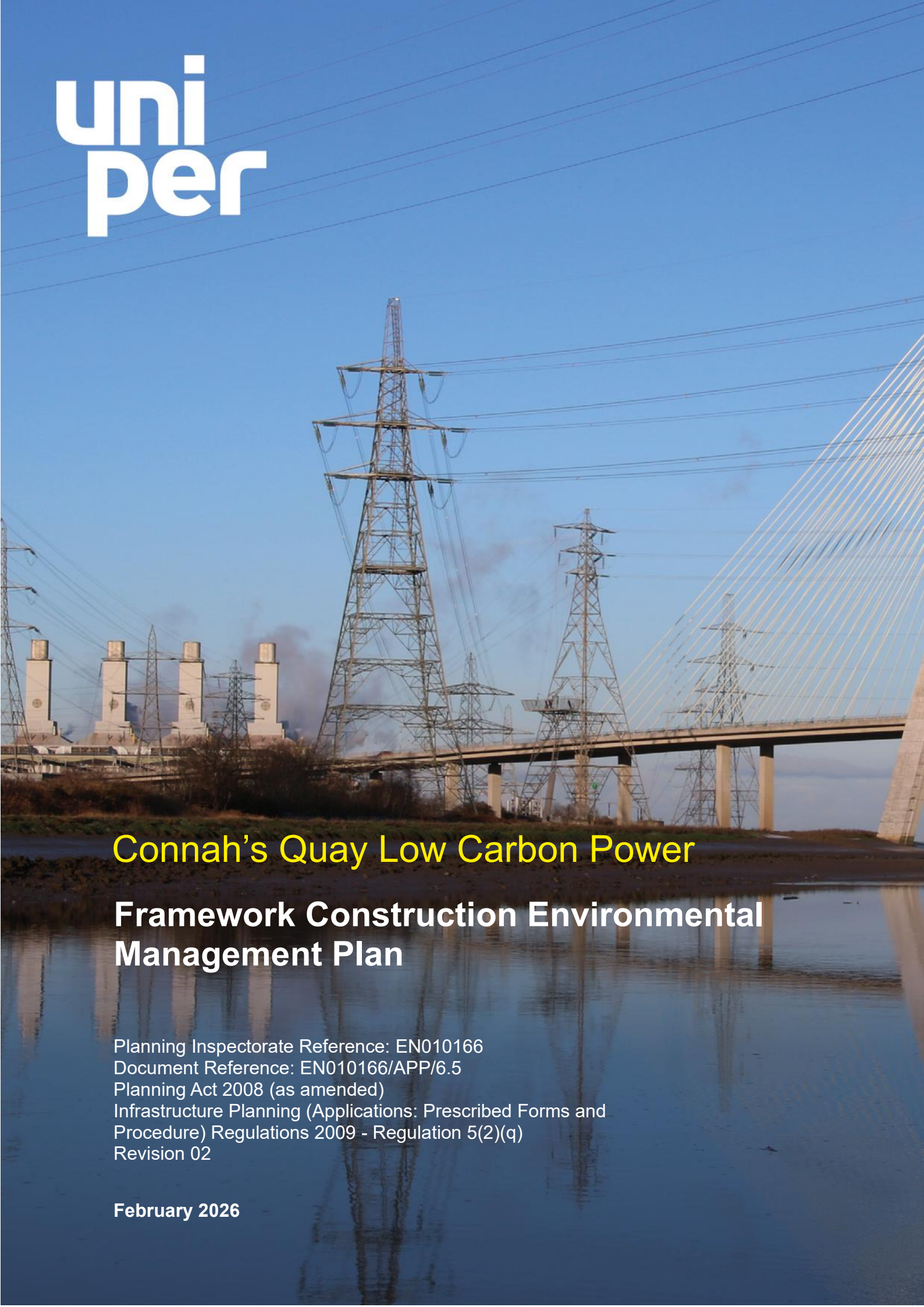

Connah's Quay Low Carbon Power

Framework Construction Environmental Management Plan

Planning Inspectorate Reference: EN010166
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Revision 02

February 2026

Prepared for:
Uniper UK Limited

Prepared by:
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1. Introduction

1.1 Overview

1.1.1 This **Framework Construction Environmental Management Plan** (**CEMP**) (**EN010166/APP/6.5**) has been prepared by AECOM on behalf of Uniper UK Limited (the Applicant). It forms part of the application (Application) for a Development Consent Order (DCO), that has been submitted to the Secretary of State (SoS) for The Department for Energy Security and Net Zero (DESNZ), under Section 37 of 'The Planning Act 2008' (the '2008 Act') (Ref 1).

1.1.2 The Applicant is seeking a Development Consent Order (DCO) for the construction, operation (including maintenance) and decommissioning of a proposed low carbon Combined Cycle Gas Turbine (CCGT) Generating Station fitted with Carbon Capture Plant (CCP) (the 'Connah's Quay Low Carbon Power (CQLCP) Abated Generating Station') and supporting infrastructure (collectively 'the Proposed Development').

1.2 The Proposed Development

1.2.1 The Proposed Development would comprise up to two CCGT with CCP units (and supporting infrastructure) achieving a net electrical output capacity of more than 350 megawatts (MW; referred to as MWe for electrical output) and up to a likely maximum of 1,380 MWe (with CCP operational) onto the national electricity transmission network.

1.2.2 Through a carbon dioxide (CO_2) pipeline, comprising existing and new elements the Proposed Development would make use of CO_2 transport and storage networks owned and operated by Liverpool Bay CCS Limited, currently under development as part of the HyNet Carbon Dioxide Pipeline project (referred to as the HyNet CO_2 Pipeline Project), that would transport CO_2 captured from existing and new industries in North Wales and North West England, for offshore storage. The captured CO_2 would be permanently stored in depleted offshore gas reservoirs in Liverpool Bay.

1.2.3 For the purposes of the electrical connection, National Grid Electricity Transmission plc (NGET), which builds and maintains the electricity transmission networks, is responsible for the operation and maintenance of the existing 400 kV NGET Substation.

1.2.4 A description of the Proposed Development, including details of maximum parameters, is set out in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**), of the **Environmental Statement** (**ES**). At this stage in the development, the design of the Proposed Development incorporates a necessary degree of flexibility to allow for ongoing design development.

1.2.5 The Proposed Development is located approximately 0.6 kilometres (km) north-west of Connah's Quay in Flintshire, North East Wales. The Main Development Area is centred approximately at national grid reference 327347, 371374, and, together with the Proposed CO_2 Connection Corridor, Repurposed CO_2 Connection Corridor, Electrical Connection Corridor, Water Connection Corridor, Construction and Indicative Enhancement Area

(C&IEA), and ancillary works to access roads and minor assets, is wholly within the administrative area of Flintshire County Council (FCC).

1.2.6 The Order limits, as shown in **Figure 1-2: Order limits** (**EN010166/APP/6.3**), encompass a total area of approximately 104.90 hectares (ha).

1.2.7 Around 86.12 ha of the Order limits is focused on the 'Construction and Operation Area', comprising the Main Development Area, construction areas and connection corridors necessary for the construction and operation of the Proposed Development shown in **Figure 1-2: Order limits** (**EN010166/APP/6.3)**. A further 18.78 ha of land included for the 'Accommodation Works Areas', comprising areas of works required to facilitate the movement and temporary storage of Abnormal Indivisible Loads (AIL) during construction of the Proposed Development. Further information on the Order limits is provided in **Chapter 3: Location of the Proposed Development** (**EN010166/APP/6.2.3)**.

1.2.8 **Figure 1: Areas Described in the CEMP** identifies the different components of the Proposed Development and Order limits which are referenced throughout this document. These comprise:

- The Construction and Operation Area:
  - Main Development Area;
  - Construction and Indicative Enhancement Area (C&IEA);
  - Water Connection Corridor;
  - Surface Water Outfall Area;
  - Proposed CO_2 Connection Corridor;
  - Repurposed CO_2 Connection Corridor;
  - Electrical Connection Corridor;
  - Access to the Main Development Area;
- The Accommodation Work Areas.

1.3 The Purpose and Structure of this Document

Purpose

1.3.1 This Framework CEMP has been prepared to accompany the ES and presents a framework for the management of environmental impacts during the construction phase of the Proposed Development. The aims of this document are to avoid and minimise adverse effects on the environment and to provide a clear and consistent approach to environmental mitigation during construction. This document does not address operation or decommissioning of the CQLCP Abated Generating Station, which would be subject to separate environmental management plans and procedures as detailed in the **Commitments Register** (**EN010166/APP/6.10**).

1.3.2 This Framework CEMP outlines how the construction mitigation measures included within the ES would be implemented and sets out the monitoring and auditing activities designed to ensure that such mitigation measures are

carried out, and that they are effective. It is anticipated that final CEMP(s) would be prepared, approved and implemented for individual phases of the Proposed Development. As a result, there would be multiple CEMP(s) prepared in accordance with the relevant parts of this **Framework CEMP**.

1.3.3 The **Draft DCO** (**EN010166/APP/3.1**) also includes certain preliminary works[1] (defined as "site enabling works") that can be carried out in advance of formally discharging Requirement 4 of the **Draft DCO** (**EN010166/APP/3.1**). This Framework CEMP details the measures that would be followed during elements of these works. Requirement 4 states:

4.—(1) No stage of the authorised development may commence until a CEMP for that stage has been submitted to and approved by the relevant planning authority.

(2) The CEMP must be in general accordance with the framework construction environment management plan and the lighting strategy and incorporate—

(a) a site waste management plan which is in general accordance with the framework site waste management plan; and

(b) a marine invasive non-native species management plan which is in general accordance with the marine invasive non-native species outline management plan.

(3) Each stage of the authorised development must be carried out in accordance with the approved CEMP for that stage unless otherwise agreed with the relevant planning authority.

(4) Limbs (a), (b), (d), (e), (g), (h), (i) and (j) of the site-enabling works must be carried out in general accordance with the framework construction environment management plan and the lighting strategy.

Structure

1.3.4 This document provides the anticipated structure of the final CEMP(s) as well as outline information relevant to the final CEMP(s). It indicates what additional information might be included under each sub-section within the CEMP(s). This **Framework CEMP** is designed with the objective of ensuring compliance with the relevant environmental mitigation measures set out within the ES.

1.3.5 The final CEMP(s) are anticipated to broadly reflect the structure of this **Framework CEMP**, which is as follows:

- Section 2 provides an indication of the construction arrangements that have been assessed in the ES;
- Section 3 presents a summary of environmental control plans;
- Section 4 presents additional information that might be included under each sub-section within the final CEMP(s), which includes –

[1] Preliminary works include, erection of site fencing, environmental surveys, demolition of buildings (shown in **Figure 2: Plant, Buildings and Structures to be Demolished**), site clearance and ground preparation, establishing a 'contractors' village' and diversion and laying of services

  - environmental effects (assessed through the Environmental Impact Assessment (EIA) as documented in the ES);
  - impact avoidance or reduction of measures to be applied, where the ES has assumed they would be applied during the detailed design or construction phase(s) of the Proposed Development;
  - any other additional mitigation measures; and
  - additional surveys or monitoring considered necessary pre-construction or during construction in order to confirm the status of receptors, and the effectiveness of impact avoidance/mitigation measures.
- Section 5 discusses the implementation and operation of the CEMP(s) including defining roles and responsibilities;
- Section 6 outlines the environmental monitoring process and corrective action procedure to be applied, where mitigation/control measures are identified to not operating as effectively as anticipated;
- Section 7 provides details of how environmental records should be held and managed;
- Appendix A comprises the accompanying Figures; and
- Appendix B comprises a Framework Site Waste Management Plan (SWMP), as specified in Requirement 4(2)(a) of the **Draft DCO (EN010166/APP/3.1)**.

Compliance

1.3.6 The undertaker would appoint Principal Contractor(s) to deliver the construction of the Proposed Development. The Principal Contractor(s) would be responsible for working in accordance with the environmental controls documented in the final CEMP(s) and the undertaker would have overall responsibility for the implementation of the final CEMP(s). As described in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**), Liverpool Bay CCS Limited are an undertaker in the **Draft DCO** (**EN010166/APP/3.1**) for works at the Proposed CO_2 AGI, construction works required for the new gas pipeline (Proposed CO_2 Connection). Liverpool Bay CCS Limited would also appoint Principal Contractor(s) for the construction of these components and therefore would be responsible for ensuring the requirements of any final CEMP(s) relevant to that works package are met.

1.3.7 The undertaker and the appointed Principal Contractor(s) would require all construction personnel to comply, as a minimum, with applicable environmental legislation at the time of construction, together with any additional environmental controls imposed by the **Draft DCO** (**EN010166/APP/3.1**). The final CEMP(s) would, therefore, be designed with the objective of compliance with any relevant environmental legislation and the mitigation measures set out within the ES and this Framework CEMP. Any additional construction licences, permits or approvals (as detailed in the **Consents and Agreements Position Statement** (**EN010166/APP/3.3**)) that are required would be listed in the applicable final CEMP(s), including any environmental information submitted in respect of them.

1.3.8 If development consent is granted, final CEMP(s) would be produced for each phase of the construction of the Proposed Development following the appointment of a Principal Contractor(s). The final CEMP(s) would be in general accordance with the measures included in this Framework CEMP and approved by Flintshire County Council (FCC) prior to construction activities commencing, as secured in Requirement 4 of the **Draft DCO** (**EN010166/APP/3.1**).

1.3.9 The Principal Contractor(s) and all construction personnel would be responsible for working in accordance with the environmental controls documented in the final CEMP(s), which would allocate responsibilities for environmental performance. The overall responsibility for implementation of the final CEMP(s) would lie with the Applicant.

2. Construction Phase Arrangements

2.1 Introduction

2.1.1 This section sets out the general arrangements for the construction of the Proposed Development.

2.2 Construction Programme

2.2.1 As the Proposed Development is comprised of up to two combined-cycle gas turbines (CCTGs) with carbon capture plant for each unit, the construction could either be undertaken in a single phase where both are constructed simultaneously ('simultaneous construction'), or in two phases where each CCGT is constructed in isolation ('phased construction').

2.2.2 Allowing sufficient time to receive consent and to discharge the DCO Requirements, it is anticipated that the earliest that site preparation and enabling works for the Proposed Development would start is late 2026.

2.2.3 A detailed construction programme would be prepared by the Principal contractor(s) once appointed and would be included in the final CEMP(s) to be agreed with Flintshire County Council post consent.

2.2.4 The final programme for construction would be determined by the Principal Contractor(s) but is expected to be between five and nine years duration, depending on whether phased or simultaneous construction is undertaken.

2.2.5 The construction of the Proposed Development would be undertaken in six main phases over the construction programme. These include:

- site enabling works – including preparation of construction laydown areas within the Main Development Area and C&IEA and demolition of the existing gas treatment plant (GTP), existing GTP above-ground installation (AGI), and existing stores buildings;
- construction activities for the Proposed CO_2 Connection (civil and integration works);
- earthworks (site preparations) phase – to provide a level development platform where this is required for new permanent infrastructure within the Main Development Area;
- main civil works phase and civil, mechanical, electrical, and integration works;
- construction activities for the Water Connection Works – minor upgrade and / or repair and integration works; and
- commissioning of the CQLCP Abated Generating Station ahead of commercial operation.

2.3 Construction Laydown

2.3.1 Six laydown areas within the Main Development Area and C&IEA ('A' to 'F') are required during construction to enable equipment and material storage, placement of site offices, batch concrete facilities, welfare facilities and car

parking, environmental / waste handling areas and vehicle wheel wash area(s). **Figure 3: Construction Areas** shows the maximum extents of the construction laydown areas. The final arrangement of the laydown areas required would be developed by the appointed Principal Contractor(s) who would consider the relevant constraints, such as the presence of overhead power lines.

2.3.2 The laydown areas would be levelled to provide an even surface and underlain by semi-permeable surfacing and secured by security fencing and gates as appropriate. Following completion of the construction works, temporary construction laydown areas would be used for habitat creation in accordance with the **Outline Landscape and Ecology Management Plan** (**LEMP**) (**EN010166/APP/6.9**)

2.4 Working Hours

2.4.1 Core construction working hours would be 08:00 and 18:00 Monday to Friday (except Bank Holidays) and 08:00 and 13:00 on Saturdays. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. This is partly because certain construction activities cannot be stopped, such as concrete pouring, but also to manage the construction programme.

2.4.2 Where construction works are proposed outside core hours, additional noise assessments would be undertaken if the construction noise and vibration thresholds (within Table 9-10 of **Chapter 9: Noise and Vibration** (**EN010166/APP/6.2.9**) are likely to be exceeded. The assessment would identify the requirements for additional mitigation measures to ensure that construction noise and vibration thresholds would not be exceeded outside of core hours. Works conducted outside the core hours would comply with any restrictions agreed with the local planning authority, in particular regarding control of noise and traffic in accordance with the relevant requirements which are be secured by the **Draft DCO** (**EN010166/APP/3.1**).

2.4.3 Twenty-four hour working for certain activities has been considered and assessed in **Chapter 9: Noise and Vibration** (**EN010166/APP/6.2.9**) which sets out specific mitigation and control measures required to prevent disturbance from any activities outside of core working hours. The Applicant would aim to ensure that working outside of core hours is kept to a minimum wherever possible, and any such works would be carefully managed to reduce effects on the local community.

2.5 Site Lighting

General Site Lighting

2.5.1 Temporary construction site lighting is proposed to enable safe working on the construction site in the hours of darkness. Standard working hours are set out in paragraph 2.4.1, however some construction activities may need to be undertaken outside of these core working hours during hours of low natural light or darkness.

2.5.2 Temporary construction lighting would be arranged so that glare is minimised outside the construction site. The Principal Contractor(s) would be

responsible for establishing the required approach to and levels of lighting and a **Lighting Strategy** is included in the DCO Application (**EN010166/APP/7.22**). A detailed Lighting Strategy is secured under Requirement 3 and 14 of the **Draft DCO** (**EN010166/APP/3.1**).

2.5.3 Lighting would be designed so as not to cause a nuisance outside of the Order limits in relation to views from residential receptors or light disturbance to ecological receptors.

2.5.4 Details of all external lighting during construction would be detailed in the final CEMP(s) in accordance with the **Lighting Strategy** (**EN010166/APP/7.22**).

Lighting of Cranage

2.5.5 Cranes would be lit in accordance with Civil Aviation Publication (CAP) 1096, *Guidance to crane users on aviation lighting and notification.* Cranes shall be sufficiently conspicuous. Due to the proximity of the Main Development Area to Hawarden Aerodrome, crane lighting would be discussed and agreed with the Civil Aviation Authority and Airbus, in accordance with Requirement 14 and Requirement 15 of the **Draft DCO** (**EN010166/APP/3.1**).

2.5.6 For cranes 45 m above ground level or more, medium intensity (2000 candela) steady red lights would be displayed and be visible from all directions.

2.5.7 For cranes less than 45 m above ground level, low intensity (32 candela) steady red lights would be displayed and visible from all directions.

2.5.8 Lights would be located as close as possible to the top of the crane. Intermediate level lights are required for cranes over 45 m above ground level, spaced as equally as practicable, with the spacing not exceeding 52 m.

2.5.9 Lights would display the general definition and extent of the crane, with lights installed on both sides of the crane jib.

2.6 Parking Provisions

2.6.1 Parking demand would vary throughout the construction phase and parking areas would be set aside within the Order limits to accommodate parking for construction workers. It is anticipated that parking provisions would be allocated within each of the five laydown areas. Additionally, contractors may establish a park and ride system from location(s) outside of the Order limits to the Main Development Area, such as temporary accommodation or existing parking locations, subject to agreement with the relevant authorities and third parties. Further details are provided in the **Framework Construction Worker Travel Plan** (**EN010166/APP/6.7**).

2.7 Site Security

2.7.1 The Principal Contractor(s) would undertake site-specific assessments of the security and trespass risk and ensure that suitable security arrangements are implemented to prevent unauthorised access to the sites. Access to the construction compounds would be limited to specified entry points only and personnel entries/ exits would be recorded and monitored for both security

and health and safety purposes, the gates would be kept secure unless they are being used.

2.8 Recycling and Disposing of Waste

2.8.1 To control the waste generated during the enabling works and construction phase, the Principal Contractor(s) would minimise the creation of waste, maximise the use of recycled materials and assist the collection, separation, sorting, recycling and recovery of waste arisings, as far as reasonably practicable.

2.8.2 A Framework Site Waste Management Plan (Appendix B) has been developed to control construction activities to minimise, as far as reasonably practicable, impacts on the environment and would specify the waste streams to be estimated and monitored and sets goals with regards to the waste produced. The SWMP would be finalised by the Principal Contractor(s), with specific measures to be implemented prior to the start of construction. Preparation, approval and implementation of a site waste management plan which is in general accordance with the Framework Site Waste Management Plan (Appendix B) is secured by Requirement 4 in the **Draft DCO** (**EN010166/APP/3.1**).

2.9 Soil Management

2.9.1 Impacts relating to the handling, movement and temporary storage of soils, would be controlled through the final CEMP(s). The final CEMP(s) would include measures to:

- limit the potential for dispersal and accidental releases of potential contaminants, soil derived dusts and uncontrolled run-off to occur;
- set out how material is to be excavated, segregated, and stockpiled; and
- establish procedures for dealing with unexpected soil or groundwater contamination.

2.9.2 Excavated materials / soils to be retained for in-situ replacement following construction (except within the Proposed CO2 Connection Corridor) would be stored as bunds within a secure area at a construction compound or laydown area and under an appropriate covering, if required

2.10 Ecological Safeguarding Zones

2.10.1 The Proposed Development and construction laydown areas have been designed to include a minimum 30 m ecological safeguard zone, for the protection of sensitive habitats/species occupying the Dee Estuary (which is designated as a Ramsar site, Special Protection Area, Special Area of Conservation and a Site of Special Scientific Interest), as shown on **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**). Habitats in these areas would be retained during construction and protected from any damage during the construction phase. These areas would include 3 m acoustic fencing to the north of the Main Development Area and C&IEA and 3 m acoustic fencing to the western side of the Main Development Area.

