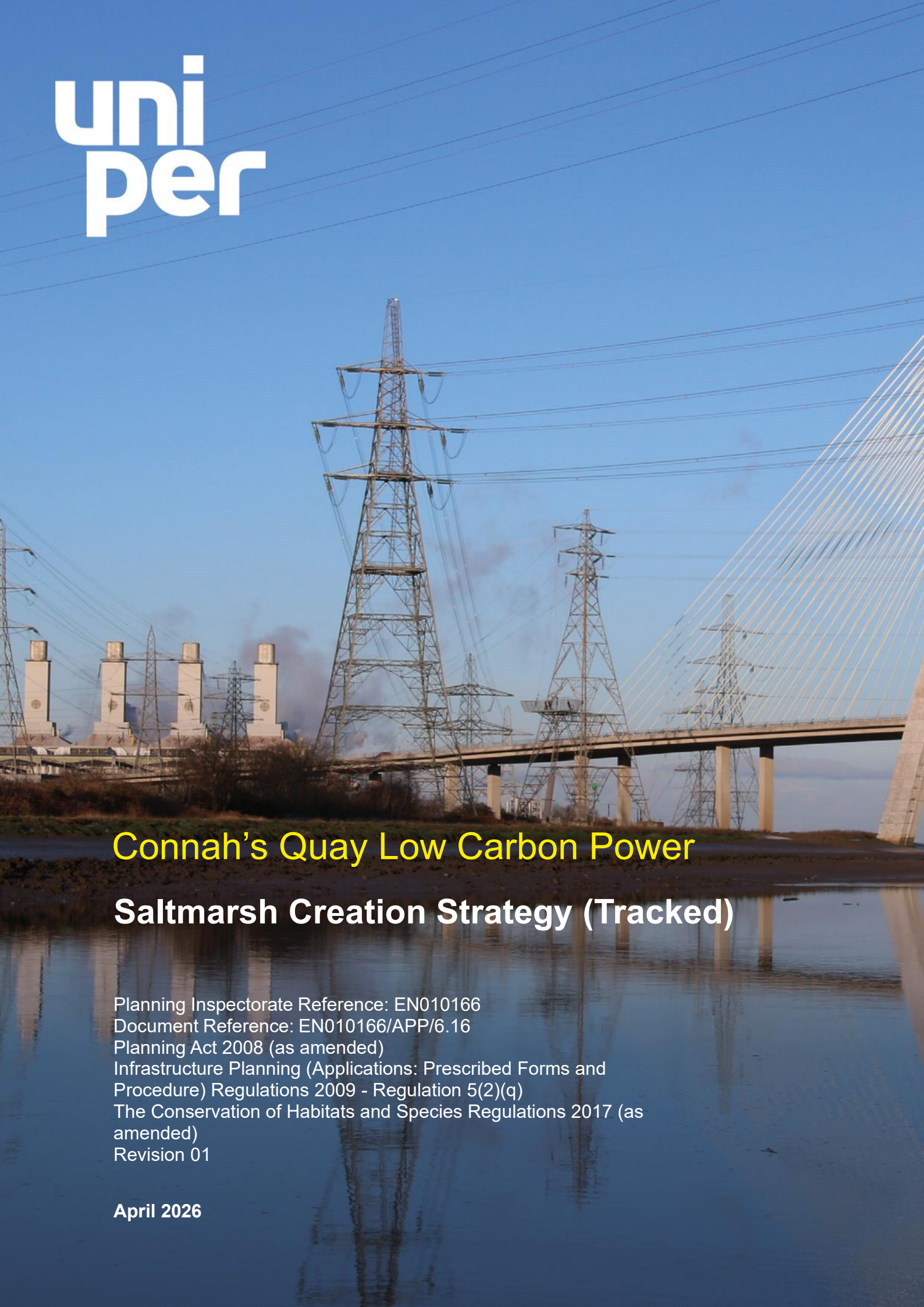


# Connah's Quay Low Carbon Power

## Saltmarsh Creation Strategy (Tracked)

Planning Inspectorate Reference: EN010166
Document Reference: EN010166/APP/6.16
Planning Act 2008 (as amended)
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(q)
The Conservation of Habitats and Species Regulations 2017 (as amended)
Revision 01

**April 2026**

Prepared for:
Uniper UK Limited

Prepared by:
AECOM Limited

# Table of Contents



# Plates



# Tables

# 1. Introduction

## 1.1 Overview

1.1.1 This Saltmarsh Creation Strategy (hereafter referred to as the Strategy) provides details of the offsetting measures for loss of saltmarsh associated with the Dee Estuary / Aber Dyfrdwy Special Area of Conservation (SAC)/ Special Protection Area (SPA) / Ramsar site. These offsetting measures are required to address ~~for~~ the permanent loss of saltmarsh within the Order limits (and more specifically the Surface Water Outfall Area) associated with the creation of a new headwall. However, the habitat created will also offset negative effects of saltmarsh vegetation from nitrogen deposition associated with the stack emissions of the operational facility.

1.1.2 This Strategy provides details of the location of an area of land within the Order limits where a series of earthworks and land management actions are required to create suitable conditions to allow an existing area of saltmarsh to naturally retreat inland, rather than being progressively lost to sea level rise, as would otherwise occur. The proposals in this document do not duplicate anything proposed in the Shoreline Management Plan (Ref 1) for this frontage. The Strategy sets out:

- the aims and objectives;
- details of the existing saltmarsh communities that need to establish;
- information on the consideration of suitable mitigation locations;
- a timetable for implementation; and
- details on the requirement for management, and for monitoring necessary to demonstrate that the aims and objectives have been met.

1.1.3 This document should be read in conjunction with the latest version of the **Report to Inform Habitats Regulations Assessment (HRA)** (**EN010166/APP/6.12**), ~~without prejudice~~ **Notice of a proposed without prejudice HRA derogation in Wales (PDA-003)**, **Green Infrastructure Statement** (**EN010166/APP/6.11**) and **Chapter 11: Terrestrial and Aquatic Ecology** (**EN010166/APP/6.2.11**) of the Environmental Statement (ES).

1.1.4 The measures set out in this document are secured via Requirement 22 (saltmarsh creation) of the **Draft Development Consent Order** (**DCO**) (**EN010166/APP/3.1**). Requirement 22 (saltmarsh creation) identifies that a Saltmarsh Implementation and Monitoring Plan must be developed by the undertaker in general accordance with this strategy document and include ~~-~~ a Saltmarsh Implementation and Monitoring Plan. This will include an implementation timetable demonstrating how and when the managed retreat will be created before any loss of saltmarsh, and a management and monitoring programme to ensure the retreat will be effective at meeting the aims and objectives of the plan.

