Landscape and Habitat Management Plan

Margam Substation, National Grid Electricity Transmission

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1 Introduction

1.1 Overview

1.1.1 Stantec was commissioned by National Grid Electricity Transmission (NGET) to produce a Landscape and Habitat Management Plan (LHMP) in relation to the Proposed Development known as the Margam Substation Extension, proposed within land owned by NGET at Margam, Port Talbot. The proposed substation extension (hereafter referred to as the 'Proposed Development') is to be subject of a full planning application. The Ecological Impact Assessment submitted with the planning application (Stantec, 2025b) describes the mitigaton, compensation and enhancement that will be delivered by the Proposed Development in order to meet legislative and policy requirements. This LHMP details how habitats within the Site will be retained, created, managed and monitored post-construction for the purpose of contributing towards a net benefit for biodiversity, along with proposed habitat creation and enhancement works at an off-site area known as Margam Burrows. The description of the habitat creation, management and monitoring for Margam Burrows is dealt with in the Habitat Management Plan for that off-site area (Stantec, 2025c).

1.2 Site Location and Proposed Development Description

1.2.1 The proposed development site (hereafter referred to as "the Site") comprises the NGET land at approximate central grid reference SS 78581 86365. The Site comprises an existing substation and area of wetland complex to the east of the Tata Steel Works and Network Rail railway line. The Site lies to the south of the Tata Steel Sports and Social Club (golf course), to the west of woodland and to the north of the BOC Ltd works area, and fields owned by BOC Ltd. Beyond the immediate Site surroundings, the M4 corridor lies to the east, Swansea Bay lies to the west, Eglwys Nunydd Reservoir to the south and Margam town to the north. The Site is shown on **Figure 1.**

1.2.2 The Proposed Development is an extension to the existing Margam Substation, with the full description of the Proposed Development as follows:

1.2.3 The planning application, (the 'Proposed Development'), is for "full planning application for the extension of the Margam 275kV substation including the erection of a gas insulated switchgear hall (GIS hall) and the demolition of the existing control and amenities buildings to enable the erection of a new amenities building. Works to include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological improvements including a wildlife tower and gabion baskets, improved internal access roads, diesel generator and hardstanding, storage and washroom buildings, water storage tank, flood defence wall including flood gates and appropriate landscaping and other associated engineering operations. A detailed overview of the proposed works to the existing Margam 275kV substation compound is provided below:

- Construction of a GIS hall to house 275 kV electrical switchgear and ancillary equipment;
- The GIS hall to include 12 bays with the provision of 3 spare bays;
- Mechanically Switched Capacitor with Damping Network;
- Realignment of the existing downleads and Super Grid Transformer circuits to new bays within the GIS hall;
- New amenities building to include welfare facilities, meeting room and ancillary office space;
- One diesel generator to be used in a backup situation only and hardstanding for a replacement freestanding diesel generator;
- Security fencing;

- Surface water management and drainage infrastructure including internal drainage systems;
- Flood defence wall (1150mm high and depth 1000mm) and flood gates at existing access points into the existing substation;
- Water storage tank (6m high and 6.1m diameter);
- CCTV;
- Lighting to include 6m medium duty, tilt down tubular steel constructure (exact location to be agreed), 27no. 'label C', 18no. 'label E' and 13no. 'label EX1), dark sky approved.
- Creation of new designated car parking area (four standard bays and two accessible bays).
- Landscaping to incorporate native planting / wildflowers.
- Ecological mitigation to include a wildlife tower and gabion baskets."

1.2.4 The plans provided at **Appendix A** show the built development footprint of the Proposed Development and the footprint of the permanent works associated with the Proposed Development.

1.2.5 Permitted Development Works

1.2.6 In parallel with, and in advance of the Proposed Development, NGET are bringing forward enabling works (cabling) and temporary works in accordance with the Schedule 2, Town and Country Planning (General Permitted Development) Order 1995 (as amended) ("Permitted Development Works"). These Permitted Development Works commenced in spring 2025 and are taking place within the Site as well as areas beyond the Site which are owned by NGET, BOC Ltd and Tata Steel.

1.2.7 To facilitate the Permitted Development works, a water vole licence (reference S095134/1) was granted by Natural Resources Wales which required the delivery of the Water Vole Management Plan (RSK Biocensus, 2025a). Furthermore, a reptile mitigation strategy was also implemented to facilitate the Permitted Development works within the Site (RSK, 2025b).

1.2.8 Enabling works completed under the Permitted Development works involved vegetation clearance and disturbance to soils. Impacts to habitats and protected/ notable species are subject to avoidance and mitigation measures detailed with the relevant CEMP (Laing O' Rourke, 2025), water vole licence method statement and Water Vole Management Plan (RSK Biocensus, 2025a). Areas of habitat and soils temporarily impacted by the Permitted Development works are to be restored to their previous condition following completion of the Permitted Development works.

1.2.9 This LHMP considers the habitat creation /reinstatement and delivery of habitat and species management and monitoring, following completion of all the works (i.e. Permitted Development works and the Proposed Development works). It also considers species-specific mitigation and management commitments associated with the Permitted Development works; specifically, the Water Vole Management Plan (RSK, 2025a) required under a water vole conservation licence (reference S095134/1) secured from Natural Resources Wales (NRW) and the reptile mitigation strategy also implemented as part of the Permitted Development works (RSK, 2025b)

1.2.10 This LHMP does not cover the soil restoration which is to be implemented as part of the Permitted Development works, but assumptions about the approach and delivery of the soil restoration works taking place under Permitted Development are provided, as the successful delivery of those soil restoration works predicates the success of the measures set out in this LHMP. For that reason, the delivery of the soil restoration works to the required standard and against the assumptions described in this LHMP are assumed to be a Condition of the Proposed Development, prior to implementation of the Site Establishment works described in this LHMP.

1.3 Planning and Ecological History

1.3.1 The Site was subject to a prior planning application for a new separate sub-station extension in 2009. However, this development was not progressed by NGET. The survey and assessment work undertaken for that prior application provides some historical context relevant to the Site which is considered in this LHMP. The majority of the NGET landholding was designated around the same time as the prior planning application as 'J38 Wetland Complex Site of Importance for Nature Conservation' (SINC), originally designated for its complex of wet woodland, reed beds, ditches, and marshy grassland. At the time of designation, some drier areas supported indicators of the neutral grassland NVC type MG5 (see Phase 1 Habitat Survey Plan from 2008 at **Appendix B** and SINC designation provided at **Appendix C**).

1.4 Report Objectives

1.4.1 The Ecological Impact Assessment for the Proposed Development (Stantec, 2025b) describes the requirement, in line with Planning Policy Wales (Edition 12) and the Section 6 duty of the Environment (Wales) Act 2016, for the Proposed Development to deliver a Net Benefit for Biodiversity (NBB). Furthermore, NGET are mindful of their own reporting requirements to Ofgem to deliver Biodiversity Net Gain through development.

1.4.2 This Landscape and Habitat Management Plan describes the proposed landscape and habitat creation/restoration measures as well as the proposed habitat management and monitoring within the Site[1], also being mindful of NGET's ongoing operational requirements. This report sets out the following:

- An overview of the ecological baseline and landscape context of the Site, in addition to other relevant considerations that contribute to ecological condition within the Site.
- The objectives of the LHMP.
- The Site establishment works, in terms of habitat creation or initial habitat management delivery.
- The ongoing management tasks over the management period, taking into account landscape and habitat delivery to enable NBB but also taking account of NGET's Operational Requirements.
- The monitoring requirements to enable measurement of success, or to determine appropriate adaptation approaches to the habitat/features management.

1.4.3 This LHMP should be reviewed and updated, if necessary, every 5 years.

1.4.4 As described in the Ecological Impact Assessment for the Proposed Development (Stantec, 2025b), the measures described in this LHMP contribute to compensating for the permanent loss of part of the J38 Wetland Complex SINC and temporary impacts on habitats within the SINC, and to positive measures for protected and notable species within the Site. This LHMP should also be considered in combination with the off-site proposals for habitat creation and management within Margam Burrows, as described in the Habitat Management Plan for Margam Burrows (Stantec, 2025c). Taken together, this LHMP and the Habitat Management Plan for Margam Burrows, demonstrate overall achievement of Net Biodiversity Benefit, in accordance with Planning Policy Wales (Edition 12) (PPW) for the Proposed Development (Stantec, 2025b). Implementation of this LHMP and the Habitat Management Plan for Margam Burrows is required to achieve policy compliance relating to Net Biodiversity Benefit and both

[1] Note that this LHMP applies to the land owned and manaaged by National Grid at Margam only (i.e. the Site). The BOC Ltd land is not available to National Grid for ongoing management or enhancement measures, beyond the commitment to restore existing habitats following completion, due to land access agreements.

should therefore be secured by Condition and/or Section 106, or other appropriate planning mechanism.

2 Site Description and Current Site Conditions

2.1 Ecological Features of the Site – Habitats and Underlying Environmental Conditions

2.1.1 A full description of the ecological baseline and survey work undertaken to determine that baseline is described in the Ecological Impact Assessment (Stantec, 2025b) and associated species survey technical reports, submitted with the pre-application consultation for the Proposed Development.

Habitats

2.1.2 The Site within which the substation is proposed comprises a complex of wetland habitats. The habitat survey work completed through the 2024 season (spring, summer and autumn 2024) mapped habitats using both UKHab2 and Phase 1 Habitat Survey classification. The former, with a view to satisfying NGET's own internal policies with regards to delivery of Biodiversity Net Gain, as calculated using the English Statutory Metric. The JNCC Phase 1 Habitat Survey classification was also used to satisfy NPT requirements; this methodology also enables a comparison with the results of habitat survey work previously undertaken for the Site in 2008, for a prior application in 2009. Further detailed botanical survey (National Vegetation Classification -NVC) was undertaken in June 2025 (Stantec, 2025a).

2.1.3 The majority of the Site is overwhelmingly dominated by common reed *Phragmites australis*. Other species that rarely occurred and at very low levels were creeping thistle *Cirsium arvense*, marsh thistle *C. palustre*, meadowsweet *Filipendula ulmaria*, hogweed *Heracleum sphondylium*, nettle *Urtica dioica* and great willowherb *Epilobium hirsutum*. In wetter areas, such as along ditches, yellow flag *Iris pseudocorus*, hemlock water-dropwort *Oenanthe crocata* or reed sweet-grass *Glyceria maxima* are locally abundant. The NVC plant community that best fits this reed-dominated habitat is S4 *Phragmites australis* Swamps and Reed-beds. This community is characterised by an overwhelming dominance of common reed, with no other species attaining more than occasional frequency overall.

2.1.4 In areas that are slightly less wet, the NVC survey found the plant community to be in transition, as reflected by the patchy nature of the vegetation cover, with expanses of dominant greater pond sedge *Carex riparia* giving way to stands of meadowsweet, and mixed patches of bulky herbs such as fleabane *Pulicaria dysenterica*. These areas have characteristics of three different plant communities but lack the constant occurring species that define each of the assemblages. Whilst these habitats cannot be definitively defined according to established plant classification methodologies, they contribute to the habitat assemblage at the Site and together with the more widespread common reed swamp meet the criteria for the Section 7 Priority habitat 'Reedbeds' BRIG (ed. Ant Maddock) 2008) which encompasses associated habitats with which reedbeds form a mosaic, stating that 'They [reedbeds] tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them.' As such, it also adds to the diversity of wetland habitats that comprise the 'Junction 38 Wetland Complex' Site of Importance for Nature Conservation (SINC).

2.1.5 Other habitats within the Site include willow scrub and ditches, or former ditches (now obscured / overgrown by willow scrub).

2.1.6 The majority of the habitats within the Site fall within the locally designated Junction 38 Wetland Complex SINC which is designated for its wetland and woodland habitats and associated species.

2.1.7 The comparison of the habitat extents recorded in 2024-2025 (B.2 in **Appendix B**) with the habitat mapping submitted with the 2009 planning application (B.1 in **Appendix B**) and the designation information for the Junction 38 Wetland Complex SINC (**Appendix C**) shows that habitats have changed through time, with the extent of reedbed (swamp) and willow scrub

increasing since 2008 and the drier semi-natural grassland being replaced by marshy grassland and swamp, with encroaching willow scrub.

2.1.8 It is considered likely that this change in habitats is as a result of the poor-functioning of the ditches in the Site and surface water drainage (or lack thereof), which combined with the understanding of the hydrogeology of the Site (see **Hydrogeology and Hydrology** below) has resulted in retention of surface water within the Site and a concurrent response in the vegetation composition. This is also supported by observations from the NGET team (Laing O Rourke *pers comm.* June 2025) that the ditches through the Site are blocked where they would otherwise drain surface water into the Upper Mother Ditch, which is the main functioning ditch around the perimeter of the Site that takes water draining north and then west towards Tata's land holding and the sea beyond. Furthermore, the lack of active management of habitats within the Site has also allowed the willow scrub to increase its extent and dominance across the Site.

Hydrogeology and Hydrology

2.1.9 The Hydrogeological Impact Assessment (HIA) undertaken of the Proposed Development (Baker Hicks, 2025b) describes how this document has completed a baseline review of the geology, hydrogeology and hydrology of the Site to develop a "Conceptual Site Model" (CSM) which explains the functioning of the groundwater and surface water environs within the Site and is subsequently used to explore the potential hydrogeological impacts of the Proposed Development. The CSM is based on desk study data and Site Investigations (boreholes and groundwater level monitoring), and the consideration of the hydrology of the Site presented in the Flood Consequence Assessment (Baker Hicks, 2025a), as explained in the HIA.

2.1.10 The CSM within the HIA (Baker Hicks, 2025b) confirms the following of relevance to the Ecological Impact Assessment for the Proposed Development, and this LHMP:

- That the soil horizons comprise four layers; from the surface: tidal flat deposits comprising clays overlying peat with underlying glaciofluvial deposits and cohesive clay dominated deposits. The bedrock is dominated by mudstone with subordinate siltstone and occasional coal.

- Groundwater strike data from the Site Investigations indicates that the primary aquifer was encountered within the granular glaciofluvial deposits where groundwater is being confined by the lower permeability overlying peat and clays. Given the artesian nature[2] of the groundwater it is not possible to determine groundwater flow direction, however it is likely to follow the local topography in a broadly westerly or south-westerly direction towards the coast.

- The overlying peat horizon is likely to be saturated due to upwelling of groundwater from the underlying glaciofluvial aquifer, however given the high clay content and potential impacts of compression from the overlying clay deposits at surface, groundwater flow within the peat itself it likely to be limited.

- The presence of clay at surface indicates that the wetland habitats present within the Site are primarily being fed by surface water run-off due to impeded drainage, as opposed to groundwater baseflow, although given the limited thickness of the clay in places some groundwater input cannot be entirely ruled out. However, the Site drainage network is also considered to be primarily within the loam soils and clay superficials and therefore will receive limited groundwater baseflow.

- There is considered to be no hydraulic connection between the superficial and bedrock aquifers due to the low permeability of the upper strata.

[2] *Artesian groundwater refers to water held under pressure within a confined aquifer, where impermeable layers above and below trap the water.*

2.1.11 Given these findings, the primary consideration for the impacts on the habitats within the Site related to surface-water hydrology.

2.1.12 The Flood Consequence Assessment (FCA) (Baker Hicks, 2025a) confirms in relation to surface-level hydrology and surface water flows that the low-lying land in the vicinity of the proposed substation between the elevated railway line to the west and higher ground to the east is drained by a network of ditches to the central 'Upper Mother Ditch' 80 m to the east of the substation extension. The ditch drains through a culvert beneath the railway line before passing through a large Sluice Structure 320 m to the northwest (NGR: SS 78299 86666). The Structure is comprised of a series of flow controls before leading to a culvert beneath the TATA Steel Facility (the "TATA Upper Mother Outlet"). It is anticipated that the TATA Upper Mother Outlet discharges into Swansea Bay or is routed through a large reservoir on the western side of the facility, which then drains into the bay. The outfall to the sea is protected by a tide flap.

2.1.13 The detailed hydraulic modelling that informed the FCA indicates that the annual probability of the land in the vicinity of the Proposed Development flooding is between 10% (1 in 10) and 3.3% (1 in 30) and therefore the minor impact in terms of flood extents and levels arising from the displacement of floodwaters would manifest itself only very infrequently and for a limited duration. Therefore, the FCA enables confirmation that the Proposed Development will have no significant impact within the retained areas of the SINC by virtue of increased flood extents or levels (Baker Hicks, 2025a). The Proposed Development does however present an opportunity to improve surface water drainage within the Site to restore surface water flows and control mechanisms, with a view to restoration of the habitats for which the SINC was designated.

Peat Deposits

2.1.14 The National Peatland Action Programme is a 5-year plan of peatland restoration in Wales targeting peatland erosions and drainage, peatland management and restoration of peatlands. The restoration programme for Wales was launched in 2020 by the Welsh Government and is being delivered by Natural Resources Wales (NRW). Peat soils are defined (Welsh Government, Mar 2022) as:

- more than 40 cm of organic (O horizon) material within the upper 80cm, excluding fresh litter and living moss; or
- more than 30 cm of organic (O horizon) material resting directly on bedrock or skeletal material.

2.1.15 The Peatlands of Wales Map does not identify any peatlands within the Site. This is consistent with the observations from site-investigations (see summary in the HIA, Baker Hicks, 2025b), which shows peat is only present at depth and also confirms that there is no actively forming peat present at the Site. As such, the peat is compressed between soil horizons and is not acting as an active carbon sink but is a carbon store. This understanding is relevant in terms of management of peat arisings from the excavation works required to implement the Proposed Deveopment, as the drying out of peat would result in the release of stored carbon. The anticipated volumes and treatment of peat arisings is described in detail in the Peat Management Plan (WRC, 2025) and will be therefore taken into account in the soil restoration works for the Site.

2.2 Ecological Features of the Site - Protected or Notable Species

2.2.1 Key protected or otherwise notable species identified from the Site, or the immediate surroundings, include the following:

- Breeding bird assemblage recorded within the Site, including the specially protected Cetti's warbler *Cettia cetti* of Local value.
- Three species of reptile have been recorded from the Site during reptile surveys undertaken in autumn 2024, spring 2025 and during the Permitted Development work

with low populations of grass snake *Natrix helvetica,* common lizard *Zootoca vivipara* and slow worm *Anguis fragilis* recorded.

- Water vole *Arvicola amphibius* was thought to be associated with the SINC at the time of its designation. Some potential feeding signs were identified during surveys in 2024 but no animals were found during licensed exclusion works undertaken by RSK on behalf of Laing O Rourke and NGET in spring 2025 as part of the Permitted Development works. Though no water voles were found, this does not preclude that water voles are present in suitable habitat in the area.

- Harvest mouse *Micromys minutus* - harvest mouse nests were identified within the Site by Ecological Clerk of Works during the Permitted Development works. Whilst this species is not specifically protected by legislation, its conservation status is considered "Vulnerable" in Wales (Mammal Society, 2024).