2.10.2 The 3 m tall acoustic fencing would be installed between April and September inclusive. Unless otherwise agreed with FCC and NRW, no

clearance works or site establishment works within the Main Development Area and C&IEA would occur between the October and March inclusive in the absence of the 3 m acoustic fencing. Prior to the installation of the acoustic fencing, reptile and amphibian fencing should be implemented around the ecological safeguarding zone following displacement to prevent reptiles from being harmed by the works.

2.10.3 The ecological safeguarding zones within both the Main Development Area and the C&IEA should be managed accordingly to maintain and/or enhance suitability for reptiles. This may include implementing sufficient habitat management to these areas to prevent them from evolving into dense scrub habitat and introducing new refugia into these areas such as log piles.

2.11 Finished Site Level

2.11.1 Land raising/levelling to provide a consistent platform of 7.4 m above ordnance datum (AOD) would be provided within the operation footprint of the Main Development Area.

2.11.2 Critical infrastructure would be raised to have a finished floor level of 7.7 m AoD to provide sufficient freeboard from predicted future sea levels identified in hydraulic modelling.

2.12 Proposed CO_2 Connection Corridor

2.12.1 Within the Proposed CO_2 Connection Corridor, soils would be stored within the 32 m-wide working area parallel to the excavation. Soil stockpiles would be split into different soil types, including topsoil, upper subsoil, lower subsoil, and basal material. Through appropriate separation and storage of soils, particularly for topsoil, this would ensure retention of any associated seed bank within the soils, which would be reinstated in the correct layering post construction.

2.12.2 The dimensions and extents of temporary haul roads within he Proposed CO_2 Connection Corridor would be minimised and the shortest possible straight-line distances would be used where reasonably practicable outside of the proposed temporary compound and the working corridor

2.13 Surface Water Outfall Area

2.13.1 It is expected that the Proposed Surface Water Outfall would be installed into an extension of the existing headwall via trenchless construction methods or open excavation.

2.13.2 Should open excavation be required it would be limited to areas to the edge of the saltmarsh and outside of the existing mudflat habitat and undertaken either by hand or use of mini diggers. In addition, any large plant required for the lifting of trench support panels etc such as cranes and/or long reach excavators would also be located on the access road to the northern side of the existing Connah's Quay Power Station fence line and would not enter areas of saltmarsh. Any removed topsoil would stored during construction to allow for reinstatement.

2.13.3 Materials storage and location of plant would to be limited to the area between the existing headwall and the existing access road to the northern

side of the existing Connah's Quay Power Station fence line or this access road itself within the Surface Water Outfall Area, or otherwise within the Main Development Area.

2.13.4 Unless otherwise agreed with FCC and NRW, these works would also be completed between April and June inclusive.

2.14 Water Connection Corridor

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

2.14.2 Works within the Water Connection Corridor would not interact with the riverbed. All materials and plant (if required - it is expected that the majority of works within the Water Connection Corridor would require hand tools only) would be stored within the support barge and a working area would be established using scaffolding attached to the existing protection structure.

2.14.3 Works would be undertaken at each of the seven intake pipes (each supporting existing four inlet baskets and to support two proposed inlet baskets) in turn with a temporary seal on the individual intake pipe undergoing works to allow for continued operation of the existing Connah's Quay Power Station during works within the Water Connection Corridor.

2.14.4 Unless otherwise agreed with FCC and NRW, these works would also be completed between April and June inclusive.

2.15 Responding to Environmental Incidents and Emergencies

2.15.1 An Emergency Response Plan (ERP) would be developed in consultation with the FCC, emergency services including the local fire service, as well as Natural Resources Wales in relation to responding to flood warnings and events. This would be included within the final CEMP(s).

2.15.2 The ERP would detail the procedures for responding to incidents and emergencies on site, and any reporting, as secured in Requirement 4 of the **Draft DCO** (**EN010166/APP/3.1**).

3. Environmental Control Plans

3.1.1 **Table 1** lists the provisional list of environmental control plans that are expected to be developed prior to construction which set out in detail the management systems and approach that would be implemented during construction to comply with the CEMP(s). Framework versions of a number of these control plans are provided within the **ES** (**EN010166/APP/6.2** and **EN010166/APP/6.4**) or comprise their own application document (see reference below in **Table 1**).

Table 1: Environmental Control Plans

Control	Description	Framework version contained within the DCO application
Stakeholder Communications Plan	To be developed by the Undertaker at detailed design. This plan would be prepared by the Community Liaison Officer and would include measures for community engagement before and during construction phase; as well as detailing a complaints procedure. This is to be included within the final CEMP(s).	No
Construction Traffic Management Plan (CTMP)	During construction, the Principal Contractor(s) would ensure that the impacts from construction traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable. Final CTMP(s) are to be prepared in accordance with Requirement 5 of the **Draft DCO** (**EN010166/APP/3.1**).	Yes (**Framework CTMP** (**EN010166/APP/6.6**))
Construction Worker Travel Plan (CWTP)	Prior to the commencement of construction phase, the Principal Contractor(s) would prepare a CWTP that contains measures to reduce the impact of workers travelling to and from Construction Area. Final CWTP(s) are to be prepared in accordance with Requirement 5 of the **Draft DCO** (**EN010166/APP/3.1**).	Yes (**Framework Construction Worker Travel Plan** (**EN010166/APP/6.7**))

Control	Description	Framework version contained within the DCO application
Dust Management Plan (DMP)	To be developed by the Principal Contractor(s) to include measures to control other emissions, approved by the Local Authority. The DMP is anticipated to include requirements for monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections. This is to be included within the final CEMP(s).	No
Site Waste Management Plan (SWMP)	This plan outlines the waste management strategy for the construction phase by considering likely waste arisings from construction activities and provides recommended management measures, taking into account the principles of the waste hierarchy. A final SWMP would be developed by the Principal Contractor(s) in general accordance with the **Framework SWMP**, as part of the final CEMP(s).	Yes, included in this document (Appendix B: Framework SWMP)
Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation	To be developed by the Principal Contractor(s) post-consent based on the **Overarching Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation** (**EN010166/APP/6.8**)to fully describe the additional mitigation measures to be implemented to preserve in situ and protect, or archaeologically excavate and record heritage assets, including upstanding earthworks and buried archaeological remains. This would be informed by the results of the archaeological evaluation surveys.	Yes (**Overarching Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation** (**EN010166/APP/6.8**))

Control	Description	Framework version contained within the DCO application
LEMP	To be developed by the Principal Contractor(s) in accordance with the **Outline LEMP**(**EN010166/APP/6.9**) as detailed in Requirement 10 of the **Draft DCO** (**EN010166/APP/3.1**). This plan details the terrestrial and ecology mitigation and enhancement details within the Order limits.	Yes (**Outline LEMP** (**EN010166/APP/6.9**).
Arboricultural Method Statement	To be developed by the Principal Contractor(s) prior to the start of construction. This statement would detail the final magnitude and extent of arboricultural impacts. This is to be included within the final CEMP(s).	No
Lighting Strategy	Provides details of requirements for external lighting during construction to be considered in the preparation of the final CEMP(s).	Yes (**Lighting Strategy** (**EN010166/APP/7.22**)
Marine Invasive Non-Native Species Framework Management Plan & Marine Biosecurity Risk Assessment	To be developed by the Principal Contractor(s) prior to the start of construction in areas below the Mean High Water Springs. This plan provides a framework for the prevention, detection and control of the introduction and spread of non-native species in the marine environment. This would be included within the final CEMP(s).	Yes (**Appendix 12-F: Marine Invasive Non-Native Species Framework Management Plan** (**EN010166/APP/6.4**) and **Appendix 12-E: Marine Biosecurity Risk Assessment** (**EN010166/APP/6.4**)) .
Invasive Species Management Plan (ISMP)	To be developed by the Principal Contractor(s) prior to the start of construction. An Invasive Species Management Plan (ISMP) survey would be updated prior to construction to determine the current location and extent of plant Invasive Non-Native Species (INNS), and to inform specification of	No

Control	Description	Framework version contained within the DCO application
	the ISMP. If determined as necessary through this survey and after consideration of other available plant and animal INNS data, an ISMP would be prepared to accompany the final CEMP(s) and would be agreed with relevant stakeholders. This is to be included within the final CEMP(s).	
Emergency Response Plan	To be developed by the Principal Contractor(s) in consultation with the FCC, emergency services including the local fire service, as well as Natural Resources Wales in relation to responding to flood warnings and events. This is to be included within the final CEMP(s).	No
Fire Management Plan	To be developed by the Principal Contractor(s) prior to the start of construction. This would detail measures to prevent fires including the use of an early warning detection system as well as procedures to manage fire emergencies. This is to be included within the final CEMP(s).	No
Pollution Prevention Plan, including an Emergency Spill Plan	Prior to construction, this would be developed by the Principal Contractor(s). This plan would include good environmental practices and measures to ensure adherence to relevant regulations. This is to be included within the final CEMP(s).	No
Flood Risk Management Plan	To be developed by the Principal Contractor(s) to provide detail of the response to an impending flood. This is to be included within the final CEMP(s).	No

Control	Description	Framework version contained within the DCO application
Construction Drainage Management Strategy	To be developed by the Principal Contractor(s) during detailed design. The Drainage Strategy would identify all known risks to the water environment and identifies appropriate measures to prevent pollution during construction; and to manage runoff rates. The Construction Drainage Strategy would define the installation of pre-construction drainage measures to intercept run-off and ensure that discharge and runoff rates are controlled in quality and volume, in turn causing no degradation to water quality. This may include specific measures to be used in high-risk areas (for example construction along or across steep gradients and water course crossings). A phased approach may be taken to the development of the Drainage Strategy to reflect the phasing of the construction programme. The Drainage Strategy would include a Site Drainage Plan. This is to be included within the final CEMP(s).	No
Water Management Plan	To be developed by the Principal Contractor(s) during detailed design. The plan would be annexed to the final CEMP(s) and detail the management principles and procedures throughout the construction period that would be implemented on site to ensure that water features are protected from pollution from construction works. This is to be included within the final CEMP(s).	No

Control	Description	Framework version contained within the DCO application
Dewatering scheme	Where dewatering is required, a dewatering scheme would be developed by the Principal Contractor(s) prior to construction to demonstrate that there is an effective strategy to manage water arising during construction and, where required. This is to be included within the final CEMP(s).	No
Soil Management Plan	To be developed by the Principal Contractor(s) to minimise the effects on soil resources during any earthworks, including materials management following foundation construction and excavation for the Proposed Development. This would include details of soil management during construction, soil restoration and aftercare of re-instated soils.	No
Materials Management Plan	To be developed by the Principal Contractor(s) at detailed design. This would set out how excavated materials are to be managed to ensure that the quality of site-won materials is maintained so that they remain suitable for re-use, do not become contaminated and ultimately do not become waste. This would be developed in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoW CoP) (or such equivalent which is in place at the time the plan is prepared). This is to be included within the final CEMP(s).	No
Strategic Plan for the Protection of Mineral Resources	To be developed by the Principal Contractor(s) prior to the start of construction, the	No

Control	Description	Framework version contained within the DCO application
	content of which would be discussed with the landowner, the relevant mineral planning departments at FCC, and any other relevant parties to assist in achieving an effective management of minerals within the affected areas of the Mineral Safeguarding Area (MSA). This is to be included within the final CEMP(s).	
Winter Service Plan	Prior to the commencement of any works scheduled to take place in winter, the Principal Contractor(s) would produce a Winter Service Plan which includes freeze prevention for pipes, and snow and de-icing procedures for access roads. This is to be included within the final CEMP(s).	No
Commissioning Plan	To be developed by the Principal Contractor(s) as a pre-operational condition of the Environmental Permit, requiring approval from NRW and the Health and Safety Executive (HSE).	No
Decommissioning Environmental Management Plan (DEMP)	To be developed at the time of decommissioning which would consider in detail all potential environmental risks on the Proposed Development and contain guidance on how risks can be removed or mitigated. This would include details of how noise and vibration should be managed on the Main Development Area during decommissioning and demolition.	No
Saltmarsh Method Statement	To be developed in liaison with the engineering team, addressing soil stockpiling and the suitability of using turves,	No

Control	Description	Framework version contained within the DCO application
	and setting out the proposed approach to monitoring saltmarsh recovery.	

4. Impact Avoidance and Mitigation Measures Implementation Plan

4.1.1 This section sets out the mitigation and management measures which have been identified within the **ES** (**EN010166/APP/6.2**) and are to be included as a minimum in the final CEMP(s). It also illustrates where additional surveys would be required, either pre-construction or during construction and sets out monitoring requirements and the responsible party identified for each mitigation / enhancement measures or monitoring requirement.

4.1.2 The mitigation measures outlined within this section are included as individual commitments within the **Commitments Register** (**EN010166/APP/6.10**).

4.1.3 Individual tables are provided for each environmental topic, as summarised below:

- **Table 2** details measures related to air quality;
- **Table 3** details measures related to noise and vibration;
- **Table 4** details measures related to traffic and transport;
- **Table 5** details measures related to terrestrial and aquatic ecology;
- **Table 6** details measures related to marine ecology;
- **Table 7** details measures related to water environment and flood risk;
- **Table 8** details measures related to geology and ground conditions;
- **Table 9** details measures related to landscape and visual;
- **Table 10** details measures related to physical processes;
- **Table 11** details measures related to terrestrial heritage;
- **Table 12** details measures related to marine heritage;
- **Table 13** details measures related to socio-economics, recreation and tourism;
- **Table 14** details measures related to climate change;
- **Table 15** details measures related to human health;
- **Table 16** details measures related to major accidents and disasters; and
- **Table 17** details measures related to materials and waste.

4.1 Air Quality

Table 2 Air Quality

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Impacts on amenity, human health and ecological receptors from fugitive emissions of dust and particulate matter. Impacts on human health and ecological receptors from traffic emissions.	Appropriate standard and best practice control measures would be included in the final CEMP, which may include measures detailed in **Appendix 8-B: Construction Dust Risk Assessment** (**EN010166/APP/6.4**). These measures include the measures discussed below The following measures are recommended in relation to communications: • develop and implement a stakeholder communications plan that includes community engagement before work commences on-site; • display the name and contact details of person(s) accountable for air quality and dust issues on the Proposed Development. This may be the environment manager/engineer or the site manager; • display the head or regional office contact information; and • develop and implement a Dust Management Plan (DMP), which may include measures to control	**Appendix 8-B: Construction Dust Risk Assessment** (**EN010166/APP/6.4**) identifies the following measures are recommended in relation to monitoring: • undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of Proposed Development, with cleaning to be provided if necessary; • carry out regular site inspections to monitor	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.	compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked; and • increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	
	The following measures are recommended in relation to site management: • record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken; • make the complaints log available to the local authority when asked; • record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook; and • hold regular liaison meetings with other high-risk construction sites within 500 m of the Proposed Development (or greater, if applicable), to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.	Agree approach to monitoring with the Local Authority ahead of construction commencing. Data would be collected before any work commences on-site to provide a comparative baseline should real-time airborne particulate or dust deposition monitoring be required.	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	The following measures are recommended in relation to preparing and maintaining the site: • plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible; • fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period where operations are within 100 m of receptors; • avoid site runoff of water or mud. • keep site fencing, barriers and scaffolding clean using wet methods; • remove materials that have a potential to produce dust from the Order limits as soon as possible, unless being re-used on-site. If they are being re-used on-site cover as described below; and • ensure all vehicles switch off engines when stationary - no idling vehicles.	Further details to be confirmed in final CEMP.	
	The following measures are recommended in relation to operating vehicle/machinery and sustainable travel: • avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; • impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate); • produce a CTMP to manage the sustainable delivery of goods and materials; and • implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).		
	The following measures are recommended in relation to operations: • only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; • ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate; and • ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.		
	The following measures are recommended in relation to waste management:		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• avoid bonfires and burning of waste materials		
	The following measures are recommended for demolition activities: • soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust); • ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground; • avoid explosive blasting, using appropriate manual or mechanical alternatives; and • Bag and remove any biological debris or damp down such material before demolition.		
	The following measures are recommended for earthworks: • re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and • only remove the cover in small areas during work and not all at once.		
	The following measures are recommended for construction: • avoid scabbling (roughening of concrete surfaces) if possible; • ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place; • ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and for smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.		
	The following measures are recommended for trackout:		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use; • avoid dry sweeping of large areas; • ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; • inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable; • record all inspections of haul routes and any subsequent action in a site logbook; • install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; • implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); • ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and access gates to be located at least 10 m from receptors where possible.		

4.2 Noise and Vibration

Table 3: Noise and Vibration

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Construction noise and vibration, and construction road traffic noise at nearby Noise Sensitive Receptors (NSR).	As identified in Section 2.4, core construction working hours would be 08:00 to 18:00 Monday to Friday (except Bank Holidays) and 08:00 to 13:00 on Saturdays. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. Where on-site works are to be conducted outside the core hours, they would comply with any restrictions agreed with the local planning authority following further assessment of specific planning activities.	To be confirmed in final CEMP. A further noise and vibration assessment would be undertaken as required, once the Principal Contractor(s) is appointed, to identify specific mitigation measures for the Proposed Development (including construction traffic).	To be confirmed in final CEMP.
	Where construction works are proposed outside core hours, additional noise assessments would be undertaken if the construction noise and vibration thresholds within Table 9-10 of **Chapter 9: Noise and Vibration** (**EN010166/APP/6.2.9**) are likely to be exceeded. The assessment would identify the requirements for additional mitigation measures to ensure that construction noise and vibration thresholds would not be exceeded outside of core hours. The assessment would be provided to FCC for approval.	Appropriate measures would be confirmed through further detailed assessment, as necessary, once construction plant and methods and construction traffic management, have been confirmed. If necessary and agreed with the Local Authority, noise monitoring can be undertaken to assess the potential impacts of construction traffic along Kelsterton Road.	
	3 m high acoustic barriers would be installed along the northern boundary and western boundary of the		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Main Development Area and along the northern boundary of the C&IEA as shown on **Figure 5-3: Construction Areas** (**EN010166/APP/6.3**).		
	Appropriate standard and best practice control measures would be implemented to minimise impacts at human and ecological receptors, particularly with respect to activities required outside of normal working hours, which may include: • abiding by agreed construction noise thresholds at nearby NSRs; • avoidance of working in the more sensitive evening and night-times where practicable; • making sure that processes are in place to minimise noise before works begin and that Best Practical Means (BPM) are being followed throughout the construction programme; • using modern plant, complying with the latest European noise emission requirements. Selection of inherently quiet plant where practicable; • hydraulic techniques for breaking to be used in preference to percussive techniques where practical; • use of rotary bored rather than driven piling techniques (if required), where possible; • off-site pre-fabrication where practical;		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• all plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use; • all contractors to be made familiar with current legislation and the guidance in BS 5228-1 and BS 5228-2; • loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Proposed Development to be conducted in such a manner as to minimise noise generation; • where practicable, locating of the noisiest items of plant at the furthest distance from the nearby NSRs. Plant known to emit noise strongly in one direction would, where practicable, be orientated so that the noise is directed away from NSRs; • shutting down of machines such as cranes that may be in intermittent use between work periods or would be throttled down to a minimum. Machines would not be left running unnecessarily; • appropriate routing of construction traffic on public roads and along access tracks; • consultation with the local authority (FCC) and local NSRs to advise of potential noisy works that are due to take place; and		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	monitoring of noise complaints and reporting to the Principal Contractor(s) for immediate investigation		
	The following would also be developed as part of the final CEMP: • method statements regarding construction management, traffic management and overall site management would be prepared prior to construction in accordance with best practice and relevant British Standards; and • regular communication with the local community throughout the construction period would serve to publicise the works schedule, giving notification to NSRs regarding periods when higher levels of noise may occur during specific operations, and providing lines of communication where complaints can be addressed.		
	Where significant construction effects are predicted, additional noise-control equipment such as jackets on pneumatic drills, acoustic covers on compressors, shrouds on piling rigs and cranes and potentially further refinement of construction works programme would be considered and implemented where practicable. The use of temporary barriers or screens may also provide additional mitigation.		
	Potentially significant vibration effects have been identified where vibratory rollers are required for		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	establishment of construction laydown areas. This is based on predictions of the use of rollers on high amplitude. Where vibratory rollers are to be used within 50 m of receptors these would be required to be used on low amplitude mode and no vibratory rollers to be used within 28 m of NSRs.		
	Following the findings of the further noise and vibration assessment, the Applicant can offer pre-condition surveys to the residential properties closest to noise /vibration generating activities.		

