Connah's Quay Low Carbon Power

Preliminary Environmental Information Report
Volume I: Non-Technical Summary

Uniper

The Planning Act 2008
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
PINS Reference: EN010166
September 2024

Delivering a better world

Prepared for:
Uniper UK Limited

Prepared by:
AECOM Limited

© 2024 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1. Introduction 1-1
1.1 Overview 1-1
1.2 The Applicant 1-3
1.3 What is Carbon Capture and Storage? 1-3
2. Assessment Methodology 2-4
2.1 Environmental Impact Assessment Methodology 2-4
2.2 EIA Scoping 2-4
2.3 Preliminary Environmental Information Report 2-5
3. Description of Existing Environment 3-7
3.1 The Existing Site and Surroundings 3-7
3.2 Areas of the Indicative Site Boundary 3-9
3.3 Potential Sensitive Receptors 3-12
4. The Proposed Development 4-17
4.1 Components of the Proposed Development 4-17
4.2 Design Parameters 4-21
4.3 Proposed Development Operation 4-22
5. Proposed Development Construction 5-23
5.1 Construction Methodology 5-23
5.2 Proposed Development Decommissioning 5-24
6. Consideration of Alternatives 6-26
7. Results of the Preliminary Environmental Impact Assessment 7-27
7.1 Overview 7-27
7.2 Air Quality 7-27
7.3 Noise and Vibration 7-28
7.4 Traffic and Transport 7-29
7.5 Terrestrial and Aquatic Ecology 7-30
7.6 Marine Ecology 7-32
7.7 Water Environment and Flood Risk 7-33
7.8 Geology and Ground Conditions 7-34
7.9 Landscape and Visual Amenity 7-35
7.10 Physical Processes 7-37
7.11 Terrestrial Heritage 7-38
7.12 Marine Heritage 7-38
7.13 Socio-economics, Recreation and Tourism 7-39
7.14 Climate Change 7-40
7.15 Human Health 7-41
7.16 Major Accidents and Disasters 7-41
7.17 Materials and Waste 7-42
7.18 Cumulative and Combined Effects 7-43
References 7-45

1. Introduction

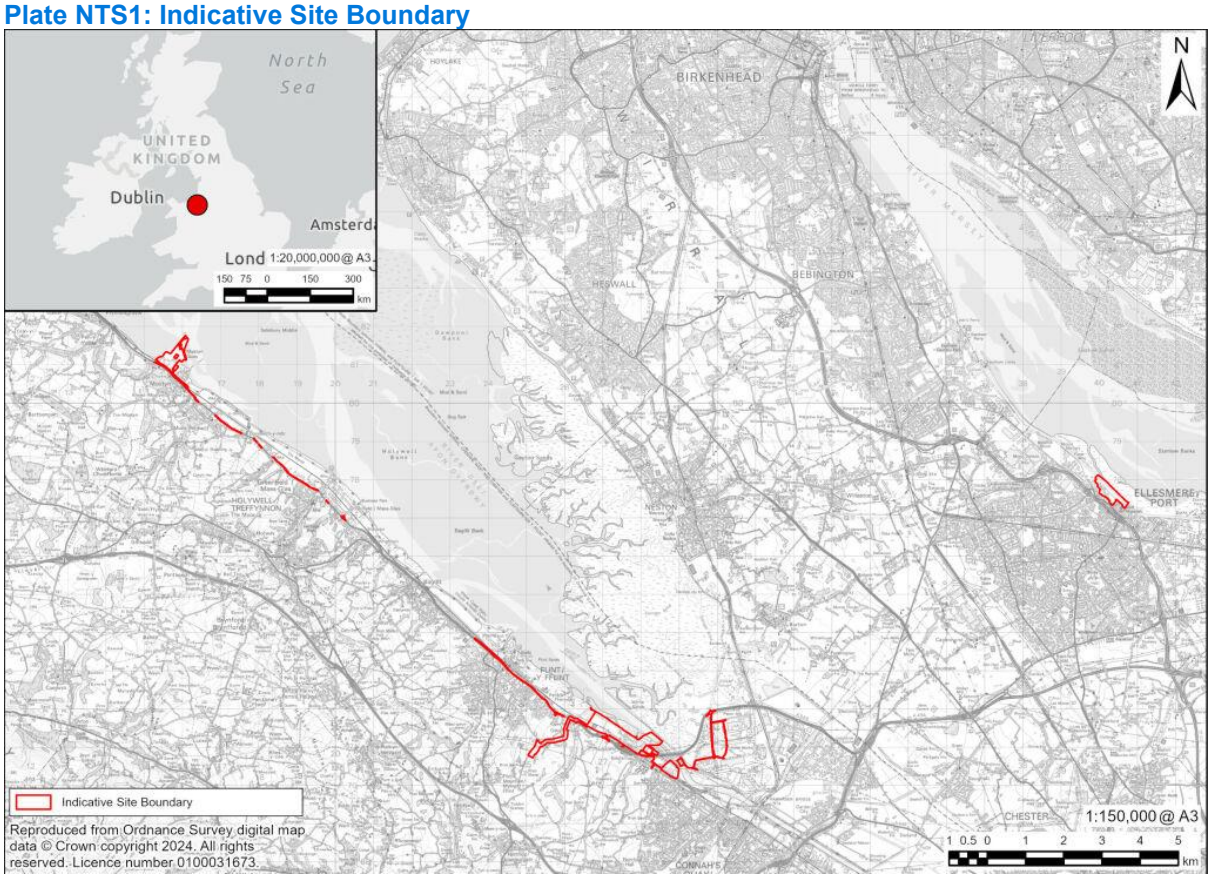
1.1 Overview

This Non-Technical Summary (NTS) of the Preliminary Environmental Information Report (PEIR) has been prepared as part of the consultation for the construction, operation (including maintenance) and decommissioning of a proposed low carbon Combined Cycle Gas Turbine (CCGT) Generating Plant fitted with Carbon Capture Plant (CCP) on land at, and in the vicinity of, the existing Connah's Quay Power Station (Kelsterton Road, Connah's Quay, Flintshire, CH6 5SJ), North Wales. The Proposed Development's Indicative Site Boundary (also referred to as the 'Site' or 'Site Boundary' with reference to distances; this is not to be confused with the 'Main Site', a specific area within the Site) is shown in **Plate NTS1** below. An image focusing on the permanent elements of the Proposed Development is shown on **Plate NTS2**.

This Non-Technical Summary is structured as follows:

- Section 1 – this section – provides an overview of the Proposed Development and the Applicant;
- Section 2 sets out the methodology for the Environmental Impact Assessment, including this PEIR;
- Section 3 describes the existing environment;
- Section 4 describes the Proposed Development;
- Section 5 describes the construction of the Proposed Development;
- Section 6 sets out the consideration of alternatives; and
- Section 7 describes the results of the Preliminary Environment Impact Assessment, with sub-sections per environmental topic.

Plate NTS1: Indicative Site Boundary



This consultation is being undertaken in advance of the proposed submission of an application for development consent in 2025. This current round of consultation is referred to as Stage 2 and is a statutory consultation under relevant legislation. Prior to this, an informal non-statutory Stage 1 consultation was undertaken between February and March 2024.

This NTS summarises the Proposed Development and provides an overview of the key findings of the PEIR for the statutory Stage 2 consultation. Full details are provided in the PEIR, including **Volume II** – Main Report, **Volume III** – Figures, and **Volume IV** – Technical Appendices.

The PEIR has been prepared to comply with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ('the EIA Regulations') (Ref. 1). An Environmental Statement (ES) will be submitted with the application for development consent. To summarise, the PEIR:

- forms a key consultation tool for the DCO statutory consultation by providing an update on the ongoing EIA, technical engagement and the design of the Proposed Development;
- reviews relevant legislation, policy and guidance;
- updates effects scoped into the EIA following the Planning Inspectorate's Scoping Opinion;
- reviews and updates the baseline (the environmental starting point), and how this is expected to change (the future baseline);
- provides a preliminary assessment of the likely significant effects of the Proposed Development; and

- identifies potential mitigation measures to avoid, reduce or compensate for environmental effects.

1.2 The Applicant

The Applicant is a UK-based company, wholly owned by Uniper SE (Uniper) through Uniper Holding GmbH. Uniper is an international energy company that operates roughly 22.5 gigawatt (GW) of generation capacity in Europe. Uniper has activities in more than 40 countries and roughly 7,000 employees worldwide. In the UK, Uniper owns and operates a flexible generation portfolio of seven power stations, a fast-cycle gas storage facility and two high pressure gas pipelines, from Theddlethorpe to Killingholme and from Blyborough to Cottam.

Uniper is committed to investing more than €8 billion (~£6.9 billion) in growth and transformation projects between 2023 and 2030. This includes developing new renewables projects, investing in clean gases such as hydrogen, and new low or zero carbon power plants and by progressively transforming Uniper's existing fleet into Europe's leading source of zero-carbon power. Uniper intends to be completely carbon-neutral by 2040 and aims for its installed power generating capacity to be more than 80% zero-carbon by 2030.

1.3 What is Carbon Capture and Storage?

Carbon Capture and Storage (CCS), also referred to as carbon capture, usage, and storage (CCUS), is a low carbon technology which captures carbon dioxide (CO_2) emissions from industrial facilities such as power generation, iron and steel, fertilizer, cement, chemicals and refining and transports it by either pipeline or ship for utilisation or safe and permanent underground storage, preventing it from entering the atmosphere.

Possible storage sites for carbon emissions include saline aquifers or depleted oil and gas reservoirs, which typically need to be 1 km (0.62 miles) or more below the ground where greater pressures exist (Ref. 2).

The decarbonisation of the energy industry through the provision of low carbon technology such as CCS will play a critical role in delivering the UK's target of net zero by 2050 (Ref. 3).

2. Assessment Methodology

2.1 Environmental Impact Assessment Methodology

The Environmental Impact Assessment (EIA) process seeks to identify and assess likely significant environmental effects. It seeks to identify and implement measures to avoid, reduce or offset adverse effects and improve beneficial effects. The EIA process aims to provide stakeholders and decision makers with necessary information to understand the likely significant effects of a future development to inform decision making.

The objective of the EIA process is to anticipate the changes (or 'impacts') that may occur to the environment as a result of a proposed development. The changes are compared to the environmental conditions that would have occurred without the proposed development (defined as 'the baseline conditions').

The EIA process identifies potentially sensitive 'receptors' that may be affected by these changes (e.g. people living near the development or local flora and fauna) and defines the extent to which these receptors may be affected by the predicted changes. These effects are then assessed as to whether they are 'significant'.

The environmental impacts and effects of the Proposed Development are assessed at key stages in its construction and operation (including maintenance), and where possible and relevant, its eventual decommissioning.

Where the EIA predicts a likely significant adverse effect, mitigation measures are identified where possible to avoid, reduce or offset the effect, and/or to reduce the likelihood of it happening and/or the magnitude of the effect. Measures are split into:

- Development design and embedded mitigation – these are measures that have been integrated into the Proposed Development. Such measures may include refinement of the design and layout and adherence to relevant legislation, guidance and industry standard practice.
- Additional mitigation and enhancement measures – these are additional measures that may reduce any significant adverse effects and enhance beneficial effects.

Details of the EIA Assessment Methodology are provided within **Chapter 2: Assessment Methodology and Consultation** (**PEIR Volume II**).

2.2 EIA Scoping

EIA Scoping is a process that is designed to identify relevant topics that should be included in the EIA and reported in the PEIR and the subsequent ES.

An EIA Scoping Report and a request for an EIA Scoping Opinion was submitted to the Planning Inspectorate (PINS) and relevant consultees on 8 February 2024. The exercise has provided an opportunity for PINS and consultees to comment on the content and approach to the environmental assessments proposed to be undertaken.

A copy of the Scoping Report is provided within **Appendix 1-A: Scoping Report** (**PEIR Volume IV**).

A Scoping Opinion was received from PINS on 20 March 2024 and is presented within **Appendix 1-B: Scoping Opinion (PEIR Volume IV)**.

2.3 Preliminary Environmental Information Report

Following the submission of an EIA Scoping Report by Uniper and publication of PINS' Scoping Opinion, the PEIR sets out preliminary environmental information. This PEIR has been prepared to inform statutory consultation with the public and other stakeholders about the Proposed Development and is based on its current design and currently available information from ongoing assessments.

Following the statutory consultation period, the ES will be prepared to accompany the Development Consent Order (DCO) application and includes the EIA of the Proposed Development, taking account of any design evolution that has taken place, as well as feedback received during consultation and technical engagement.