- Whilst no bat roosts have been identified on the Site, the Site has been found to support low numbers of commuting and/or foraging bats, including low numbers of lesser horseshoe bats *Rhinolophus hipposideros*. The closest known significant roosts of lesser horseshoe roosts are approximately 1.2km to the east (Margam Country Park) and 2.5km south (Kenfig Industrial Estate). A further single lesser horseshoe bat, with observations consistent with a night-time feeding perch was recorded in farm buildings 0.75km to the east of the Site.

- Invertebrates – the Site supports a diverse range of invertebrates including species listed as Threatened on the IUCN Red List and those listed as Priority Species or Species of Principal Importance (SPI) for the purpose of maintaining and enhancing biodiversity in Wales.

- Invasive and Non-Native Species (INNS) - whilst no INNS were recorded from within the Site, Himalayan balsam was recorded within the land to the south of the proposed substation in the south-east corner of the Site, north of Heolcae'r Bont and a stand of Japanese knotweed *Fallopia japonica* has been identified along Heolcae'r Bont.

2.3 Landscape Character

2.3.1 The character of the Site itself is largely patchy, open, wetland complex, aside from the existing substation which exerts an industrial influence on the surroundings. Most of the Site is located within the **Local Character Area (LCA) 1: Margam Marsh** (eastern part), with the proposed northern access extending into **LCA 50: Port Talbot Docks and Margam Works**.

2.3.2 The Site broadly corresponds to the descriptors for LCA 1 as "*flat, marshy wetland pasture, veined with drainage ditches and significant wetland vegetation*" and "*significant areas of marsh, eutrophic water and wetland habitats*" with *"strong visual influence of the surrounding heavy industry".* As described in **Section 2.2** above, part of the Site is designated a SINC with a diverse range of wetland habitats though diversity has reduced in recent years due to inundation caused by inoperative ditches.

2.3.3 The landscape character of the immediate area was predominantly defined by industry, with the Tata Steel Plant influencing the area, particularly in views from the east looking towards the Bristol Channel. Other industrial development such as the Margam Green Energy Plant, Western Bio-Energy and BOC hydrogen plant augment this character. Land to the north between the Site and the settlement of Margam presents some open space, although this is largely set aside for recreational sports use.

2.3.4 The wider landscape character is reflective of National Character Area (NCA) 38: Swansea Bay, being part of the narrow coastal plain, a long lowland area between uplands to the northeast and the sea to the southwest dominated by heavy industry and its role as a major transport corridor.

3 Landscape and Ecology Design: Management Plan Objectives

3.1 Net Biodiversity Benefit Overview

3.1.1 The Ecological Impact Assessment for the Proposed Development (Stantec, 2025b) describes the requirement, in line with Planning Policy Wales (Edition 12) and the Section 6 duty of the Environment (Wales) Act 2016, for the Proposed Development to deliver a Net Benefit for Biodiversity (NBB). Furthermore, NGET are mindful of their own reporting requirements to Ofgem to deliver Biodiversity Net Gain through development.

3.2 Management Plan Objectives

3.2.1 Taking into account the current Site conditions and identified issues in the preceding sections, the key objectives of this LHMP are:

Objective 1: To improve surface water management across the Site through the diversion, restoration and ongoing maintenance of ditches, including the installation of appropriate water control structures (e.g. natural weirs) where necessary. Management of ditches will aim to maintain a hydrological balance that supports the persistence of the wetland habitat complex and water column suitable to support emergent vegetation for water vole, while also enabling the positive management water balance through the rest of the Site with a view to encouraging development of areas of drier, more floristically diverse marshy grassland or other drier grassland communities.

Objective 2: To manage the dynamic balance between reedbed, marshy grassland, and encroaching scrub and young trees, ensuring the maintenance of habitat diversity and preventing the dominance of any one habitat type to the detriment of others.

Objective 3: To maintain and enhance habitat features that support protected and notable species recorded within the Site, or which have the potential to colonise the Site, including but not limited to: water vole, breeding birds, reptiles, bats, and invertebrates, through targeted habitat management and species-specific interventions.

Objective 4: To implement a programme of ecological monitoring to assess the effectiveness of habitat and species measures, and inform ongoing adaptive management decisions. Monitoring results will be used to identify emerging issues, track progress against defined success criteria, and guide responsive interventions where necessary.

3.2.2 These objectives provide the overall guiding principles for the management and monitoring prescriptions described in **Appendix F**. Note these overarching Objectives and the management and monitoring prescriptions are also devised being mindful of NGET's ongoing operational requirements for the Site such as the maintenance of the substation and its connecting infrastructure to enable delivery of electricity across the local network, taking into account safety clearances and distances required for NGET infrastructure.

3.3 Key Landscape and Ecological Deliverables

3.3.1 In the context of the management plan objectives described above, the key landscape and ecological deliverables for this Site are described below. These deliverables are predicated on the restoration of soils following the completion of the Permitted Development works. Further details are provided in **Sections 5** and **6**.

Habitat Measures

Habitat measures will include the following:

- natural regeneration of reedbed and associated habitats within the Permitted Development footprint;

- diversion of ditches within the Site and reconnection to the wider ditch network, in addition to reinstatement and/or enhancement of ditches within the Site to restore ditch profile and function and connection to the Upper Mother Ditch, with detailed design, including flow control measures (e.g. natural weirs), to be confirmed in the final drainage design, to enable maintenance/management of ditch water levels[3];

- provision of trees and scrub in appropriate locations;

- management and monitoring of reedbed habitat;

- management and monitoring of the extent of willow and other scrub to maintain balance between scrub, wetland habitats and open ditch habitats; and

- monitoring of the extent of marshy grassland/drier grassland in response to ditch reinstatement and diversion. Consideration will be given to the incorporation of specific management and monitoring prescriptions for grassland, if grassland becomes a feature of the Site.

Species Measures

3.3.2 Species measures will include the following:

- provision of reptile hibernacula;

- provision of a “Wildlife Tower” to provide opportunities for roosting bats;

- provision of gabion baskets for invertebrates;

- maintenance of a mosaic of wet scrub, reedbed and ditch habitats to support a diversity of breeding bird, mammal (water vole and others) and invertebrate species;

- inclusion of a lighting design to maintain dark corridors for use by foraging and commuting bats; and

- monitoring and control of invasive non-native species, where required.

[3] Note that the detailed drainage design and the detailed landscape design are subject to review and confirmation. A preliminary drainage design is provided in the Margam Drainage Report (Baker Hicks, 2025c) Given the close interaction between these aspects of the Proposed Development and the deliverables described in this LHMP, it is anticipated that the final versions of the Drainage Design, Landscape Design and this LHMP will be subject to pre-commencement Condition.

4 Biodiversity Management Plan Responsibilities

4.1 Ownership and Management Responsibilities

4.1.1 This LHMP relates to the Site at Margam which is wholly owned by NGET, as shown in **Figure 1**.

4.1.2 The responsibility for the funding and delivery of this LHMP lies with NGET. It is anticipated the LHMP will be secured by Planning Condition relating to the Proposed Development of the sub-station extension at Margam.

4.1.3 Whilst NGET will be responsible for delivery of the management, Contractors may be appointed by NGET to deliver some, or all of, the elements described in this LHMP. All ecological monitoring for habitats and species will be carried out by suitably qualified ecologists.

4.2 Landscape and Habitat Management Plan Period and Review Schedule

4.2.1 This LHMP refers to post-construction management of the Site over a 30 year period. Periodic reviews, enabling an adaptive response to monitoring outcomes, will be undertaken. Such reviews will take place, as a minimum, every 5 years, with monitoring outcomes and any resultant proposed changes to management and monitoring prescriptions described in this Management Plan, to be agreed with Neath Port Talbot Council.

4.2.2 Monitoring aspects relating to measures for the benefit of water voles will be reported to Natural Resources Wales, in accordance with the water vole licence conditions (RSK Biocensus, 2025a)

4.3 Operational Requirements

4.3.1 It is acknowledged that the Site is under the control of NGET primarily to fulfil their function as an owner and operator of the high-voltage electricity transmission network. This means that NGET's primary operational requirements for the Site will relate to the maintenance of the substation and the connecting infrastructure. The proposed habitats and management of the same within this LHMP will not conflict with the requirement for NGET to maintain the sub-station and associated infrastructure (for example, woodland planting, in addition to not being ecologically appropriate for the Site would also have the potential to interact with overhead lines as it grew to maturity). NGET will take account of the species considerations identified through the assessment work for the Proposed Development in their future operational management of the NGET assets.

5 Establishment Works

5.1 Landscape and Habitat Creation Measures

5.1.1 The landscape and habitat creation measures proposed for the scheme as described below are shown in the Landscape and Habitat Strategy Plan and the Landscape Designs provided at **Appendix D**.

5.1.2 The delivery of the Landscape and Habitat Strategy Plan and Landscape Designs is dependent on the restoration of soils. The restoration of the soils will be undertaken by the Contractor as part of the Permitted Development Works. It is assumed that the Contractor will adhere to the following standards and good practice methods, such that this provides appropriate soil surface conditions for the delivery of the landscape and habitat creation works described in this LHMP. For this reason, it is assumed that the delivery of the soil restoration works to the required standard and against the assumptions described in this LHMP are assumed to be a Condition of the Proposed Development, prior to implementation of the Site Establishment works described in this LHMP.

5.1.3 Following the completion of temporary enabling and construction works within the Margam Site, areas previously supporting reedbed habitat will be restored. Temporary compounds and haul roads used during construction will be prepared firstly through the removal and suitable storage of topsoil, followed by use of a separation layer (e.g. geotextile membrane) prior to preparation of these temporary working areas using lightweight aggregates and/or trackway. Following completion of works, the temporary works areas will be removed, with the separation layer aiding clean removal. Prior to replacement of topsoil, an assessment of ground compaction will be undertaken by the contractor and any over-compacted soil will be remediated. Smaller areas may be restored through the use of a VOGT geoinjector or air spade (as appropriate to the conditions), or a low disturbance sub-soiler may be used for larger areas; the precise methodology is to be determined by the contractor and their suitably qualified specialists, and secured by Condition as part of the delivery of the soil restoration works.

5.1.4 Please refer to Chapter 4 of the Peat Management Plan for Margam Extension, prepared by WRC Stirling (WRC, 2025). Peat arisings from the Proposed Development should, where possible, be stored as close to the point of excavation as possible and then re-buried as soon as possible, following the provisions in the Peat Management Plan.

5.1.5 Other than the provisions of the Peat Management Plan (WRC, 2025), stripping storage and reuse of topsoil should adhere to the guidelines set out with the *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009), as described in the Construction Environmental Management Plan (Laing O Rourke, 2025).

5.1.6 Once subsoil has been decompacted and suitably prepared, reused topsoil should be spread across the site and graded into smooth contours that are married into existing levels at the edges, refer to drawing MAREXT-STN-XX-XXX-LA-003 for outline specification (see **Appendix D**); the confirmed landscape design is anticipated to be subject to Condition, in parallel with the soil restoration proposals and drainage design. This Landscape and Habitat Management Plan should also be reviewed in line with these designs, accordingly.

Natural Regeneration of Reedbed and Associated Habitats.

5.1.7 It is proposed that re-vegetation of the Site following restoration of the soils in the temporary working areas will take place through a process of natural regeneration. This approach will be underpinned by the re-use of site-won topsoil and the retention of the existing seedbank, which is expected to facilitate the re-establishment of native reedbed vegetation and associated habitats, as described by Maddock (2011). The restoration strategy avoids intensive planting and instead relies on the inherent regenerative capacity of the Site's soils and hydrology. This is consistent with best practice for wetland restoration in Wales, where passive recovery is often

favoured in areas with intact hydrological function and viable seed sources (Welsh Government, 2020). However, given the proximity of the area to the ditch system and to help stabilise soils quickly, an annual nurse grass species is recommended which should help to secure soils and minimise sediment run-off. The nurse grass species proposed to be used is non-persistent and a poor competitor, allowing the natural seedbank to self-generate. It is proposed to use the annual grass variety of *Lolium multiflorum,* Westerwolds Ryegrass as the nurse grass species, subject to agreement with Neath Port Talbot Council.

Ditch Diversion, Reinstatement or Enhancement.

5.1.8 As described in **Section 2.1** the existing ditches within the Site have, for the most part ceased to function as surface water drainage features and, with the exception of the Upper Mother Ditch, have silted up so that standing water within the ditches is shallow (10-20cm) and in pools along the ditch. The ditches are also heavily shaded and overgrown with scrub and young trees and/or dominated by common reed. Ditches lost to the footprint of the permanent development (D6 and part of D4 and D5) are being diverted and reconnected to the retained ditch sections. The diverted ditch will be planted with species appropriate to the location, given this will be a newly-created ditch profile (see **Appendix D** for the Landscape and Habitat Strategy Plan and the Landscape Designs). The confirmed landscape design is dependent on the confirmed drainage design for the Proposed Development and both are anticipated to be subject to pre-commencement Condition to agree finalised designs.

5.1.9 Other ditches, including the Upper Mother Ditch and the other retained ditches within the Site are proposed for habitat enhancement or reinstatement (Ditch 2, Ditch 3, retained sections of Ditch 4 and 5 and the diverted ditch that links them, Ditch 7, Ditch 8 and Ditch 9, see **Appendix D** for ditch locations) dependent on their current condition. This includes the reinstatement of the connection of the ditches which should enable discharge of the ditches to the Upper Mother Ditch but that have become blocked. One of the drivers for the proposed ditch works is to accord with the commitments within the Water Vole Management Plan (RSK, 2025a), required under the water vole conservation licence (reference S095134/1), which was secured in order to enable the Permitted Development works to commence.

5.1.10 The Water Vole Management Plan (RSK Biocensus, 2025a) frames the proposed ditch diversion, enhancement and reinstatement described in that document as habitat creation and management for the benefit of water voles, with the aim that these ditches will provide, following diversion, reinstatement or enhancement, a permanent watercourse with herbaceous vegetation on banksides and marginal shelves, along with an overall ditch profile with suitable banks for water vole burrowing. However, it is also anticipated that the proposed ditch diversion, enhancement and reinstatement will also benefit the habitat diversity within the Site; it is anticipated that these measures will promote better surface water drainage within the Site, supporting a reduction in the dominance of the reedbed monoculture and a move towards the re-establishment of a mosaic of native reedbed vegetation and associated habitats, as described by Maddock (2011) for the Priority Reedbed habitat type, and as described in the J38 Wetland Complex SINC habitat description.

5.1.11 A drainage design is being produced by NGET's contractor (Laing O Rourke) for the project, to determine an appropriate profile and fall for the realigned and reinstated ditches, such that they will function as drainage ditches, allowing discharge into the Mother Ditch and onward to the sea. A preliminary drainage layout is provided in the Margam Drainage Report (Baker Hicks, 2025c). The final detailed drainage ditch design will incorporate water control measures where they meet the Mother Ditch (e.g. natural weirs). A careful balance of water levels is required, to support the wetland complex within the Site for which the SINC is designated. The lack of functioning ditches has led to the Site becoming too wet in recent years and contributed to the current dominance of monoculture reedbed habitat. However, allowing the drainage to become too efficient and causing the Site to become too dry would be equally detrimental to the habitats within the Site for which the SINC was designated (wetland complex). The detailed drainage design will enable retention of sufficient water within the Site to support wetland habitats, while allowing for controlled drainage to prevent excessive waterlogging and reduce the dominance of reedbed. The detail of the drainage design and the implementation of the same, to enable the support of the wetland complex within the Site, will be secured by Condition. The Landscape

Design will be reviewed, and where necessary updated, in the light of the confirmed drainage design. The Landscape Design review and update is also therefore anticipated to be secured by Condition, along with a review and update (where necessary) of this LHMP.

Scrub and Young Trees

5.1.12 The Proposed Development will result in the removal or coppicing of scrub and young trees within the works footprint. Furthermore, the proposed ditch diversion, reinstatement or enhancement described above will result in the removal or coppicing of the scrub and trees that have grown up along the ditch network as a result of lack of management of these features.

5.1.13 Apart from scrub and young trees along ditches, outgrown hedgerows, recorded as scrub in the Phase 1 Habitat Survey baseline 2024-2025 (**Appendix B),** are also present along the Site boundaries and provide linkages across the Site between sections of ditch, which will be retained as the scrub does contribute to the habitat diversity within the Site and the scrubby vegetation in association with the reedbed habitats provides for species such as Cetti's Warber, as well as providing sheltered features for use by foraging bats.

5.1.14 Planning Policy Wales (Edition 12) requires replacement of trees 3:1 compared to those lost to Proposed Development. For this Site, whilst the Arboricultural Impact Assessment (AIA) (Treework Environmental Practice, 2025) has recorded groups of trees within the footprint of the Proposed Development, ecologically these are recorded as scrub as the "trees" recorded in the AIA are dominated by willow scrub. The habitats within the Site are considered to be dominated by the Section 7 Priority Habitat Reedbed; such habitats are identified as being unsuitable for tree planting by Natural Resources Wales guidance for new planting schemes (NRW, 2016). Trees, once established in wetland habitats can result in the drying out of wetland through increased transpiration (the natural process is termed hydroseral succession). Whilst scrub and willow carr is a natural and valuable component of wetland habitats and is the tertiary habitat type if natural succession processes are left unchecked, this would also result ultimately in the drying and shading-out of the Reedbed and associated habitats. It is necessary therefore to consider long-term rotational management to avoid the loss of the Reedbed and associated habitats to willow scrub. Long-term rotational management of willow scrub and young trees is a common management technique used in important wetland habitats (Ausden, 2007). For these reasons, it is considered therefore that planting of trees within the majority of the Site, i.e. within Reedbed Priority Habitat would conflict with the requirement for the development to achieve Net Biodiversity Benefit.

5.1.15 Areas of the Site outside of the Priority Habitat areas provide some opportunity for limited tree and scrub species planting. These include around the proposed SUDS basin (outside of the management strip required for such features) and along the access road to the north, within verges owned/managed by NGET. Please refer to drawing MAREXT-STN-XX-XXX-LA-002 (**Appendix D**).

5.2 Species Measures

5.2.1 The habitat measures described above in **Section 5.1** will support enhancement and diversification of habitats within the retained area of the Site. In turn, this will also provide enhanced diversity and quality of habitats suitable to support:

- Water vole – as aligned with the targets described in the Water Vole Management Plan (RSK Biocensus, 2025a) written to discharge the Condition associated with the Water Vole licence for the Permitted Development works.
- A range of breeding birds including Cetti's warbler, reed bunting *Emberiza schoeniclus*, and sedge warbler *Acrocephalus schoenobaenus*, known to be associated with the Site.
- Diversity of invertebrates, potentially also providing a supporting role to the important invertebrate assemblage associated with Margam Moors SSSI c.0.75km to the south-west of the NGET land, and Kenfig SSSI beyond.

5.2.2 Further specific measures to be created within the Site to provide enhancements for protected or otherwise notable species include the following:

- Provision of reptile hibernacula – 2 no. reptile hibernacula were provided within the Site prior to a reptile translocation and capture exercise undertaken as part of the Permitted Development works mitigation (RSK, 2025b). The location of the provided reptile hibernacula is shown on the Landscape and Habitat Strategy Plan provided at **Appendix D**.

