3.2.A Outline Construction Environmental Management Plan

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1. INTRODUCTION

1.1 Background

1.1.1 National Grid Electricity Transmission plc (NGET) is submitting consent applications under the Town and Country Planning Act 1990 (TCPA) and Section 37 of The Electricity Act 1989 ('the Electricity Act')to construction and operate the Pentir to Trawsfynydd Reinforcement Project (the 'Project'). The Project comprises the following elements:

- Underground cabling works in the existing Pentir substation.
- A new substation, replacement of tower 4ZC067 and new cables from the replaced tower down into the substation (downleads). A new 132 kV cable to connect the existing SPEN DB route to the new substation, which will be partly underground cable and partly overhead line, and removal of a section of the SPEN DB route that will no longer be required.
- An extension to the existing Wern Cable sealing End Compound (CSEC), replacement of the Glaslyn Cables, including the removal of some redundant sections of cable and making safe other redundant sections that will be left buried, a new CSEC at Minffordd and raising the floor level of a new Tunnel Head House (THH), previously consented as part of the Eryri (previously Snowdonia) Visual Impact Provision (EVIP) project, and the removal of the existing Garth CSEC.
- Replacement of downleads from tower 4ZC005, underground cabling works, installation of new equipment, including a shunt reactor, and amendments to the substation compound fence line.
- Replacement of cables and fittings ("reconductoring") on the 4ZC overhead line between towers 4ZC005 and 4ZC027, and then between towers 4ZC044 and 4ZC070 as well as replacement of the earthwire with an Optical Ground Wire (OPGW). Installation of fibre optic cables along the earthwire between towers 4ZC070 and 4ZC140.

1.1.2 This Outline Construction Environmental Management Plan (CEMP) focuses on the Bryncir section of the Project, referred to herein as the 'Proposed Works' and will subject to agreement with the Gwynedd Council. This Outline CEMP details the mitigation measures identified in the Environmental Statement[1] and sets out a variety of control measures for managing the potential effects of the Proposed Works including control and management of noise, dust, surface water runoff, waste and pollution control.

1.1.3 The detailed CEMP shall be prepared and shall need to be submitted for acceptance to Gwynedd Council by National Grid in consultation with the relevant stakeholders prior to construction The Contractor shall undertake all mitigation and enhancements Works in accordance with the CEMP and employ an Environmental Manager.

[1] Pentir to Trawsfynydd Reinforcement Project; Environmental Statement, Volume 3: Bryncir Substatio

1.1.4 Proposed monitoring which will be undertaken during construction is defined within the relevant sections of the Construction Environmental Management Plan and relevant supporting plans to be produced before commencement of Proposed Works.

1.2 The Proposed Works

1.2.1 The Proposed Works would be on agricultural land approximately 750 metres (m) south-west of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen, in the administrative boundary of Gwynedd Council ('Bryncir works site') (see **Figure 1-1**). The Bryncir works site is on relatively flat ground with a slight slope to the west and is characterised by pastoral fields with an area of marshy grassland to the south-west. Agricultural Land Classification data identifies the Bryncir works site as a mix of Grade 3b, Grade 4 and Grade 5. The existing Pentir – Trawsfynydd overhead line and an existing 132 kV overhead line owned by Scottish Power Energy Networks (SPEN) (the 'SPEN DB route') runs through the Bryncir works site. The Llystyn Isaf candidate Wildlife site (cWS), Afon Dwyfach cWS, Tyddyn-y-Felin cWS and Dolwar Heath cWS all partially fall within the Bryncir works site, with several others in the wider area.

1.2.2 The Bryncir works site covers an area approximately 17.7 hectares (ha); however, the permanent Bryncir Substation compound would cover approximately 1.6 ha. The Bryncir works site will comprise the Bryncir Substation, the SPEN DB route connection, permanent access road, construction compound (comprising office and welfare facilities) and laydown areas.

1.2.3 The Bryncir works site is characterised by pastoral fields with an area of marshy grassland to the south-west. The Bryncir works site is surrounded by a mix of field boundary types, being predominantly dry-stone wall and post and wire fences, but with overgrown hedgerows/hedgerow trees along the southern boundary and along the north-eastern boundary. Managed hedgerows line the southern boundary of the A487 as it faces the Proposed Works site. The Bryncir works site is on land which the Agricultural Land Classification (ALC) data identifies as a mix of Grade 3b (moderate quality), Grade 4 (poor quality) and Grade 5 (very poor quality).

1.2.4 The existing Pentir – Trawsfynydd 400 kilovolt (kV) and 132 kV overhead line runs through the Bryncir works site and would intersect the Bryncir works site at three locations. The towers are visible from many views in the vicinity of the Bryncir works site and from elevated areas, including from the Eryri National Park to the north-east, due to the relatively open topography.

1.2.5 An existing 132 kV overhead line owned by Scottish Power Energy Networks (SPEN) ('the SPEN DB route') runs north to south through the western extent of the Bryncir works site, west of the Afon Dwyfach. The SPEN DB route is approximately 600 m west of the proposed Bryncir Substation. The SPEN DB route runs south – south-west from Tower 4ZC070. The SPEN DB route is fed from downleads from Tower 4ZC070, which drop to a steel gantry. The SPEN DB route then runs for approximately 1.2 km before turning further west at another steel gantry support and continuing. The SPEN DB route between the two steel gantries is suspended from eight wooden H-pole supports allowing three conductors to hang in flat formation.

1.2.6 The Llystyn Isaf candidate Wildlife Site (cWS), Afon Dwyfach cWS, Tyddyn-y-Felin cWS and Dolwar Heath cWS all partially fall within the Bryncir works site, with several others in the wider area. There is purple moor grass and rush pasture, lowland heath and lowland dry acid grassland within the Bryncir works site.

1.2.7 The Bryncir works site is south-west of the A487 and would be accessed onelocations along the A487.

1.2.8 The Bryncir works site intersects two Public Right of Way (PRoW): the Dolbenmaen No 18 footpath, and a small part of a second PRoW, Dolbenmaen No 17 footpath, which falls in the Bryncir works site at the north-eastern extent. National Cycle Route (NCR) 8 runs to the west of the Bryncir works site and is outside the works boundary.

1.2.9 There are a number of isolated properties in the vicinity of the Bryncir works site comprising; a small group is close to the junction of the B4411 and the A487, approximately 500 m north-west of the Bryncir works site.

1.2.10 The Proposed Works are summarised below:

- New 400 kV substation, including a permanent access road;
- Relocation of existing Tower 4ZC067 80m north-west of its current position;
- Realignment of the SPEN DB route. And decommissioning and removal of a redundant section;
- Permanent diversion of the Dolbenmaen Number 18 footpath; and
- New landowner track.

1.2.11 The Proposed Works (see **Table 1-1**) include the following principal elements which have been described in the Environmental Statement[2] and **Table 1-1**:

Table 1-1: Proposed Works of Project (Bryncir works site)

Proposed Works	Description
400 kV Substation Compound	Installation of secure compound with dimensions 134m x 128 m to accommodate the single electrical transformer that would 'step down' the 400 kV voltage of the Pentir-Trawsfynydd circuit to a voltage of 132 kV, ready for connection to SPEN DB route. The principal components of the substation and equipment's to be installed comprises of: • Ancillary Buildings; • Busbars and Air Insulated Switch Gear (AIS) (one x 400 kV and one x 132 kV); • Earth Switches (nine x 400 kV and nine x 132 kV); • Disconnectors (three x 400 kV and three x 132 kV); • Circuit Breakers (three x 400 kV and three x 132 kV); • Cable Sealing Ends (x three); • Current Transformers (x six);

[2] Pentir to Trawsfynydd Reinforcement Project; Environmental Statement,Volume 3: Bryncir

	• Settlement Metering (x three); • Diesel Generator; • Gantry; • Low voltage alternating current (LVAC) Transformer; • Super Grid Transformer (one x 400/132 kV); • Surge Arresters (three x 400 kV and three x 132 kV); • Voltage Transformers (three x 400 kV and four x 132 kV); • Water Tank; • Oil Interceptor; • Access Road – access to the Bryncir works site would be from the A487 using an upgraded existing access point located opposite Bryn-yr-efail-uchaf, before following field boundaries to the substation compound; and • Security Fencing – 2.4 m high palisade fencing with an electric fence backing of 3.4 m height from ground level.
Drainage	• There is a requirement for surface and foul water drainage on site. Foul water (from bunds) would be collected within a septic tank or similar which would be emptied via a tanker. For surface water, several impermeable surfaces will be installed on site which require drainage, most notably the access road to the site. • One or both sides of the access road will be lined with a linear Sustainable Urban Drainage (SuDS) feature such as swales or filter drains to provide the required level of water treatment required. An attenuation basin will also be required to attenuate flows from the access road catchment. The discharge from the attenuation basin will be to the existing ditch / channel running south of the proposed substation location and will be approximately 1.5 ha with a 3 m wide grass strip around the basin for access.
Landscape Design	(On Hold- details on landscape design will be added when known).
Tower 4ZC067	To provide a 400 kV supply into the proposed Bryncir Substation, the existing Tower 4ZC067 will be replaced 80 m north-west of its current position. The new tower will be the same design as the current Tower 4ZC067 and will

	be 55 m in height. Downleads 30 m long will be required from the new tower into a gantry within the proposed Bryncir Substation.
SPEN DB Route Connection	The SPEN DB route connection will connect to the proposed Bryncir Substation using part underground cables and part overhead line. The DB route connection includes installation of 132 kV underground cables and overhead lines via trenching and pole erection. The redundant section of DB route will be dismantled and the ground fully reinstatement.
Footpath Diversion	Dolbenmaen No 18 footpath where it intersects the Bryncir works site will be temporarily closed during construction and permanently diverted during operation. The footpath will be diverted initially along the access track, then across a field to cross a field boundary via a new kissing gate. The diversion would then follow the field boundaries to the east of the proposed substation before turning east to follow the southern boundary of the field. The field boundary would be crossed via a new kissing gate and then join the existing alignment of the footpath southwest of the proposed substation. The footpath will not be surfaced.
Landowner Track	To allow the landowner access across field boundaries south of the proposed Bryncir Substation, a hardcore track extending an existing track will be provided to the south-west of the proposed Bryncir Substation. The track will be approximately 250 m long.
Tower 4ZC067	A temporary 4 m wide stone road will be built around the northern perimeter of the new substation, which will provide access to the new tower 4ZC067 and will carry on to a 40 m x 40 m working area immediately to the east of the new tower. The foundation for the existing tower 4ZC67 will be cut 1 m below ground level, removed and re-instated during this period. Vegetation clearance will include low level strimming of grassland, and adequate fencing will be installed around the excavation using scaffolding rails, or Herras panels.
SPEN DB Route Connections	The 132 kV underground cables would be installed in a trench of approximate section 1 m x 1 m. A working area of approximately 6 m wide would be required to accommodate the trench, storage areas, laydowns and access. Access would be via a temporary haul road or steel trackway running alongside the cable route. The SPEN DB route connection will require a new 132 kV steel gantry support. This would require excavation of pits for foundations and filling with concrete and the stub foundation on which the gantry would be constructed from sections delivered to site.

Removal of Redundant Section of the SPEN DB Route	The removal of the redundant part of the existing SPEN DB route would involve removing the conductors between the new connection and Tower 4ZC070 and removing fittings from the supports. The existing 132 kV steel support west of Tower 4ZC070 will be removed and materials will be recycled, where possible.

1.2.12 The Proposed Works are planned to be undertaken over a period of approximately 18 - 20 months from the start of 2026 to the end of 2027, with substation installation and commissioning running into 2028. Construction will occur in phases, which will include activities summarised below:

- Preliminary works – further site investigation preconstruction surveys required to be undertaken in advance of construction;
- Mobilising on site - this will include development of the site access, forming a temporary hardstanding just off the A487. Short term temporary facilities including site offices, welfare, laydown and plant storage will be in place to enable the construction of the earthworks phase of activities. Liaison with Gwynedd Highways Authority will be required to agree Traffic Management requirements on A487;
- Vegetation Clearance and Earthworks - this will include: the diversion of services, de-vegetation and topsoil strip, land owner track construction, new bellmouth construction, access road construction, earthworks drainage, substation platform construction, hardstandings to main temporary site and laydown areas;
- Main civil engineering works – all reinforced concrete works (foundations, slabs etc), below ground earthing, drainage, ducts, troughs, permanent buildings (including services), boundary fence, internal roads, footpaths and car parking etc.;
- Mechanical and electrical work – this will include all primary and secondary electrical plant and equipment and all Stage 1 and Stage 2 testing and commissioning;
- Site reinstatement and landscape works – this will include removal of site offices and temporary facilities, land reinstatement and landscape works;
- Fencing – will include temporary Herras fencing will be used for the substation and cable construction works; and
- Lighting and CCTV - low level temporary external lighting will be in place to the site establishment compound and task lighting to specific activities during the works.

1.3 Purpose of Outline Construction Environmental Management Plan

1.3.1 This document presents the approach and application of environmental management and mitigation for the construction of the Proposed Works. The Outline CEMP aims to ensure that adverse effects on the environment and local communities, from the construction phase of the Proposed Works, are minimised.

1.3.2 This Outline CEMP has been prepared in accordance with the mitigation measures identified in the Environmental Statement and in accordance with National Grid's

Environmental Management System (EMS) to reduce the adverse effects of the Proposed Works on the environment during the construction phase. A detailed CEMP will be developed adopting all requirement laid out in this Outline CEMP.

1.4 Objectives

1.4.1 The objectives of the Outline CEMP are to:

- Provide a mechanism for ensuring the delivery of mitigation measures, to reduce environmental effects identified in the environmental assessment phase;
- Ensure compliance with legislation and identify where it will be necessary to obtain authorisation from relevant statutory bodies;
- Provide a framework for compliance auditing and inspection to ensure the agreed environmental aims are being met; and
- Ensure a prompt response to any non-compliance with legislative and planning conditions, including reporting, remediation and any additional mitigation measures required to prevent a recurrence.

1.5 Supporting Plans

1.5.1 This Outline CEMP references a range of supporting documentation including a series of subject specific management plans for specific environmental topics and the environmental management measures that have been identified as mitigation requirements within the environmental assessment.

1.5.2 The following supporting plans will be developed to set in detail the management systems, procedures, and approaches that will be implemented during construction and comply with the Outline CEMP. These subject specific management plans shall be incorporated within the detailed CEMP:

- Earthworks Material Management Plan (EMMP);
- Site Waste Management Plan (SWMP);
- Asbestos Management Plan (AMP);
- Outline Construction Traffic Management Plan (CTMP);
- Landscape and Ecological Management Plan (LEMP);
- Biosecurity Management Plan (BMP);
- Soil Management Plan (SMP);
- Pollution Prevention Plan (PPP);
- Contractor Environmental Management System (EMS);
- Pollution Incident Control Plan (PICP);
- Construction Phase Safety, Health and Environmental (SHE) Plan;
- Emergency Response Plan (ERP); and
- Materials Management Plan (MMP);

1.6 Structure of the Outline CEMP

1.6.1 **Chapter 2** of this Outline CEMP provides information on general environmental management procedures and conformance, roles and responsibilities (including a summary of the specific management plans to be produced by the Contractor) and compliance with legislation and consents.

1.6.2 **Chapter 3** describes the site-specific environmental management measures that will be implemented during construction.

1.6.3 **Chapter 4** describes the site-specific environmental management measures (as recommended in the Environmental Statement) that will be implemented during construction.

2. ENVIRONMENT MANAGEMENT

2.1 Conformance with Corporate and Project EMS

2.1.1 National Grid take their responsibilities for Environmental Sustainability and compliance very seriously. As a minimum, National Grid will meet compliance obligations but will aspire to world class performance.

2.1.2 National Grid maintain an Environmental Management System (EMS) to provide a framework within which to manage and reduce their effects on the environment. The EMS is accredited to ISO14001:2015. National Grid's Environmental Sustainability Policy is provided in **Appendix xx**.

2.1.3 The EMS sets out the overall processes for:

- Environmental responsibilities;
- Identifying environmental aspects;
- Setting and achieving environmental objective and targets;
- Controlling environmental impact;
- Meeting the conditions of environmental consents and permits; and
- Preparing and responding to environmental emergencies and incidents.

2.1.4 The Contractor will prepare their own project-based EMS in accordance with National Grid's EMS prior to construction commencing. The Contractors' EMS will detail their framework for managing the environment. National Grid will approve the Contractor's EMS prior to construction.

2.2 Conformance with Planning Conditions

2.2.1 National Grid Electricity Transmission plc (NGET) is submitting planning applications under the Town and Country Planning Act 1990 (TCPA) to Gwynedd Council for the construction and operation of Bryncir substation which forms part of the Project. The Planning Application will allow for construction compounds associated with these works.

2.2.2 Any conditions imposed through the planning system will be appropriately discharged at the relevant stage of the Proposed Works by the Contractor.

2.3 Compliance with Legislation, Standards and Guidance

2.3.1 Once developed, the detailed CEMP will be kept under review and updated as required as a result of new or amended legislation, standards and National Grid guidance and issued to its Contractors.

2.4 Consent and Licenses

2.4.1 A number of sections of this Outline CEMP reference consents, permits and licences that will be required during construction. A Consents Register will be maintained by the Contractor's Environmental Manager which will document all existing consent conditions, record all new applications made and the status of the applications.

2.5 Roles and Responsibilities

2.5.1 Establishing roles and responsibilities on site is important to ensure the successful construction of the Proposed Works, including the implementation of the detailed CEMP.

2.5.2 The responsibilities of the personnel who will be responsible for implementing, monitoring, responding to, and updating the detailed CEMP are described at **Table 2-1**.