## 1.2 The Proposed Development

1.2.1 Uniper UK Limited (the Applicant) is seeking a 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).

1.2.2 The CQLCP Abated Generating Station 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.

1.2.3 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 will 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.

1.2.4 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.

1.2.5 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 **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.

## 1.3 Legislative Context

1.3.1 As part of the assessment of a development, it is necessary to consider whether the development is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes (i.e., European Sites). European sites are protected under the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations). The United Kingdom (UK) left the European Union (EU) on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (the Withdrawal Act).

1.3.2 However, the most recent amendments to the Habitats Regulations – the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (2019 Regulations) – make it clear that the need for HRA continues to apply. Whilst those 2019 Regulations make changes to the Habitats regime and terminology; much of the impact of those changes does not yet have a practical effect, particularly the introduction of the term 'national site network', given the short passage of time since the end of the transition period. As such, this document continues to use the term 'European sites' to

refer to all Natura 2000 (National Site Network) sites potentially affected by the Proposed Development.

1.3.3 A detailed **Report to Inform Habitats Regulations Assessment** (**EN010166/APP/6.12**) has been prepared. A without prejudice **Derogations Report (PDA-003)** has also been submitted into the Examination.

# 2. Baseline

## 2.1 Overview

2.1.1 This section provides an overview of the location of the relevant components of the Proposed Development and provides baseline information in relation to the relevant designated sites and saltmarsh features.

## 2.2 Location and Context

### Location of the Proposed Development

2.2.1 The Order limits are located within Flintshire, Wales. **Figure 3-3: Areas identified in the ES** (**EN010166/APP/6.3**) provides an overview of the different components of the Proposed Development, within the Order limits, which are referenced throughout the Application. 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; and
  - Access to the Main Development Area.
- The Accommodation Work Areas.

2.2.2 The areas of relevance to this document are the C&IEA and the Surface Water Outfall Area and are shown on **Figure 1**.

## 2.3 Order limit Context

### Main Development Area

2.3.1 The Main Development Area is located on land at, and in the vicinity of, the existing Connah's Quay Power Station (Kelsterton Road, Connah's Quay, Flintshire, CH6 5SJ), North Wales.

2.3.2 The Main Development Area which has an indicative area of approximately 56.5 ha includes operational parts of the Applicant's existing Connah's Quay Power Station site to the south-east and agricultural fields to the north-west. It is these fields that are the focus of this document.

2.3.3 There are nine international and 30 national statutory designated sites within 15 km of the Main Development Area as shown on **Plate 1**. The Main Development Area is adjacent to the Dee Estuary /Aber Dyfrdwy SAC / SPA / Ramsar site.

### Surface Water Outfall Area

2.3.4 The Surface Water Outfall Area is located adjacent to the northern extent of the Main Development Area, including and surrounding the existing artificial outfall for surface water drainage (the 'Existing Surface Water Outfall') from the existing Connah's Quay Power Station into the River Dee.

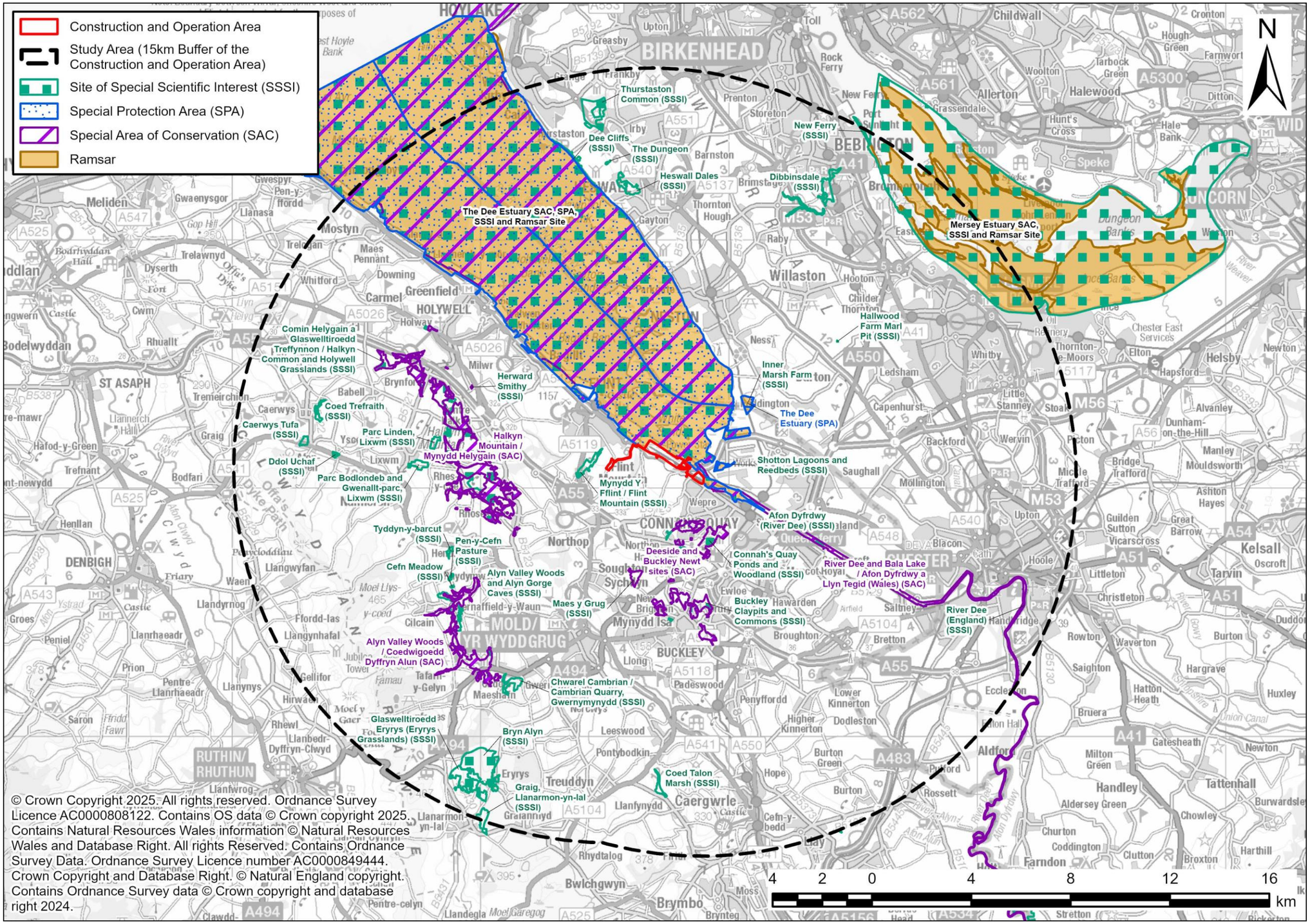
2.3.5 This area is a maximum of 650 $m^2$ in extent (this being the maximum potential temporary works footprint for the construction of the new outfall) and is located within the Dee Estuary /Aber Dyfrdwy SAC / SPA / Ramsar site.

