of de-watering are required, portable pumps would be used to extract the water into mobile de-silting and water treatment systems. These water treatment systems are expected to incorporate separation structure(s), such as weir(s) or pond(s), to allow suspended solids and sediment to settle out for removal. Regular quality testing of the water would take place after it has passed through the separation structure(s) to determine if further treatment is required prior to discharge, which would be to a nearby watercourse, licenced sewer discharge point, or, if none is

present, to greenfield surface. Any captured sediment would be re-used where suitable or taken to an offsite recycling facility in accordance with the **Framework Site Waste Management Plan** included as an appendix to the **Framework CEMP** (**EN010166/APP/6.5**).

5.3.13 Any significant groundwater de-watering required would be undertaken in line with the requirements of Natural Resources Wales under the Water Resources Act 1991 (as amended) and Environmental Permitting (England and Wales) Regulations 2016 as detailed in the **Consents and Agreement Position Statement** (**EN010166/APP/3.3**) document.

Construction Laydown Areas including Contractors' Compounds

Main Development Area and C&IEA

5.3.14 Six laydown areas within the Main Development Area and C&IEA (A to F) are required during construction to enable equipment and material storage, placement of site offices, batch concrete facilities, welfare facilities and car parking, environmental / waste handling areas and vehicle wheel wash area(s). **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**) shows the maximum extents of the six construction laydown areas within the Main Development Area and in the C&IEA. The laydown areas would be levelled to provide an even surface and underlain by semi-permeable surfacing and secured by security fencing and gates as appropriate.

5.3.15 As described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**), areas of land south-west of the CQLCP Abated Generating Station would be cleared of vegetation for use as laydown and temporary compounds for contractors during operation of the Proposed Development (the Maintenance Laydown Area). It is expected that this clearance would be undertaken during enabling works, between March to September inclusive, or following the installation of the acoustic barrier. Therefore, in both the phased and simultaneous construction scenarios these areas would be used for parking, contractor compounds, material storage, and fabrication.

5.3.16 Further detail on how laydown areas would be restored and / or enhanced post construction is set out in Section 5.10 as well as the **Outline Landscape and Ecological Management Plan** (**LEMP**) (**EN010166/APP/6.9**).

5.3.17 The final arrangement of the laydown areas required would be developed by the appointed Principal Contractor s) who would consider the relevant constraints (for example 30 m buffers, as identified by National Grid Electricity Transmission (NGET), have been included around existing overhead lines (OHL) pylons to reduce the risk of collision and to allow continuation of routine maintenance to the OHL and pylons) identified on **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**). **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**) also provides an indication of how laydown areas would be used, as described below.

Main Development Area and C&IEA

5.3.18 During either the phased or simultaneous construction, 10.8 ha of the Main Development Area and 10.8 ha of the C&IEA would be used for dedicated construction laydown over an approximate five year period as follows:

- either side of the existing 400 kilovolts (kV) OHL (area A to north and area B to south) within the Main Development Area would be fully used for fabrication, laydown, contractor compounds, and wheel-washing facilities;
- the central area of the C&IEA (area E), would be used for contractor compounds, parking and material storage;
- the outer areas of the C&IEA (area F), would be used for contractor parking;
- the west and north of the laydown area within the Main Development Area ('area A' and 'area B'), would be used for soil storage, with a minimum 30 m wide ecological safeguard zone outside of the laydown area maintained, with 3 m-high acoustic fencing proposed beyond this to the north, west and south boundaries to provide protection for sensitive habitats in the Dee Estuary and residential receptors; and
- a minimum 30 m wide ecological safeguard zone would be provided for laydown areas associated with the C&IEA (area E and area F), with 3 m-high acoustic fencing on the north-facing and east-facing boundaries and fence hoarding on the south-facing boundary, or similar, is proposed to provide protection for sensitive habitats in the Dee Estuary and residential receptors.

5.3.19 Outside of these dedicated laydown areas, there is potential for use of the extents of Train 1 (area D) and Train 2 (area C) to be used wholly or in part for temporary laydown throughout the construction phase in advance of construction of specific assets and structures within these areas, subject to the detailed programme of construction. Additionally, the extent of the Maintenance Laydown Area may be used for temporary laydown throughout the construction phase both in advance and following construction of the Maintenance Laydown Area as described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**).

Proposed CO_2 Connection Corridor

5.3.20 Within the Proposed CO_2 Connection Corridor, a contractor compound and laydown area would be located in proximity to the Flint AGI. The access to the Proposed CO_2 Connection Corridor would be off Allt-Goch Lane via either the permanent access point to the Liverpool Bay CCS Limited's Flint AGI, to be constructed as part of the HyNet CO_2 Pipeline Project, or via the existing field entrance to the field north of the Liverpool Bay CCS Limited's Flint AGI. This access point would be reached from the A548 Chester Road via the A5119 in Flint, and Coed Onn Road, then Allt-Goch Lane north of the access point.

Earthworks

5.3.21 Earthworks would be required to reprofile areas of the Main Development Area, to produce a level platform, excavate foundations, and/ or remove surplus material or remediate any contaminated soils across the Proposed Development. Earthworks would also be required for the installation of the Proposed CO_2 Connection, in the form of excavations using open cut methods (trenchless techniques would not be used). Limited earthworks in

areas outside of saltmarsh and mudflat habitats would be required for the installation of the Proposed Surface Water Outfall.

5.3.22 As far as reasonably practicable, a material cut and fill balance would be used to minimise waste arisings. However, it is anticipated that some import / export of materials are likely to be necessary to provide a suitable foundation platform for the CQLCP Abated Generating Station.

5.3.23 Targeted ground raising would be required to increase ground levels in order that critical equipment and infrastructure are designed to remain safe in future climate change scenarios described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**) and **Appendix 13-C: Flood Consequences Assessment** (**FCA**) (**EN010166/APP/6.4**). Hydraulic modelling studies that informed **Appendix 13-C: FCA** (**EN010166/APP/6.4**) have identified that the minimum required platform level is 7.4 m AOD, with minimum finished floor levels of critical infrastructure at 7.7 m AOD. On this basis it is assumed that up to 87,100 m^3 of soils may need to be removed and up to 250,000 m^3 of soils imported to provide a suitable platform for foundations and buildings/ equipment across the Main Development Area.

5.3.24 Earthworks would be undertaken at an early stage in site preparation between March and September or following the installation of the acoustic fencing. Further information on traffic movements associated with the distribution of materials to and from the Main Development Area is provided in Section 5.7 below.

5.3.25 Additionally, the **Framework CEMP** (**EN010166/APP/6.5**) incorporates measures to prevent an increase in flood risk during the construction works, as far as reasonably practicable.

Main Works

Main Civil and Process Works (CQLCP Abated Generating Station)

5.3.26 Plant and related infrastructure for the CQLCP Abated Generating Station would, as far as reasonably practicable, be wholly pre-fabricated off-site. Larger equipment, including items for the CCP, would not be feasible to transport to site as whole components due to their anticipated size; such components would need to be pre-fabricated in a modularised form for transport to the Main Development Area and assembled on-site, which includes the:

- direct contact cooler (DCC);
- absorber column(s);
- CO_2 stripper(s);
- storage tanks; and
- Heat Recovery Steam Generator (HRSG).

5.3.27 The exact number and size / weight of these components is not known at this stage and is based on specific construction methodologies that would be confirmed during detailed design. However, it is anticipated that up to 60 two-way (30 arrivals and 30 departures) Abnormal Indivisible Load (AIL)

movements would be required during the construction period for each Train of the CQLCP Abated Generating Station.