4.3 Traffic and Transport

Table 4: Traffic and Transport

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
The potential construction impacts for Traffic and Transport include: • 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 Principal Contractor(s) would prepare and implement a detailed CTMP, in general accordance with the **Framework CTMP** (**EN010166/APP/6.6**). The Principal Contractor(s) would also prepare and implement a detailed Construction Worker Travel Plan (CWMP), in general accordance with the **Framework CWTP** (**EN010166/APP/6.7**),	N/A	N/A
Impacts to users of Deeside Naturalists Society bird hides	Temporarily diverted access to the nature reserve and Site of Special Scientific Interest (SSSI) for users during the construction phase.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

4.4 Terrestrial and Aquatic Ecology

Table 5: Terrestrial and Aquatic Ecology

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
The potential impacts experienced by habitats and Designated Sites include: • habitat loss; • changes in air quality (i.e. dust deposition); and • alteration of local hydrology and water quality. The potential impacts experienced by ornithological important ecological features (IEFs) could include: • effects on water quality; • direct habitat loss and fragmentation; • disturbance effects from noise, lighting and human activity; and • physical interaction with Proposed Development infrastructure. The potential impacts experienced by Protected Species would include:	Details relating to terrestrial and aquatic ecology mitigation and enhancement are detailed in the **Outline LEMP (EN010166/APP/6.9)**	See **Outline LEMP (EN010166/APP/6.9)** for monitoring and additional survey requirements.	To be confirmed in final LEMP.
	The 30 m ecological safeguarding zones identified in section 2.10 would be adhered to throughout construction		
	As detailed in section 2.10, works to install the 3 m acoustic fence would undertaken outside of the core over-wintering period.		
	As detailed in section 2.10, no works would be undertaken within the Main Development Area or C&IEA during the over-wintering period in the absence of the acoustic barrier.		
	The ground excavated during construction of the Proposed CO_2 Connection would be reinstated after construction to its pre-existing habitat		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
• destruction/disturbance of badger setts; • loss of bat roosts and habitat fragmentation; • foraging habitat loss and fragmentation; and • incidental mortality. The potential impacts experienced by Aquatic Ecology would include: • habitat loss; • incidental mortality; and • changes in water quality.	condition where practicable. Existing vegetation lost/disturbed would be replanted/replaced. As detailed in section 2.14, works within the Water Connection Corridor all would be carried out using hand tools rather than mechanised plant and the area would be accessed on foot through the saltmarsh. Materials would be brought in by barge (between April and June inclusive). Additional sediment control measures would be in place around the Kelsterton Brook/Old Rockcliffe Drain culvert so construction works do not result in untreated water entering the culvert as a pathway to the River Dee. There would be retention of, and appropriate stand-offs from the top of the bank of all waterbodies/courses (including the Allt-Goch Brook, Allt-Goch Tributary and Lead Brook. Minor works (if required) within the Electrical Connection Corridor would		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	be carried out via existing access points or within the existing substation.		
	Lighting would be restricted to focused point-use where reasonably practicable. Construction would be carried out during daylight hours to avoid the use of artificial light. Where this isn't possible then lights would be directed away from watercourses and bodies so that fish migration, spawning and feeding is not disrupted.		
	An Ecological Clerk of Works (ECoW) would be appointed by the Applicant to provide ecological oversight, instruct and report on all site clearance and construction works with potential to affect protected species, encompassing both licensed and unlicensed activities		
	Measures to deliver compliance with industry good practice and environmental protection legislation during both construction and		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	operation (e.g. in relation to prevention of surface and groundwater pollution, fugitive dust management, noise prevention or amelioration) would be in accordance with NPS EN-1. Additional measures to minimise noise would be considered, if necessary, at detailed design stage once a Principal Contractor(s) is appointed and a full list of plant is available. Such measures could include jackets on pneumatic drills, acoustic covers on compressors and shrouds on piling rigs and cranes. Works would be timed to avoid or reduce noise and visual disturbance impacts, particularly on SPA/Ramsar site bird species		
	A fish rescue may be required under an FR2 permit granted by NRW during construction where de-watering or over-pumping is required. Where any pumping is required, Eels Regulations 2009		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	compliant screens would be used on any pump used for drain-down or over-pumping of watercourses. Where there are likely to be direct impacts to watercourses or waterbodies it is advised that key migration periods are avoided wherever practicable e.g. April-June and September – November inclusively for eel.		
The potential impacts experienced by Protected Species would include: • destruction/disturbance of badger setts; • loss of bat roosts and habitat fragmentation; • foraging habitat loss and fragmentation; and • incidental mortality.	Precautionary working methods would be put in place prior to and during construction for the purposes of avoiding impacts on named species and to comply with relevant legislation. These include: • **Toolbox Talk**: Prior to the start of the construction works the ECoW would deliver a pre-works briefing to all site staff. This would detail the precautionary working methods the be implemented, what to do if an animal is found on site and how to identify the species that maybe present onsite;	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• **Nesting birds**: All clearance of suitable vegetation to be done outside the breeding season (typically March to August inclusive for most species), where possible. If not possible, the ECoW would check the working area for nests before works commence. If active nests are discovered through this process, then the ECoW would advise on appropriate mitigation to ensure that these are not impacted by construction activities. All relevant works would be completed in accordance with this advice and under an ecological watching brief (in the presence of the ECoW). Birds may be dissuaded from nesting in construction/site access routes by removing vegetation from the desired area before the breeding season commences. Where this is not possible bird deterrent measures would be deployed to deter birds from nesting, followed by the completion of a pre-works survey		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	to check for the presence of nests. In some cases a combination of measures may be required (to be advised by the ECoW) such as to prevent ground nesting species nesting on bare ground after vegetation removal. If Schedule 1[2] bird species are found breeding within the working area, or close enough to the working area that works would result in disturbance of the breeding birds, works would stop immediately and the advice of an ornithologist would be consulted to ensure that measures are put in place to avoid disturbance occurring; • **Reptiles/Amphibians/Hedgehog**: Vegetation would be removed in a two-stage cut. The first cut would take vegetation down to 150 mm. Any cuttings would be removed from the works area. The second cut would be performed down to ground level at least 72 hours after the first cut to allow any		

[2] Goodship, N.M. and Furness, R.W. (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	animals present chance to move away from the area. Any animals found should be moved out of the works area with gloved hands and released in similar habitat to where they were found outside the area of works; • **Reptiles/Amphibians:** Prior to the installation of the acoustic fencing, reptile and amphibian fencing should be implemented around the safeguarding zone following displacement to prevent reptiles from being harmed by the works. • **Reptiles:** The ecological safeguarding zones within both the Main Development Area and the C&IEA should be managed accordingly to maintain and/or enhance suitability for reptiles. This may include implementing sufficient habitat management to these areas to prevent them from evolving into dense scrub habitat and introducing new refugia into these areas such as log piles.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• **Great Crested Newt**: In areas where there is a low risk of encountering great crested newts on site (within the Proposed CO_2 Corridor) an ECoW would be present for any vegetation removal. Vegetation would be removed in a two-stage cut. The first cut would take vegetation down to 150 mm. Any cuttings would be removed from the works area. After the first cut the ECoW would hand search the works area focusing on any suitable resting sites for great crested newt before the second cut down to ground level is performed. If a great crested newt is found then all works in the area would cease and a mitigation licence for the works would be sought from NRW; • **Badger**: Any animal hole or burrow found within the construction boundary would be inspected by the ECoW who would advise on the course of action to be taken. A 30 m buffer		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	would be maintained from any active badger sett during the works should this be discovered (to date no badger setts have been recorded). If this is not possible then a licence for full or partial closure of the sett would be required from NRW prior to commencement of the works; • **Bats:** Minimum buffer zone of approximately 30 m (which may be reduced subject to findings and assessment by an appropriately qualified bat licensed ecologist) from any retained trees with suitability for roosting bats, or further surveys to be carried out where there is potential for direct impacts (where applicable). Refer to **Appendix 11-G: Bat Technical Appendix** (**EN010166/APP/6.4**); and • General animal welfare during construction, such as: – vegetation clearance and construction excavations have potential to affect wildlife and		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	may result in offences under animal welfare legislation; and • all excavations would be covered overnight, or where this is not practicable, a means of escape would be fitted e.g. battered soil slope or scaffold plank, to provide an escape route should any animals (e.g. reptiles, badger, otter, hedgehog) stray into the construction site and fall into an excavation.		
Spead of invasive plant species	An Invasive Species Management Plan (ISMP) survey would be updated prior to construction to determine the current location and extent of plant INNS, and to inform specification of the ISMP. If determined as necessary through this survey and after consideration of other available plant and animal INNS data, an ISMP would be prepared to accompany the final CEMP and would be agreed with relevant stakeholders. The ISMP would specify the measures and supervision necessary during	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	construction to prevent the spread of plant and animal INNS to new locations.		
The potential impacts experienced by Protected Species would include: • destruction/disturbance of badger setts; • loss of bat roosts and habitat fragmentation; • foraging habitat loss and fragmentation; and • incidental mortality.	Preconstruction update surveys: These would be carried out for protected species where relevant or necessary, for example to inform licensing or to identify potential additional features which may become established in the study area. Additional species-specific mitigation would be incorporated into the design (as appropriate) following analysis of results of further surveys to support with obtaining Letters of No Impediment from NRW for protected species (where applicable). Species present would be monitored during and post construction	To be confirmed in final CEMP.	To be confirmed in final CEMP.

4.5 Marine Ecology

Table 6: Marine Ecology

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Introduction and / or spread of marine Invasive Non-Native Species (INNS)	As detailed in section 2.14, works within the Water Connection Corridor all would be carried out using hand tools rather than mechanised plant and the area would be accessed on foot through the saltmarsh. Materials would be brought in by barge. Implementation of the **Biosecurity Risk Assessment** (**Appendix 12-E: Marine Biosecurity Risk Assessment** (**EN010166/APP/6.4**)) and **Appendix 12-F**: **Marine Invasive Non-Native Species Framework Management Plan** ((**EN010166/APP/6.4**)). These include the following measures: • visual inspection of project equipment (including vessels) to ascertain the biosecurity risk from no visible fouling (Risk Rank 0) to Very heavy fouling assemblage comprising many different types of plants and/or animals (Risk Rank 5); • the GB Non-Native Species Secretariat and RAPID LIFE project have outlined important biosecurity control measures for reducing the spread of INNS in the marine environment;	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• additional measures related to the Proposed Development include the use of appropriate anti-fouling coatings on the new eel screen replacements. Where elements cannot receive an anti-fouling coating, they would be appropriately visually inspected, thoroughly cleaned, and dried out prior to placement within the marine environment; and • furthermore, although all vessels are expected to originate from within UK waters, and local to the Proposed Development, all vessels should adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments with the aim of preventing the spread of marine INNS and the International Maritime Organisation (IMO) Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines).		
Permanent and temporary direct loss and physical disturbance to benthic habitats and species from works (including construction phase dredging works and berthing of vessels, such as a jack-up barge (JUB), at low tide)	The final CEMP(s) would include measures such as: • control and minimise the risk of pollution to surface waters by managing construction site run-off; • measures to control storage, handling and disposal of polluting substances; • control the movement of construction site run-off; and – restriction of lighting to a focused point where reasonably practicable, during construction. Refer to **Chapter 5: Construction Management and**	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
below MHWS within the Water Connection Corridor. Physical disturbance to marine ecology from temporary increase in SSC 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 ZoI. Underwater sound and vibration disturbance to marine ecology, particularly migratory fish, within the ZoI. Indirect effects to marine ecology from	**Programme** (**EN010166/APP/6.2.5**) and the **Lighting Strategy** (**EN010166/APP/7.22**). The strategy seeks to provide safe working conditions whilst reducing light pollution and the visual impact of light on the local environment; – operational lighting requirements for the Proposed Development that identify that lighting would be sited or screened in such a way as to reduce illumination on adjoining sensitive habitats to minimise effects on receptors sensitive to light impacts where practicable (**Lighting Strategy** (**EN010166/APP/7.22**)). A Pollution Prevention Plan, including an emergency spill plan which would be implemented during the construction phase. Pollution prevention would be achieved with both physical and procedural measures such as temporary sediment forebays within a designated attenuation basin during construction, suitable interceptors within the permanent and temporary surface water drainage networks and suitable storage of construction materials.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
hydromorphological changes (e.g. changes to water flow or sediment movement) within the ZoI.	As part of the drainage design, appropriate pollution measures would be implemented and in place within the drainage network in the form of full retention fuel interceptors, shut-off valves and fire suppression / contaminated water tanks. Suitable pumps, settlement tanks, and filters to filter all water being pumped / discharged from excavations into existing drains would be provided. Runoff from open excavations would not enter surrounding drainage system without being treated. All discharged water (rainwater and groundwater) from pumping would be treated and tested before re-infiltration. Such water would be disposed of as construction site run-off having first passed through a settlement tank or filtration system where appropriate.		
Collisions between any project vessels and marine mammals, particularly seals.	All vessels used during the Proposed Development would be required to adhere to the International Convention for the Control and Management of Ships' Ballast Water and Sediments with the aim of preventing the spread of marine INNS and the IMO Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines).	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Effects of Artificial Light at Night (ALAN) on migratory fish	Works during the construction phase should be carried out during daylight hours to avoid the need to use ALAN. Where this isn't possible then lights should be directed away from watercourses and bodies so that fish migration, spawning and feeding is not disrupted. Where only daylight working is not feasible, or ALAN cannot be directed entirely away from waterbodies it is advised that key migration periods are avoided.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

4.6 Water Environment and Flood Risk

Table 7: Water Environment and Flood Risk

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Potential impacts on surface water quality include: • Surface water quality impacts associated with discharge containing the spillage of oils, fuels and other construction chemicals; • potential adverse effects from the mobilisation of contaminated soils; • the displacement of floodwater and changing flood flow conveyance routes; • changes in flood risk from changes in surface runoff; • temporary increase in suspended sediment concentration, sediment deposition from	Principles for managing pollution risk, relevant good practice guidance includes, but is not limited to: • controlling and minimising the risk of pollution to surface waters and groundwater by managing construction site runoff and the risk of chemical spillage; • measures to control the storage, handling and disposal of potentially polluting substances during construction; • the management of activities within floodplains including storing materials outside of the floodplain as far as reasonably practicable, production of a Flood Risk Management Plan (FRMP) with floodplain control measures and contingency actions, and measures to safeguard safety of staff during construction from increases in flood risk on-site due to climate change; • management of water removed from excavations including the risk from groundwater flooding through appropriate working practices (during excavations) such as having adequate plans and equipment in place for de-watering to enable safe and dry working environments, but also any risk to the flow regime or quality of any relevant, nearby water feature; and • appropriate method and mitigation measures when undertaking works within, under and adjacent to water	To be confirmed in final CEMP. The Principal Contractor(s) would be required to continually monitor the need for measures relating to the management of construction run off depending on the nature of the works bring undertaken, the weather conditions, and the performance of sustainable drainage systems installed. <u>Ground Investigation and Dewatering</u> An understanding of groundwater levels and flow in relevant areas of the Main Development Area would be obtained from the ground investigation and monitoring to inform the baseline conditions. Monitoring during and after construction is proposed.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
potential dredging leading to increased turbidity, smothering, and mobilisation of sediment-bound contaminants; • temporary obstruction and/or restriction of flow; • an increase in flooding to upstream and downstream receptors on the River Dee; • conveyance of fine sediment to nearby water features through uncontrolled runoff; • temporary alteration to the riverbed and banks, and also changes to the substrate; • temporary removal of riparian vegetation; • accidental leaks and spills of liquid chemical substances to infiltrate to ground during; and	features including managing any risk of physical damage to water features. <u>Pollution Prevention</u> Good practice advice on the management of construction works to avoid, minimise and reduce environmental impacts is available in the following documents: • Guidance for Pollution Prevention (GPP) 1: Understanding your environmental responsibilities – good environmental practices (Ref 2); • GPP 2: Above ground oil storage (Ref 3); • GPP 3: Use and design of oil separators in surface water drainage systems (Ref 4); • GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer (Ref 5); • GPP 5: Works and maintenance in or near water (Ref 6); • GPP 6: Working on construction and demolition sites (Ref 13-63); • GPP 8: Safe storage and disposal of used oils (Ref 7); • GPP 13: Vehicle: washing and cleaning (Ref 8); • GPP19: Vehicle: Service and Repair (Ref 9); • GPP 20: Dewatering underground duct and chambers (Ref 10); • GPP 21: Pollution Incidents Response Plans (Ref 11); • GPP 22: Dealing with spills (Ref 12);	A more detailed hydrogeological assessment would be undertaken where excavations or dewatering is required in high sensitivity groundwater environments. Groundwater levels are likely to be shallow, and therefore any excavations likely to require dewatering. The purpose of the hydrogeological assessment would be to review excavation design alongside the permeability and groundwater levels in the strata and consider the effects of impacts or drawdown on nearby abstractions or resources. <u>Soil and Groundwater Pollution Control Mitigation</u> A Site Waste Management Plan would be developed to manage and outline measures to control earthworks given the risk of historical contamination. This should include a Pre-construction condition surveys	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
a reduction groundwater levels and alterations to flow direction.	• GPP 26: Safe storage – drums and intermediate bulk containers (Ref 13); and • GPP 27: Installation, decommissioning and removal of underground storage tanks (Ref 14). <u>Management of Surface Water Runoff During Construction</u> Where possible, earthworks would be undertaken during the drier months of the year. Periods of wet weather would be avoided, if possible, to minimise the risk of generating runoff contaminated with fine particulates. However, it is likely that some work during wet weather periods would be unavoidable, in which case mitigation measures would be implemented to control fine sediment laden runoff. A Drainage Management Strategy would be prepared, setting out temporary drainage measures to prevent runoff contaminated with fine particulates from entering surface water without treatment. In this regard, it is recommended that the Drainage Management System would incorporate Sustainable Drainage Systems (SuDS) and adopt a phased approach aligned with the construction programme. Drainage design would follow the pollution prevention hierarchy (see GPP1, Ref 2), consider sediment and erosion control measures, and have a clear inspection and maintenance regime. Training will also be given to staff (e.g. through tool box talks) on the importance of effective water management practices and methods. Further principles of drainage management	to establish baseline conditions of existing ground conditions, and a method statement outlining specific construction methods, restoration specifications, and processes informed by the pre-construction survey. A Water Management Plan (WMP) would be annexed to the final CEMP(s) which would outline the mitigation measures necessary to avoid, prevent and reduce adverse effects where possible upon the local surface water (and groundwater) environment during construction. The WMP would also include an outline of responsibilities with regard to water management, required water quality monitoring, pollution prevention measures, training requirements for construction workers with regard to the water environment, an outline of likely relevant permissions	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	during construction are set out in the good practice documents listed above. Mitigation measures would be implemented related to excavations, exposed ground and stockpiles to prevent uncontrolled release of sediment from the Main Development Area. Further measures to manage construction run off would include buffers around water features. The Contractor would continually monitor the need for these measures depending on the nature of the works being undertaken, the weather conditions, and the performance of installed SuDS. <u>Management of Construction Chemical Spillage Risk</u> Measures would be in accordance with prevailing pollution prevention legislation in the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and Control of Pollution (Oil Storage) (Wales) 2016 and following good practice guidelines. They would include details on how fuel and other chemicals would be stored and used, equipment and plant cleaning, as well as how leaks and spillages would be prevented or remediated if required. This would also include the implementation of a Pollution Prevention and Emergency Incident Response Plan. Any site welfare facilities would be appropriately managed. <u>Management of Flood Risk</u>	and consents required, and a Pollution Incident and Response Plan. <u>Water Quality Monitoring</u> The water quality monitoring programme would be developed by the Principal Contractor(s) in consultation with NRW and would also reflect any requirements of secondary environmental permits / licences for works affecting, or for temporary discharges to, watercourses within the Proposed Development Site. <u>Ground Investigation and Dewatering</u> Monitoring during and after construction is proposed as dewatering has the potential to locally lower groundwater levels, alter flow regimes and spread existing contamination and salinity within an area of	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	For areas of potential flood risk, construction flood mitigation measures would be applied to reduce the risk to construction site and workers. A Flood Risk Management Plan (FRMP) would provide the following details: • 24-hour availability and ability to mobilise staff in the event of a flood warning; • the removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period; • details of the evacuation and site closedown procedures; and • arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works area. To manage activities within floodplains effectively, it is currently proposed that: • construction materials would be stored outside of the 1 in 200 year (0.5% AEP) extent for areas at tidal flood risk and outside of the 1 in 100 year (1% AEP) extent for areas at fluvial flood risk. If areas located within Flood Zone 3 are to be utilised for the storage of construction materials, this would be done in accordance with the applicable flood risk activity regulations, if required; • the welfare facilities and staff car park would be located outside of the modelled tidal 1 in 200 year (0.5% AEP) extent plus 2074 climate change extent;	influence around dewatered excavations <u>Proposed CO_2 Connection Corridor</u> A Pre-Works Surface Water Feature Survey would be undertaken prior to construction to investigate the location and condition of existing ditches <u>Main Development Area: Culverted Watercourses</u> Where diversions to existing culverted watercourses are required, water quality monitoring would be undertaken prior to, during, and following on from the construction activity to ensure any spillages or other pollution is identified. <u>Surface Water Monitoring Programme</u> Daily observations and monitoring of upstream and	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• connectivity would be maintained between the floodplain and the adjacent watercourses; • during the construction phase, the Contractor would monitor the weather forecasts daily, and review the weekly and monthly weather forecasts each week, and plan works accordingly. For example, works in the channel of any watercourses would be avoided or halted were there to be a significant risk of high flows or flooding; and • the construction laydown area site office and supervisor would be notified of any potential flood occurring by use of the Floodline Warning Service or equivalent service. materials (such as earth and topsoil etc.) would be stored outside the 1 in 100-year flood extent, and permits would be obtained for storage in Flood Zone 3 if required. <u>Ground Investigation and Dewatering</u> Where dewatering is required, a dewatering scheme would be developed prior to construction to demonstrate that there is an effective strategy to manage water arising from the operations and, where required, sufficient proposals to treat the water prior to controlled discharge. The Dewatering Scheme would demonstrate that there is an effective strategy in which to manage water rising from construction. Sufficient proposals to treat the water may be required prior to controlled discharge.	downstream reaches of water features associated with the Proposed Development. Water quality sampling would be undertaken on a periodic as well as ad-hoc basis, dependent upon circumstances / activities onsite. Monitoring and sampling would be undertaken prior to the commencement of construction as to allow a sufficient baseline data to be collected. In the event that contamination is identified within the Main Development Area, monitoring of any discharge to the River Dee or other surface water receptors should be carried out on a regular basis so that no contamination enters the estuary.	