### C&IEA

2.3.6 The C&IEA is located north of the A548 (Flintshire Bridge), west and southwest of the Dee Estuary, north-east of the North Wales Main Line railway, and south-east of the NGET 400 kV Substation. The C&IEA is approximately 12.58 ha in area.

2.3.7 Existing land-use within the western and northern extents of the C&IEA comprises derelict hardstanding with scrub / grass vegetation regrowth, while the southern and eastern extents comprise open grassland with scattered shrubs and small trees. The divide between these two areas is partially indicated by a combination of a row of trees and one side of the footprint of the demolished Connah's Quay 'A' Power Station, which is recessed relative to ground level and itself also lined by vegetation. Two existing electrical pylons and a building foundation are located near to the eastern boundary of the C&IEA and a further existing electrical pylon is located on the southern border.

## Plate 1: Designated Sites



# 2.4 Baseline Surveys

## National Vegetation Classification Survey

2.4.1 A National Vegetation Classification (NVC) survey of the saltmarsh within the Surface Water Outfall Area was surveyed as part of a wider NVC survey undertaken on 1st and 2nd July 2024 by two suitably experienced ecologists/ botanists. The survey followed the methodology outlined in the National Vegetation Classification Users' Handbook (Ref 2).

2.4.2 Analysis of the NVC survey data showed that the saltmarsh within the Surface Water Outfall Area to be representative of the SM28 *Elymus repens* saltmarsh community, as shown on **Plate 4** and **Plate 5**. This is a species-poor community and of relatively low sensitivity compared to other community types.

2.4.3 A small amount of SM16d *Festuca rubra* saltmarsh community - *Juncus gerardii* sub-community with tall *Festuca rubra* dominant is also present within the Surface Water Outfall Area. SM16d is a mid - upper marsh community and SM28 is a drift-line community.

2.4.4 An updated NVC survey of the Surface Water Outfall Area and adjacent areas will be undertaken between June and August 2026.

**Plate 2: Saltmarsh within the location of the Proposed Surface Water Outfall. (Taken on 02/07/2024 using an Apple iPhone SE. Facing west towards the Existing Surface Water Outfall Structure)**

## UK Habitat Classification Survey

2.4.5 An initial site walkover of the Construction and Operation Area undertaken in November 2023 identified the proposed saltmarsh creation area, which is located within the Construction and Indicative Enhancement Area, to be

*'Grassland – other neutral'* **(Preliminary Environmental Information Report Volume IV, Appendix 11-C: Preliminary Ecological Appraisal).**

2.4.6 Following the initial site walkover surveys in 2023, all habitats within 50 m of the Construction and Operation Area were mapped and categorised in accordance with the UK Habitat (UKHab) classification (Ref 3). The survey was completed in June and October 2024 and classified the proposed saltmarsh creation area as *'other neutral grassland'* with a strip of bracken *Pteridium aquilinum* running along the eastern boundary.

2.4.7 The results of the Uk Hab survey results are shown in **Figure 11C-2 [APP-191]**, which has been replicated as **Plate 5.**

## 2.5 Geomorphological Walkover Survey

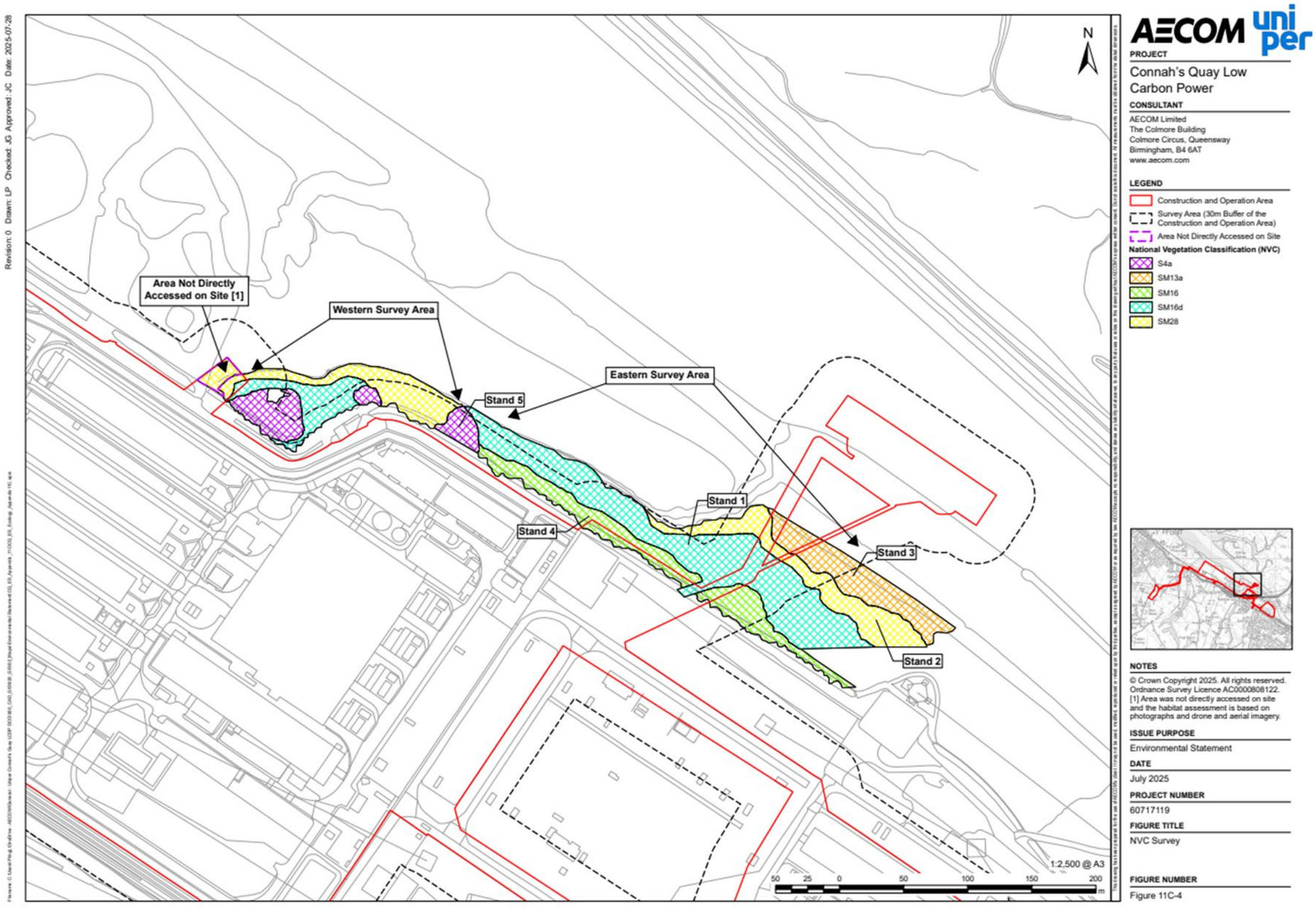
2.5.1 As detailed in the **Geomorphological Walkover Survey Report [REP2-020],** a geomorphological walkover survey was undertaken by a suitably qualified coastal geomorphologist on 23 January 2026 between the hours of 0900 and 1600.