5.3.28 Building erection and plant installation may be carried out as concurrent activities, noting that not all buildings would be erected prior to the commencement of plant installation. Large plant may be first placed on foundations with steelwork erected around it.

Construction associated with the natural gas connection

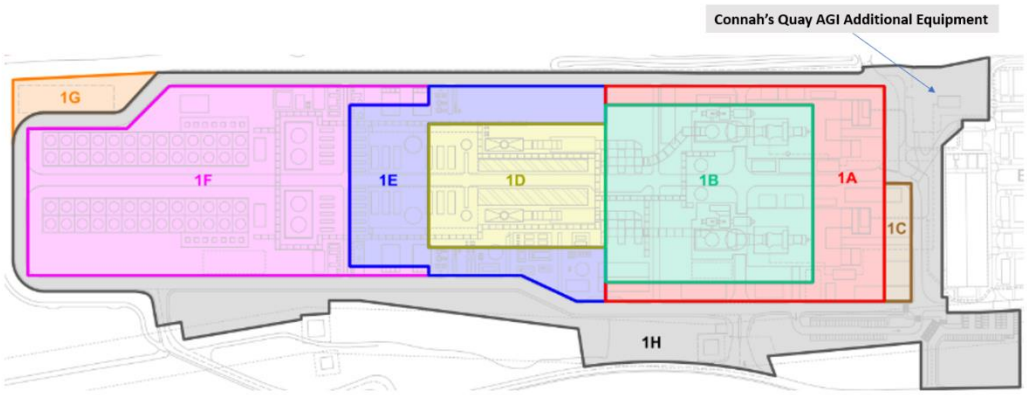
5.3.29 Import of natural gas from the National Transmission System (NatTS) for use in the proposed CCGT plant would use an existing natural gas connection – a 750 mm, approximately 2.5 km long natural gas pipeline (the Dee Pipeline) from the Applicant's existing Connah's Quay AGI within the Main Development Area to the Applicant's existing Burton Point AGI located 1.6 km north-east of the Main Development Area, immediately off the A548 Weighbridge Road junction. The Dee Pipeline is owned and operated by the Applicant. National Gas also operates apparatus related to metering and valving at the Burton Point AGI.

5.3.30 As described in the **Gas Connection Statement** (**EN010166/APP/7.3**), no upgrades to the existing natural gas connection outside of the Order limits would be required during construction of the Proposed Development. If minor modernisations are required during the construction or operation/ maintenance phase, the necessary work would likely only be carried out within the fence boundary of the Burton Point AGI under existing rights, outside of the Application.

5.3.31 The existing Connah's Quay AGI would be upgraded to include a new tie-in, new gas filtering plant and a new pressure reduction station (PRS). The indicative location is shown on **Plate 5-2**, labelled as Connah's Quay AGI Additional Equipment.

5.3.32 Further details of the works associated with the gas connection for the Proposed Development are provided in the **Gas Connection Statement** (**EN010166/APP/7.3**) and **Indicative Gas Supply Pipeline Connection and Above Ground Installation Plans** (**EN010166/APP/7.18**).

Plate 5-2: Indicative Location for Connah's Quay AGI Additional Equipment



Construction within Electrical Connection Corridor

5.3.33 The proposed electrical grid connection (the Electrical Connection) would consist of an electrical connection between the new CCGT generator transformers and the existing NGET 400 kV substation via extension of the Applicant's existing banking compound on the Main Development Area. This would replace the electrical connection for all or some of the existing CCGTs of the existing Connah's Quay Power Station in a phased approach. As such, the existing power circuit and connection to NGET's 400 kV substation within the Electrical Connection Corridor would be reused.

5.3.34 At this stage, no modifications or works are expected within the Electrical Connection Corridor except for minor changes to switchgear (etc.) which may be required to make the final connection, but this is subject to confirmation by NGET. Other minor works such as additional protection/safety equipment or monitoring equipment may be required within the Electrical Connection Corridor, below-ground and within existing cable conduits, but this is subject to NGET confirmation. The timing, location and construction of the Electrical Connection would be determined in consultation with NGET and the National Grid Energy System Operator (ESO).

5.3.35 Further details of the works associated with the electricity connection for the Proposed Development are provided in the **Electricity Grid Connection Statement** (**EN010166/APP/7.2**) and **Indicative Electrical Connection Plans** (**EN010166/APP/7.16**).

Construction within Water Connection Corridor

5.3.36 Cooling water for the Proposed Development would be abstracted from and discharged to the River Dee within the Water Connection Corridor, in line with the current process for the existing Connah's Quay Power Station. The Proposed Development would utilise the existing cooling water abstraction and discharge infrastructure with minor additions and refurbishment at the intake to meet current legislative requirements, including The Eels (England and Wales) Regulations 2009 (Ref 5-3) (Eels Regulations).

5.3.37 Refurbishment and upgrades to the existing intake structure would be undertaken by competent operatives and divers and a support boat and/or barge, or similar, and foot-only access via the saltmarsh itself over an estimated three- to five-month period. Such work may include boat or shore-led pre-works surveys along the Dee Estuary. Eel screen upgrade works would comprise the removal of one existing 3 mm screen and the installation of one new 2 mm screen on each of the existing 28 intakes to mitigate impacts on aquatic ecology and to comply with the Eels Regulations, in addition to minor repairs to surface concrete, metalwork, and timbers.

5.3.38 Works within the Water Connection Corridor would not require interaction with the riverbed and would be undertaken between April and June (inclusive). All materials and plant (if required; it is expected that the majority of works within the Water Connection Corridor will require hand tools only) would be stored within the support barge and a working area would be established using scaffolding attached to the existing protection structure. Works would be undertaken at each of the seven intake pipes (each supporting existing four inlet baskets and to support two proposed inlet

baskets) in turn with a temporary blanking plate on the individual intake pipe undergoing works to allow for continued operation of the existing Connah's Quay Power Station during construction within the Water Connection Corridor.

5.3.39 An assessment of the potential environmental impacts due to noise and vibration, and on marine ecology, flood risk, water quality, erosion and scour impacts are presented in **Chapter 9: Noise and Vibration** (**EN010166/APP/6.2.9**), **Chapter 12: Marine Ecology** (**EN010166/APP/6.2.12**), **Chapter 13: Water Environment and Flood Risk** (**EN010166/APP/6.2.13**) and **Chapter 16: Physical Processes** (**EN010166/APP/6.2.16**). Measures to minimise environmental impacts are reported in these chapters and secured in the **Framework CEMP** (**EN010166/APP/6.5**).

Construction within Surface Water Outfall Area

5.3.40 The existing Connah's Quay Power Station surface water outfall (the Existing Surface Water Outfall) is located to the eastern side of the Rockcliffe culvert and within the Dee Estuary. Construction of a new permanent outfall structure for surface water drainage discharge from the Main Development Area (the Proposed Surface Water Outfall) would be undertaken adjacent to the Existing Surface Water Outfall. The Proposed Surface Water Outfall would connect to and be downstream of a surface water drainage network within the Main Development Area as detailed in **Appendix 13-D: Outline Surface Water Drainage Strategy** (**EN010166/APP/6.4**). A 10 m buffer around the existing artificial structure (the Surface Water Outfall Area) has been included to allow for access and works if required, including the footprint of the Proposed Surface Water Outfall. Excavation may be required during the installation of the Proposed Surface Water Outfall but this would be limited to areas to the edge of the saltmarsh and outside of the existing mudflat habitat. It is expected that the Proposed Surface Water Outfall will be installed into an extension of the existing headwall via trenchless construction methods or with open excavation. Materials storage and location of plant would to be limited to the area between the existing headwall and the existing access road to the northern side of the existing Connah's Quay Power Station fence line or this access road itself within the Surface Water Outfall Area, or would otherwise be undertaken from within the Main Development Area. Any large plant required for the lifting of trench support panels etc such as cranes and/or long reach excavators would be located on the access road to the northern side of the existing Connah's Quay Power Station fence line. Excavation would be carried out by either hand or use of mini diggers positioned as described above for plant. Backfilling operations will be carried out in 300 mm layers to ensure adequate compaction is achieved. Minimising the contact patch of the motorised plant will be a requirement in plant selection.