Table 2-1: Responsibilities of the Contractor

Role	Responsibility
Project Manager	• Overall responsibility for ensuring conformance with the Outline CEMP; and incident investigation.
Safety, Health, Environment, Security and Quality (SHESQ) Manager	• Reviewing risk assessments and method statements (RAMS); • Manager of the Safety, Health and Environment (SHE) Plan; • Reviewing, updating and issuing the detailed CEMP; • Incident investigation; • Liaison with the emergency services; • Site inspection; • Reviewing applications for environmental consents and permits; and • Sensible monitoring.
Environmental Manager	• Ensure management plans are implemented; • Oversee environmental mitigation; • Site inspection; • Preparing and submitting applications for environmental consents and permits; • Maintaining a consents register; • Liaison with third parties and licensing authorities; • Organising environmental surveys; and • Progress monitoring.
Ecological Clerk of Works (ECoW)	• Oversee vegetation clearance (wherever applicable) and ecological mitigation works.

2.5.3 Prior to construction commencing, management plans shall be prepared as detailed in **Table 2-2.**

Table 2-2: Management Plans to be prepared

Management Plan	Description
Construction Environmental Management Plan (CEMP)	Details the environmental mitigation measures that will be implemented during each stage of the construction works and will be in accordance with this Outline CEMP.
Contractor Environmental Management System (EMS)	Details the framework for managing the environment.
Pollution Incident Control Plan (PICP)	Identifies how the risk of pollution due to construction works, materials and extreme weather events will be controlled and identifies the remedial actions in the event of an incident.
Construction Phase Safety, Health and Environmental (SHE) Plan	Details relevant safety, health and environmental information relating to all construction activities.
Site Waste Management Plan (SWMP)	Sets out details developed from the Outline CEMP to identify site-specific measures for the collection, segregation, treatment and disposal of waste.
Emergency Response Plan (ERP)	Describes the procedure to be followed in the event of an emergency.

2.5.4 The plans above will be accessible on site and made available to any person working on the Proposed Works where required.

2.5.5 Any identified environmental issues that arise either before or during the construction of the Proposed Works will be reviewed at the inaugural and subsequent regular meetings held by the Contractor. Where necessary, toolbox talks will be included in the Daily Briefing / Point of Works Risk Assessment (PoWRA) held by the Contractors to inform the construction staff of any environmental concerns and any changes to the plans.

2.5.6 The Contractor will be a member of the Considerate Constructors Scheme to ensure that everything is done, where practicable, to reduce the effect on the environment and this will include awareness-raising, through toolbox talks.

2.5.7 The Contractor will ensure that all staff, including sub-contractors are trained and competent in the management of environmental impacts to a level that is appropriate to their role.

2.5.8 National Grid will convene regular meetings with the Consultees where applicable. These will be open discussions and will be attended by relevant members of staff. The Contractor shall also liaise closely with Natural Resources Wales (NRW), Eryri National Park Authority, Gwynedd Council and other key stakeholders throughout the construction phase of the Proposed Works where necessary.

2.6 Environmental Procedures

Audits and Inspections

2.6.1 The Contractor shall undertake site inspections at a frequency that is relevant to the risk, which will include monitoring conformance with the Outline CEMP. Daily assessment forms will be completed during the daily checks. Checks on equipment will be undertaken to reduce the risk of incidents occurring (for example oil leaks). As a minimum the following equipment and receptors will be inspected:

- Fencing and signage;
- Waste storage facilities;
- Oil separators;
- Chemical storage facilities;
- Bund integrity;
- Foul water storage facilities;
- Silt traps;
- Drainage ditches and watercourses or other nearby environmental receptors;
- Storage vessels (including pumps, gauges, pipework and hoses);
- Secondary containment (for example, secondary skins for oil tanks);
- Spill response materials;
- Equipment with potential to leak oils and other liquids, for example, compressors and transformers; and
- Signage, fencing and condition of any diverted Public Rights of Way and associated temporary bridges.
- Daily risk assessment forms;
- Faults and defects to be identified and rectified; and
- Data for performance monitoring.

2.6.2 Environmental performance data (Potential ground gas accumulations, Groundwater) will be collected and collated into the SHE Plan by the Contractor.

2.6.3 Immediate action including ceasing of all works, if necessary, will be taken should any significant incidents or non-conformance with the Outline CEMP be found during inspection.

2.6.4 All monitoring reports will be made available to statutory and non-statutory bodies on request subject to General Data Protection Regulation (GDPR).

2.6.5 Type and frequency of inspections and audits will be defined within subsequent management plans and detailed CEMP to be developed.

Incident Procedure

Pollution Incident Control Plan (PICP)

2.6.6 The Contractor shall provide and maintain a PICP which will detail their response in the event of any incident on site, which will include and detail how incidents and adverse environmental effects are managed describe the procedure to be followed in the event of an incident (in accordance with the 'Incident Response' procedure below);

- Describe the procedure for the notification of appropriate emergency services, authorities and personnel on the construction site;
- Describe the procedure for the notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers;
- Provide maps showing the locations of local emergency services facilities such as police stations, fire authorities, medical facilities, other relevant authorities, such as NRW and also the address and contact details for each service and authority;
- Provide contact details for the persons responsible on the construction site for pollution incident response;
- Provide contact details of a competent spill response company which can be contacted at short notice for an immediate response;
- Ensure that site drainage plans, and flood risk management plans are available on site and are kept up-to date; and
- Ensure staff competence and awareness in implementing plans and using pollution response kit.

Incident Response

2.6.7 The Contractor shall adequately resource and maintain an Environment Incident Response Team for immediate response and attendance at environmental incidents or aspects. Out of hours contact names and telephone numbers for the Environment Incident Response Team shall be made available to the Project Manager.

2.6.8 All incidents associated with the Proposed Works including environmental incidents will be reported and investigated using the PICP.

2.6.9 The following procedure will be followed in the event of an incident and will be detailed further in the PICP:

- Related works will stop;
- If the incident is controllable by staff on Site, remedial action will be taken immediately in accordance with the PICP;
- The Environmental Manager and SHESQ Manager will be contacted;
- The size of the incident will be assessed; and
- if the incident cannot be controlled by the staff on Site, emergency assistance will be sought.
- The appropriate enforcing authority will be contacted and informed, as appropriate including:

- NRW for incidents affecting rivers, groundwater, marine environment, major emissions to atmosphere and protected species;
- the local sewerage undertaker for incidents affecting sewers;
- the Local Authority Environmental Health Department for incidents that could affect the public or other assets;
- the Food Standards Agency for incidents that have the potential to affect food through deposition on crops or land used for grazing livestock;

2.6.10 Following the control of an incident, below steps will be taken:

- The Project Manager and SHESQ Manager will instigate an investigation into the occurrence of the incident;
- The findings will be sent to the appropriate enforcing authority where necessary; and
- An action plan will be prepared to determine why the incident occurred and whether any modifications to working practices are required to prevent a recurrence. If necessary, the Outline CEMP, PICP and SHE Plan will be updated (and any other plans as appropriate) and all workers will be notified.

Training

2.6.11 The Contractor will ensure that all site personnel and sub-contractors are aware of their responsibilities with respect to the detailed CEMP and its appropriate implementation.

2.6.12 All staff, site visitors and delivery drivers will receive a relevant and proportionate project induction by the Contractor to ensure they are aware of site hazards and health, safety and environmental management requirements. Site staff will be briefed daily by the Contractors prior to work commencing. Site-specific risk assessments will be carried out to ensure the risk strategy of the frequently changing workplace remains relevant.

2.6.13 Where required, environmental training commensurate to the work task, work location and work phase, will be provided by the Contractor.

2.6.14 Toolbox talks will be given to site personnel with information provided to the workforce to ensure that staff are aware of environmental issues and how to manage them in accordance with the detailed CEMP.

3. ENVIRONMENT MANAGEMENT OF SITE OPERATIONS

3.1 Introduction

3.1.1 This chapter of the Outline CEMP describes the environmental management measures that will be implemented during the construction of the Proposed Works to minimise adverse effects on the terrestrial and aquatic environment. These are based on current best practice guidance, Guidance for Pollution Prevention (GPP) documents[3], and mitigation measures as identified during the Environmental Appraisal process.

3.2 General

3.2.1 The Contractor will set up and maintain a register with details of consents, permits and licences required for the Proposed Works.

3.2.2 The Contractor will prepare and implement appropriate measures to control the risk of pollution due to construction activities, materials and extreme weather events.

3.2.3 The Contractor will investigate and provide a report to the Applicant in the event a pollution incident does occur, including the following:

- A description of the pollution incident, including its location, the type and quantity of contaminant and the likely receptor(s);
- Contributory causes;
- Adverse effects and the measures implemented to mitigate adverse effects; and
- Recommendations to reduce the risk of reoccurrence.

3.2.4 The Contractor will consult with the relevant organisations, statutory bodies and other relevant parties when preparing response measures and provide Suitable Experience Personnel (SEP) to monitor and manage works for which they are responsible.

3.2.5 The Contractor will have an Environment Management System (EMS) certified to British Standard (BS) EN ISO 14001.

3.2.6 Site inspections will be recorded in an environmental logbook, incorporating all environmental areas.

3.3 Working Hours

3.3.1 Generally, construction activities would be carried out from Monday to Friday 7am-7pm (including an hour set up and hour shut down) and 8am-6pm on Saturdays and will be

[3] *Guidance for Pollution Prevention (GPPs) are a series of documents that provide environmental good practice and regulatory guidance in Wales, they are directly replacing a series of guidance documents called Pollution Prevention Guidelines (PPGs) that were administered by the Environment Agency. Where no GPP is yet available information provided within the relevant PPGs is still considered as best practice.*

confirmed as part of the Planning Application. Prior agreement will be required from the Local Planning Authority for any works on a Sunday. During the summer months maximum advantage of day light hours will be used, however during the winter months working hours may be reduced to suit available daylight, for certain activities.

3.3.2 There may be some periods of extended or 24-hour working, for example oil filling of the transformer. However, this would be by agreement with the Local Planning Authority.

3.3.3 The following operations may take place outside the core working hours referred to above:

- Completion of operations commenced during the core working hours which cannot safely be stopped;
- The completion of works delayed or held up by severe weather conditions which disrupted or interrupted normal construction activities;
- Getting workers to and from the site, and activities such as briefings, setting to work, maintenance of equipment and machinery (excludes running engines) etc.; and
- Any surveys such as continuous baseline monitoring or ecology surveys which are required to take place at night.

3.4 Lighting

3.4.1 General low-level lighting for access will be required at the temporary construction compounds and task lighting required as needed for the general works. Lighting will be used only when required and will comprise lighting of work areas and access and egress with low level directional lighting.

3.4.2 Contractor shall provide and maintain all lighting for the construction works and the site welfare and site security cabins shall include low level lighting. Motion sensor lighting shall be used in areas of high security risk and access and egress. Construction lighting will follow BS EN 12464 (Parts 1 and 2), Institute of Lighting Professionals Guidance Note 08/23 Bats and Artificial Lighting at Night[4] and Institute of Lighting Professionals Guidance Note 1 for the Reduction of Obtrusive Light[5].

3.4.3 The following measures shall be applied by the Contractor at all times for any lighting provided at or above ground level:

- Lights installed will be of the minimum brightness and/or power rating capable of performing the desired function;
- Light fittings will be used that reduce the amount of light emitted above the horizontal;
- Light fittings will be positioned correctly and directed downwards;
- Direction of lights will seek to avoid spillage onto neighbouring properties; and
- Unnecessary lights will be switched off.

[4] Institute of Lighting Professionals (2023). Guidance Note 08/23 Bats and Artificial Lighting at Night.

[5] Institute of Lighting Professionals (2021). Guidance Note 1 for the reduction of obtrusive light 2021.

3.4.4 The Contractor will ensure that construction works will be restricted to daylight hours wherever practicable, to remove the need for artificial lighting, with focused task-specific lighting provided where this is not practicable. However, task-specific and fixed general lighting will likely be required in months with reduced daylight hours (early mornings and up to 5:30 pm for general workforce) to meet safety requirements.

3.5 Security

3.5.1 The Contractor will provide as appropriate safe working conditions and security of the Construction Compounds and working areas. Site security will likely be posted at Centralised Compounds and will ensure an appropriate amount of lighting for the safe movement of personnel between welfare facilities. For further details on lighting, see **Section 3.4**.

3.6 Welfare

3.6.1 No living accommodation shall be permitted on the construction site. Welfare facilities will be kept clean and tidy. The Contractor shall control rodents encountered on site and shall inform the local authority's pest control officer upon their discovery.

3.6.2 A Construction Traffic Management Plan (CTMP) will be prepared and will provide details of procedures for construction related traffic.

3.6.3 The public will be informed of the nature, timing and duration of particular construction activities and the duration of the construction works by newsletters and liaison with the Contractor.

3.6.4 Construction Compounds will be set out and managed so as to reduce impacts on access to/from private property and housing, and community facilities as far as practicable.

3.6.5 Clear signage and directions for any alternative routes and appropriate alternative diversions will be provided and diversions clearly publicised to maintain access. Signage to advertise that businesses are open and operating as normal will also be provided where required.

3.6.6 Community facilities will be consulted prior to construction where access arrangements will be directly affected. Traffic management systems and diversion routes will be put in place to maintain access to identified community facilities.

3.6.7 Vehicular access will be maintained at all times to community facilities which perform emergency service activities.

3.6.8 Construction activities taking place at public access parks, where practicable will be outside of the peak holiday seasons (e.g. peak summer season (July – August) as well as half terms and Easter holidays).

3.7 Pollution Prevention/Storage and Plant

3.7.1 The Contractor shall demonstrate application of appropriate industry best practice and published guidelines to reduce pollution.

Table 3-1: Summary of Guidance Documents

Title	Details
PPG1: Understanding your environmental responsibilities	An introduction to pollution prevention including containment, waste and emergency planning.
GPP2: Above ground oil storage tanks.	This will advise the correct storage of oils across the Areas for permanent and temporary works, particularly within Contractor compounds to minimise the risk of causing pollution.
GPP5: Works and maintenance in or near water.	Given that site crosses The Afon Dwyfach (NRW Main River) and is in proximity of several streams and ponds to the proposed areas of temporary and permanent works there is the potential to cause pollution, transfer non-native species and can impact on the bed and banks of a watercourse.
PPG 6: Working at construction and demolition sites.	An overarching document providing best practise principles and examples to be used as guidance on how to prevent pollution.
PPG 7: Safe Storage – the safe operation of refuelling facilities	Including guidance on small scale liquid refuelling of plant and machinery on site to prevent damage to surface waters, ground water, land and air.
GPP8: Safe storage and disposal of used oils.	The correct handling of waste during the construction period and during ongoing maintenance, including waste oils, must be safe and secure. Waste minimisation is the preferred option. Waste is regulated under the Duty of Care Regulations. Oil storage is regulated under the Oil Storage Regulations (see GPP2).
GPP13: Vehicle washing and cleaning.	Effluent and run-off from vehicle washing and cleaning can damage the environment and pollute rivers, streams, burns and ground water. It may be a legal requirement to arrange the collection and disposal of effluent and run off. If vehicle wash areas are required on site these should be managed appropriately.
/GPP19: Vehicles: Service and Repair.	The repair and maintenance of machinery and plant must be conducted in an appropriate location and properly managed.
PPG 20: Dewatering underground ducts and chambers	Protection of controlled waters during any dewatering works to avoid pollution.
GPP21: Pollution incident response planning.	Production of a plan will help to prevent or reduce environmental damage of such an incident occurs. A template is available to assist the production.
PPG 26: Safe Storage – drums and intermediate bulk containers (IBCs)	Good practice guidance for the safe storing and handling of small containers and IBCs to reduce the risk of pollution from sites to land, surface waters and ground water.

3.7.2 The Contractor shall make available a suitable quantity of pollution control equipment, including consumable items such as sorbent pads and sorbent granules or similar material. These materials shall be readily available at the Site always and a regular check during the weekly inspections made to see that they are available. Adequate provision shall be made to ensure that sorbent pads, booms and granules are kept dry prior to use.

3.7.3 The Contractor shall make provisions for access to more sophisticated containment/clean-up equipment such as sorbent booms, river booms etc.; which shall be 'boxed' and readily transportable at the construction base/site establishment and available for immediate dispatch to a spillage.

Storage and Handling Requirements

3.7.4 Details on the storage of waste will be provided in the SWMP. Facilities will be provided for the collection, segregation, treatment and disposal of solid and liquid waste.

3.7.5 The following measures shall be implemented on site for the storage of materials by the Contractor:

- All oil and diesel storage facilities will be at least 10 m from any watercourse including surface water drains; and at least 50 m from any borehole or well; Oil storage containers include:
    - oil drums and fixed tanks;
    - intermediate bulk containers (IBCs);
    - mobile bowsers - containers designed to store and dispense oil that can be moved between locations but not under their own power; and
    - some types of generator and transformer.
- Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed.
- All static plant, such as pumps and generators, shall have integral drip-trays where possible or as a secondary requirement external drip trays, that are to be checked and emptied daily in accordance with the Pollution Prevention & Control Plan or Waste Management Plan. All drip trays for static plant refuelling and servicing shall be of sufficient size to retain 10% of the total volume of liquids being 'handled'. Interceptor drip trays shall only be used for oil-based products. They are ineffective for water soluble products.
- For larger items of plant or mobile plant such as side-booms, excavators etc, where the continuous. use of drip trays is not practical, the Plant shall undergo daily inspections by a competent person to check for defects, such as leaking hoses, interference by others etc. Records of inspections shall be maintained and held on file by the Contractor. Where defects are evident the item of Plant shall be removed from the Site immediately; and serviced or replaced as soon as possible.
- Storage facilities will be provided for solid materials, including waste soils, to prevent deterioration of the materials and their escape (via surface run off or wind blow);
- Storage facilities will be kept secure to prevent acts of vandalism that could result in leaks or spills; and

- All containers of any size will be correctly labelled indicating their contents and any hazard warning signs.