2.5.2 The walkover survey was focused on the location of the proposed surface water outfall and the adjacent areas of saltmarsh habitat within the Connah's Quay Nature Reserve.

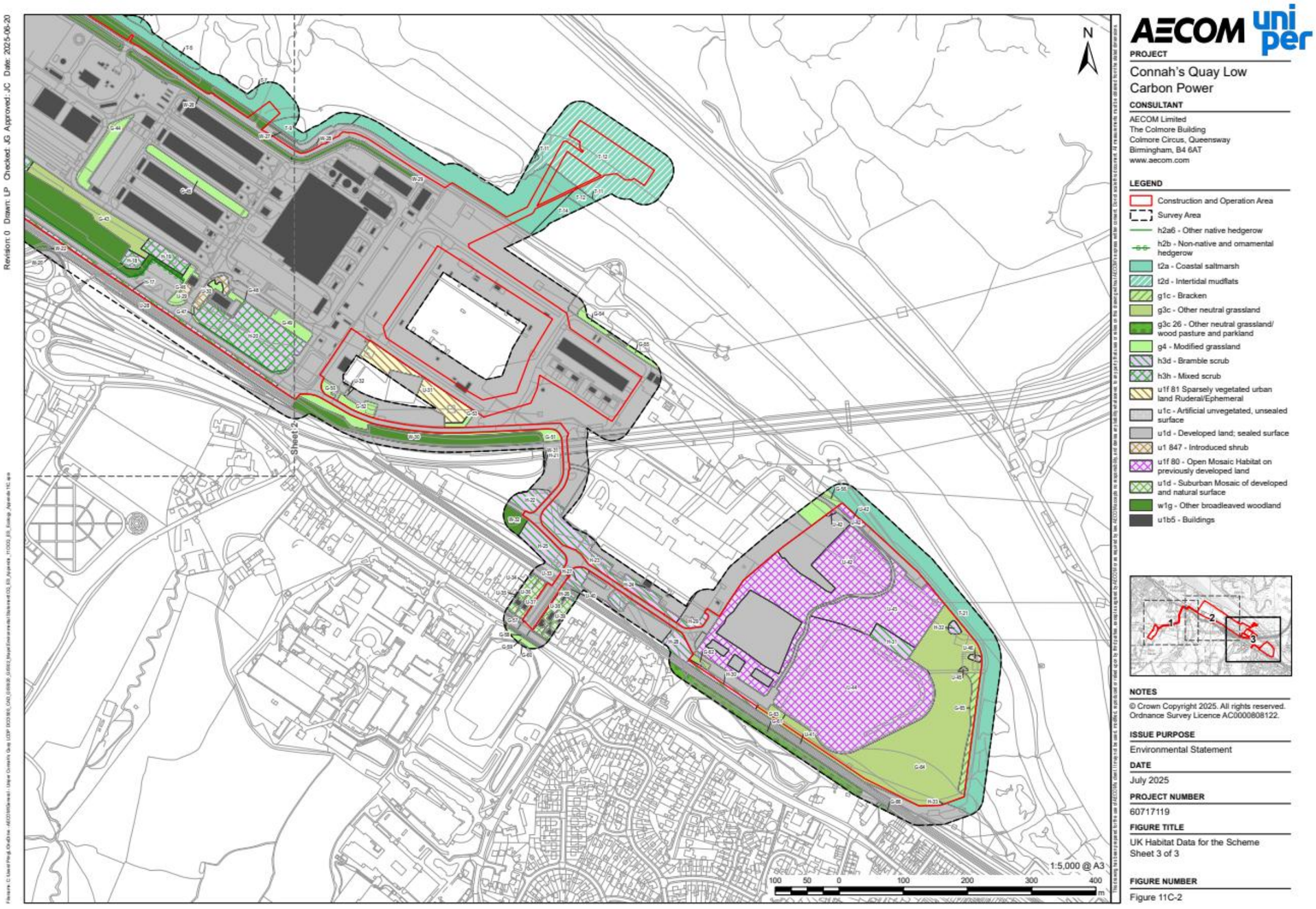
2.5.3 A photograph showing the existing Surface Water Outfall is included as ~~Plate 2~~**Plate 3** while a map showing the location is contained in **Plate**~~Plate 3~~**4**. These show species-poor saltmarsh habitat, consistent with the findings of the NVC survey (further details provided in **Appendix 11-C: Botany Technical Appendix [APP-191]**) which are shown in **Figure11C-4 [APP-191]**, replicated in ~~**Plate 4**~~**Plate 5**.