Works within Repurposed CO_2 Connection Corridor

5.3.41 The export of CO_2 from the Proposed Development would be via a new AGI (the Proposed CO_2 AGI) in the north of the CQLCP Abated Generating Station, which would connect into the Repurposed CO_2 Connection pipeline within the Main Development Area, for further export via the Repurposed

CO_2 Connection Corridor pipeline and onwards to the Proposed CO_2 Connection pipeline.

5.3.42 No construction works would occur within the Repurposed CO_2 Connection Corridor.

Construction within Proposed CO_2 Connection Corridor

5.3.43 Captured CO_2 emissions from the Proposed Development would be transported from the Repurposed CO_2 Connection Corridor, via a new pipeline of approximately 422 m in length (the Proposed CO_2 Connection) and interface at Liverpool Bay CCS Limited's Flint AGI (which is part of the HyNet CO_2 Pipeline Project[2]) before entering the HyNet CO_2 Pipeline. The Proposed CO_2 pipeline is expected to be of similar specification to the Repurposed CO_2 Connection (i.e. an approximately 610 mm diameter, below ground pipeline).

5.3.44 It is anticipated that the Proposed CO_2 Connection pipeline would be constructed in the same way as a natural gas transmission pipeline, involving excavation using open cut methods (pipeline to be laid at a minimum of 1.2 m bgl at its top; required excavation depth is approximately 2 m). Excavated spoil would be stored adjacent to the trench whilst the pipeline is laid, before reinstatement using suitable excavated material. Any surplus suitable excavated material would be reused within the Construction and Operation Area, where practicable. Topsoil would be removed and stored separately to the subsoil in accordance with the measures set out in the **Framework CEMP** (**EN010166/APP/6.5**). Construction works would be contained within a fenced working area and the overall construction area, including storage and all working areas, is expected to occupy a 32 m-wide area around (but not centred on) the pipeline within the Proposed CO_2 Connection Corridor.

5.3.45 Construction works associated with connecting the Proposed CO_2 Connection to the Liverpool Bay CCS Limited's Flint AGI would be limited to the footprint of the Liverpool Bay CCS Limited's Flint AGI. The works would involve installation of new pipework, pig receiver, valves, instruments and other auxiliary components, plus associated foundations, supports, platforms, and other supporting assets. The Proposed CO_2 Connection itself will tie-into a pre-existing (by time of construction) valved tie-in connection in the Liverpool Bay CSS Limited's Flint AGI.

5.3.46 A small section of the Repurposed CO_2 Connection (within the Proposed CO_2 Connection Corridor) would be excavated, cut, and removed during construction to allow for connection between the Repurposed and Proposed CO_2 Connections. The redundant section of the existing pipeline (between the Proposed CO_2 Connection and the HyNet CO_2 Pipeline Project's pipeline; within the Proposed CO_2 Connection Corridor) would be sealed and left in-situ.

5.3.47 A temporary diversion of Flintshire County Council (FCC) Public Right of Way (PRoW) No.66 may be required in order to facilitate construction of the

[2] The Flint AGI and HyNet CO_2 Pipeline are to be developed as part of the HyNet CO_2 Pipeline Project by Liverpool Bay CCS Limited. The proposed Flint AGI and access has been included within the Proposed CO_2 Connection Corridor.

Proposed CO_2 Connection pipeline where they intersect. It is anticipated that the diversion may be required for up to nine months and would follow a route within the same field, as is detailed in the **Street Access Right of Way Plans** (**EN010166/APP/2.6**). No permanent change to this PRoW is proposed and the original access would be reinstated following construction.

5.4 Construction Staff

5.4.1 It is anticipated that there would be a monthly average of 608 construction personnel required during the phased construction scenario and 984 construction personnel required during the simultaneous construction scenario, respectively, at the Main Development Area and C&IEA during periods of construction as shown in **Table 5-1** and **Table 5-2**.

5.4.2 If the phased construction approach is selected, it is estimated that there would be approximately 1,000 construction personnel required at the Main Development Area and C&IEA at the peak of construction during each phase.

5.4.3 If the simultaneous construction approach is selected, it is estimated that there could be approximately 1,600 construction personnel required at the Main Development Area and C&IEA at the peak of construction.

5.4.4 It is anticipated that personnel based at the Main Development Area and C&IEA would undertake all works associated with the construction within the Construction and Operation Area, with the exception of works within the Proposed CO_2 Connection Corridor. An additional 10 personnel would undertake construction works within the Proposed CO_2 Connection Corridor.

5.4.5 These figures for construction personnel are based on experience of other comparable developments and inform the transport assessment presented in **Chapter 10: Traffic and Transport** (**EN010166/APP/6.2.10**) and **Appendix 10-A: Transport Assessment** (**EN010166/APP/6.4**). The peak of construction workforce for the purposes of the Transport Assessment reported in this ES (**Appendix 10-A: Transport Assessment** (**EN010166/APP/6.4**)) is anticipated around month 36 of the construction programme in the event of simultaneous construction for Train 1 and Train 2.

5.4.6 Construction staff are anticipated to travel to the Construction and Operation Area via the existing network of trunk roads and local roads. The Undertaker would seek to maximise sustainable transport options such as public transport, cycling and car sharing in accordance with its current practice / policy. This is outlined in the **Framework Construction Workers Travel Plan** (**CWTP**) (**EN010166/APP/6.7**) which accompanies the Application.

5.5 Construction Working Hours

5.5.1 Core construction working hours would be 08:00 to 18:00 Monday to Friday (except Bank Holidays) and 08:00 to 13:00 on Saturdays. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. This is partly because certain construction activities cannot be stopped, such as concrete pouring, but also to manage the construction programme. The **Framework CEMP** (**EN010166/APP/6.5**) provides details of any seasonal restrictions to works (including their location) to reflect ecological constraints. This includes works within the

Water Connection Corridor which would be timed around suitable tidal conditions.

5.5.2 Where on-site works are to be conducted outside the core hours, they would comply with any restrictions agreed with the local planning authority, in particular regarding control of noise and traffic to reduce effects on local people and the environment.

5.5.3 Twenty-four-hour working for certain activities has therefore been assessed in **Chapter 9**: **Noise and Vibration** (**EN010166/APP/6.2.9**) which sets out specific mitigation and control measures which may be required to prevent disturbance from any activities outside of core working hours.

5.6 Construction Traffic and Site Access

Freight Management Strategy

5.6.1 To minimise impact on the highway network, consideration has been given to the potential options to deliver freight to the Main Development Area during construction. The strategy is based on the assumption that certain equipment, such as the absorber stacks, would be modularised and pre-fabricated for final assembly on-site. Modularised units, along with large specialist equipment, are likely to require special transport considerations. Off-site pre-fabrication is likely to be supplemented by on-site construction of certain larger components which, due to their size or weight, may involve fabrication and erection on-site.

5.6.2 It is anticipated that smaller components and modules would be transported using the existing road network with more significant modules being transported by ship to one of a series of local ports where they would be either unloaded onto suitable haulage vehicles and transported to the Construction and Operation Area by road or, where reasonably practicable, undergo onward transport by barge to Connah's Quay North jetty with the final section of the journey by road.

