

Connah's Quay Low Carbon Power

Preliminary Environmental Information Report
Volume II, Chapter 5: Construction Management and Programme

Uniper

The Planning Act 2008
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
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5. Construction Management and Programme

5.1 Overview

5.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) describes the construction phase of the Proposed Development. This includes information on the anticipated construction programme, timings and methods of working, where available.

5.1.2 This chapter is supported by the following figures in **PEIR Volume III**:

- **Figure 5-1: Key Plan – Indicative Construction Work Areas;**
- **Figure 5-2: Demolition Areas;**
- **Figure 5-3: N/A – Figure Removed;**
- **Figure 5-4: Construction Areas;** and
- **Figure 5-5: Abnormal Load Routing Options (Sheets 1-10).**

5.1.3 No appendices support this chapter.

5.2 Construction Timing and Programme

5.2.1 At this stage, a detailed construction programme is not available, as this is normally determined by the Engineering, Procurement and Construction (EPC) contractor(s) who have not yet been appointed. Where construction details cannot be confirmed at this stage, worst-case estimates have been made based on experience gained on similar developments and professional judgment.

5.2.2 The Applicant would appoint one or more contractors for the construction of the Proposed Development, one of which will be appointed as Principal Contractor with overall responsibility for construction works and the final, detailed Construction Environmental Management Plan (CEMP). The Applicant is committed to providing a safe working environment for all employees and contractors. As described in **Chapter 2: Assessment Methodology and Consultation**, construction of the Proposed Development could (subject to the necessary consents being granted and an investment decision being made) potentially start as early as Quarter (Q)4 2026 after the Development Consent Order (DCO) could have been granted and relevant conditions discharged. 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.

5.2.3 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 single phase of construction works could be adopted, with associated requirements for laydown areas.

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

5.2.5 The Applicant would appoint one or more EPC contractors for the construction of the combined cycle gas turbine (CCGT) and carbon capture plant (CCP) and associated development e.g. civils/ highway works. The final programme for construction would be determined by the EPC contractor(s) but is expected to include (in approximately the following order):

- an enabling works phase, including preparation of construction laydown areas, which would be undertaken over a six- to nine-month period;
- earthworks to provide a level development platform where this is required for new permanent infrastructure within the Main Site, which would be expected to take six to nine months;
- construction activities for the main works phase (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) or up to approximately three and a half years (in the event of a Single Phase of construction works); and
- commissioning, which may take up to one year (per single Train) or up to two years (both Trains in a Single Phase construction).

5.2.6 It is common for much of the groundwork, for example piling and pouring of concrete slabs, to be completed prior to the erection of any above ground permanent structures. The completion of buildings and structural components, such as cladding and external civil works, usually continues whilst mechanical erection is ongoing. However, the detailed phasing of construction is the responsibility of the appointed EPC contractor(s) and may vary dependent on plant layout and procurement of key equipment. The indicative programmes to illustrate a phased construction and single phase of construction works are shown in **Table 5-1** and

5.2.7 **Table 5-2** respectively.

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				
Enabling works (both Trains)		■	■	■																																				
Works to Repurposed CO ₂ and 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)									■	■	■	■	■	■	■														■	■	■	■	■	■	■					
Commissioning and Commercial Operation (Train 1, Train 2)													■	■	■	■																	■	■	■	■				

Key: Both Trains ■ Train 1 ■ Train 2 ■

Table 5-2: Indicative Single Phase 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
Enabling Works (trigger commencement of DCO)	■	■	■																	
Works to Repurposed CO ₂ and 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)									■	■	■	■	■	■	■	■	■	■		
Commissioning (both Trains)													■	■	■	■	■	■	■	■