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	A groundwater abstraction licence may be required for construction activities (i.e. dewatering) depending on the abstraction volume (>20 m3/d) and duration of abstraction. The proposed discharge of any water pumped out of excavations may be subject to a separate consent under the Environmental Permitting (England and Wales) Regulations 2016. An approved environmental permit would be required for all pumping operations (before dewatering or discharges commence) if not exempt under the Water Abstraction and Impounding (Exemptions) Regulations 2017. Water would never be pumped directly to a watercourse or be allowed to directly enter a watercourse. <u>Soil and Groundwater Pollution Control Mitigation</u> Method statements would be produced to outline specific measures for pollution prevention during piling operations, which would include techniques for avoiding the creation of flow paths between groundwater and/or contaminated soils. <u>Water Connection Corridor: Infrastructure Refurbishment</u> A Marine Licence would be required for these works, as set out in **Consents and Agreements Position Statement** (**EN010166/APP/3.3**). A Flood Risk Activity Permit (FRAP) would be required for any permanent or temporary works in, over, under or within 16 m of a tidal main river, or within 16 m of any flood defence structure on		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	that river, or within a flood plain. All relevant permits and consents would be sought from NRW where necessary. <u>Proposed CO_2 Connection Corridor:</u> Topsoil would be removed and stored separately to the subsoil. There would be no storage of materials within 20 m of any watercourse or within any NRW Flood Mapping for Planning (FMfP) mapped surface water or fluvial floodplain. A Pre-Works Surface Water Feature Survey would be undertaken prior to construction to investigate the location and condition of existing ditches. If drains are identified that need to be crossed, the following embedded mitigation measures would be followed: • any temporary access and pipeline crossings of watercourses would be undertaken in accordance with good practice guidance; • crossing locations would be selected to make the crossing as close to perpendicular to the watercourse as reasonably practicable, so that the crossing is as short as possible and for open cut / temporary access crossings reducing the risk of localised scour at the structures; and • field drainage would be newly installed or restored elsewhere to enable landowners field drains to continue working throughout the construction period.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	With the exception of crossings of field ditches to convey pipelines or for access, works to new/existing outfalls/intakes that must be undertaken close to or in a water feature, and where watercourses are culverted through the site, it is proposed that all water features would be protected by a buffer zone. No works would be permitted in the buffer zone and no vegetation cleared. For small watercourses that are less than approximately 5 m wide (bank top to bank top) the buffer zone would be 10 m from the centre line of the watercourse. For larger water features, such as the Dee Estuary, the buffer zone would be applied from the Mean High Water Line. For ponds and lakes, the buffer applies from the edge of the water at typical levels. Allt-Goch Tributary is located along the western boundary of the Proposed CO_2 Corridor. A buffer of at least 10 m from this watercourse would be maintained, with no storage of materials within the mapped floodplain. Along the pipeline route, the ground would be reinstated with stored topsoil and subsoil following trenching, within the same year as construction should weather conditions allow. Restoration activities would include reseeding of pastureland and reinstatement of field boundaries.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	All relevant permits and consents would be sought from NRW, SuDS Approval Body (SAB) and the Lead Local Flood Authority (LLFA), where necessary. <u>Main Development Area Surface Water Outfall:</u> Any works associated with the outfall would incorporate good practice construction guidance. Furthermore, the location, position and orientation of a new drainage outfall would be carefully determined and informed by a hydromorphological survey to minimise any adverse local impacts on river processes. Appropriate micro-siting of the outfall would minimise loss of bank habitat, the need for bed scour or hard bank protection and minimise localised flow disturbance or disruption to sediment transport processes. Prefabricated headwalls would be used for all outfalls where possible to avoid the need for potentially polluting activities adjacent to watercourses (e.g. pouring wet concrete close to the watercourse). <u>Main Development Area: Culverted Watercourses</u> Where diversions are required to existing culverted watercourse, flow would be maintained by damming and over pumping to create a dry working area and minimise the risk of polluting the flow. Works should therefore be carried out in the drier months of the year where possible. Once the watercourse is reinstated, silt fences, geotextile matting, or straw bales should be used initially to capture mobilised sediments until the watercourse has returned to		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	a settled state and thereby reduce risks of downstream water quality impacts. All culverts to convey watercourses would be set 150 mm below bed level to allow sedimentation and a naturalised bed to form, which would maintain longitudinal connectivity for fish and other aquatic fauna should they be present. <u>Laydown Areas / Construction Compounds</u> Temporary drainage systems would be designed to provide suitable protection measures for watercourses including a suitable stand-off distance. New areas of hardstanding associated with all the compounds would require regular inspections of the drainage system associated with the new facilities (as well as before and after storm events) so that site runoff is adequately managed. Storage areas for hazardous or potentially polluting materials would be located in a separate secure, and where appropriate bunded, area. Material data sheets would be available for all these materials and the COSHH assessments kept within the relevant risk assessment for the task. <u>Validation of Water Levels</u> It is recommended that water level data (15 mins data) should be obtained for a minimum of 35 days at Connah		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Quay a year to check the hydraulic model against real time data and make sure it is calibrated sufficiently. This should take the form of monitoring at consistent set locations to be agreed with NRW.		

4.7 Geology and Ground Conditions

Table 8: Geology and Ground Conditions

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Impacts on Geology and Ground Conditions features during construction of the Proposed Development are likely to include: • temporary adverse to mineral resources where construction compounds are proposed within the Mineral Safeguard Area (MSA); • mobilising existing contamination in soil and groundwater; • increasing the potential for contaminants in unsaturated soils to leach to groundwater in open excavations; • increasing the potential for contaminated surface run-off to migrate to surface water; • introducing new sources of contamination, such as fuels and oils;	Further ground investigations to be undertaken before commencement of construction. Where ground investigations identify risks deemed to be unacceptable, further detailed quantitative risk assessment, and if required, detailed remediation strategies would be developed accordingly. Where dewatering is required, a dewatering scheme would be developed prior to construction to demonstrate that there is an effective strategy to manage water arising from the operations and, where required, sufficient proposals to treat the water prior to controlled discharge. Any such assessment would consider the effects of any drawdown or impacts on nearby abstractions or resources. A strategic plan would be discussed in advance of the construction works with the landowner, the relevant mineral planning departments at FCC, and any other relevant parties to assist in achieving an effective management of minerals within the affected areas of the Mineral Safeguard Area (MSA).	To be confirmed in final CEMP. Ground-investigations (geo-environmental and geotechnical) would be undertaken prior to construction. Ground investigation will also validate the findings of the CMRA and inform any required mitigation or remedial solution which will be incorporated into the Proposed Development design. Ground stability and geotechnical issues (including coal mining risks) will be assessed in the detailed design phase through an interpretive Ground Investigation Report (GIR) and, as the design develops, then a Geotechnical Design Report (GDR), or equivalent. Any future detailed site investigations and/or remedial works will be undertaken subject to obtaining any required	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
• creating preferential pathways for the migration of soil contamination and gases, for example, along new below ground service routes, service ducts; • introducing new human health receptors such as site staff; and • temporary removal of soils from agriculture represents.	Good site practice and management measures would be implemented, including: • methods for materials to be excavated, segregated, and stockpiled; and • procedures for dealing with unexpected soil or groundwater contamination that may be encountered. Any works that may affect or enter Mining Remediation Authority assets would require Mining Remediation Authority permits and associated mitigation. A Coal Mining Risk Assessment (CMRA) will be undertaken where not covered by previous investigations of the site, which will be based on the Mining Remediation Authority Consultant's Mining Report and available records / mine plans. The CMRA will determine the location and depth of underground workings (if present) and the presence of mine shafts / adits.	Mining Remediation Authority permit(s). As part of further ground investigation, ground gas monitoring would be undertaken, as there is the potential for ground and mine gas to be displaced and accumulate within future buildings (based on landfills / Made Ground / coal measures (including potentially from recorded workings to the west of the Main Development Area) anticipated within the Order limits). A detailed hydrogeological assessment would be undertaken where excavations or dewatering is required in high sensitivity groundwater environments.	
	<u>Soil and Groundwater Pollution Control Mitigation</u> In addition to pollution prevention measures outline in **Table 7** the following would be applied: All bulk fuel and COSHH items would be stored in accordance with the relevant Guidance for		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Pollution Prevention (GPP) or where GPP are yet to be published, Pollution Prevention Guidance (PPG) notes (withdrawn but widely considered good practice) and storage regulations. Tanks and dispensing pumps would be locked when not in use to prevent unauthorised access. Any hazardous materials would be stored in designated locations with specific measures to prevent leakage and the release of their contents. This would include a requirement for storage areas to be set back an appropriate distance from surface water features / drains to prevent any uncontrolled discharge (and take into consideration the positions of any groundwater abstraction wells), on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain at least 110% of the contents. Valves and trigger guns would be protected from vandalism and kept locked when not in use. Only well-maintained plant would be used during construction to minimise the potential for accidental pollution from leaking machinery or damaged equipment. Static machinery and plant are expected to be stored in hardstanding areas when not in use and, where necessary, to make		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	use of drip trays beneath oil tanks / engines / gearboxes / hydraulics. Spill response kits containing equipment that is appropriate to the types and quantities of materials being used and stored during construction would be maintained within the Order limits for the duration of the works A Drainage Management Strategy would be developed and provided in the final CEMP(s).		
	<u>Contamination</u> Potential impacts specific to construction workers during site preparation and construction / decommissioning works would be controlled and mitigated by the following measures and through working in accordance with CIRIA C811: • measures to minimise dust generation; • provision of Personal Protective Equipment (PPE), such as gloves, barrier cream, overalls etc. to minimise direct contact with soils; • provision of adequate hygiene facilities and clean welfare facilities for all construction site workers; • monitoring of confined spaces for potential ground gas accumulations, restricting access to confined spaces, i.e., to suitably trained		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	personnel only, and use of specialist PPE, where necessary; and • preparation and adoption of a site and task specific health and safety plan as is required under health and safety legislation. If unexpected soil or groundwater contamination is found, affected works would stop to enable approbative people to be notified, and further characterization and risk assessment would be undertaken before remediation or mitigation proposals are agreed. In the event that unacceptable risks are identified, or encountered during construction, and routing through these areas is unavoidable, specific mitigation measures may be required in the form of treating / remediating contamination. There is potential for asbestos to be present in any Made Ground within the Order limits. Any Made Ground found to be contaminated with asbestos would require suitable management if it is to be retained on-site or removed (in line with the CL:AIRE, CAR-SOIL 2012.		
	<u>Excavated Materials and Waste Management</u> Re-use of excavated materials during construction and decommissioning of the		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Proposed Development would be governed by either a Materials Management Plan (MMP) developed in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (DoW CoP), 2011, an environmental permit or a relevant exemption. In order to manage and monitor waste, including any spoil generated on-site, a Framework Site Waste Management Plan (SWMP) has been developed (Appendix B). Where there is a requirement to dispose of surplus excavated materials off-site as waste, the material would be characterised to determine firstly whether it is Hazardous or Non-Hazardous waste in accordance with the Technical Guidance WM3 and then once this is established, the appropriate disposal facility would be determined and Waste Acceptance Criteria (WAC) analysis undertaken, if required. To minimise the effects on soil resources during any earthworks, high standards of soil handling and management would be employed with a view to minimising where possible the double handling of soils and the extent to which exposed soils would be left vulnerable to erosional processes.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	<u>Soil Management</u> To minimise the effects on soil resources during any earthworks, including materials management following foundation construction and excavation for the Proposed Development, high standards of soil handling and management would be employed with a view to minimising where possible the double handling of soils and the extent to which exposed soils would be left vulnerable to erosional processes. Guidelines are published in documents such as DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009) (Ref 16) and Good Practice Guide for Handling Soils in Mineral Workings (Ref 17). Impacts relating to the handling, movement and temporary storage of soils, would be controlled through Soil Management Plan(s) (SMP(s)) to be included within the final CEMP(s). The SMP(s) would provide final details on the following: Soil management during construction, including: • Soil moisture conditions for handling, in accordance with sheets A to D of the Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (Ref 17); • Soil stripping;		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• Soil storage, in accordance with guidance given in sheets B and C of the Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (Ref 17); • Stockpile locations; • Forming the stockpiles; and • Maintenance of stockpiles during storage. Soil Restoration, including: • Excavation of soil stockpiles; • Preparation of the base layer; and • Soil reinstatement. Aftercare of re-instated soils, including: • Aftercare plan including periodic assessment to determine soil use and function meets landowner requirements. The SMP(s) should also consider the measures prescribed in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref 17) and identify the requirement for regular inspections of activities by a suitably experienced soil scientist.		

4.8 Landscape and Visual

Table 9: Landscape and Visual Amenity

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Permanent removal of areas of grassland. Removal of areas of vegetative scrub for construction laydown activities.	The **Outline LEMP** (**EN010166/APP/6.9**) provides details of retained and enhanced vegetation within the Order limits.	N/A	To be confirmed in final CEMP.
Direct impact of the Proposed Development to trees	No veteran trees, ancient trees or ancient woodland are to be removed during construction. No tree features of high quality (Category A) would be removed to facilitate the Proposed Development within the Construction and Operation Area. All tree work is to follow the principles of BS3998: 2010 Treework – Recommendations (Ref 19) and must be carried out by suitably qualified contractors. The Arboricultural Association provides a list of contractors who meet these requirements. Should the requirement for additional tree works be identified, this would be discussed with the Project Arboriculturist and no works would be undertaken without the consent of FCC.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	An arboricultural method statement (including Tree Protection Plan) would be prepared to detail final measures in general accordance with Annex E of **Appendix 15-G Arboricultural Impact Assessment** (**EN01066/APP/6.4**): • tree protection measures (such as construction exclusion zones); • ground protection as set out in section 6.2.3.3 of BS5837:2012; • guidance for the management of exposed roots; and • storage, use and mixing of materials.		
Indirect impacts to trees through the routeing of new services near trees / or undertaking construction works in proximity of trees.	All services are to be routed outside of the RPA of retained trees. Excavation to install services has the potential to result in unacceptable root severance which could result in instability, dysfunction or the death of trees. Repeated incursions are particularly damaging and must be avoided by bundling services wherever possible. Where it is not possible, and services must be routed within the RPA of a retained tree, this would be subject to a detailed method statement with approval from FCC. The principles of the National	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Joint Utilities Group (NJUG) Volume 4 (Ref 18) guidance must be adhered to. Where existing services become redundant within the RPA of a retained tree, the default position must be (and is) that they would be decommissioned and left in situ. Where this is not feasible one of the following techniques would be utilised: • Existing services to be removed by winching out from an access/inspection chamber located outside of an RPA; • Fill redundant pipe work with an inert material where acceptable; or Undertake pipe bursting where necessary within the RPA of retained trees.		
Construction of construction site facilities in proximity to trees	All construction site facilities, including site huts, staff and contractor parking and areas for storage, would be located outside of the RPA or crown spread of retained trees. The construction exclusion zones identified on the TPP would be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

4.9 Physical Processes

Table 10: Physical Processes

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Increased water column turbidity / increased Suspended Sediment Concentration (SSC). Potential release of sediment-bound contaminants into the water column due to river / estuary bed disturbance. 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	As detailed in section 2.14, works within the Water Connection Corridor all would be carried out using hand tools rather than mechanised plant and the area would be accessed on foot through the saltmarsh. Materials would be brought in by barge. Construction phase impacts would be mitigated through the implementation of standard construction techniques and mitigation measures as detailed in **Table 7** and **Table 8**.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
deposition patterns caused by newly built intake and outfall structures elsewhere within the water connection corridor.			

4.10 Terrestrial Heritage

Table 11: Terrestrial Heritage

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Temporary short-term or long-term impacts to assets as a result of change to their setting. Permanent physical impacts to below ground archaeological remains.	Mitigation measures relevant to terrestrial heritage are also detailed in **Table 2** and **Table 3. Air** Quality A protocol for unexpected archaeological discoveries has also been agreed. The scope of these mitigation measures are set out within the **Overarching Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation** (**EN010166/APP/6.8**) which has been agreed with CPAT (Heneb) and the RCAHMW and is secured by a requirement of the **Draft DCO** (**EN010166/APP/3.1**).	N/A	To be confirmed in final CEMP.

4.11 Marine Heritage

Table 12: Marine Heritage

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Direct physical impacts on potential Marine Heritage assets. Permanent, irreversible damage or destruction, truncation, compaction or loss of previously unknown potential archaeological remains and deposits. Indirect impacts on potential Marine Heritage assets.	As detailed in section 2.14, all works within the Water Connection Corridor would be carried out using hand tools rather than mechanised plant and the area would be accessed on foot through the saltmarsh. Materials would be brought in by barge. As detailed in section 2.14, the works in the Water Connection Corridor would be carried out at low tide, when the existing intake structures are exposed and accessible by foot. For some works there may need to be a barge positioned alongside the intake infrastructure, which would remain floating at all times (i.e. no jack-up barge would be involved in any aspect of eel screen replacement). There would be no interaction with the riverbed during the construction works. As detailed in section 2.12 works within the Surface Water Outfall Area would be minimised as far as practicable. A protocol for unexpected archaeological discoveries has also been agreed. The scope of these mitigation measures are set out within the	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Overarching Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation (**EN010166/APP/6.8**) which has been agreed with CPAT (Heneb) and the RCAHMW and is secured by a requirement of the **Draft DCO** (**EN010166/APP/3.1**).		

4.12 Socio-economics, Recreation and Tourism

Table 13: Socio-economics, Recreation and Tourism

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Potential Socio-economics, Recreation and Tourism impacts could include: • 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	Control measures for earthworks, noise and vibration, dust generation and waste generation are detailed in **Table 2**, **Table 3**, **Table 8** and **Table 17**. Soil Management measures are detailed in **Table 8.** The **Framework CTMP** (**EN010166/APP/6.6**) provides an overview of proposed construction (including AIL) traffic routes and associated management measures, including parking and access requirements, and proposals for management of any affected PRoW.	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
community facilities and visitor attractions due to noise, air quality, visual and traffic effects during construction and decommissioning.			

4.13 Climate Change

Table 14: Climate Change

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Greenhouse Gas (GHG) emissions from the construction of the Proposed Development on the climate.	Construction activities would be controlled through relevant regulations, industry good practice, and standard good practice to reduce GHG emissions as detailed in **Table 2, Table 3** and **Table 7.** The use of construction materials with lower embodied carbon emissions (i.e. higher recycled content) would be encouraged.	To be confirmed in final CEMP.	To be confirmed in final CEMP.
Vulnerability of the Proposed Development to the impacts of future climate change. Combined impacts of climate change and the Proposed Development on surrounding receptors.	Controls to increase the resilience of the Proposed Development to climate change include: • monitoring of weather forecasts and plan works accordingly, protecting workers and resources from extreme weather conditions; and • implementation of standard construction techniques and mitigation measures, as are described in a wide range of good practice publications (e.g. C811 Environmental Good Practice on site (fifth edition) (Ref 20).	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Embedded controls (measures already included in the design of the Proposed Development) include: • construction equipment used would be suitable to operate in the temperatures expected in North Wales; • the Contractor would monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions. This would include receiving Cyfoeth Naturiol Cymru (Natural Resources Wales) flood alerts and the works would be planned accordingly to protect workers and resources from any extreme weather conditions such as storms and flooding; and • management of surface water run-off from the Proposed Development during construction would be managed in accordance with the **Outline Surface Water Drainage Strategy** in **Appendix 13-D** (**EN010166/APP/6.4**); and • Construction phase impacts would be mitigated through the implementation of standard construction techniques and mitigation measures, as are described in a wide range of good practice publications (e.g. C811 Environmental Good Practice on site (fifth edition). This involves flood consultations with local flood authorities, in particular in the approach to existing defenses.		

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	Adaption measures to increase the resilience of the Proposed Development to climate change include: • development of a fire management plan and an early warning detection system; • a Winter Service Plan would be developed which includes freeze prevention for pipes, and snow and de-icing procedures for access roads; • installation of a water pump for areas with critical infrastructure; • raise critical infrastructure to be above Probable Maximum Flood level; • installation of additional attenuation features at key locations or identified flood risk areas; and • regular monitoring of trees and vegetation, pruning as necessary.		

4.14 Human Health

Table 15: Human Health

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
An increase in demand on local health care services. Increased traffic flows and severance effects inhibiting the ability of local residents to access these facilities. A reduction in air quality due to construction dust or increased NO_2 and particulate matter concentrations, which could lead to adverse health effects on residents. Increases in noise and vibration, which could lead to adverse health and wellbeing effects in terms of annoyance and/or disrupt local amenities. Construction activities of the Proposed Development may	Measures as set out in **Table 2, Table 3, Table 4** and **Table 9.**	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
intersect, or otherwise impact upon, the accessibility of open space and PRoW in the study area, which could impact the health and wellbeing of local residents. Adverse impacts on water quality due to deposition or spillage of soils, sediment, oils, fuels, or other construction chemicals.			

4.15 Major Accidents and Disasters

Table 16: Major Accidents and Disasters

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Release of hazardous substances Construction works have potential to cause ground instability / collapse and / or utility / pipeline / UXO strike. Major Accidents and Disasters scenarios	All works would be undertaken in compliance with accredited health and safety and environmental management systems, relevant legislation and environmental permits, consents and licenses. The use of suitably experienced contractors, risk assessments, working method statements, operating procedures and personnel training would minimise the risk of accidental scenarios occurring during the Proposed Development construction. Atypical activities, which would be undertaken during construction, but not in normal operation, would be assessed as part of the risk assessment and mitigation processes. Commissioning of the facility would be undertaken in accordance with a commissioning plan. It is expected that the commissioning plan would be a pre-operational condition of the Environmental Permit, for NRW, and it would also be supplied to the HSE for approval as part of the COMAH pre-construction notification process. Aspects of the commissioning would also form part of	To be confirmed in final CEMP. Prior to the final design and construction of the Proposed Development, confirmatory Ground Investigations (GI) would be undertaken to assist the structural and civil design of the Proposed Development. In addition, the GI would inform the soil and groundwater contamination baseline, as required for Environmental Permitting.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	construction phase plan required under the CDM Regulations 2015.		