5.6.3 Construction traffic and road haulage would utilise designated transport routes which would be controlled by a Construction Traffic Management Plan (CTMP) that would be prepared by the Principal Contractor(s) in accordance with the **Framework CTMP** (**EN010166/APP/6.6**), which details measures to improve the safety and reliability of deliveries to a site, reducing congestion and minimising environmental impacts.

Construction Traffic Movements

5.6.4 **Table 5-3** sets out the indicative initial forecasts for peak of daily construction traffic movements by vehicle type associated with a phased construction and a simultaneous construction of the Proposed Development.

Table 5-3: Indicative Peak of Daily Construction Traffic Movements (Main Development Area) – phased construction and simultaneous construction

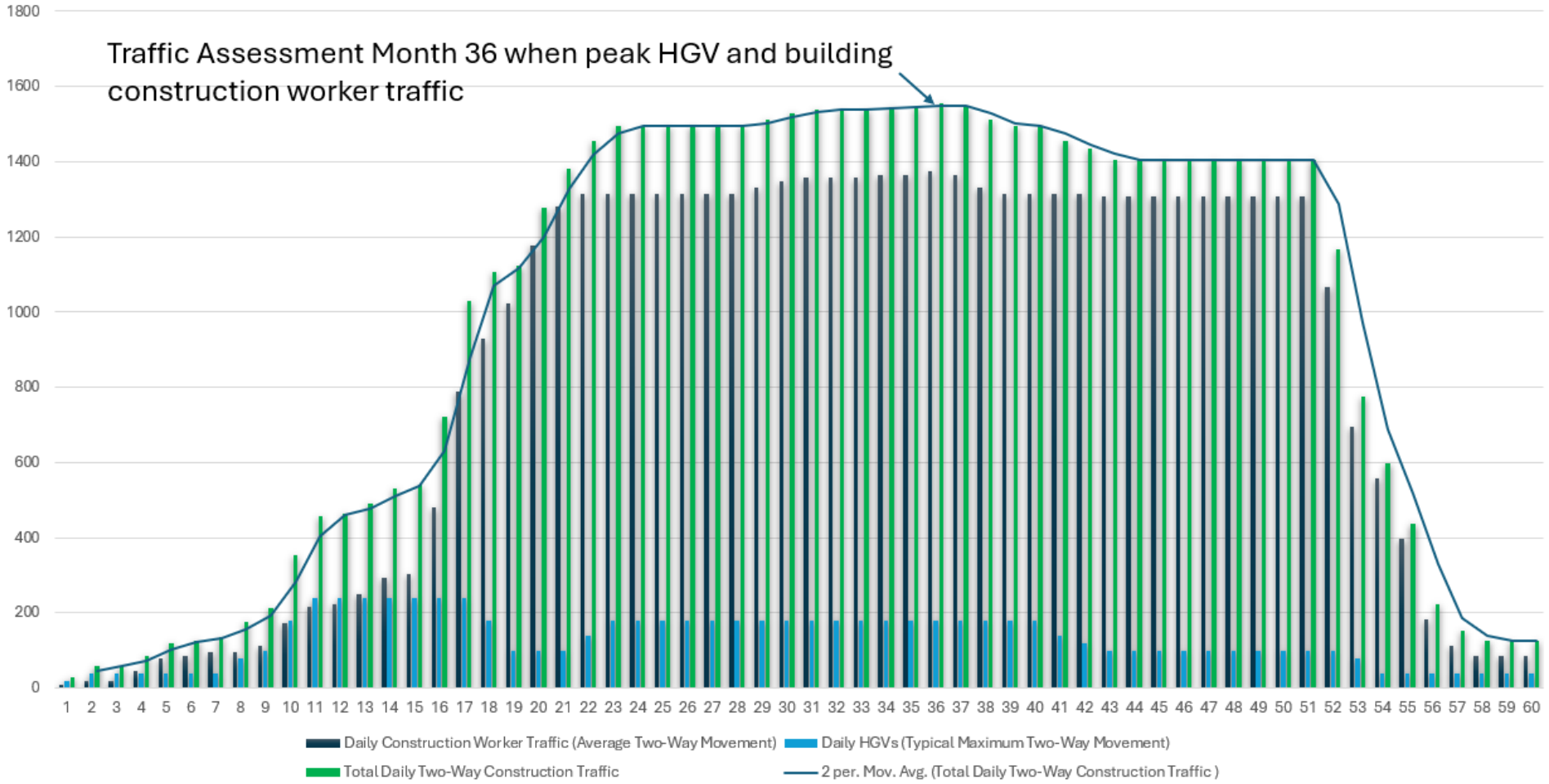
	Phased construction	Simultaneous construction	Phased construction	Simultaneous construction
	Months 12-18	Months 11 – 17	Month 28	Month 36
	HGV		Car / LGV	
Inbound	100	120	430	687
Outbound	100	120	430	687
Two-Way	200	240	860	1,374

5.6.5 The volume of construction heavy goods vehicles (HGVs) on the network is predicted to be at its maximum of around 240 two-way daily vehicle movements (120 in and 120 out) in the simultaneous construction scenario during months 11 to 17, and in month 36 (as a sensitivity test for the worst-case). This is largely associated with earthworks phase to provide a level development platform within the Main Development Area. During the remainder of the construction period, HGV movements would vary with an average of 130 two-way daily vehicle movements (65 in and 65 out).

5.6.6 The volume of worker traffic (LGVs) on the network is predicted to be at its maximum of around 1,374 two-way daily vehicle movements (687 in and 687 out) in the simultaneous construction scenario during month 36. This is associated with the main works phase within the Main Development Area, which follows the initial earthworks phase when the peak daily HGV movements are likely to occur. During the remainder of the construction period, construction worker movements will vary with an average of 845 workers in the event of a five-year simultaneous construction period.

5.6.7 The total two-way construction vehicle traffic expected over the construction period if simultaneous construction is adopted is illustrated in **Plate 5-3**.

Plate 5-3: Two-Way Construction Vehicle Daily Traffic over worst-case 60 month programme (Simultaneous Construction)[3]



[3] While the modelling indicates a peak of 180 HGV daily two-way movements in the month of highest overall vehicle movements, the assessment has considered 240 HGV daily two-way movements in this month. This is to allow for flexibility during construction and for confidence that the assessment has been conducted on a hypothetical worst-case scenario (as a sensitivity test) for potentially sensitive receptors to the highest numbers of both HGV and worker traffic movements.

5.6.8 As shown in **Table 5-4**, the peak HGV and peak worker traffic profiles would not occur coincidentally in either construction scenario. Therefore, a representative worst-case for the purposes of the traffic assessment in this ES is considered to be a simultaneous construction scenario, with month 36 identified as the potential overall peak for assessment. **Table 5-4** illustrates that this may comprise a total of 1,554 daily two-way vehicle movements comprising 1,374 two-way construction worker vehicle movements and 180 two-way HGV movements.

Table 5-4: Selected Peak for Traffic Assessment in this ES

	HGV	Car / LGV	Total
Inbound	90	687	777
Outbound	90	687	777
Two-Way	180	1,374	1,554

5.6.9 Further information on traffic volumes and routing, based on these initial estimates, is provided in **Chapter 10: Traffic and Transport** (**EN010166/APP/6.2.10**).

5.6.10 Minor works would also likely be required to existing access tracks on the north-east boundary of the Main Development Area in order to maintain suitable access to the Surface Water Outfall Area shown on **Figure 3-3: Areas Described in the ES** (**EN010166/APP/6.3**). A 10 m buffer around the existing artificial structure (Existing Surface Water Outfall) has been included to allow for access and works if required, including any additional permanent artificial structures. The Surface Water Outfall Area is located within the Dee Estuary.