- Provision of a "Wildlife Tower" – as described in **Section 2.2** no bat roosts have been recorded within the Site and the Site lacks any real opportunities for roosting bats. As such, a clear opportunity for biodiversity benefit delivery is the provision of a Wildlife Tower suitable for use by bats. An illustrative example of a proven design for such a Wildlife Tower is shown at **Appendix E**.

- Provision of gabion baskets, 1m^3 gabion baskets filled will clean slag provided by Tata Steel to NGET will provide habitat for invertebrates. An illustrative example of a design for such a feature is also provided at **Appendix E** and in the Landscape and Habitat Strategy Plan at **Appendix D**.

5.2.3 Furthermore, protected and notable species are also being considered in the scheme design. For example, the lighting design has been developed to minimise light-spill into the retained area of the SINC, enabling maintenance of dark corridors along hedgerows and treelines used by foraging and commuting bats, including lesser horseshoe bat.

5.2.4 With respect to breeding birds, vegetation management (e.g. cutting back of scrub and reedbed) will be timed to avoid the nesting season (further information provided on timing for ongoing management and monitoring in **Section 6** and **Appendix F**). Providing a mosaic of reedbed and associated habitats including scrub will provide long-term nesting and foraging habitat for the breeding bird population, in addition to supporting a diverse invertebrate assemblage and providing edge habitat suitable for use by species such as harvest mouse and foraging or commuting bats.

5.2.5 With respect to invasive and non-native species, whilst Japanese knotweed and Himalayan balsam are absent from the Site, the continued absence of these species and any other invasive non-native plant species will be a positive indicator sought during monitoring, with appropriate management put in place should they be identified. The Water Vole Management Plan (RSK Biocensus, 2025a) also requires monitoring for the invasive animal species, the American mink *Neovison vison,* on an annual basis.

6 Management and Monitoring

6.1.1 Management and Monitoring Prescriptions by habitat type and by species are provided at **Appendix F**. An annualised calendar of management activities and schedule of activities by management year is provided at **Appendix G**. Note that all management activity frequencies, extents and approached are subject to adjustment, depending on the outcomes of monitoring.

6.2 Assessment Methodology for LHMP Success Criteria

6.2.1 Key attributes for which the success of the LHMP is to be measured against have been established for key ecological features within the Site as summarised below.

6.2.2 The attributes that have been identified will be used to measure the effectiveness of the management prescriptions for habitats and populations of water voles, reptiles, bats and breeding birds over the duration of the LHMP.

Table 6.1. Assessment Attributes

Ecological Feature	Attributes
J38 Wetland Complex SINC	Site continues to meet criteria for designation as a SINC
Reedbed complex	Site supports a maximum of 50% reedbed, with the remaining 50% formed of a complex of open water, scrub and grassland.
	Less than 1 % of the vegetation cover is made up of non-native species
Ditches	Ditches support a diversity of vegetation
	Less than 1 % of the vegetation cover is made up of non-native species
	At least 50% open water is present in the growing season (e.g. March to September) in ditches not specifically managed for water vole benefit (see below)
	Water Vole Management Plan (RSK Biocensus, 2025a) seeks to provide a mean depth of 1.2 m of water depth (or more), remaining above 0.5 m in summer (subject to site topography and hydrology).
	Ditches enhanced or reinstated in accordance with the requirements of the Water Vole Management Plan (RSK, 2025a) (Upper Mother Ditch, D2, D3, retained section of D4, D7, D8 and D9) to have open water along 80% of ditch channel, 90% to be unshaded from trees/scrub[4] and 60-100% of ditch bankside vegetation to comprise emergent/bankside herbaceous vegetation.
Scrub and trees	Trees planted around SUDS basin and along access road have established, with no dead or diseased trees present
	Less than 20% of the vegetation cover across the Site is made up of scrub and scattered trees
Water vole	Ditch supports at least 50% open water with banks supporting a minimum of 50% grassland and reedbed vegetation.
	Less than 20% of the vegetation cover along the banks is made up of scrub and scattered trees
	No mink recorded within the Site Undertaking of water vole surveys in line with monitoring period defined by Water Vole Management Plan (and Section 6.4 below)
Bats	Bat tower supports at least one species of bat
	Site provides a complex of habitats suitable for foraging bats

[4] Scrub within 5 m to these ditches will be routinely managed and removed to ensure ditches remain in good condition. However, other scrub e.g. located between ditches D2 and D3, and adjacent to D8 and elsewhere within the Site will be managed in accordance to the management requiremetns for scrub and trees, due to the additional ecological benefits these habitats provide to the Site's wider biodiversity (i.e.foraging/commuting bats, birds and invertebrates).

Ecological Feature	Attributes
Reptiles	Presence of suitable open patches and variation in vegetation structures and topography close to ground levels (qualitative assessment based on professional judgement and in agreement with NPTC).
	Hibernacula features remain intact and suitable for use by reptiles
Breeding birds	Bird species composition and number of nesting pairs remains as per the baseline recorded prior to works commencing and/ or there is an increase in diversity
	Site provides a complex of habitat for foraging and nesting birds
Invertebrates	Invertebrate species assemblage remains as per the baseline recorded prior to works commencing and/ or there is an increase in diversity

6.3 Vegetation Management and Monitoring

Reedbed Complex

6.3.1 Monitoring of regenerating areas of Reedbed will be undertaken during the growing season in years 1, 2, and 4 of this LHMP. Should monitoring indicate poor re-establishment of the reedbed complex through the proposed natural regeneration (e.g. <50% reedbed, or associated habitats, or dominance by undesirable species), adaptive measures such as selective planting, seeding or hydrological adjustment may be required.

6.3.2 Following establishment of the reedbed habitat, and for areas of retained reedbed within the Site, there will be a need to manage the reedbed habitats to support diversity, rather than monoculture. The management will be through the implementation of rotational cutting or mowing of the reedbed in strips or blocks, with the cuttings removed and either piled in agreed position within the Site (agreed with ecologist) or removed from the Site. It is proposed that the cutting should take place every 3-5 years from year 5 post-restoration, with a maximum of one third of the reedbed area cut in any one management event. Any management work would need to take place between September and February inclusive (as a guide) to avoid any disturbance to breeding birds and to avoid the water vole breeding season, as well as the breeding season for other species associated with this habitat type (e.g. reptiles and harvest mouse). The management should be undertaken so as to minimise further soil disturbance or compaction. Where machinery is used for reed cutting, a low-pressure machine such as Loglogic's Softrak 120 cut-and-collect system will be used.

6.3.3 Monitoring of the established/ retained reedbed habitat will be undertaken from year 5 and every 5 years thereafter during which the structure and extent of reedbed will be reviewed. Monitoring of reedbed vegetation should pay particular attention to reed density, species composition, and the presence of transitional or mosaic habitats. Monitoring will comprise a botanical survey undertaken in June of each monitoring year following Phase 1 Habitat Survey methodology to map broad habitat types and extents. NVC survey methodology will be used for the parcels of habitats which were the focus of the NVC surveys prior to the Proposed Development (Stantec, 2025a). Photographic fixed-point photography will also be used. Combined, these survey approaches will provide an assessment of overall habitat extents and diversity, compared to the baseline surveys undertaken in 2024-2025. Key targets sought in these surveys will include identification of increased diversity within the Reedbed habitats, absence of undesirable or invasive species, reduction in areas of reedbed monoculture in favour of the more diverse marshy grassland or drier grassland areas and confirmation that scrub cover does not exceed 20% of the Site area.

6.3.4 With the proposed reinstatement and enhancement of the ditches proposed for the Site (see **Section 5.1** above), it is anticipated that the better functioning drainage features will result in a reduction in dominance of the reed monoculture within the Site and promotion / restoration of purple moor grass/rush pasture and/or other more floristic drier grasslands which were present at the time of the designation of the SINC.

6.3.5 Note that the extent of marshy grassland/drier grassland will be monitored in response to ditch reinstatement and diversion. This LHMP will be updated to incorporate specific management and monitoring prescriptions for grassland, as/when such habitats become a significant feature of the Site. An appropriate timeframe for review in this regard is considered to be at Year 5 of the LHMP period, following the first formal botanical monitoring survey of the Site.

Ditches

6.3.6 The management and monitoring of ditches within the Site are critical to maintaining suitable habitat for water vole (required under the Condition associated with the Water Vole licence for the Permitted Development works (RSK Biocensus, 2025a)) but will also support the broader ecological function of the wetland complex associated with the SINC. This section focuses on habitat-based management, while species-specific monitoring (including for water vole and other species) is addressed in **Section 6.4**.

6.3.7 All ditch management and monitoring activities will align with the requirements of the Water Vole Management Plan (RSK Biocensus, 2025a), which is a condition of the water vole licence issued for the Permitted Development works. However, the management approaches proposed are also expected to benefit a wider range of species and contribute to the overall habitat diversity and hydrological resilience of the Site.

6.3.8 Following the creation and planting of the diverted ditch, and the reinstatement or enhancement of retained ditches (as described in **Section 5.1**), ongoing management will aim to maintain ditches in good ecological condition. This includes:

- Rotational management of bankside vegetation (trees and scrub) within 5 m of the ditch edge. No more than one-third of the total ditch length will be managed in any one year.
- Rotational cutting of reed and marginal vegetation within the ditch channel to a height of 100–150 mm. Only one bank per ditch will be managed during each management event to retain habitat continuity. Cut material is to be piled on the banks up to a height of 1 m to provide habitat for reptiles and invertebrates.
- De-silting and rhizome removal on rotation, with no more than one-third of the ditch network treated in any one year. The target summer water depth is 0.5–1.2 m, subject to confirmation through the detailed drainage design.

6.3.9 All vegetation and silt management will be undertaken between September and February, to avoid disturbance to breeding birds, water voles, reptiles, and harvest mice. The frequency of the management activities for the ditches over the 30 year period is described and shown in **Appendix F and G**.

6.3.10 Water level monitoring within the ditches is a key requirement of the Water Vole Management Plan (RSK Biocensus, 2025) and will be used to inform adaptive management of the ditch network. Monitoring will be conducted at least once per season in each monitoring year, with a target minimum summer water depth of 0.5 m. Note that anticipated water depths are subject to confirmation of the detailed drainage design, taking into account Site topography, but will ideally to be in the range 0.5m-1.2m depth.

6.3.11 Monitoring of the water levels in the ditches will be undertaken in the same years as water vole habitat and population monitoring: Years 1–3, 5, 7, 10, and every 5 years thereafter for the duration of the Management Plan period (see **Section 6.4**).

6.3.12 If water levels are sustained >20 cm above or below the target range, a review of water control structures will be triggered. In addition to water depth, visual indicators of ditch health will be recorded, including:

- Flow conditions
- Presence of algal blooms

- Vegetation dieback or excessive growth
- Invasive or non-native species

6.3.13 Any adverse findings will prompt a review of management practices and remedial action requirements.

Scrub and Trees

6.3.14 The management and monitoring for scrub and trees will consider measures required to enable the successful establishment of the trees and scrub planted around the SUDS basin and along the access road to the north and to implement replacement planting and/or consider adaptive responses to habitat creation and management, should the initial planting in these locations fails.

6.3.15 The preceding section relating to ditch management describes management and monitoring approaches for scrub and trees associated with the ditches. There is also a need to consider the management and monitoring of scrub and trees across the rest of the Site, such that a balance is maintained between the extent of scrub and trees, as part of the mosaic of habitats associated with the J38 Wetland Complex SINC, and the reedbed and marshy grassland habitats. The monitoring will include monitoring of extent of scrub/young tree encroachment through fixed-point photography and/or GPS in the summer every 3 years. This would determine whether the scrub and young tree extent had increased such that above-ground removal (and stump treatment if required) should be undertaken in the following September-February inclusive (avoiding breeding bird season etc).

6.3.16 It is important to note that the retention of some scrub and trees is required to provide sheltered habitat linkages across the Site and to contribute to the overall diversity of habitats within the Site. For example, the maintenance of a mosaic of reedbed, scattered scrub and marshy grassland is ideal to support notable species known to be associated with the Site such as Cetti's warbler and harvest mouse and a diversity of invertebrate species. The decision regarding scrub clearance should therefore consider the extent of scrub and the results of species monitoring together (see **Section 6.4** below).

6.3.17 In addition to the clearance of young encroaching scrub and trees, where required, the management (e.g. through pollarding) of retained scrub/trees that are retained within the Site, where these are considered to be over-shading areas of interest, or where required for NGET operational reasons, will take place also September-February inclusive. These will be monitored and managed on the same schedule as the scrub encroachment extent monitoring described above (i.e. every 3 years).

6.4 Species Management and Monitoring.

6.4.1 The habitat management measures described above are primarily intended to benefit water vole populations, in accordance with the Water Vole Management Plan (RSK Biocensus, 2025a). However, it is anticipated that the proposed habitat creation and management will also provide benefits for a wider range of species. The monitoring outlined in this section therefore fulfils the requirements of the Water Vole Management Plan, while also incorporating additional monitoring for other species or species groups. This broader approach will help assess the success of the mitigation, compensation and enhancement measures provided for species within the Site and identify any need for adaptive management to support these other species, as well as water vole.

Water vole

6.4.2 The monitoring described for water vole aligns with the Water Vole Management Plan (RSK Biocensus, 2025a). Monitoring for water vole will occur across all ditches on the Site to determine presence or likely absence of the species. Monitoring will occur between April and September (inclusive) during the water vole breeding period when field evidence is most abundant. During each year of monitoring, surveys will comprise of two survey visits: one survey occurring between 15 April and 30 June, and a second survey visit between 01 July and 31 September (at least 8 weeks apart) in line with current survey protocols (Dean *et al* 2016).

6.4.3 Where evidence of water vole is found, an indication of relative population density will be estimated based on the recorded evidence of number of latrines per 100m of bank-side habitat, as described in Dean *et al.* 2016. The monitoring will take place in years 1-3, 5, 7, 10 and then every 5 years thereafter for the 30 year Management Plan period.

Bats

6.4.4 Bat monitoring should include monitoring of the Wildlife Tower provided for the scheme to confirm presence/absence of bats. This will take place in June of each monitoring year, with the species of any bats present, and their number, recorded. Any bat droppings present will be collected and sent for DNA analysis. Furthermore, activity monitoring for bats will take place through use of static detectors three times through the season in each monitoring year (covering the spring, summer and autumn periods). The static detectors will be deployed in locations to match, as far as possible, the pre-construction baseline surveys to enable a review of any changes in bat activity as a result of the Proposed Development and the management described in this Management Plan.

6.4.5 The bat monitoring will be conducted in years 3 and every 5 years subsequent for the during of the management plan period.

Reptiles

6.4.6 A low population of reptiles was recorded during baseline survey work. The monitoring proposed is a simple check of the reptile hibernacula (x2) constructed for reptiles to make sure that these features remain suitable for use by reptiles during the Management Plan period. This is considered a proportionate approach given the numbers of reptiles recorded during the 2025 survey and captured during the Early Works undertaken under NGET's Permitted Development rights (Stantec, 2025d).

Breeding birds

6.4.7 A breeding bird survey, undertaken in March-June in each monitoring year, with 6 survey visits spread across the survey period. During each survey visit breeding bird calls and activity will be noted with a view to establishing the breeding bird assemblage present and to give an indication of breeding pairs for each species. The monitoring will enable the determination of any changes in the breeding bird assemblage as a result of the management described in this Management Plan.

6.4.8 The breeding bird surveys will be conducted in years 5 and 10 of the Management Plan period.

Invertebrates

6.4.9 An invertebrate survey will be conducted with, in each monitoring year, invertebrate survey visits including the spring, summer and autumn periods. The survey protocol will follow that undertaken for the baseline survey work undertaken prior to commencement of the Proposed Development and will seek to determine the species present and their conservation value.

6.4.10 Invertebrate surveys will be conducted every 5 years through the Management Plan period.

Invasive species monitoring

6.4.11 Invasive species monitoring includes monitoring for invasive animal and plant species.

6.4.12 The Water Vole Management Plan (RSK Biocensus, 2025a) sets out the requirement for an American mink monitoring programme on an annual basis which is part of the condition of the water vole conservation licence for the Site. At least five mink rafts will be installed at suitable locations across the Site and used to record American mink activity. Rafts will be checked once a year and on an annual basis. Where evidence of American mink is discovered, a capture and control program of this non-native species will be undertaken by a specialist contractor. Records of American mink will be submitted to the National American Mink recording program through Mink Mapp (https://minkmapp.uk/)

6.4.13 No non-native invasive species of plants (as listed under Schedule 9 of the Wildlife and Countryside Act 1981, as amended) have been recorded within the Site. However, Japanese knotweed and Himalayan balsam are known to be present in the local area (within 1 km of the Site). Given the presence of these invasive species in the local area, and the network of watercourses containing flowing water to and from the Site, there is the potential for these species to appear in the future.

6.4.14 Monitoring for Japanese knotweed and Himalayan balsam (and any other non-native species) will occur alongside surveys during the habitat assessment. These surveys will principally concentrate on the ditches but will cover all other areas across the Site as well. If these species are recorded during the monitoring sessions, then appropriate control measures will be implemented to control and prevent further spread of these species. This monitoring will take place concurrently with the water-level monitoring (years 1-3, 5, 7, 10 and then every 5 years after that through the duration of the Management Plan period).

6.5 Remedial Measures

Remedial measures will be necessary where monitoring identifies that the objectives of the LHMP are not being achieved. Changes to management or other measures will be initially identified by NGET and their appointed ecologist and the LHMP will be amended and submitted to NPTC for approval prior to the implementation of any revised management prescriptions.

6.5.1 Any loss, damage, vandalism or other deleterious impact to habitats will require immediate intervention. Any appropriate measures shall be implemented within the appropriate timeframe and as advised by the NGET appointed Ecologist, Arboriculturist or other relevant professional carrying out the monitoring.

6.5.2 After the Initial 5-year period (years 1- 5 of this LHMP) the success of the management prescriptions will be reviewed. Any changes or additions to the approach to management or monitoring will need to be agreed by NPTC through an update to the LHMP. Where monitoring is suggesting that the attributes set out in **Table 6.1** of the LHMP are not being met, suggestions for remedial measures are to be submitted to NPTC for approval.

7 Conclusion

7.1.1 This LHMP sets out a comprehensive framework for the restoration, enhancement, and long-term management of the wetland complex and associated habitats within the Margam Substation Site. Developed in alignment with Planning Policy Wales and the Environment (Wales) Act 2016, the plan supports NGET's commitment to delivering a measurable Net Benefit for Biodiversity (NBB) through the described Site interventions.

7.1.2 The objectives outlined in this plan address the core ecological challenges identified through baseline surveys, including the need for improved water level management, control of scrub encroachment, and the enhancement of habitat features for protected and notable species. A robust programme of monitoring and adaptive management underpins these objectives, ensuring that ecological outcomes can be tracked, evaluated, and refined over time.