**Plate 3: Saltmarsh within the location of the Proposed Surface Water Outfall (taken on 23/01/2026). Facing east away from the Existing Surface Water Outfall Structure)**

## Plate 4: 2024 NVC Survey (Figure 11C-4 [APP-191])



## Plate 5: UK Habitat Data (Figure 11C-2 [APP-191])



# 3. Permanent habitat loss and air quality effects and offsetting solution

## Permanent Habitat Loss

3.1.1 As summarised in the **Outline Surface Water Drainage Strategy [REP2-012]** consideration has been given to implementing a drainage design that would not result in the loss of saltmarsh within the Dee Estuary SAC. At this stage of design it is not possible to confirm a solution that would achieve no loss of saltmarsh and, therefore, as a worst case, the **RIHRA** (**EN010166/APP/6.12**) considers the permanent loss of 5 $m^2$ of saltmarsh. The Applicant is committed to further exploring the alternative drainage solutions outlined within the **Outline Surface Water Drainage Strategy [REP2-012]** throughout the detailed design process.

3.1.2 In defining an adequate area for offsetting, the Applicant is only required to achieve a no net loss in saltmarsh and, therefore, the identified area provides more than adequate provision for this.

## Nitrogen Deposition

3.1.3 As identified in the **RIHRA** (**EN010166/APP/6.12**), the operation of the Proposed Development would result in approximately 245 ha of saltmarsh within the Dee Estuary SAC/SPA/Ramsar site being subject to nitrogen deposition above 1 % of the critical load due to the Proposed Development alone, although only marginally above this threshold (1.4% of the critical load). Whilst the area that would be subject to this is large, the impact is very small and any potential changes in habitat composition may not arise. The managed retreat discussed in this document is being created to offset the temporary 650 $m^2$ and, particularly, approximately 5 $m^2$ permanent loss of saltmarsh to install the new outfall. However, at 1,300 $m^2$ the retreat area to be created is twice the size of the temporary loss and more than 200 times larger than the area to be permanently lost. It will allow an equivalent sized 1,300 $m^2$ area of existing saltmarsh to persist that would otherwise be lost over time to coastal squeeze.

3.1.4 It is considered that allowing an entire area of saltmarsh to persist in the face of sea-level rise will not only address the direct loss of habitat due to the outfall, but also mitigate any subtle qualitative botanical changes that may arise across the wider saltmarsh in the Dee Estuary as a result of elevated nitrogen deposition (for example, minor shifts towards more competitive grass species) during operation of the Proposed Development. This is particularly the case since such botanical changes may not occur in practice due to other confounding factors that usually have a greater effect on botanical composition (e.g. tidal inundation, and management).

# 4. Identifying Location for Saltmarsh Creation

## Managed Retreat Area

4.1.1 The Applicant has given consideration to potential areas of habitat creation to offset the 5 $m^2$ permanent loss, and 650 $m^2$ of temporary loss, and which would also incidentally address the small predicted increases of nitrogen deposition across the Dee Estuary SAC/SPA/Ramsar site. This has included consideration of the following:

- land ownership;
- The SMP (Ref 1); and
- technical constraints (such as location of buried services).

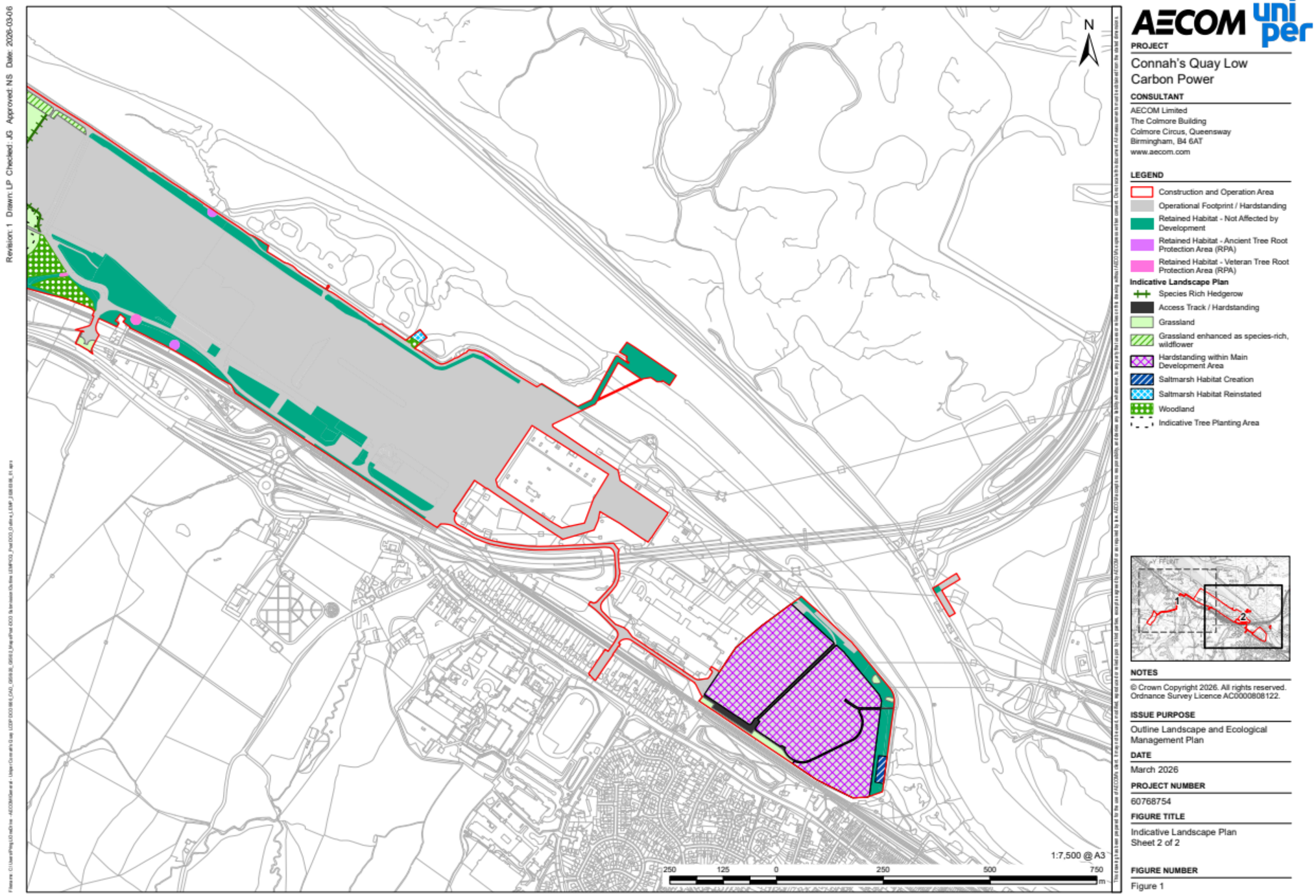
4.1.2 The Applicant has identified potential for saltmarsh creation within the C&IEA, noting its proximity to existing areas of saltmarsh. An area around the eastern and northern perimeter of the C&IEA has been identified as an ecological safeguarding zone, excluded from use as a temporary laydown area. The area is also noted within the SMP as 'hold the line'. All areas of this ecological safeguarding zone have been considered for their suitability for saltmarsh creation.