Access to the Construction and Operational Area

5.6.11 This section describes the locations of the accesses to each component of the Construction and Operational Area.

Access for Construction Traffic (HGVs/ Workers) to Main Development Area

5.6.12 Access to the Main Development Area for both construction workers and heavy goods vehicles (HGV) traffic would be via the site access for the existing Connah's Quay Power Station (Access to Main Development Area) from the western end of Kelsterton Road (shown on Sheet 8 of the **Street Access Right of Way Plans** (**EN010166/APP/2.6**)). No works to the existing roadway are expected to be required to facilitate access for construction workers and HGV via the Access to Main Development Area and public highway layout. The access from the A548 Chester Road into the Main Development Area includes two grade separated roundabouts linking to the on and off slips of the A548 Chester Road. An under bridge below the A548 Chester Road links the two roundabouts. When travelling north-west along the B5129 Kelsterton Road towards the Main Development Area, the road approaches a further roundabout and from this, the Access to Main Development Area is reached via an existing Network Rail bridge (Rock Hall Railway Tunnel – North Wales Main Line railway).

5.6.13 The access road then extends north to a roundabout and along the Applicant's private road network which provides a number of access locations into the Main Development Area. This purpose-built road serves the existing Connah's Quay Power Station site and is considered wide enough to allow access by construction traffic, without the need for alteration. It is crossed by existing 400 kV OHL which require consideration with regard to the height of vehicles and loads and the necessary exclusion / safety distances associated with the OHL.

5.6.14 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 (shown on Sheet 9 of the **Street Access Right of Way Plans** (**EN010166/APP/2.6**)). This alternative access would only be used in emergencies. This route includes a crossing over the North Wales Mainline railway and under the A548 Chester Road which then connects to the existing Connah's Quay Power Station internal road network which would provide access towards the Main Development Area. Subject to ongoing feasibility assessments, minor upgrade works and improvements to the access roads may be undertaken within the Alternative Access to Main Development Area and Access to C&IEA to provide suitable carriageways for use by construction traffic (cars / LGVs).

5.6.15 The location of the primary and alternative access points is shown on **Figure 5-1: Key Plan – Indicative Construction Work** (**EN010166/APP/6.3**) and **Plate 5-1**.

5.6.16 As described in Section 5.3, construction personnel arriving by car would use on-site parking, within the construction laydown areas illustrated on **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**). Where the C&IEA is used, it is anticipated that a shuttle system would be used to transport staff to the Main Development Area via the Access to C&IEA.

Access to Connah's Quay Power Station Nature Reserve

5.6.17 The Undertaker would provide alternative temporary access to the Connah's Quay Power Station Nature Reserve for the Deeside Naturalists' Society (the DNS) during the construction phase of the Proposed Development. The current access to the Connah's Quay Power Station Nature Reserve including bird hides as described in **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3**).

5.6.18 It is anticipated that access would continue from the Access to the Main Development Area, with a designated access road following the southern and western boundary fence of the ecological safeguard zone shown on **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**), which would minimise health and safety risks associated with the construction works.

5.6.19 A separate permanent access road to maintain access to the bird hides during operation of the Proposed Development would be constructed, as described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**) and shown on **Figure 4-1: Indicative Site Layout** (**EN010166/APP/6.3**). This permanent access road would be installed during

or following the disestablishment of 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 and Proposed CO_2 AGI. Suitable security fencing would be installed and landscaping would be undertaken within the space between the access road and perimeter road.

Access to Proposed CO_2 Connection Corridor

5.6.20 The access to the Proposed CO_2 Connection Corridor would be off Allt-Goch Lane via either the permanent access point to the Liverpool Bay CCS Limited's Flint AGI, to be constructed as part of the HyNet CO_2 Pipeline Project, or via the existing field entrance to the field north of the Liverpool Bay CCS Limited's Flint AGI (shown on Sheet 7 of the **Street Access Right of Way Plans** (**EN010166/APP/2.6**)). This access point would be reached from the A548 Chester Road via the A5119 in Flint, and Coed Onn Road, then Allt-Goch Lane north of the access point. Only cars and LGV (including plant and equipment) would be required to access the Proposed CO_2 Connection Corridor, with approximately eight two-way daily vehicle movements (four in and four out) expected, based on a peak of 10 workers.

Delivery of Abnormal Indivisible Loads

5.6.21 It is currently anticipated that during the construction phase, certain modular plant and equipment is likely to be pre-fabricated off-site and require delivery to the Construction and Operation Area, as AILs. This would include components identified in Section 5.3 as well as compressors, turbines, generators and transformers which typically require special transport considerations. The full itinerary of components that would require transport as AILs would be developed during detailed design.

5.6.22 Small components and modules can be transported using the existing road network; however, more significant modules would require shipborne delivery. At this stage, a number of routes are under consideration to be used for the shipborne delivery of large plant and equipment. It is anticipated that the largest AIL would be received the Port of Mostyn, located within the FCC administrative area. Other options for AIL delivery routes are from the Corus Jetty at Connah's Quay North, also located within the Flintshire County Council administrative area and from the Ellesmere Port (Manchester Ship Canal), located within the Cheshire West and Chester Council administrative area.

5.6.23 Commercial agreements for the use of these existing operational ports, which would be in-line with their existing commercial operations and practices, would be secured outside of the Application. Loads would either be offloaded using existing portside cranes, or via temporary mobile cranes onto vehicles for onward road transport to the Main Development Area. Alternatively, depending on their dimensions, certain loads arriving at Port of Mostyn could be transported along the River Dee/ Dee Estuary towards the Main Development Area by vessel, being offloaded onto vehicles at the existing Connah's Quay North jetty (also referred to as Mid-way Berth by Dee Conservancy) and transported via the local road network to the Main Development Area.

5.6.24 The exact number and size/weight of waterborne movements is not confirmed at this stage and would be based on specific construction methodologies to be confirmed during FEED by the relevant Principal contractor(s). For the purposes of informing this work, assumptions have been made using similar experience, which could suggest a worse case forecast of up to 30 two-way vessel movements across a 12-month period per Train in order to deliver the AIL for the Proposed Development, and to facilitate this the vessels for AIL delivery could be considered to be up to 60 m in length, shown on **Plate 5-4**. It is expected that all waterborne movements would be directed through any one, or a combination of, the three identified entry ports at Port of Mostyn, Connah's Quay North, or Ellsemere Port.

5.6.25 For the entry port and AIL route options from Port of Mostyn and Connah's Quay North, accommodation works to facilitate transport / passage of AIL via the given route have been included within the Order limits and are discussed in below. These are also shown in the **Street Access Right of Way Plans** (**EN010166/APP/2.6**) in this Application.

Main Development Area Access Works

5.6.26 Due to the layout and dimensions of Kelsterton Road and its junction with the A548, and to potentially reduce disruption to residential receptors of Kelsterton Road, it is proposed that a direct connection between the A548 and the Access to Main Development Area would be used by AIL (only). This is to be facilitated by the reconstruction of a junction bellmouth that had previously been used during construction of the existing Connah's Quay Power Station, subject to detailed design and changes to requirements for highways design. It is proposed that these works would involve the removal of the existing metal safety barriers in the verge and central reserve, clearance of vegetation and excavation of soils, alterations to the existing kerbline, pavement construction and installation of hardstanding to form the temporary road surface, in addition to the installation of signage, removable barriers, and all necessary safety and security measures, subject to technical assessment and detailed design. The indicative design of this access is shown on the Highway Plan, included as an appendix in the **Framework Construction Traffic Management Plan** (**EN010166/APP/6.6**).