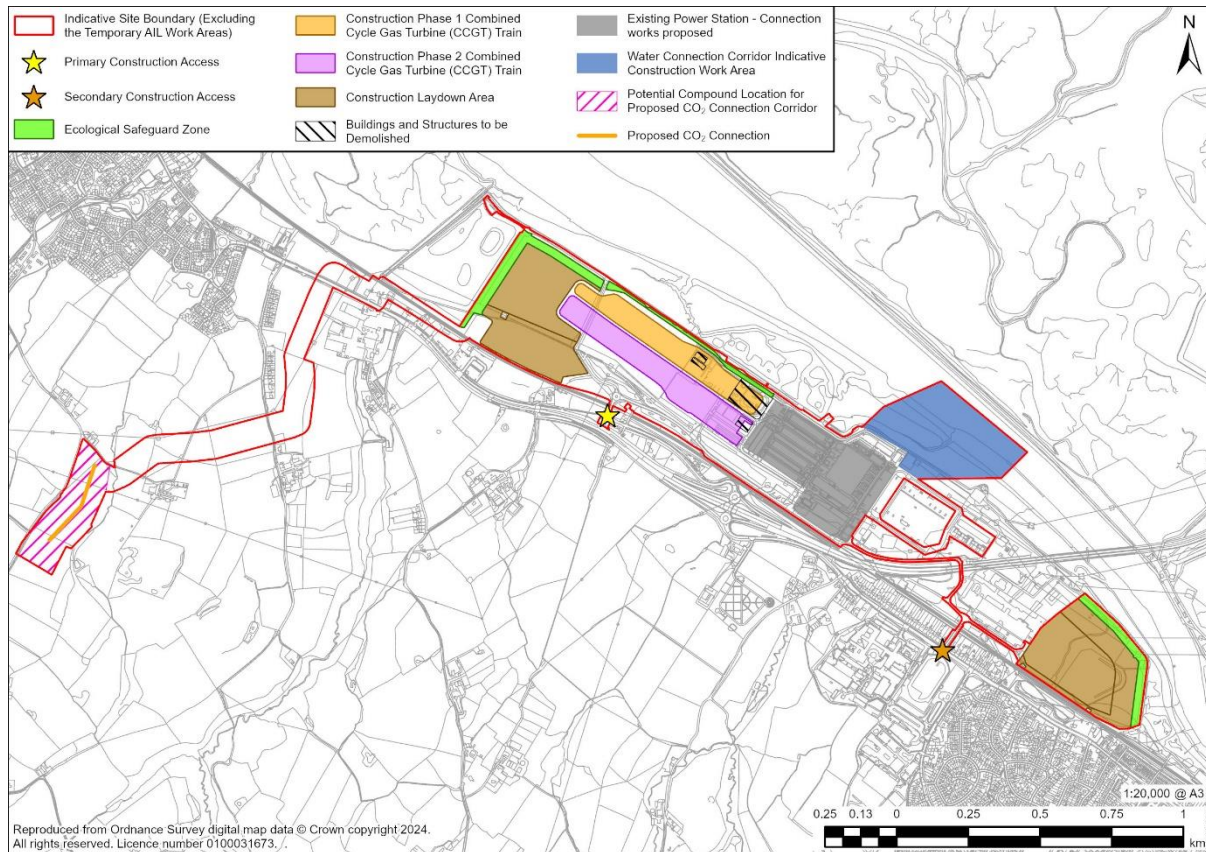
5.3 Construction Approach

- 5.3.1 During the detailed design stage, the approach to construction will be defined. For the purposes of this PEIR, it is assumed that certain equipment such as the absorber stacks, will be modularised and pre-fabricated/ assembled 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.
- 5.3.2 It is anticipated that smaller components and modules will be transported using the existing road network with more significant modules being transported by ship to one of a series of local ports (refer to Section 5.7) where they will be either unloaded onto suitable haulage vehicles and transported to the Site by road or, where reasonably practicable, undergo onward transport by barge with the final section of the journey by road. Where the access routes from the ports are unsuitable for any of the larger modularised units, these units could be constructed on-site.
- 5.3.3 Construction traffic and road haulage will be achieved along designated transport routes which will be controlled by a Construction Traffic Management Plan (CTMP) that will be prepared by the EPC Contractor(s) and secured through a requirement of the draft DCO. A Framework CTMP will accompany the Application.
- 5.3.4 The Application will be accompanied by a Framework CEMP, which will describe the specific mitigation measures to be followed to control and reduce impacts on the environment and local community during the construction phase. The Framework CEMP will be developed taking into account the environmental assessments, including mitigation measures presented in the Environmental Statement (ES) that accompanies the Application and will include, but not be limited to, impacts from:
- construction traffic (including parking and access requirements);
 - earthworks;
 - noise and vibration;
 - surface water runoff;
 - dust generation; and
 - waste generation.
- 5.3.5 A final detailed CEMP will be prepared by the EPC Contractor(s) prior to construction. This will be secured as a requirement of the draft DCO.
- 5.3.6 The selected contractor would be encouraged to be a member of the 'Considerate Constructors Scheme' which is an initiative open to all contractors undertaking building work. Construction industry guidance (e.g. from the Construction Industry Research and Information Association (CIRIA)) will be adopted as far as reasonably practicable to assist in reducing the potential for pollution and nuisance. This will be achieved by employing best practice measures considering relevant environmental legislation including: Control of Pollution Act 1974 (COPA) (Ref 5-3), Environment Act 1995 (Ref 5-4) and Hazardous Waste (England and Wales) Regulations 2005 (Ref 5-5).

5.4 Construction Methods

5.4.1 Construction activities are focused on the Main Site, the Proposed Carbon Dioxide (CO₂) Connection Corridor, the Water Connection Corridor and the Electrical Connection Corridor, and (as a worst-case scenario) the Repurposed CO₂ Connection Corridor. These areas are described further in **Chapter 3: Description of the Existing Environment** and shown on **Figure 5-1** in **PEIR Volume III** (reproduced in **Plate 5-1** below).

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



5.4.2 For the purposes of this PEIR (and in particular for the noise and vibration assessment presented in **Chapter 9: Noise and Vibration**), reasonable worst-case estimates have been made of the types and numbers of plant and machinery likely to be used at the Site during the construction period, as well as the potential use of piling for foundations of the main structures and works to install a cofferdam which may be required in the Water Connection Corridor.

Enabling Works

Preliminary Works including Demolition / Dismantling

5.4.3 The preliminary works required are the subject of ongoing studies and would be confirmed in the ES that accompanies the Application, but are likely to include:

- erection of site fencing and notices;
- environmental surveys and ground investigations including any remedial work, if required;

- demolition of the gas treatment plant (GTP), existing GTP above-ground installation (AGI), and existing stores building (and removal of temporary modular structures) within the Main Site including use of on-site crushing / screening – refer to **Figure 5-2 (PEIR Volume III)**;
 - site clearance; and
 - diversion and laying of services.
- 5.4.4 Given the nature of the former operations and underlying fill materials within the Main Site, it is possible that subsurface contamination may be present. Accordingly, a soil and groundwater investigation would be undertaken prior to construction commencing, subject to requirements agreed with Natural Resources Wales. The design and extent of this investigation would be based on the final design for the Proposed Development and would be conducted to inform the Environmental Permit or variation that is required from Natural Resources Wales for the commissioning and operation of the Proposed Development.
- 5.4.5 The Construction and Indicative Enhancement Area (C&IEA) may require enabling works in preparation for laydown. This may include the breaking up and removal of hardstanding, concrete, metal, and relic railway assets. Further information on this will be provided in the ES.
- 5.4.6 Impacts relating to the handling, movement and temporary storage of soils, including any agricultural soils classified as 'best and most versatile' (BMV) (Agricultural Land Classification (ALC) Grades 1 to 3a) that will be disturbed for temporary laydown, will be managed in accordance with the Final CEMP. Measures within the Final CEMP would include a pre-construction condition survey of laydown areas where BMV land is predicted/ established, a method statement for the works to include soil handling and storage proposals, a restoration specification and a post-works survey to confirm condition. Soils will be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 5-6) to minimise impacts on soil structure and quality. Temporary drainage systems will be designed to provide suitable protection measures for watercourses including a suitable stand-off distance. The Framework CEMP will outline these and other measures to be put in place.

Construction Laydown Areas including Contractors' Compounds

Overview

- 5.4.7 Laydown areas required during construction, including equipment and material storage, site offices, batch concrete facilities, welfare facilities and car parking, environmental / waste handling areas and vehicle wheel wash area(s) will be located at specific locations within the Site. **Figure 5-4 (PEIR Volume III)** shows the indicative areas of land that are under consideration for construction laydown within the Main Site ('Main Site Laydown Areas') and in the C&IEA. Laydown areas required will depend upon the final choice of technology and preferred construction approach of the appointed EPC Contractor(s) and will be confirmed following detailed design, taking into consideration relevant constraints (e.g. exclusion zones around sensitive habitats and presence of overhead electrical lines (OHL), where above-ground height is restricted). Laydown areas are likely to be required for the duration of construction. An indication of constraints, including proposed ecological

safeguard zones given the proximity of sensitive habitats and ecological receptors, are shown on **Figure 5-4 (PEIR Volume III)**.

- 5.4.8 Laydown area(s) would be secured by security fencing and gates as appropriate.
- 5.4.9 Indicative 5 m buffers around existing OHL pylons have been included to reduce the risk of collision and to allow continuation of routine maintenance to the OHL and pylons. These buffers are indicative, and the actual distances will be confirmed with the OHL operator prior to construction.
- 5.4.10 The area(s) would be levelled to provide an even surface and underlain by semi-permeable surfacing, such that it allows surface water and rainwater to percolate through it. No hazardous materials would be stored unbunded within the construction laydown area(s).
- 5.4.11 Further detail on how laydown area(s) may be restored and / or enhanced will be set out in the Outline Landscape and Biodiversity Management and Enhancement Plan (LBMEP) that accompanies the Application.

Main Site Laydown Areas

- 5.4.12 **Figure 5-4 (PEIR Volume III)** provide an indication of how laydown areas may be used in either the phased construction, or single phase construction approach.
- 5.4.13 In the event of a phased construction approach, full use of around 6.7 ha of the Main Site ('area C') utilising the footprint of Train 2 is anticipated over a four year period for material laydown, storage and fabrication. An additional 5 ha area ('area B') would be fully used for parking, contractor compounds and material storage over this period. A further 5.8 ha area ('area A') may be partially used over this period. A minimum 30 m ecological safeguard zone outside of the laydown area, with acoustic barrier on the north-facing boundary and fence hoarding on the west-facing and south-facing boundaries, or similar, would be used for the protection of sensitive habitats/ species occupying the Dee Estuary.
- 5.4.14 In the event of a phased construction approach, on completion of construction of Train 1, construction of Train 2 could commence. In the event that construction of Train 2 proceeds shortly after commissioning of Train 1, area B would continue to be used for parking, contractor compounds, material storage and other uses and an additional 6.3 ha area ('area D') would be used for material stores, warehousing and fabrication of components in the C&IEA. However, as outlined in **Chapter 2: Assessment Methodology and Consultation**, other scenarios could occur including a delay in final investment decision to proceed with Train 2, or alternatively, there may be an investment decision not to proceed with Train 2. In each scenario, habitats disturbed during construction will be restored as soon as reasonably practicable following relevant construction activities and as specified in the LBMEP.
- 5.4.15 In the event of a single phase approach to construction, full use of around 10.8 ha of the Main Site is anticipated over an approximate five year period:

- either side of the existing 400 kilovolts (kV) OHL ('area A' to north and 'area B' to south) within the Main Site would be fully used for fabrication, laydown, contractor compounds, and wheel-washing facilities; and
- in the west and north of the laydown area, soil would be stored, with a minimum 30 m wide ecological safeguard zone outside of the laydown area maintained, with acoustic fencing or similar proposed beyond this to the north, west and south boundaries to provide protection for sensitive habitats in the Dee Estuary and residential receptors.