The PEIR for the Proposed Development includes the following Chapters **(PEIR Volume II)**:

- **Chapter 1:** Introduction;
- **Chapter 2:** Assessment Methodology and Consultation;
- **Chapter 3:** Description of the Existing Environment;
- **Chapter 4:** The Proposed Development;
- **Chapter 5**: Construction Management and Programme;
- **Chapter 6**: Project Alternatives;
- **Chapter 7**: Planning Policy and Need;
- **Chapter 8:** Air Quality;
- **Chapter 9:** Noise and Vibration
- **Chapter 10:** Traffic and Transport;
- **Chapter 11:** Terrestrial and Aquatic Ecology;
- **Chapter 12:** Marine Ecology;
- **Chapter 13:** Water Environment and Flood Risk;
- **Chapter 14:** Geology and Ground Conditions;
- **Chapter 15:** Landscape and Visual Amenity;
- **Chapter 16:** Physical Processes;
- **Chapter 17:** Terrestrial Heritage;
- **Chapter 18:** Marine Heritage;
- **Chapter 19:** Socio-Economics, Recreation and Tourism;
- **Chapter 20:** Climate Change;
- **Chapter 21:** Human Health;

- **Chapter 22:** Major Accidents and Disasters;
- **Chapter 23:** Materials and Waste; and
- **Chapter 24**: Cumulative and Combined Effects.

The PEIR also includes **Volume III: Figures** and **Volume IV: Technical Appendices**.

3. Description of Existing Environment

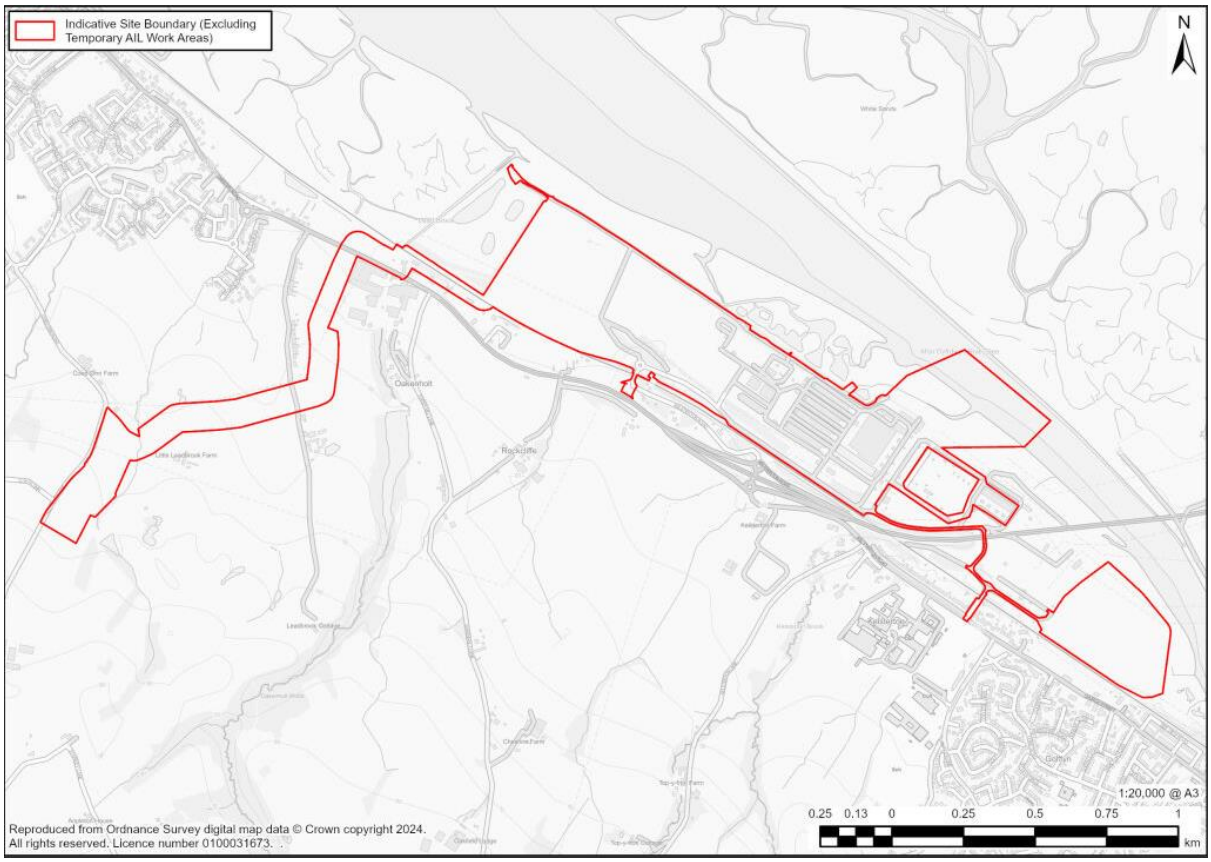
3.1 The Existing Site and Surroundings

The Proposed Development is located approximately 0.6 kilometres (km) north-west of Connah's Quay in Flintshire, north-east Wales. The Proposed Development lies mainly within the Flintshire County Council (FCC) administrative area, except for an area within Ellesmere Port, which is located within the administrative area of Cheshire West and Chester (CWaC) Council where land is under consideration for shipborne deliveries of Abnormal Indivisible Loads (AIL) during construction .

The Indicative Site Boundary encompasses a total area of approximately 187 hectares (ha), as shown in **Plate NTS1**, and remains preliminary at this stage. Around 80 ha of land is included within the Indicative Site Boundary for the receipt and delivery of AIL to the Main Site from local ports (the 'Temporary AIL Work Areas'), during construction.

Around 107 ha of the Indicative Site Boundary is focused on the Main Site, construction areas and connection corridors which is shown in **Plate NTS2,** (the 'Indicative Site Boundary (Excluding the Temporary AIL Work Areas)').

Plate NTS2: Indicative Site Boundary (Excluding the Temporary AIL Work Areas)



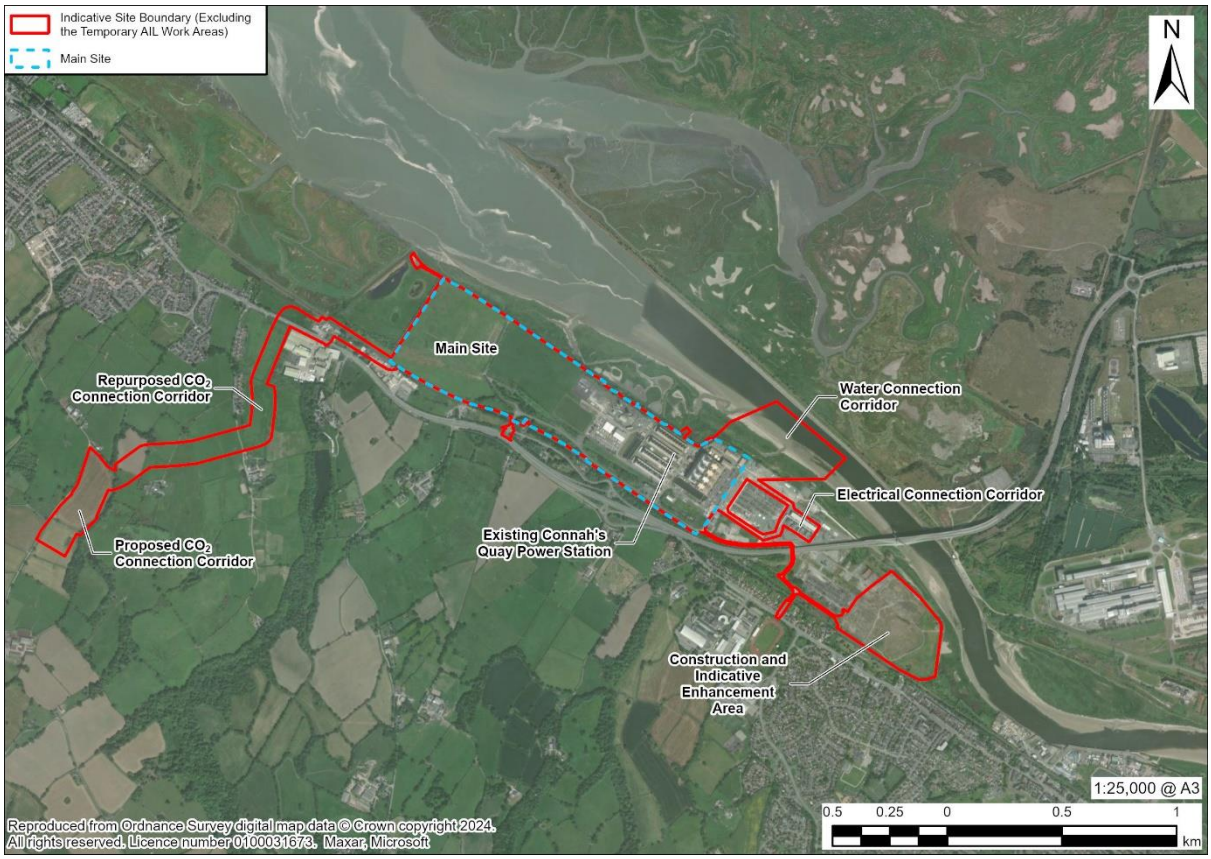
The Indicative Site Boundary (Excluding the Temporary AIL Work Areas) includes the existing Connah's Quay Power Station site, owned and operated by Uniper, and adjacent land for the purposes of facilitating connections to the Proposed Development for gas, electricity, water and other necessary infrastructure. A view of

the existing Connah's Quay Power Station looking south-west from across the Dee Estuary is shown in **Plate NTS3**.

Plate NTS3: Existing Connah's Quay Power Station (view from Dee Estuary)

The town of Connah's Quay is located to the south-east of the existing Connah's Quay Power Station and the Main Site, immediately beyond the A548 and the North Wales Main Line railway. The area to the south-west of the Main Site, shown on **Plate NTS4**, is mainly used for pastoral agriculture with some arable agriculture while the area to the north-west of the Main Site is a nature reserve within several statutory designated sites.

Plate NTS4: Aerial View Centered on Main Site



3.2 Areas of the Indicative Site Boundary

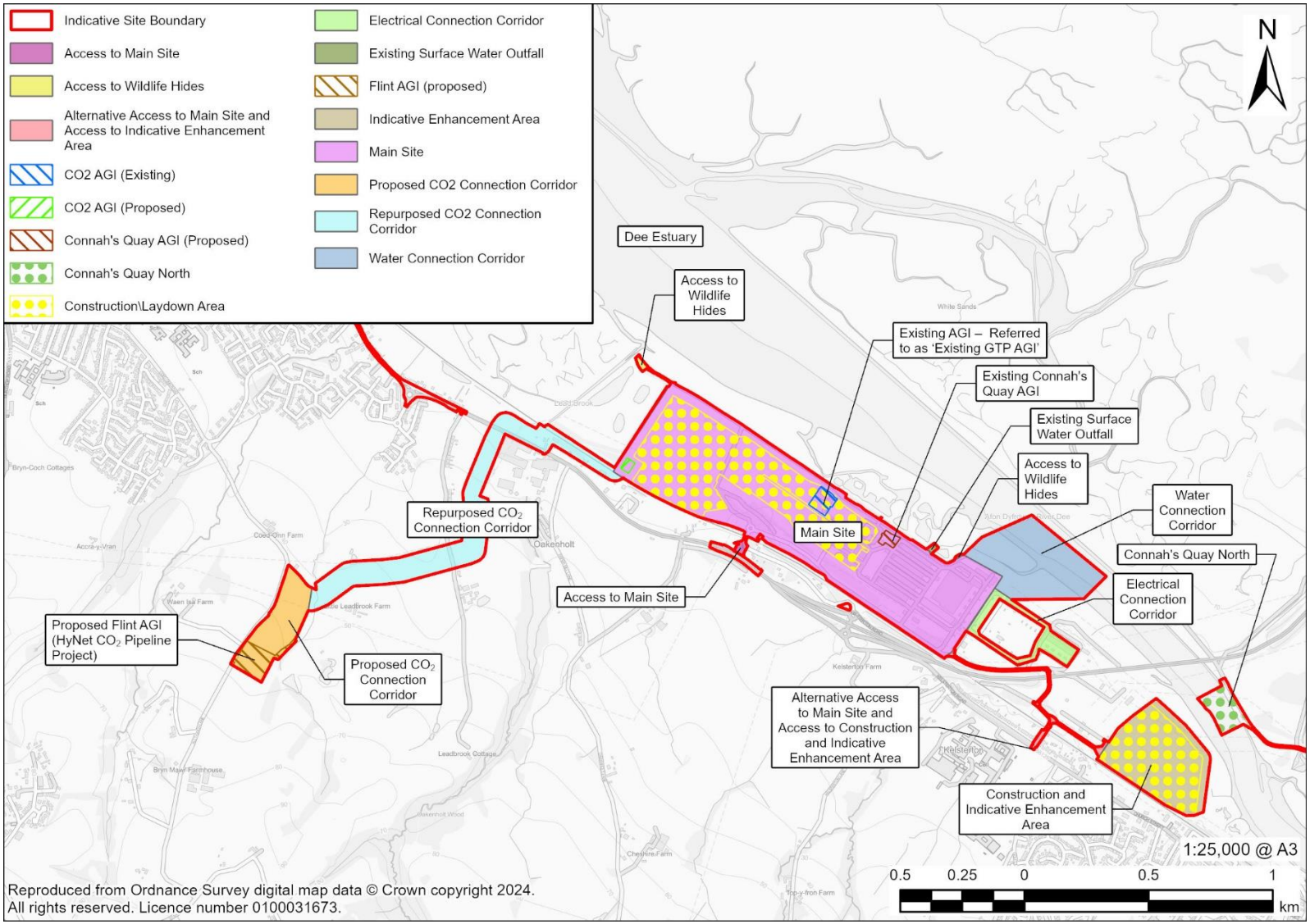
The areas referred to in the PEIR are shown in **Plate NTS5**. For the purposes of the PEIR, the naming conventions (described in section 4) used to describe areas of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas) are:

- the **Main Site** is an area of around 56.5 ha that includes operational parts of the existing Connah's Quay Power Station and agricultural fields. Areas of the Main Site would be developed for the proposed CCGT and CCP and used for temporary laydown areas during construction. An existing 400 kV high-voltage overhead electrical transmission line crosses the Main Site. It is bordered generally to the north by the Dee Estuary, to the east by the existing National Grid Electricity Transmission (NGET) 400 kV Substation, and to the south by the North Wales Main Line railway;
- the **Repurposed CO_2 Connection Corridor** is an area between the south-west corner of the Main Site and the north-east corner of the Proposed CO_2 Connection Corridor. It comprises around 15 ha and is largely agricultural fields and hedgerows. It follows the route of an existing underground gas pipeline and forms approximately 3 km of an overall 27 km pipeline route between the existing Connah's Quay Power Station and Point of Ayr Gas Terminal to the north-west;
- the **Proposed CO_2 Connection Corridor** mirrors the area consented for the proposed Flint Above Ground Installation (Liverpool Bay CCS Ltd's Flint AGI) and Newbuild CO_2 Pipeline works within the HyNet CO_2 Pipeline Project. It comprises around 6 ha within which a new CO_2 export pipeline approximately 350 m in length for the Proposed Development would be

constructed linking the Repurposed CO_2 Connection Corridor at one end, with the area consented for the proposed Liverpool Bay CCS Ltd's Flint AGI at the other end;

- the **Water Connection Corridor** is an area of around 11.5 ha which includes the existing abstraction and discharge infrastructure for cooling water sourced from the River Dee for the existing Connah's Quay Power Station. It includes both intertidal mudflat and saltmarsh habitats of the Dee Estuary and the River Dee itself. The Proposed Development may utilise the existing Connah's Quay Power Station abstraction and discharge infrastructure if this is in a suitable condition for re-use with some refurbishment and additions. Alternatively, new abstraction and discharge infrastructure may be required within the Water Connection Corridor;
- the **Electrical Connection Corridor** is an area of around 3 ha which includes the existing electrical export transmission cable(s) that interface with the Main Site and the existing NGET 400 kilovolt (kV) Substation;
- the **Construction and Indicative Enhancement Area (C&IEA)** is an approximate 13 ha area of vacant land under Uniper's ownership south-east of the Main Site which currently comprises derelict hardstanding with scrub / grass vegetation, open grassland and small trees. Following use during construction as a laydown area, it may be used for biodiversity mitigation and / or enhancement;
- the **Access to Main Site** comprises the existing Kelsterton Road, including a bridge over the North Wales Main Line railway, and part of a former junction between the A548 and Kelsterton Road. This area comprises around 0.2 ha of existing hardstanding with small areas of roadside, kerbs, trees and grass;
- the **Alternative Access to Main Site and Access to C&IEA** is an existing hardstanding road that runs from the B5112 towards the Electrical Connection Corridor beneath the A548 Flintshire Bridge;
- the **Existing Surface Water Outfall** is the area including and surrounding the existing artificial outfall for surface water drainage from the existing Connah's Quay Power Station into the Dee Estuary; and
- the **Access to Wildlife Hides** is an access to specific facilities within an area for landscape and ecological mitigation secured by conditions within the existing Connah's Quay Power Station planning consent and within Uniper land ownership. This area includes five bird hides and one bird screen used by Deeside Naturalists' Society.

Plate NTS5: Areas referred to in the PEIR (centered on Main Site)



The Indicative Site Boundary also includes the 'Temporary AIL Work Areas' which are the ports and routes under consideration to be used for the shipborne delivery of large plant and equipment during construction of the Proposed Development. These are shown in **Plate NTS1** and are:

- Port of Mostyn (PoM), located approximately 14.2 km north-west of the Main Site. The route includes parts of the existing A548 from the PoM to Main Site where temporary works may be required;
- route from Connah's Quay North (CQN) (Corus jetty), adjacent to the Tata Steel/Shotton Mill site and Flintshire Bridge, located approximately 1.1 km to the east of the Main Site; and
- Ellesmere Port (EP) (Manchester Ship Canal) located approximately 13.7 km to the north-east of the Main Site.

3.3 Potential Sensitive Receptors

A number of environmental receptors have been identified within the vicinity of the Proposed Development for each environmental topic assessed and are described in more detail in **Chapter 3: Description of the Existing Environment** (**PEIR Volume II**). Distances are provided as the shortest distance between the receptor and the closest relevant point of the Site.

Key receptors for each topic area have been identified as part of the assessment process and details are included in the relevant technical chapters (**Chapters 8 to 23**, **PEIR Volume II**). A brief summary is also provided below.

Residential Receptors

The nearest residential receptors to the Main Site are located along Kelsterton Road, with the closest receptor being approximately 20 m from the Indicative Site Boundary (Excluding the Temporary AIL Work Areas) and additional residential receptors along Kelsterton Road beyond this distance.

The nearest main settlement is the town of Connah's Quay, the approximate centre of which is located approximately 620 m south of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas) at its closest point. Other nearby settlements to the Indicative Site Boundary (Excluding the Temporary AIL Work Areas) include:

- the village of Oakenholt, its approximate centre located approximately 270 m south-east (though the Repurposed CO_2 Connection Corridor passes within the village);
- the village of Flint Mountain, its approximate centre approximately 1.1 km south-west;
- the town of Flint, approximately 1.6 km west at its approximate centre, though residential areas of the settlement reach to within 210 m west;
- the village of Northop Hall, its approximate centre located approximately 2.9 km south-west; and
- several scattered residential areas and individual residential properties, including farmsteads.

In relation to the Temporary AIL Work Areas, the nearest settlements:

- to the PoM is the town of Mostyn, located approximately 60 m south-west at its closest point from the Indicative Site Boundary. The Indicative Site Boundary between PoM and the Main Site includes the A548 within the settlements of Llannerch-y-Môr, Greenfield, and Flint, while the route itself also passes through Bagillt;
- to CQN is the Golftyn area of Connah's Quay, located approximately 85 m south-west at its closest point to the Indicative Site Boundary; and
- to EP (Manchester Ship Canal) is the town of Ellesmere Port, located approximately 1.4 km south at its closest point to the Indicative Site Boundary.

Ecological Receptors

The Dee Estuary, which is a Special Area of Conservation (SAC), Ramsar site, Special Protection Area (SPA), and Site of Special Scientific Interest (SSSI), is partly located within the Proposed Development Site. The River Dee and Bala Lake SAC is adjacent to the Site.

There are additional nature conservation designations located beyond these within 15 km of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas). This is presented in Table 3-1 of **Chapter 3: Description of the Existing Environment** (**PEIR Volume II**).

The Dee Estuary designations are also located within PoM and CQN, while CQN also overlaps with the River Dee and Bala Lake SAC. The Mersey Estuary, a SAC, Ramsar site, SSSI, and SPA is located within EP.

Due to the proximity of statutory designated European sites, an assessment under the Conservation of Habitats and Species Regulations (2017) will be required. A Habitats Regulations Assessment (HRA) Report will be provided as part of the DCO Application.

Transport Receptors

The principal access to the Main Site during the construction and operation of the Proposed Development would be via Kelsterton Road which provides a link to the A548 Chester Road with wider connections to the strategic road network including M56 and M53 to the north-east of the Site. These roads provide the connections to the Temporary AIL Work Areas.

There are varying levels or provision for walking and cycling on Kelsterton Road between the A548 and the access to the Main Site. This includes a 3 m-wide shared cycleway connecting to the roundabout junction with the A548, as well as a segregated footway on the northern side of Kelsterton Road.

The B5129 provides secondary access to the south-east of the Site (entering the Alternative Access to Main Site and Access to C&IEA), via a priority T-Junction with an unnamed access road, located north of Deeside Stadium.

Public Rights of Way (PRoW) in the vicinity of the Main Site and the Proposed CO_2 Connection Corridor include:

- a designated footpath (FCC Footpath 28) that lies 5 m to the south-eastern extent of the C&IEA and connects to the B5129, continuing towards Quay Business Park where it terminates; and
- a designated footpath (FCC Footpath 66) also intersects the field parcel containing the Proposed CO_2 Connection Corridor, forming a link between Allt-Goch Lane and the farm access road forming the northern boundary of the field parcel.

National Cycle Network (NCN) Route 5 is located in close proximity to the Main Site, routing along the A548 to the west of the Main Site, before connecting to Kelsterton Road and, subsequently, the B5129.

Air Quality Management Areas

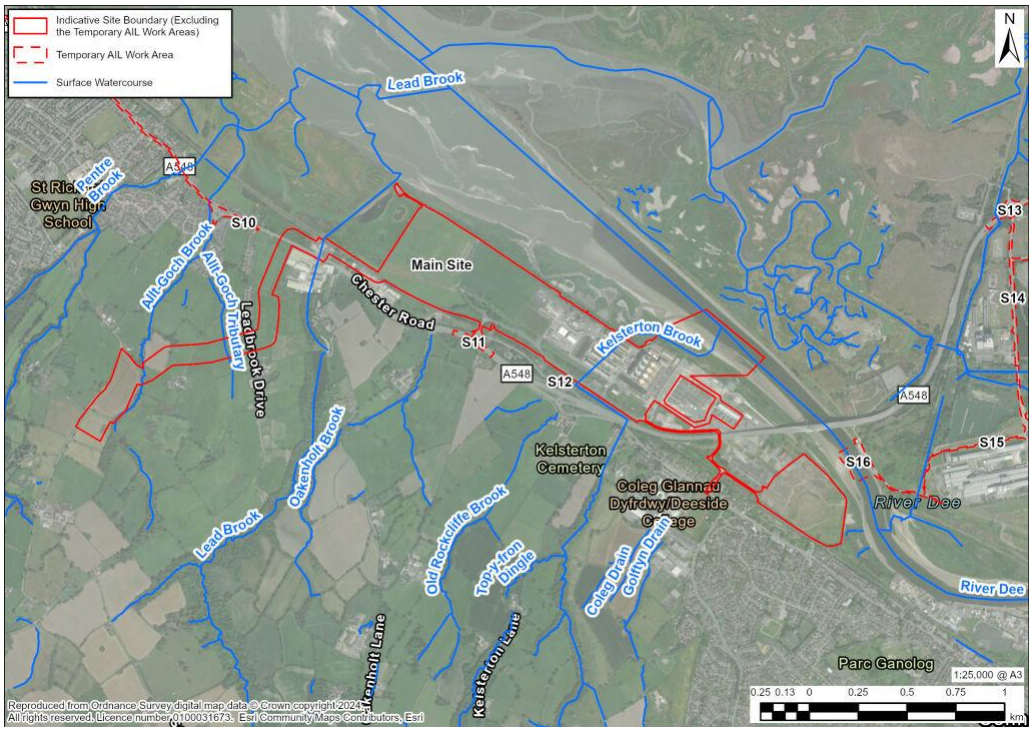
There are no Air Quality Management Areas (AQMAs) designated within or in proximity to the Main Site. In the vicinity of one of the Temporary AIL Work Areas, CWaC has designated Whitby Rd/Station Rd AQMA for nitrogen dioxide (NO_2) due to road traffic sources. This AQMA is located approximately 350 m south-west of EP (Manchester Ship Canal).