4.16 Materials and Waste

Table 17: Materials and Waste

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
Potential waste impacts could arise from the type and quantities of key construction materials used ,and the type and quantities of waste generated.	To reduce the potential impacts from materials and waste, and to achieve high levels of sustainability in the Proposed Development as a whole, the Principal Contractor(s) would apply the principles of the waste hierarchy. The following construction practices would also be applied during construction: • agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme; • implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled where possible, which increases the risk of their damage and subsequent disposal as waste; • attention to material quantity requirements to avoid over-ordering and generation of waste materials due to surplus; • reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping, recycling of demolition materials into aggregates; • off-site prefabrication, where practical, including the use of prefabricated structural elements; and	To be confirmed in final CEMP.	To be confirmed in final CEMP.

Potential Impact	Mitigation/ Enhancement Measure	Monitoring/ Additional Survey Requirements	Responsibility
	• segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and • off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site. To manage and monitor waste generated on the Order limits during the construction of the Proposed Development, a Framework SWMP has been developed (Appendix B) which would allow for waste streams to be estimated and monitored.		

5. Implementation and Operation

5.1 Implementation

5.1.1 The final CEMP(s) would set out all roles, responsibilities and actions required in respect of implementation of the measures described in this Framework CEMP, including:

- an organogram showing team roles, names and responsibilities;
- training requirements for relevant personnel on environmental topics;
- information on site briefings and toolbox talks that would be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures;
- measures to advise employees of changing circumstances as work progresses;
- communication methods (e.g. updates via the Applicant's website);
- document control;
- environmental emergency procedures; and
- monitoring, inspection and audits of site operations.

5.1.2 In accordance with sub-paragraph (3) of Requirement 4 in the **Draft DCO** (**EN010166/APP/3.1**), all construction works associated with the Proposed Development would be carried out in accordance with the final CEMP(s) unless otherwise agreed with the relevant planning authority.

5.2 Roles and Responsibilities

5.2.1 Key roles and responsibilities during the construction phase in managing environmental impacts would likely include, but are not limited to:

- **The undertaker** – Ultimate responsibility for ensuring requirements are discharged in accordance with the **Draft DCO** (**EN010166/APP/3.1**) and that the roles identified below are fulfilled during construction;
- **Principal Contractor(s)** – appointed by the undertaker to construct the Proposed Development and responsible for the production of, and compliance with, the final CEMP(s);
- **Site Manager** – appointed by the undertaker to have overall responsibility for activity on-site and would be based on-site full time;
- **Construction Project Manager** – appointed by the undertaken to have overall responsibility for ensuring all elements in the DCO, final CEMP(s) and all environmental legal and other requirements are implemented, and appropriately resourced, managed, reviewed and reported;
- **Environment Manager(s)** – appointed by the undertaker to be responsible for the overall management of environmental aspects on-site, ensuring environmental legislation and best practices are complied with, and environmental mitigation and monitoring measures identified

are implemented. The Environment Manager would oversee environmental monitoring on-site and carry out regular environmental site inspections, reporting and responding to any incidents or non-compliance. The Environment Manager would liaise with relevant environmental bodies and other third parties as appropriate;

- **Environmental Site Supervisor(s)** (if required) – appointed by the undertaker to be responsible for overseeing the management of and providing advice about environmental risks during construction including, for example, management of protected species, surface water management, pollution, air quality and noise. This role may be merged with Environment Manager;
- **Ecological Clerks of Works (ECoWs)** – appointed by the undertaker to manage the risks to ecology during construction, advising protecting valued biodiversity features and providing practical solutions. The appointed ECoW(s) would be appropriately qualified and a member of the Chartered Institute of Ecology and Environmental Management (CIEEM);
- **Health and Safety Manager** – appointed by the undertaker to be responsible for the monitoring and controlling of health and safety compliance and related rules and regulations on-site;
- **Archaeological Contractor** – The works specified in **Overarching Written Scheme of Investigation for Terrestrial and Marine Heritage Mitigation** (**EN010166/APP/6.8**) would be undertaken on behalf of the Applicant by a competent and suitably qualified Archaeological Contractor who is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA), or with equivalent demonstrable experience; and
- **Community Liaison Officer** – a Community Liaison Group would be set up prior to construction and would continue until final commissioning of the Proposed Development as a formal forum for local issues to be raised. A Community Liaison Officer would be appointed to lead discussions with local communities, and also act as the primary point of contact should there be any queries or complaints.

5.2.2 These roles and responsibilities are indicative and would be confirmed in the final CEMP(s).

6. Checking and Corrective Action

6.1.1 To ensure that the mitigation provisions set out in the final CEMP(s) are operating effectively and as intended, environmental monitoring of the Proposed Development and its impacts would be undertaken throughout the construction phase.

6.1.2 As part of the monitoring process, the Principal Contractor would allocate a designated Environmental Manager(s), who would be present on-site throughout the construction, notably when new activities are commencing. The Environmental Manager(s)/ Environmental Site Supervisor(s) would observe site activities and report any deviations from the final CEMP(s) in a log book, along with the corrective action taken and general conditions at the time. The Applicant would be informed of any deviations from the final CEMP(s) as soon as possible following identification of such issues. The Environmental Manager would also assist the Applicant with day-to-day contact with Flintshire County Council, and other regulatory agencies such as Natural Resources Wales, as required.

6.1.3 During construction, the Environmental Manager would conduct regular walkover surveys to ensure all requirements of the final CEMP(s) are being met and complied with. Actions from these surveys would be documented on an Environmental Action Schedule, discussed with the Site Manager for programming requirements and issued weekly for actioning.

7. Records

7.1 Record of action

7.1.1 The Environmental Manager would retain records of environmental monitoring as part of, and implementation of, the final CEMP(s). This would provide evidence that the final CEMP(s) are being implemented effectively and in accordance with Requirement 4 of the **Draft DCO** (**EN010166/APP/3.1**). These records would include:

- an Environmental Action Schedule;
- records of licences, permits and approvals;
- results of inspections;
- other environmental surveys and investigations; and
- environmental equipment test records.

7.1.2 The final CEMP(s) would be live documents and as such the intention is that they would be updated regularly, with a full review being undertaken on at least a quarterly basis throughout construction of the Proposed Development.

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Appendix A: Figures

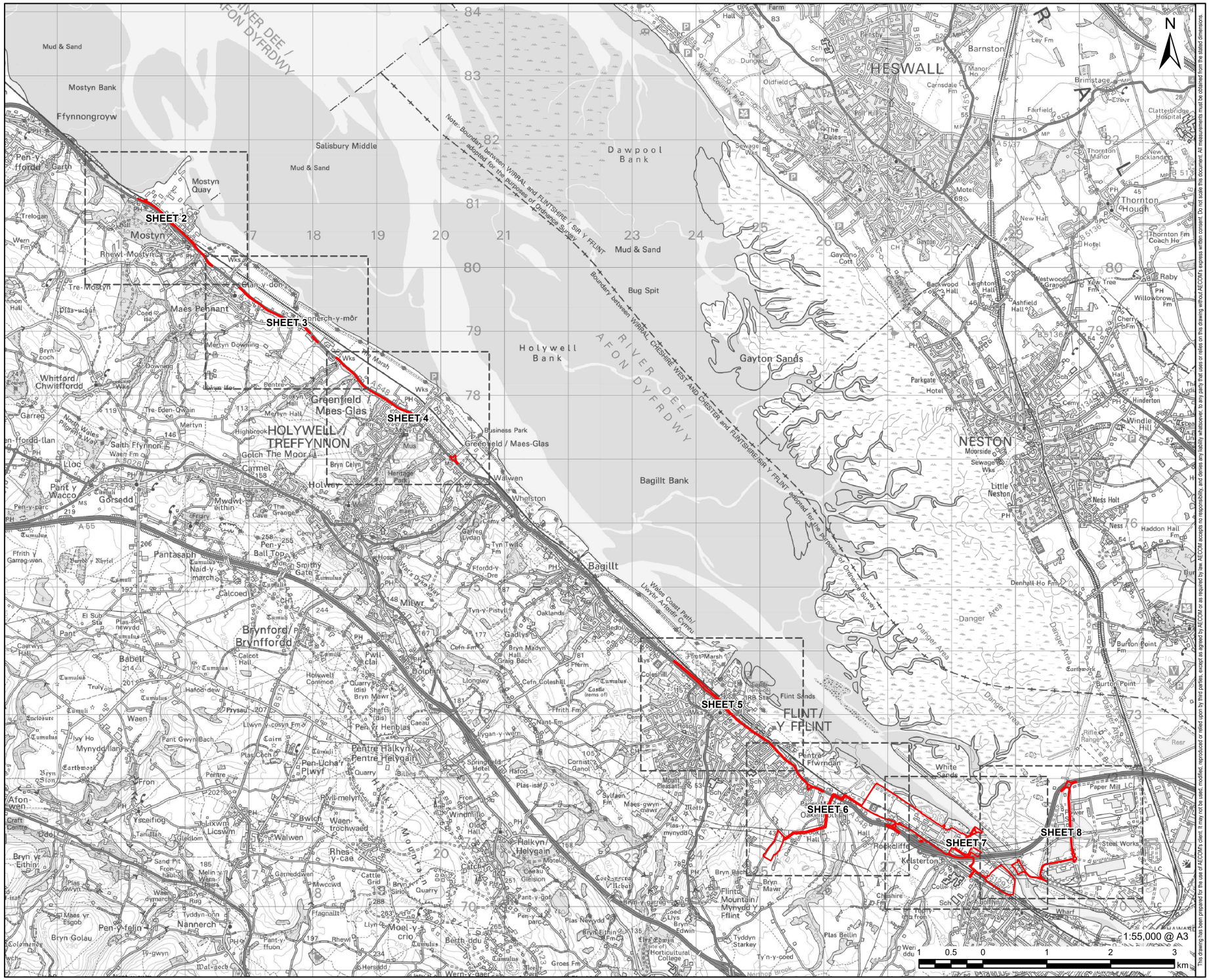

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FIGURE TITLE

Areas Described in the Framework Construction Environmental Management Plan
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FIGURE NUMBER

Figure 1

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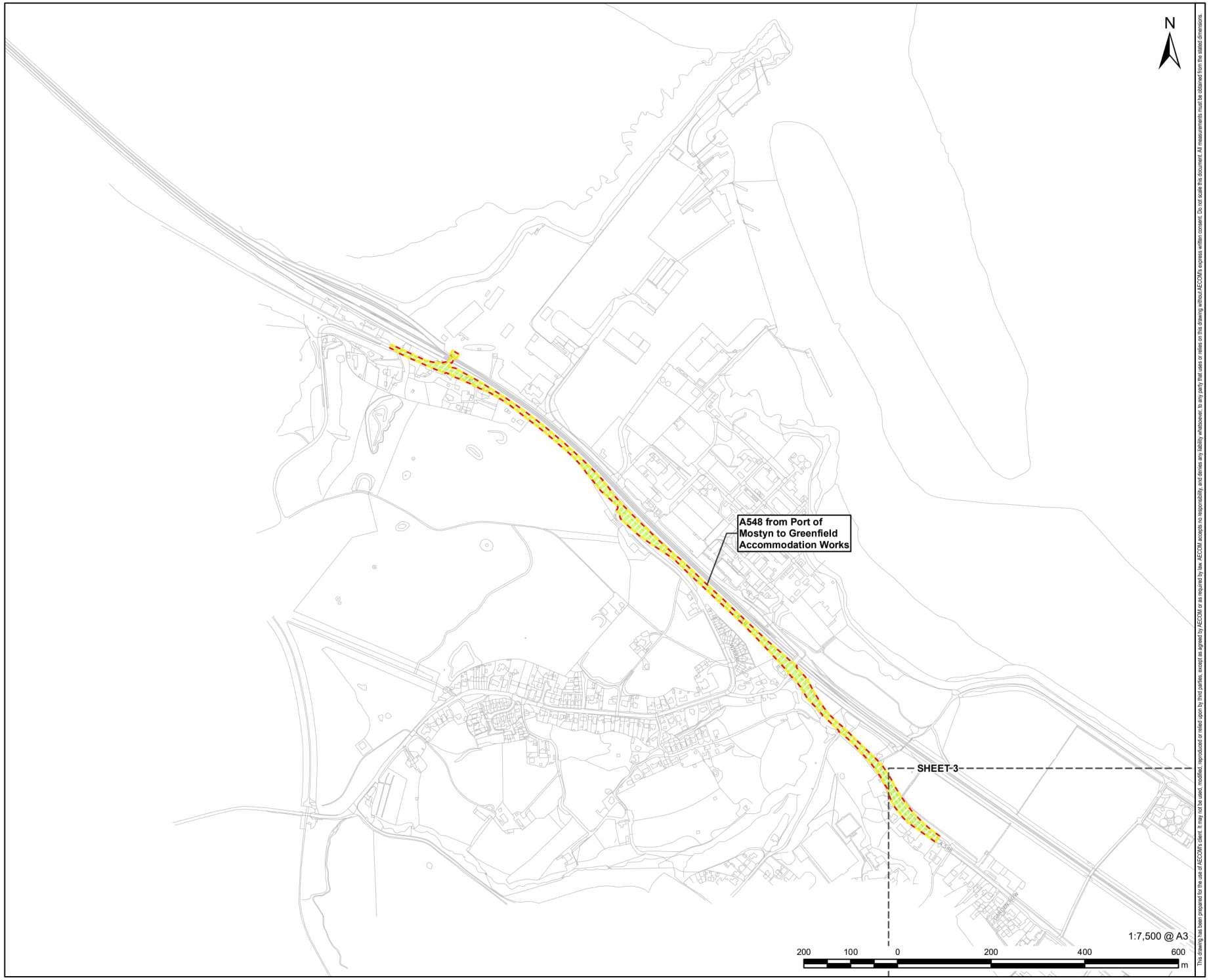