5.6.27 It is proposed that this temporary junction would be in place for the duration of AIL deliveries for the construction period (for either phased or simultaneous construction) and would be used by AILs only. A suitable traffic management system would be installed to ensure that this is principle is enforced during construction (such as through the use of barriers in the A548 central reserve and eastbound verge, at the AIL access location, that could be temporarily removed at the time of the AIL deliveries) and that the location of the temporary junction would be restored to its current condition following the end of AIL deliveries.

Port of Mostyn (Access Works)

5.6.28 As described in **Chapter 2: Assessment Methodology** (**EN010166/APP/6.2.2**), the Port of Mostyn is an existing operational commercial deep-water port that lies adjacent to the existing Mostyn navigational channel with access to the Irish Sea. The Port of Mostyn

includes a riverside quay and roll on roll off (Ro-Ro) terminal with direct access to the A548 Chester Road towards the Main Development Area.

5.6.29 The Port of Mostyn is an existing support hub for the offshore wind sector and includes Mostyn Energy Park with a long-standing history of handling AIL. The Port of Mostyn has received consent for an expansion of facilities, in order to continue to service the offshore wind sector (the Mostyn Energy Park Extension (MEPE) Project[4]). As a result, it is anticipated that additional berthing and Ro-Ro facilities could be available for use during construction of the Proposed Development. The Order limits are shown on **Figure 5-5** (**EN010166/APP/6.3**) for the Proposed Development, and therefore reflect the maximum extent of land required at the Port of Mostyn to perform modifications to facilitate AIL deliveries.

5.6.30 **Table 5-5** provides an overview of works that may be required at Port of Mostyn within the Order limits.

[4] Application for marine consent is undergoing determination by Natural Resources Wales. For further information, refer to **Chapter 24: Cumulative and Combined Effects**

Table 5-5: Potential Accommodation Works within Port of Mostyn

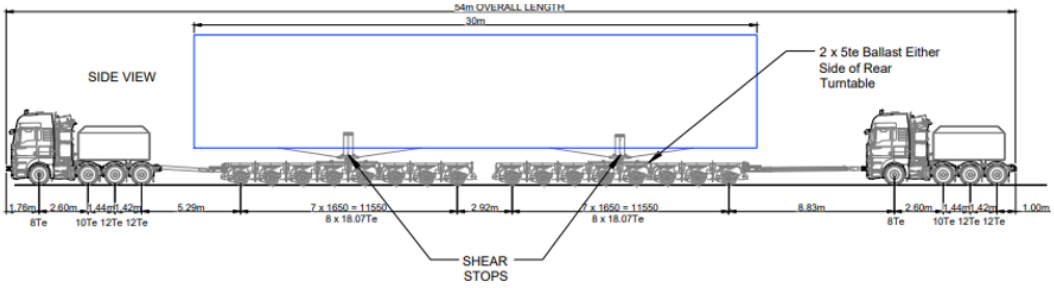
Area within PoM shown on Figure 5-5 (Sheet 2)	ES Name (refer to Chapter 3: Location of the Proposed Development)	Area	Nature of works under consideration
M01	A548 from Port of Mostyn to Greenfield Accommodation Works		Works may include (subject to refinement following further technical assessment and engagement with PoM): • minor accommodation works (removal of gate post and tree works) in the vicinity of Port Level Crossing to provide the necessary swept path for AILs. • no works are required to the Port Level Crossing and associated infrastructure (other than the above gate post).

5.6.31 Components that cannot be transported by vessel from the Port of Mostyn via Connah's Quay North (described in paragraph 5.6.37) would require transport to the Main Development Area by road. These AILs would access the A548 over an existing Network Rail at grade Port Level crossing exit located within the Port of Mostyn. Further technical engagement with Network Rail will be undertaken in relation to arrangements as the design and Application progresses, with the intention to secure a Basic Asset Protection Arrangement between Network Rail and the Applicant. It is expected that this Basic Asset Protection Arrangement would detail measures to protect the crossing and railway at this location, such as the placement of steel protection plates over the rails, and measures to minimise disruption to railway operations, such as notice periods for AIL movements over Port Level crossing or coincidence with existing plans for track possessions or blockades[5].

A548 Accommodation Works

5.6.32 On exit from the Port of Mostyn, the A548 would be used to convey AILs to the Main Development Area. **Plate 5-4** below provides an indication of a potential transportation option for AILs from Port of Mostyn (and Connah's Quay North), based on components around 6 m wide, 6 m high and 30 m long that are considered feasible to transport from Port of Mostyn to the Main Development Area, considering existing constraints along the route.

Plate 5-4: Illustration of 30 m length AIL Transportation Option



5.6.33 The route between the Port of Mostyn and the Main Development Area comprises 15.5 km of carriageway, and the majority of the route would require no accommodation works for the purposes of AIL transport. However, a number of areas have been identified as requiring accommodation works to facilitate the movement of the AILs, including:

- trees – depending on the dimensions of AIL, some trees would likely require pruning works to trim back overhanging branches. Tree loss, as far as reasonably practicable, would be avoided, and a tree survey and **Arboricultural Impact Assessment** (**AIA**) (**Appendix 15-F: AIA**) (**EN010166/APP/6.4**) have been undertaken and accompany the Application in order to define tree protection measures necessary where

[5] With regard to the railway, 'possession' refers to the temporary closure of a railway line (or multiple adjacent lines) to trains to allow for construction or maintenance works to be undertaken safely (trains may be present but only those associated with the works and their movements are strictly controlled). Most possessions are undertaken at night to avoid disruption to regular services. A 'blockade' is when this temporary closure is extended for (usually) more than a weekend to allow for more substantial works.

crown reduction, pollarding or coppicing works are considered likely to be required to provide a reasonable clearance for AIL;

- power and telecommunications – accommodation works may be required to either isolate (power), temporarily lift overhead cables in-situ (telecommunications), or divert some of these services depending on the dimensions of AILs;
- street works / junctions – it is likely that street furniture including (but not limited to) traffic signals, signage, kerbing, islands and barriers along the A548 would need to be temporarily removed and reinstated to provide reasonable clearance for AILs; and
- roundabouts – where existing roundabouts are raised, it may be necessary to temporarily lower the central area or alter the existing junction mouth kerblines to allow AIL delivery.

5.6.34 **Table 5-6** presents an overview of the areas currently under consideration for accommodation works within the Order limits.

Table 5-6: Areas Under Consideration along A548 for Accommodation Works

Road Section (S) (Refer to Figure 5-5 Sheets 2 to 7)	ES Name (refer to Chapter 3: Location of the Proposed Development)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
S01	A548 from Port of Mostyn to Greenfield Accommodation Works Area	316138, 380361	Tree works at Port of Mostyn exit. Trees covered by TPO would be avoided / protected as far as reasonably practicable. Protection measures at Port Level crossing to protect rails (e.g. temporary placement of protection plates over rails during AIL movements).
S02		317021, 379526	Tree works. Temporary lifting and replacement of telecommunications cables crossing the carriageway.
S03		317910, 379019	Tree works.
S04		318034, 378873	Tree works.
S05		318662, 378314	Tree works.
S06	Tir Glas Roundabout Accommodation Works Area	320213, 377001	Tree and temporary accommodation works to roundabout (TPO trees to be avoided / protected as far as reasonably practicable).
S07	A548 through Flint to Chester Road Roundabout Accommodation Works Area	324145, 373417	Tree works (west of Flint conservation area).
S08		324370, 373217	Temporary removal and reinstatement of street furniture and signage (within Flint conservation area), limited to central reservation / avoiding removal of pavement barriers. Trees within conservation area to be avoided / protected as far as reasonably practicable.