Fuel Tanks, Mobile Bowsers and Bunds

3.7.6 In accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016 the following measures shall be implemented by the Contractor:

- Fuel tanks and mobile bowsers (and any other equipment that contains oil and other fuels) shall have secondary containment,
- Fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain;
- Any tap or valve permanently attached to a tank or bowser through which fuel can discharge, will be fitted with a lock;
- Where fuel is delivered through a pipe permanently attached to a tank or bowser:
    - the pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use;
    - the pump or valve will be fitted with a lock;
    - the pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser;
    - the pipework will pass over and not through bund walls;
    - tanks and bunds will be protected from vehicle impact damage; and
    - tanks will be labelled with contents and capacity information.
- All valves, pumps and trigger guns will be turned off and locked when not in use.

3.7.7 Suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans) including:

- Each container or piece of equipment will be stored in its own drip tray made of a material suitable for the substance being handled; and
- Containers and equipment will be stored on a firm, level surface.

Drum Storage

3.7.8 In accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016, where oil drums are over 200 litres it will be ensured that:

- Multiple drums and containers have suitable secondary containment with sufficient capacity to contain at least 25% of the total volume of the containers or 110% of the largest container, whichever is the greatest;
- Drum storage areas will be covered to prevent rainwater getting into bunds and drum pallets;
- Drums will be labelled and positioned such that leaks cannot overshoot the bund or drip tray wall; and
- All containers are stored securely when the site is unattended.

Flammable and Hazardous Substances

3.7.9 The Contractor shall ensure that all flammable and hazardous substances will be kept in accordance with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) and any substance specific safety data sheets, which would be expected to contain measures such as, within a secure bunded cupboard, cabinet or tank constructed of materials which are chemically resistant to its contents.

Deliveries and Dispensing

3.7.10 For deliveries and dispensing activities, it will be ensured that:

- Site-specific procedures are in place for bulk deliveries;
- Delivery points and vehicle routes are clearly marked;
- Emergency procedures are displayed, and a suitably sized spill kit is available at all delivery points, and staff are trained in these procedures and the use of spill kits;
- Suitable facilities (for example, drip trays, drum trolleys, funnels) meet the sites specific dispensing needs and are maintained and used;
- Tank capacities and current contents levels are checked prior to accepting a delivery to ensure that they are not overfilled;
- All deliveries are supervised throughout the delivery operation;
- Spill prevention equipment is used during dispensing activities; and
- All spillages occurring during dispensing and handling activities are cleared up and reported via the SHESQ Manager and are dealt with in accordance with **Section 2.6** of this Outline CEMP.

Vehicles and Plants

3.7.11 The Contractor shall ensure:

- Vehicles and plant provided for use on the site will be in good working order to ensure optimum fuel efficiency and are free from leaks. Plant with integral bunding and/or drip trays will be specified;
- Throughout construction phase the Contractor shall ensure as a minimum that all vehicles that access the construction site shall carry an "Emergency Grab Pack"/ spill kit) for immediate use in the event of a pollution incident. All fuel bowsers and emergency vehicles shall carry larger spill kits including sorbent pads and sorbent material to deal with any small spillages, in addition to polythene sacks for gathering spent absorbents. The Contractor shall make provisions for access to more sophisticated containment/clean-up equipment such as sorbent booms, river booms etc.; which shall be 'boxed' and readily transportable at the construction base/ site establishment and available for immediate dispatch to a spillage;
- Any hired vehicles and plant will be checked on delivery and not accepted if they are not in good working order for example, leaking, excessive fumes, excessive noise and/or smoke;
- Vehicles and plant will be regularly maintained to ensure that they are working at optimum efficiency and are promptly repaired when not in good working order;

- Vehicles and plant will not park near or over drains;
- Employee- owned vehicles will not be driven or parked in construction areas unless authorised to do so;
- Fuel/ oil refilling of vehicles and plant will be carried out on hardstanding using drip trays and not over or near drains, or, where this is not reasonably practicable, drip trays and/or drain covers will be used to reduce the risk of spills;
- Vehicles and plant will not be overfilled with fuel; and
- Plant containing oils will be inspected daily and maintained to both prevent and identify leaks.

Road Sweeping

3.7.12 Road sweeping will be undertaken as required to remove deposits of silt from roads and reduce the risk of silt being washed into surface water gullies and watercourses. The frequency of road sweeping will be based on the risk involved with the on-going activities.

3.8 Material/Resource and Waste Management

3.8.1 There are no allocated/safeguarded mineral or waste sites are located within the Bryncir Works Site. Additionally, since materials and wastes arising from extraction, processing and manufacture of construction components are being developed in a manufacturing environment with their own waste management plans. Therefore, materials and waste has been scoped out of the assessment for the Proposed Works.

3.8.2 Best working practices and measures to manage the wastes produced during the construction phase of Proposed Works have been provided below.

3.8.3 A SWMP will be prepared for the Proposed Works. The SWMP will adhere to all relevant legislation and the Applicant's waste management procedures including technical guidance note (AMTE TG 010).

3.8.4 The Contractor will ensure that the application of circular economy principles will be followed, including:

- Design solutions to prevent the production of waste where feasible, and to send the waste produced for recovery where possible;
- Considering all phases of construction, operation and decommissioning in a lifecycle approach; and
- Identification of resource streams that might be considered by-products (i.e. not wastes, as per applicable legislation) and reused or recycled.

3.8.5 The Contractor will ensure that waste storage areas will be incorporated into the design with waste segregation measures are in place.

3.8.6 The Contractor will ensure that Identification and specification of material resources that can be acquired responsibly, in accordance with BES 6001 Responsible Sourcing of Construction Products.

3.9 Geology, Hydrogeology, Land Use and Agriculture

3.9.1 The Study Area is underlain with Glaciofluvial Sheet Deposits, Alluvium, Peat and Till Superficial deposits and Llanbedrog Volcanic Group, Dwyfach Formation and Cwm Eigiau Formation Bedrock. There is one historic borehole log within the Bryncir works site. Ground stability classifies most of the Bryncir works site as stable, with some landslide, running sand and compressibility hazards. A small section at the south-western most extent of the Bryncir works site falls within a Mineral Safeguarding Area (MSA) for sand and gravel. There is an area of surface ground workings including gravel pits, brit pits (detailed as ceased gravel pits), refuse heals and a disused tip 15 m west of the Bryncir works site. There are other isolated areas approximately 170 m west and 170 m south-west of the Bryncir works site) that are 'cuttings' and an area 125 m north of the Bryncir works site mapped as a 'pond'. There is a small area of underground workings approximately 15 m west of the Bryncir works site for 'Unspecified Melin' (dated 1913).

3.9.2 The Proposed Works have the potential to cause geological and hydrological impacts. Construction activities have the potential to result in the loss or damage on the identified geological receptors i.e. bedrock. The Bryncir works site is predominantly within areas of low potential for ground instability, except for areas of Alluvium and Peat in the west where compressibility and uneven settlement hazards are likely present and also running sand conditions may be present. Temporary impacts on the sand and gravel MSA includes impediment of the MSA within the Bryncir works site. Construction activities could affect groundwater flow, quality, and levels, and create contamination risks from accidental spills, leaks, and the disturbance of existing contaminants. There is also a risk of importing potentially contaminated materials, exposing workers to harmful substances and temporary or permanent loss of soil resources. During maintenance works there is the potential for contamination of shallow groundwater from accidental leaks and spills, or plant breakdown.

3.9.3 Key construction mitigation and control measures to prevent adverse effects on Geology, Hydrogeology, and Land Contamination have been provided in **Table 4-1**.

Contaminated Land

3.9.4 The Contractor shall ensure that the contaminated materials are segregated and stockpiled separately from materials that are uncontaminated and/or suspected of being uncontaminated until verification testing has been undertaken. The Contractor shall stockpile materials displaying obvious signs of contamination on an impermeable surface and prevent leaching of contaminants to ground and water. The Contractors method for handling and stockpiling contaminated materials on site (including for example, containment measures, such as bunding, membranes, temporary drainage, and alternative pollution prevention methods) shall be forwarded to the Project Manager for approval prior to the commencement of such works.

3.9.5 The permanent storage of contaminated materials on site shall not be permitted.

3.9.6 The Contractor will ensure that:

- Suitable Personal Protective Equipment (PPE) and good hygiene practices are implemented to reduce risk to human health in areas of known contamination;
- Work will stop in the vicinity of any previously unidentified contamination encountered until the nature and concentration of the contaminant(s) are determined and appropriate risk control measures implemented;

- Clay bungs or other vertical barriers will be constructed within trench excavations where deemed necessary to prevent the creation of preferential drainage pathways or to prevent the creation of preferential migration pathways for contaminants (where suspected); and
- Guidance on the assessment of risks from potentially contaminated land will be followed in line with the Model Procedures for the Management of Land Contamination (CLR11).

3.9.7 The Contractor shall undertake suitable ground investigation to ascertain the ground conditions at the areas including the assessment of soil conditions and a suitable programme of gas monitoring to ascertain the gas regime. The investigation should also include the assessment and potential remediation of contamination encountered.

3.9.8 Any waste materials generated as a result of the Proposed Works will be disposed of satisfactorily by registered waste carriers and in accordance with Section 34 of the Environmental Protection Act 1990 and NRW relevant guidance on waste management. Uncontrolled disposal or discharge of waste is strictly forbidden, and compliance of all activities related to the management of waste with all existing local laws and regulations shall be assessed and assured by the subsidiary.

3.9.9 Acute exposure to potential contamination will be mitigated through normal working practice using appropriate Risk Assessment Method Statement (RAMS) and use of standard PPE and hygiene best practice. Where contamination is suspected, construction workers will be provided with appropriate PPE or Respiratory Protective Equipment (RPE) (over and above the standard PPE) to prevent direct contact. Earthworks will be completed in accordance with a Contaminated Land: Applications in Real Environments (CL:AIRE) compliant Materials Management Plan (MMP) to ensure re-used material does not present a risk to human health or the environment and complies with UK waste legislation regulations. An earthworks specification will be produced that will include protocols for testing and limiting values to ensure that imported materials are suitable for their intended use in terms of their chemical quality.

Use of Support Fluids

3.9.10 Any facilities for the storage of oils, fuels or chemicals will be sited on impervious bases and surrounded by impervious bund walls. The volume of the bunded compound should be 110% of the capacity of the tank, all filling points, gauges, vents and sight glasses will be located within the bund. Associated pipework should be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets will be detailed to discharge downwards into the bund and refuelling will be supervised at all times, preferably on an impermeable surface. This system will reduce the potential for the addition of new contaminants to the existing baseline environment (e.g., spill or leak).

3.9.11 Where practicable appropriate drainage at the proposed infrastructure will be implemented to prevent contamination migration into and then via any trench fill where required.

Soil Management Measures

3.9.12 The Contractor will follow DEFRA guidance (in particular, DEFRA Code of Good Agricultural Practice for the Protection of Soil, 1998) and will include, but not be restricted to, the following measures, where required. The key construction mitigation and control measures are provided in **Table 4-1**.

3.9.13 The handling and temporary storage of soils will be in accordance with DEFRA (2009) Construction code of Practice and the IoQ (2021) Soil Handling Guide.

3.9.14 Any unexpected disused below ground tanks, structures and/or pipework/services encountered during construction that cannot be avoided will be appropriately decommissioned and removed (where necessary) by an appropriately qualified person as appointed by the Contractor.

3.9.15 Temporary installation or upgrade of existing access tracks for the Construction Compounds and work-fronts will be set up Options include provision of bog matts (where wet soil conditions are anticipated) and compacted gravel tracks (where road-going vehicles or heavy traffic is anticipated).

3.9.16 Any concrete used in below ground infrastructure will be selected based on the appropriate sulphate classifications.

3.10 Water Resources and Flood Risk

3.10.1 There are anticipated effects on flood risk during the construction of the Proposed Works, given its location within an area mapped as being at risk of flooding from surface water or small watercourses.

3.10.2 Appropriate industry best practice and published guidelines will be followed to reduce pollution and sediment movement during construction.

Surface Water Resources

3.10.3 The Contractor shall take all necessary precautions to ensure that oil or other deleterious matter shall not enter any existing drainage system or water courses and shall not by his operations, pollute or injuriously affect any drainage systems, water supply, groundwater aquifers, streams, rivers or estuary. All liquids contaminated by oil or other deleterious matter shall be passed through approved interceptors to remove contamination.

3.10.4 Best practice measures to be implemented include:

- Contractor will ensure that the drains do not act as pathways for contamination or cause flooding off-site, consulting with the Local Flood Authority wherever necessary;
- Dewatering and discharge of water will be carefully controlled to prevent the risk of sediment laden run-off entering watercourses;
- Water removed from excavations will be treated in a suitable manner to avoid the passage of silt into local watercourses. Where settlement or filtering is not practicable or effective, alternative disposal options will be considered, for example discharge onto a grassed area (with consent from the landowner and following NRW consultation), and discharge to foul sewer (with consent from the local sewerage undertaker);
- Watercourses will be protected from surface water run-off by using French drains, cut off ditches, grips, silt fences or bunds round the edge of watercourses. Numerous small, passive mitigation measures will be installed in preference to one large treatment system to prevent large-scale water build-up;
- Existing and new surface water drains will be kept clear of silt or weed build-up;

- Roads and hard surfaces will be kept clean, to prevent a build-up of mud and sediment that could contaminate surface water;
- All soils will be stored a minimum of 10m from watercourses and any potentially contaminated soil will be stored on an impermeable surface and covered to reduce leachate generation and potential migration to surface waters;
- Clay bungs or other vertical barriers will be constructed within trench excavations where deemed necessary to prevent the creation of preferential drainage pathways or to prevent the creation of preferential migration pathways for contaminants (where suspected);
- Ensure construction compounds, areas of storage (including topsoil where possible) and parking bays are located outside of any areas vulnerable to flooding; and
- No refuelling or storage of hazardous materials within 10 m of a watercourse or 50 m of a well, spring or borehole.

Groundwater Compliance

3.10.5 It is the Contractor's responsibility to ensure compliance with the Groundwater Regulations 1998 (SI 2746) and other relevant guidelines for protection of groundwater.

3.10.6 In accordance with the Groundwater Regulations the Contractor shall implement procedures to:

- Prohibit the use of construction materials containing List I substances that come into contact with groundwater; and
- Control the use of construction materials containing List II substances that come into contact with groundwater by demonstrating that List II substances do not leach out such as to create groundwater pollution or otherwise prohibit their use.

Other Discharges

3.10.7 Other effluents may be produced that need to be properly managed and controlled in order to prevent contamination of surface water or groundwater. As part of best practice measures, the Contractor will ensure that:

- Washing of equipment using detergent is carried out at commercial facilities only;
- Washing of vehicles and equipment without the use of detergent is only carried out at either commercial facilities, or at purpose-built wash stations where the water is contained for controlled disposal; and
- All foul effluent will be contained; and the foul effluent container will be subject to daily inspection and a maintenance and emptying schedule as recommended by the manufacturer. The effluent will be removed by tanker and disposed of at a licensed facility.

3.10.8 The Contractor shall not be permitted to make discharges of any kind to watercourses or sewers without the prior written consent of the appropriate authority and shall comply with all their requirements in respect of discharges. Requests for permission to discharge to watercourses or sewers shall be made by the Contractor to NRW, Welsh Water, their Agents, or other appropriate authorities. Discharges to ground via soak aways shall not be permitted under any circumstances.

3.10.9 The Contractor shall provide settlement tanks of sufficient capacity to ensure that discharge water meets standards required by NRW, Welsh Water, or their Agents.

3.10.10 The Contractor shall manage all surface water from paved areas or roofs, which shall otherwise flow into the working area and shall ensure that surface run-off is not permitted to enter any excavation. Pumping shall be provided as necessary.

3.10.11 The Contractor shall record details of all existing drains within excavated areas and the drains shall be reinstated where necessary on completion of the Works.

3.10.12 The Contractor shall, whilst he is responsible for the care of the Works, maintain all interior surfaces of pipes and manholes free from any liquid or solid deposits and shall prevent any such deposits.

Drainage

3.10.13 Land drainage may be encountered and adversely affected during construction activities. To minimise impacts on the drains, the following best practice measures will be implemented:

- The measures in **Section 3.9** of this Outline CEMP (Soil Management) will be prepared in advance of construction to ensure protection, conservation and reinstatement of soil material, its physical and chemical properties and functional capacity for agricultural use;
- Permanent surface water/ agricultural drains will be re-installed to reinstate any pre-existing field drainage systems to pre-construction condition;
- Extended excavations will be arranged so as not to create preferential drainage pathways with the potential to cause flooding of lower land;
- Appropriate measures will be implemented such as the introduction of baffles or creation of sumps to reduce the risk of preferential drainage paths being created;
- Where drains are encountered they will be either repaired or diverted to ensure that preferential pathways are not created;
- Ensure that all reinstated surfaces have the same runoff properties and are at the same elevation as existing as far as practically feasible; and

Flooding

3.10.14 There are anticipated effects on flood risk during the operation and maintenance of the Proposed Works, given its location within an area mapped as being at risk of flooding from surface water or small watercourses. Mitigation measures to control on-site flooding will be implemented by the contractor and will comprise of the following:

- During construction check local and national weather forecasts, and NRW website (https://naturalresources.wales/flooding/check-flood-warnings/?lang=en) to check the live flood warning map (which is updated every 15 minutes to show flood alerts and warnings). The five-day flood outlook can also be checked on the NRW website);
- Following the completion of all construction works, the land temporarily used within the working area will be fully reinstated as near as practically possible to its former condition, and where possible all reinstated surfaces will have the same runoff properties and elevation as existing or as agreed with landowners

and stakeholders in advance (this will include the reinstatement of drainage ditches and existing culverts);

- Where possible, soils will be stored at least 10 m away from watercourses, and outside of areas of floodplain. Where this is not possible, gaps will be provided in stored topsoil to prevent the impoundment of flood water (all year around); best practice measures will be applied where required to ensure that stockpiled soil will not be eroded/ transported by overland flow and will not enter any water bodies (such as berms, vegetated strips and silt traps will be included where required);
- Regular monitoring will be put in place to ensure that mitigation measures function as intended and check on any drainage systems to ensure flows are not impeded. This can take the form of regular visual inspections to check that watercourses have not become blocked by debris and should be used to trigger immediate remedial action in the event of debris accumulation;
- Geotextile will be used on the ground in the immediate vicinity of watercourse/drain crossings to reduce damage to the surrounding ground and vegetation and reduce erosion; and
- Where possible access roads / routes, parking bays, hardstanding areas (i.e. those that may be required for temporary access, maintenance or repairs) are laid at existing elevations and not raised compared to existing or surrounding ground levels.