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FIGURE TITLE

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Figure 1

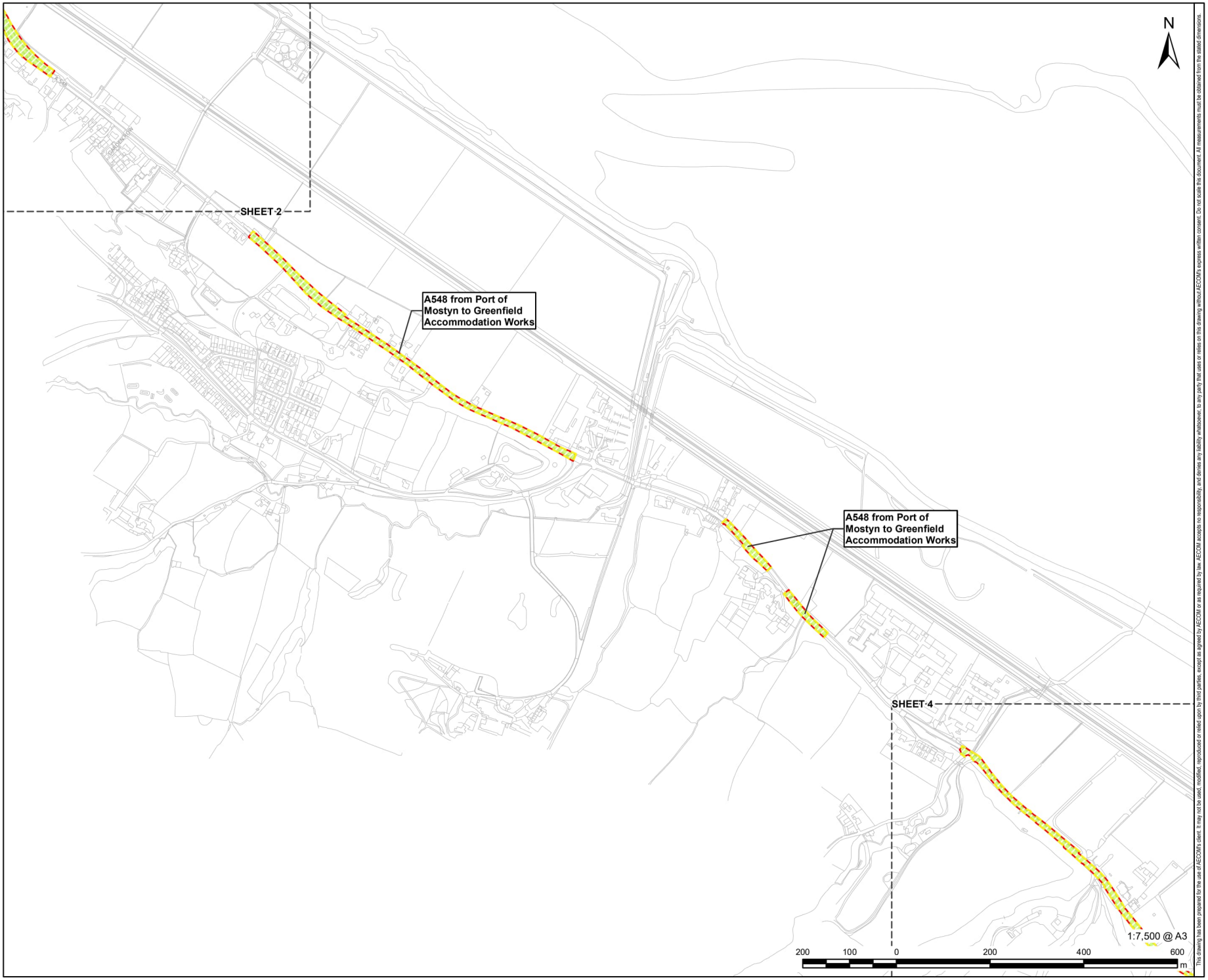

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Figure 1

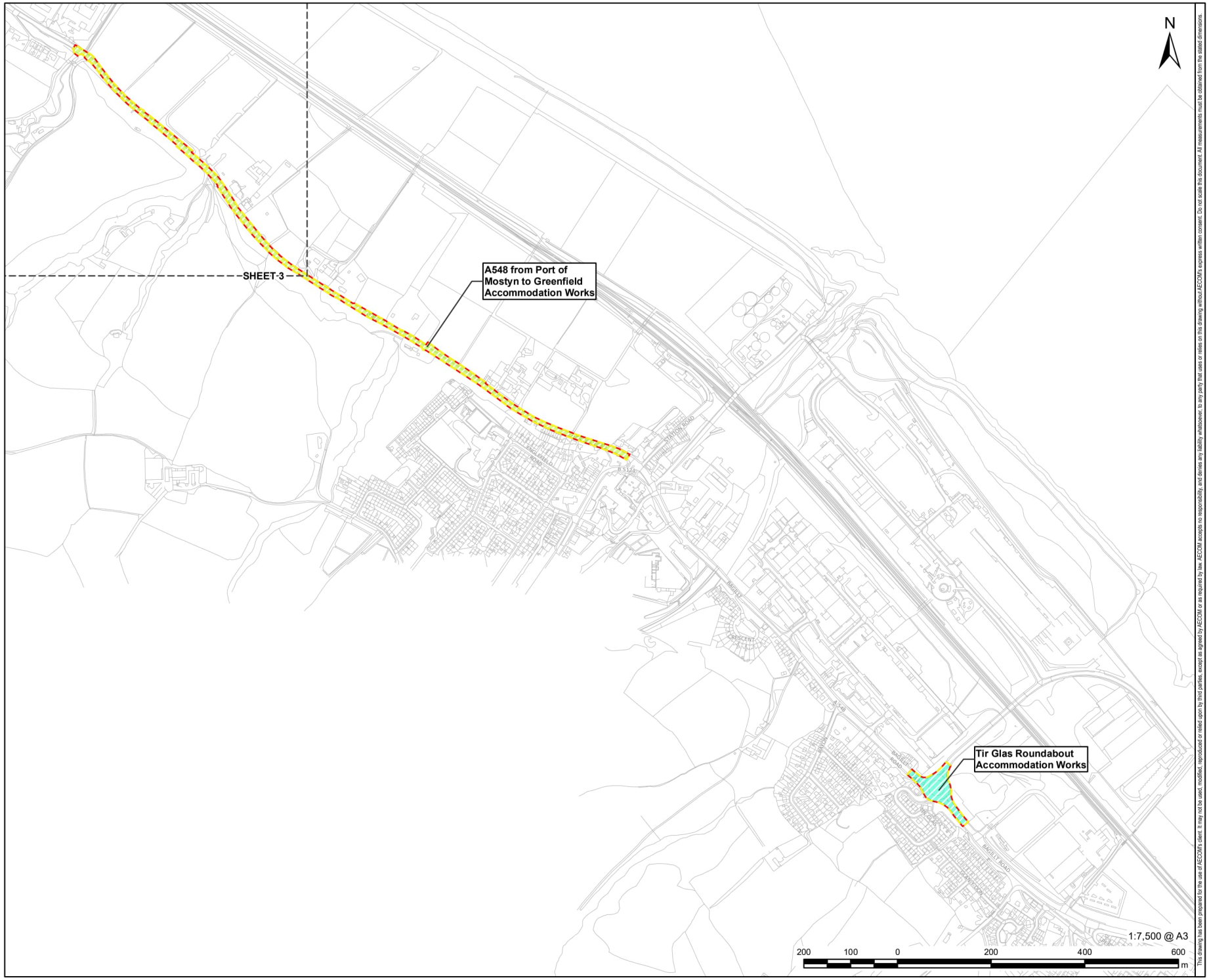

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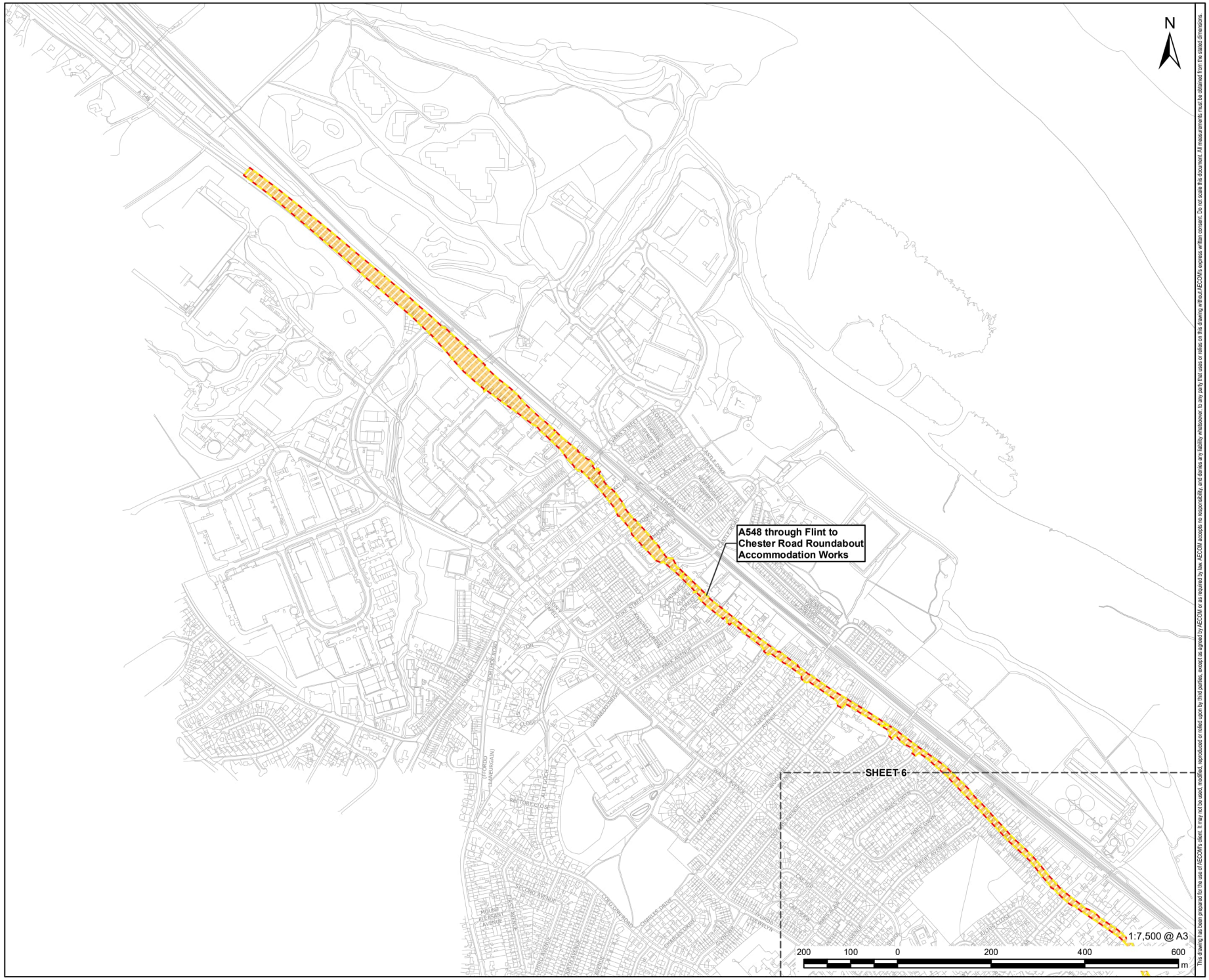
Figure 1



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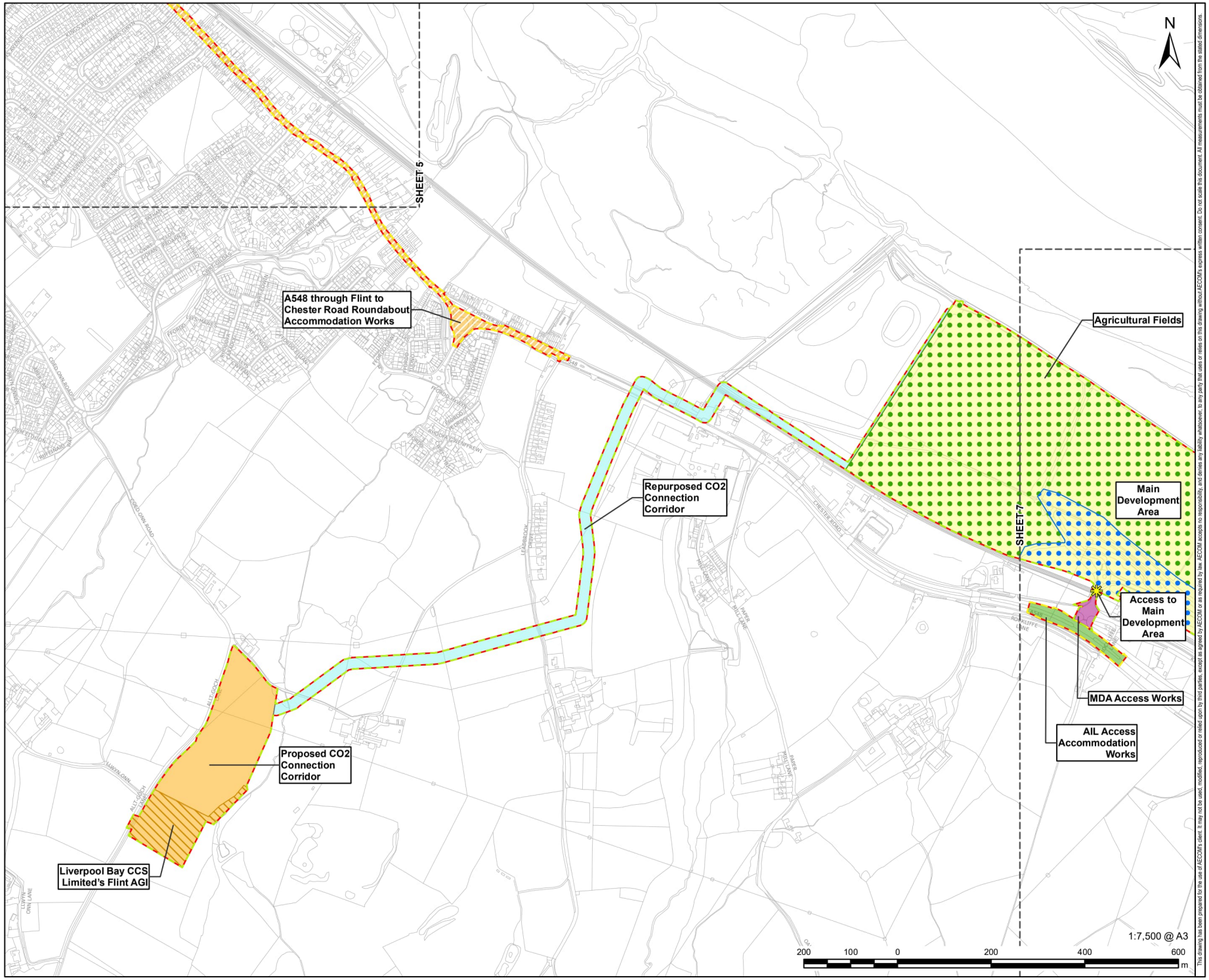

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LEGEND

- Order limits
- Accommodation Work Area
- Construction & Operational Area
- Access to Main Development Area
- Main Development Area
- Repurposed CO_2 Connection Corridor
- Proposed CO_2 Connection Corridor
- MDA (Main Development Area) Access Works
- AIL (Abnormal and Indivisible Loads) Access Accommodation Works
- Liverpool Bay CCS Limited's Flint AGI
- A548 through Flint to Chester Road Roundabout Accommodation Works
- Agricultural Fields
- HV Overhead Line Corridor

NOTES

ISSUE PURPOSE

Framework Construction Environmental Management Plan

DATE

July 2025

PROJECT NUMBER

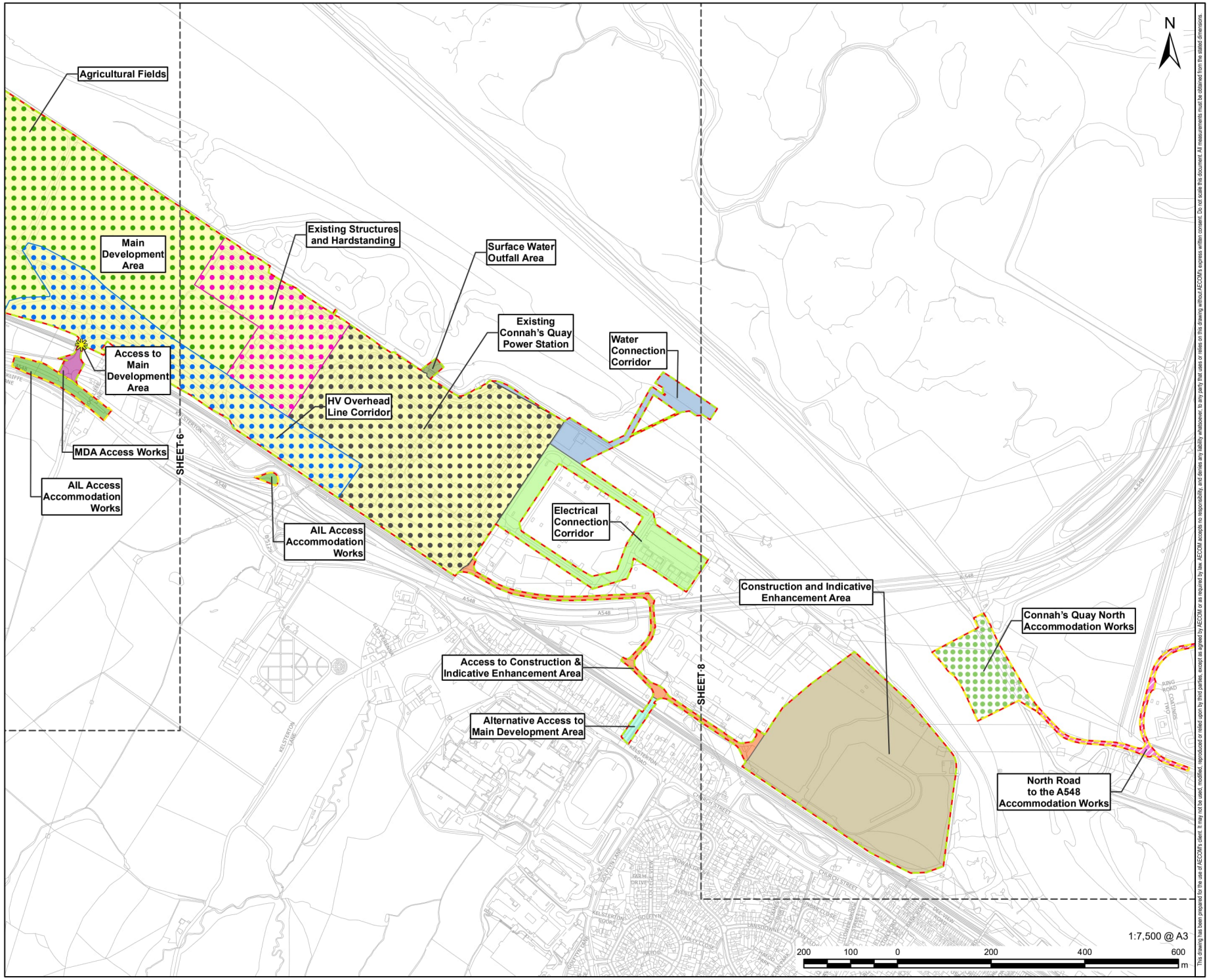
60717119

FIGURE TITLE

Areas Described in the Framework Construction Environmental Management Plan
Sheet 6 of 8

FIGURE NUMBER

Figure 1



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AECOM uniper

PROJECT

Connah's Quay Low Carbon Power

CONSULTANT

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LEGEND

- Order limits
- Accommodation Work Area
- Construction & Operational Area
- Access to Main Development Area
- Main Development Area
- Water Connection Corridor
- Electrical Connection Corridor
- Surface Water Outfall Area
- MDA (Main Development Area) Access Works
- Access to Construction & Indicative Enhancement Area
- Alternative Access to Main Development Area
- Construction & Indicative Enhancement Area
- AIL (Abnormal and Indivisible Loads) Access Accommodation Works
- Connah's Quay North Accommodation Works
- North Road to the A548 Accommodation Works
- Agricultural Fields
- Existing Connah's Quay Power Station
- Existing Structures and Hardstanding
- HV Overhead Line Corridor

NOTES

ISSUE PURPOSE

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DATE

July 2025

PROJECT NUMBER

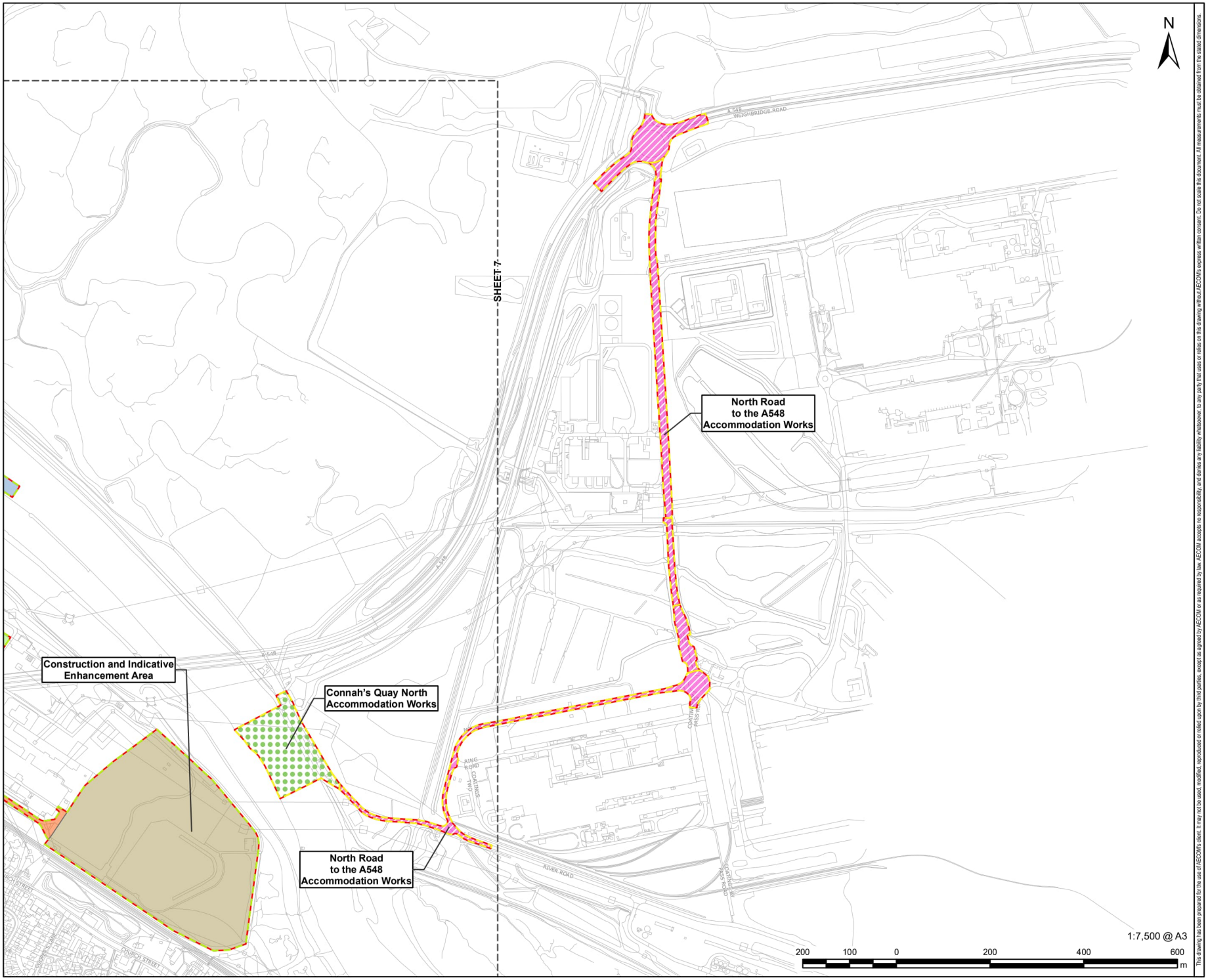
60717119

FIGURE TITLE

Areas Described in the Framework Construction Environmental Management Plan
Sheet 7 of 8

FIGURE NUMBER

Figure 1



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LEGEND

- Order limits
- Accommodation Work Area
- Construction & Operational Area
- Water Connection Corridor
- Electrical Connection Corridor
- Access to Construction & Indicative Enhancement Area
- Construction & Indicative Enhancement Area
- Connah's Quay North Accommodation Works
- North Road to the A548 Accommodation Works

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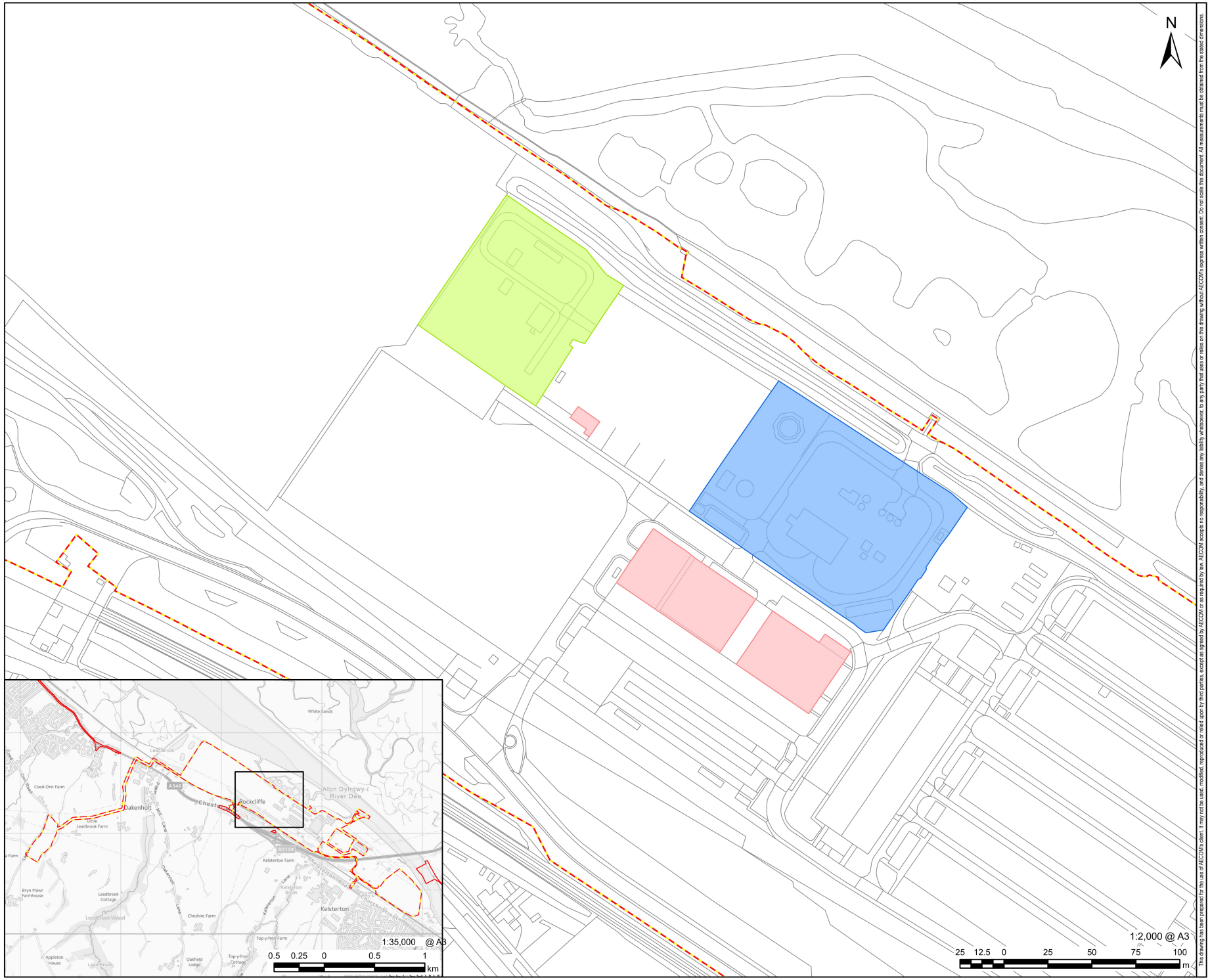
FIGURE TITLE

Areas Described in the Framework Construction Environmental Management Plan
Sheet 8 of 8

FIGURE NUMBER

Figure 1



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LEGEND

- Order limits
- Construction and Operation Area

Plant, Buildings and Structures to be Demolished

- Existing Stores Building and Contractors Facilities
- Existing Gas Treatment Plant Above-Ground Installation (ENI AGI)
- Gas Treatment Plant (GTP)