7.1.3 Implementation of this plan, alongside the complementary proposals for Margam Burrows, will contribute to the resilience of local ecosystems, support biodiversity targets, and demonstrate best practice in integrating ecological stewardship with essential infrastructure development. The plan will be reviewed on a five-year cycle, or sooner if required, to ensure it remains responsive to Site conditions, monitoring results, and evolving operational requirements.

8 References

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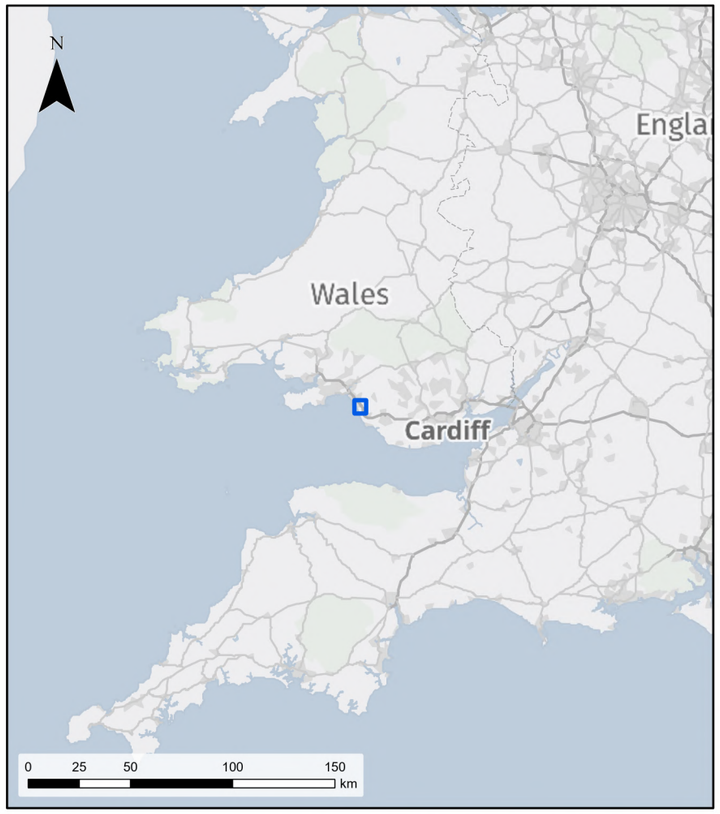
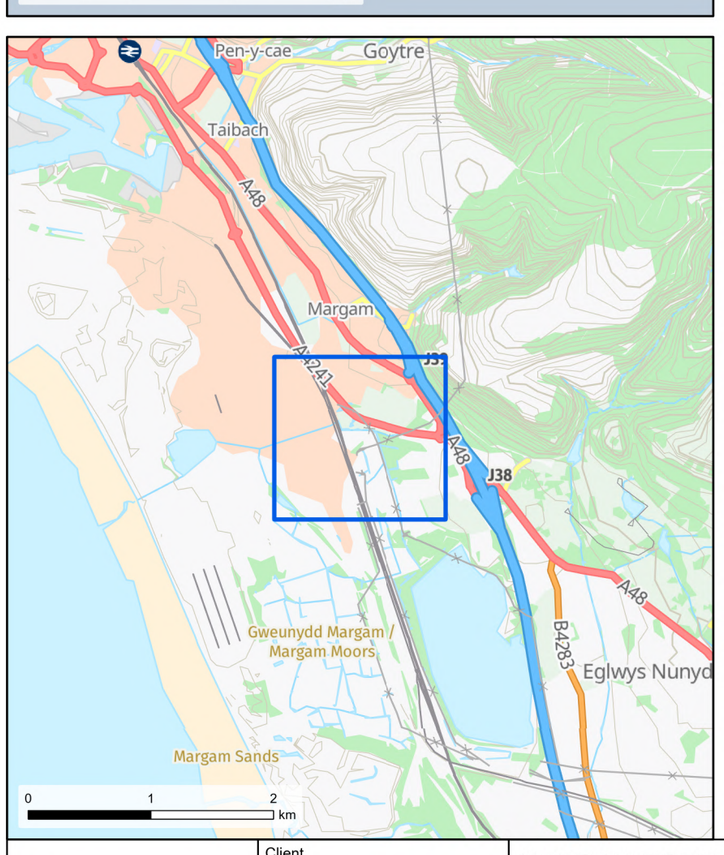
9 Figures





Stantec

Client

nationalgrid

MARGAM PORT TALBOT

Site Location Plan

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Contains data from OS Zoomstack

Date: 30/07/2025	
Drawn: TL	Checked: HE
Figure: 01	Rev: A

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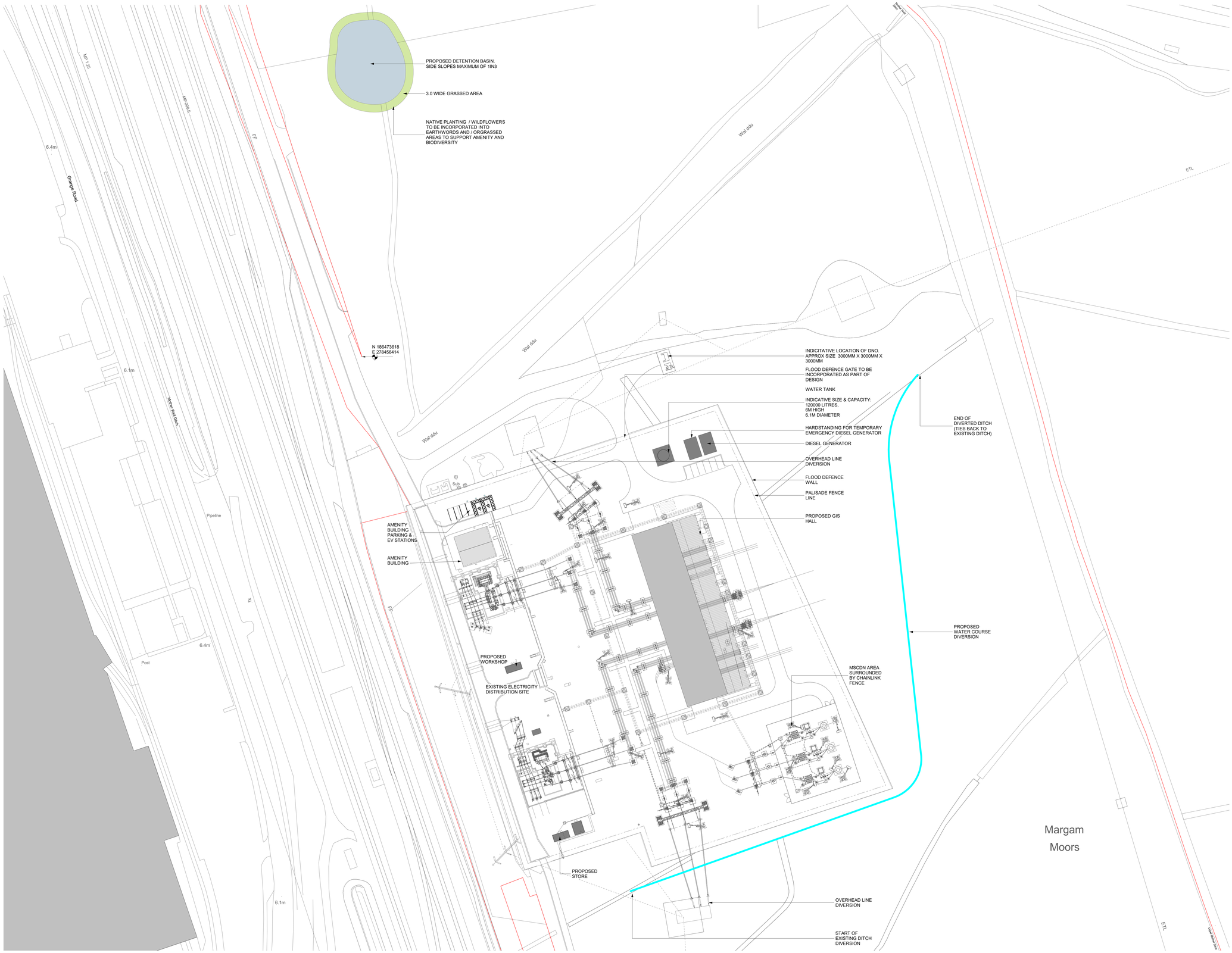
Appendix A Proposed Development



1 Margam Site Plan - Proposed
Scale: 1 : 500

5 0 5 10 15 20 25
SCALE 1:500 m

For Planning

GENERAL NOTES

ALL BAKERHICKS DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE GENERAL NOTES DRAWINGS, THE RELEVANT BAKERHICKS SPECIFICATIONS AND ALL RELEVANT ARCHITECTS AND SERVICE ENGINEER'S DRAWINGS AND SPECIFICATION.

ALL LEVELS ARE IN METRES ABOVE ORDINANCE DATUM.

ALL DIMENSIONS ARE IN MILLIMETRES (U.N.O)

DO NOT SCALE ANY ENGINEERING DRAWINGS OR DIGITAL DATA. IF IN DOUBT ASK. WORK TO FIGURED DIMENSIONS ONLY. ANY DISCREPANCIES IN DIMENSIONS ARE TO BE REFERRED TO ENGINEER BEFORE WORK IS PUT TO HAND.

THE CONTRACTOR MUST ADVISE THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND/OR SITE CONDITIONS / DIMENSIONS AT THE EARLIEST POSSIBLE OPPORTUNITY.

REVISION NOTES ARE FOR GUIDANCE ONLY. FOR SPECIFIC DETAILS, REFER TO CLOUDED AREA ON DRAWINGS FOR MOST RECENT AMENDMENTS.

ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR OR HIS SUBCONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.

ALL WORK HAS TO BE CARRIED OUT WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

ALL METHOD STATEMENTS SHOULD BE SUBMITTED TO THE ARCHITECT / CDM PRINCIPAL DESIGNER AND ENGINEER FOR REVIEW AT LEAST TWO WEEKS BEFORE CARRYING OUT THE SAID WORKS.

ALL PROPRIETARY PRODUCTS TO BE AS SPECIFIED OR EQUAL APPROVED.

KEYPLAN

SITE KEY

SITE BOUNDARY
SITE AREA:
153601.838 m2)
(15.36 Hectares)
(37.95 Acres)

BUILDINGS

PROPOED WATERCOURSE DIVERSION

NOTE:

DRAWING TO BE PRINTED IN COLOUR

Refer to Peat Management Strategy for location of location of peat burial locations.

P04	S3 - For Review & Comment. Updated Proposed Site Layout following Planning Consultant Feedback	OTr	OT/RC	30/06/25
P03	Issued for planning, comments incorporated following client feedback	GP	OTr / RC	24/04/25
P02	Issued For Planning	DSB	OTr / RW	10/02/25
P01	First Issue	DSB	RW / JK	03/02/25
Rev.	Description	Cre'd	Ch'k'd / App'd	Date

nationalgrid

Master Scheme No:	Sub-Scheme No:	Site:
101677		MARGAM

Scheme Name: Margam Substation

Document Title: Margam GIS Hall - Proposed Site Plan

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
DSB	30/01/25	RW	30/01/25	JK	30/01/25

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
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N

Planning Application Boundary
Existing Substation
Proposed Substation Extension
Proposed Access Road Improvements and Ditch Diversion
Proposed SUDS
Proposed Peat Burial Areas

Ffordd Yr Harbwr / Harbour Way
Heol Margam / Margam Road
Allotments
Bowling Green
Tennis Court
Other Sports Facility
A4241
A48
M4
Upper Mother Ditch
Tyn y Caeau
Longland House
Playing Field

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MARGAM PORT TALBOT
Planning Application Boundary and Proposed Permanent Development Footprint

0 250 500 m

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Figure: 00 | Rev: A

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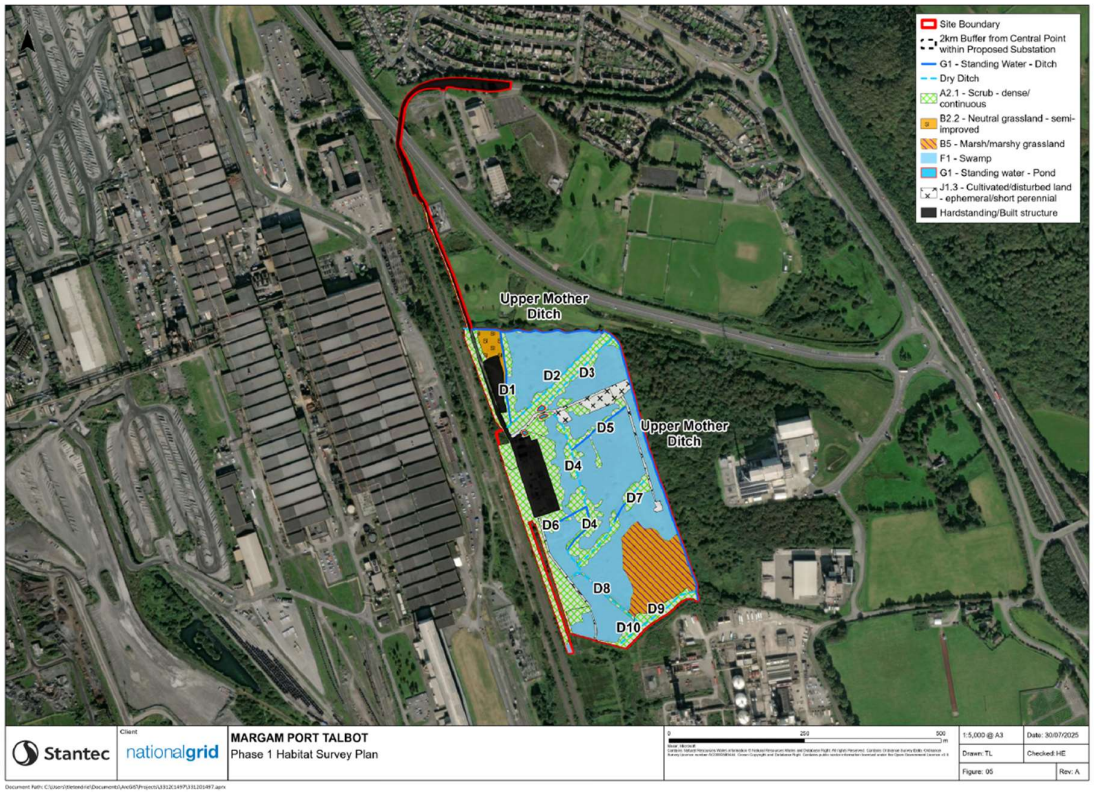
Appendix B Phase 1 Habitat Survey 2024-2025 vs Phase 1 Habitat Survey from 2009 Planning Application

B.1 Phase 1 Habitat Survey 2008

B.2 Phase 1 Habitat Survey 2024-2025

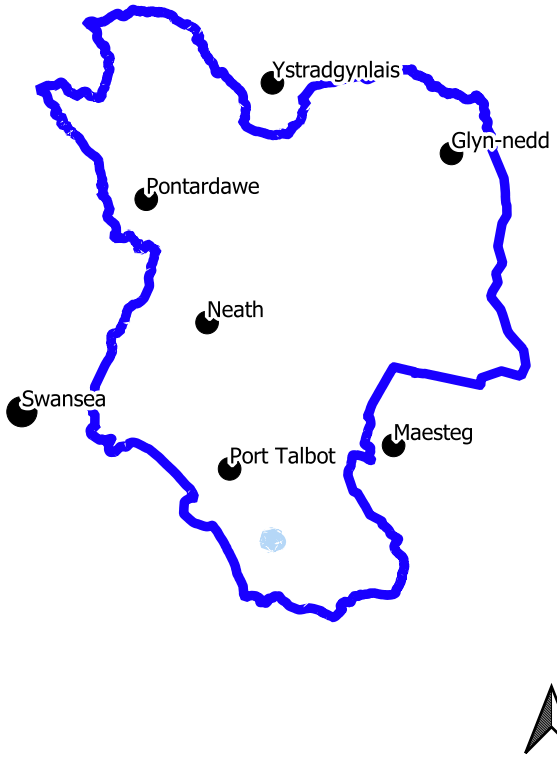


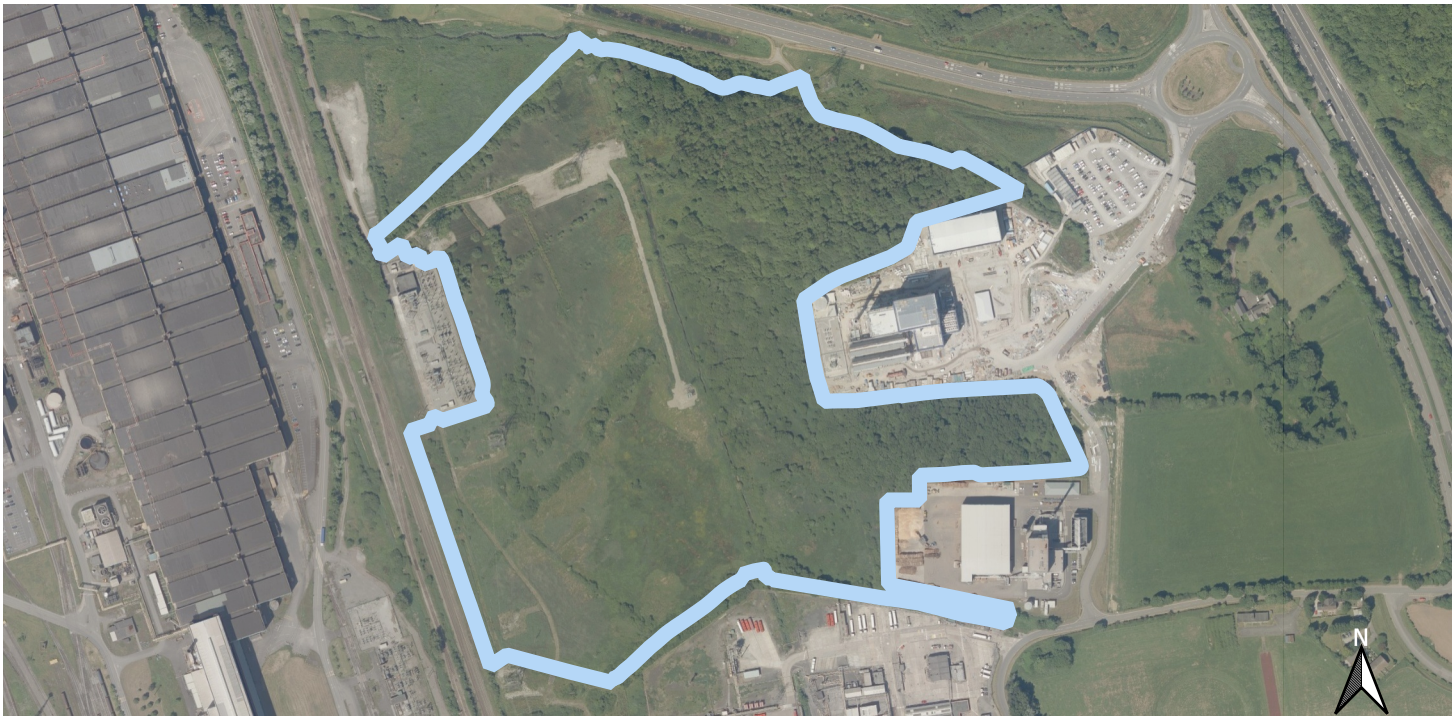
Appendix C J38 Wetland Complex SINC Designation

JUNCTION 38 WETLAND COMPLEX

Reference No: NPTSINC057
Ward: Margam
Grid ref at centre: SS7874586334
Area (ha): 20.47

Reason for selection:
H1:3 Native woodland
H9:2 Lowland Fen
H9:3 Purple moor-grass and rush pastures





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JUNCTION 38 WETLAND COMPLEX

Site Description:

This is a cohesive wetland site comprised of wet woodland, reed beds, ditches, and marshy grassland. Some drier areas support indicators of the neutral grassland NVC type MG5. Much is known about this site because it has been included in several planning applications over recent years. The site is located to the rear of Port Talbot Steelworks near Junction 38 of the M4 motorway. Margam Moors SSSI is approx 800m south west of the site, and is fairly well connected by the network of drains and ditches in the area. Eglwys Nunydd SSSI is about 750m directly south of the site and is designated due to the waterfowl populations it supports and as a SINC (NPTSINC056) it additionally includes the surrounding wetland and scrub habitats. The area is very wet but is occasionally grazed by cattle. There is a National Grid substation directly west of the site and high voltage power lines cross the site in several directions; resilience clearance works are undertaken under these pylons on a fairly regular basis.