3.11 Historic Environment

3.11.1 While no significant effects have been identified on potential below ground archaeological remains, ground-breaking works will impact a non-designated historic asset of unknown date, the route of an old road (PRN 62128) from Garn Dolbenmaen. Additional mitigation in the form of archaeological watching brief on selected ground works may be required to determine the value and spatial extent of these remains.

3.11.2 Mitigation measure to reduce impacts on historic environment have been provided below in **Table 4-1**. Best working practices to be implemented/followed by Contractor during construction phase have been provided below:

- If an archaeological site is found, all works will stop until an archaeological management plan is produced to identify the controls and measures that are required to be put in place to effectively manage the archaeological works during the proposed development.

3.12 Traffic and Transport

3.12.1 The main access to the Bryncir works site would be from the A487 using an upgraded existing access point opposite Bryn-yr-efail-uchaf, before following field boundaries to the location of the substation compound. The permanent access track would be approximately 250-300 m long with a maximum width of 6 m and would have a tarmacadam surface with crossing points to enable landowner access across the track. A small number of staff will also use an access off the B4411 to construct a tower off this road, as well as an access on the A487 North. No significant adverse effects are anticipated at any of the assessed links during construction phase.

3.12.2 Mitigation measures include traffic management where construction vehicles interact with the public road network, restricting the use of certain roads, restricting arrivals and departures to avoid peak traffic flow, implementing a Delivery Management System to control deliveries, encouraging car sharing. Following the implementation of embedded mitigation measures, impacts would not be significant at any of the assessed roads in the Study Area. Detailed mitigation measures have been provided in **Table 4-1**.

3.12.3 The Proposed Works has looked to mitigate by design issues in relation to traffic and transport. The detailed CTMP shall ensure that all traffic associated with the construction works operate in a safe and compliant manner at all times and shall be signed by the Contractor and the relevant highway authority.

3.12.4 The detailed CTMP shall ensure that all traffic associated with the construction works operate in a safe and compliant manner at all times and shall be signed by the Contractor and the relevant highway authority. The detailed CTMP shall include working procedures and measures to:

- Ensure the effects on local residents, properties, businesses and schools caused by construction traffic, where practicable, are kept to an absolute minimum;
- Maximise safety in all aspects of the Proposed Works associated with the movement of traffic;
- Ensure all third-party traffic interfacing with the Proposed Works are kept safe from the on-going works;
- Include clear liaison with the Local Authority regarding traffic caused by construction works;
- Identify suitable signage and traffic controls to be used for all access points; and
- Include a Driver Information Pack covering a variety of topics and providing information on the requirements of working on the Proposed Works .; and
- Use of traffic marshals to manage HGV movements with local traffic and pedestrians/cyclists to minimise exposure for these groups to construction traffic.

3.12.5 A copy of the access route plans shall be provided to all suppliers and haulage operators by the Contractor when orders are placed to ensure that drivers are fully briefed on the required route to take. The supplier would be made aware that these routes are required to be followed at all times unless agreed or alternate diversions are in place.

3.12.6 Information regarding construction traffic activities and movements would be provided to the public. The means of communication would include online updates, letter drops, information boards and details of key contacts.

3.12.7 The Contractor will implement a Travel plan to include measures to reduce single occupancy car trips via a car sharing scheme and the use of minibuses to transport workers to compounds and access locations.

3.13 Air Quality and Emissions

3.13.1 The Llystyn Isaf cWS, Afon Dwyfach cWS, Tyddyn-y-Felin cWS and Dolwar Heath cWS all partially fall within the Bryncir works site which would be sensitive to the impacts of dust settling either directly or indirectly through increased stresses on the plants. There

are multiple residential receptors, two PRoWs and NCR 8 within 250 m of Bryncir works site.

3.13.2 The source of potential Air Quality an Emissions effects during the construction phase includes construction dust emissions and site plant emissions. Earthworks, construction activities and trackout are all classed as having a large magnitude. The area surrounding the Bryncir works site is predominantly rural with several human health and nature conservation receptors. It is deemed to have high sensitivity to dust soiling and human health impacts, and a low sensitivity to nature conservation impacts. The impact of operational and maintenance emissions has been scoped out of this assessment.

3.13.3 The Contractor shall carry out work in accordance with dust assessment and minimise air quality impacts from the construction works, any spoil transport systems installed and mitigation measures to reduce the effect of dust and emissions from construction activities.

3.13.4 A series of site-specific mitigation measures recommended to be adopted during construction phase of Proposed Works have been provided in **Table 4-1**.

3.13.5 Best working practices to be implemented/followed by Contractor during construction phase have been provided as follows:

- Continuous dust monitoring will be undertaken at agreed points prior to work commencing on site and throughout construction;
- Where practicable, solid screens or barriers will be installed around dusty activities or the Site boundary that are at least as high as any stockpiles at site;
- Earthworks and exposed areas or soil stockpiles will be managed to prevent wind-borne dust. Methods such as covering, seeding or water suppression;
- All vehicle operators will be switched off when not in use and ensured that there will be no idling;
- A maximum speed limit of 15 miles per hour (mph) on surfaced and 10 mph on unsurfaced haul roads and work areas will be imposed;
- Equipment will be readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- Scabbing (roughening of concrete surfaces) will be avoided if possible, to reduce concrete dust;
- For smaller supplies of fine powder materials, it will be ensured that bags are sealed after use and stored appropriately to prevent dust;
- All construction plant and equipment will be maintained and in good working order;
- On-site haul roads will be inspected for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Where practicable, hard surfaced haul routes will be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;

- Access points to the local highway will be prepared with temporary hard surfacing and wheel washing facilities;
- It will be ensured that the construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (using wheel washers, etc.) and sheeted when on public highways.
- There will be no bonfires or burning of waste materials; and
- Stockpile cover will be removed only in small areas during works and not all at once.

3.14 Noise and Vibration

3.14.1 There are eight sensitive receptors within the Study Area which were all are defined as of medium sensitivity to noise.

3.14.2 There are five key phases of construction works that may result in potential adverse noise and vibration effects including preliminary works, enabling works, underground cable installation, overhead line installation, landscaping works for reinstatement and demobilisation. It is predicted that the daytime construction noise levels would be highest during the enabling works and landscaping works for reinstatement. Noise levels from construction activities are all expected to result in negligible impacts on a medium sensitivity receptors (not significant) with the exception of one receptor which has the potential to experience noise level of 66 dB LAeq,T (equivalent continuous sound level) during the landscaping works for reinstatement phase, representing a minor adverse and not significant impact.

3.14.3 The Contractor shall implement Best Practicable Means (BPM) as per recommendations set out in BS5228 (Code of practice for noise and vibration control on construction and open sites), and current guidelines set down by the Health and Safety Executive. The Contractor will comply with the noise regulations or restrictions imposed by the Local Authority. The Contractor will apply to the Local Authorities for prior consent under Section 61 of the Control of Pollution Act for noisy activities where required. The Contractor shall implement all noise control measures required to meet any noise limits agreed with the Local Authorities.

3.14.4 The Contractor shall bring to the site only plant conforming to relevant national, European Union or international standards, directives and recommendations on noise and vibration emissions. All generators and compressors used on the site shall be 'sound reduced' models fitted with acoustic linings and all ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers for types of plant and equipment whose noise emissions are governed by EC Directives, only plant bearing the appropriate conformity mark shall be used on site.

3.14.5 Operations of equipment shall be stopped whenever unreasonable noise or disturbance results from faulty equipment. Faults to equipment shall be remedied by the Contractor immediately or the equipment shall be replaced.

3.14.6 All powered equipment in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum required.

3.14.7 Noise levels shall be monitored by the methods set out in Appendix E of BS5228 series. All measurements shall be made on a noise level meter to BS5969. BS7580-1:1997 shall also be referred to.

3.14.8 The Contractor shall ensure that audible warning systems, e.g. vehicle reversing sirens, are switched to a setting, which is compatible with Health and Safety Executive requirements.

3.14.9 The Contractor shall undertake to keep site noise to a minimum and must carry out all works with the local community in mind.

3.14.10 For all construction activities the following construction noise limits as set out in Section E5 of BS5228 will apply (subject to any alternate agreement in terms of a Section 61 Consent.):

- 65 dB for daytime;
- 55 dB for evening and weekends (Saturday after 1pm and Sunday); and
- 45 dB for night-time.

3.14.11 Measures to control noise as defined in Annex B of BS 5228-1 and measures to control vibration as defined in Section 8 of BS 5228-2 will be adopted where reasonably practicable. Site-specific measures recommended on assessment for Proposed Works will be implemented during the construction works and have been detailed within **Table 4-1**.

3.15 Ecology and Nature Conservation

3.15.1 The Bryncir works site comprises various types of woodland, scrub, grassland, hedgerows, buildings and running water. There are five international statutory sites for nature conservation (Special Areas of Conservation, Special Protection Areas and Ramsar sites) within 10 km of the Bryncir works site. Nine other statutory designated sites (Site of Special Scientific Interest, National Nature Reserve and Local Nature Reserves) are present within 5 km of the Bryncir works site. There are 40 non-statutory sites designated for nature conservation within 2 km of the Bryncir works site, four of which are partially within the Bryncir works site. There are six areas of ancient semi-natural woodland, one site of restored ancient woodland and one site of ancient woodland of unknown category within 2 km of the Bryncir works site. Habitats of Principal Importance identified within 1 km of the Pentir works site include purple moor grass and rush pastures, lowland heathland, lowland dry acid grassland, lowland fen and reedbed, lowland meadow, open mosaic habitat, traditional orchards, hedgerows, rivers and deciduous woodland. The following protected and notable species were identified within 2 km of the Bryncir works site: terrestrial invertebrates, aquatic macroinvertebrates (river skater (Aquarius najas) only), fish, breeding birds, bats, badger, otter, hedgehog, brown hare, reptiles, flora and INNS.

3.15.2 The Proposed Works have the potential to affect ecology and nature conservation through habitat loss (temporary and permanent), disturbance (light, noise, vibration and human activity), habitat degradation, species mortality and spread of INNS during construction. During operation, no effects are anticipated. However, should maintenance works be intrusive and require refurbishment or replacement the sources of potential effects include species mortality, disturbance (light, noise, vibration and human activity) and spread of INNS.

3.15.3 Embedded mitigation measures have been integrated into the Proposed Works to minimise potential ecological impacts from construction, operation, and maintenance. The Proposed Works have been designed to avoid impacts on designated sites and key habitats, with buffers applied to woodlands, hedgerows, trees, and watercourses. The detailed CEMP will outline measures to address construction dust, pollution, light and noise.

3.15.4 Measures contained in The Environment (Wales) Act 2016 and best practice guidance on the control and removal of invasive weed species will be implemented.

3.15.5 Contractors and site staff will receive a toolbox talk on the various ecological sensitivities of the development as part of their site induction.

3.15.6 Prior to construction, a team of suitably qualified and experienced ECoWs, will be appointed to support, oversee and monitor the Contractor with the implementation of measures defined within the Outline CEMP. Multiple ECoWs may be required during construction to ensure appropriate oversight of multiple active works locations. Broadly, the ECoW will:

- Provide ecological advice to the Contractor over the entire construction programme, at all times as required;
- Undertake or oversee pre-construction surveys for protected species in the areas affected by the Proposed Works;
- Monitor ecological conditions during the Construction Stage to identify additional constraints that may arise as a result of natural changes to ecological baseline over time, e.g., the monitoring of badger activity within and in close proximity to construction works;
- Provide ecological advice to the Contractor over the entire construction programme, at all times as required;
- Undertake or oversee pre-construction surveys for protected species in the areas affected by the Proposed Works; and
- Monitor ecological conditions during the Construction Stage to identify additional constraints that may arise as a result of natural changes to ecological baseline over time, e.g., the monitoring of badger activity within and in close proximity to construction works.

3.15.7 The ECoW will have previous experience in similar ECoW roles and be approved by the Applicant. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.

3.15.8 The detailed mitigation measures have been provided in **Table 4-1**.

3.16 Climate Change

3.16.1 The climate risks were assessed as moderate, unlikely, or rare. While the event is possible, its occurrence is infrequent, with some evidence suggesting a potential shift from business as usual. The likelihood of the event is estimated to be between 0% and 50%. The consequence of climate change impacts was identified as insignificant and minor in terms of their impact on the Proposed Works. Risks identified during the

construction and operation phases are not significant and no specific mitigation measures are required.

3.16.2 Best working practices and measures to reduce impacts on climate change during construction phase have been provided below:

- The Proposed Works will be designed and operated in accordance with the risks and mitigation measures outlined in National Grid Electricity Transmission's Climate Resilience Strategy;
- The Contractor will ensure that welfare facilities are cooled to reduce effects on the construction site and workers and machineries are switched off when not in use;
- The Contractor will ensure that adequate rest, shade and PPE is provided to the construction workers;
- The Contractor will ensure that the construction compounds drainage has sufficient capacity;
- Consider adjusting the programme of activities and reviewing the wind speed prior to any work at height;
- Construction materials will be sourced from local suppliers and local waste disposal facilities will be used where available and practicable to minimise the distance materials are transported from source to site and from site to disposal;
- Avoid disposal of construction waste to landfill, maximising recycling, and reuse of waste where possible;
- Using modern and efficient low emission construction plant and delivery vehicles, and/or those powered by electricity from alternative/lower carbon fuels (as far as practicable). The Contractor will ensure high performance of plant and equipment through correct and efficient operation, maintenance, and servicing of vehicle fleet to avoid polluting emissions;
- Training policies will be in place during site induction to avoid idling of engines, spills of fuels (for example, when refuelling) and safe/environmentally sensitive driving techniques to maximise fuel saving; and
- The sustainability credentials of suppliers and companies in the supply chain will be considered as part of the procurement process.

3.16.3 To reduce the level of energy consumption used during construction, innovative construction methods will be utilised where practicable. These may include:

- Avoiding sharp acceleration and braking to conserve fuel;
- Adjusting haul and access road/points to smoother gradients to avoid unnecessary fuel usage; and
- Only using plant when required (including future planning as to what plant is required, and when).

3.17 Landscape and Visual

3.17.1 The Bryncir works site is not covered by any statutory landscape designations, however part of the Study Area falls with Eryri National Park which is 1.1 km east of the Bryncir works site at its closest point. The Bryncir works site is relatively flat with a slight slope to the west, the Study Area is gently undulating. Settlement within the Study Area comprises scattered farms and individual properties. Public Right of Way (PRoW) Dolbenmaen No 18 footpath passes through the centre of the Bryncir works site.

3.17.2 The construction works would introduce some elements of Proposed Works which may result in Landscape and Visual amenity effects.

3.17.3 Best working practices and measures to reduce impacts on landscape and visual receptors during construction phase will be implemented by the Contractor provided in **Table 4-1**.

3.18 Socioeconomics

3.18.1 The Bryncir works site has some receptors relevant to socioeconomics in proximity to it including residential, business, agriculture and tourist uses. There are two PRoW within the Bryncir works site, one passes through the centre of the Bryncir works site and the second only marginally falls within the boundary. There are a further 10 PRoW within 500 m. There is one community facility within 1 km; two visitor attractions, four business premises and several residential properties within 500 m of the Bryncir works site. There are four landowners and one tenant within the Bryncir works site. Construction phase impacts range from minor beneficial for skills uplift to minor adverse in relation to temporary and permanent land take of open spaces.

3.18.2 Best working practices and measures to reduce impacts on landscape and visual receptors during construction phase will be implemented by the Contractor provided in **Table 4-1**.

3.19 Major Accidents and Disasters

3.19.1 Construction activities have not been identified to pose any Major Accidents and Disasters. However, general working practices will be implemented by the Contractor during Construction Phase of Proposed Works.

3.19.2 The construction stage(s) of the Proposed Works will be managed through the implementation of the Construction Phase Plan (required under the CDM Regulations 2015).

3.19.3 The Contractor shall ensure that the design, installation, commissioning, operation and maintenance of plant, drainage systems, equipment, and machinery, including associated systems, will consider Good Engineering Practice.

3.19.4 The Proposed Works will be managed in accordance with Environmental, Health & Safety Management systems.

3.19.5 The Contractor shall ensure that all construction risks will be managed in accordance with the CDM Health & Safety Plan and Construction Phase Plan.

4. CONSTRUCTION MANAGEMENT AND MITIGATION

4.1.1 This section of the Outline CEMP sets out the mitigation and management measures outlined in the Environmental Statement and Register of Environmental Actions and Commitments (REAC) during the Construction Phase. These measures are included as a minimum requirement; they illustrate how the monitoring strategy will be undertaken and who is responsible for each of the measures listed.

4.1.2 **Tables 4-1** of this Outline CEMP outlines they key construction mitigation and control measures within the REAC that will in incorporated into the topic specific management plans as part of the detailed CEMP.