NOTES

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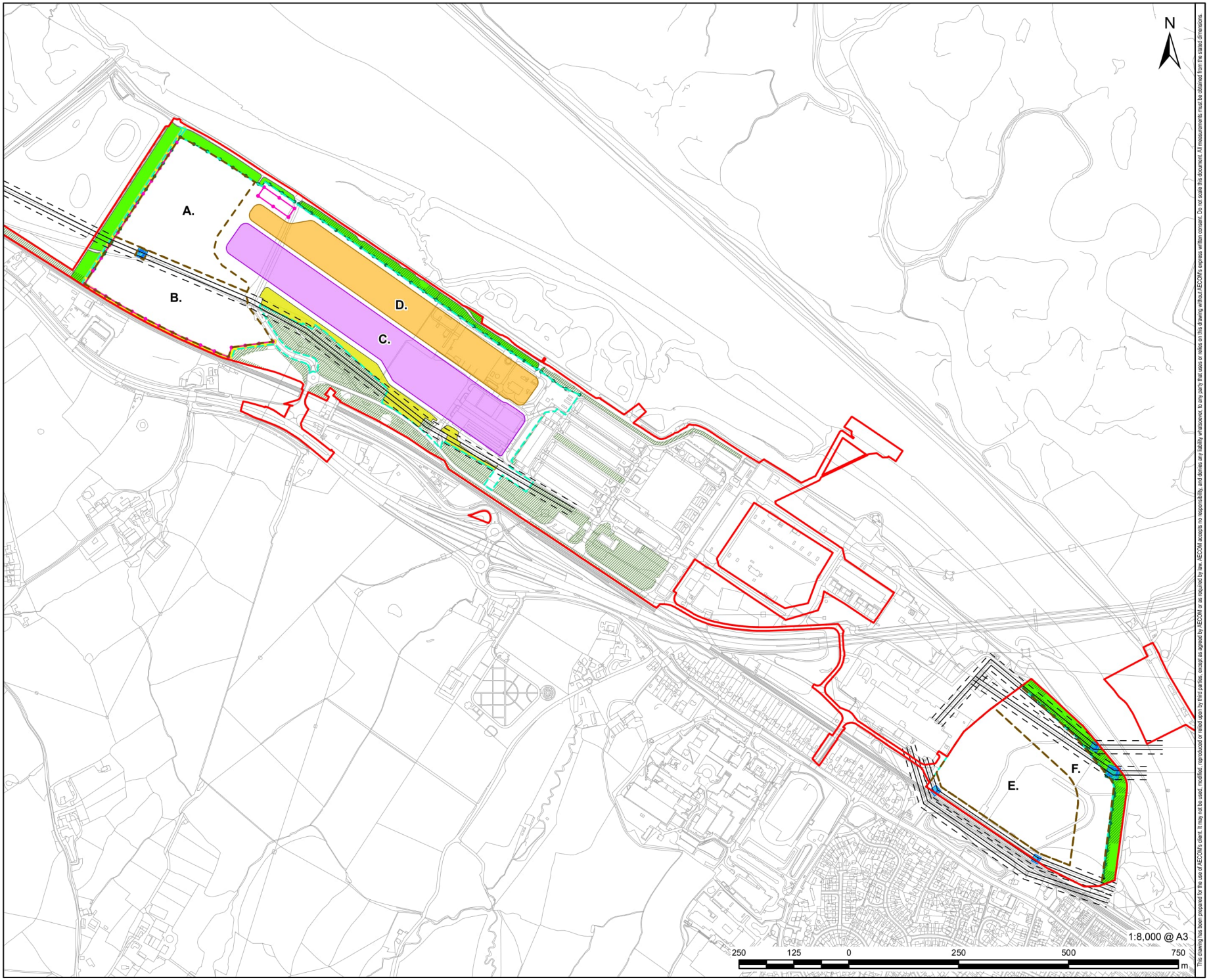
FIGURE TITLE

Demolition Areas of Existing Buildings and Structures

FIGURE NUMBER

Figure 2



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LEGEND

- Order limits
- Existing Overhead Line
- Existing Overhead Line - 10m Buffer
- Acoustic Barrier
- Fence Hoarding
- Deeside Naturalists' Society Temporary Construction Access
- Transmission Tower
- Transmission Tower - 5m Buffer
- Construction Laydown Area
- Ecological Safeguard Zone
- Work No. 4
- Retained Habitat
- Maintenance Laydown Area
- Indicative Extent of Train 1
- Indicative Extent of Train 2

NOTES

The Construction Laydown Areas, Ecological Safeguard Zones and Acoustic Fence are indicative and based on the likely extents of laydown required for each construction programme.

ISSUE PURPOSE

Framework Construction Environmental Management Plan

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FIGURE TITLE

Construction Areas

FIGURE NUMBER

Figure 3

Appendix B: Framework Site Waste Management Plan

Prepared for:
Uniper UK Limited

Prepared by:
AECOM Limited

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Plates

Tables

23. Outline Site Waste Management Plan

23.1 Introduction

Overview

23.1.1 This Outline Site Waste Management Plan (SWMP) sets out the standard best practice measures that would be implemented by the Principal Contractor to manage waste generated by the proposed Connah's Quay Combined Cycle Gas Turbine (CCGT) and Carbon Capture Storage (CCS), known as 'Connah's Quay Low Carbon Power' (hereafter referred to as the 'Proposed Development').

23.1.2 This Outline SWMP would be updated by the Principal Contractor into a detailed SWMP prior to commencement of works, as secured through a requirement of the **Draft Development Consent Order (DCO)** (**EN010166/APP/3.1**).

23.1.3 Key terminology in relation to this Outline SWMP is detailed in **Table 1**.

Table 1: Key Terminology

Terminology	Definition
AGI	Above Ground Installation
BPMs	Best Practice Measures
Contaminated Land: Application in Real Environments Definition of Waste: Development Industry Code of Practice (CL:AIRE DoW CoP)	A code of practice providing the process for reusing excavated materials on or off site. It supports the sustainable and cost-effective development of land.
CCGT	Combined Cycle Gas Turbine
CCS	Carbon capture and storage
The Considerate Constructors Scheme	The Considerate Constructors Scheme – a non-profit making, independent organisation founded in 1997 by the construction industry to raise standards in the construction industry.
C&D waste	Construction and demolition waste
Construction Environmental	This document outlines the mitigation measures for environmental disruption caused by construction of the Proposed Development.

Terminology	Definition
Management Plan (CEMP)	It is submitted by the developer to the Local Planning Authority.
Construction Industry Research and Information Association (CIRIA)	Construction Industry Research and Information Association – a member-based research and information organisation dedicated to improvement in all aspects of the construction industry.
Controlled waste	Household, industrial and commercial waste (not agricultural waste, waste from mines or quarries and most radioactive waste).
Control of Substances Hazardous to Health (COSHH)	Risk assessment and control guidance relating to fuels, oils, and other substances associated with the Proposed Development's waste, so adverse health effects are mitigated.
Development Consent Order (DCO)	A decision ruled by the Secretary of State for planning permission of a nationally significant infrastructure project.
DoW	Designing out Waste
Duty of Care	Legal responsibility for anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that the waste is managed properly.
Duty of Care checks	Checks to ensure that only authorised persons transfer waste, and that the waste is managed legitimately, including checks on: The waste carrier's registration certificate; The waste broker's registration certificate (if used); The Environmental Permits for waste management facilities; or proof of exemptions from permitting.
Environment Agency	The main environmental regulatory body in England.
Environmental Statement (ES)	An ES is part of the Environmental Impact Assessment (EIA) process, and is drawn up ensure that the significant environmental effects of a Proposed Development are sufficiently described and understood.
EU	European Union
European Waste Catalogue (EWC) code	A six-digit number used to classify a particular waste stream.

Terminology	Definition
Exempt activities	Activities not requiring an Environmental Permit (an exemption will require registration).
Flood Zone 3	The area of the floodplain where there is a high probability of flooding, having a 1 in 100 or greater annual probability of river flooding .
GTP	Gas Treatment Plant
Hazardous Waste Consignment Note (HWCN)	A document that accompanies the movement of any hazardous waste from production (cradle) to disposal (grave).
Hazardous waste	Waste with any hazardous properties as listed in Annex III of The Hazardous Waste (England and Wales) Regulations 2005 (as amended).
Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management Assessment (IEMA))	ISEP are a professional body for sustainability and environmental professionals. They provide tools and resources to assist in report writing and other deliverables.
JIT	Just in Time
Key Performance Indicators (KPIs)	Quantifiable measurements to gauge performance of a project in recovering waste against national standards.
Material Safety Data Sheet (MSDS)	A sheet that details the risks of a hazardous chemical and advice about safety procedures, including handling, storage, and disposal
Non-hazardous waste	Waste which does not display any of the hazardous properties listed in Annex III of The Hazardous Waste (England and Wales) Regulations 2005 (as amended).
Natural Resource Wales (NRW)	NRW is the national body for Wales responsible for the regulation and sustainable management of environmental resources in the face of multiple pressures such as flooding, the climate crisis, and human health.
Principal Contractor (PC)	Contractor appointed to coordinate the construction phase of a project where it involves more than one contractor.
Registered Waste Carrier	A person who holds a registration certificate from NRW or the EA to transport waste.

Terminology	Definition
Standard Industrial Classification (SIC)	A system for categorising and standardising industry classification nationally across organisations and agencies.
Site Waste Management Plan (SWMP)	The document provided as part of this ES is the Outline SWMP. This will be developed into a detailed SWMP prior to commencement pursuant to **the Draft DCO (EN010166/APP/3.1)**.
Waste and Resources Action Programme (WRAP)	WRAP is a global environmental non-governmental organisation that conducts research and implements a Circular Living design-make-use approach with the aim of eliminating product and food waste.
Waste Transfer Notes (WTN)	A document that details the transfer of waste from one organisation to another, and how each material waste type is disposed of or recovered.

Purpose and benefits

23.1.4 Outline SWMPs are used as best practice measures on construction projects and to support planning and consenting applications.

23.1.5 This Outline SWMP has been developed to act as a guide for site staff on how to manage materials (construction materials) and waste, in accordance with both legal requirements and best practice. The Principal Contractor would use this Outline SWMP as a basis for producing the SWMP for use throughout the duration of the Proposed Development's construction phase, as secured through a requirement of the **Draft DCO** (**EN010166/APP/3.1**).

23.1.6 The Principal Contractor would take all reasonable steps to ensure that:

- all waste from the site is dealt with in accordance with the waste duty of care (defined in section 34 of the Environmental Protection Act 1990 (Ref 1) and The Waste (England and Wales) Regulations 2011 (as amended) (Ref 2); and
- materials are handled efficiently, and waste managed appropriately.

Scope

23.1.7 This Outline SWMP includes:

- an overview of applicable legislation;
- details of the Proposed Development;
- management arrangements, including roles and responsibilities, training, key performance indicators (KPIs) and best practice measures (BPM);
- estimates of construction material use and waste arising and how they will be managed;

- design decisions;
- materials and waste management on-site; and
- Opportunities for waste minimisation, reuse, recycling and recovery in line with the requirements of the waste hierarchy.

23.2 Waste management legislation

23.2.1 This section summarises the key legal requirements with regards to waste management and control within Wales.

Definition of waste

23.2.2 The European Union (EU) Waste Framework Directive (Directive 2008/98/EC), as amended by Directive (EU) 2018/851 (Waste Framework Directive) (Ref 3) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery.

23.2.3 Waste is defined by Article 3(1) of the Waste Framework Directive as *"any substance or object which the holder discards or intends or is required to discard"*.

23.2.4 The legal definition of waste also covers substances or objects, which fall outside of the commercial cycle or out of the chain of utility. In particular, most items that are sold or taken off-site for recycling are wastes, as they require treatment before they can be resold or reused.

23.2.5 In practical terms, wastes include surplus earthworks materials and soil, scrap, unwanted surplus materials, packaging, recovered spills, office waste, and damaged, worn-out, contaminated or otherwise spoiled plant, equipment and materials.

Duty of care

23.2.6 The duty of care for waste management is set out under section 34 of the Environmental Protection Act 1990 (Ref 1) and The Waste (England and Wales) Regulations 2011 (as amended) (Ref 2). It requires anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that the waste is managed properly. Anyone in possession of waste must take all reasonable steps to:

- prevent unauthorised or harmful deposit, treatment or disposal of waste;
- prevent a breach (failure) by any other person to meet the requirement to have an environmental permit, or a breach of a permit condition;
- prevent the escape of waste;
- ensure that waste is transferred to an authorised person; and
- provide an accurate description of the waste when it is transferred to another person, by using a compulsory system of Waste Transfer Notes (WTNs) that control the transfer of waste between parties.

23.2.7 Failure to comply with the duty of care requirements is a criminal offence and could lead to prosecution.

Apply the waste hierarchy

23.2.8 The Waste (England and Wales) Regulations 2011 (as amended) (Ref 2) transpose the requirements of the Waste Framework Directive (Ref 3), and require:

- those undertaking waste management activities, such as the import, production, collection, transportation, recovery and/or disposal of waste, to take all reasonable measures to apply the waste hierarchy, in priority order, as follows:
  - prevention;
  - preparation for reuse;
  - recycling;
  - other recovery (such as energy recovery); and
  - disposal.
- those producing waste to confirm that they have applied the waste hierarchy when transferring waste and to include a declaration on their WTN or consignment note.

Hazardous waste

23.2.9 The Hazardous Waste (England and Wales) Regulations 2005 (as amended) (Ref 4) require that a consignment note be used to document the transfer and management of all hazardous waste.

Registration of waste carriers

23.2.10 Under the Control of Pollution (Amendment) Act 1989 (Ref 5) it is a criminal offence for anyone not registered as a waste carrier to transport controlled waste. The Waste (England and Wales) Regulations 2011 (as amended) (Ref 2) updated the system for the registration of waste carriers, including brokers and dealers.

23.2.11 Anyone undertaking any of the following activities as part of their business must register as a waste carrier, broker or dealer:

- transporting their own waste;
- transporting waste for someone else;
- buying or selling waste; or
- acting as a waste broker (arranging for someone to handle waste produced by someone else).

23.2.12 Details of all appointed waste carriers, brokers and contractors would be included in the SWMP, including copies of appropriate waste carrier licences/registrations. The Register of Waste Carriers, Brokers and Dealers can be checked using the Natural Resources Wales (NRW)'s Public Register (Ref 6), or since the Proposed Development is close to the Wales-England border, the Environment Agency's online portal of Public Registers (Ref 7).

Environmental permits and exemptions

23.2.13 The Environmental Permitting (England and Wales) Regulations 2016 (as amended) (Ref 8) require sites where waste is processed, treated or disposed of to hold a valid Environmental Permit issued by NRW (in Wales).

23.2.14 The Regulations also include a schedule of activities that are exempt from the requirements of permitting. However, to comply with these Regulations, an exempt activity must generally be registered with NRW before commencing.

23.2.15 A permit is not usually required where waste is temporarily stored on the site where it is produced prior to management or disposal. However, depending on the types and quantities of waste to be stored, the duration and place of storage and compliance with other defined conditions the following exemptions may be required:

- a non-waste framework directive exemption may apply, which does not need to be registered; and
- an exemption may need to be registered with NRW.

23.2.16 The Principal Contractor would be responsible for obtaining the necessary permits and exemptions, where required.

23.3 Details of the Proposed Development

23.3.1 The Principal Contractor would complete **Table 2** as part of the SWMP, prior to commencement of construction.

Table 2: Details of the Proposed Development

Project title	Connah's Quay Low Carbon Power
Project location	Address
	Town
	Postcode
Client	Name
	Address
	Contact Email
	Phone Mobile
Principal Contractor	Name
	Address
	Contact Email
	Phone Mobile
SWMP Drafter	Name
	Address
	Contact Email

Project title	Connah's Quay Low Carbon Power
	Phone Mobile
Construction cost (estimated)	
Site area (gross area)	
Construction programme	
Start date (DD/MM/YYYY)	
Completion date (DD/MM/YYYY)	
Waste Management Champion	
Person Responsible for SWMP	
Document Controller/Secretary	
Location of SWMP	

Description of the Proposed Development

23.3.2 A full description of the Proposed Development is presented in **Chapter 4: The Proposed Development** (**EN010166/APP/6.2.4**). In summary it comprises the construction, operation (including maintenance) and decommissioning of up to two CCGT with CCP units (and supporting infrastructure) achieving a net electrical output capacity of approximately 1,100 and up to a maximum of 1,380 megawatts.

Roles and responsibilities

23.3.3 The main contract personnel responsible for producing the SWMP are shown in **Table 3**. The Principal Contractor would complete **Table 3** as part of the SWMP prior to the commencement of the construction phase.

Table 3: Roles and Responsibilities

Position	Name	Contact details	SWMP responsibility
Main Contract personnel			
Client Project Manager			Monitor the Principal Contractor's performance against the contract, including any environmental commitments and targets

Position	Name	Contact details	SWMP responsibility
			agreed for the Proposed Development.
Project Manager (Principal Contractor (PC PM))			Approval of the SWMP for the relevant phase of works. Ensure that all controls specified within the SWMP are implemented by employees and sub-contractors.
Environment Manager (Principal Contractor PC EM))			Undertake site inspections to monitor compliance with the environmental licences/consents for the works and the measures within the SWMP. Ensure that the Proposed Development complies with all environmental legislation, consents, objectives, targets and other environmental commitments secured through the CEMP and SWMP throughout the relevant project phase.
Site Materials and Waste Manager/Waste Champion (Principal Contractor)			Prepare the SWMP. Implement the SWMP throughout the construction of the Proposed Development and ensure that waste is disposed of legally, economically and safely in line with the SWMP and all relevant legislation. Provide appropriate professional and practical advice to contractors, consultants and project team members associated with materials and waste issues.

Sub-contractor details

Position	Name	Contact details	SWMP responsibility
Individual Sub-contractor(s), as appointed			Read through, familiarise and understand the requirements of the SWMP. Produce waste documentation. Comply with the requirements set out in the SWMP.

Instruction and training

23.3.4 The Principal Contractor would incorporate the SWMP requirements into the site induction and training procedures and would provide on-site instruction of appropriate construction materials and waste separation, handling, recycling, reuse and return methods to be used by all parties at all appropriate stages during the construction of the Proposed Development.

23.3.5 The Principal Contractor would ensure that all personnel working on the site, including sub-contractors, are inducted and appropriately trained.

Key performance indicators (KPIs)

23.3.6 The national target for recovery of construction and demolition (C&D) waste is 70% by weight, as set out in the Waste Framework Directive (Ref 3) and the Towards Zero Waste One Wales: One Planet – The Overarching Waste Strategy Document for Wales (Ref 9). The target specifically excludes naturally occurring materials with EWC Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous substances)). Recovery is deemed to include reuse, recycling and other recovery, e.g. energy recovery.

23.3.7 A good practice landfill diversion target of 90% has been achieved and exceeded by major UK developments, as outlined in the IEMA Guidance (Ref 10). In 2020, the UK generated 59.1 million tonnes of non-hazardous C&D waste, of which 54.8 million tonnes was recovered. This represents a recovery rate of 92.6% (Ref 11).

23.3.8 Targets for materials and waste would be included in the SWMP and could include, for example:

- Achieving a set percentage (by weight) for recovery of non-hazardous C&D waste. Such a target would specifically exclude naturally occurring materials with EWC Code 17 05 04 (soil and stones other than those mentioned in 17 05 03* (soils and stones containing dangerous substances)). Recovery is deemed to include reuse, recycling and other recovery, e.g. energy recovery; and
- Achieving a set percentage (by weight) of materials imported to site for use within the Project containing alternative (reused, recycled or

secondary) content, for those applications where it is technically and economically feasible to substitute these alternatives to primary materials.

Best practice measures (BPMs)

23.3.9 To reduce the potential impacts from materials and waste, and to achieve high levels of sustainability in the Proposed Development as a whole, the Principal Contractor would apply the principles of the waste hierarchy and adopt BPMs which go beyond statutory compliance.

23.3.10 This may include BPMs set out in construction industry guidance for example, guidance from the Considerate Constructors Scheme, WRAP and CIRIA.

23.3.11 The following approaches would be implemented, where practicable, to minimise the quantity of waste arising and requiring disposal:

- Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme;
- Implementation of a just-in-time (JIT) material delivery system where possible to avoid materials being stockpiled, which can increase the risk of damage and subsequent disposal as waste;
- Attention to material quantity requirements to avoid over-ordering and the generation of waste materials due to surplus;
- Reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping, recycling of demolition materials into aggregates;
- Off-site prefabrication, where practical, including the use of prefabricated structural elements;
- Segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and
- Off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site.

23.3.12 The Principal Contractor would implement the following waste management measures, where practicable, in order to minimise the likelihood of any localised impacts from pollution or nuisance from waste on the surrounding environment:

- Damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the site as required;
- Burning of waste or unwanted materials would not be permitted on-site;
- All hazardous materials including fuels, chemicals, cleaning agents, solvents and solvent containing products to be properly sealed in containers at the end of each day prior to storage in appropriately protected and bunded storage areas;
- All demolition and construction workers would be required to use appropriate personal protective equipment whilst performing activities on-site;

- Any waste effluent would be tested and, where necessary, disposed of at a correctly licensed facility by a licensed specialist contractor/s; and
- Materials requiring removal from the site would be transported using licensed carriers and records would be kept detailing the types and quantities of waste moved, and the destinations of this waste, in accordance with the relevant regulations.

23.4 Estimate of waste arising

Waste

Demolition

23.4.1 The Main Development Area would require site clearance and remedial works prior to the construction of the Proposed Development.

23.4.2 As outlined in **Chapter 5: Construction Management and Programme** (**EN010166/APP/6.2.5**), the demolition of the Gas Treatment Plant (GTP), Above Ground Installation (AGI), and existing stores building, will take place in the early stages of the Proposed Development's construction.

23.4.3 Estimated quantities of demolition waste are approximately 2,050 m^3 of hard standing waste and 17,050 m^3 of building/ancillary equipment waste (19,100 m^3 total) (**Table 4**). Estimated hard standing is based on an assumed depth of 350 millimetres (mm) (200 mm of concrete/asphalt on a base of 150 mm of aggregate). Waste from buildings/ancillary equipment is based on an estimate of 0.47 tonnes per m^3 of building/ancillary equipment volume (height x width x depth). Buildings and ancillary equipment height is assumed to be 6.1 m, except for stacks and a tank located in the GTP.