5.4.16 Outside of this 10.8 ha, there is potential for use of the extents of Train 1 and Train 2 to be used for temporary laydown through 'informal phasing' of construction (similar to 'area C'). This is shown indicatively on **Figure 5-4 (PEIR Volume III)** as the 'Cooling Tower Construction Area'. As this informal phasing would be wholly dependent on the detailed programme of construction, to be determined by the EPC contractor(s), it is not possible to define areas or extents for this PEIR. However, this informal phasing would only occur within the extent of the permanent development and would not increase the extent of the developed area or its period of use within the single phase approach to construction, and therefore any informal phasing would not represent a material change.

Construction and Indicative Enhancement Area Laydown Area

5.4.17 In the event of a phased construction approach, full use of 6.3 ha of the C&IEA ('area D') is anticipated over an approximate six year period for material laydown, storage, fabrication and contractor parking (in this scenario, laydown requirements are reduced by using the Train 2 footprint during construction of Train 1). The outer areas of the C&IEA where OHL restrictions limit uses ('area E') may be partially used over this period. A minimum 30 m ecological safeguard zone, with acoustic fencing or similar would be used to provide protection for sensitive habitats in the Dee Estuary. A wider safeguard zone could be achievable, depending on contractor requirements.

5.4.18 In the event of a single phased approach to construction (**Figure 5-4 PEIR Volume III**), full use of around 10.9 ha of the C&IEA is anticipated over an approximate five year period:

- in the central area ('area D'), for contractor compounds, parking and material storage;
- in the outer areas where OHL restrictions limit uses ('area E'), for contractor parking; and
- outside of these, a minimum 30 m wide ecological safeguard zone, with acoustic barrier 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.

Proposed CO₂ Connection Corridor

5.4.19 Within the Proposed CO₂ Connection Corridor, a contractor compound and laydown area would be located in proximity to the Liverpool Bay CCS Ltd's Flint AGI. It is anticipated that existing field access is likely to be suitable for the purposes of construction access, although access arrangements will be confirmed in the DCO/ ES that accompanies the Application.

Earthworks

- 5.4.20 Earthworks will be required to reprofile areas of the Main Site, to produce a level platform, excavate foundations for the Proposed Development and/ or remove surplus material or remediate any contaminated soils. Earthworks may also be required for the installation of the Water Connection Corridor and the Proposed CO₂ Connection, which may include excavations using open cut methods to install these new connections. As far as reasonably practicable, a material cut and fill balance would be used to minimise waste arisings. However, given the anticipated ground conditions (subject to any additional findings of proposed initial ground investigation), it is anticipated that some import / export of materials are likely to be necessary to provide a suitable foundation platform for the Main Site. It is also anticipated that some targeted ground raising may 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** and **Appendix 13-C: Flood Consequences Assessment (FCA)** of **PEIR Volume II**.
- 5.4.21 The requirements for any land raising will be confirmed following hydraulic modelling studies that inform the FCA which is being prepared to accompany the Application. To provide a preliminary conservative estimate of soil movements on which the assessments for technical disciplines in the PEIR (e.g. traffic and transport) can be based, it is assumed that up to 87,100 m³ of soils may need to be removed and up to 250,000 m³ of soils imported to provide a suitable platform for foundations and buildings/ equipment across the Main Site.
- 5.4.22 Earthworks would be undertaken at an early stage in site preparation as described in Section 5.2. Further information on traffic movements is included in Section 5.7 below.
- 5.4.23 Any excess spoil generated during construction will be managed through the Site Waste Management Plan (SWMP) that would form part of the Final CEMP. Measures to control earthworks will be described in the Framework CEMP which will accompany the ES and the Application. The submission, approval and implementation of the Final CEMP will be secured by a requirement of the draft DCO.
- 5.4.24 Additionally, the Framework CEMP will incorporate measures to prevent an increase in flood risk during the construction works, as far as reasonably practicable.

Main Works

Main Civil and Process Works

- 5.4.25 Following enabling works and earthworks, ground clearance and installation of underground utilities, foundation formation, rebar, and concrete placement activities would commence. Pre-cast concrete items will be used as far as reasonably practicable. Where cast in-situ concrete is required, ready-mix concrete from trucks as direct pours or concrete pumps may be utilised. A temporary concrete batching plant may also be required.

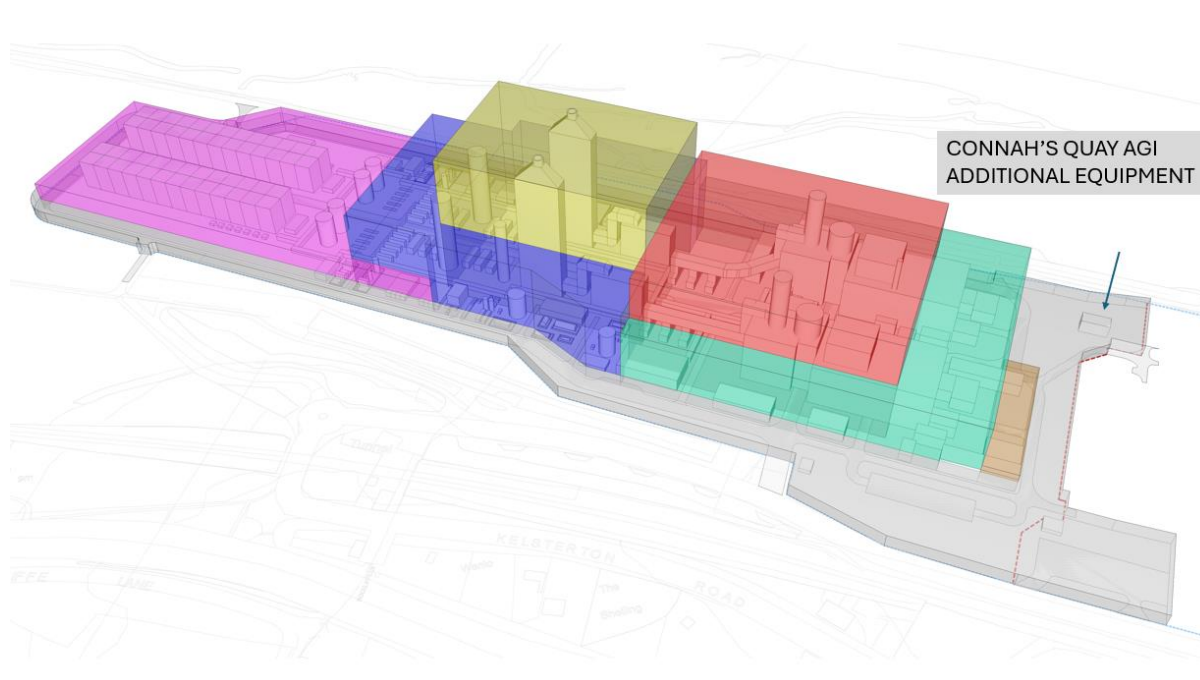
- 5.4.26 Piled foundations are likely to be required for certain components, e.g. absorber stack, Heat Recovery Steam Generator (HRSG) and turbine hall which may comprise continuous flight auger (CFA) or bored piling methods. Piling design would be undertaken at detailed design stage and informed by ground investigation. Piling design would include method statements, informed by a foundation works risk assessment (FWRA). The requirement for this would be set out in the Framework CEMP and secured by a Requirement of the draft DCO. The FWRA would include soil and groundwater pollution prevention measures. Approval of the FWRA by the local authority following submission to, and after engagement with Natural Resources Wales would be required and all piling and penetrative foundation works would be carried out in accordance with the approved method statements to prevent contamination of the underlying soils and groundwater.
- 5.4.27 The approach to construction will be defined by the contractor at detailed design stage. It is currently envisaged that plant and equipment will be pre-fabricated off-site, where practicable, however, it is anticipated that larger equipment, including items for the CCP, may need to be fabricated and erected on-site due to its anticipated size. The main items that could require special consideration due to their size or weight will be confirmed during the Front End Engineering Design (FEED) phase and are likely to comprise (but not be limited to):
- direct contact cooler (DCC);
 - absorber column(s);
 - stripper(s);
 - CO₂ compression package plant;
 - storage tanks;
 - CCGT gas and steam turbines, HRSG and associated plant; and
 - major transformers and electrical equipment.
- 5.4.28 The exact number and size / weight of these components is not known at this stage and is based on specific construction methodologies that will be confirmed during FEED. The ES will include an indication of the anticipated number of Abnormal Indivisible Load (AIL) movements during the construction period.
- 5.4.29 Building erection and plant installation may be carried out as concurrent activities, noting that not all buildings will be erected prior to the commencement of plant installation. Large plant may be first placed on foundations with steelwork erected around it.