Unique ES Reference	Action/Commitment/Mitigation (including Monitoring Requirements)	Objective	Organisation/Individual Delivering Measure
Bryncir Works			
B-BW-001	During installation, the appointed Contractor would be required to operate under a detailed site-specific Construction Environmental Management Plan (CEMP). It would implement the mitigation measures identified in this ES and the Outline CEMP. The detailed CEMP would set out a variety of control measures for managing the potential environmental effects of the Proposed Works including control and management of noise, dust, surface water runoff, waste and pollution control.	To ensure mitigation and management measures are followed correctly during the construction stage of works.	Construction Contractor
B-BW-002	Subject to geotechnical testing, excavated materials will be re-used on site wherever possible. An Earthworks Material Management Plan will identify materials to be re-used, and material which will need either importing of exporting off site. Where waste materials are to be disposed of off-site this will be at licensed waste disposal facilities in accordance with a Site Waste Management Plan.	Limit permanent removal of soils during construction phase and to reduce adverse impacts on land and soil	Construction Contractor
B-BW-003	During construction, general low-level lighting for access will be required at the temporary construction compounds and task lighting required as needed for the general works.	To reduce disturbance to fauna and reduce landscape and visual impacts	Construction Contractor
B-BW-004	For general construction work the background noise level should not be exceeding 70 decibels (dBA), or that greater from levels obtained from main A487 road. Some specific construction activities will exceed this limit depending on the phase of works, but these would be local to the works area and appropriate Personal Protective Equipment measures would be implemented by construction workers undertaking the work.	To avoid noise and vibration impacts on sensitive receptors.	Construction Contractor
B-BW-005	Temporary fencing would be erected around the Bryncir works site and associated compounds early in the programme to secure the construction area and site security would be in place during non-working hours.	To ensure the site is secure	Construction Contractor

B-BW-006	Generally, construction activities will be undertaken during daytime periods only, from Monday to Friday 7.00 am – 7.00 pm (including an hour set up and hour shut down). No bank holiday or weekend working will be undertaken, unless agreed with the Local Planning Authority. There may be some periods of extended or 24-hour working, for example oil filling of the transformer. However, this would be by agreement with the Local Planning Authority.	To minimise construction impacts on sensitive receptors	Construction Contractor
B-BW-007	Access to the Bryncir works site would be from the A487 using an upgraded existing access point located opposite Bryn-yr-efail-uchaf, before following field boundaries to the substation compound. The design of which shall be suited for the passage of an abnormal (AIL) load i.e. super grid transformer. The access road will have crossing points to enable landowner access across the track.	To minimise disruption to existing transport links and enable landowner access	Construction Contractor
B-BW-008	Aluminium trackway or 'bog mats' would be used to avoid or minimise ground disturbance from vehicles tracking to the working areas and around them as appropriate.	To avoid or minimise ground disturbance	Construction Contractor
Geology, Hydrogeology, Land Use and Agriculture			
B-GH-001	A detailed CEMP will be developed and implemented by the appointed Contractor and will form the basis of the approach to mitigating potential effects on the natural and built environment and the local community. The detailed CEMP will include a range of standard site management and construction methodology techniques. The detailed CEMP will set out how material is to be excavated, segregated, and stockpiled to minimise the potential for run-off, soil quality degradation and wind dispersal of dusts. The detailed CEMP will also establish procedures for dealing with unexpected soil or groundwater contamination if encountered during construction.	To ensure mitigation and management measures are followed correctly during the construction stage of works.	Construction Contractor
B-GH-002	An appropriate intrusive ground investigation of selected areas of the Bryncir works site will be undertaken in accordance with the relevant guidance including Eurocode 7 (BS EN 1997-2:2007) , BS 5930 (2015 + A1 2020) and BS 10175 (2011 + A2 2017) and using the UK Specification for Ground Investigation (2022). The ground investigation will be designed to target the potentially contaminative sources identified within the Bryncir works site, including the following:	To determine the ground condition, assess the nature, extent and magnitude of contamination, assess the risks from potential contaminants to human health/controlled waters and assess the ground gas regime to allow design and construction of foundations and structures.	The Applicant / Construction Contractor

	• Farmland including a former sheepfold (enclosure) (in the central area). • Made Ground associated with the B4411 road, traversing the Bryncir works site in the west, and towers, in the northern-most extent of the northern spur, and in the south-east of the Bryncir works site. • Peat deposits and Alluvium – ground gas. • Near the edge of the Bryncir works site close to the Infilled Ground (Artificial Deposit) adjacent to the Bryncir works site to the west. Also identified as an area of surface ground workings including gravel pits, brit pits (detailed as ceased gravel pits), refuse heaps and a disused tip. If areas of the Bryncir works site are shown to pose a risk, infrastructure would be moved to a different location if feasible. However, if it is not possible to move the infrastructure in contact with the ground, remedial measures would be identified and implemented.		
B-GH-003	An inspection and discovery strategy will be devised and agreed with the regulatory authorities (including the Local Authority and NRW) if required, for implementation during the construction works should unexpected contamination be identified. Potential impacts specific to construction workers (and any adjacent site users) during the construction phase would be controlled and mitigated by the following measures and through working in accordance with CIRIA C811 : Measures to minimise dust generation and run-off. • Provision of PPE, such as gloves, barrier cream, overalls etc. to minimise direct contact with soils. • Provision of adequate hygiene facilities and clean welfare facilities for all construction site workers. • Monitoring of confined spaces for potential ground gas accumulations, restricting access to confined spaces, i.e., to suitably trained personnel only, and use of specialist PPE, where necessary.	To mitigate unacceptable contaminated land related risks to the environment and construction workers and ensure works are legally compliant	Construction Contractor

	• Preparation and adoption of a site and task specific health and safety plan as is required under Health and Safety legislation.		
B-GH-004	Materials excavated during construction will be re-used on-site where possible. Whilst the approach will need to be confirmed by the construction works contractor, this typically involves the preparation of a plan for materials management following the protocols within the Contaminated Land Application in the Real Environment (CL:AIRE) Definition of Waste: Development Industry Code of Practice to ensure that excavated materials are re-used appropriately, sustainably and remain outside the waste hierarchy. Materials which need to be removed from the Bryncir works site will be disposed of to an appropriately permitted facility. The materials management plan will be prepared along with a qualified person declaration to CL:AIRE prior to the construction works commencing.	Limit permanent removal of soils during construction phase, re-use excess material and to reduce adverse impacts on land and soil	Construction Contractor
B-GH-005	Any material imported to the Bryncir works site, such as for supporting foundations, will be natural quarried stone or, if recycled, the material will undergo chemical testing. The suite of contaminants and site use criteria will be agreed with regulatory authorities, in order to demonstrate that the material is suitable for use on the Bryncir works site and does not pose a risk to human health or the environment.	To ensure that contaminants do not enter the ground.	Construction Contractor
B-GH-006	Any Made Ground found to be contaminated with asbestos will require suitable management if it is to be retained on-site or removed (in line with the CAR 2012 and CAR-SOIL 2016). As asbestos only presents a risk if it is disturbed, it is considered that the highest risk would be during the construction stage of the Proposed Works. An asbestos management plan will need to be prepared by a suitably competent person before carrying out works involving asbestos and include methods to be used to prevent or reduce exposure to asbestos and clearly describe how disturbance and spread of asbestos will be minimised or prevented.	To minimise risk of site workers coming into contact with asbestos on site.	Construction Contractor
B-GH-007	The disposal of soil waste contaminated or otherwise, to landfill sites would be mitigated by minimisation of the overall quantities of waste generated during construction, and by considering whether that excavated material consigned to landfill cannot, as an alternative, be put to use either on the Bryncir works site or on other sites. Where there is a requirement to dispose of surplus excavated materials off-site as waste, the material will be characterised to determine firstly	To ensure that contaminants do not enter the ground.	Construction Contractor

	whether it is Hazardous or Non-Hazardous waste in accordance with the Technical Guidance WM3 and then once this is established, the appropriate disposal facility will be determined through Waste Acceptance Criteria analysis, as required.		
B-GH-008	A Soil Management Plan will be prepared and followed, consistent with guidance in the Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (or updated version thereof) and other relevant documents such as The Institute of Quarrying's Good Practice Guide for Handling Soils in Mineral Workings.	Limit permanent removal of soils during construction phase, re-use excess material and to reduce adverse impacts on land and soil	The Applicant / Construction Contractor
B-GH-009	A Pollution Prevention Plan will outline key pollution mitigation measures to be adopted including a Control of Substances Hazardous to Health, fuel inventory and key contacts to be notified in the event of a significant pollution incident, which may subsequently lead to the contamination of controlled waters or soils.	To reduce the potential effects associated with fuels, oils and chemicals required during construction	The Applicant / Construction Contractor
B-GH-010	Hazardous materials will be stored in designated locations with specific measures to prevent leakage and the release of their contents. This will include a requirement for storage areas to be set back an appropriate distance from surface water features and drains to prevent any uncontrolled discharge (and take into consideration the positions of any groundwater abstraction wells), on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain at least 110% of the contents. Valves and trigger guns will be protected from vandalism and kept locked when not in use.	To reduce the potential effects associated with fuels, oils and chemicals required during construction	Construction Contractor
B-GH-011	Only well-maintained plant and other equipment will be used during construction to minimise the potential for accidental pollution from leaking machinery or damaged equipment. Static machinery and plant are expected to be stored on hardstanding areas when not in use and, where necessary, to make use of drip trays beneath oil tanks, engines, gearboxes and hydraulics. Spill response kits containing equipment that is appropriate to the types and quantities of materials being used and stored during construction will be maintained within the Proposed Works site for the duration of the works.	To reduce the potential effects associated with fuels, oils and chemicals required during construction	Construction Contractor
B-GH-012	An understanding of groundwater throughout the Proposed Works will be obtained from ground investigation and monitoring: including before, during and after construction.	To minimise the risk of groundwater flooding and impacts from dewatering to groundwater receptors	Construction Contractor

	A more detailed hydrogeological assessment will be undertaken where trenchless techniques or dewatering is required in higher sensitivity groundwater environments (Secondary A aquifer, for example) or where dewatering is required to facilitate open cut installation. Where dewatering is required, a dewatering scheme will be developed prior to construction to demonstrate that there is an effective strategy to manage water arising from the operations and, where required, sufficient proposals to treat the water prior to controlled discharge. Any such assessment will consider the effects of any draw down or impacts on nearby abstractions or resources along with ground instability. Dewatering will be developed in consultation with NRW and other stakeholders if appropriate.		
Water Resources and Flood Risk			
B-WR-001	During the construction of the Proposed Works contractors will sign up to Met Office Weather reports. In the event of heavy rain being forecast they will leave the Bryncir works site.	To ensure safety of construction workers	Construction Contractor
B-WR-002	The Proposed Works design incorporates a diversion channel to divert the surface water flowpath around it, and also a SuDS attenuation system to ensure there is no increase in flood risk.	To ensure there is no increase in flood risk	The Applicant
Historic Environment			
B-HE-001	An archaeological watching brief on selected ground works may be required to determine the value and spatial extent of on the potential below ground archaeological remains at the non-designated historic asset of unknown date, the route of an old road (PRN 62128) from Garn Dolbenmaen	To prevent potential impacts to archaeological remains	Construction Contractor
B-HE-002	Potential impacts to historic landscape features that cannot be avoided by design can be mitigated through a proportionate programme of archaeological investigation, recording and reporting, such as archaeological excavation in advance of construction	To ensure that no archaeological remains are removed or damaged without record.	Construction Contractor
B-HE-003	The scope of mitigation will be set out in a WSI and agreed with the Archaeological Advisor for Heneb once full details of the construction works have been agreed and prior to works commencing.	To prevent potential impacts to archaeological remains	Construction Contractor

Traffic and Transport

B-TT-001	Establish appropriate access points to facilitate vehicle movements into the Bryncir work site, where necessary.	To reduce, where possible, traffic effects on links that would be more sensitive to changes in traffic volumes.	Construction Contractor
B-TT-002	Any access points requiring the creation of a junction bell mouth would be designed in accordance with the relevant standards outlined in the DMRB CS 123 Geometric Design of At-Grade Priority and Signal-Controlled Junctions, and in consultation with the local highway authority. This would help mitigate any potential safety risks associated with construction activities.	To reduce, where possible, traffic effects on links that would be more sensitive to changes in traffic volumes.	Construction Contractor
B-TT-003	Swept path analysis for AILs and HGVs would be carried out to ensure suitable routing.	To reduce, where possible, traffic effects on links that would be more sensitive to changes in traffic volumes.	Construction Contractor
B-TT-004	HGVs and AILs will follow the designated routes	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-005	Utilising internal routes in the Bryncir works site to avoid using the existing road network where practicable.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-006	Traffic management would be employed where construction vehicles need to interact with the public road network, including providing adequate visibility splays between construction traffic and other road users. Measures such as advanced signage to notify the public of works, and temporary traffic signals or barriers will be implemented. Construction traffic should generally give priority to other road users.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-007	Restricting HGV movements as follows: A487 – B4411	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-008	Route inbound staff vehicles via: A487 – B4411	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-009	Restricting HGV movements to ensure arrivals/departures between 9.00 am and 5.00 pm to avoid increasing traffic levels on the surrounding highway network during the typical weekday peak hours.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor

B-TT-010	Implementing a Delivery Management System to control the bookings of HGV deliveries from the start of the construction period. This would be used to regulate the arrival times of HGVs via timed delivery slots, as well as to monitor compliance with HGV routing. In addition, adequate space would be made available in the Bryncir works site to ensure no queuing back onto the surrounding road network occurs.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-011	Implementing a monitoring system to record the route of all HGVs travelling to and from the Bryncir works site, to record any non-compliance with the agreed routing strategy and delivery hours and to communicate any issues to the relevant suppliers to ensure the correct routes and times are followed.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-012	Construction staff (e.g. non-HGV vehicles) would be directed to take the most direct route to the Bryncir works site using 'higher' order roads, such as A and B classified roads or the SRN.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-013	Encouraging construction workers to car share to reduce single occupancy car trips would promote the benefits of car sharing, such as reduced fuel costs and an environmental impact. A car share system should be implemented to match potential sharers and to help staff identify any colleagues who could potentially be collected along their route to and from the site.	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
B-TT-014	Providing limited (but sufficient) on-site car and cycle parking to accommodate the expected parking demand of workers at the Bryncir works site.	Maintain the safe and effective flow of traffic on the road network and encourage sustainable behaviour	Construction Contractor
B-TT-015	A specialised haulage service would be employed to allow AIL to transport components with the necessary escort, permits and traffic management, with the contractor consulting the relevant highways authorities to ensure the correct permits are obtained. The police will also be given advanced notification under the Road Vehicle Authorisation of Special Types Order 2003	Maintain the safe and effective flow of traffic on the road network	Construction Contractor
Air Quality and Emissions			
B-AQ-001	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	To minimise air quality impacts on receptors	Construction Contractor

B-AQ-002	Display the name and contact details of person(s) accountable for air quality and dust issues on the construction compound fence. This may be the environment manager or environmental engineer or the site manager.	To ensure the proposed development air quality contacts are known.	Construction Contractor
B-AQ-003	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	To minimise air quality impacts	Construction Contractor
B-AQ-004	Make the complaints log available to the local authorities when asked.	To minimise air quality impacts	Construction Contractor
B-AQ-005	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.	To minimise air quality impacts	Construction Contractor
B-AQ-006	Undertake daily on-site and off-site inspection (including roads), where receptors are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked.	To monitor and minimise air quality impacts	Construction Contractor
B-AQ-007	Carry out regular site inspections to monitor compliance with the Outline CEMP commitments, record inspection results, and make an inspection log available to the Local Authorities when asked.	To monitor and minimise air quality impacts	Construction Contractor
B-AQ-008	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	To monitor and minimise air quality impacts	Construction Contractor
B-AQ-009	Ensure all vehicles switch off engines when stationary - no idling vehicles.	To minimise air quality impacts	Construction Contractor
B-AQ-010	Sustainable power sources (solar panels etc.) to be used where practicable. Where available, generators are to be low emission with hybrid battery systems (or to current best practice).	To minimise air quality impacts	Construction Contractor
B-AQ-011	Use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	To reduce risk of dust blowing around Site and to protect workers from inhalation.	Construction Contractor

B-AQ-012	Ensure an adequate water supply on the site for effective dust and particulate matter suppression mitigation, using non-potable water where possible and appropriate.	To ensure dust creating activities are dampened down to reduce risk to Site workers.	Construction Contractor
B-AQ-013	Use enclosed chutes and conveyors (if used) and covered skips.	Reduce risk of materials becoming loose and potential contamination of Site.	Construction Contractor
B-AQ-014	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	To minimise impacts associated with track out.	Construction Contractor
B-AQ-015	Avoid site runoff of water or mud.	To minimise air quality impacts.	Construction Contractor
B-AQ-016	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	To minimise air quality impacts.	Construction Contractor
B-AQ-017	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	To minimise air quality impacts.	Construction Contractor
Noise and Vibration			
B-NV-001	Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme.	To minimise noise and vibration impacts	Construction Contractor
B-NV-002	All contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) which should form a prerequisite of their appointment.	To minimise noise and vibration impacts	Construction Contractor
B-NV-003	Where reasonably practicable, noise and vibration are controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the construction programme and methodology to consider quieter methods, consideration of the location of equipment on-site and control of working hours.	To minimise noise and vibration impacts	Construction Contractor
B-NV-004	Use of modern plant, complying with applicable UK noise emission requirements.	To minimise noise and vibration impacts	Construction Contractor
B-NV-005	Hydraulic techniques for breaking to be used in preference to percussive techniques, where reasonably practicable.	To minimise noise and vibration impacts	Construction Contractor