4.1.3 The northern perimeter of the C&IEA was not deemed suitable noting the unregistered asbestos tip and the presence of 400kV pylons and, therefore, the eastern perimeter was favoured.

4.1.4 The preference for the original creation was to provide this as far north as possible. However, due to the presence of below ground infrastructure it was deemed not viable as excavation would be required to lower the existing ground levels.

4.1.5 On this basis the only remaining viable option is to create saltmarsh in the area to the south of these below ground cables. This area is only shown indicatively in the Indicative Landscape Plan which is replicated in **Plate 6** and will evolve through design development outlined in **Section 5**. The final proposals will be outlined within the Saltmarsh Implementation and Monitoring Plan to be submitted in accordance with Requirement 22 (saltmarsh creation) of the **Draft DCO** (**EN010166/APP/3.1**).

## Plate 6: Saltmarsh Creation Area (Outline Landscape and Ecology Management Plan (EN010166/APP/6.9))



## Other enhancements

4.1.6 The Applicant has also considered opportunities to remove man-made features within their landholding and has identified the possibility to remove an area of hard standing equating to 5 $m^2$.

# 5. Saltmarsh Implementation and Monitoring Plan

## 5.1 Aim and Objectives

5.1.1 The offsetting objective is to ensure no overall loss of saltmarsh habitat within the Dee Estuary / Aber Dyfrdwy SAC / SPA / Ramsar site as a result of the Proposed Development by allowing natural coastal processes to resume south of the existing Connah's Quay Power Station along a currently defended frontage and in an area not otherwise proposed for managed realignment as part of other strategies. This will allow part of the area known as Station Saltings to retreat inland as sea levels rise.

5.1.2 The Station Saltings comprises a flat expanse of saltmarsh, saltpans, creeks and mudflats at the level of the estuary foreshore, approximately 2-3 metres below the level of the land lying immediately to the west (where the retreat area will be created), and above the adjacent intertidal flats. The vegetation in this area has changed little since management was first introduced. Previous NVC surveys have indicated a small amount of SM28 *Elymus repens* saltmarsh community to be present at the eastern end of the compartment with the majority of the area occupied by SM13 *Puccinellia maritima* saltmarsh. The communities are typically species-poor, with wild celery *Apium graveolens* in the SM28 vegetation and hard-grass *Parapholis strigosa* in SM13a vegetation being probably the most interesting records.

5.1.3 Since the habitat within the location of the new outfall is species-poor grass-dominated saltmarsh (SM28 *Elytrigia repens* dominated grassland) the specific purpose of the retreat will be to ensure this, or a more diverse saltmarsh community, are established. The works to create the retreat will take place prior to any loss of saltmarsh due to construction of the new outfall, although the actual process of saltmarsh development in the retreat area will be incremental over several years.

5.1.4 The Saltmarsh Implementation and Monitoring Plan will be effective at meeting the aims and objectives identified in this Strategy provided the retreat has been created and the conditions for saltmarsh expansion have been created prior to the outfall works being commenced. That will be sufficient to enable the construction of the outfall to commence.

5.1.5 This will ensure compliance with the most relevant conservation objectives of the Dee Estuary / Aber Dyfrdwy SAC as expressed in the European Marine Site Regulation 33 Report (Ref 4):

- the aggregate total extent of all estuarine communities within the site is maintained;
- the spatial distribution of estuarine communities within the site is maintained;
- the total extent of Atlantic salt meadow vegetation communities within the site is maintained;
- the proportions of individual Atlantic salt meadow vegetation communities within the site are maintained;

- the zonation of Atlantic salt meadow vegetation communities and their transitions to fresh water and terrestrial vegetation are maintained; and
- the morphology of saltmarsh creeks and pans and the process of their evolution are maintained.

## 5.2 Implementation

5.2.1 Under current circumstances the saltmarsh within Conservation Area 3 of the Conservation Areas Management Plan (Ref 5) (known as Station Saltings, south-east of the existing Connah's Quay Power Station) will reduce in extent due to sea level rise and presence of the landward defences, resulting in coastal squeeze. By relocating part of the existing defences inland and lowering the existing ground level the saltmarsh would be able to naturally retreat. This would not avoid coastal squeeze altogether as that would require the removal of such defences, but it would substantially delay the rate of squeeze and the period at which any reduction in saltmarsh extent due to sea level rise would occur.

5.2.2 Subject to detailed design, the Saltmarsh Implementation and Monitoring Plan will detail how the coastal defences south-east of the existing Connah's Quay Power Station adjacent to Compartment 3 would be set back to create a 1,300 $m^2$ area into which the saltmarsh in Conservation Area 3 can expand.

5.2.3 The Conservation Areas Management Plan indicates that between 2010 and the date of the Management Plan (2015) some previously exposed mud around Compartment 3 had been colonised by common saltmarsh grass (*Puccinella maritima*) indicating natural saltmarsh colonisation and extension can occur in this area if suitable conditions are created.

5.2.4 Setting back the embankment would reduce long-term losses of saltmarsh in the Dee Estuary due to coastal squeeze and thus ensure no net loss of grass dominated SM16 or SM28 saltmarsh in the Dee Estuary by enabling the saltmarsh in the existing area to expand landwards. Provided this is done before the existing area of saltmarsh is lost it would allow the saltmarsh (which would be a naturally shifting community without hard defences) to move naturally inland to a greater extent by managed realignment than the loss due to the new outfall and therefore avoid a net loss. It would, therefore, not conflict with the conservation objectives regarding extent or proportions.

## 5.3 Design Development

5.3.1 The section identifies the surveys required to inform the design development of the Saltmarsh Creation Area.

5.3.2 The Saltmarsh Creation Area along the south-eastern boundary of the C&IEA requires a high-resolution terrestrial survey to accurately map the area and the deployment of a tide gauge (pressure sensor) to resolve the tidal regime. It is critical when calculating the correct elevation of the Saltmarsh Creation Area that there are an accurate terrain model and coincident tidal levels. Saltmarsh only develops and maintains itself within a specific tidal range, usually ~~within mean spring tidal range to highest astronomical tide (HAT)~~between mean high water neap tides at the lowest

level and the highest astronomical tide, and this range must be accurately determined.