Geological, Hydrogeological and Hydrological Receptors

The Site is underlain by superficial Tidal Flat Deposits that are designated as a Secondary Undifferentiated Aquifer and by Glaciofluvial Deposits classified as a Secondary A aquifer, with bedrock of the Pennine Lower Coal Measures Formation - mudstone, siltstone and sandstone designated as a Secondary A aquifer. The Site does not contain or lie within or in close proximity (<1 km) to any groundwater Source Protection Zones (SPZ).

The River Dee is a designated Main River and flows south-east to north-west within/ north of the Indicative Site Boundary. The river is defined as part of the Dee Estuary at this location. Kelsterton Brook, Old Rockliffe Brooke / Drain and Lead Brook / Northop Brook, all ordinary watercourses, intersect with or are in proximity to the Indicative Site Boundary (Excluding the Temporary AIL Work Areas). Surface watercourses are shown on **Plate NTS6**.

Plate NTS6: Local Surface Watercourses



Terrestrial Heritage Receptors

There are 10 scheduled monuments, 77 listed buildings, and four conservation areas located within 3 km of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas).

The nearest scheduled monuments include:

- Croes Atti Roman Site (FL213) located 130 m west;
- Kelsterton Brewery (FL180) located 260 m south-east; and
- Pentre Bridge Roman Site (FL131) located 645 m north-west.

The 77 listed buildings within the 3 km study area include one Grade I listed building, a church dating to the medieval period, and six Grade II* listed buildings comprising a hall, houses, farmhouses, and a school building dating to the post-medieval and modern periods. The remaining 70 Grade II listed buildings comprise farmsteads and associated farm buildings, war memorials, ancillary buildings, schools and churches dating to the post-medieval and modern periods.

The nearest listed buildings to the Indicative Site Boundary (Excluding the Temporary AIL Work Areas) include:

- Kelsterton Hall (Cadw: 1; Grade II), located approximately 130 m south-west of the Main Site;
- Leadbrook Hall (Cadw: 16409; Grade II), located approximately 150 m south of the Repurposed CO2 Connection Corridor; and
- Church of St Mark (Cadw: 85254; Grade II), located approximately 325 m south-east of the C&IEA.

There are a number of conservation areas within the wider 5 km study area but only Oakenholt Hall conservation area is within 1 km of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas).

Flint conservation area, in the north-central area of the town, is partially within the Temporary AIL Work Areas and several Grade II listed buildings are located within close proximity.

Five non-designated historic assets have been identified within the Indicative Site Boundary and there is potential for archaeological features above the mean high water springs, such as preserved wooden structures, to remain present along the waterfront within the Water Connection Corridor.

Landscape and Visual Receptors

The Indicative Site Boundary is located approximately 7.8 km north-east of the Clwydian Range and Dee Valley National Landscape and is located within National Landscape Character Area 13: Glannau Dyfrdwy a Wrecsam /Deeside and Wrexham (NLCA13), defined by Natural Resources Wales (NRW). It is situated along the southern shore of the Dee Estuary and is located within Marine Character Area 01: Dee Estuary (MCA01). 'Character areas' are defined by the relevant authority based on their distinct, recognisable character and natural boundaries. The open countryside to the north of the Main Site, which overlooks the Dee Estuary, has been designated as an Area of Special County Value by CWaC, for its distinctiveness, landscape character, and scenic views over the Estuary.

The Dee Estuary has been evaluated as high overall scenic quality, integrity, character, and rarity. There is an expanse of the Dee Estuary to the east of the Main Site that has been designated as outstanding habitat and historic value, while the surrounding area and the Site have been designated as moderate to low.

Agricultural Land Classification

Predictive Agricultural Land Classification (ALC) mapping indicates that urban land is the largest individual element of the Indicative Site Boundary (Excluding the Temporary AIL Work Areas), with Best and Most Versatile (BMV) Grade 2 (very good quality agricultural land) and Subgrade 3a (good quality agricultural land) also present. Smaller elements of non-BMV (Grade 3b, Grade 5 and no-agricultural land) are also present. Grade 2 land according to predictive ALC mapping is within the Main Site. The Subgrade 3a land dominates the Repurposed and Proposed CO_2 Connection Corridors.

4. The Proposed Development

4.1 Components of the Proposed Development

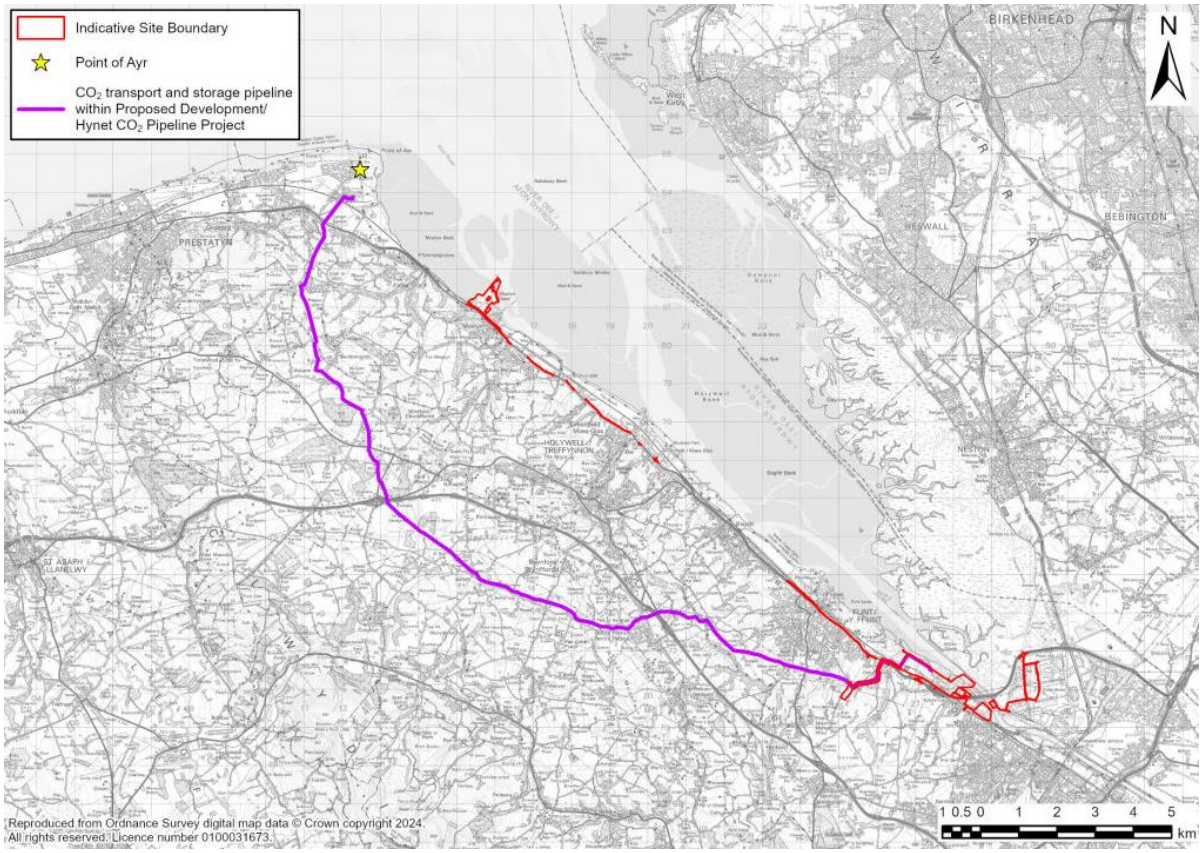
The Proposed Development comprises the demolition of an existing gas treatment plant (GTP) and above-ground installation (AGI), store buildings, and contractors' facilities on site, and the construction, operation, and maintenance of a CCGT generating plant with CCP including a Proposed CO_2 AGI.

The Proposed Development is comprised of up to two 'Trains' – whereby a 'Train' refers to each CCGT unit and associated CCP and the supporting development within the Main Site required to operate these. These Trains may be installed in a phased manner, with a combined net electrical output capacity of up to 1,380 Megawatts (MWe).

The Proposed Development will be fuelled by natural gas and requires electricity, cooling water, mains water, data/telecommunications, and CO_2 transport and storage (T&S) connections. It will be designed to operate with a post-combustion CCP installed and will generally be operated in response to demand (also known as 'dispatchable').

The location of the Proposed Development makes use of the existing available infrastructure links including electrical grid and gas, specifically the NGET and National Gas Transmission (NGT) networks. The location has been sited to facilitate its connection to the emerging proposals for the HyNet CO_2 Pipeline Project (see **Plate NTS7** for part of the HyNet CO_2 Pipeline Project relevant to the Proposed Development), which was granted development consent in March 2024. This is being developed to connect carbon capture plants in the region via an onshore CO_2 T&S network to enable transportation via offshore pipelines for storage in existing depleted oil and gas fields in Liverpool Bay. The HyNet CO_2 Pipeline Project is being developed by Liverpool Bay CCS Ltd, and a final investment decision is expected later in 2024.

Plate NTS7: Proposed Development Interface with HyNet CO_2 Pipeline Project



The Proposed Development incorporates equipment required for the capture and compression of CO_2 emissions from the generating plant for onward transfer and connection into the Proposed HyNet CO_2 Pipeline (Ref. 4) via the proposed Liverpool Bay CCS Ltd's Flint AGI (part of the HyNet CO_2 Pipeline Project), as shown in **Plate NTS7**, for subsequent compression and transport to offshore geological storage site.

The components of the Proposed Development include:

- CCGT units with associated stacks (heights up to 120 m above ground);
- post-combustion CCP and associated stacks, including measures to reduce other emissions and re-use chemicals:
- equipment and associated utilities;
- cooling infrastructure;
- other ancillary buildings and structures;
- CO_2 export and third-party connections (above-ground installations (AGI) / on-site utilities.)

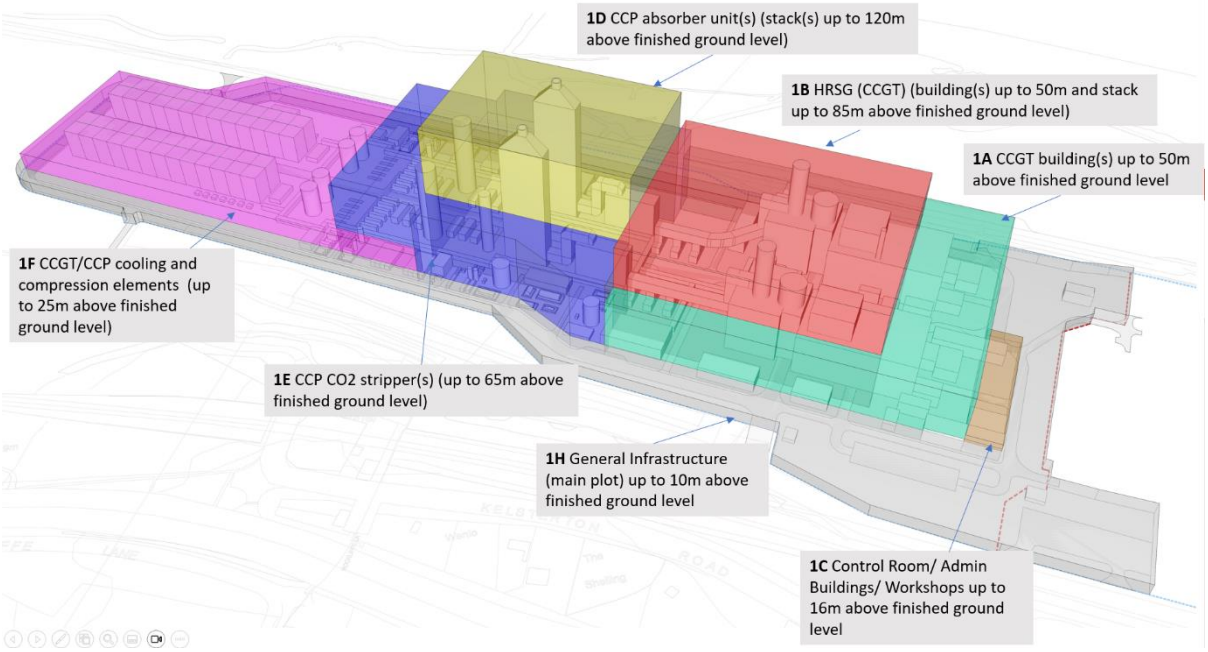
Connections and ancillary infrastructure are likely to include:

- natural gas connection and treatment infrastructure;
- Electrical Connection works;
- Water Connection works including abstraction and discharge infrastructure;
- drainage and surface water attenuation;
- domestic and sanitary effluent;

- potable/ towns and de-mineralised water; and
- chemical and material storage.