B-NV-006	Drop heights of materials will be minimised.	To minimise noise and vibration impacts	Construction Contractor
B-NV-007	Plant and vehicles will be sequentially started up rather than all together.	To minimise noise and vibration impacts	Construction Contractor
B-NV-008	Off-site pre-fabrication where reasonably practicable.	To minimise noise and vibration impacts	Construction Contractor
B-NV-009	Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications.	To minimise noise and vibration impacts	Construction Contractor
B-NV-010	All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use.	To minimise noise and vibration impacts	Construction Contractor
B-NV-011	Loading and unloading of vehicles, dismantling of site equipment or moving equipment or materials around the Order limits to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable.	To minimise noise and vibration impacts	Construction Contractor
B-NV-012	All vehicles used on-site shall incorporate reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable.	To minimise noise and vibration impacts	Construction Contractor
B-NV-013	Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place.	To minimise noise and vibration impacts	Construction Contractor
B-NV-014	Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use.	To minimise noise and vibration impacts	Construction Contractor
B-NV-015	Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas.	To minimise noise and vibration impacts	Construction Contractor
B-NV-016	The effect of Noise and Vibration on nearby sensitive receptors can be minimised through a good communication strategy. Prior to works being undertaken, liaison will be undertaken with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration. Providing information of construction works and notice of when high noise and/or vibration generating activities are taking place can reduce adverse effects. All communications will contain contact	To minimise noise and vibration impacts	Construction Contractor

	details to direct any questions or complaints to. The extent of communications will be agreed with the Local Authority through the Section 61 process.		
Ecology and Nature Conservation			
B-EC-001	Proposed Works Design and Habitat Avoidance Measures: The Proposed Works have been designed to avoid IEFs present in or adjacent to the Bryncir works site as far as practicable. Accordingly, the following minimum stand-off buffers will be applied where practicable: • 15 m from woodlands; to prevent incursion into Root Protection Areas (RPA). • 15 m from individual trees to prevent incursion into RPAs to protect the tree and reduce the likelihood of disturbing any roosting bats that could be present. • 5 m from hedgerows; extended to 15 m where trees are present. • A minimum of 10 m from watercourses (bank top), including dry ditches, to protect riparian habitats and to mitigate for potential hazards such as chemical and soil spills into watercourses or water bodies. These stand-off buffers will not be able to be applied for works that involve the SPEN DB route connection oversailing the Afon Dwyfach; removal of the redundant section of the existing SPEN DB route over the river further north including existing timber and steel supports no longer required; and the access track to the proposed Bryncir substation"	To avoid and minimise adverse impacts to habitats.	Construction Contractor
B-EC-002	A detailed CEMP will provide the measures required to manage the environmental effects of the Proposed Works and demonstrate compliance with environmental legislation will be implemented. The detailed CEMP will provide the measures required to mitigate construction related effects on IEFs, including those associated with construction dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration.	To ensure mitigation and management measures are followed correctly during the construction stage of works.	Construction Contractor

B-EC-003	A LEMP will be implemented which will include all design-based measures and construction best practice mitigation.	To minimise landscape and ecological impacts	The Applicant
B-EC-004	Nesting Birds: Vegetation clearance will be carried out in advance of construction and to avoid the nesting bird period which is from March to August inclusive. This will prevent birds nesting within the proposed construction works area prior to construction. Where vegetation clearance (including grassland and scrub habitats that may support ground-nesting bird species) cannot be scheduled outside the bird breeding season, the area will be surveyed by a suitably experienced ornithologist prior to any works. If active nests are identified, appropriate buffer zones will be established, and the area will be monitored until the young have fledged. Confirming the absence of nesting activity can be particularly challenging in habitats such as marsh and grassland, which may result in potential localised proposed development delays. Some structures, such as towers, could potentially be used by nesting peregrine. A pre-construction check will be completed to confirm there are none at the time of the works."	To minimise adverse impacts on nesting birds	Construction Contractor
B-EC-005	Reptiles, Common Amphibians and Common Mammals: Precautionary working methods will be adhered to in areas of habitat suitable for reptiles, common amphibians and common mammals (including tall grassland, marshy grassland, hedgerows and riparian habitat) to avoid the incidental killing or injury of any such species that may be present. All habitats suitable for reptiles, common amphibians and common mammals will be subject to two-stage habitat manipulation. Firstly, vegetation will be cut to approximately 150 millimetres (mm) (with the arisings removed), overseen by a suitably experienced appointed ecologist and the area left for a minimum of one day to allow any such species to naturally disperse. Secondly, vegetation will be cleared down to ground level, which will be overseen by the aforementioned ecologist. Vegetation will be cleared using appropriate equipment based on the type of vegetation to be removed, the area affected, and the risk of killing or injuring reptiles, common amphibians and common mammals. Construction works can commence immediately after completion of the second stage. Reptile hibernacula will be retained and protected during construction where practicable. Any habitat features which could be concealing sheltering	To minimise adverse impacts on reptiles, amphibians and common mammals	Construction Contractor

	reptiles and amphibians (e.g. log piles, rubble mound bunds, any other debris) would not be dismantled during their inactive season (i.e. November to February inclusive) if they cannot be retained. Sensitive habitats, including within areas of WS and cWS will be protected through the use of an appropriate temporary ground protection trackway or matting, to limit damage to the existing habitat and to ensure that vehicles use the same route through the site and stay within defined working areas.		
B-EC-006	Lighting: It is anticipated that during construction , works will be restricted to daylight hours wherever practicable, to remove the need for artificial lighting, with focussed task-specific lighting provided where this is not practicable. Task- specific and fixed general lighting will likely be required in months with reduced daylight hours (early mornings and up to 7.00 pm for general workforce) to meet safety requirements. During construction, general low-level lighting for access will be required at the temporary construction compounds. During operation, whilst external lighting will be installed at the proposed Bryncir Substation for emergency work during hours of darkness, the substation will not normally be lit. The site will not require artificial lighting, other than potentially during temporary periods of maintenance or repair. All routine maintenance activities will be scheduled for daylight hours as far as is practicable, and therefore it is anticipated that focussed task specific lighting should only be required in the event of emergency works or equipment failure requiring night-time working. Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and preventing disturbance to bats and other species, including Institute of Lighting Professionals Guidance Notes (GN) (in particular GN08/23 Bats and Artificial Lighting at Night. This guidance, produced in collaboration with the BCT, and GN-1: Reduction of Obtrusive Light, will be followed in so far as it is reasonably practicable.	To reduce disturbance to nocturnal and crepuscular species	Construction Contractor / The Applicant
B-EC-007	Hedgerow and Cloddiau: Hedgerow and Ccloddiau removal will be kept to a minimum to minimise habitat fragmentation. Where temporary removal of a section	To minimise habitat fragmentation	Construction Contractor

	is required, new sections of hedgerow (with the same species mix and of the same or improved condition) or cloddiau with hedgerows on top will be created, to maintain habitat connectivity and connectivity for species, such as commuting bats. It is acknowledged that these sections will take some years to mature.		
B-EC-008	Habitats: Where grassland vegetation removal is required, underlying topsoil and subsoil will be stripped and stored appropriately, omitting the use of glyphosate. Once the works are completed, the topsoil and subsoil will be backfilled promptly, retaining the original soil profile and seed bank. Correct handling of soils and associated seedbanks and reinstatement of the habitat will ensure that for most of the Bryncir works site, any loss is temporary for the duration of the construction period only. Further detail on the recommended methodologies will be contained within the LEMP. Permanent habitat loss will be compensated with the creation of replacement habitats or habitat management in the Bryncir works site through NBB.	To avoid and minimise adverse impacts to habitats.	Construction Contractor
B-EC-009	Wildlife Legislation Compliance: To comply with relevant wildlife legislation, pre-construction surveys, such as (but not limited to) an updated Phase 1 habitat survey, check for badger setts, otter resting sites or holts and bat roost assessments of any affected trees or structures near to the Proposed Works, will be undertaken to support the baseline findings. Checks for nesting birds (including nesting peregrine on pylons towers) will also be undertaken. The purpose of these pre-construction surveys is to ensure mitigation during construction is based on the latest protected species information. This will also be required for any protected species licensing that may be identified as being necessary prior to commencement of works. These surveys will also provide an update on the presence and location of any INNS, the findings of which will inform the implementation of measures to prevent their spread into the wild and will be secured through the detailed CEMP. During construction, operation and maintenance, Reasonable Avoidance Measures (RAM), including 15 m buffers around trees with bat roost suitability, will be implemented where possible. Implementation of measures to avoid animals being injured or killed within construction working areas, such as through the inclusion of	To avoid adverse impacts to protected species and comply with conservation legislation	The Applicant / Construction Contractor

	perimeter fencing and covering excavations or providing a means of escape, will exclude them from such areas and prevent them from becoming trapped or injured. Such measures will be included in the detailed CEMP.		
B-EC-010	One tree that lies within the area of the proposed substation fence has been identified as exhibiting features associated with veteran status (tree T240). It is proposed that this tree will be translocated to a suitable location, outside of the proposed working areas, prior to construction. However, this will be confirmed as part of the planning application. All other veteran (and ancient) trees will be retained and suitably buffered, ensuring no works occur within their RPAs.	To minimise adverse impacts on veteran and ancient trees	Construction Contractor
B-EC-011	Marsh Fritillary Butterfly: A pre-construction check will be carried out at the appropriate time of year to look for any visible larval webs, with a view to avoid such areas, if possible. The use of appropriate temporary ground protection matting, to limit damage to existing habitat and to ensure that vehicles use the same route through the Bryncir works site. A suitably experienced ecologist will be on site to guide the implementation of the construction route through any potential suitable habitat, with a view to avoid or reduce potential impacts where possible. Machinery or materials will not be stored on site in areas of suitable habitat. Suitable timings of works, where practicable, to avoid impacting foodplants when eggs or larval webs may be present.	To minimise adverse impacts on Marsh Fritillary Butterfly	Construction Contractor
B-EC-012	Roosting Bats: Bat emergence surveys will be conducted pre-construction to determine if roosting bats are present in up to three trees which have been identified as having bat roost suitability, where tree removal or reduction cannot be avoided, including where trimming may be required. Where impacts to roosting bats cannot be avoided a licence from NRW will be	To minimise adverse impacts on Roosting Bats	Construction Contractor

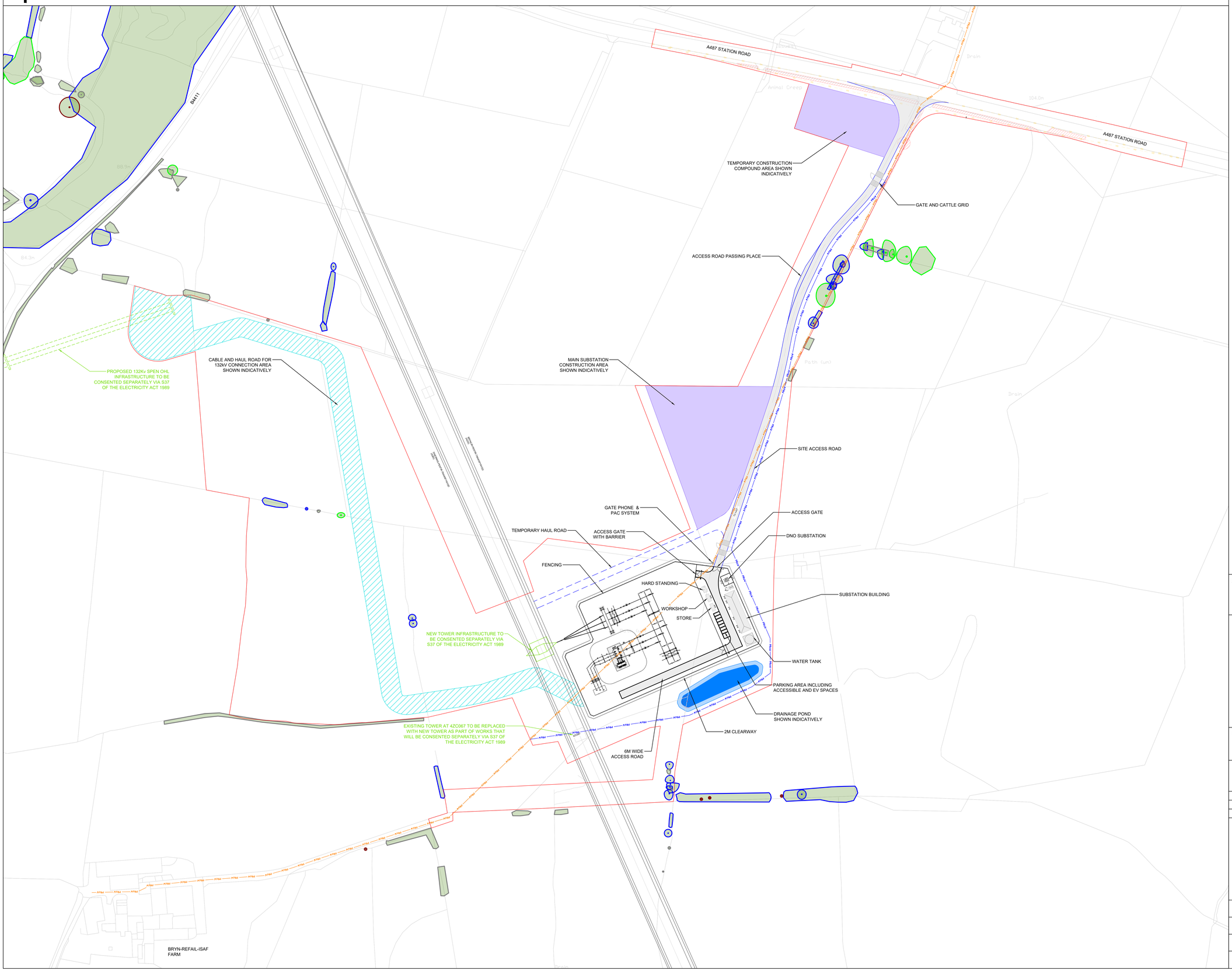
	obtained and suitable mitigation put in place. Mitigation will likely include the requirement to install bat boxes in the area. Where the removal or reduction of trees with Low bat roost suitability is unavoidable (trees that are identified as PRF–I), these trees will be section felled in accordance with an approved Method Statement, under an ecological watching brief delivered by a suitably licensed ecologist.		
B-EC-013	Migratory Fish: Suitable timings of works, where practicable, to avoid impacting the migration of these species. Works near watercourses will seek to avoid the following ecological sensitive windows (migration) where possible: • Atlantic salmon (smolt): March to May. • Atlantic salmon (adult – main run): August to November. • Sea trout (smolt): March to May. • Sea trout (adult): June to October. • River lamprey (adult): October to December. • River lamprey (transformer): January to March. • European eel (elver/glass eel): April to October. • European eel (silver eel): August to October. Pre-construction surveys will be carried out to support the baseline survey findings and inform any additional mitigation requirements. For example, a fish habitat assessment will be completed to assess if the Afon Dwyfach within the Proposed Works site represents areas of suitable spawning habitat for the protected migratory fish assemblage. Where suitable spawning habitat is found for the protected migratory fish assemblage, then suitable timings of works, where practicable, are recommended to avoid impacting the spawning of these species. The following are the ecological sensitive windows (spawning): • Brown/sea trout – October to December. • Atlantic salmon – November to December.	To minimise impacts on Migratory Fish	Construction Contractor

	• Brook lamprey – March to April. • River lamprey – Mary to April. This, in combination with the migration timings, provides a window of least ecological sensitivity between January and February to complete these works. Although river lamprey transformers migrate during this window, their presence was not found in the desk study, but records were only recorded to genus level (Lampetra), which also covers brook lamprey. That said, a lack of suitable ammocoete habitat (fine sediment/silt beds) was recorded in the Afon Dwyfach within the Bryncir works site and therefore the risk to migrating river lamprey transformers will be low – to be confirmed through the pre-construction surveys.		
B-EC-014	The implementation of a Biosecurity Management Plan that will set out procedures to ensure that no INNS are brought onto the Bryncir works site or areas of existing INNS are spread, will demonstrate compliance with legislation. Pre-construction surveys will be carried out to provide an update on the presence and location of any INNS previously identified. This will inform the implementation of measures to prevent their further spread, such as biosecurity measures, exclusion zones or treatment.	To prevent the spread of invasive species and manage other biosecurity concerns	Construction Contractor
B-EC-015	Pre-construction surveys will be carried out during the appropriate seasons prior to the construction of the Proposed Works. These will inform detailed design where needed, provide up to date status of protected species that require mitigation during site clearance, and inform any protected species licensing that may be required should species distribution change or detailed design result in licencing requirements for species such as bats and otter.	To inform detailed design and any protected species licencing requirements	The Applicant / Construction Contractor
B-EC-016	Ongoing monitoring of habitats and species will be carried out throughout construction, over seen by an appointed ECoW of suitable qualifications and experience. The ECoW will have the appropriate authority to review reasonable avoidance measures, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, e.g. to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.	To ensure implementation of mitigation measures, track compliance with commitments and legal requirements.	The Applicant / Construction Contractor

B-EC-017	Post construction monitoring will be carried out in accordance with protected species licences granted for the works. Post construction monitoring of habitat reinstatement, enhancement and creation will be undertaken in line with landscape provisions and NBB requirements as per the LEMP.	To avoid adverse impacts to protected species and comply with conservation legislation	The Applicant
B-EC-018	Afon Dwyfach: A minimum 10 m stand-off buffer (from the bank top of the watercourse) will be maintained to minimise visual, lighting and noise disturbance for most of the works apart from the removal of at least the northern most existing SPEN DB route support, which is within this distance.	To avoid adverse impacts to connected designated sites and their features of interest.	Construction contractor
Landscape and Visual			
B-LV-003	Incorporation of new and additional planting such as hedgerow and tree planting to help tie the Proposed Works into the existing landscape character and provide localised screening.	Tie the Proposed Works into the existing landscape character and provide localised screening to minimum landscape and visual impacts	The Applicant / Construction Contractor
B-LV-004	Optimising zones within construction compounds to minimise their temporary impact on the landscape and views, including at night.	Minimise the landscape and visual impacts of construction compounds	Construction Contractor
B-LV-005	Returning and reinstating land used temporarily to its former condition and profiles, where appropriate	To minimise landscape and visual impacts of the scheme once operational	Construction Contractor
B-LV-006	Confining lighting on the Bryncir works site and construction compounds to locations where safety is a priority to minimise the potential for light spill in night-time views.	Reduce light spill to minimise landscape and visual impacts on night time views	Construction Contractor
B-LV-007	Keeping the use of tall cranes and plant machinery to the minimum practicable time to reduce the duration of any landscape and visual impacts.	Reduce the duration of landscape and visual impacts	Construction Contractor
B-LV-009	Construction programme to be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts and areas will be cleared for construction as close as possible to works commencing and top-soiling, reseeding and planting shall be undertaken as soon as practicable after sections of work are complete.	Reduce the duration of landscape and visual impacts	Construction Contractor