Construction within the Gas Connection Corridor

- 5.4.30 Import of natural gas from the National Transmission System (NatTS) for use in the proposed CCGT plant will 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 Site to the Applicant's existing Burton Point AGI located 1.6 km north-east of the Main Site, 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.

- 5.4.31 It is not anticipated that any upgrades to the existing natural gas connection will be required during construction of the Proposed Development. If minor modernisations are required during the construction or operation/maintenance phase, the necessary work will likely only be carried out within the fence boundary of the Burton Point AGI.
- 5.4.32 The existing Connah's Quay AGI will 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**.

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



Construction within Electrical Connection Corridor

- 5.4.33 The proposed electrical grid connection (the 'Electrical Connection') will 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 Site. This will replace the electrical connection for all or some of the existing CCGTs in a phased approach. As such, the existing power circuit and connection to NGET's 400 kV substation within the Electrical Connection Corridor will be reused.
- 5.4.34 At this stage, no modifications or works are expected within the Electrical Connection Corridor, but this is subject to confirmation by NGET. Minor works such as additional protection equipment or monitoring equipment may be required within the Electrical Connection Corridor but this is subject to NGET confirmation. The timing, location and construction of the Electrical Connection will be determined in consultation with NGET and National Grid Energy System Operator (ESO).

Construction within Water Connection Corridor

- 5.4.35 Cooling water for the Proposed Development will 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 may utilise the existing cooling water abstraction and discharge infrastructure or may require additional / new abstraction and discharge infrastructure.

5.4.36 Cooling water abstraction and discharge requirements are subject of ongoing technical evaluation and engagement with Natural Resources Wales. Two main options are being considered for the raw water supply connections for the Proposed Development cooling water. Either:

- Option 1 – the existing Connah's Quay Power Station cooling water infrastructure will be re-used for the Proposed Development and the intake upgraded to meet current legislative requirements including The Eels (England and Wales) Regulations 2009 (Ref 5-7) ('Eels Regulations') with some refurbishment and additions; or
- Option 2 – new infrastructure will be provided for the Proposed Development, with the existing Connah's Quay Power Station cooling water infrastructure remaining in-situ.

Option 1 – Re-Use/ Upgrade of Existing Cooling Water Infrastructure

5.4.37 Should this option be selected, there is a potential that refurbishment / upgrades to the existing abstraction could be undertaken by divers and a support boat, or similar, over an estimated three to five week period. Such works could be limited to boat or shore-led pre-works survey(s) along the Dee Estuary, including diving operations where required, followed by the installation of screening to mitigate impacts on aquatic ecology and to comply with the Eels Regulations.

5.4.38 Alternatively, a cofferdam could be used in order to allow for refurbishment works to safely take place and if required, could comprise up to 750 m of interlocking sheet piling within the Water Connection Corridor in the vicinity of the existing cooling water infrastructure. This extent of works may also require additional bunds within the River Dee, outside of the cofferdam, to allow for the excavation of sediment and installation of scour protection, as well as a causeway within the Water Connection Corridor to allow safe movement of plant.

Option 2 – New Cooling Water Infrastructure

5.4.39 If it is determined that additional / new abstraction and discharge infrastructure is required, a temporary cofferdam would be installed within the Dee Estuary in order to allow installation of new abstraction/ discharge structure(s) to safely take place. Use of a temporary cofferdam would provide a suitable safe, dry and stable working location for the in-river construction works which could include construction of a new intake and/ or outfall. Screening would be installed on the intake, as required, to mitigate impacts on aquatic ecology and to comply with the Eels Regulations. In this option, the cofferdam may extend up to 850 m within the Water Connection Corridor comprising interlocking sheet piling.

5.4.40 This extent of works may also require additional bunds within the River Dee, outside of the cofferdam, to allow for the excavation of sediment and installation of scour protection, as well as a causeway within the Water Connection Corridor to allow safe movement of plant.

Cofferdam and In-River Construction Methodology

- 5.4.41 A Jack-Up barge (JUB) or similar would be required to install and remove the cofferdam. With the cofferdam and JUB in place, around half of the Dee Estuary in the vicinity of any cofferdam would remain open for navigation purposes and appropriate warning signs will be installed to maintain navigational safety. With these measures, it is anticipated that navigation will not be significantly impeded.
- 5.4.42 It is assumed that a suitable method of piling will be used to reduce the potential noise and vibratory impact to birds, fish, and other marine wildlife to as low as reasonably practicable. This could include e.g. adoption of the Joint Nature Conservation Commission (JNCC) (Ref 5-8) best practice measures for piling including the implementation of a soft-start process.
- 5.4.43 Capital dredging may be required as part of the construction works and is subject of ongoing technical evaluation. If required, impacts associated with capital dredging will be assessed and reported in the ES.
- 5.4.44 Up to 1,000 m of additional temporary interlocking sheet piling may be required within the Main Site for the installation of pipework to connect the cooling water abstraction and discharge points to the Main Site.
- 5.4.45 An initial 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, Chapter 12: Marine Ecology, Chapter 13: Water Environment and Flood Risk and Chapter 16: Physical Processes**. Measures to minimise environmental impacts are reported in these chapters and will be further considered in the ES that accompanies the Application.

Surface Water Outfall

- 5.4.46 The existing Connah's Quay Power Station surface water outfall is located within the Dee Estuary. The existing outfall may require maintenance / minor upgrade works, including clearing debris / repair so that it is suitable for use of the Proposed Development. Alternatively, construction of a new permanent outfall structure for surface water drainage discharge may be required in the immediate vicinity of the existing outfall structure. A 10 m buffer around the existing artificial structure has been included to allow for access and works if required, including any additional permanent artificial structures. Proposals will be confirmed in the ES that accompanies the Application.

Construction within Repurposed CO₂ Connection Corridor

- 5.4.47 The export of CO₂ from the Proposed Development will be via a new separate AGI (the 'Proposed CO₂ AGI') which would connect into the Repurposed CO₂ Connection Corridor.
- 5.4.48 Works may be required to re-route, modify, or apply additional protections to, a short section of the Repurposed CO₂ Connection around existing built development since the pipeline's original construction. The requirement for such works will be determined by ongoing assessments which will be completed prior to submission of the Application.
- 5.4.49 It is anticipated that these works will be similar to those for the Proposed CO₂ Connection, involving excavation using open cut methods (at a minimum of 1.2 m below ground level (bgl)). Excavated spoil would be stored adjacent to

the trench, whilst the pipeline re-routing or additional protection works undertaken, before reinstatement using excavated material. Any surplus excavated material will be reused on site, where practicable. Topsoil will be removed and stored separately to the subsoil.