23.4.4 Based on information about the operational use of the GTP, AGI and existing stores and the materials used in construction of those areas, it is assumed that the majority of demolition waste would be non-hazardous and would be recycled on-site (e.g. crushing of hard standing) or recycled off-site with recovery rates over 90% achievable.

Excavated Material

23.4.5 The Main Development Area is located within the curtilage of the existing Connah's Quay Power Station. Given the nature of the former site operations, it is possible that subsurface contamination may be present. However, it is anticipated that the majority of excavated materials would be non-hazardous since the areas to be excavated consist of pulverised fuel ash which is anticipated to be non-hazardous. It is assumed that non-hazardous excavated material would be reused on-site for land raising.

23.4.6 Through the detailed design of the Proposed Development the requirements for cut and fill would be optimised, and where possible, this would be minimised to reduce the import and export of materials and waste, although the design may generate excavated material that would require off-site treatment or disposal.

23.4.7 Where possible surplus excavated material would be reused or recovered on-site, in accordance with the Contaminated Land: Application in Real

Environments Definition of Waste: Development Industry Code of Practice (CL:AIRE DoW CoP) (Ref 12), waste exemption or environmental permit. The CL:AIRE DoW CoP sets out the process for reuse of excavated materials on or off-site, and means the surplus material is recovered using best practice in the waste hierarchy.

23.4.8 It is currently estimated that 87,100 m^3 of material would be excavated with 20% of material (17,420 m^3) currently being assumed (in a worst-case) to be hazardous waste, with the remaining 80% being non-hazardous and assumed to be reused or recovered on-site for land raising. It is assumed that 50% of the hazardous waste would be recovered via off-site treatment at a waste management facility (8,735 m^3), with the remainder reused on site.

Construction Waste

23.4.9 The estimated main types and quantities of waste to be generated during the Proposed Development's construction are:

- 8,500 m^3 of non-hazardous inert material (e.g. concrete, asphalt and aggregates), source separated recyclables (e.g. paper & card, plastic, metals and wood) and mixed construction waste;
- 500 m^3 of non-hazardous municipal waste, source-separated recyclables (e.g. paper, card, plastics) and mixed municipal waste; and
- 50 m^3 of hazardous construction waste (e.g. surplus paint/coatings, batteries and oil filters) (**Table 4**).

23.4.10 **Table 4** summarises the anticipated waste streams for the construction phase.

Table 4: Estimated Waste for the Construction Phase

Waste Type	Estimated Waste Quantity (m^3)	Potential Waste Management Routes and Recovery Rate
Demolition-hazardous waste	Minimal	Recycling, Energy Recovery, Landfill 50% recovery rate
Demolition – non-hazardous waste	19,100	Recycling, Energy Recovery, Landfill 90% recovery rate
Excavation – hazardous waste	17,420	Recycling, Recovery, Landfill 50% recovery rate
Excavation – non-hazardous waste	0	It is assumed that non-hazardous excavated material would be reused on-site for land raising and would not be sent to landfill.
Construction - hazardous waste	50	Recycling, Energy Recovery, Landfill 50% recovery rate
Construction – non - hazardous waste	9,000	Recycling, Energy Recovery, Landfill 90% recovery rate

Waste Type	Estimated Waste Quantity (m^3)	Potential Waste Management Routes and Recovery Rate
Total hazardous waste	17,470	
Total non-hazardous waste	28,100	

23.4.11 The Principal Contractor would review, update and monitor these estimates throughout the design and construction of the Proposed Development, and incorporate these updates in the SWMP to ensure delivery of the Proposed Development KPIs.

23.5 Design decisions

23.5.1 Decisions made at the detailed design stage of the Proposed Development would impact on the quantity and types of materials used, the quantity and types of waste arising, and the management of materials and waste.

23.5.2 The Proposed Development design development has applied and will continue to apply the principles of Designing out Waste (DoW) (Ref 9), which include:

- Design for Reuse and Recovery;
- Design for Off Site Construction;
- Design for Materials Optimisation;
- Design for Waste Efficient Procurement; and
- Design for Deconstruction and Flexibility.

23.5.3 Prior to construction, the Principal Contractor would record, in the SWMP, all actions to be implemented to reduce waste or material use on the Proposed Development, and the resulting benefits. Embedded measures considered in the preliminary design in relation to waste are included in **Chapter 23: Materials and Waste** (**EN010166/APP/6.2.23**). **Table 5** would be populated by the Principal Contractor during the detailed design of the Proposed Development.

Table 5: Waste Minimisation Actions

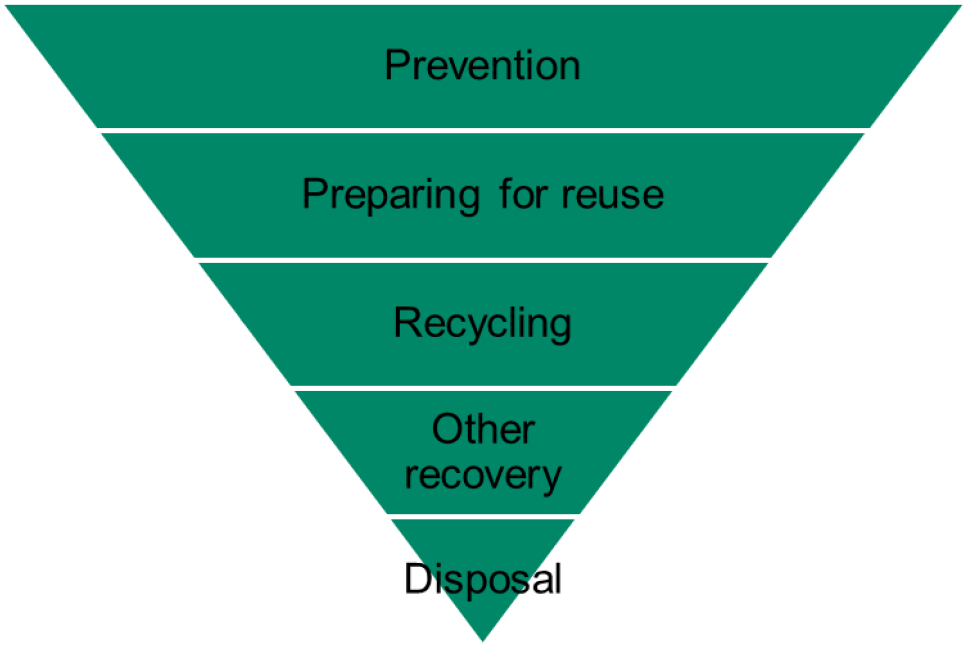
Material / waste	Estimated reduction in waste arising tonnes m^3	Will additional planning permissions / authorisations be required?	Estimated cost saving (£)	Persons responsible for completing action

23.6 Construction materials and waste management on-site

Waste management routes

23.6.1 The waste hierarchy sets out the priority order that should be considered when managing wastes. A basic representation of the waste hierarchy is provided in **Plate 1** below.

Plate 1 Waste Hierarchy (Ref 13)



23.6.2 To reduce the potential impacts from materials and waste and achieve high levels of sustainability, the Principal Contractor would apply the principles of the Waste Hierarchy and adopt BPMs which go beyond statutory compliance.

23.6.3 When considering waste management options for the Proposed Development, the Principal Contractor would take into consideration the site's location, natural environment, and available infrastructure. The Principal Contractor would consider the following options when determining the preferred waste management option for each waste stream.

Prevention and Preparing for Reuse

23.6.4 The Principal Contractor would engage with the team or individuals tasked with procurement of materials and services to ensure best practice procedures are employed to prevent residual resources at the site. A range of best practice measures may include the following:

- select procurement routes to minimise unnecessary packaging – for example applying JIT delivery processes to minimise material spoilage;
- use of consolidation centres to support JIT delivery – these are strategically-located storage and distribution facilities where materials can be stored prior to JIT delivery to sites;

- implement ordering procedures and supply chain systems that avoid waste, i.e. no over-ordering, use of take-back schemes for packaging, material surplus and offcuts;
- select procurement routes that minimise unnecessary packaging; and
- plan the work sequence to reduce the potential for on-site residual resource generation.

23.6.5 The following approaches would be implemented, where practicable, to further minimise the quantity of waste arising and requiring disposal:

- reuse of materials on-site wherever feasible, e.g. reuse of excavated soil for landscaping, recycling of demolition materials into aggregates;
- off-site prefabrication, where practical, including the use of prefabricated elements;
- divert waste from landfill through off-site recycling and recovery;
- segregation of waste at source, where practical, to facilitate a high proportion and high-quality recycling; and
- off-site reuse, recycling and recovery of materials and waste where reuse on-site is not practical, e.g. through use of an off-site waste segregation or treatment facility or for direct reuse or reprocessing off-site.

Recycling

23.6.6 By recycling onsite and off-site, as far as practicable, the quantity of waste requiring disposal to landfill is reduced. Recycling may also be achieved by utilising materials with a recycled content, such as recycled aggregates produced off-site. Targets for recycled content and waste recovery (includes reuse, recycling and recovery) would be agreed by the Client and contractor and included in the detailed SWMP.

Recovery

23.6.7 This generally aims to recover energy from waste which cannot otherwise be reused or recycled. This may include waste materials such as hazardous liquids or solids that can be sent to energy from waste facilities.

23.6.8 Recovery may also include the beneficial use of materials on land for restoration (backfilling operations).

Disposal

23.6.9 The least preferred option in the waste hierarchy is a final disposal route such as landfill. Some waste streams would inevitably end up with such a solution.

23.6.10 When placing waste disposal contracts, the Principal Contractor would consider the implications of long-distance travel in terms of health and safety risk, commercial terms and increased emissions from vehicles.

23.6.11 The Principal Contractor would ensure the pre-treatment of all hazardous and non-hazardous wastes prior to disposal to landfill. The methods of pre-treatment will enable the waste to meet the three-point test:

- it must be a physical, thermal, chemical or biological process including sorting;
- it must change the characteristics of the waste; and
- it must do so in order to:
  - reduce its volume;
  - reduce its hazardous nature;
  - facilitate its handling; and
  - enhance its recovery.

23.6.12 Source segregation can be a pre-treatment option and as such can be applied to waste generation on-site including general waste and arisings and will take place on-site.

23.6.13 The Principal Contractor would ensure that a declaration stating the pre-treatment method applied to the waste is appended to any WTNs for non-hazardous waste being sent for disposal.

Materials and waste storage and segregation options

23.6.14 The Principal Contractor would store excavated soils and earthworks materials on-site in stockpiles until required for use.

23.6.15 Demolition materials that are to be recycled for use on-site would be separated at source and stored separately both before and after the treatment process.

23.6.16 Construction materials that are stored on-site would be in designated areas that are flat, accessible and secure in order to avoid damage or loss (which could render the materials unusable (waste) and require replacement material to be purchased). Materials would be stored in appropriate conditions to avoid damage through, for example, water ingress or vermin. Materials would be retained in their original packaging to protect them from damage.

23.6.17 The Principal Contractor would ensure that the construction site incorporates designated waste storage areas for skips or similar suitable waste receptacles.

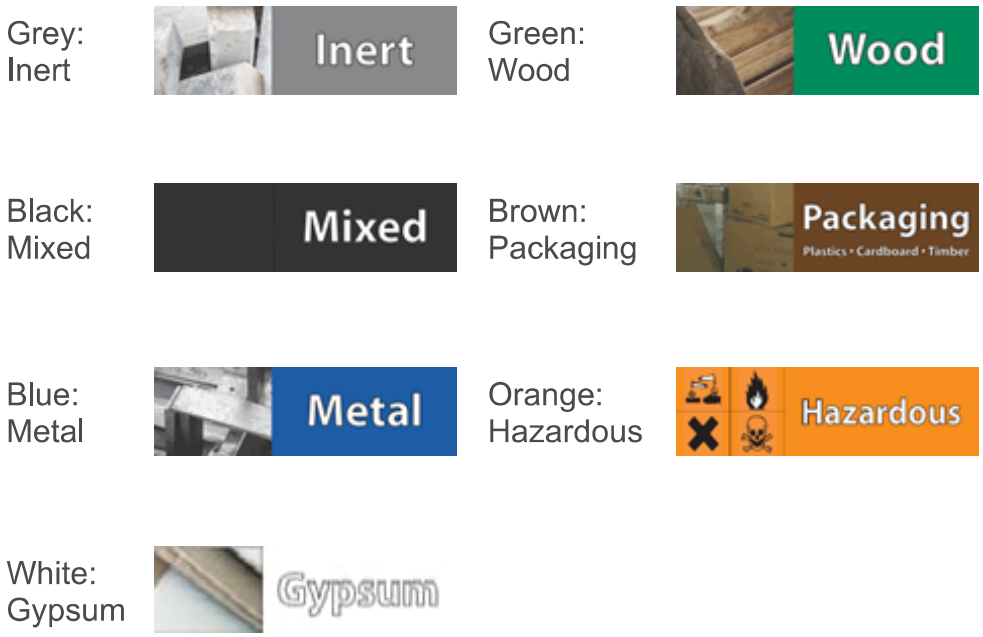
23.6.18 At the waste storage areas, the Principal Contractor would segregate waste into the following types as a minimum: inert; wood; metals; packaging; general waste; hazardous solid wastes; hazardous liquid wastes.

23.6.19 The Principal Contractor would implement the following waste management procedures where practicable:

- all waste containers would be secure and ensure that no waste is allowed to escape;
- all waste containers would be clearly labelled using a colour coding system so that users know what wastes can be placed in each container. Waste containers would be appropriately colour coded using generic colour codes, an example is shown in **Plate 2** below;
- lockable storage would be provided for all hazardous waste;

- all waste containers would be sited at least 10 m away from watercourses, ditches, and other areas of environmental sensitivity;
- liquid wastes would be stored in enclosed/lidded containers and stored within a suitable bunded area, or otherwise provided with secondary containment;
- separate containers would be provided for each type of hazardous waste;
- each type of hazardous waste would not be mixed with any other hazardous or non-hazardous waste;
- sewage from the site offices/compounds would drain to a septic tank and be collected by a suitable specialist waste contractor; and
- portable toilet facilities on-site (portaloos, etc.) would be emptied by the facility provider as per their service agreement.

Plate 2 Waste Container Colour Codes



Waste carriers and facilities

23.6.20 The Principal Contractor would manage all waste generated by the Proposed Development in accordance with legal requirements. The Principal Contractor would record details of the proposed waste carrier for each waste stream in the registration table (Annex 1: Waste Carriers), with Waste Carriers Licence details appended to the SWMP.

23.6.21 The Principal Contractor would ensure that the following information is recorded for all waste facilities used (where required and relevant):

- contractor's name;
- date(s) of waste removal;
- type(s) of waste removed (i.e. non-hazardous waste, hazardous waste, inert (specify);

- method of treatment, recovery or disposal (i.e. reuse, recycling, incineration, landfill etc.);
- volume or weight of waste removed;
- recovery rate achieved; and
- costs associated with waste removal, transport and treatment, including Landfill Tax charges where applicable.

Waste Transfer Notes (WTNs)

23.6.22 The Principal Contractor would ensure that all movements of waste from site are accompanied by a WTN, which detail specific information. The Principal Contractor's Site Materials and Waste Manager or other competent person would check that each WTN contains the following (where required and relevant):

- the name of the person receiving the waste and what they are authorised to do with that waste as a Registered Waste Carrier can only transport waste;
- type of waste;
- the Standard Industrial Classification (SIC) code;
- the six-digit EWC code;
- address of the producing site and details of the waste producer;
- waste carrier's details including registration number;
- quantity of waste;
- how it is contained (e.g. 8 cubic yard skip);
- address of the receiving site (e.g. landfill) and the Environmental Permit or Exemption No. associated with the receiving site;
- the date to which the WTN applies;
- if the material is non-hazardous waste and it is destined for disposal directly to landfill, pre-treatment would have been applied and a declaration detailing the treatment applied appended to the WTN; and
- a declaration that the waste has been treated in line with the requirements of the waste hierarchy.

23.6.23 The site representative signing the WTN would ensure all WTNs are placed in the Site Waste Management File and would be kept for a minimum period of two years for non-hazardous waste.

23.6.24 By signing a WTN, the site representative is confirming that all the details are correct and that the material is to be sent by a licensed waste carrier to a suitably licensed receiving site, permitted to receive that type of waste. The signature completes the WTN as a legal document.

23.6.25 The Site Materials and Waste Manager or other competent person signing the WTN would additionally ensure that the Waste Carrier is using a suitable vehicle with adequate, covered containment for the waste.

Waste Consignment Notes (Hazardous Waste)

23.6.26 The Principal Contractor would ensure that a HWCN is completed for every movement of hazardous waste. The HWCN would be prepared before the waste is moved. Prior to signing, the Site Materials and Waste Manager or another competent person would ensure that the HWCN includes:

- hazardous Waste Premises Code;
- consignment note code;
- SIC Code;
- name and address of the site from which the waste is being moved;
- date of removal;
- type of waste produced, including the quantity and the EWC code;
- the name of the person who is receiving the waste and what they are authorised to do with that waste (e.g. registered waste carrier can only transport waste);
- the final disposal site that is authorised to accept the waste; and
- retention period for hazardous waste.

23.6.27 The Principal Contractor would retain a copy of the HWCN for a minimum of three years.

Waste documentation

23.6.28 The Principal Contractor would retain all waste documentation at the main site compound and, following completion of the Proposed Development construction, at the Principal Contractor's head office. This includes:

- the SWMP (two years after end of construction of the Proposed Development);
- waste transfer documentation (two years for WTNs and three years for HWCNs);
- copies of any exemptions or permits; and
- copies of waste carrier and treatment/disposal site licences or permits.

Fly-tipping

23.6.29 Fly-tipping of waste on or adjacent to ongoing construction projects can be a significant issue.

23.6.30 A site assessment of pre-existing fly tipping hotspots would be undertaken and, where appropriate, security measures to prevent access to such areas would be implemented.

23.6.31 If waste is fly-tipped on the site, the Principal Contractor would have a duty of care to ensure it is dealt with safely and disposed of correctly, even if not the producer of the waste.

23.6.32 Regardless of whether the Principal Contractor has filled the obligation in the sentence above, any instance of fly-tipping on the site would be reported by the Principal Contractor to the local authority.

Fuels, oils and Control of Substances Hazardous to Health (COSHH) materials

23.6.33 The Principal Contractor would establish appropriate control and management measures for the storage, dispensing, containment and use of all fuels, oils and COSHH materials and wastes required during construction.

23.6.34 The storage, dispensing, containment and use of fuels, oils and COSHH materials have the potential to cause significant damage to the environment. Causes of environmental incidents linked to fuel, oil and COSHH materials on construction sites include:

- delivery and use of materials;
- overfilling of storage containers;
- plant or equipment failure;
- containment failure;
- accidents and vandalism; and
- mixing of inappropriate materials and wastes.

23.6.35 Environmental incidents could affect:

- drainage systems, surface waters, groundwater and soil;
- air quality, by producing fumes, vapours and airborne pollutants; and
- land quality by contamination through spillages.

23.6.36 The storage, dispensing, containment and use of all fuels, oils and COSHH materials and wastes would be undertaken in accordance with regulatory and best practice guidance, the key points of which are set out below.

23.6.37 For COSHH materials and waste, relevant control and management measures may include:

- storage would be in a secure, bunded and sheltered area;
- waste would be segregated;
- COSHH liquids would not be stored in areas within Flood Zone 3;
- areas would be supervised, and records of materials and waste stored and removed from the area recorded; and
- the handling, storage and disposal would be undertaken as described in the COSHH Assessment and any Material Safety Data Sheet (MSDS).

23.6.38 Fuel and oil (including mould oil) would be stored in accordance with the **Framework CEMP (EN010166/APP/6.5)** and CEMP.

Key responsibilities

Reporting and auditing

23.6.39 The effectiveness of the SWMP would depend upon the enforcement of its requirements on-site by the nominated Site Materials and Waste Manager (or similar) and Site Manager. Responsibility for the formal recording of waste movements lies with the Site Materials and Waste Manager or Project Manager.

23.6.40 The Principal Contractor would maintain a record of all materials that come on to site. The quantity of reused, recycled and secondary aggregate would be recorded, alongside details of the supplier, the producing facility and records that demonstrate that the material meets all relevant technical and regulatory requirements (Annex 2: Aggregates Imported to Site).

23.6.41 The Principal Contractor would maintain a record of all wastes that are removed from the site and their management route. Each waste management contractor would provide details of the types and quantities of waste removed from the site, the receiving waste management facility and the associated recycling, recovery and disposal rates for each waste stream (Annex 3: Waste Management).

23.6.42 The Principal Contractor would monitor, and record details of the wastes placed in all waste receptacles to ensure that contamination has not occurred.

23.6.43 The Principal Contractor would continually review the types of surplus materials and waste being produced and change the site set up to minimise wastage rates and maximise reuse or recycling.

23.6.44 The Client or its representatives may carry out spot checks in relation to the completeness of any WTNs and HWCNs.

Review of the Site Waste Management Plan

23.6.45 The Principal Contractor would review the SWMP at least once every six months during the construction of the Proposed Development to ensure that targets are being achieved and that realistic solutions are provided for any unplanned events or abnormal wastes. The Principal Contractor would also review the SWMP if there is any significant change to the Proposed Development. These reviews would involve the completion and submission of a monitoring report to the Undertaker (or its representative) in an agreed format.

Site inspections

23.6.46 The Site Manager or nominated deputy would undertake a daily inspection of the construction areas including all areas used for waste management. Any issues shall be recorded in the daily log along with any corrective action taken.

Closure reporting

23.6.47 Within three months of the completion of construction works under a contract, the Principal Contractor would submit a Waste Management

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