Qualifying features

H1:3 Native woodland - A semi-natural woodland with a wet woodland component
H9:2 Lowland Fen
H9:3 Purple moor-grass and rush pastures 20/12

Important species

Species recorded: Water vole, Otter, Grass snake, Common lizard, Reed bunting, Cetti's warbler

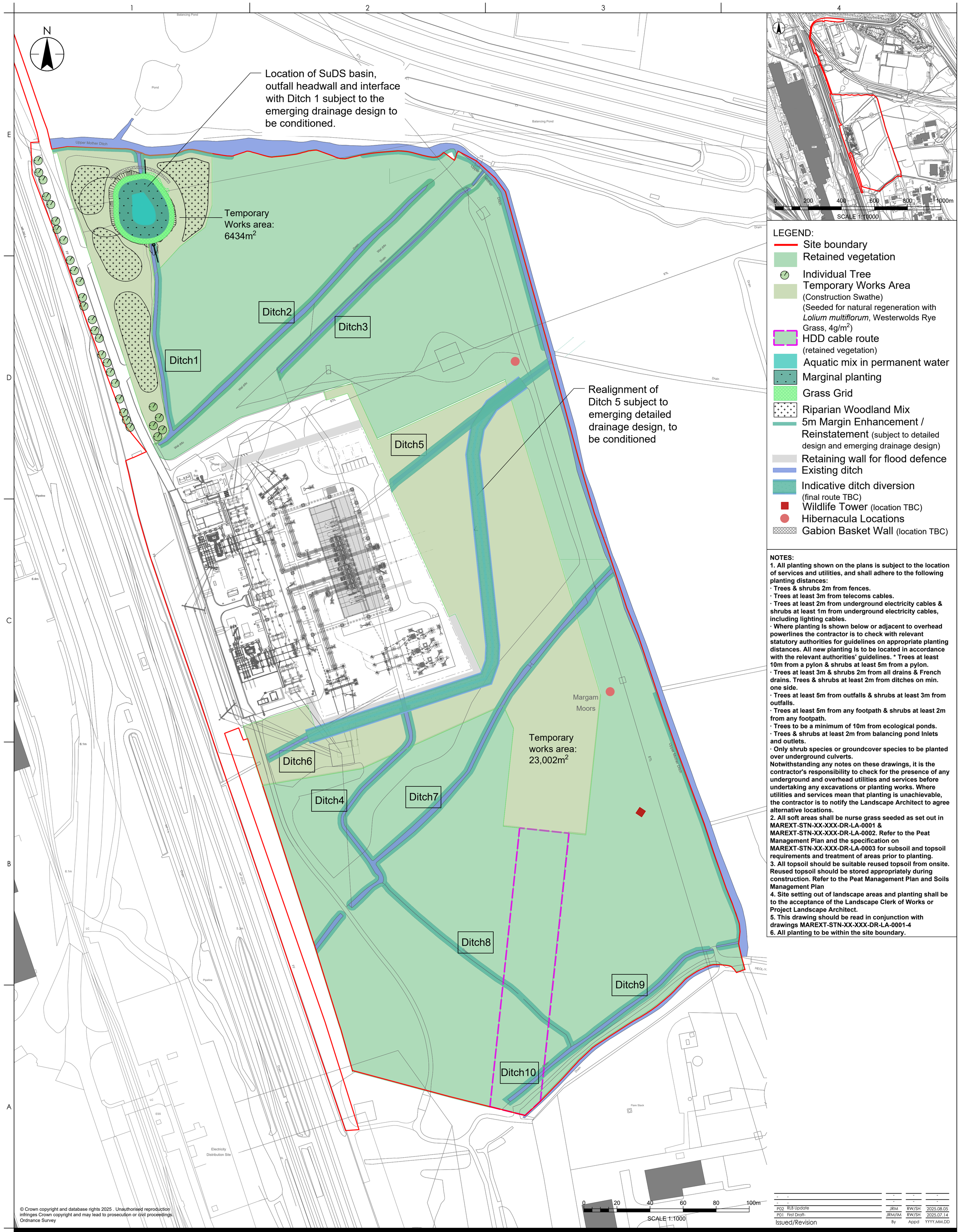
Management Recommendations

The western field may one day be managed by the Wildlife Trust as part of a package related to the proposed development of fields to the north. There is Rhododendron in the wet woodland which should be eradicated.

Last surveyed: Surveyor: Author: ER

To be read in conjunction with Wildlife Sites Guidance Wales (WBP 2008) and the NPT amendments. This area has been designated as a Site of Importance for Nature Conservation by Neath Port Talbot County Borough Council. This does not formally protect the site or place any restrictions upon the landowner. Neath Port Talbot Council's Countryside & Wildlife Team will endeavour to support and encourage activities that maintain and enhance the biodiversity interest of the land; where funding is available, funds may be provided to facilitate these activities. The information given is used to ensure that nature conservation is taken into account in planning decisions. The designation itself does not confer any rights of access to the site and places no restriction on the management of the land.

Appendix D Landscape and Habitat Strategy Plan and Landscape Designs.



LEGEND:

- Site boundary
- Retained vegetation
- Individual Tree
- Temporary Works Area (Construction Swathe) (Seeded for natural regeneration with *Lolium multiflorum*, Westerwolds Rye Grass, 4g/m²)
- HDD cable route (retained vegetation)
- Aquatic mix in permanent water
- Marginal planting
- Grass Grid
- Riparian Woodland Mix
- 5m Margin Enhancement / Reinstatement (subject to detailed design and emerging drainage design)
- Retaining wall for flood defence
- Existing ditch
- Indicative ditch diversion (final route TBC)
- Wildlife Tower (location TBC)
- Hibernacula Locations
- Gabion Basket Wall (location TBC)

NOTES:

1. All planting shown on the plans is subject to the location of services and utilities, and shall adhere to the following planting distances:
· Trees & shrubs 2m from fences.
· Trees at least 3m from telecoms cables.
· Trees at least 2m from underground electricity cables & shrubs at least 1m from underground electricity cables, including lighting cables.
· Where planting Is shown below or adjacent to overhead powerlines the contractor is to check with relevant statutory authorities for guidelines on appropriate planting distances. All new planting Is to be located in accordance with the relevant authorities' guidelines. * Trees at least 10m from a pylon & shrubs at least 5m from a pylon.
· Trees at least 3m & shrubs 2m from all drains & French drains. Trees & shrubs at least 2m from ditches on min. one side.
· Trees at least 5m from outfalls & shrubs at least 3m from outfalls.
· Trees at least 5m from any footpath & shrubs at least 2m from any footpath.
· Trees to be a minimum of 10m from ecological ponds.
· Trees & shrubs at least 2m from balancing pond Inlets and outlets.
· Only shrub species or groundcover species to be planted over underground culverts.
Notwithstanding any notes on these drawings, it is the contractor's responsibility to check for the presence of any underground and overhead utilities and services before undertaking any excavations or planting works. Where utilities and services mean that planting is unachievable, the contractor is to notify the Landscape Architect to agree alternative locations.
2. All soft areas shall be nurse grass seeded as set out in MAREXT-STN-XX-XXX-DR-LA-0001 & MAREXT-STN-XX-XXX-DR-LA-0002. Refer to the Peat Management Plan and the specification on MAREXT-STN-XX-XXX-DR-LA-0003 for subsoil and topsoil requirements and treatment of areas prior to planting.
3. All topsoil should be suitable reused topsoil from onsite. Reused topsoil should be stored appropriately during construction. Refer to the Peat Management Plan and Soils Management Plan
4. Site setting out of landscape areas and planting shall be to the acceptance of the Landscape Clerk of Works or Project Landscape Architect.
5. This drawing should be read in conjunction with drawings MAREXT-STN-XX-XXX-DR-LA-0001-4
6. All planting to be within the site boundary.

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-	-	-	-	-
P02	RLB Update	JRM	RW/SH	2025.08.05
P01	First Draft-	JRM/IM	RW/SH	2025.07.14
Issued/Revision		By	Appd	YYYY.MM.DD

Notes:
The position of ditches and other features within this plan are approximate and have been transposed from plans submitted by RSK as part of the Water Vole Licence Application in 2024/2025.

Common plant species considered of value to water voles are provided, following those described in the Margam Substation Water Vole Licence Method Statement. To be discussed and agreed with NPT. The emerging drainage design will influence the final landscape detailed plan, to be conditioned.

Issue Status

S5 - FOR REVIEW AND ACCEPTANCE

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Client/Project Logo: nationalgrid

Project:
Margam
Port Talbot

JRM/IM	RW	RW/SH	2025.08.07
Dwn	Dsgn.	Chkd.	YYYY.MM.DD

Title
FIGURE L9
LANDSCAPE PLAN

Issued/Revision	By	Appd	YYYY.MM.DD

Project No. 331201497
A1 Scale 1:1000
Revision **P02**
Drawing No. **MAREXT-STN-XX-XXX-DR-LA-0001**

Issued/Revision	By	Appd	YYYY.MM.DD

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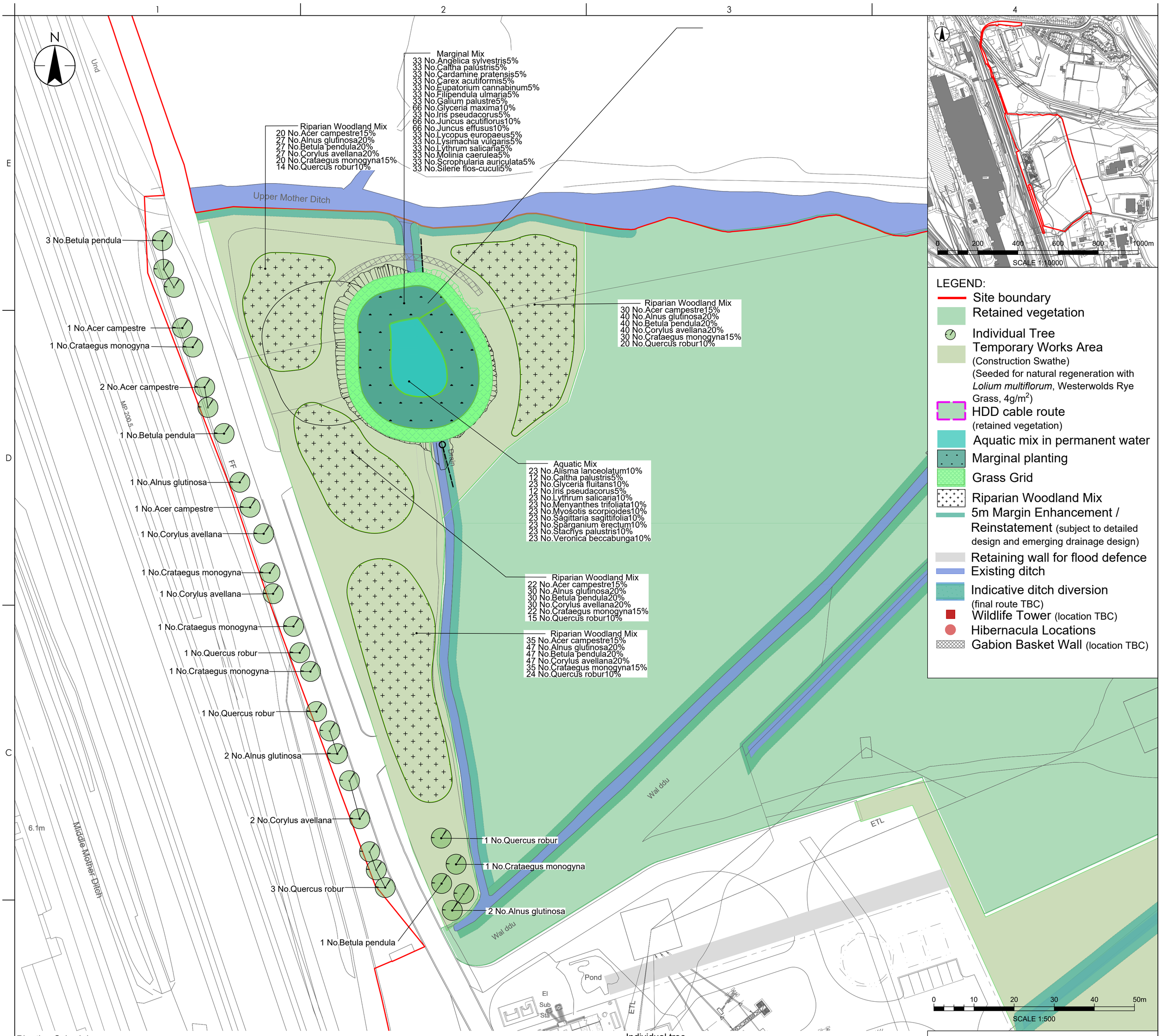

Planting Schedule

Aquatic Mix

Number	Abbreviation	Species	Specification	Density	Pot Size	Percentage Contribution
23	Al la	Alisma lanceolatum	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
12	Ca pa	Caltha palustris	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
23	Gl fl	Glyceria fluitans	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
12	Ir ps	Iris pseudacorus	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
23	Ly sa	Lythrum salicaria	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	Me tr	Menyanthes trifoliata	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	My sc	Myosotis scorpioides	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	Sa sa	Sagittaria sagittifolia	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	Sp er	Sparganium erectum	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	St pa	Stachys palustris	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
23	Ve be	Veronica beccabunga	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%

Total :231

Marginal Mix

Number	Abbreviation	Species	Specification	Density	Pot Size	Percentage Contribution
33	An sy	Angelica sylvestris	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ca pa	Caltha palustris	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ca pr	Cardamine pratensis	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ca ac	Carex acutiformis	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Eu ca	Eupatorium cannabinum	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Fi ul	Filipendula ulmaria	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ga pa	Galium palustre	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
66	Gl ma	Glyceria maxima	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
33	Ir ps	Iris pseudacorus	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
66	Ju ac	Juncus acutiflorus	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
66	Ju ef	Juncus effusus	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	10%
33	Ly eu	Lycopus europaeus	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ly vu	Lysimachia vulgaris	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Ly sa	Lythrum salicaria	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Mo ca	Molinia caerulea	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Sc au	Scrophularia auriculata	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%
33	Si fl	Silene flos-cuculi	Full Pot: Sept to April planting: British Native-origin: C1/m²		0.5L	5%

Total :660

Riparian Woodland Mix

Number	Abbreviation	Species	Specification	Density	Percentage Contribution
107	Ac ca	Acer campestre	1+1: Transplant - seed raised: B	2Ctr	15%
144	Al gl	Alnus glutinosa	1+1: Transplant - seed raised: B	2Ctr	20%
144	Be pe	Betula pendula	1+1: Transplant - seed raised: B	2Ctr	20%
144	Co av	Corylus avellana	1+2: Transplant - seed raised: Branched: 4 brks: B	2Ctr	20%
107	Cr mo	Crataegus monogyna	1+2: Transplant - seed raised: B	2Ctr	15%
73	Qu ro	Quercus robur	1+2: Transplant - seed raised: B	2Ctr	10%

Total :719

Individual tree

Number of Plants	Species	Height
5	Crataegus monogyna	100-125cm
5	Betula pendula	80-100cm
5	Alnus glutinosa	175-200cm
6	Quercus robur	175-200cm
4	Corylus avellana	80-100cm
4	Acer campestre	150-175cm

Total :29

Grass Nurse Seed: Lolium multiflorum, Westerwolds Rye Grass, sowing rate at 4g/m²
Total area: 29,436m²

Grass Grid
Total Area: 385m²

NOTES:

1. All planting shown on the plans is subject to the location of services and utilities, and shall adhere to the following planting distances:
· Trees & shrubs 2m from fences.
· Trees at least 3m from telecoms cables.
· Trees at least 2m from underground electricity cables & shrubs at least 1m from underground electricity cables, including lighting cables.
· Where planting Is shown below or adjacent to overhead powerlines the contractor is to check with relevant statutory authorities for guidelines on appropriate planting distances. All new planting Is to be located in accordance with the relevant authorities' guidelines. * Trees at least 10m from a pylon & shrubs at least 5m from a pylon.
· Trees at least 3m & shrubs 2m from all drains & French drains. Trees & shrubs at least 2m from ditches on min. one side.
· Trees at least 5m from outfalls & shrubs at least 3m from outfalls.
· Trees at least 5m from any footpath & shrubs at least 2m from any footpath.
· Trees to be a minimum of 10m from ecological ponds.
· Trees & shrubs at least 2m from balancing pond Inlets and outlets.
· Only shrub species or groundcover species to be planted over underground culverts.
Notwithstanding any notes on these drawings, it is the contractor's responsibility to check for the presence of any underground and overhead utilities and services before undertaking any excavations or planting works. Where utilities and services mean that planting is unachievable, the contractor is to notify the Landscape Architect to agree alternative locations.
2. All soft areas shall be nurse grass seeded as set out in MAREXT-STN-XX-XXX-DR-LA-0001 & MAREXT-STN-XX-XXX-DR-LA-0002. Refer to the Peat Management Plan and the specification on MAREXT-STN-XX-XXX-DR-LA-0003 for subsoil and topsoil requirements and treatment of areas prior to planting.
3. All topsoil should be suitable reused topsoil from onsite. Reused topsoil should be stored appropriately during construction. Refer to the Peat Management Plan and Soils Management Plan
4. Site setting out of landscape areas and planting shall be to the acceptance of the Landscape Clerk of Works or Project Landscape Architect.
5. This drawing should be read in conjunction with drawings MAREXT-STN-XX-XXX-DR-LA-0001-4
6. All planting to be within the site boundary.