## Terrestrial Survey

5.3.3 The Yr Careg nature reserve is a complicated site in relation to elevation. Whilst the saltmarsh is mature, the variation in elevation across the nature reserve is subtle with only sharp relief associated with the minor creeks. The total elevation range of the saltmarsh from the mouth of creek 1 and the top of the seaward berm is 2.4 m and a total elevation range between creek 1 and the current surface elevation of the Saltmarsh Creation Area is 3.86 m.

5.3.4 Surveys are undertaken to prepare:

- A digital terrain model; and
- A digital surface model.

## Tide Gauge

5.3.5 A tide gauge survey is proposed to characterise the tide levels with Creek 1 to aid the definition of suitable ground levels within the Saltmarsh Creation Area. The desired output from this survey will be a time-series of tide height reduced to Ordnance Datum Newlyn over a four to eight week period.

## Final Saltmarsh Creation Area

5.3.6 Following the completion of the surveys outlined above, the final location of the Saltmarsh Creation Area would be determined and plans developed in discussion with Natural Resources Wales (NRW). The final saltmarsh creation area will be set out within the Saltmarsh Implementation and Monitoring Plan.

5.3.7 The Saltmarsh Implementation and Monitoring Plan must include details of:

- the amount of sediment that will need to be removed to create the required elevation for the Saltmarsh Creation Area;
- the location of where the material is to be deposited after altering the topography of the Saltmarsh Creation Area;
- whether an artificial creek system is needed within the Saltmarsh Creation Area; and
- whether the sediment at the Saltmarsh Creation Area is compacted and any decompaction is required prior to a breach.

### ***Ground Investigations***

5.3.8 Ground investigation will be undertaken within the final Saltmarsh Creation Area to identify any potential contamination risks. The scope of ground investigations will be developed once the location of the Saltmarsh Creation Area has been finalised and would be discussed with NRW.

## Saltmarsh Establishment

~~5.3.7~~5.3.9 Following realignment of the existing embankment and associated elevation changes, it is envisaged that no further active intervention will be

taken. The Area would be left to colonise naturally. However, monitoring will be necessary to ensure that saltmarsh development is occurring as expected, that the water levels and inundation are appropriate, to inform any adjustments to facilitate colonization, and to identify any need for management.

## 5.4 Monitoring and Management

5.4.1 This section outlines indicative monitoring and management arrangements that will be confirmed within the Saltmarsh Implementation and Monitoring Plan in agreement with Flintshire County Council (FCC) and in consultation with NRW.

### Monitoring

5.4.2 In order to determine if the elevation is increasing sufficiently for stable marsh to develop and whether pioneer vegetation is establishing and expanding, the strongest monitoring option would be to combine ground-based vegetation surveys with remote sensing. This combination would capture marsh elevation, vegetation establishment, zonation shifts, and accretion rates which are the core indicators of saltmarsh development and stability.

5.4.3 A summary of the monitoring, including frequency and associated timescales, is provided in **Table 1.**

#### *Recommended Monitoring Package*

5.4.4 For the newly forming saltmarsh the following will be undertaken:

- Unmanned Aerial Vehicle (UAV) orthomosaic + elevation model;
- Real-time Kinetmatic – Global Navigation Satellite System (RTK-GNSS) ground control & transects;
- Quadrat-based vegetation survey;
- Sediment elevation monitoring (marker horizons / pins); and
- Creek network mapping from UAV.

5.4.5 Survey frequency will depend on how fast the saltmarsh is likely to develop and the purpose of the monitoring, but there are well accepted norms used across the UK for habitat creation, managed realignment, and natural regeneration.

5.4.6 For newly developing saltmarsh associated with habitat creation or coastal realignment, monitoring should continue for:

- Minimum: 5 years (typical regulatory requirement);
- Standard: 10 years for habitat creation success criteria; and
- Optimal: Long-term (up to 20 years) or after geomorphological stability is achieved.

5.4.7 It is considered that the initial five-year period will identify whether the saltmarsh colonisation process is proceeding as expected, and this is the period when any remedial works (e.g. managing inundation flow rates or

levels, installing brushwood revetments or similar to manage sediment accretion) are most likely to need introduction. Subsequent monitoring should not be required so frequently. The precise subsequent monitoring frequencies can be agreed with the Saltmarsh Steering Group (See Section 6), but it is likely that periodic botanical monitoring will be required to track the development of pioneer saltmarsh to mature Atlantic salt meadow habitat, on a three-year basis ~~for 80 years (this being the standard HRA definition of 'in perpetuity') or~~ until the Proposed Development is decommissioned~~, whichever is the sooner~~.

5.4.8 Once created and established, the retreat area would be included within the existing management regime of Station Saltings, to which it would form an extension.

### *RTK-GPS / RTK-GNSS Elevation Surveys*

5.4.9 Saltmarsh development is fundamentally tied to elevation relative to tidal frame. Accurate elevation surveys (±2–3 cm) detects accretion and can predict habitat transitions.

5.4.10 This survey method is best for:

- Identifying sedimentation/accretion changes over time;
- Establishing baseline topography for newly forming marsh; and
- Calibrating remote sensing data.

5.4.11 These surveys should be carried out 1 to 2 times per year as accretion and elevation changes happen gradually; annual or biannual measurement is usually sufficient:

- Annually, ideally late summer (stable vegetation + good access); and
- Biannually during the first 2–3 years if the site is evolving rapidly (e.g., new managed realignment).

### *Drone Surveys (RGB + multispectral)*

5.4.12 UAVs deliver very high resolution (2–10 cm) imagery for mapping vegetation colonisation, creek evolution, and surface moisture. This method provides:

- Orthomosaics;
- NDVI/NDSI maps;
- Digital Surface/ Terrain Models (DSM/DTM); and
- Creek network mapping.

5.4.13 These surveys should be carried out 2 to 4 times per year in order to capture rapid seasonal changes, pioneer vegetation establishment, and creek formation:

- Early growing season (May–June) – initial vegetation development;
- Peak growing season (July–August) – maximum biomass for mapping;
- Autumn (Sept–Oct) – end-of-season mapping and elevation model update; and
- Optional winter flight if sedimentation or storm impacts are important.