- 5.4.50 Construction works will generally be contained within a fenced working area. These works will be located outside of statutory and non-statutory designations. As far as reasonably practicable, the works will also be located outside of the footprint of existing residential and commercial buildings and their respective curtilages or associated hardstanding areas/ public highways. In the event that the safety case demonstrates works are required to the existing pipeline within sensitive locations, it is anticipated that such works could be undertaken using specialist trenchless construction /working techniques, from a working area located within adjacent open or agricultural land within the Repurposed CO₂ Connection Corridor.
- 5.4.51 Within the Repurposed CO₂ Connection Corridor, along the existing pipeline length, marker posts, cathodic protection (CP) composition monitoring posts, and access point(s) may be installed. The work areas will be identified at detailed design and are likely to be located adjacent to existing road and rail crossings, directly above the pipeline and/ or positioned within verges or at field boundaries minimising disturbance to existing land uses. As far as reasonably practicable, existing pipeline markers will be re-used, re-coloured, and re-labelled or replaced in-situ.
- 5.4.52 Where works are required that affect Flintshire County Council (FCC) Public Right of Way (PRoW) No.66, temporary diversions will be put in place during the works, within the same field as far as reasonably practicable. The duration of the temporary diversion will be limited to the works affecting the PRoW with the route reinstated after works. No permanent change to this PRoW is proposed.
- 5.4.53 Where the existing land has been disturbed, the ground will be reinstated after construction, to allow continuation of previous uses. Existing vegetation lost or disturbed will be replanted and replaced.

Construction of Proposed CO₂ Connection Corridor

- 5.4.54 Captured CO₂ emissions from the Proposed Development will be discharged from the Repurposed CO₂ Connection Corridor, via a new pipeline spur of approximately 350 m in length (the Proposed CO₂ Connection) and interface at the Liverpool Bay CCS Ltd's Flint AGI (which is part of the proposed HyNet CO₂ Pipeline Project¹) before entering the Proposed HyNet CO₂ Pipeline. The Proposed CO₂ Connection Corridor pipeline is expected to be of similar specification to the Repurposed CO₂ Connection pipeline (i.e. an approximately 610 mm diameter, below ground pipeline).
- 5.4.55 It is anticipated that the Proposed CO₂ Connection will be constructed in the same way as a natural gas transmission pipeline, involving excavation using open cut methods (at a minimum of 1.2 m bgl). Excavated spoil would be stored adjacent to the trench whilst the pipeline is laid, before reinstatement using excavated material. Any surplus suitable excavated material will be

¹ The Flint AGI and HyNet CO₂ Pipeline are to be developed as part of the HyNet CO₂ Pipeline Project by Liverpool Bay CCS Limited. The proposed Flint AGI and access has been included within the Proposed CO₂ Connection Corridor.

reused on site, where practicable. Topsoil will be removed and stored separately to the subsoil. Construction works will generally 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 the pipeline within the Proposed CO₂ Connection Corridor.

- 5.4.56 Construction works associated with connecting the Proposed CO₂ Connection to the Liverpool Bay CCS Ltd's Flint AGI are subject to ongoing studies and will be considered in the ES.
- 5.4.57 A temporary diversion of FCC PRoW No.66 will be required in order to facilitate construction of the Proposed CO₂ Connection. It is anticipated that the diversion will follow a route within the same field, with the original routing reinstated following construction. No permanent change to this PRoW is proposed.

5.5 Construction Staff

- 5.5.1 If a phased approach to construction is selected, it is estimated that there could be approximately 1,000 personnel contracted to work on the Proposed Development at the Main Site at the peak of construction during each phase (Phase 1 and/ or 2). If construction of both Train 1 and 2 takes place in a single phase, it is anticipated there could be approximately 1,600 personnel contracted to work on the Proposed Development at the Main Site at the peak of construction. It is anticipated that personnel based at the Main Site would undertake all works associated with the construction of the Proposed Development with the exception of works within the Proposed CO₂ Connection Corridor. An additional 10 personnel would undertake construction works within the Proposed CO₂ Connection Corridor. These figures are based on experience of other comparable developments and inform the transport assessment presented in **Chapter 10: Traffic and Transport** and **Appendix 10-A: Transport Assessment**.
- 5.5.2 The peak of construction workforce for the purposes of the Transport Assessment reported in this PEIR (**Appendix 10-A in PEIR Volume IV**) is anticipated around month 36 in the event that Train 1 and Train 2 are constructed in a single phase.
- 5.5.3 Construction staff are anticipated to travel to the Proposed Development Site via the existing network of trunk roads and local roads. The Applicant would seek to maximise sustainable transport options such as public transport, cycling and car sharing in accordance with its current practice/ policy. This will be outlined in the Framework Construction Workers' Travel Plan (CWTP) which will accompany the Application and be secured through a Requirement in the draft DCO.

5.6 Construction Working Hours

- 5.6.1 Core construction working hours would be 07:00 to 19:00 Monday to Friday (except Bank Holidays) and 07:00 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. 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. Twenty-four hour working for certain activities has therefore been assessed in **Chapter 9: Noise and Vibration** which sets out specific mitigation and control measures which may be required to prevent disturbance from any activities outside of core working hours.

5.7 Construction Traffic and Site Access

Access for Construction Traffic (HGVs/ Workers) to Main Site

- 5.7.1 Access to the Main Site for both construction workers and heavy goods vehicles (HGV) traffic will likely be via the existing site access from Kelsterton Road from the A548 Chester Road. The access from the A548 Chester Road into Site 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 Site, the road approaches a further roundabout and from this, access to the Main Site is gained via an existing Network Rail bridge (Rock Hall Railway Tunnel – North Wales Main Line railway).
- 5.7.2 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 Site. 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 400kV OHL which require consideration with regard to the height of vehicles and loads and the necessary exclusion/safety distances when the OHL is live.
- 5.7.3 A secondary controlled access to the Main Site which could be used by light goods vehicles (LGV) / cars is proposed from the B5129 Kelsterton Road via the NGET 400 kV substation sitesite (the 'Alternative Access to the Main Site and Access to the Construction and Indicative Enhancement Area'). 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 Site. Subject to ongoing feasibility assessments, minor upgrade works and improvements to the access roads may be undertaken within the Alternative Access to the Main Site and Access to the Construction and Indicative Enhancement Area to provide suitable carriageways for use by construction traffic (cars/ LGVs).
- 5.7.4 The location of the primary and secondary access points is shown on **Figure 5-1 (PEIR Volume III)** and **Plate 5-1**.
- 5.7.5 As described in Section 5.4, construction personnel arriving by car will use on-site parking, within the construction laydown areas illustrated on **Figure 5-4 (PEIR Volume III)**. Where the C&IEA is used, it is anticipated that a park and ride system will be used to transport workers to the Main Site via the Alternative Access to the Main Site and Access to the C&IEA. Use of this

alternative access will minimise impacts on the local highway network, including Kelsterton Road.

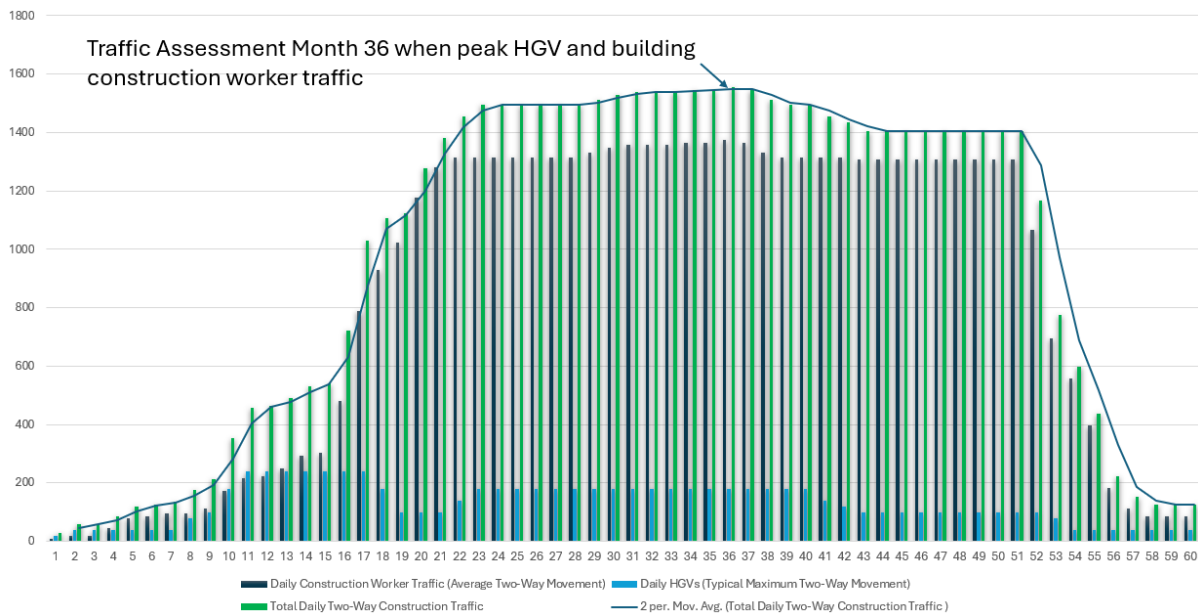
- 5.7.6 **Table 5-3** sets out the indicative initial forecasts for peak of daily construction traffic movements by vehicle type associated with a phased construction and a single phase construction of the Proposed Development.