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Issued/Revision	By	Appd	YYYY.MM.DD
- -	-	-	-
- -	-	-	-
P02 RLB Update	JRM	RW/SH	2025.08.05
P01 First Draft-	JRM/IM	RW/SH	2025.07.14

Notes:
The position of ditches and other features within this plan are approximate and have been transposed from plans submitted by RSK as part of the Water Vole Licence Application in 2024/2025.

Common plant species considered of value to water voles are provided, following those described in the Margam Substation Water Vole Licence Method Statement. . To be discussed and agreed with NPT. The emerging drainage design will influence the final landscape detailed plan, to be conditioned.

Issue Status

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Client/Project Logo: nationalgrid

Project:
Margam

Port Talbot

Dwn	Dsgn.	Chkd.	YYYY.MM.DD
JRM/IM	RW	RW/SH	2025.08.07

Title
FIGURE L7
LANDSCAPE MITIGATION AREA PLANTING PLAN

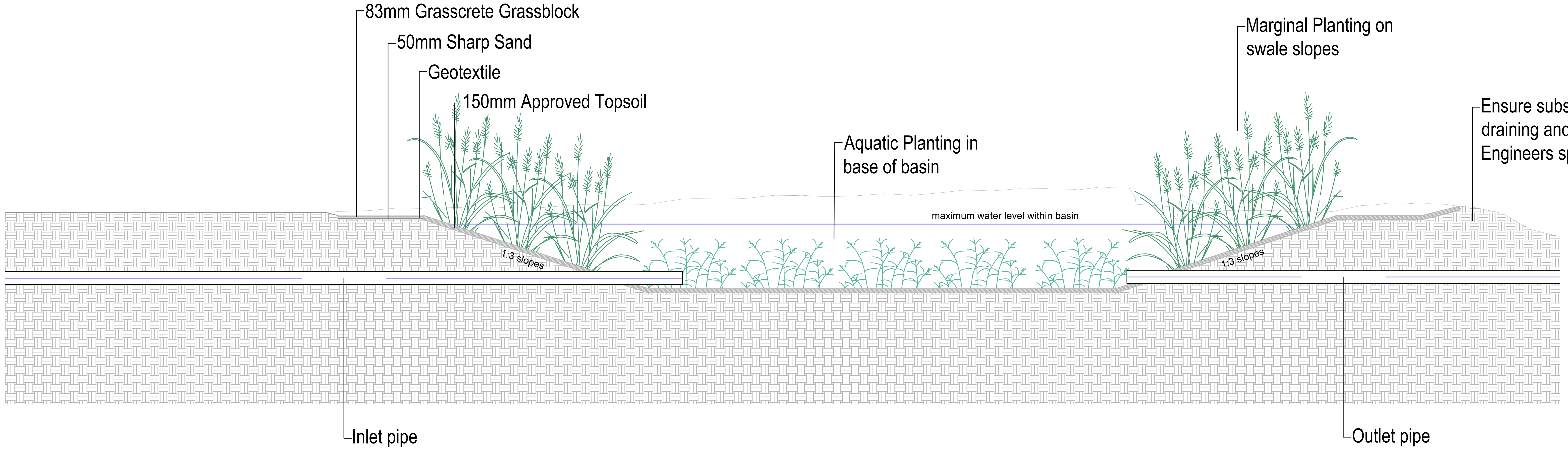
Project No.
331201497

A1 Scale
1:500

Revision
P02

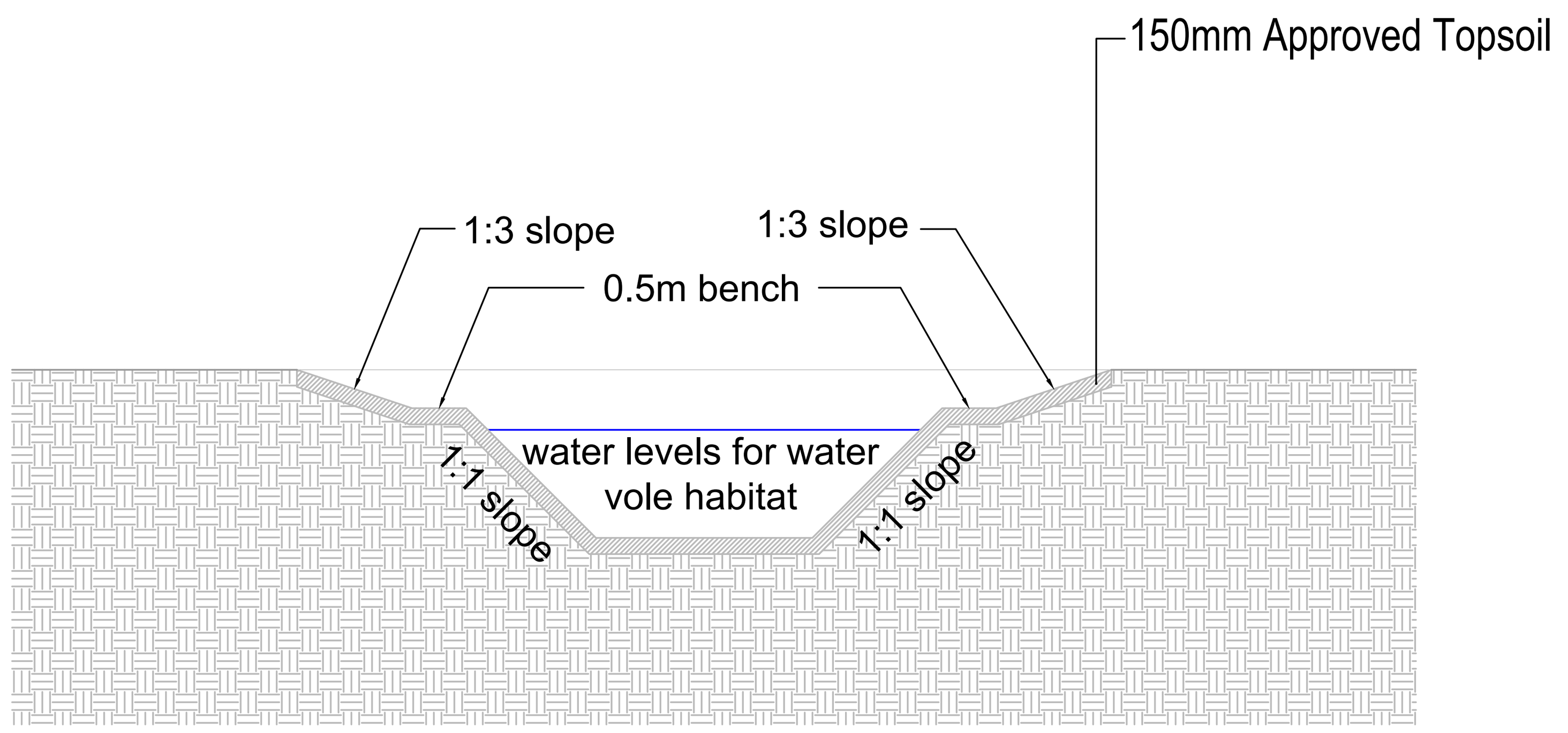
Drawing No.
MAREXT-STN-XX-XXX-DR-LA-0002

ORIGINAL SHEET - ISOA1 c:\users\jrainfordmendez\stantec\margam port talbot - landscape and visual\drawings\landscape strategy plan\331201497 landscape strategy - pond plan sections construction detail-rainfordj-lt-macraei-lt-macraei-lt-05.08.2025
Plotted: 07.08.2025 2025.08.07 10:32:11 AM By: Rainford Mendez, Jenifer



Section B-B

SCALE 1:100



Sections vary across the ditch reinstatement scope

Typical Ditch Section (not to scale)

Note:
Final ditch design, Suds location and diversion of Ditch 5 to be established by the detailed design and subject to the emerging drainage design, to be conditioned.

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Outline Specification

General Implementation Notes

Refer to the Arboriculturalist's information for details of existing vegetation to be retained and protection measures.
Drawing to be read in conjunction with Ecologist's information and any prescriptions therein.
Vegetation removal should be undertaken outside of bird nesting season, which is March to August inclusive, unless supervised by a suitably experienced ecologist.
All work is to be undertaken in accordance with best practice, relevant British Standards and manufacturer's guidance, where applicable.
Products and materials specified are to be used or similar and approved.
All planting to be undertaken in accordance with BS4428 Code of Practice for General Landscape Operations.
Preparation, planting and mulching materials must be free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
Use only machinery and tools suitable for the site conditions and the work to be carried out.

Times of Year for Planting

Follow the provisions set out in the LMMP, but generally:
Deciduous trees and shrubs: Late October to late March.
Dried bulbs, corms and tubers: September/ October.
Planting is to be carried out in suitable weather. Stock shall not be planted in conditions of drought, hot sunshine, frost, frozen ground, strong wind or heavy rainfall that renders the soil waterlogged or in sticky condition. Wherever possible, planting should take place when the weather is dull and the ground is moist and workable.
All plants to be protected from wind exposure at all times.

Site Clearance

Areas to be planted shall be free from old foundations, concrete bases and other similar obstructions. All coarse rubble, stone, and artifacts greater than 75mm in diameter exposed by ripping operations shall be removed to a licensed facility.
In areas to be planted, all grass and other herbaceous vegetation shall be cut to a height of between 50 mm and 75 mm and the arisings removed.

Subsoil

Subsoil grading of the site shall leave landscape areas with smooth flowing contours to achieve the specified finished levels when topsoiled. Prior to topsoiling, subsoil formation should be ripped and loosened to a minimum depth of 450mm except for areas with Root Protection Areas as shown on the Arboriculturalist's drawings.

Topsoil

All topsoil is to be reused from within the site to preserve the existing seed bed.
Topsoil must be free from weeds and roots, clay lumps, non-soil materials, brick or other building materials, foreign matter and chemical contamination. Topsoil should be spread evenly over areas to be seeded and planted. Minimum topsoil depths after settlement shall be 300mm. Topsoil shall be spread in layers not exceeding 150mm and firm each layer before spreading the next. At the time of laying, both material and weather should be reasonably dry. Soil levels should be married in with existing soil levels.

Cultivation

Cultivate the soil of all areas prior to seeding and planting. A few days before planting, but in suitably dry weather and ground conditions, cultivate top 300mm of all tree planting areas, using suitable plant to loosen, aerate and break up the soil into particles of 2-8mm. Leave surface regular and even, with levels as required. Remove weeds, perennial weed roots and undesirable material brought to the surface including stones and clods larger than 50mm in any dimension, roots, tufts of grass and foreign matter. Final cultivation prior to seeding topsoil shall be brought to a fine tilth by approved mechanical means or by hand raking.

Weed Treatment

The contractor shall prevent weeds from seeding and perennial weeds from becoming established, by applying a suitable herbicide (non-residual), allowing a period of time to elapse as recommended by manufacturer before cultivation.
Specification of Plant Material
All plants are to be local provenance wherever possible, from a local supplier and from sources with soil and climatic conditions similar to those prevailing on site.
All plants to be healthy, hardened-off and with good fibrous root systems and to comply with the requirements of BS3936 Specification for Nursery Stock.
All plant material to be supplied in accordance with the HTA National Plant Specification.
The code for Plant Handling published by C.P.S.E. shall be strictly adhered to.
Substitutions to plant material will only be acceptable if approved by the Landscape Architect.

Planting Shrubs and Herbaceous Material

All individual plants shall be notch planted, making a vertical 'I', 'L', 'T' or 'H' notch, to accommodate fill depth of roots. Notch should be closed following planting, using root collar at ground level, and soil should be firmed.
Planting of species should be undertaken at 0.5/m2, planted in random groups of no less than 3 and no more than 7 of the same species, ensuring that no groups are aligned in any one direction.
Larger specimens, for example more than 1m in height, to be pit-planted with with sufficiently large pit to accommodate root system without bending roots (minimum size of 150mm wider than roots when fully spread and 200mm deep). The base of each pit to be broken up to 150mm with all topsoil thoroughly broken up from the carefully excavated material, and any soil additives and/or ameliorants added in accordance with best practice, prior to backfilling.
Trees shall be secured in position using round timber stakes (top diameter of 50-75 mm), peeled of bark, straight in length and free of snags, pests and diseases, with adjustable 25mm tree ties, made of black PVC or reinforced rubber
Stakes for all trees shall be firmly driven and positioned into the tree planting pit before planting to a minimum depth of 300 mm below the bottom of the pit.
The stake shall be positioned off centre on the prevailing windward side of the tree as near to the tree as possible but shall not interfere with the free movement of the branches and shall cause no rubbing.

General Watering

All plants to be soaked in water for several hours prior to planting, to be well watered in and as necessary to ensure healthy establishment.
Use a fine rose where appropriate to avoid damage or displacing plants or soil.
Water as necessary to ensure establishment and continued thriving of planting.
Water Restrictions: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

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Notes

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

1. All planting shown on the plans is subject to the location of services and utilities, and shall adhere to the following planting distances:
· Trees & shrubs 2m from fences.
· Trees at least 3m from telecoms cables.
· Trees at least 2m from underground electricity cables & shrubs at least 1m from underground electricity cables, including lighting cables.
· Where planting Is shown below or adjacent to overhead powerlines the contractor is to check with relevant statutory authorities for guidelines on appropriate planting distances. All new planting Is to be located in accordance with the relevant authorities' guidelines. * Trees at least 10m from a pylon & shrubs at least 5m from a pylon.
· Trees at least 3m & shrubs 2m from all drains & French drains. Trees & shrubs at least 2m from ditches on min. one side.
· Trees at least 5m from outfalls & shrubs at least 3m from outfalls.
· Trees at least 5m from any footpath & shrubs at least 2m from any footpath.
· Trees to be a minimum of 10m from ecological ponds.
· Trees & shrubs at least 2m from balancing pond Inlets and outlets.
· Only shrub species or groundcover species to be planted over underground culverts.
Notwithstanding any notes on these drawings, it is the contractor's responsibility to check for the presence of any underground and overhead utilities and services before undertaking any excavations or planting works. Where utilities and services mean that planting is unachievable, the contractor is to notify the Landscape Architect to agree alternative locations.
2. All soft areas shall be nurse grass seeded as set out in MAREXT-STN-XX-XXX-DR-LA-0001 & MAREXT-STN-XX-XXX-DR-LA-0002. Refer to the Peat Management Plan and the specification below for subsoil and topsoil requirements and treatment of areas prior to planting.
3. All topsoil should be suitable reused topsoil from onsite. Reused topsoil should be stored appropriately during construction. Refer to the Peat Management Plan
4. Site setting out of landscape areas and planting shall be to the acceptance of the Landscape Clerk of Works or Project Landscape Architect.
5. This drawing should be read in conjunction with drawings MAREXT-STN-XX-XXX-DR-LA-0001 & MAREXT-STN-XX-XXX-DR-LA-0002
6. All planting to be within the site boundary.

Issued/Revision		By	Appd	YYYY.MM.DD
-	-	-	-	-
-	-	-	-	-
P02	RLB Update	JRM	RW/SH	2025.08.05
P01	First Draft-	JRM/IM	RW/SH	2025.07.14

Issued/Revision	By	Appd	YYYY.MM.DD
P01 FIRST ISSUE	ND	SH	2025.07.14

Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
KM	KM	RW	2025.07.14

Issue Status

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Client/Project Logo

nationalgrid

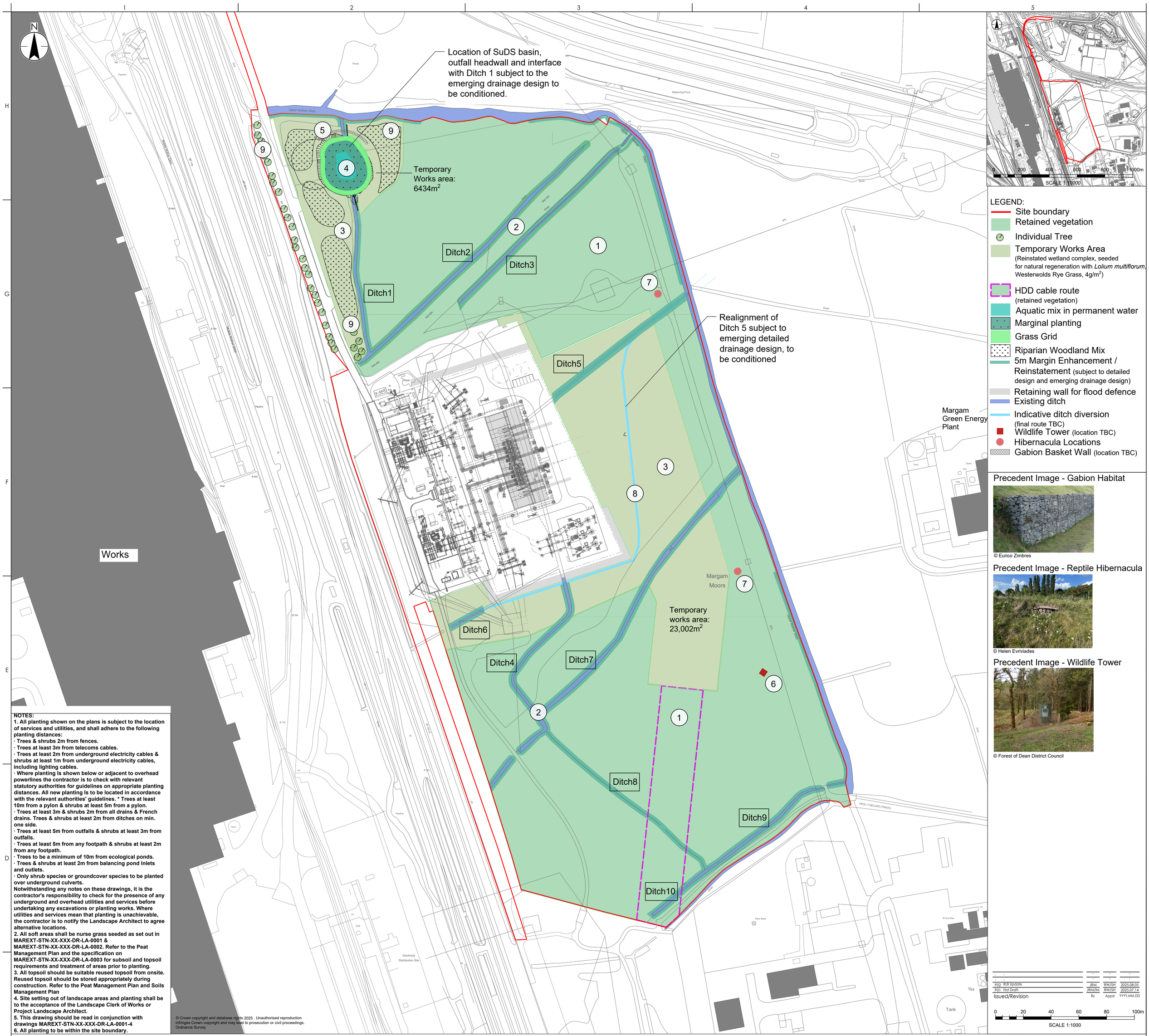
Client/Project
National Grid

Margam, Port Talbot

Title
Margam SuDS and Ditch Indicative Sections and Specification

Project No.	A1 Scale
331201497	1:100

Revision	Drawing No.
P01	MAREXT-STN-XX-XXX-DR-LA-0003



LEGEND:
- Site boundary
- Retained vegetation
- Individual Tree
- Temporary Works Area (Reinstated wetland complex, seeded for natural regeneration with *Lolium multiflorum*, Westerwolds Rye Grass, 4g/m²)
- HDD cable route (retained vegetation)
- Aquatic mix in permanent water
- Marginal planting
- Grass Grid
- Riparian Woodland Mix
- 5m Margin Enhancement / Reinstatement (subject to detailed design and emerging drainage design)
- Retaining wall for flood defence
- Existing ditch
- Indicative ditch diversion (final route TBC)
- Wildlife Tower (location TBC)
- Hibernacula Locations
- Gabion Basket Wall (location TBC)