Road Section (S) (Refer to Figure 5-5 Sheets 2 to 7)	ES Name (refer to Chapter 3: Location of the Proposed Development)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
S09		325287, 372414	Temporary removal and reinstatement of street furniture and signage (east of Flint conservation area). Temporary earthworks to lower part of central island of roundabout or to widen entry/exit carriageway(s).
S10	AIL Access Accommodation Works Area	327083, 371226	Temporary removal and reinstatement of central reservation.
S11		327532, 371019	Tree works.

5.6.35 Accommodation works would be temporary with reinstatement secured via the **Draft DCO** (**EN010166/APP/3.1**).

5.6.36 During an AIL movement along the A548, it is anticipated that temporary rolling closures of relevant sections of public highway would be undertaken with loads moving under escort and road sections being progressively closed / opened once the AIL movement passes. It may be necessary to implement temporary parking restrictions along the carriageway to provide the required carriageway width for the AIL transport vehicles during AIL movements. Enforcement, such as vehicle removal for non-compliance, would need to be arranged with the police. The likely requirement for any full day and / or night closures would be subject to technical engagement with FCC and be arranged by Temporary Traffic Regulation Order (TTRO) Application with FCC as the Highway Authority.

Connah's Quay North

5.6.37 The option to use the closest existing jetty to the Main Development Area, the Corus Jetty at Connah's Quay North, is also under consideration. Connah's Quay North has a history as an AIL offloading facility, having been used to transport Airbus components from Broughton to the Port of Mostyn for onward international shipment until 2020. Connah's Quay North has since resumed use as a berthing facility for AIL arriving at the Port of Mostyn, destined for Shotton Mill. In May 2024, an AIL was berthed at Port of Mostyn and then transferred from ship to barge for onward transport during an appropriate tidal cycle upstream via the Dee Estuary to Connah's Quay North. In August 2024, it was rolled off onto a temporary link span via a mobile crane and transferred onto special purpose modularised transporter units (SPMT) for onward road transport.

5.6.38 Subject to further feasibility as part of detailed design, a similar method for offloading could be used for AIL required for the Proposed Development. Following offloading at Connah's Quay North using a Ro-Ro and temporary link span, SPMTs or similar would use the existing private road network (River Road, North Road and roundabout), where AILs would use the first exit onto British Steel Road (partly private road/partly adopted road) heading north, directly to the A548 roundabout/ Weighbridge Road junction.

5.6.39 From the A548 / Weighbridge Road roundabout, the AILs would use the A548, passing over Flintshire Bridge. In order to access the Main Development Area, it would be necessary to temporarily remove the central reserve barrier in the A548 Chester Road, to provide the required swept path onto the Main Development Area Access Works Area directly from the westbound carriageway. AILs up to 6 m wide, 6 m high, and 30 m long (relative to the roadway) may be accommodated from Connah's Quay North, given existing road network constraints.

5.6.40 **Table 5-7** presents an overview of the areas currently under consideration for accommodation works from Connah's Quay North to the Main Development Area for AIL within the Order limits.

Table 5-7: Areas Under Consideration from Connah's Quay North to Site for Accommodation Works

Section (S) (Refer to Figure 5-5 Sheet 9)	ES Name (refer to Chapter 3: Location of the Proposed Development)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
S12	North Road to the A548 Accommodation Works Area	329829, 371897	Roundabout accommodation works at A548 Phase 4 Roundabout for the Deeside Industrial Park (Adopted Highway).
S13		329926, 371651	Carriageway accommodation works (Unclassified Road).
S14		329987, 370743	Carriageway accommodation works (private road network) within Deeside Industrial Estate.
S15		329901, 370850	Carriageway accommodation works (private road network) within Deeside Industrial Estate, including works to temporarily demount and re-mount gates / posts at the security entrance or otherwise facilitate AIL passage.
S16	Connah's Quay North Accommodation Works Area	329052, 370608	CQN in-river and quayside area. Works may include (subject to refinement following further technical assessment and landowner engagement): *Within the Dee Estuary (marine environment)* • No works are proposed (precautionary inclusion of full width of the Dee Estuary within Order limits to allow for temporary berthing of vessel on river bed, if required, during low tide). *Works at quayside* • Connection to moorings. • Either placement of mobile cranes (for heavy lift) or placement of temporary link span for Ro-Ro. • Activity would take place within existing commercial offloading facility.

5.6.41 Use of this option is subject to assessment of the clearance and required safety distances of the 400 kV High Voltage (HV) OHL present at Connah's Quay North. There are also HV OHL present on the A548 on the route to the A548 AIL access.

Ellesmere Port (Manchester Ship Canal)

5.6.42 Ellesmere Port (Manchester Ship Canal) is also under consideration for shipborne deliveries of AIL. The port is 22 km north-west of the Main Development Area and has a history of use for AIL, including reception of a furnace in 2022 for onward transport via the highway and local road network to Stanlow. No accommodation works to facilitate AIL delivery or transport are expected to be required at PoE and therefore no part of PoE or routes to the Main Development Area are included within the Order limits. The highway authority for sections of the route options includes National Highways, Cheshire West and Chester Council, North and Mid Wales Trunk Road Agent (NMWTRA) on behalf of the Welsh Government and Flintshire County Council. The relevant highway authorities must be notified in advance of all individual AIL movements and require a special order. The AIL movements must be planned and authorised in accordance with Highway Authority's system, forms and requirements.

5.6.43 The route length from Ellesmere Port to the Main Development Area is 22 km via the A5032 Merseyton Road to the M53 junction 8 Rossmore Road Interchange north-westbound (Option 1) or south-eastbound (Option 2), as shown on Sheet 1 of **Figure 5-4** (**EN010166/APP/6.3**).

5.6.44 Option 1 follows the M53 for approximately 4 km to junction 5 New Chester Road interchange, before following the A41 for approximately 0.5 km, before following the A550 for approximately 8 km until joining the A548. Option 2 follows the M53 for approximately 4 km to junction 10 Stanlow Halt Interchange, before following the A5117 for approximately 6 km, before following the A494 for approximately 3 km until joining the A548. Both options meet the A548 at the same junction and follow this for approximately 8 km until accessing the Main Development Area via Kelsterton Road.

5.6.45 The M53 for both options is bordered to the east by the industrial areas of the Mersey Estuary and to the west by the settlement of Ellesmere Port. For Option 1, the A41 and A550 largely pass through agricultural fields lined with hedgerows, interspersed with the settlements of Hooton, Childer Thornton, and the edge of Ellesmere Port. For Option 2, the A5117 is initially bordered by the suburbs of Ellesmere Port to the north and agricultural fields to the south, before passing fully intro agricultural surroundings as it reaches and continues onto the A494. For both options, the A548 is bordered by agricultural fields and a solar farm to the north and the Deeside Industrial Estate to the south.

5.6.46 For both options, AILs could be delivered to Ellesmere Port (Manchester Ship Canal) through routine commercial shipping operations. However, due to the presence of highway overbridges. gantries and overhead telecommunication lines, both options would be limited to the transportation of AILs of 6 m wide, 5 m high, and 30 m in length. For both options, the route contains the following features:

- use of the A550, A5117, A494, and A548 would all require crossing under several overhead transmission lines (five, two, two, and two, respectively) in order to reach the Main Development Area;
- there are a number of well-developed trees, including a number of trees that are subject to TPO along the routes;
- a number of central reservations (without barriers in Option 1 and Option 2 sections), junctions with islands and traffic signals/signal-controlled crossings;
- a number of roundabouts (however, Option 1 itself does not contain any roundabouts outside of motorway junctions and the A548 roundabout); and
- the route to the Main Development Area would include crossing over the Flintshire Bridge.