Table 5-3: Indicative Peak of Daily Construction Traffic Movements (Main Site) – phased construction and single phase construction

	Phased construction	Single phase construction	Phased construction	Single phase 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

- 5.7.7 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 single phase construction scenario during months 11 to 17. This is associated with earthworks phase to provide a level development platform within the Main Site. During the remainder of the construction period, HGV movements will vary with an average of 130 two-way daily vehicle movements (65 in and 65 out).
- 5.7.8 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 single phase construction scenario during month 36. This is associated with the main works phase within the Main Site which follow 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 single phase construction period.
- 5.7.9 The total two-way construction vehicle traffic expected over the construction period if a single phase construction approach is adopted is illustrated in **Plate 5-3**.

Plate 5-3: Two-Way Construction Vehicle Daily Traffic over worst-case 60 month programme (Single Phase)



5.7.10 As shown in **Table 5-3**, 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 PEIR is considered to be a single phase 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 PEIR

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

5.7.11 Further information on traffic volumes and routing, based on these initial estimates, is provided in **Chapter 10: Traffic and Transport**.

5.7.12 Minor works may also be required to existing access tracks to the north of the Main Site in order to maintain suitable access to the Existing Surface Water Outfall shown on **Figure 3-2 (PEIR Volume III)**. A 10 m buffer around the existing artificial structure has been included to allow for access and works if required, including any additional permanent artificial structures. The Existing Surface Water Outfall is located within the Dee Estuary.

5.7.13 Access to Connah's Quay Power Station Nature Reserve The Applicant will aim to provide alternative temporary access to the Connah's Quay Power Station Nature Reserve (CQPSNR) and Site of Specific Scientific Interest (SSSI) for the Deeside Naturalists' Society (the DNS) during the construction phase of the Proposed Development. The current access to the CQPSNR including bird hides is described in **Chapter 3: Existing Site and Surroundings**.

- 5.7.14 It is currently anticipated that access will continue from the existing Connah's Quay Power Station site entrance, with a designated access road following the southern and western boundary fence of the ecological safeguard zone shown on **Figure 5-4 (PEIR Volume III)**, which will minimise health and safety risks associated with the construction works. Additional maintenance or minor upgrade works adjacent to the Main Site may be required at the existing Access to Wildlife Hides in order to maintain suitable access to and use of the existing wildlife hides, shown on **Figure 3-2 (PEIR Volume III)**.

Access to Proposed CO₂ Connection Corridor

- 5.7.15 It is anticipated that access to the Proposed CO₂ Connection Corridor will be off Allt-Goch Lane, north of the access point to the proposed HyNet CO₂ Pipeline Project compound for the Liverpool Bay CCS Ltd's Flint AGI located off Allt-Goch Lane. 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. It is anticipated that only cars and LGV will be required to access the Proposed CO₂ Connection Corridor, with approximately eight two-way daily vehicle movements (four in and four out) expected, based on a peak of 10 workers.
- 5.7.16 In the event that minor works are required within the Repurposed CO₂ Connection Corridor, it is assumed that access will be directly off the A548 Chester Road. It is anticipated that existing field accesses and junctions will be used to access temporary works locations within the Repurposed CO₂ Connection Corridor.


Abnormal Indivisible Loads

- 5.7.17 During the detailed design stage, the approach to construction of the Proposed Development will be defined. However, 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 Site, as AILs. This would include components identified in Section 5.4 as well as compressors, turbines, generators and transformers which typically require special transport considerations.
- 5.7.18 Small components and modules can be transported using the existing road network, however, more significant modules will 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 will be received at one or more local ports in North Wales or north-west England. The options identified at this stage are the Port of Mostyn (PoM), located within the FCC administrative area; or Ellesmere Port (Manchester Ship Canal) located within the Cheshire West and Chester (CWaC) Council administrative area. Loads would either be offloaded using existing portside cranes, or via temporary mobile cranes onto vehicles for onward road transport to Site. Alternatively, depending on their dimensions, certain loads arriving at PoM could be transported along the River Dee/ Dee Estuary towards Site by vessel, being offloaded onto vehicles at the existing Connah's Quay North (CQN) jetty ('Corus Jetty') and transported via the local road network to Site.


Port of Mostyn (Port Works)

- 5.7.19 As described in **Chapter 2: Assessment Methodology and Consultation**, the PoM is an existing operational commercial deep-water port that lies adjacent to the existing Mostyn navigational channel with access to the Irish Sea. The PoM includes a riverside quay and roll on roll off (Ro-Ro) terminal with direct access to the A548 Chester Road towards Site.
- 5.7.20 The PoM is an existing support hub for the offshore wind sector and includes 'Mostyn Energy Park' with a long-standing history of handling AIL. The PoM is currently seeking consent for an expansion of facilities, in order to continue to service the offshore wind sector ('the Mostyn Energy Park Extension (MEPE) Project²'). If consented, it is anticipated that additional berthing and Ro-Ro facilities could be available for use during construction of the Proposed Development. The indicative order limits are shown as the 'Site Boundary' on **Figure 5-5 (PEIR Volume III)** for the Proposed Development, and therefore reflect the maximum extent of land, including any temporary laydown areas and means of access (including minor, temporary accommodation works to facilitate this access), that may be required.
- 5.7.21 **Table 5-5** provides an overview of works that may be required at PoM and the areas under consideration are illustrated in **Figure 5-5 (PEIR Volume III)**.

Table 5-5: Potential Works within Port of Mostyn

Area within PoM shown on Figure 5-5 (Sheet 2)	Area	Nature of works under consideration
M01		<p>Use of PoM berthing area (including berth for new PoM Energy Park Infrastructure, if consented).</p> <p><u>No works proposed.</u></p> <p>Inclusion in indicative order limits at PEIR to allow the Applicant to seek rights for berthing of vessels, connection to moorings and offload of AIL onto M2 (see below).</p> <p>Activity would take place within the marine environment (existing commercial port) which is a statutory designated ecological site.</p>
M2		<p>PoM Offloading Area (includes existing Ro-Ro, Riverside Quay and potential AIL laydown areas).</p> <p>Works may include (subject to refinement following further technical assessment and engagement with PoM):</p> <ul style="list-style-type: none"> • placement of mobile crane(s); and

² Application for marine consent is undergoing determination by Natural Resources Wales. For further information, refer to **Chapter 24: Cumulative and Combined Effects**

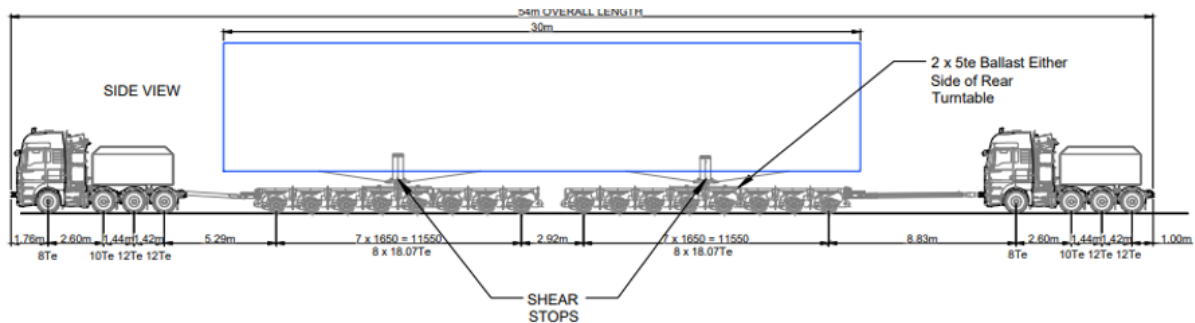
Area within PoM shown on Figure 5-5 (Sheet 2)		Nature of works under consideration
		<ul style="list-style-type: none"> minor accommodation works (removal of gate post and tree works) in the vicinity of Port Level Crossing to provide the necessary swept path for AIL.