B-LV-010	A Landscape and Ecological Management Plan (LEMP) is to be produced prior to construction based on the Outline LEMP submitted with the planning application.	To minimise landscape and ecological impacts	Construction Contractor
B-LV-011	A suitably experienced Environmental Manager will be appointed for the duration of the construction phase. In addition, a qualified and experienced Environmental Clerk of Works (ECoW) will be available during the construction phase to advise, supervise and report on the delivery of the mitigation methods and controls outlined in the detailed CEMP. The ECoW will monitor that the works proceed in accordance with relevant environmental requirements and adhere to the required good practice and mitigation measures. The ECoW will be supported as necessary by appropriate specialists, including ecologists and arboriculturists.	To ensure implementation of mitigation measures, track compliance with commitments and legal requirements	The Applicant / Construction Contractor
B-LV-012	Land used temporarily will be reinstated where practicable to its pre-construction condition and use, unless agreed otherwise.	To minimise landscape and visual impacts of the scheme once operational	Construction Contractor
B-LV-013	Earthworks and stockpiled soil will be protected by covering, seeding or using water suppression where appropriate.	To minimise landscape and visual impacts	Construction Contractor
B-LV-014	Working areas will be appropriately fenced. The type of fencing installed may also serve to provide acoustic and visual screening of the Bryncir work site and reduce the potential for disturbance of users in the surrounding areas. Fencing will be regularly inspected and maintained and removed as part of the demobilisation unless otherwise specified.	To minimise landscape and visual impacts	Construction Contractor
B-LV-015	The contractor will retain vegetation where practicable. Where vegetation is lost and cannot be replaced due to restrictions associated with underground services or wayleaves, reinstatement in accordance with the Outline LEMP and outline Landscape Design shall be followed.	To minimise landscape and visual impacts	Construction Contractor
B-LV-016	The contractor will apply the relevant protective principles set out in British Standard (BS) 5837:2012: Trees in relation to design, demolition and construction. This will be applied to trees within the Bryncir works site which will be preserved through the construction phase, and to trees outside where such measures do not hinder or prevent the use of the relevant working width for construction.	To minimise landscape and visual impacts and impacts on trees and woodland features	Construction Contractor
B-LV-017	A five-year aftercare period will be established for all reinstatement and mitigation planting.	To minimise landscape and visual impacts of the scheme once operational	The Applicant / Construction Contractor

B-LV-018	Separation and storage of subsoil and topsoil to ensure no degradation in quality and reinstatement undertaken as soon as possible after completion of construction of each section or area of works.	To ensure no degradation in soil quality and reduce the duration of landscape and visual impacts	Construction Contractor
B-LV-019	Temporary and separate placement of topsoil and subsoil will be stored with the additional height of the subsoil storage used on whichever side of the Bryncir works site requires greater screening benefit, where practicable.	To minimise landscape and visual impacts	Construction Contractor
B-LV-020	To control the spread of invasive weeds in accordance with the Wildlife and Countryside Act 1981, any plant or machinery that has been used in areas infested with invasive species (both terrestrial and aquatic), such as Japanese knotweed and Russian olive, will be thoroughly cleaned. Water used to clean vehicles will be controlled to prevent the spread of the plant (through seeds, rhizomes, fragments, etc.). The area will be cordoned off to prevent any inadvertent spreading.	To control the spread of INNS	Construction Contractor
Socioeconomics			
B-SE-001	Alternative access tracks will be constructed to minimise disruption to landowners; impacts on landowners will also be mitigated via financial compensation where appropriate. The Bryncir works site will be reinstated after construction, including landscape works.	To minimise disruption to landowners	The Applicant / Construction Contractor
Climate Change			
B-CC-001	The Proposed Works will be designed and operated in accordance with the risks and mitigation measures outlined in National Grid Electricity Transmission's Climate Resilience Strategy	To minimise adverse impacts to climate resilience	The Applicant



Legend

- APPLICATION SITE BOUNDARY
- PROPOSED SUBSTATION ACCESS ROAD EDGE OF CARRIAGEWAY
- PROPOSED OVERHEADLINE TEMPORARY HAUL ROAD EDGE OF CARRAIGEWAY
- EXISTING PUBLIC RIGHT OF WAY(PROW)
- PROPOSED DIVERTED PUBLIC RIGHT OF WAY (PROW)
- JUNCTION HORIZONTAL VISIBILITY SPLAY
- AREA FOR CONSTRUCTION COMPOUND SHOWN INDICATIVELY
- AREA FOR CABLE ROUTE AND HAUL ROAD SHOWN INDICATIVELY
- GATE AND CATTLE GRID INDICATIVELY SHOWN
- VEGETATION TO BE REMOVED
- CATEGORY A VEGETATION
- CATEGORY B VEGETATION
- CATEGORY C VEGETATION

Notes:

1. CONCEPT DESIGN ONLY, I.E.: FEED / NDP4.3. NOT FOR CONSTRUCTION.
2. ALL MEASUREMENTS ARE IN METRES.
3. SITE CLEARANCE REQUIRED WITHIN JUNCTION VISIBILITY PLAY SHOWN.
4. ACCESS POINTS HAVE BEEN DESIGNED IN ACCORDANCE WITH DMRB. DETAILED DESIGN AND CONSTRUCTION TO BE IN ACCORDANCE WITH TS 2.10.08, ITS REFERENCES AND LOCAL REQUIREMENTS
5. VEHICLE TRACKING HAS BEEN CARRIED OUT FOR 16.48m ARTICULATED LORRY AND 10m HGV. AT THIS STAGE AIL MOVEMENTS HAVE BEEN ACCOUNTED FOR BASED ON TS 2.10.08. JUNCTION MOUTH RADI ARE BASED ON TURNING CIRCLE FOR 16 AXLE GIRDER FRAME TRAILER
6. ROAD DESIGN IS SUBJECT TO CHANGE DUE TO LACK OF TOPOGRAPHICAL DATA AND SUBSEQUENT ABNORMAL LOAD VEHICLE TRACKING.
7. ADDITIONAL AREA REQUIRED WITHIN REDLINE BOUNDARY IS SUBJECT TO CHANGE ONCE TOPOGRAPHICAL DATA IS AVAILABLE TO FINALISE ALIGNMENT.
8. IT IS ASSUMED PROW WILL BE TEMPORARILY CLOSED DURING CONSTRUCTION.

Notes

This drawing is scaled at paper size A0, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against

Scale Bar

20m 10m 0m 50m 100m

1:1000

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Issue	Date	Remarks	Drawn	Checked	Approved
P01	12/09/25	FIRST ISSUE	TM	MT	RW

Title

FIGURE 1-1 BRYNCIR
PROPOSED OVERALL LAYOUT (FOR TCPA)

nationalgrid

Figure Number

PTC1 / PTNO - BRYNCIR

Drawing Reference

PTNO-WSP-SS50-C00484-DRW-CP-000005

Scale	Sheet Size	Sheet	Issue
1:1000	A0	SHEET 1 OF 1	1

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3.4.A Bryncir Works – Landscape Assessment Tables

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1. Landscape Assessment Tables

1.1.1 This Appendix provides details of the predicted impacts on landscape designations and landscape character in the Study Area. The following tables should be read in conjunction with the baseline description and value judgements in the Environmental Statement (ES) **Volume 3 Bryncir, Chapter 4 Landscape and Visual Amenity** and **Figure 3.4.2: National Landscape Character Areas, Figure 3.4.3: Gwynedd Local Landscape Character Areas, Figure 3.4.4: Eryri National Park Landscape and Seascape Character Areas and Figure 3.4.6: Landscape Relevant Statutory Designations and Recreational Routes**.

1.2 Eryri (Snowdonia) National Park Local Landscape Character Area (LCA)

Table 1-1: Landscape Character Area – LCA 04 Moel Hebog Uplands

Descriptor	
Baseline Description	The proposed works are not in this LCA but lies to the north of the study area. This LCA is large and located on the westerly mountains of the Eryri National Park bound by the A4085 to the east and the A487 to the west. The steep upland landform is rugged with intervening U-shaped valleys. Landcover is predominantly large areas of rough grazing to the higher areas and smaller scale grass pasture fields on lower ground. Settlement and infrastructure are extremely limited due to the terrain, and where present are on the lower valley areas, creating a perception of remote and ruggedness. Recreational footpaths are limited although the area is open access land. The views out are expansive looking across the plateau toward the Llyn Peninsula and coast and will include detracting elements of urban infrastructure.
Value:	This is a designated landscape at the western edge of the Eryri National Park. Considering the setting, landscape elements, recreational access, expansive scenic quality and perception of tranquillity and remoteness, it is assessed as having a very high value.
Susceptibility:	This is a rural landscape. The elevated views out from this LCA are expansive and electrical infrastructure, highways and urban elements are present within views. The perceptual setting is tolerant of a degree of change and is assessed to have a medium susceptibility.
Sensitivity:	High

Descriptor		
Description of change	**Magnitude of Effect**	**Significance of Effect**
Construction: There would be no loss or change to landscape elements in this LCA as the proposed works are not in it. The construction work would lead to a very slight alteration to the perceptual qualities and tranquillity. The elevated terrain of this LCA potentially increases the geographical extent, however the large size of the LCA, its intervening mountainous landform and the proposed size and scale of the proposed works mean that effects would be highly localised to the foothills to the area of Craig-y-garn and its Ordnance Survey (OS) listed panoramic viewpoint from the summit. Effects will be short term, temporary and reversible.	Very Low	Minor adverse (not significant)
Operation Year 1 (winter): There would be a limited change to landscape elements in this LCA as the presence of electrical infrastructure and industrial elements are already noted characteristics of the landscape. Based on the distance and size of construction works located within the view, there would be a very slight alteration to the aesthetic and perceptual aspects of the landscape receptor.	Very Low	Minor adverse (not significant)
Operation Year 15 (summer): The mitigation scheme would be established by Operation Year 15, providing a degree of screening or softening of the Bryncir works site. There would be a reduction to impacts on the aesthetic and perceptual aspects of the landscape receptor in comparison to Operation Year 1. Impacts would be permanent and of long-term duration.	None	Neutral

1.3 Gwynedd Local Landscape Character Area (LCA)

Table 1-7: Landscape Character Area – LCA 10 Central Llyn

Descriptor			
Baseline Description	The proposed works are in the eastern edge of this LCA. This LCA is large and broadly relates to the central plateau of the Llŷn Peninsula which has a gently undulating landform. Landcover is predominantly agricultural with limited settlement and infrastructure dispersed throughout. Recreational footpaths are fragmented between small settlements. The western part of the area has been included in the Register of landscapes of Outstanding Historic Interest in Wales. Views are expansive looking across the plateau toward the Eryri National Park and rising hills in the Lyn North Coast and will include detracting elements of urban infrastructure.		
Value:	Although not a designated landscape, the area is in, and contributes to, the setting of the National Park. The LCA has good scenic value and landscape elements of conservation interest and is assessed as having a high value.		
Susceptibility:	Whilst the LCA is predominantly rural in character, there are also areas of urban influence and infrastructure present making the landscape able to tolerate a small to medium degree of change and it is assessed to have a medium susceptibility.		
Sensitivity:	Medium		
Description of change		**Magnitude of Effect**	**Significance of Effect**
Construction: Construction activity would influence a localised area of the LCA. The scale of change and geographical extent of construction activity would be limited. The presence of construction activity including storage of materials, tall machinery and movement of plant would result in a slight impact to the rural landscape characteristics and would result in a loss of tranquillity over a localised area. Impacts would be limited in extent due to the relative containment provided by landform, tall hedgerows and woodland. The impacts would be temporary and of short-term duration.		Low	Minor adverse (not significant)
Operation Year 1 (winter):		Low	Minor adverse (not significant)

Descriptor		
There would be a limited change to landscape elements within this LCA as where the presence of electrical infrastructure and industrial elements are already noted characteristics of the landscape. Based upon the distance and size of construction works located within the view, there would be a very slight alteration to the aesthetic and perceptual aspects of the landscape receptor.		
Operation Year 15 (summer): The mitigation scheme would be established by Operation Year 15, providing a degree of screening or softening of the Bryncir works site. There would be a reduction to impacts on the aesthetic and perceptual aspects of the landscape receptor in comparison to Operation Year 1. Impacts would be permanent and of long-term duration.	Very Low	Negligible Adverse (not significant)

3.4.B Bryncir Works - Visual Amenity Assessment Tables

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1. Visual Amenity Assessment Tables

1.1.1 This Appendix provides details of the predicted impacts on visual amenity, focused on the identified representative viewpoints. The following tables should be read in conjunction with the baseline description and value judgements which are found in the Environmental Statement (ES) **Volume 3, Chapter 4 Landscape and Visual Amenity** and the supporting figures; **Figure 3.4.7: Zone of Theoretical Visibility**, **Figure 3.4.8: Representative Viewpoints**, **Figures 3.4.9 Representative Viewpoint and Visual Receptor Locations** and **Figure 3.4.10 Baseline Photography**.

Table 1-1: Viewpoint 1: Garndolbenmaen local road.

Descriptor					
Grid Reference	E: 247754 N: 343128	**Approximate elevation**	87 m AOD	**Receptor type**	Transport; places of work
Baseline Description	An open rural grassland field with clumps of short scrubby grass falls from the fore to middle ground. Tall hedgerow vegetation with occasional hedgerow trees encloses the extents of the field and mark the watercourses. Larger blocks of riparian vegetation along the Afon Dwyfach and hedgerow vegetation screen the B4411. Beyond this the terrain rises with a large open field stretching from the mid ground to the horizon. The tops of large agricultural buildings can be seen to the south-east partially filtered by tall trees. Overhead line pylons cross the view forming a detracting element breaking the skyline. The mountain ranges of the Eryri National Park can be seen in the far distance in periods of good visibility, including the individual properties on the rising footslopes to the east of Garndolbenmaen.				
Value:	An ordinary rural view typical of the area (albeit in the setting of the Eryri National Park) and not specifically recognised. The view is generally pleasing and well composed with the setting of the Eryri National Park and Llyn Peninsula with few detracting elements and the value of the view is medium.				
Susceptibility:	Road users are typically not focussed on appreciation of the view resulting in low susceptibility.				
Sensitivity:	Medium				

Descriptor		
Magnitude and Significance of Effect		
Description of change	**Magnitude of Effect**	**Significance of Effect**
Construction: Construction activities would be visible in the fore to middle ground of the view as a medium-scale addition. Work in the Bryncir Substation at ground level would be partially screened by intervening vegetation with greater visibility of construction operations associated with tall plant in the background above the hedgerow and tree line and only for the duration of the construction phase. Construction is assessed to result in a medium impact, over a small geographical extent, low number of viewers and short-term.	Medium	Moderate adverse (significant)
Operation Year 1 (winter): New and replacement infrastructure would replace infrastructure of a similar size and nature. The operational Bryncir Substation would marginally increase the presence of power related infrastructure in the view. The change would be visible, although partially screened by intervening vegetation in the view, resulting in a medium impact, over a small geographical extent, low number of viewers and long-term.	Medium	Moderate adverse (significant)
Operation Year 15 (summer): Mitigation planting would have established by Operation Year 15, although the proposed structures including Bryncir Substation would still be perceptible in the view, resulting in a low impact, over a small geographical extent, low number of viewers and long-term.	Low	Minor adverse (not significant)

Table 1-2: Viewpoint 2: A487 settlement edge in near Glan-Dwyfach.

Descriptor					
Grid Reference	E: 248796 N: 343412	**Approximate elevation**	104 m AOD	**Receptor type**	Recreational, residential, transport, places of work
Baseline Description	A view across an open, flat landscape from the entrance to PRoW Dolbenmaen No 18 from the A487. An open field stretches from fore to middle ground. A short length of wooden post and stock fencing separates the entrance of the field from the road. A row of intermittent trees planted on a slightly raised earth bank with exposed stone (Cloddiau) form a fragmented hedgerow boundary of the footpath and recedes from the foreground to the horizon. Similar fragmented hedgerows comprising clumps of intermittent trees mark the boundary of the field to the southwest and filter views across the adjoining fields. In the middle to background of the view the field boundaries are marked by a mixture of low, drystone walls, wooden post with stock fencing, and fragmented hedgerows. Large agricultural buildings are set within blocks of woodland along the Afon Dwyfach that form a wooded horizon. Overhead line pylons cross the horizon forming a detracting element breaking the skyline.				
Value:	Views from these receptors are typical of the area (albeit in the setting of the Eryri National Park) and not specifically recognised. They are generally pleasing and well composed with the setting of the Eryri National Park and Llyn Peninsula. View is well composed but common place with existing detracting elements and therefore the value of the view is assessed to be medium.				
Susceptibility:	Views from residential properties are generally considered to be of primary importance resulting in high susceptibility. Views for receptors who are engaged in outdoor recreation, including use of PRoW, whose attention or interest is likely to be focused on the landscape and on particular views resulting in high susceptibility.				
Sensitivity:	Medium				
Magnitude and Significance of Effect					
Description of change				**Magnitude of Effect**	**Significance of Effect**

Descriptor		
Construction: Construction activities would be visible in the fore to middle ground of the view as a medium-scale addition. Work in the Bryncir Substation would be visible in the middle ground. Construction operations associated with the new and replacement infrastructure would be perceptible in the background of the view. Construction is assessed to result in a medium impact, over a small geographical extent, low number of viewers and short-term.	Medium	Moderate adverse (not significant)
Operation Year 1 (winter): New and replacement infrastructure would be visible, although would not alter the baseline view. The operational Bryncir Substation would be clearly visible, increasing the presence of power related infrastructure in the view, resulting in a medium impact, over a small geographical extent, low number of viewers and long-term.	Medium	Moderate adverse (significant)
Operation Year 15 (summer): Mitigation planting would have established by Operation Year 15, although the proposed structures including Bryncir Substation would still be perceptible in the view, resulting in a low impact, over a small geographical extent, low number of viewers and long-term.	Low	Minor adverse (not significant)

Table 1-3: Viewpoint 3 PRoW Llanystumdwy No 62.