5.6.47 Each of these AIL route options are subject to ongoing technical assessment but at this stage, it is considered unlikely that works would be required for the purposes of the Proposed Development. Therefore, these routes are not included within the Order limits. Should Ellesmere Port be used, the contractor would utilise AILs that do not require works to the local or strategic road network.

Main Development Area

5.6.48 AIL road transport into and within the Main Development Area requires consideration of the existing 400 kV HV OHL which runs approximately parallel to the south-west border of the Main Development Area. Following detailed design, when the size of AIL components has been further defined, technical engagement with NGET would be undertaken in the event that temporary shutdowns / earthing of HV OHL are considered necessary for safety reasons to enable AIL to enter the Main Development Area. No permanent or temporary works to the HV OHL itself are proposed.

5.7 Storage of Construction Plant

5.7.1 The **Framework CEMP** (**EN010166/APP/6.5**) outlines measures and associated responsibilities for the storage of construction plant and materials, including the primary measures outlined below.

5.7.2 At the end of each shift, mobile plant would either be returned to a secure overnight plant storage area or have appropriate drip trays positioned, if needed. Storage areas for hazardous or potentially polluting materials would be located in a separate secure, and where appropriate bunded, area. Material data sheets would be available for all these materials and the Control of Substances Hazardous to Health (COSHH) assessments kept within the relevant risk assessment for the task.

5.8 Storage of Materials

5.8.1 This section provides details of practices to manage excavated materials. Noting the differences in construction methodology, area specific approaches are introduced, before site-wide practices are discussed.

Site Wide Principles

5.8.2 Excavated material would be managed in accordance with the appropriate exemption and/or environmental permit or, if applicable, a Materials Management Plan (MMP) will be developed under the Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice by the construction contractor. If excavated material is found to be unsuitable for re-use within the Construction and Operation Area, it shall be disposed of in accordance with waste management procedures outlined in the **Framework Site Waste Management Plan** (**SWMP**), which is included as an appendix to the **Framework CEMP** (**EN010166/APP/6.5**).

5.8.3 The **Framework CEMP** (**EN010166/APP/6.5**) sets out how material is to be excavated, segregated and stockpiled to minimise the potential for run-off, soil quality degradation and wind dispersal of dusts. These measures may include, but are not limited to:

- Stockpiled excavation material would be kept to a minimum as far as is reasonably practicable and stored away from watercourses to prevent surface water entering or leaving the stockpile area;
- All areas of stockpiled material may be reseeded or otherwise covered temporarily until restoration activities commence, except within the Proposed CO_2 Connection Corridor due to the expected short duration of stockpiling. All areas of unused and exposed soil following reinstatement through the Proposed Development would be reseeded or otherwise covered as soon as possible, except in areas of existing arable fields. Erosion protection matting may also be used to reduce as far as is reasonably practicable sediment being entrained by water flow or becoming entrained by the wind if allowed to dry out; and
- Topsoil would be stored separately according to original strata.

5.8.4 The **Framework SWMP** is included within the **Framework CEMP** (**EN010166/APP/6.5**) in order to control the management and monitoring of waste, including any spoil generated on-site, during construction. The construction contractor would use this document to produce a final Site Waste Management Plan (SWMP) prior to works commencing on-site. The SWMP would require that the contractor segregates the waste streams on-site, prior to them being taken to a licensed waste facility for recycling or disposal. All waste removal from Proposed Development would be undertaken by licensed waste carriers and taken to permitted waste facilities.

Main Development Area and C&IEA

5.8.5 Excavated materials / soils to be retained for in-situ replacement following construction (except within the Proposed CO_2 Connection Corridor) would be stored as bunds within a secure area at a construction compound or laydown area and under an appropriate covering, if required.

Proposed CO_2 Connection Corridor

5.8.6 Within the Proposed CO_2 Connection Corridor, soils would be stored within the 32 m-wide working area parallel to the excavation. Soil stockpiles would be split into different soil types, including topsoil, upper subsoil, lower

subsoil, and basal material. Through appropriate separation and storage of soils, particularly for topsoil, this would ensure retention of any associated seed bank within the soils, which would be reinstated in the correct layering post construction.

Surface Water Outfall Area

5.8.7 Saltmarsh habitat within the Surface Water Outfall Area would be removed with the topsoil and stored during construction to allow for reinstatement. All soils would be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 5-4) to minimise impacts on soil structure and quality in accordance with the **Framework CEMP** (**EN010166/APP/6.5**).

5.9 Lighting Controls

5.9.1 Construction temporary site lighting is proposed to enable safe working on the construction site in the hours of darkness. Construction temporary lighting would be arranged so that glare is minimised outside the construction site. The appointed contractors will be responsible for establishing the required approach to and levels of lighting in accordance with the **Lighting Strategy** (**EN010166/APP/7.22**). The strategy seeks to provide safe working conditions during construction whilst reducing light pollution and the visual impact of light on the local environment. The details of construction lighting are to be included in the Final CEMP(s) prepared by the Principal contractor(s).

5.10 Site Restoration / Reinstatement

5.10.1 Following construction, construction plant and equipment would be removed and existing ground reinstated. Topsoil would be reinstated where this has been stored during construction following topsoil stripping. The overall objective is to leave the areas of the Construction and Operation Area required only for construction (with no residual environmental and/ or safety risks) and reinstate the land to a condition suitable for re-use.

5.10.2 Areas within the Proposed CO_2 Connection Corridor would be reinstated after construction, to allow continued agricultural use. Existing vegetation lost / disturbed will be replanted and replaced. Following construction, FCC PRoW No.66 would also be reinstated along its original alignment.

5.10.3 Landscaping and ecological management within the Main Development Area and C&IEA laydown areas (excluding the Maintenance Laydown Area) would be provided as soon as reasonably practicable as described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**). In the event of a phased construction approach being adopted, and both Train 1 and Train 2 being built, land that is temporarily disturbed and no longer required for Train 2 could commence from 2030 although earlier reinstatement / restoration may be possible in the Surface Water Outfall Area, Electrical Connection Corridor and Proposed CO_2 Connection Corridor, depending on the construction activities that may be required for Phase 2.

5.10.4 In the event of simultaneous construction being adopted, restoration and reinstatement activities for land that is temporarily disturbed could

commence from 2036 although earlier reinstatement / restoration may be possible in the Surface Water Outfall Area, Electrical Connection Corridor and Proposed CO_2 Connection Corridor.

5.11 Commissioning

5.11.1 Commissioning of the Proposed Development would include composition monitoring and commissioning of the process equipment in order to check that all systems and components installed are in accordance with the requirements of the undertaker. A commissioning plan would be required to be agreed with Natural Resources Wales under the Environmental Permit, which would specify monitoring and control procedures to be used and set out a schedule of commissioning and composition monitoring activities.

References

Ref 5-1 PINS (2025). Advice Note 9: Rochdale Envelope [Online]. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/ (Accessed 29/07/2025).

Ref 5-2 The Construction (Design and Management) Regulations 2015 (SI 2015/15). London: HMSO [Online]. Available at: https://www.legislation.gov.uk/uksi/2015/51/contents/made (Accessed 29/07/2025).

Ref 5-3 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 5-4 Defra (2011). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. London: Department for Environment, Food and Rural Affairs [Online]. Available at: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites (Accessed 29/07/2025).