Precedent Image - Gabion Habitat

© Eurico Zimbres

Precedent Image - Reptile Hibernacula

© Helen Evriviades

Precedent Image - Wildlife Tower

© Forest of Dean District Council

NOTES:
1. All planting shown on the plans is subject to the location of services and utilities, and shall adhere to the following planting distances:
· Trees & shrubs 2m from fences.
· Trees at least 3m from telecoms cables.
· Trees at least 2m from underground electricity cables & shrubs at least 1m from underground electricity cables, including lighting cables.
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· Trees at least 3m & shrubs 2m from all drains & French drains. Trees & shrubs at least 2m from ditches on min. one side.
· Trees at least 5m from outfalls & shrubs at least 3m from outfalls.
· Trees at least 5m from any footpath & shrubs at least 2m from any footpath.
· Trees to be a minimum of 10m from ecological ponds.
· Trees & shrubs at least 2m from balancing pond inlets and outlets.
· Only shrub species or groundcover species to be planted over underground culverts.
Notwithstanding any notes on these drawings, it is the contractor's responsibility to check for the presence of any underground and overhead utilities and services before undertaking any excavations or planting works. Where utilities and services mean that planting is unachievable, the contractor is to notify the Landscape Architect to agree alternative locations.
2. All soft areas shall be nurse grass seeded as set out in MAREXT-STN-XX-XXX-DR-LA-0001 & MAREXT-STN-XX-XXX-DR-LA-0002. Refer to the Peat Management Plan and the specification on MAREXT-STN-XX-XXX-DR-LA-0003 for subsoil and topsoil requirements and treatment of areas prior to planting.
3. All topsoil should be suitable reused topsoil from onsite. Reused topsoil should be stored appropriately during construction. Refer to the Peat Management Plan and Soils Management Plan
4. Site setting out of landscape areas and planting shall be to the acceptance of the Landscape Clerk of Works or Project Landscape Architect.
5. This drawing should be read in conjunction with drawings MAREXT-STN-XX-XXX-DR-LA-0001-4
6. All planting to be within the site boundary.

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P02	RLB Update	JRM	RW/SH	2025.08.05
P01	First Draft-	JRM/IM	RW/SH	2025.07.14
Issued/Revision		By	Appd	YYYY.MM.DD

0 20 40 60 80 100m
SCALE 1:1000

KEY:

1) Retained Vegetation: Works areas have been minimised to reduce permanent and temporary impacts on retained areas of vegetation. The retained areas of vegetation will be managed and monitored to contribute to the delivery of Net Biodiversity Benefits for the scheme, whilst being mindful of National Grids ongoing operational requirements.

2) Managed vegetation at ditches: Across the retained areas of vegetation, habitat creation and enhancement works will take place alongside the ditches. Whilst this is primarily targeted to benefit water vole (see Margam Substation Water Vole Licence Method Statement), it is anticipated that the habitat creation and enhancement works proposed for the ditches will also overall benefit the habitat diversity within the site through allowing the ditch network to function and drain the site more effectively than currently. It is considered that this will enable the drier and more floristic marshy grassland to come back and reduce the dominance of the reed and large-sedge dominated areas of the existing site. Management of ditches to include the following measures:

- removal of encroaching scrub from banks and 5 m back from the watercourse
- removal of shrubs from banks and up to 5 m back, and removal of stumps
- retention of individual mature trees, to cover less than 10% of the ditch
- where present and where appropriate, the pollarding of more mature willow
- dredging of water channel up to a depth of 1.2a
- where needed, the planting of banks and marginal shelf with species of value to water voles as per the Marginal Mix detailed on drawing MAREXT-STN-XX-XXX-DR-LA-0002

3) Natural regeneration in construction swathe areas: Following construction, areas of land compacted by track matting, vehicles and working platforms would undergo subsoil aeration initially followed by sowing of nurse grass seed such as Westerwolds Ryegrass *Lolilium mulitflorum* or as agreed with Neath Port Talbot Council to encourage early establishment of natural regeneration processes. These areas would be allowed to succeed naturally with minimal management, thereby creating an open mosaic habitat, assimilating within the existing Site habitat over time.

4) SuDS with marginal planting: SuDS area (to be established following removal of the welfare compound) with suitable marginal planting to encourage use by aquatic wildlife and potentially oxygenate standing water.

5) Gabion basket CO_2 gardens: Multi-functional refugia to be created through the re-use of waste materials (clean slag) provided by Tata Steel to be used within 1m3/ gabion baskets - mesh size to be determined by size of slag rocks/stones provided by Tata for the fill along with incorporation of logs/cinder "bee" bricks etc. The locations for these features are to be agreed with the Contractor and with Neath Port Talbot Council but options being considered include: along the access road to the north within National Grid land ownership and in areas of higher ground within the site (e.g. around the proposed SUDS pond) to avoid waterlogging.

6) Wildlife Tower: 1 no. appropriate for this site, Location is approximate and to be confirmed, along with the design type, to be agreed with NPT. The stand-alone wildlife towers could provide resource for bats (e.g. bat boxes on a pole to provide suitable roosting provision for crevice-dwelling bat species which are currently the most encountered species recorded during activity surveys; there is no current roosting opportunities for this species group within the National Grid land) Pole Mounted Roost Maternity Single/Double Bat Box or Eco Rocket Bat Box | Wildlife Services. Alternatively, the wildlife tower could comprise a multi-functional tower incorporating features for nesting birds and/or roosting bats in addition to features for invertebrates (e.g. How to build a wildlife tower - The Barn Owl Trust).

7) Reptile & Amphibian Hibernacula:
Locations of the reptile hibernacula have been provided by National Grid's contractor. The reptile hibernacula have been constructed prior to "Early Works" undertaken under Permitted Development. The Early Works Reptile Mitigation Strategy (RSK, 2025) described the reptile hibernaculum as follows: "to comprise a mix of stone and logs, topped with soil and turf (or be seeded). Each should comprise minimum size: 4 m (length) x 2 m (width) x 1.5 m (height) x up to 0.5 m (below-ground), and should be oriented east-west, to create a south-facing bank and constructed above-ground to avoid potential flooding.

8) Indicative Ditch Diversion: the permanent footprint of the proposed substation affects existing ditches. The ditches will be realigned and reinstated to include:

- creation of permanent water channel to a depth of 1.2 m and 2 to 3 m wide (as appropriate to the levels within the Site)
- profiling of banks to 45 degree angle
- planting of banks and marginal shelf with species of value to water voles

Indicative species list of planting suitable for SuDS / ditches:
(As described in the Margam Substation Water Vole Licence Method Statement – detailed specification to be agreed with relevant parties – see Notes)

Reeds; *Glyceria maxima* (Reed Sweet-grass), *Glyceria fluitans* (Floating Sweet-grass)

Aquatic plants; *Sagittaria sagittifolia* (Arrowhead), *Alisma plantago-aquatica* (Water-plantain), *Ceratophyllum demersum* (Hornwort), *Myriophyllum spicatum* (Spiked Water-milfoil), *Menyanthes trifoliata* (Bogbean), *Schoenoplectus lacustris* (Common Club-rush), Water-cress), *Caltha palustris* (Marsh- marigold)

Marginal plants; *Iris pseudacorus* (Yellow Iris), *Caltha palustris* (Marsh-marigold), *Cardamine pratensis* (Cuckooflower), *Filipendula ulmaria* (Meadowsweet), *Comarum palustre* (Marsh cinquefoil), *Lythrum salicaria* (Purple-loosestrife), *Apium nodiflorum* (Fool's Water-cress), *Angelica sylvestris* (Wild Angelica), *Galium palustre* (Common Marsh-bedstraw), *Myosotis scorpioides* (Water Forget-me-not), *Mentha aquatica* (Water Mint), *Veronica beccabunga* (Brooklime), *Valeriana officinale* (Common Valerian), *Lycopus europaeus* (Gypsywort)

Bankside rushes & sedge; *Juncus effusus* (Soft-rush), *Juncus conglomeratus* (Compact Rush), *Juncus acutiflorus* (Sharp-flowered Rush), *Carex acutiformis* (Lesser Pond-sedge).

9) Tree Planting: It has been agreed with Neath Port Talbot Council that the majority of the Site is not suitable for tree planting. This is because the majority of the Site lies within the Junction 38 Wetland Complex SINC and the area of the SINC within the Site is designated for its wetland and grassland habitats which who's interest has the potential to be adversely impacted by tree planting. The tree planting provided within the site will therefore be provided in suitable locations outside of the SINC boundary. Indicative locations are provided, subject to agreement with NPT. These are located within the north western corner of the site, where the area will be resetablished post-constructiona nd surrounding the SuDS pond.

Indicative species list of planting suitable for planting:
Alnus glutinosa (Alder), *Quercus robur* (Common Oak), *Acer campestre* (Field Maple), *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Betula pendula* (Silver birch).

Notes:
The position of ditches and other features within this plan are approximate and have been transposed from plans submitted by RSK as part of the Water Vole Licence Application in 2024/2025.

Common plant species considered of value to water voles are provided, following those described in the Margam Substation Water Vole Licence Method Statement. As stated in that document, not all species listed will be suitable or acceptable at all locations/sites but native species from local provenance suitable to the geographic, hydrological, shade and soil factors should be chosen, in addition to those plant species which provide suitable food and cover for water vole. To be discussed and agreed with NPT. The emerging drainage design will influence the final landscape detailed plan, to be conditioned.

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Client/Project Logo: nationalgrid

Project: Margam
Port Talbot

	IM/JRM	RW	SH	2025.07.14
	Dwn	Dsgn.	Chkd.	YYYY.MM.DD

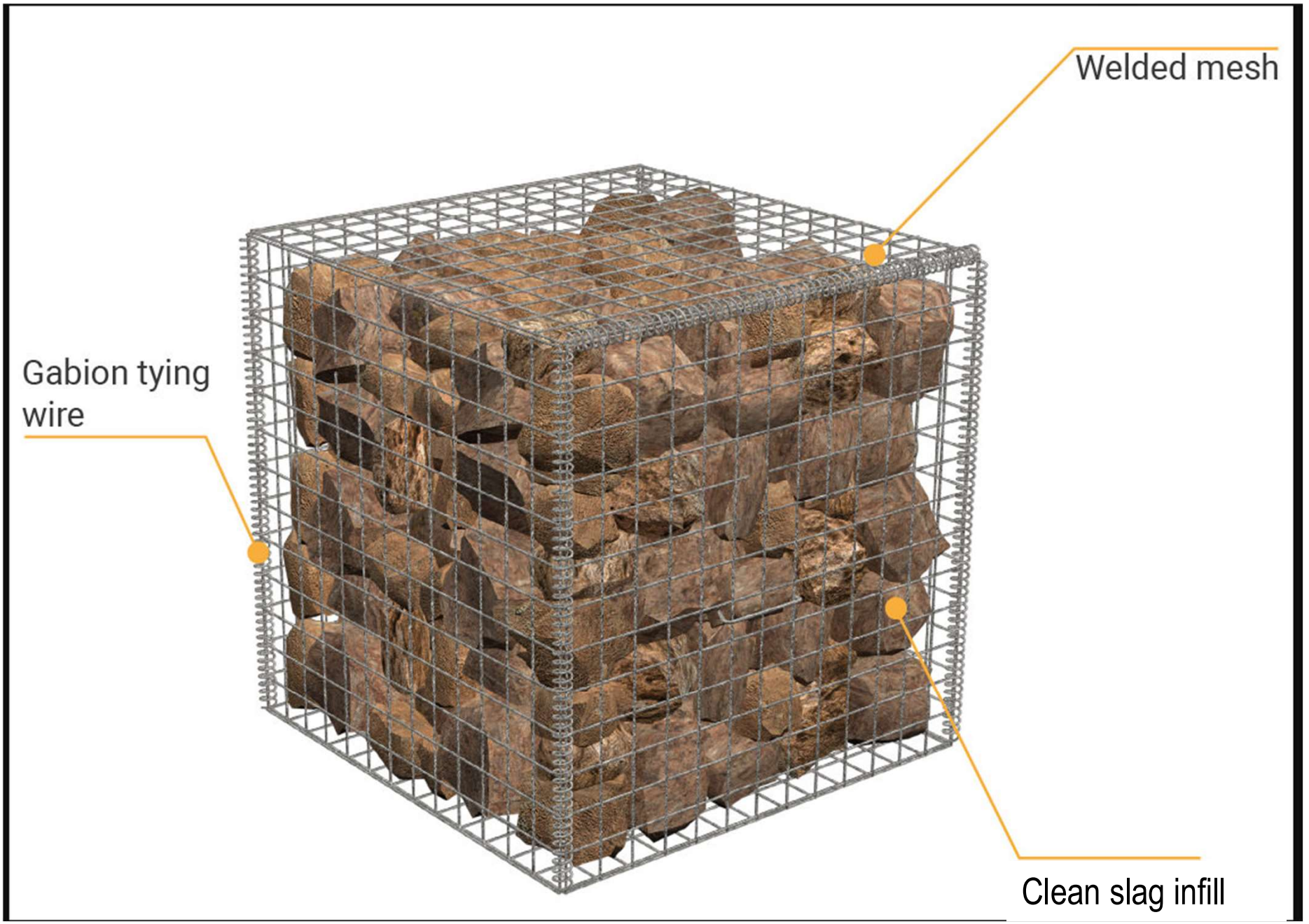
Title
FIGURE L8
LANDSCAPE AND HABITAT STRATEGY PLAN

Project No. 331201497
A0 Scale 1:1000
Revision P02
Drawing No. MAREXT-STN-XX-XXX-DR-LA-0004

ORIGINAL SHEET - ISO A0 c:\users\jrainfordmendez\stantec\margam port talbot - landscape and visual\drawings\landscape strategy plan\331201497 landscape strategy - pond plan sections construction detail-rainford-jll-macraeil-lll-macraeil-ll-05.08.2025
Plotted: 07.08.2025 2025.08.07 10:43:48 AM By: Rainford Mendez, Jenifer

Appendix E Illustrative Design: Wildlife Tower and Gabion Baskets

Illustrative Sketch: Gabion Basket for Wildlife.
Dimensions: 1m^3



Forest of Dean
DISTRICT COUNCIL

Building a new Lesser Horseshoe Bat Night Roost

Case Study - *How we did it*

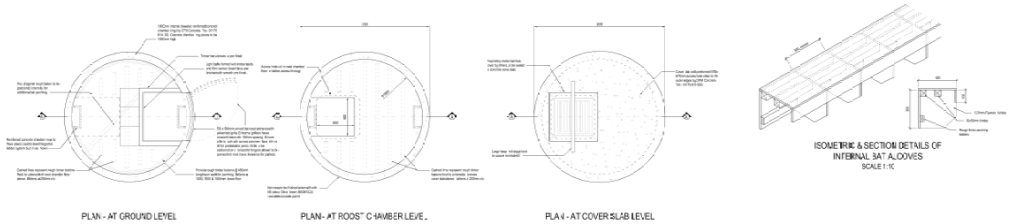

Lesser Horseshoe Bat

Background A major education led regeneration programme is underway in Cinderford, Gloucestershire. Programme implementation requires the building of two new replacement Lesser Horseshoe Bat Day Roosts and two Night Roosts. The focus of this case study is about the practical experience of designing and building two bat night roosts (A case study in relation to the day roost is also available). We hope by providing this information freely it will be of assistance for similar projects in the future. For further information contact details are provided at the end of the case study or visit the regeneration pages on the Council website (www.fdean.gov.uk).

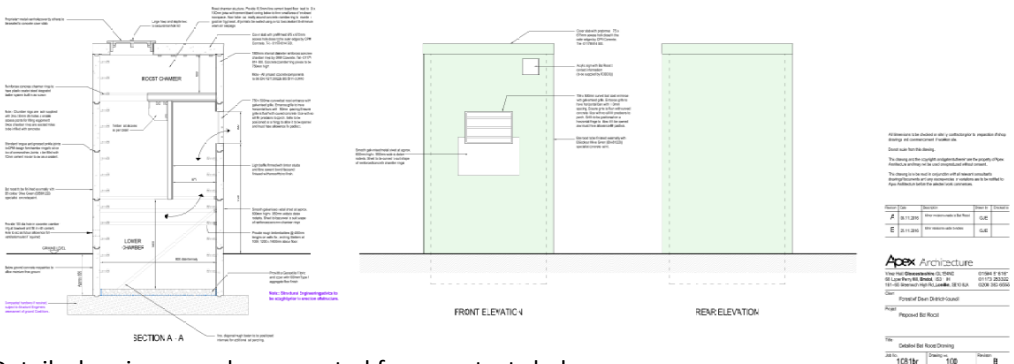
Introduction Planning permission for a new mixed use development required the building of two Lesser Horseshoe Bat (LHB) night roosts. The purpose of the night roosts were to extend feeding ranges and provide additional bat colony resilience by providing additional occasional shelter/feeding perches.

Design and Siting Radio tracking data from an existing main roost site, habitat suitability assessments together with future Forestry Plans were used to select locations which were considered likely to be the most useful to the bats and reduced chance of substantial disturbance. **The 'Lesser Horseshoe Conservation Handbook'** (2008) Schofield, H. provides excellent background to LHB ecology, roost requirements and roost design features. The handbook illustrates a 'shed' like night roost design however bearing in mind the open access nature of the site, preference for low maintenance and a permanent structure it was decided an alternative design was needed in this case. The handbook provided good guidance of the requirements and features for a night roost.

In addition to the ecological requirements we were keen that that the structures should be as simple as possible, easily replicable and minimise on site construction time by prefabrication.



Our final design was based on pre-cast concrete sewer rings, with an internal baffle and upper chamber. An idea being that these could be prefabricated off site and transported and easily assembled on site.



Details drawings may be requested from contacts below

Construction The compacted hardcore base construction of the two sites was undertaken over two days in February 2017 with the construction of the two night roosts taking about a week later that month. Planting around the roost was completed by the end of March 2017. The total cost of construction and landscaping of the two roosts was in the region of £13,500.

Monitoring Static bat recorders (loggers) were placed inside the night roosts for 17 consecutive nights in July 2018. Of the 6700 sound files recorded in the period half were identified as bat passes. Whilst the recorders will have undoubtedly recorded bat passes nearby, but outside of the roost, the level of recording clearly indicates the structures were being regularly used.