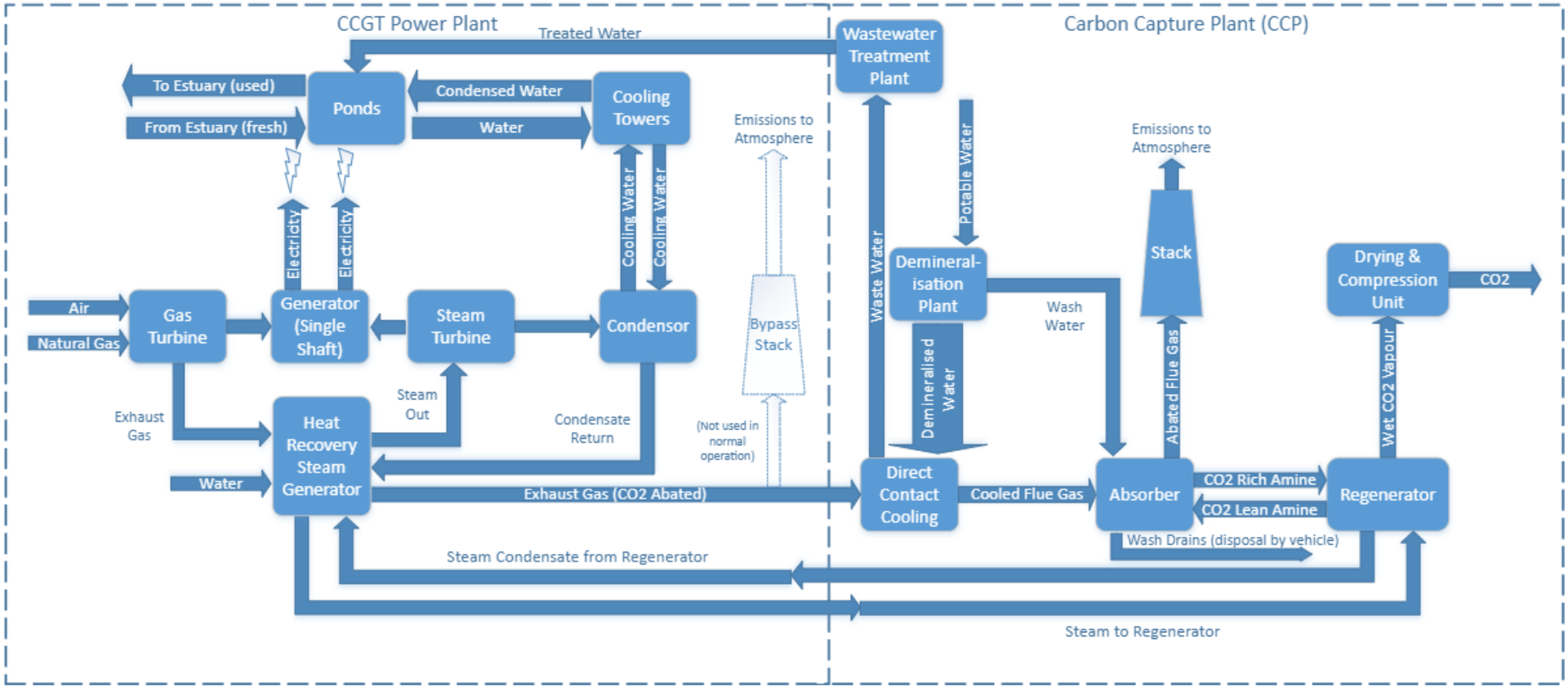
An indicative illustration of the maximum parameters of Proposed Development within the Main Site based on the tallest component in each area is shown in **Plate NTS8** and is further detailed in **Chapter 4: The Proposed Development** (**Volume II**).

Plate NTS8: Indicative illustration of the Proposed Development within the Main Site, based on the maximum parameters in each area (Single Absorber Unit Layout)



A schematic of the Proposed Development and its processes is shown in **Plate NTS9.**

Plate NTS9: Process Schematic of Integrated Power and Carbon Capture Units



Power Generation and Carbon Capture Plant

Natural gas that has been conditioned to the required temperature and pressure will be burned in the CCGT.

Following combustion, the hot product gases enter the gas turbine where, by expanding, they will cause it to rotate and drive an electrical generator. The gas turbine exhaust gases are passed through the Heat Recovery Steam Generator (HRSG) to recover the useful heat in order to produce steam (at various pressures) to generate further power via a separate steam turbine, and for heating of process streams within the CCP.

Flue gases (i.e. waste gases from the combustion process) are expected to be treated with Selective Catalytic Reduction (SCR) to further remove NO_x to the required emission limits as set by an Environmental Permit for the Proposed Development. Although it will be possible to vent exhaust gases through a dedicated stack above the HRSG building (for example during outages of the CCP), during normal operation, this will not happen. Instead, the hot flue gases will enter the integrated CCP.

The CCP will be capable of capturing up to 95% of the CO_2 emitted from the power station. The benefits of the Proposed Development will therefore be to supply low-carbon electricity to the UK electricity supply grid which will displace higher carbon intensity grid electricity (or other power generation sources).

The CCP will include a CO_2 absorption column (absorber) and associated stack(s), a CO_2 removal column (stripper/ regenerator) and associated supporting equipment including storage of the chemical solvent that will remove the CO_2 from the gas stream. The solvent to be used is the subject of ongoing technical studies but is assumed to be a solution of amines which selectively absorb gases such as CO_2.

The captured CO_2 will be treated in a gas conditioning and compression facility to remove traces of oxygen before it is sent to the Repurposed CO_2 Connection, Proposed CO_2 Connection and subsequently the Proposed HyNet CO_2 Pipeline.

Each of the main components of the Main Site are described in detail in **Chapter 4: The Proposed Development** (**PEIR Volume II**).

Liverpool Bay CCS Ltd would be responsible for the construction, operation and decommissioning of the CO_2 gathering network (the HyNet CO_2 Pipeline Project and offshore transportation and storage network). The Proposed Hynet CO_2 Pipeline does not form part of this Application but is the subject of separate consent application(s) by third parties. Notwithstanding this, it is still necessary for the EIA in support of this DCO application to consider the potential in-combination and cumulative effects of these activities taking place. This is considered in **Chapter 24: Cumulative and Combined Effects** (**PEIR Volume II**).

4.2 Design Parameters

The design of the Proposed Development is following an iterative process, based on preliminary environmental assessments and consultation and technical engagement with statutory and non-statutory consultees. Therefore, the design of the Proposed Development is likely to evolve as the Application progresses.

Additionally at this stage, the final technology selection cannot yet be made as it will be determined by various technical and economic considerations and the contractors

selected for the Proposed Development. The design of the Proposed Development therefore incorporates a necessary degree of flexibility to allow for the future selection of the preferred technology in the light of prevailing policy and market conditions once a DCO is granted.

Where design details cannot yet be finalised, a conservative approach has been adopted whereby the option that gives rise to the worst-case potential environmental impact has been assessed in the PEIR. This is referred to as the 'Rochdale Envelope' approach.

4.3 Proposed Development Operation

Operation of the Proposed Development is anticipated to create up to 66 permanent operational roles. During major outages during the operational phase, which are likely to occur approximately every four years (per unit), it is envisaged that there could be up to 300 additional staff although these are short-term requirements (approximately two months).

The operation of the Proposed Development would be regulated by the Environment Agency through an Environmental Permit. This permit would be used to control normal emissions to the environment from the plant and would also consider potential abnormal operation scenarios and prevention or minimisation of accidents, through the use of management procedures and process monitoring. The Proposed Development would also comply with the Industrial Emissions Directive (IED) so that the impact of emissions to air, soil, surface and ground water, to the environment and human health would be minimised.

5. Proposed Development Construction

5.1 Construction Methodology

The Applicant will appoint one or more contractors for the construction of the Proposed Development. The Applicant is committed to creating a safe working environment for all its employees and contractors.

It is possible that the two Trains will be constructed in a phased approach. Subject to being granted development consent and following a final investment decision, under this phased approach, it is anticipated that construction of a single CCGT and CCP together with cooling and CO_2 compression infrastructure and associated development (herein referred to as 'Train 1, Phase 1'), could commence in 2026, and last approximately four years. The construction of a similar CCGT and CCP together with cooling infrastructure and associated development (herein referred to as 'Train 2, Phase 2'), could commence in 2031 and last approximately four years. These dates are indicative.

For each of the technical assessments in the PEIR, a reasonable worst-case is assumed. For some assessments, this includes consideration of:

- potential for Train 1 and Train 2 to be constructed during a single phase (herein referred to as a 'Single Phase'); or
- construction commencing as late as 2031 as the DCO Application will seek consent for the commencement of the Proposed Development to take place up to five years from the date of granting of the DCO (depending on market needs and financing).

During the construction phase, earthworks will be required to reprofile the Main Site, to produce a level platform, excavate foundations and/ or remove surplus material or remediate contaminated soils. 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 will also be necessary to provide a suitable foundation platform for the Main Site.

Construction laydown areas, including contractor's compound(s), will be required. **Plate NTS5** above shows the indicative areas of land that are under consideration for construction laydown . Additional laydown will be required within the Proposed CO_2 Connection Corridor.

The preliminary works required are the subject of on-going studies but are likely to include:

- erection of site fencing and notices;
- environmental surveys and ground investigations including remedial work, if required;
- demolition of the GTP, existing GTP AGI, and existing stores building (and removal of temporary modular structures);
- earthworks and site clearance; and

- diversion and laying of services.

The contractor will prepare and level the Main Site, followed by piling (if required) and excavation for main foundations, e.g. absorber stack, HRSG and turbine hall. Plant and equipment will be pre-fabricated where practicable. However, it is anticipated that certain larger items of plant may need to be fabricated and erected on-site due to their anticipated size or weight.

Based on initial estimates, it is considered that there could be approximately 1,000 workers contracted to work on the Main Site at the peak of construction for each phase (Phase 1 or 2). If a Single Phase approach is adopted for construction of both Train 1 and 2, it is anticipated that peak construction numbers could be approximately 1,600 workers.

Core construction working hours would be 07:00 to 19:00 Monday to Friday 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, subject to consultation with the local planning authority.

The Main Site is currently proposed to be accessed via the existing Kelsterton Road. Additional works may be required at the existing Access to the Main Site, which comprises the existing Kelsterton Road, including a bridge over the North Wales Main Line railway, and the location of a relict slip-road between the A548 and Kelsterton Road.

Abnormal indivisible loads (AIL), formed of the largest components that cannot be disassembled for transport, will be transported to the Site initially by sea to one of three offloading locations described in Section 3.2 and shown on **Plate NTS1** (all included in the Indicative Site Boundary):

- PoM (operational port);
- CQN (existing commercial offloading facility); or
- EP (operational port).

AIL will be offloaded using mobile crane or roll-on, roll-off facilities for transport by specialized vehicle and contractor. From the offloading facilities, AIL will be transported via the motorway and/or A road network to the A548 south of the Main Site. From there, a reinstated junction will form a direct connection from the A548 to the existing access to the Main Site, via a temporary gap in the central reservation to ease turning.

PoM and EP allow direct access to the A548 and M53, respectively. CQN requires the use of private and public unclassified roads before connecting to the A548. Temporary accommodation works to tree branches, to lift overhead wires, or to temporarily remove street signs/lights/furniture may be required on the A548 and unclassified roads near CQN to facilitate transport of AILs.

5.2 Proposed Development Decommissioning

It is envisaged that the power generation and carbon capture elements of the Proposed Development would have a design and operational life of up to 30 years; therefore, decommissioning activities are currently anticipated to not commence until after 2060 or 2065. At the end of operation, it is expected that the Proposed Development will have some residual life remaining, and an investment decision would then be made based on the market conditions prevailing at that time. If the operating

life were to be extended, the Proposed Development would be upgraded in line with the legislative requirements at that time.

6. Consideration of Alternatives

Chapter 6: Project Alternatives (**PEIR Volume II**) provides information on the reasonable alternatives considered in the EIA. Alternatives have been considered during the evolution of the Proposed Development including:

- do nothing
- alternative sites
- alternative designs; and
- alternative layouts.

The Main Site was identified as being the most suitable for the following key reasons:

- absence of major structures requiring demolition, treatment and removal on the Main Site footprint, allowing for continuation of electricity generation during construction (if either construction approach described in Chapter 2: Assessment Methodology and Consultation is adopted);
- sufficient space is available within the Main Site plot to accommodate the power generation and carbon capture equipment without encroaching on OHL exclusion zones;
- the Main Site enables connections to be developed to existing electrical, gas and, in the future, CO2 pipeline infrastructure; and
- adequate supplies of cooling water are available from the adjacent Dee Estuary, utilising existing and / or new abstraction and discharge infrastructure.