### *Quadrat Vegetation Surveys / NVC / Species Composition*

5.4.14 Vegetation surveys are necessary to confirm pioneer species establishment (e.g., *Salicornia, Spartina, Puccinellia*), biodiversity changes, and habitat condition. Vegetation surveys are best for:

- Ground truthing UAV/satellite classifications;
- Condition assessments (e.g., NVC SM types); and
- Monitoring colonisation thresholds.

5.4.15 These surveys should be carried out once per year: during the optimal growing season:

- Late July to early September (NVC window).

5.4.16 The survey should be repeated annually for the first 5 years of establishment, then every three years once the marsh stabilises.

### *Sediment Pins / Marker Horizons (Feldspar)*

5.4.17 This is valuable as it valuable provides direct measurements of vertical accretion, independent of elevation change due to compaction. It is best for:

- Managed realignment projects;
- Estimating long-term marsh stability; and
- Understanding sediment supply dynamics.

5.4.18 These surveys should be 2 to 4 times per year to capture short-term accretion variation, especially after storms or high sediment delivery periods.

5.4.19 This should be done quarterly for the first 2 years and then biannually thereafter.

5.4.20 **Creek Network Mapping** should be done annually and is best captured via drone imagery. This should be repeated annually, or biannually if creek evolution is a key success criterion.

5.4.21 **Table 1** provides a summary of the proposed monitoring schedule

**Table 1: Summary Monitoring Schedule**

| Survey Type | Frequency Years | | Additional Comments |
|---|---|---|---|
| UAV imagery + DTM | 2–4 × per year | Annual for five years | Key for vegetation and geomorphology |
| RTK GNSS elevation | 1–2 × per year | Annual for five years | More frequent in first 2–3 years |
| Vegetation (quadrats/NVC) | 1× per year (Jul–Sep) | Annual for five years; every three years thereafter. | Peak biomass |
| Sediment pins / marker horizons | 2–4 × per year | Quarterly for the first two years, biannually thereafter | Higher frequency early on |
| Creek network mapping | 1 × per year | Annual for five years | Via UAV |

5.4.22 An annual monitoring report should be provided to the Saltmarsh Steering Group in Q4 of each calendar year.

5.4.23 Following the successful establishment of pioneer saltmarsh, as agreed by the Saltmarsh Steering Group, monitoring of the Saltmarsh Creation Area will be added to the Connah's Quay Power Station Conservation Areas Management Plan. This will require monitoring to be undertaken throughout the operation of the Proposed Development.

## Management

5.4.24 The Applicant has extensive experience in the management of saltmarsh habitat with existing practices set out within the Connah's Quay Power Station Conservation Areas Management Plan. Based on the experience of the Applicant, the management of this area would need to be adaptive and ~~would~~ could include a cutting regime if a dense cover of grasses develops within the area. However, it is envisaged that the management perspectives would be driven by the results of the monitoring. It is proposed that the results of the monitoring identified in **Table 1** are shared with a Saltmarsh Steering Group (see Section 6) annually to agree the management activities.

5.4.25 Following the successful establishment of the saltmarsh, as agreed by the Saltmarsh Steering Group, management of the Saltmarsh Creation Area will be added to the Connah's Quay Power Station Conservation Areas Management Plan. This will require management to be undertaken throughout the operation of the Proposed Development.

## Corrective Actions

5.4.26 Provision will be made for potential corrective actions to be taken to encourage the development of saltmarsh should natural colonisation of the Saltmarsh Creation Area be unsuccessful.

5.4.27 Potential corrective actions include:

- Further changes to levels within the Saltmarsh Creation Area;
- Structures to manage velocity or sediment accretion;
- Seeding the area with target species; and
- Translocation of ~~curves~~turves within other areas of the Connah's Quay Nature Reserve threatened by erosion associated with the tidal regime within the wider reserve.

5.4.28 It is proposed that the results of the monitoring identified in **Table 1** are shared with a Saltmarsh Steering Group annually to agree any corrective actions so far as these are necessary.

# 6. Saltmarsh Steering Group

6.1.1 It is proposed that a Saltmarsh Steering Group is formed to review the results of monitoring and to agree any management or corrective actions on an annual basis. No actions may be taken by the undertaker until mutual agreement has been reached within the Saltmarsh Steering Group.

6.1.2 It is envisaged that t~~T~~he Saltmarsh Steering Group would be a subgroup of the existing management group for the Conservation Areas Management Plan and would comprise at least one member of each of the following parties:

- the undertaker;
- Natural Resources Wales; and
- Flintshire County Council.

6.1.3 The Saltmarsh Steering Group will cease to exist once all parties are agreed that the saltmarsh has successfully established. Future discussions on management would be discussed and agreed under the existing management group for the Conservation Areas Management Plan.

# References

Ref 1. North West England and North Wales Coastal Group (2016), Shoreline Management Plan 22 – The Great Orme [Online]. Available at: https://www.mycoastline.org.uk/shoreline-management-plans/ (Accessed 25/07/2025).

Ref 2. Rodwell J.S. (2006) National Vegetation Classification: Users' Handbook. Available at: National Vegetation Classification: Users' handbook (Accessed 28/01/2026).

Ref 3. UKHab Ltd (2023). The UK Habitat Classification Version 2.0. UKHab Ltd.

Ref 4. Natural England (2010). Dee Estuary EMS: Conservation Advice for European Marine Sites. Natural England. [Online]. Available at: https://publications.naturalengland.org.uk/publication/2986296?category=3212324 (Accessed 27/02/2026).

Ref 5. Connah's Quay Power Station - Conservation Areas Management Plan Final Issue. (July 2015). Bellinger Design and Richard Tofts Ecology. 338pp.

# Abbreviations

| Term | Definition |
|---|---|
| C&IEA | Construction and Indicative Enhancement Area |
| CCP | Carbon Capture Plant |
| CCGT | Combined Cycle Gas Turbine |
| $CO_2$ | Carbon dioxide |
| CQLCP | Connah Quay Low Carbon Power |
| DCO | Development Consent Order |
| EU | European Union |
| FCC | Flintshire County Council |
| HAT | Highest astronomical tide |
| kV | kilovolt |
| MW | Megawatt |
| NGET | National Grid Electricity Transmission |
| NRW | Natural Resources Wales |
| NVC | National Vegetation Classification |
| RTK-GNSS | Real-time Kinetmatic – Global Navigation Satellite System |
| SAC | Special Area of Conservation |
| SPA | Special Protection Area |
| SSSI | Site of Special Scientific Interest |
| UAV | Unmanned Aerial Vehicle |
| UK | United Kingdom |
| UKHab | HK Habitat Classification |