Key things we might look at differently next time…..

Water tightness

We soon found that the manhole cover on the top (for future access) was not water tight and needed sealing. In hindsight some form of fabricated hatch cover may well be better.

Prefabrication

The contractor chose not to do any internal fabrication off site which led to a longer on site construction time as they wanted to avoid damage in transit. It remains an option for future projects.

Appearance

Landscaping with native climbing and thorned plants has been undertaken and does require some annual maintenance and securing to the structure. Vertical timber cladding was considered as a measure to 'soften' the impact of the structure, but not considered necessary for these locations.

Internal features for other species

The focus for the roosts was for Lesser Horseshoe Bats, however a greater range of features could have been added for crevice favouring bat species.

Costs

There was a certain amount of developmental and risk cost within the overall budget; as a result of trying something new. Overall it is considered costs could potentially be reduced dependant on access and practical experience.

Main Contractors

Apex Architecture
www.apexarchitecture.com

ERNEST HEAL Est. 1929
CONSTRUCTION & Sons Ltd

AEWC Ltd
Animal Ecology & Wildlife Consultants

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Appendix F Management and Monitoring Prescriptions

The following tables set out the Management and Monitoring Prescriptions by Habitat or Species Type, along with the Objectives of that Management; specific prescription measures relating to that habitat; and frequency of management and monitoring activities, following completion of the Site Establishment Works.

Furthermore, where there are considerations that are relevant to the interface of habitat types or species considerations relevant to management, these are described under “other considerations”.

These management and monitoring prescriptions should be read with the main text of the LHMP, to provide context to these prescriptions. A Management and Monitoring Activity Schedule for the 30 years following completion of the Site Establishment Works is also provided at **Appendix G**. Note that all management activity frequencies, extents and approaches are subject to adjustment, depending on the outcomes of monitoring.

Full formal review, and as necessary, update of the LHMP, will take place a minimum of every 5 years, to allow the plan to evolve in response to monitoring findings. Any proposed changes to the LHMP will be discussed and agreed with Neath Port Talbot Council.

F.1 Reedbed Complex

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
Monitoring of Reedbed Complex - Establishment	Monitoring to confirm re-establishment through natural regeneration of the reedbed complex within the temporary works area following completion of works.	Monitoring to be undertaken during the growing season (May-August). Assess reedbed extent, density, height, and presence of associated habitats. Check for signs of scrub encroachment, drying out, impeded drainage and undesirable species (e.g. invasive species or dominance by undesirable species.	Years 1, 2 and 4 following completion of works	Monitoring to be undertaken by suitably qualified ecologist. Should monitoring indicate poor re-establishment of the reedbed complex through the proposed natural regeneration (e.g. <50% reedbed, or associated habitats, or dominance by undesirable species), adaptive measures such as selective planting, seeding or hydrological adjustment may be required. Monitoring outcomes to be reviewed with water level monitoring outcomes (see Ditches below).
Management of reedbed habitat	To maintain and enhance reedbed diversity and	Implement rotational cutting or mowing of reedbed in strips or blocks (maximum 1/3 of area in any one year). Management work to take place between September and February inclusive.	From year 5 every 3-5 years.	Management work to take place between September and February inclusive (as a guide) to avoid any disturbance to breeding birds and to avoid water vole breeding season, as

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
	prevent overly uniform habitat.	Cuttings to be removed to reduce nutrient loading. Management undertaken to minimise further soil disturbance or compaction if machinery used for this operation use a low-pressure machine such as Loglogic Softrak 120.		well as the breeding season for other species associated with this habitat type (e.g. reptiles and harvest mouse)
Monitoring of Reedbed habitat following Establishment	Review structure and extent of reedbed	Monitoring of reedbed vegetation in June of each monitoring year should record reed density, species composition, and the presence of transitional or mosaic habitats (e.g. areas of open water and ditches, and small areas of wet grassland and scrub/willow carr). The survey will comprise a Botanical Survey undertaken in June of each monitoring year following Phase 1 Habitat Survey methodology to map broad habitat types and extents. NVC survey methodology will used for the parcels of habitats which were the focus of the NVC surveys prior to the Proposed Development. Photographic fixed-point photography will also be used. Combined, these survey approaches will provide an assessment of overall habitat extents and diversity, compared to the baseline surveys undertaken in 2024-2025. Key targets sought in these surveys will include identification of increased diversity within the Reedbed habitats, absence of undesirable or invasive species, reduction in areas of reedbed monoculture in favour of the more diverse marshy grassland or drier grassland areas and confirmation that scrub cover does not exceed 20% of the Site area	From year 5 every 5 years	This LHMP will be updated to incorporate specific management and monitoring prescriptions for grassland, as/when such habitats become a significant feature of the Site, aligned with the outcomes of this monitoring prescription.

F.2 Ditches

F.2.1 Note, each of the ditch management prescriptions below are to be coordinated such that 50% or more of the ditch network and associated banks remain undisturbed in any management year, to avoid significant disturbance to water vole and other species associated with these habitats.

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
Management of ditch vegetation – bankside trees up to 5m from ditch	Management of trees and scrub to prevent overshading and encroachment of ditches.	Rotational pollarding of trees. Rotational management - no more than one third of the bankside trees to be managed in any one year.	Every 5 years. Following the requirements of the Water Vole Management Plan	All vegetation management will take place in the period September- February inclusive (as a guide) in each management year.

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
	90% of ditch length to remain unshaded.	Frequency of management (number of years between management events) to be dictated by extent of encroachment of bankside vegetation.	(RSK Biocensus, 2025a).	This timing is to avoid any disturbance to breeding birds and to avoid water vole breeding season, as well as the breeding season for other species associated with bank-side vegetation (e.g. reptiles and harvest mouse).
Management of ditch vegetation – bankside scrub and young trees up to 5m from ditch	Removal of new scrub and young tree growth since initial re-establishment or management of ditches. 90% of ditch length to remain unshaded.	Removal of new growth of scrub and young trees up to 5m from the ditch. Rotational management - no more than one third of the bankside scrub and young trees to be managed in any one year. Frequency of management (number of years between management events) to be dictated by extent of encroachment of bankside scrub.	Every year, as dictated by the Water Vole Management Plan (RSK Biocensus, 2025a) and as required based on extent of encroachment.	All vegetation management will take place in the period September- February inclusive (as a guide) in each management year. This timing is to avoid any disturbance to breeding birds and to avoid water vole breeding season, as well as the breeding season for other species associated with bank-side vegetation (e.g. reptiles and harvest mouse).
Management of ditch vegetation – reeds and marginal vegetation	Above-ground removal of reeds and marginal vegetation for managed sections of ditch. Proportion of undisturbed marginal and bankside vegetation to be retained in any management year for water vole (and other species).	Rational cutting of reed and marginal vegetation within the ditch channel to a height of 100–150 mm. One bank per ditch maximum and up to 33% of ditches to be managed in any management year to retain habitat continuity	Every year, as dictated by the Water Vole Management Plan (RSK Biocensus, 2025a).	All vegetation management will take place in the period September- February inclusive (as a guide) in each management year. This timing is to avoid any disturbance to breeding birds and to avoid water vole breeding season, as well as the breeding season for other species associated with bank-side vegetation.
De-silting of Ditches including removal of any reed rhizomes present	Maintaining open water channels with a minimum summer water depth of 0.5m, whilst retaining proportion of undisturbed	De-silting of the ditches (also including removal of any reed rhizomes) will take place on a rotational basis such that sections of the ditches will remain undisturbed in any one management year; up to one third of ditches will be de-silted/rhizomes removed in any one management year.	Each section of ditch to be managed every 5 years (i.e. each third of ditches to be managed every 5 years); or as	Note anticipated water depths subject to confirmation of the outcomes of the hydrological studies ideally to be in the range 0.5m-1.2m depth. Following the

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
	marginal and bankside vegetation for water vole (and other species). Preventing the natural succession and drying out of ditches		dictated by Water Level Monitoring outcomes. Following the requirements of the Water Vole Management Plan (RSK Biocensus, 2025a)	requirements of the Water Vole Management Plan (RSK Biocensus, 2025a) De-silting/rhizome removal will take place in the period September- February inclusive (as a guide) in each management year. This timing is to avoid any disturbance to breeding birds and to avoid water vole breeding season, as well as the breeding season for other species associated with bank-side vegetation
Water-Level Monitoring and monitoring of ditch health including habitats.	100% of ditches to support permanent water. Check for indicators of good or poor ditch health.	Water level monitoring should take place in the same years as water vole habitat and population monitoring. With water levels being taken once in each season for each monitoring year. Anticipated water levels to be confirmed by hydrological modelling and confirmed engineering design for the ditches within the Site. Seeking to confirm water levels remain a minimum 0.5m in the summer months. In addition to water depth, visual indicators of ditch health will be recorded including flow conditions, algal blooms, vegetation dieback or vegetation extent, presence of non-native species	Years 1-3, 5, 7, 10 and then every 5 years after that through the duration of the Management Plan period. Following the requirements of the Water Vole Management Plan (RSK Biocensus, 2025a)	Note anticipated water depths subject to confirmation of the outcomes of the hydrological studies and drainage design based on Site topography; ideally to be in the range 0.5m-1.2m depth. Any observations of adverse issues to trigger a review of management approaches and water level control measures.

F.3 Scrub and Trees

Note: This management prescription relates to young scrub and trees outside of the ditch corridor (as described above) and relates to all other scrub/trees within the Site. All tree works should be undertaken by a qualified arboriculturist or tree surgeon. Works are to comply with BS3998 and HSE Forestry and Arboricultural safety leaflets. Trees are to be left with a well-balanced shape and natural appearance. Chainsaw operatives must hold a certificate of competence. Chain or hand saw wounds will be as small as possible, cutting back to sound wood leaving a smooth surface, angled to shed the water and avoiding bark tears.

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
Tree and scrub establishment, where appropriate for the Site	Enable the delivery of the proposed tree and scrub planting shown in the Landscape and Habitat Strategy Plan and Landscape Design. Note point in the main body of the Management Plan that the majority of the SINC is unsuitable for tree/scrub planting.	Manage to promote vigorous growth. Replace dead, missing, dying or defective plants (all planting to be checked in the summer to confirm health; with replacements to be provided the following planting season). Source replacement trees/scrub, if required, from local nursery stock and, where possible, use native trees of local provenance.	Following planting, the trees/scrub will be pruned in years 1 and 3 where required to promote vigorous bushy growth. All trees will be inspected annually in the summer for the first three years following planting and dead or dying stock will be replaced during the first available planting window.	Where possible, the cause of failure should be established. This should inform consideration of whether a like for like replacement is appropriate, whether an alternative solution is required, or if it is necessary to amend the management prescription accordingly.
Tree Guards and Stakes	Enable trees to anchor and support vertical growth form.	Adjust/replace/remove all tree stakes, ties and guards as required until anchorage has been achieved and tree has a vertical growth form. Remove guards once established.	From Year 1 of the Plan onwards until established.	
Scrub and young trees – management and monitoring	Maintain balance between habitat types associated with Site.	Monitoring of extent of scrub/young tree encroachment through fixed-point photography and/or GPS in the summer every 3 years. This will determine whether the scrub and young tree extent had increased such that above-ground removal (and stump treatment if required) should be undertaken in the following September-February inclusive (avoiding breeding bird season etc). The decision regarding scrub clearance should consider the extent of scrub and the results of species monitoring together.	Every 3 years, or as determined by monitoring	All vegetation management will take place in the period September- February inclusive (as a guide) in each management year. This timing is to avoid any disturbance to breeding birds, as well as the breeding season for other species associated this Site.
Pollarding of retained trees, where required.	Tree management where over-shading areas of other interest (or required for National Grid operational reasons)	Monitoring of extent to taken place in the summer every 3 years. This will determine management requirements for following September-February inclusive (avoiding bird breeding season etc). Decisions regarding pollarding should consider extend of trees and the results of species /habitat monitoring together.	Every 3 years, or as determined by monitoring	All vegetation management will take place in the period September- February inclusive (as a guide) in each management year. This timing is to avoid any disturbance to breeding birds, as well as the breeding season

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
				for other species associated this Site.

F.4 Species Monitoring (Protected or Notable Fauna)

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
Monitoring for water vole	To determine water vole presence/likely absence within the Site and to determine population size estimate, where present.	Monitoring for water vole will occur across all ditches on the Site to determine presence or likely absence of the species. Monitoring will occur between April and September (inclusive) during the water vole breeding period when field evidence is most abundant. During each year of monitoring, surveys will comprise of two survey visits: one survey occurring between 15 April and 30 June. And a second survey visit between 01 July and 31 September (at least 8 weeks apart) in line with current survey protocols (Dean *et al* 2016). Where evidence of water vole is found, an indication of relative population density will be estimated based on the recorded evidence of number of latrines per 100m of bank-side habitat, as described in Dean I 2016.	The monitoring will take place in years 1-3, 5, 7, 10 and then every 5 years thereafter for the 30-year Management Plan period, following the requirements of the Water Vole Management Plan (RSK Biocensus, 2025a)	Any incidental observations notes during water vole survey relevant to the implementation of the wider Management Plan to noted.
Monitoring for Bats	Determine presence/absence /use of Wildlife Tower provided through Proposed Development. Monitor species diversity and indication of abundance through static monitoring surveys.	Monitoring of the Wildlife Tower in June of each monitoring year. The species of any bats present, and their number, will be recorded. Any bat droppings present will be collected and sent for eDNA analysis. Activity monitoring for bats will take place through use of static detectors three times through the season in each monitoring year (covering the spring, summer and autumn periods). The static detectors will be deployed in locations to match, as far as possible, the pre-construction baseline surveys to enable a review of any changes in bat activity as a result of the Proposed Development and the management described in this Management Plan.	In year 3 and every 5 years subsequently for the Management Plan period.	Monitoring to be undertaken by suitably experienced ecologists and, for the check of the wildlife tower, suitably licensed bat workers. Any required reparation works to Wildlife Tower to be recorded and built into Management Plan requirements.
Check of reptile hibernacula features	Suitability of hibernacula features for reptile use	Visual checks of form of reptile hibernacula – check still provides variety of opportunities for shelter and access	Check undertaken June (concurrent with Wildlife Tower check for bats)	Remedial measures undertaken as required. Disturbance to hibernacula features (including

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
		by reptiles (e.g. check that dead wood, for instance hasn't rotted down). Reparation works to be undertaken as prompted by visual inspection – preferably through re-use of materials from management elsewhere within the Site	with remedial/reparation works undertaken as soon as practically possible and prior to hibernation period.	for reparation works) to be avoided during the winter whilst hibernating animals may be present.
Breeding bird survey	Monitor species diversity and indication of abundance in response to Proposed Development and Management Plan	Breeding bird survey, undertaken in March-June in each monitoring year, with 6 survey visits spread across the survey period. During each survey visit breeding bird calls and activity will be noted with a view to establishing the breeding bird assemblage present and to give an indication of breeding pairs for each species.	March-June in years 5 and 10 of the Management Plan period	
Invertebrate Survey	Monitor species diversity in response to Proposed Development and Management Plan	An invertebrate survey will be conducted with, in each monitoring year, invertebrate survey visits including the spring, summer and autumn periods. The survey protocol will follow that undertaken for the baseline survey work undertaken prior to commencement of the Proposed Development and will seek to determine the species present and their conservation value.	Surveys to be undertaken March-September every 5 years through the Management Plan period.	

F.5 Species Monitoring (Invasive and Non-Native Species)

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
Monitoring for Mink	To check for presence/absence of mink and implement control measures if present.	At least five mink rafts will be installed at suitable locations across the Site (as described in the Water Vole Management Plan; RSK Biocensus, 2025a) and used to record American mink activity. Rafts will be checked once a year and on an annual basis.	Every year, one check of the mink rafts. Checks to be undertaken in spring. Following the requirements of the Water Vole Management Plan (RSK Biocensus, 2025a)	Where evidence of American mink is discovered, a capture and control program of this non-native species will be undertaken by a specialist contractor. Records of American mink will be submitted to the National American Mink recording program through Mink Mapp (https://minkmapp.uk/)
Invasive species monitoring and management	Control of invasive non-native species to avoid spread within Site	Check for invasive -native species to take place as part of water vole monitoring – particular care taken to check in typical locations for this species (e.g. ditch banks).	The monitoring will take place in years 1-3, 5, 7, 10 and then every 5 years	Treatment of non-native invasive plant species, if found present, to be determined with input from suitably qualified ecologist.

Management or Monitoring Prescription	Management Objectives or Monitoring Aim	Specific Prescription	Timing	Other Considerations
			thereafter for the 30-year Management Plan period (concurrent with water vole monitoring)	

Appendix G Management and Monitoring Activity Schedule

Margam Substation: Landscape and Habitat Management Plan - Management and Monitoring Activity Schedule following Completion of Establishment Works
Numbers in brackets refer to the relevant section of the Landscape and Habitat Management Plan which should be read in conjuction with this Schedule.

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Activity																														
1. Landscape and Habitat Management Plan Reporting and Review - Every 5 years (4.2)					X					X					X					X					X					X
2. Reedbed Complex (Priority Habitat - Reedbed plus associated wetland habitat types) (6.3)																														
2A. Monitoring of natural regeneration of Reedbed habitat complex following completion of PD works and soil restoration.	X	X		X																										
2B. Following re-establishment of Reedbed, rotational management of reedbed habitat (every 3-5 years following establishment, dependent on results of reedbed monitoring - 5 year frequency shown here)					X					X					X					X					X					X
2C. Botanical Survey of Reedbed complex (whole site)					X					X					X					X					X					X
3. Ditches (6.3)																														
3A. Rotational Management of bankside vegetation (trees) up to 5m from the ditch (every 5 years, as determined by monitoring)					X					X					X					X					X					X
3B. Rotational Management of bankside vegetation (scrub) up to 5m from the ditch (every year, as determined by monitoring)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3C. Rotational Management of bankside vegetation (reeds and marginal vegetation) (Every year)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3D. Rotational de-silting of ditches - including removal of reed rhizomes and other vegetation, following the requirements odf the Water Vole Management Plan, or as dictated by water level monitoring outcomes.			X	X	X			X	X	X			X	X	X			X	X	X			X	X	X			X	X	X
3E. Water Level Monitoring and monitoring of ditch health including habitats, following the requirements odf the Water Vole Management Plan.	X	X	X		X		X			X					X					X					X					X
4. Scrub and trees (6.3)																														
4A. Scrub extent monitoring and removal where required.			X			X			X			X			X			X			X			X			X			X
4B Trees monitoring and pollarding/management where required.			X			X			X			X			X			X			X			X			X			X
5. Species Monitoring (6.4)																														
Water Vole	X	X	X		X		X			X					X					X					X					X
Bats			X					X					X					X					X					X		
Breeding Birds					X					X					X					X					X					X
Invertebrates					X					X					X					X					X					X
6. Invasive and Non-Native Species (6.4)																														
Mink - annual monitoring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Japanese knotweed and Himalayan balsam	X	X	X		X		X			X					X					X					X					X