Additionally, the indicative linear layout of the Trains within the Main Site was selected to potentially reduce the potential visual impact of the Proposed Development by grouping the elements with the greatest above ground height in close proximity to each other.

The Proposed Development includes an appropriate degree of flexibility for a number of technical parameters that have yet to be finalised. The design process and feedback from the EIA process will continue to iteratively assess and improve upon the design of the Proposed Development.

7. Results of the Preliminary Environmental Impact Assessment

7.1 Overview

This section provides a summary of the preliminary assessment of likely environmental effects predicted to occur as a result of the construction, operation (including maintenance) and decommissioning of the Proposed Development. This takes into account design development and embedded mitigation which are part of the Proposed Development. Effects are assessed as either significant or not significant. Where effects are likely to be significant, suggestions for additional mitigation measures are identified. The NTS is based on reasonable worst case assumptions as assessments are still ongoing and there will be additional mitigation measures be developed at the ES stage. Where there is uncertainty at this stage of the assessment on likely significant effects, this is also outlined. This section of the NTS also identifies non-significant effects that may be of particular interest to stakeholders. The likely significant environmental effects of the Proposed Development are fully described within PEIR (**Volume II**).

7.2 Air Quality

Potential emissions to air during construction of the Proposed Development may result in:

- impacts on amenity, human health and ecological receptors from emissions of dust and particulate matter; and
- impacts on human health and ecological receptors from traffic emissions.

Potential emissions to air during operation may result in:

- impacts on human health and ecological receptors from operations of the CCGT and integrated CCP and associated emissions; and
- impacts on human health and ecological receptors from traffic emissions.

The predicted air quality impacts of decommissioning are considered to be comparable to, or less than, those assessed associated with construction activities.

Embedded mitigation measures during construction include standard control measures such as covering materials that are stored and transport to/from site and avoiding vehicle and plant idling. Embedded measures during operation include monitoring and controlling process emissions to comply with Emission Limit Values regulated by Natural Resources Wales. Furthermore, the heights of absorber stacks have been chosen to allow good dispersion of emissions into the air.

Taking into account these embedded measures, and on the basis of modelling for operational effects, no likely significant effects on human health are currently anticipated during construction, operation or decommissioning of the Proposed Development. Potential impacts on ecological sites are discussed in Section 1.4.

7.3 Noise and Vibration

The Proposed Development has the potential to impact Noise Sensitive Receptors (NSR) such as residents and educational and health facilities. During the construction phase, a number of embedded mitigation measures will be implemented including limiting the hours that work can take place, abiding by agreed noise thresholds, using modern/quieter equipment and plant, appropriate routing of construction traffic and ensuring processes are in place to inform the local community of construction works.

The embedded mitigation measures will reduce the significance of effects for many NSRs. However, prior to additional mitigation measures there are a number of NSRs that are expected to experience **significant** effects associated with construction of the Main Site and Construction and Indicative Enhancement Area, the Repurposed CO_2 Connection Corridor, the Proposed CO_2 Connection Corridor, the Electrical Connection, and the Water Connection. There is also the potential for **significant** effects on three NSRs on Kelsterton Road due to construction traffic impacts and on one NSR on Kelsterton Road at the closest approach to the construction laydown area, due to construction vibration effects from vibratory rollers.

Additional measures to mitigate these effects include jackets on pneumatic drills, acoustic covers on compressors, shrouds on piling rigs and cranes, lower amplitude vibratory rollers, and potentially further refinement of the construction works programme. With these additional measures, there are generally expected to be **no residual significant** noise and vibration effects arising from construction. The exception is construction traffic on Kelsterton Road, the access road to the Main Site, which is still expected to have a moderate adverse (**significant**) noise effect.

The effects of decommissioning noise and vibration are considered to be comparable to, or less than, those assessed for construction activities and are therefore considered to be not significant during the daytime. However, if the decommissioning works are undertaken during evening, night or weekend periods there is the potential for **significant adverse** effects.

During the operational phase, a number of sound mitigation measures have been embedded within the design including increased sound insulation, enclosure of plant and acoustic lagging, although additional and/or alternative solutions may be identified as the design evolves. Furthermore, operational noise will be controlled by the Environmental Permit, which will require operational noise from the power station to be controlled using Best Available Techniques (BAT).

During the operational phase, with embedded mitigation measures in place, moderate to major adverse (**significant**) effects are predicted during the daytime or night-time periods at three NSRs on Kelsterton Road.

During the detailed design stage mitigation measures to minimise operational sound will be considered, including:

- enclosure of key sound sources;
- use of quieter plant (including limits on sound emissions from plant and equipment at source);
- orientation of plant within the site to provide screening of low-levels sound sources by other buildings, structures and dedicated barriers, or orientating fans and the air inlets away from sensitive receptors; and

- use of additional acoustic barriers/screens or earth bunds to reduce transmission of sound from the Site to NSRs.

Furthermore, during detailed design, an operational noise control scheme (including noise limits as agreed with the local authority) will be prepared and secured by a Requirement of the DCO. The noise control scheme will set out the noise reduction measures to be incorporated into the Proposed Development and will demonstrate the use of Best Available Techniques (BAT) for the control of noise for the Environmental Permit.

Following the implementation of additional mitigation measures, there would be **no residual significant** noise and vibration effects from the operation of the Proposed Development.

7.4 Traffic and Transport

Impacts with regards to traffic and transport during the construction operational, and decommissioning phases may include effects relating to:

- severance – relating to the change in traffic flows;
- pedestrian amenity;
- fear and intimidation;
- road user and pedestrian safety;
- hazardous / large loads; and
- driver delay.

The environmental impact assessment demonstrates the largest amount of impact would be experienced on Kelsterton Road during construction. However, most HGV traffic will access the site directly from the A548 which forms part of the strategic road network, avoiding surrounding local roads. As part of the embedded mitigation during the construction phase, a full Construction Traffic Management Plan (CTMP) and Construction Worker Management Plan (CWMP) will be prepared by the contractor(s) which will set out precise details of construction traffic management measures, including management of the local highway in the vicinity of any temporary road closures. The CTMP and CWMP will be in accordance with the Framework CTMP and Framework CWMP that will be prepared as part of the DCO Application. In particular, the CTMP will outline specific measures proposed for Kelsterton Road, so that the impacts of increased traffic are mitigated.

Taking into account the embedded mitigation measures, no likely significant effects relating to traffic and transport are currently anticipated during construction, operation, or decommissioning of the Proposed Development.

Information and quantities in relation to hazardous loads and detail of the size / weight of Abnormal Indivisible Loads (AILs) are still being considered as part of the EIA and through ongoing design development. These impacts will be reported and assessed within the ES.

Impacts during decommissioning are likely to be similar or less than impacts during construction.

7.5 Terrestrial and Aquatic Ecology

The assessment of potential impacts and effects on terrestrial and aquatic ecology includes nature conservation designations and protected and notable habitats and species. As assessments and surveys are still ongoing, precautionary assessments based on reasonable worst-case scenarios have been applied at this stage. The receptors listed below will be fully assessed through the EIA and Habitat Regulations Assessment (HRA) processes which are currently in progress. The HRA will assess how the Proposed Development would affect designated Habitats Sites. Engagement is ongoing with NRW.

During the construction phase, a number of embedded mitigation measures will be implemented including habitat retention, ecological safeguarding zones, vegetation replanting / replacement, precautionary working methods, good practice in relation to noise, vibration, water and dust, and the appointment of an Ecological Clerk of Works to supervise construction.

Prior to the completion of all assessments and surveys, likely **significant adverse effects** currently cannot be ruled out on the following designated sites and receptors during construction. This is as a result of potential habitat loss / damage and / or changes in noise, air quality / hydrology and water quality:

- Dee Estuary SPA / Ramsar site / SAC;
- The River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC;
- Dee Estuary / Aber Afon Dyfrdwy SSSI;
- Dee Estuary SSSI (England);
- Saltmarsh;
- Rivers (River Dee Estuary);
- Birds;
- Bats;
- Otter;
- Water vole;
- Terrestrial Invertebrates; and
- Aquatic Ecology (Aquatic Invertebrates, Fish, Aquatic Plants).

Likely **significant adverse effects** during construction are currently anticipated upon:

- Afon Dyfrdwy (River Dee) SSSI – due to changes in hydrology and water quality;
- River Dee (England) SSSI – due to changes in hydrology and water quality;
- The River Dee LWS – due to changes in hydrology and water quality;
- Possible Open Mosaic Habitats – due to habitat loss;
- Other lowland mixed deciduous woodland – due to habitat loss;
- Hedgerows – due to habitat loss; and
- Other rivers and streams – due to habitat loss.

After further assessment, design refinement and additional mitigation measures such as those in relation to hydrology and water quality and habitat replacement / planting / translocation, these likely significant adverse effects are expected to be **not significant**.

During the operational phase, a number of embedded mitigation measures are anticipated to be implemented including providing Net Benefit for Biodiversity, sensitive lighting design and providing landscaping and ecological management on site. The Proposed Development will also be required to operate in line with the requirements of the Environmental Permit including limits relating to the discharge of cooling water to the Dee Estuary and the discharge of emissions to air.

As with the construction impacts, prior to the completion of all assessments and surveys, likely **significant adverse effects** currently cannot be ruled out on the following designated sites and receptors during operation. This is as a result of changes in noise, air quality / hydrology and water quality:

- Dee Estuary SPA / Ramsar site / SAC;
- The River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC;
- Deeside and Buckley Newt sites SAC;
- Halkyn Mountain / Mynydd Helygain SAC;
- Alyn Valley Woods / Coedwigoedd Dyffryn Alun SAC;
- Mersey Estuary SPA / Ramsar site (England);
- Dee Estuary / Aber Afon Dyfrdwy SSSI;
- Afon Dyfrdwy (River Dee) SSSI;
- A number of locally designated wildlife sites;
- Ancient Woodland;
- Saltmarsh;
- Rivers (River Dee Estuary);
- Possible Open Mosaic Habitat; and
- Birds.

Significant adverse effects are currently anticipated on the following designated sites as a result in changes in air quality due to the operation of the Proposed Development:

- Shotton Lagoons and Reedbeds SSSI;
- Inner Marsh Farm SSSI; and
- Connah's Quay Ponds and Woodland SSSI.

Further assessment, design refinement and additional mitigation measures in relation to air quality emissions, noise and visual disturbance are anticipated to have the potential to reduce the adverse effects below those currently identified, though some residual effects are anticipated to remain **significant** at this stage. These will be assessed as part of the Environmental Statement. The effects of decommissioning would to be similar to construction.

7.6 Marine Ecology

Potential impacts on marine ecology during the construction may include:

- permanent and temporary direct loss and physical disturbance to benthic habitats and species from works carried out below mean high water springs within the Water Connection Corridor;
- physical disturbance to marine ecology from a temporary increase in suspended sediment concentrations and subsequent sediment deposition leading to increased turbidity, smothering effects and possible contaminant mobilisation;
- effects to marine ecology from changes in marine water quality due to accidental spills within the study area;
- underwater sound and vibration disturbance to marine ecology, particularly migratory fish, within the zone of influence;
- indirect effects to marine ecology from hydromorphological changes (e.g. changes to water flow or sediment movement) within the study area;
- introduction and spread of invasive non-native species from any in-river works; and
- collisions between project vessels and marine mammals, particularly seals.

Potential impacts on marine ecology receptors during the operation may include:

- direct loss and physical disturbance to benthic habitats and species from works (e.g. air blasting and sediment clearing) carried out below mean high water springs within the Water Connection Corridor section of the Site;
- indirect effects to marine ecology from any changes to existing thermal and chemical effects from treated water discharge (subject to control under permitted limits required for discharges);
- indirect effects to benthic ecology from hydromorphological changes (e.g. changes to water flow or sediment movement) within the zone of influence, including ongoing scour;
- physical disturbance and potential mortality to benthic and fish and shellfish ecology from entrainment and impingement within the cooling water abstraction and discharge infrastructure within the Water Connection Corridor;
- temporary increase in suspended sediment concentrations sediment deposition from air blasting and screen cleaning leading to increased turbidity, smothering effects and possible contaminant mobilisation on subtidal habitats and species; and
- effects to intertidal habitats and species (including fish) from the deposition of airborne pollutants (e.g. from emissions from the power plant stacks during operation).