5.7.22 Components that cannot be transported by vessel from the PoM via CQN (described in paragraph 5.7.28 below) will require transport to Site by road from the PoM. These AIL will access the A548 Chester Road over an existing Network Rail at grade 'Port Level crossing' exit located within the PoM. Further technical engagement with Network Rail will be undertaken in relation to arrangements as the design and Application progresses.

A548 Accommodation Works

5.7.23 On exit from the PoM, the A548 Chester Road would be used to convey AIL to Site. **Plate 5-4** below provides an indication of a potential transportation option for AIL from PoM, based on components around 6 m wide, 6 m high and 30m long that are considered feasible to transport from PoM to Site, considering existing constraints along the route.

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



5.7.24 The route between the PoM and the Site comprises 14 km of carriageway, and the majority of the route would require no accommodation works for the purposes of AIL transport. A number of areas are subject to ongoing technical studies in order to evaluate the need for accommodation works including:

- trees – depending on the dimensions of AIL, some trees will likely require pruning works to trim back overhanging branches. Tree loss, as far as reasonably practicable, will be avoided, and a tree survey and arboricultural impact assessment (AIA) undertaken and will accompany the Application in order to define tree protection measures necessary where crown reduction, pollarding or coppicing works are considered likely to be required to provide a reasonable clearance for AIL. The AIA will include a desk study to evaluate the status of trees, including any Tree Preservation Order (TPO) trees or groups and trees within conservation areas;
- power and telecommunications – accommodation works may be required to either isolate (power), temporarily lift cables in-situ (telecommunications), or divert some of these services depending on the dimensions of AIL;

- street works – it is likely that street furniture including (but not limited to) traffic signals, signage, kerbing and barriers along the A548 Chester Road will need to be temporarily removed and reinstated to provide reasonable clearance for AIL; and
- roundabouts – where existing roundabouts are raised, it may be necessary to temporarily lower these to allow AIL delivery.

5.7.25 **Table 5-6** presents an overview of the areas currently under consideration for accommodation works.

Table 5-6: Areas Under Consideration along A548 for AIL accommodation works

Road Section (S) (Refer to Figure 5-5 Sheets 2 to 7)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
S1	316138, 380361	Tree works at PoM exit. Trees covered by TPO will be avoided / protected as far as reasonably practicable.
S2	317021, 379526	Tree works. Temporary lifting and replacement of telecommunications cables crossing the carriageway.
S3	317910, 379019	Tree works.
S4	318034, 378873	Tree works.
S5	318662, 378314	Tree works.
S6	319790, 377415	Tree works.
S7	320213, 377001	Tree and temporary accommodation works to roundabout (TPO trees to be avoided / protected as far as reasonably practicable).
S8	324145, 373417	Tree works (west of Flint conservation area).
S9	324370, 373217	Temporary removal and reinstatement of street furniture and signage (within Flint conservation area). Trees within conservation area to be avoided / protected as far as reasonably practicable.
S10	325287, 372414	Temporary removal and reinstatement of street furniture and signage (east of Flint conservation area).
S11	327083, 371226	Temporary removal and reinstatement of central reservation.
S12	327532, 371019	Tree works.

5.7.26 Accommodation works would be temporary with reinstatement secured via the draft DCO.

5.7.27 During an AIL movement along the A548 Chester Road, 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. The likely requirement for any full day and / or night closures would be subject to technical engagement with FCC and confirmed in the Application.

Connah's Quay North

- 5.7.28 The option to use the closest existing jetty to the Site – CQN (formerly known as the 'Corus Jetty') is also under consideration. CQN has a history as an AIL offloading facility, having been used to transport Airbus components from Broughton to the PoM for onward international shipment until 2020. CQN has since resumed use as a berthing facility for AIL arriving at the PoM, destined for Shotton Mill. In May 2024, an AIL was berthed at PoM and then transferred from ship to barge for onward transport during an appropriate tidal cycle upstream via the Dee Estuary to CQN. 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.
- 5.7.29 It is anticipated that a similar method for offloading could be used for AIL required for the Proposed Development. Following offloading at CQN 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 AIL would either:
- use the first exit onto the unnamed private road heading north, directly to the A548 roundabout/ Weighbridge Road junction; or
 - use the second exit onto the unnamed private road heading east, before a left turn onto the unnamed private road heading north. The route will then cross or use the first exit of the private road roundabout, before turning left at the T-junction onto Weighbridge Road (private road), before finally turning right at the T-junction to join the unnamed private road heading north to the A548 roundabout/ Weighbridge Road junction.
- 5.7.30 From the A548 / Weighbridge Road roundabout, the AIL use the A548 Chester Road, passing over Flint Bridge. In order to access the Main Site, it may be necessary to temporarily remove the median barrier in the A548 Chester Road, to provide the required swept path onto the Access to Main Site directly from the westbound carriageway. AIL up to 6 m wide, 10 m high, and 30 m long (relative to the roadway) may be accommodated from CQN, given existing road network constraints.
- 5.7.31 **Table 5-7** presents an overview of the areas currently under consideration for accommodation works from Connah's Quay North to the Main Site for AIL.

Table 5-7: Areas Under Consideration from Connah's Quay North to Site for AIL accommodation works

Section (S) (Refer to Figure 5-5 Sheet 9)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
S13	329829, 371897	Roundabout accommodation works (Adopted Highway).
S14	329926, 371651	Carriageway accommodation works (Unclassified Road).
S15	329987, 370743	Carriageway accommodation works (private road network) within Deeside Industrial Estate.
S16	329052, 370608	CQN in-river and quayside area. Works may include (subject to refinement following further technical assessment and landowner engagement):


Section (S) (Refer to Figure 5-5 Sheet 9)	Satellite Area National Grid Reference	Nature of accommodation works under consideration
		<p><i>Within the Dee Estuary (marine environment)</i></p> <ul style="list-style-type: none"> • <u>No works are proposed</u> (precautionary inclusion of full width of the Dee Estuary within indicative order limits for PEIR to allow for berthing of vessel on river bed, if required, during low tide). • Dee Estuary at CQN is a statutory designated ecological site. <p><i>Works at quayside</i></p> <ul style="list-style-type: none"> • 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.

5.7.32 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 CQN.

Ellesmere Port (Manchester Ship Canal)

5.7.33 Ellesmere Port (EP) (Manchester Ship Canal) is also under consideration for shipborne deliveries of AIL. The port is 22 km north-west of Site 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. Potential works that may be required if AIL are delivered to EP are indicated in **Table 5-8** below.

Table 5-8: Potential Works within Port of Ellesmere

Area within EP shown on Figure 5.5 (Sheet 10)	Area	Nature of works under consideration
E1		<p>EP berthing area includes existing quay and potential laydown areas.</p> <p>Works may include (subject to refinement following technical engagement with EP).</p> <p><i>Manchester Ship Canal</i></p> <p><u>No works proposed</u></p> <p>Inclusion in indicative order limits for PEIR to allow for berthing of vessel, connection to moorings and offload of AIL.</p> <p><i>Quayside areas</i></p> <ul style="list-style-type: none"> • Temporary placement of mobile cranes. • Use of potential AIL laydown areas.