Embedded mitigation measures include measures to control and minimize the risk of pollution to surface waters by managing construction site run-off, and measures to control storage, handling and disposal of polluting substances. Of the potential impacts

during the construction and operation of the Proposed Development, none are expected to result in a likely significant adverse or beneficial effect. However, potential impacts will be assessed in further detail in the ES, once further information has been gathered.

Environmental effects associated with decommissioning of the Proposed Development are assumed to be no worse than those during construction and operation phases.

7.7 Water Environment and Flood Risk

This topic considers water quality and resources, hydromorphology, flood risk and drainage of surface water and groundwater features including watercourses, lakes, canals, estuaries, coastal waters and aquifers.

The following potential impacts from construction are considered to have the potential to lead to effects that are **significant**, prior to any additional mitigation:

- Potential temporary impacts on water quality in the River Dee due to the uncontrolled discharge of sediment laden water associated with construction activities;
- potential temporary impacts on water quality in the River Dee due to the accidental spillage of oils, fuels and other construction chemicals, or through uncontrolled site run-off;
- there will be direct works in the River Dee for the replacement or refurbishment of the outfall and intake structure. This has the potential to cause a reduction in water quality through sediment disturbance or mobilisation of contaminated sediments or contaminated runoff from piling and construction;
- displacement of floodwater due to construction within the Kelsterton Brook and Old Rockcliffe Brook floodplains resulting in an increased flood risk to off-site receptors; and
- a reduction in the capacity of the River Dee resulting in increased flood risk to off-site receptors.

Potential additional mitigation includes further sediment and pollution control measures to be applied around Kelsterton Brook / Old Rockcliffe Drain and River Dee. Hydraulic modelling, which estimates flow, water level and velocity in river channels, will be undertaken for Kelsterton Brook / Old Rockcliffe Drain and River Dee to assess the potential impacts of the Proposed Development. Appropriate mitigation will then be implemented, if required. A Construction Drainage Strategy will be prepared to help prevent risks to off-site receptors. With these additional mitigation measures, **no significant residual effects** are anticipated. However, effects associated with the construction of the Water Connection Corridor on the River Dee cannot be assessed fully at this stage until further modelling takes place.

The following potential impacts are considered to have the potential to lead to effects that are **significant**, prior to any additional mitigation measures during operation:

- potential for contaminated process water to be accidentally discharged or to overflow into the 'clean' surface water drainage system and into the River Dee;

- land raising, construction of Main Site and Water Connection Corridor may result in loss of floodplain, resulting in increased flood levels impacting on off-site receptors, in relation to the River Dee, Kelsterton Brook / Old Rockcliffe Brook and Lead Brook; and
- Potential additional mitigation for surface water includes good site management. Further investigation will also be carried out into process water and foul water arrangements.

If effects are identified then appropriate additional mitigation will be applied. Furthermore, hydraulic modelling will be undertaken to assess the potential impacts associated with the likely land raising and presence of the Main Site on the River Dee floodplain and off-site receptors. With these additional mitigation measures, **no significant residual effects** are anticipated during operation.

Potential decommissioning impacts and effects are considered to be the same as the construction phase and will be assessed in the ES.

7.8 Geology and Ground Conditions

Potential impacts on geology and ground conditions during construction of the Proposed Development may include:

- Mineral resources:
  - temporary adverse effects may occur where construction compounds are proposed within the Mineral Safeguarding Areas (MSA). This may resulting in a temporary sterilisation of the resource, preventing mineral extraction.
- Contaminated land:
  - mobilising existing contamination potentially present in soil and groundwater as a result of ground disturbance and potential dewatering, which is the removal of ground water;
  - increasing the potential for contaminants in unsaturated soils to leach to groundwater in open excavations during construction;
  - increasing the potential for contaminated surface run-off to migrate to surface water and groundwater receptors as a result of leaching from uncovered stockpiles of excavated materials;
  - introducing new sources of contamination, such as fuels and oils used in construction plant;
  - creating preferential pathways for the migration of soil contamination and gases, for example, along new below ground service routes, service ducts and as a result of potential dewatering; and
  - introducing new human health receptors such as site staff during and post-construction.
- Soil and agricultural land:
  - the withdrawal of land from agricultural use to be repurposed as construction laydown areas; and
  - temporary removal of soils from agriculture.

Potential impacts on geology and ground conditions during operation may include:

- Mineral resources:
  - the effect from operation of the Proposed Development on the MSA will be permanent when underlying the footprint of permanent works, limiting the opportunity for mineral extraction.
- Soil and agricultural land:
  - soil functioning would be lost under the footprint of the development.

Potential impacts on geology and ground conditions during decommissioning may include:

- Mineral resources:
  - temporary adverse effects may occur where decommissioning compounds are proposed within the MSA. In such cases, there will be a temporary sterilisation of the resource during decommissioning works preventing mineral extraction.
- Contaminated land:
  - potential impacts are considered to be the same as the construction phase.
- Soil and agricultural land:
  - agricultural use of land within the Repurposed and Proposed CO_2 Connection Corridors would be possible throughout operation and following decommissioning of the Proposed Development, however, it is not foreseen that decommissioning of the Main Site would necessarily result in a return to agriculture and as a worst-case assumption the impacts should be considered permanent.

Example embedded mitigation measures include ground investigation to inform further design; a more detailed hydrogeological assessment and associated mitigation strategy; a CEMP which sets out environmental control, protection and response measures; and a further survey on existing agricultural land classification. No additional mitigation, compensation and enhancement measures are anticipated to be required for Geology and Ground Conditions during the construction, operation or decommissioning phase.

The significance of the effects during the construction, operation and decommissioning phases will be formally assessed in the ES. This will ensure the final mitigation measures set out in the ES are sufficient so that all identified effects to receptors are minimised as far as practicable within the constraints of the Proposed Development and in accordance with all applicable legislation. At this stage, it is considered that effects are unlikely to be significant.

7.9 Landscape and Visual Amenity

The potential landscape / seascape and visual impacts of the Proposed Development primarily relate to the visibility of the proposed structures (temporary and permanent), including how this affects the perceptual qualities and tranquility of a character area and the direct loss of landscape features within the Site.

In the case of the construction phase of the Proposed Development this relates to the following:

- permanent removal of areas of grassland;
- removal of areas of vegetative scrub for construction laydown activities;
- the introduction of stationary and moving plant including cranes and piling rigs and other high level construction machinery;
- the introduction of low-level construction activities including temporary stockpiling of storage of materials, contractor/ welfare facilities and temporary laydown areas;
- construction vehicles including Heavy Goods Vehicles (HGV) entering and leaving the Site and surrounding area; and
- the progressive construction of tall structures including new elements of height such as the absorber stacks and the HRSG stacks.

In the case of the operational phase of the Proposed Development this relates to the following:

- introduction of large-scale buildings and structures within the maximum parameters of the Site;
- introduction of additional site lighting, where required for operational safety;
- movement of additional vehicles within and around the operational area; and
- potential visibility of plumes from the operation of Proposed Development's cooling towers at certain times of the year.

The potential impacts on landscape character and visual amenity arising as a result of decommissioning of the Proposed Development are considered to be similar to those identified at the construction stage of the Proposed Development.

The Proposed Development has been designed, as far as possible, to avoid or minimise impacts and effects on Landscape and Visual Amenity. Measures include using grouping large plant items closest to existing assets, the use suitable materials to break up the bulk of the buildings and structures, and reducing unnecessary light spill.

For the construction, operational and decommissioning phases, it is assessed that there is expected to be a moderate adverse **significant** visual effect for:

- Viewpoint 8 – Flint Castle
- Viewpoint 10 - Kelsterton Road, Rockcliffe, Connah's Quay;
- Viewpoint 11 - Kelsterton Cemetery, Memorial Garden, Rockcliffe, Connah's Quay; and
- Users of National Cycle Route (NCR) 5 and Public Rights of Way on the north bank of the River Dee.

This is due to the visibility of construction and decommissioning activity and the operational Proposed Development. The opportunity for mitigation of the visual effects, including Viewpoints 8, 10 and 11, is limited due to the proximity, size and scale of the Proposed Development. The remaining effects are expected to be **not significant**.

A Landscape and Biodiversity Management and Enhancement Plan will be prepared to accompany the DCO application which will present proposals for landscape planting, including enhancement areas following their use as construction laydown areas in the medium to long term.

7.10 Physical Processes

Impacts on physical processes in the marine environment (including estuary/river bed morphology, sediment transport and depositional patterns, and the water column) during construction of the Proposed Development may include:

- changes to river / estuary bed morphology, due to:
  - scour of the river / estuary bed around the cofferdam;
  - change or disruption to existing sediment transport and deposition patterns caused by the presence of the cofferdam and jack-up barge (subject to confirmation of location and leg dimensions) within the waterway; and
  - change or disruption to existing sediment transport and deposition patterns caused by newly built intake and outfall structures elsewhere within the Water Connection Corridor;
- increased water column turbidity / increased SSC; and
- potential release of sediment-bound contaminants into the water column due to river / estuary bed disturbance.

Taking into account embedded mitigation measures, no likely significant adverse or beneficial effects are currently anticipated during construction of the Proposed Development.

Impacts during the operation of the Proposed Development may include:

- scour of the river / estuary bed and associated change in hydrological regimes as cooling water is extracted from the estuary and discharged from the outfall into the estuary;
- alteration of estuary bed morphology due to new installation of outfall and intake structures elsewhere within the Water Connection Corridor;
- maintenance operations involving use of an air blast, and/or jet washing system to remove accumulated sediment from the intake screens;
- increased water column turbidity / increased SSC due to estuary bed scour; and
- potential release of sediment-bound contaminants into the water column due to estuary bed disturbance.

Taking into account the embedded mitigation measures, no likely significant adverse or beneficial effects are currently anticipated during operation of the Proposed Development.

Impacts during the decommissioning of the Proposed Development are anticipated to be similar to those during construction

The above conclusions will be refined as part of the ES when further information on the Proposed Development is confirmed such as the duration, extent and location of

the cofferdam, and further detailed assessment is undertaken, such as hydrodynamic modelling.

7.11 Terrestrial Heritage

Potential impacts on terrestrial heritage assets during construction of the Proposed Development may include:

- temporary changes in the ability to appreciate the archaeological value of historic assets;
- temporary changes to the setting and character of historic assets and a change in the surroundings in which they are experienced;
- permanent changes to the setting and character of historic assets and a change in the surroundings in which they are experienced;
- temporary changes to the settings of historic assets due to noise from traffic, machinery and vehicular movements; and
- physical impacts to potential archaeological remains.

Taking into account design development and embedded mitigation measures, no likely significant effects are currently anticipated during construction of the Proposed Development for the majority of heritage assets.

However, a **significant** effect has been identified on potential below ground archaeological remains dating to the Roman period. The results of planned archaeological evaluation surveys are needed to determine if these remains are present and, if so, the value and spatial extent of these remains, and these results will inform the emerging design and avoidance measures by design. The programme of archaeological evaluation surveys would not minimise the physical impact, as the archaeological evidence would still be removed, but would compensate for its loss by preserving it by record. This would reduce the overall magnitude of impact, which may reduce the significance of this effect resulting in a minor to moderate residual effect, depending on the value of any the archaeological remains identified.

Potential impacts related to operation of the Proposed Development may include operational noise and vehicle movements for staff access, which could result in changes to the setting and character of historic assets. However these are not expected to result in any change to the assessed levels of impact resulting from construction.

Impacts arising from decommissioning activities would be temporary and the duration would be shorter than the impacts during construction. The impacts would not be greater than those reported during construction.

7.12 Marine Heritage

Impacts on marine heritage assets during construction of the Proposed Development may include:

- direct and indirect impacts to potential unknown shipwreck and aviation material, for example, due to dredging and placement of the cofferdam;
- direct and indirect impacts on potential prehistoric evidence and sediment layers containing paleoenvironmental evidence, for example,

due to dredging, anchoring of vessels and placement of the cofferdam; and

- direct and indirect impacts to potential late post-medieval and modern industry-related construction and infrastructure.

No effects beyond those identified during the construction phase impacts are expected during the operation phase. Decommissioning has been scoped out of this assessment because no additional impacts beyond those identified during construction would occur.

There are currently no known marine heritage assets within the Water Connection Corridor, and therefore no known assets will be impacted. However, **potential significant effects** on potential marine heritage assets and archaeological remains listed above may arise. Further assessments will be undertaken in the ES to confirm any potential significant effects. The impact on any potential assets that may be discovered during works will need to be assessed on a case-by-case basis to determine value, magnitude of impact and significance of effect.