5.7.34 The route length from EP to the Main Site is 22km via the A6032 Merseyton Road to the M53 junction 9 Rossmore Road Interchange north-westbound

(Option 1) or south-eastbound (Option 2), as shown on Sheet 1 of **Figure 5-5 (PEIR Volume III)**.

- 5.7.35 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 Chester Road. 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 Chester Road. Both options meet the A548 Chester Road at the same junction and follow this for approximately 8 km until accessing the Main Site via Kelsterton Road.
- 5.7.36 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 into 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.
- 5.7.37 For both options, AILs could be delivered to EP (Manchester Canal) through routine commercial shipping operations. However, due to the presence of highway overbridges, both options would be limited to the transportation of AILs of 8 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 transmission lines (five, two, two, and two, respectively) in order to reach the Main Site;
 - 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) and signal-controlled crossings;
 - a number of roundabouts, including elevated central reservations (however, Option 1 itself does not contain any roundabouts outside of motorway junctions); and
 - the route to the Main Site would include a crossing over the Flintshire Bridge.
- 5.7.38 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, no satellite red line boundary areas within these routes are included within the Indicative Order Limits for the PEIR. If technical assessments demonstrate that minor works such as tree pruning or removal of street furniture are required, satellite red line boundaries to allow these works to take place via DCO powers will be included in the Order Limits and in the event of any likely environmental effects arising, these will be assessed in the ES that accompanies the Application.

Main Site

- 5.7.39 ALL road transport into and within the Main Site requires consideration of the existing 400 kV HV OHL which runs approximately parallel to the south-west border of the Main Site. Following detailed design, when the size of ALL 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 ALL to enter the Main Site. No permanent works to the HV OHL are proposed.

5.8 Storage of Construction Plant and Materials

- 5.8.1 The Framework CEMP will outline measures and associated responsibilities for the storage of construction plant and materials, including the primary measures outlined below.
- 5.8.2 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.
- 5.8.3 Excavated materials / soils to be retained for in-situ replacement following construction (such as within the Water Connection Corridor) will be stored within a secure area at a construction compound or laydown area and under an appropriate covering, as required. All soils will be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 5-6) to minimise impacts on soil structure and quality in accordance with the Framework CEMP that will accompany the Application and will also outline measures to be put in place to prevent sediment being washed off stockpiles or off-site.
- 5.8.4 If excavated material is found to be unsuitable for re-use within the Site, it shall be disposed of in accordance with waste management procedures outlined in Section 5.10.

5.9 Lighting

- 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 will 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 and a Lighting Strategy will be prepared for approval pursuant to a requirement in the draft DCO.
- 5.9.2 An Indicative Lighting Strategy will be prepared and submitted with the Application. Relevant standards to be considered include the Guidance Notes for the Reduction of Obtrusive Light (2021) published by the Institute of Lighting Engineers and/ or Chartered Institution of Building Services Engineers (CIBSE) requirements (Ref 5-9), as appropriate. The strategy will seek to provide safe working conditions whilst reducing light pollution and the visual impact of light on the local environment.

5.10 Framework Construction Environmental Management Plan (CEMP) including Outline Site Waste Management Plan (OSWMP)

- 5.10.1 In accordance with policy requirements, through the ongoing design, the Applicant would seek to design, construct and be able to operate the Proposed Development to minimise the creation of waste, maximise the use of recycled materials and assist the collection, separation, sorting, recycling and recovery of waste arisings, as far as reasonably practicable.
- 5.10.2 The Applicant would require the contractor to produce and maintain a CEMP to control construction activities to minimise, as far as reasonably practicable, impacts on the environment. This would include industry standard practice measures and specific measures set out in this PEIR and the Framework CEMP that will accompany the Application. A Final CEMP is proposed to be secured by a requirement in the draft DCO which will specify that the contractor's CEMP must be in accordance with the principles set out in the Framework CEMP.
- 5.10.3 The purpose of the CEMP is:
- to minimise nuisance levels as a result of construction activities;
 - to adhere with relevant regulatory requirements and environmental commitments; and
 - to contain procedures that must be put into place to minimise environmental effects including a scheme for environmental monitoring and reporting, corrective actions and a notification scheme for handling any complaints received relating to construction impacts.
- 5.10.4 An Outline Site Waste Management Plan (OSWMP) will be included within the Framework CEMP that accompanies the Application in order to control the management and monitoring of waste, including any spoil generated on-site, during construction. The construction contractor will use this document to produce a final SWMP prior to works commencing on-site. The SWMP will 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 Site would be undertaken by licensed waste carriers and taken to permitted waste facilities.
- 5.10.5 Excavated material will 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. This will support the reuse of excavated materials, minimise off-site disposal; and demonstrate the necessary lines of evidence to support the proper reuse/off-site disposal of materials required taking into consideration regulatory guidance.
- 5.10.6 Further assessment of impacts in relation to construction waste is presented in **Chapter 23: Materials and Waste**.

5.11 Site Restoration / Reinstatement

- 5.11.1 Following construction, construction plant and equipment will be removed and existing ground reinstated. Topsoil would be reinstated where this has been stored during construction following topsoil stripping. The overall objective will be to leave the areas of the Site required for construction with no residual environmental and/ or safety risks and return the land to a condition suitable for re-use.
- 5.11.2 Areas within the Proposed CO₂ Connection Corridor will be reinstated after construction, to allow continued agricultural use. Existing vegetation lost / disturbed will be replanted and replaced. Following construction, FCC PRow No.66 will also be reinstated where it has been temporarily diverted.
- 5.11.3 Landscaping and ecological management within the Main Site and C&IEA laydown areas will be provided as soon as reasonably practicable as described in **Chapter 4: The Proposed Development**. 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 Water Connection Corridor, Electrical Connection Corridor and Proposed CO₂ Connection Corridor, depending on the construction activities that may be required for Phase 2. The timescales for restoration of land following construction of Train 2 would be dependent on the timescales for development of Train 2 but based on the indicative programme in **Table 5-3**, could be from 2035 / 6.
- 5.11.4 In the event of a single phase of construction being adopted, based on the indicative programme in **Table 5-2**, restoration and reinstatement activities for land that is temporarily disturbed could commence from 2036 although earlier reinstatement / restoration may be possible in the Water Connection Corridor, Electrical Connection Corridor and Proposed CO₂ Connection Corridor.

5.12 Commissioning

- 5.12.1 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 Applicant. A commissioning plan will be required to be agreed with Natural Resources Wales under the Environmental Permit, which will specify monitoring and control procedures to be used and set out a schedule of commissioning and composition monitoring activities.

References

- Ref 5-1 PINS (2018). Advice Note 9: Rochdale Envelope [Online]. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/> (Accessed 11/06/2024)
- 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 11/06/2024)
- Ref 5-3 Control of Pollution Act 1974 (c.40). London: HMSO. [Online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40> (Accessed 11/06/2024)
- Ref 5-4 Environment Act 1995 (c.25). London: HMSO. [Online]. Available at: <https://www.legislation.gov.uk/ukpga/1995/25/contents> (Accessed 11/06/2024)
- Ref 5-5 The Hazardous Waste (England and Wales) Regulations 2005 (SI 2005/894). London: HMSO. [Online]. Available at: <https://www.legislation.gov.uk/ukSI/2005/894/contents/made> (Accessed 11/06/2024)
- Ref 5-6 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 11/06/2024).
- Ref 5-7 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 11/06/2024).
- Ref 5-8 JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise [Online]. Available at: <https://hub.jncc.gov.uk/assets/31662b6a-19ed-4918-9fab-8fbcff752046> (Accessed 11/06/2024).
- Ref 5-9 Institute of Lighting Professionals (2021). Guidance Note 1 for the Reduction of Obtrusive Light. Rugby: Institute of Lighting Professionals [Online]. Available at: <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/> (Accessed 11/06/2024).