In the event that potential significant effects on potential marine heritage assets and archaeological remains are identified, additional mitigation measures would be adopted including the preparation and implementation of a Written Scheme of Investigation and a Protocol for Archaeological Discoveries, to ensure that unexpected discoveries are addressed in a timely and appropriate manner. As a result, there would likely be **no likely residual significant effects**.

7.13 Socio-economics, Recreation and Tourism

Socio-economic, recreation and tourism impacts during the construction and decommissioning of the Proposed Development may include:

- Beneficial effects on the economy through the generation of approximately 683 net jobs during construction and 608 jobs during decommissioning;
- Gross Value Added (GVA) to the Flintshire and Wrexham economy and the national economy due to the generation of jobs;
- increased demand for local accommodation facilities during construction and decommissioning;
- the closure and diversion of Public Rights of Ways (PRoW) during construction and decommissioning;
- increased traffic demand on the strategic road network and Kelsterton Road during construction and decommissioning;
- the temporary loss of agricultural land during construction and decommissioning; and
- adverse impacts on the amenity of residents, businesses, users of community facilities and visitor attractions due to noise, air quality, visual and traffic effects during construction and decommissioning.

Impacts during operation may include:

- Beneficial effects on the economy through the generation of approximately 82 net jobs;

- Gross Value Added (GVA) to the Flintshire and Wrexham economy and the national economy due to the generation of jobs;
- the permanent loss of agricultural land under the footprint of the Main Site; and
- adverse impacts on the amenity of residents, businesses, users of community facilities and visitor attractions due to noise, air quality, visual and traffic effects.

Embedded mitigation to minimise adverse effects includes measures to avoid and reduce construction and operational effects on noise, air quality, transport, and landscape and visual. Taking into account these measures, no likely significant adverse or beneficial effects are currently anticipated during construction, operation or decommissioning.

7.14 Climate Change

A lifecycle greenhouse gas (GHG) assessment was completed and found that that the impact of construction and decommissioning emissions on the delivery of the Welsh and UK Carbon Budgets was considered to be not significant. The operation phase impacts were considered have the potential to lead to effects that are **beneficial** and **significant.** This is because the Proposed Development reduces greenhouse gas emissions compared to the existing Connah's Quay Power Station. The Proposed Development supports the decarbonisation of the energy industry through the provision of low carbon technology such as CCS which will play a critical role in delivering the UK's target of net zero.

- A Climate Change Risk Assessment (CCRA) was completed to assess the Proposed Development's resilience to climate change. Prior to additional mitigation measures, the CCRA identified eight risks for construction: three were related to extreme temperatures, two were related to storms, two were associated with flooding, and one was associated with wildfires. Prior to additional mitigation measures, there were two 'high risks' that were associated with tidal/coastal flooding and wildfires.
- Prior to additional mitigation measures, the CCRA identified twelve risks for operation: four were related to extreme temperatures, two were related to storms, three were associated with flooding, one was associated with drought and two were associated with wildfires. Prior to additional mitigation measures, there was one 'high risk' associated with tidal/coastal flooding and wildfires.
- The nature of risks during decommissioning are considered similar to those during construction.
- Following the implementation of adaptation climate change additional mitigation measures it has been concluded that all residual climate change risks during the operation and construction phases have been identified to be not significant.
- An In-Combination Climate Change Impact (ICCI) assessment was completed that considers the combined impacts of climate change and the Proposed Development on receptors in the surrounding environment. It considers the ways in which projected climate change will influence the

significance of the effects of the Proposed Development on the identified receptors.

- The ICCI Assessment concluded that there are no significant residual ICCIs on receptors in the surrounding environment identified. Further assessment will be undertaken for the ES as the design evolves.

7.15 Human Health

Potential impacts relating to human health during the construction, operation and decommissioning of the Proposed Development may include effects relating to:

- health and social care services;
- employment and income;
- education and training;
- transport modes access, and connections;
- air quality;
- noise and vibration;
- open space, leisure, and play;
- climate change mitigation and adaptation; and
- water quality or availability.
- There is also the potential for radiation and exposure to electromagnetic fields during the operation of the Proposed Development.

Prior to any additional mitigation, the human health effects associated with construction are anticipated to be **not significant**.

The likely effect on human health from reductions in greenhouse gas emissions during the operational phase is assessed to be moderate **beneficial** and **significant** for children, who are considered to be a sensitive population group.

During the decommissioning phase of the Proposed Development, the effects anticipated to be no worse than those experienced during the construction phase.

Taking into account embedded mitigation measures, there are no other significant effects expected in relation to human health as a result of the construction, operation or decommissioning of the Proposed Development.

7.16 Major Accidents and Disasters

A number of Major Accident and Disasters (MA&Ds) scenarios have been identified for the Proposed Development which could have significant consequences to people and the environment, but a low probability of occurrence.

For the construction phase, the following risk events have been shortlisted for further consideration:

- ground instability;
- structural collapse/ accidental impact;
- utility (pipeline or electrical cable) strike / UXO impact;

- domino effects from impacts at neighbouring facilities;
- accidental vehicle impact;
- aircraft/ drone strike; and
- vandalism.

For the commissioning phase, the following risk events have been shortlisted for further consideration:

- wet testing of equipment and charging storage vessels; and
- testing of critical instrument and control systems.

For the operational phase, the following risk events have been shortlisted for further consideration:

- fire/ explosion and release of harmful gas;
- major release of carbon dioxide (CO2) – asphyxiant;
- domino effects from impacts at neighbouring facilities;
- flooding;
- aircraft/ drone impact; and
- vandalism.

Risks during the decommissioning phase have not specifically been included since the hazards are anticipated to be similar to those addressed within the construction and operational phases. No additional decommissioning hazards have been identified that could give rise to potential significant effects.

The engineering design, construction and operation of the Proposed Development will incorporate appropriate standards and mitigation measures necessary to reduce the risks of MA&Ds to a level that is as low as reasonably practicable (or tolerable if so).

It is considered that all risk events identified during each stage of the Proposed Development will be tolerable or tolerable if appropriate standards and mitigation measures are incorporated. Therefore, no likely significant adverse or beneficial effects are currently anticipated. Further measures will be defined as the Proposed Development design is further progressed, and which will be detailed within the ES.

7.17 Materials and Waste

Potential impacts relating to materials and waste during the construction of the Proposed Development may include effects relating to: type and quantities of key construction materials used, and type and quantities of waste generated.

A number of design development and embedded measures will be implemented including designing for reuse and recovery of waste, and optimising materials use during construction. With regards to quantities of materials used during construction, a potential moderate adverse **significant** effect has been identified in relation to concrete availability in Wales. Due to the location of the Proposed Development, close to the border between Wales and England, it is anticipated that concrete may be sourced from North West England. Therefore, when the concrete quantity required for construction is considered in the context of a combined Wales and North West England baseline, the effect is **not significant**.

With regards to waste, a potential large or very large adverse **significant** effect has been identified in relation to hazardous waste from excavation of material requiring disposal during construction. In practice, the proportion of material from the Indicative Site Boundary classed as hazardous may be lower; with any hazardous excavated material potentially being sent to a waste management facility rather than disposed of to landfill with a 50% recovery rate. This would further reduce the overall quantities of hazardous waste for disposal to landfill. Waste management routes will be confirmed by the construction contractor after consent. The volume estimates will be further refined with a ground investigation that would be undertaken before starting construction. This would reduce the resulting effect to minor adverse (**not significant**). However, the worst case outlined above is used in the assessment.

Potential impacts during the operational phase of the Proposed Development may include effects relating to waste. With embedded mitigation measures considered, such as operation in line with appropriate standards and implementation of Environmental Management Systems, no significant effects have been identified during operation.

Decommissioning has been scoped out of the materials and waste assessment.

7.18 Cumulative and Combined Effects

Cumulative and combined effects are defined as follows:

- inter-project cumulative effects: these occur when the environmental impacts and effects of the Proposed Development interact with those associated with other planned projects and developments (hereafter referred to as 'proposed schemes'); and
- intra-project combined effects: these are different environmental effects resulting from a single development, for example, combined noise, air and visual effects on a single receptor that may, in combination, cause an effect of greater significance as compared to a single environmental effect on that receptor.

The cumulative and combined effects assessment considers the construction and operation of the Proposed Development. An assessment of effects during decommissioning will be presented within the ES.

The cumulative effects assessment follows a four stage process as set out by guidance produced by the Planning Inspectorate:

- Stage 1: establishing the long list of 'other existing development and/or approved development';
- Stage 2: establishing a shortlist of 'other existing development and/or approved development';
- Stage 3: information gathering; and
- Stage 4: assessment.

Stage 2 of the cumulative assessment has been completed and the shortlist of proposed schemes for cumulative assessment has been identified and is presented in the PEIR.

Upon completion of Stage 3 and 4, the ES will report on any cumulative effects with other proposed schemes. The ES will also assess and report any combined effects.

References

Ref. 1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/572). London: HMSO. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents/made

Ref. 2 The London School of Economics and Political Science (2023). What is carbon capture, usage and storage (CCUS) and what role can it play in tackling climate change?. Available at: https://www.lse.ac.uk/granthaminstitute/explainers/what-is-carbon-capture-and-storage-and-what-role-can-it-play-in-tackling-climate-change/ (Accessed 09/04/2024)

Ref. 3 The Committee on Climate Change (2019). Net Zero Technical Report [online]. Available at: https://www.theccc.org.uk/publication/net-zero-technical-report/ (Accessed 20/12/2023).

Ref. 4 PINS (2023). HyNet Carbon Dioxide Pipeline [online]. Available at: https://infrastructure.planninginspectorate.gov.uk/projects/Wales/HyNet-Carbon-Dioxide-Pipeline/ (Accessed 22 March 2024)

Ref. 5 Planning Act 2008 (c.29). [online]. London: The Stationery Office. Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents (Accessed 6 March 2024)

Ref. 6 Department for Energy Security and Net Zero (DESNZ) (2023). Overarching National Policy Statement for Energy (EN-1) [online]. Available at: https://assets.publishing.service.gov.uk/media/65a7864e96a5ec0013731a93/overarching-nps-for-energy-en1.pdf (Accessed 26 February 2024)

Ref. 7 DESNZ (2023). National Policy Statement for Natural Gas Electricity Generating Infrastructure (EN-2) [online]. Available at: https://assets.publishing.service.gov.uk/media/655dc15a544aea000dfb3239/nps-natural-gas-electricitygenerating-infrastructure-en2.pdf (Accessed 26 February 2024)

Ref. 8 DESNZ (2023). National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) [online]. Available at: https://assets.publishing.service.gov.uk/media/655dc2d4046ed4000d8b9dd9/nps-natural-gas-supply-infrastructurepipelines-en4.pdf (Accessed 26 February 2024)

Ref. 9 DESNZ (2023). National Policy Statement for Electricity Networks Infrastructure (EN-5) [online]. Available at: https://assets.publishing.service.gov.uk/media/655dc25e046ed400148b9dca/nps-electricity-networks-infrastructure-en5.pdf (Accessed 26 February 2024)

Ref. 10 Marine and Coastal Access Act 2009 (c.23). [online]. London: The Stationery Office. Available at: https://www.legislation.gov.uk/ukpga/2009/23/contents (Accessed 6 March 2024).

Ref. 11 Welsh Government (2019). Welsh National Marine Plan [online]. Available at: https://www.gov.wales/sites/default/files/publications/2019-11/welsh-national-marine-plan-document_0.pdf (Accessed 6 March 2024)

Ref. 12 HM Government (2017). The Clean Growth Strategy [online]. Available at: https://assets.publishing.service.gov.uk/media/5ad5f11ded915d32a3a70c03/clean-growth-strategy-correction-april-2018.pdf (Accessed 6 March 2024)

Ref. 13 HM Government (2020). The Ten Point Plan for a Green Industrial Revolution [online]. Available at: https://assets.publishing.service.gov.uk/media/5fb5513de90e0720978b1a6f/10_POINT_PLAN_BOOKLET.pdf (Accessed 6 March 2024)

Ref. 14 HM Government (2020). Energy White Paper: Powering our Net Zero Future (CP 337). [online]. Available at:

https://assets.publishing.service.gov.uk/media/5fdc61e2d3bf7f3a3bdc8cbf/201216_BEIS_EWP_Command_Paper_Accessible.pdf (Accessed 6 March 2024)

Ref. 15 HM Government (2021). Net Zero Strategy: Build Back Greener [online]. Available at: https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf (Accessed 6 March 2024)

Ref. 16 HM Government (2023). Powering Up Britain [online]. Available at: https://assets.publishing.service.gov.uk/media/642468ff2fa8480013ec0f39/powering-up-britain-joint-overview.pdf (Accessed 6 March 2024)