Descriptor					
Grid Reference	E: 248835 N: 342070	**Approximate elevation**	106 m AOD	**Receptor type**	Recreational, residential
Baseline Description	This is an open view to the north from the entrance to PRoW Llanystumdwy No 62 from the local road and near to Cefn-uchaf. An open field stretches from the fore to middle ground. At the northwestern field boundary, tall hedgerow foreshortens the middle ground views beyond. Wooden post and stock fencing with intermittent hedgerow trees partially filters views of the fields beyond to the north where views are more open, although vegetation in the generally flat landscape limits views of fields and the perception of distance. The mountain ranges of the Eryri National Park can be seen in the far distance in periods of good visibility. A straight run of overhead lines recedes from the foreground of the view into the distance. The overhead line pylons break the skyline and are a detracting element in the view.				
Value:	Views from these receptors are typical of the area (albeit in the setting of the Eryri National Park) and not specifically recognised. View is well composed but common place with large existing detracting elements and therefore the value of the view is assessed to be medium.				
Susceptibility:	Views from residential properties are generally considered to be of primary importance resulting in high susceptibility. Views for receptors who are engaged in outdoor recreation, including use of PRoW, whose attention or interest is likely to be focused on the landscape and on particular views resulting in high susceptibility.				
Sensitivity:	Medium				
Magnitude and Significance of Effect					
Description of change				**Magnitude of Effect**	**Significance of Effect**
Construction: Any discernible elements of construction would be limited to tall construction plant in the background above the tree line. The short term, limited scale/extent of the proposed works, geographical extent and reversibility of construction would make it barely perceptible small-scale addition in a largely unchanged panorama. Construction is assessed to result in a low impact, over a small geographical extent, low number of viewers, short-term.				Low	Minor adverse (not significant)

Descriptor		
Operation Year 1 (winter): New and replacement infrastructure will replace infrastructure of similar size and visual impact being removed resulting in no notable net change. The proposed works would not be discernible or occupy such a small part of the view as to represent no change.	Low	Minor adverse (not significant)
Operation Year 15 (summer): Mitigation planting would have established by Operation Year 15, reducing the visibility of the structures in comparison to Year 1, resulting in a very low impact, over a small geographical extent, low number of viewers and long-term.	Very low	Negligible adverse (not significant)

Table 1-4: Viewpoint 4: PRoW Dolbenmaen No 16

Descriptor					
Grid Reference	E: 249769 N: 342435	**Approximate elevation**	109 m AOD	**Receptor type**	Recreational, residential
Baseline Description	A view looking north-west from the slightly elevated PRoW Dolbenmaen No 16 to the north-east of Ystumcegld Farm. A drystone wall with additional post and stock fencing defines the immediate foreground. The terrain falls to a field with bracken in the foreground. Landform, large individual trees and clumps of scrubby vegetation partially filter views beyond. The terrain flattens in the middle to background with small fields bound by hedgerows with individual hedgerow trees forming a largely rural landscape with only a small number of scattered farms and individual properties visible. A line of overhead line pylons passes through the middle ground below the horizon but are barely perceptible set against the landform. The terrain rises in the far distance with a series of broad peaks of the Llyn peninsula to the west and the Eryri National Park to the north being visible during periods of good visibility. A line of overhead line pylons and wind turbines, in the vicinity of Derwyn-fawr, and a TV station antenna in the vicinity of Bryn-ffynnon are visible breaking the skyline in periods of exceptional visibility.				
Value:	View is far reaching but typical of the area (albeit in the setting of the Eryri National Park) and not specifically recognised. It is generally pleasing and well composed with the setting of the Eryri National Park and Llyn Peninsula. View is well composed but common place with some detracting elements in the central background of the view and therefore the value of the view is assessed to be high.				
Susceptibility:	Views from residential properties are generally considered to be of primary importance resulting in high susceptibility. Views for receptors who are engaged in outdoor recreation, including use of PRoW, whose attention or interest is likely to be focused on the landscape and on particular views resulting in high susceptibility.				
Sensitivity:	High				
Magnitude and Significance of Effect					
Description of change				**Magnitude of Effect**	**Significance of Effect**

Descriptor		
Construction: Despite the elevated viewpoint, intervening landform, buildings and vegetation would mean that construction activity would be limited to tall construction plant in the background not breaking the skyline. Construction is assessed to result in a very low impact, over a small geographical extent, low number of viewers, short-term and reversable.	Very low	Negligible adverse (not significant)
Operation Year 1 (winter): New and replacement infrastructure would replace infrastructure of similar size and visual impact resulting in a very low impact. The proposed works would not be barely perceptible, resulting in a very low impact, over a small geographical extent, low number of viewers and long-term.	Very low	Negligible adverse (not significant)
Operation Year 15 (summer): Mitigation planting would have established by Operation Year 15, further reducing the visibility of the structures in comparison to Year 1. The proposed works would not be discernible or occupy such a small part of the view as to represent no change.	None	Neutral

Table 1-5: Viewpoint 5: Road from T^y Eiddew South-eastwards to Tyn y Ffridd, Bodwian

Descriptor					
Grid Reference	E: 250184 N: 344288	**Approximate elevation**	178 m AOD	**Receptor type**	Residential; recreational
Baseline Description	An open and expansive view looking south from the foothills of Craig-y-garn in the Eryri National Park to the east of Garndolbenmaen. An open field with clumps of scrubby vegetation stretches from the fore to middle ground. The terrain falls to a field boundary of scrubby vegetation with several dwelling set within it which foreshorten views of the falling terrain immediately beyond it. A line of telegraph poles recedes from the fore to middle ground. The terrain flattens in the middle ground with a wide, open valley floor comprising small fields. These are predominantly bound by hedgerow vegetation and intermittent hedgerow trees. Beyond the valley floor the terrain is gently undulating. Large woodland blocks in the distance along with hedgerow boundaries form a wooded backdrop just below the horizon. Cardigan Bay can be seen along the horizon in periods of good visibility. Some of the smaller coastal summits of the Llyn Peninsula are visible in periods of exceptional visibility.				
Value:	An attractive rural view from slightly elevated ground in the Eryri National Park offering panoramic views toward Cardigan Bay and the Llyn Peninsula. A nicely balanced view of elements characteristic of the area with few detracting elements, therefore the value of the view is assessed to be high.				
Susceptibility:	Views from residential properties are generally considered to be of primary importance resulting in high susceptibility. Views for receptors who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views resulting in high susceptibility.				
Sensitivity:	High				
Magnitude and Significance of Effect					
Description of change				**Magnitude of Effect**	**Significance of Effect**
Construction: Despite the elevated viewpoint, intervening landform, buildings (including the consented Bryncir Substation) and vegetation would mean that construction activity would be limited to tall				Very low	Negligible adverse (not significant)

Descriptor		
construction plant in the background above the tree line but set against the backdrop of the hills of the Llyn Peninsula and not breaking the skyline. Construction is assessed to result in a very low impact, over a small geographical extent, low number of viewers, short-term.		
Operation Year 1 (winter): New and replacement infrastructure will replace infrastructure of similar size and visual impact. The proposed works would not be barely perceptible, resulting in a very low impact, over a small geographical extent, low number of viewers and long-term.	Very low	Negligible adverse (not significant)
Operation Year 15 (summer): Mitigation planting would have established by Operation Year 15, further reducing the visibility of the structures in comparison to Year 1. The proposed works would not be discernible or occupy such a small part of the view as to represent no change.	None	Neutral

3.4.C. Bryncir Outline Landscape and Ecological Management Plan

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Executive Summary

i. The purpose of this Outline Landscape and Ecological Management Plan (LEMP) is to provide a framework for delivering the landscape and ecological mitigation strategy and the successful establishment and future management of the proposed landscape and ecology works associated with the proposed works for Bryncir.

ii. It sets out the short and long-term measures and practices that will be implemented by National Grid to establish, monitor and manage landscape and ecology mitigation and enhancement measures. It also provides a mechanism for the delivery of landscape and ecological measures to avoid, reduce or compensate for any potential environmental effects identified in the Environmental Statement.

iii. This is an outline document, which will be fully developed prior to the commencement of works. National Grid will engage with statutory bodies and relevant stakeholders .

1. Introduction

1.1 Overview

1.1.1 National Grid Electricity Transmission (plc) (NGET) is seeking powers to construct, operate and maintain the Pentir to Trawsfynydd Reinforcement Project (the 'Project'). Planning applications are being made both in terms of the Town and Country Planning Act 1990 (as amended) ('TCPA') (Ref 1.1), and Section 37 of the Electricity Act 1989 ('the Electricity Act') (Ref 1.2).

1.1.2 NGET owns, builds and maintains the electricity transmission network in England and Wales. Under the Electricity Act 1989, NGET holds a transmission license under which it is required to develop and maintain an efficient, coordinated, and economic electricity transmission system.

1.1.3 This would be achieved by reinforcing the overhead lines, cables and substations on the existing circuits between Pentir and Trawsfynydd.

1.1.4 NGET is also required, under Section 38 of the Electricity Act, to comply with the provisions of Schedule 9 of the Electricity Act. Schedule 9 requires licence holders, in the formulation of proposals to transmit electricity, to:

> *Schedule 9(1)(a) '…have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;' and*
>
> *Schedule 9(1)(b) '…do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects'.*

1.2 Bryncir Works

1.2.1 The Bryncir works site covers an area approximately 17.7 hectares (ha). However, the permanent Bryncir Substation compound would occupy approximately 1.6 ha. The remainder of the land in the Bryncir works site will comprise the SPEN DB route connection, access road, construction compound (comprising office and welfare facilities) and laydown areas.

1.2.2 The proposed works are summarised below:

- New 400/132 kilovolt (kV) substation, including a permanent access road.
- Removal of the existing Tower 4ZC067 and building of a replacement 80 m north-west of its current position.
- Realignment of the Scottish Power Energy Networks (SPEN) DB connection route (DB route) and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No.18 footpath.

- New landowner track.

1.2.3 The proposed works are described in more detail in Environment Statement (ES) **Volume 3, Chapter 2 Bryncir Works**.

1.3 Purpose of the Outline Landscape and Ecological Management Plan

1.3.1 This Outline Landscape and Ecological Management Plan (LEMP) focuses on works at Bryncir and has been prepared on behalf of NGET. It forms part of an application for consents to construct, operate and maintain the Project with all applications supported by an ES. These consents include planning permission under the Town and Country Planning Act, and consent under the provisions of Section 37 of the Electricity Act. This application provides a framework for delivering the landscape and ecological mitigation strategy and the successful establishment and future management of proposed landscape and ecology works associated with the Project. It sets out the short and long-term measures and practices that will be implemented by NGET to establish, monitor, and manage landscape and ecology mitigation and enhancement measures. It provides a mechanism for the delivery of landscape and ecological measures to avoid, reduce or compensate for environmental effects identified in the ES.

1.3.2 This Outline LEMP will be updated by NGET into a full LEMP.

1.3.3 This document outlines the establishment, management and monitoring of habitats and landscape features that are referenced in the ES, **Volume 3, Chapter 4: Landscape and Visual Amenity** and **Volume 3, Chapter 5: Ecology and Nature Conservation**. **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment also provides further information.**

1.4 Structure of the LEMP

1.4.1 The structure of the LEMP is set out in **Table 3-1** below. The outline contents of the LEMP has been discussed with the relevant planning authorities and stakeholders.

Table 1-1 Structure of the LEMP

Chapter	Content
Chapter 1: Introduction	This chapter sets out the purpose of the LEMP and how it is structured. It references relevant application documents which accompany the LEMP. It also describes the features of the proposed works.
Chapter 2: Landscape and Ecology Baseline	This chapter sets out the baseline landscape and ecology features which have informed the mitigation commitments. It also refers to any

	existing features that will be protected as part of the proposed works.
Chapter 3: Construction Mitigation	This chapter sets out the pre-construction ecological monitoring required and specific ecological mitigation requirements and associated licensing requirements.
Chapter 4: Landscape and Ecological Reinstatement	This chapter sets out the reinstatement required following construction.
Chapter 5: Long-term Landscape and Ecological Proposals	This chapter sets out the proposed outline landscape and ecological interventions, their functions and rationale. It also identifies species mixes and the phasing of the landscape proposals.
Chapter 6: Maintenance and Management Aims, Prescriptions and Objectives	This chapter sets out the maintenance and management prescriptions of the various ecological and landscape interventions. It also identifies the management periods.
Chapter 7: Monitoring	This chapter outlines the monitoring requirements pre and post construction and the requirement for adaptive management.

1.5 Objectives of the LEMP

1.5.1 The overarching objectives of the LEMP are to:

- integrate the proposed works into its landscape setting and avoid or minimise adverse landscape, biodiversity, heritage and visual effects as far as practicable;
- promote the conservation, protection and improvement of the physical, natural and historic environment within the proposed works and its setting;
- diversify ecological value of existing habitats, for example through restoration and enhancement of riparian ditches and creation of diverse habitats; and
- guide the design and management of landscape and biodiversity components that respond to and enhance the character of the landscape, local distinctiveness and sense of place.

1.6 Responsibilities

1.6.1 NGET will establish the appropriate roles and responsibilities for site staff as set out in Outline Construction Environmental Management Plan. An Environmental Clerk of Works (EnvCoW) will be responsible for ensuring construction environmental mitigation measures are correctly implemented, monitored and maintained. An Ecological Clerk of Works (ECoW) will be appointed. The scope of the ECoW will be advised by the

ecologist and landscape architect based on relevant environmental commitments, the findings of the pre-commencement walkovers, protected species licensing requirements and with reference to the relevant proposed works programmes.

1.6.2 Relevant site staff would receive toolbox talks (summary training by environmental and ecology staff on site on specific issues over which they need to be aware) as necessary from the ECoW on the relevant ecological risks present, legal requirements, and the working requirements necessary to comply with legislation, and the final approved landscape and biodiversity management and enhancement measures. Toolbox talks would be repeated as necessary over the duration of the works.

1.6.3 The contractor appointed by NGET to construct the proposed works will be responsible for establishing, managing and monitoring the implementation and establishment of landscape and ecological mitigation within the establishment aftercare period. NGET will inspect and report on the success of establishment during this period.

1.6.4 All long-term monitoring and management requirements are specified in this document and will be carried out by NGET and/or a contractor appointed by NGET.

2. Landscape and Ecology Baseline

2.1 Landscape Designations Overview

2.1.1 The Bryncir works site is not covered by any statutory landscape designations. The boundary to the Eryri National Park is approximately 1.1 kilometres (km) east of the Bryncir works site at its closest point. The Eryri National Park covers 823 square miles with 1,497 miles of routes to explore and is Wales' largest National Park.

2.1.2 There are no non-statutory landscape designations covering the Bryncir works site and Study Area.

2.2 Landscape Baseline

2.2.1 The following is a summary of the Landscape Baseline which is provided in detail in ES **Volume 3, Chapter 4: Landscape and Visual Amenity**. A 3 km radius of the Bryncir works site was deemed appropriate for assessment (hereafter referred to as 'the Study Area').

2.2.2 The landform of the Bryncir works site is relatively flat with a slight slope to the west at approximately 80 meters (m) to 103 m above ordnance datum (AOD). The Bryncir works site is largely in a river valley (Afon Dwyfach). The landform of the Study Area is gently undulating and typical of the Llyn peninsula. Several small but prominent hills frame the wider landscape. This includes Craig-y-garn (363 m AOD) in the Eryri National Park in the east of the Study Area, Bryniau Ystumcegid (179 m AOD) to the south-east and Mynydd Cennin (262 m AOD) to the north-west.

2.2.3 Two rivers pass through the Study Area from north to south. The Afon Dwyfach passes through the Bryncir works site. The Afon Dwyfor is to the east of the Study Area.

2.2.4 Settlement in the Study Area comprises scattered farms and individual properties. The Bryncir works site is approximately 750 m south of the settlement of Bryncir, a linear settlement along the A487; the village of Garndolbenmaen is approximately 1.4 km to the north-east.

2.2.5 The landscape of the Bryncir works site is rural comprising small rectilinear agricultural fields bound by hedgerows, often with intermittent hedgerow trees. The distinctive field patterns are well defined.

2.2.6 There are numerous public right of ways (PRoWs) in the Study Area linking settlements and providing recreational routes. From the B4411, the Dolbenmaen No 18 footpath passes through the access corridor and main site of the Bryncir works site in a north to south-west direction.

2.2.7 Land within the Study Area associated with the Eryri National Park is common and open access land, although none lies within the Bryncir works site.

2.2.8 National Cycle Network (NCN) Route 8 (Lôn Las Cymru) passes along the western extent of the Bryncir works site from north to south using the minor road near Tyddyn-y-felin.

2.2.9 The Bryncir works site and the majority of the Study Area is in the National Landscape Character Area (NLCA) 05 Tremadoc Bay (Ref 2.1) and exhibits some of the key characteristics of the NLCA:

- *The NLCA "forms the land between the sea and the mountains";*
- *"Hemmed in by steeply rising uplands of both Llŷn and Snowdonia";*
- *Areas of "Lowland pastoral and hill sheep grazing" to the west where there is a "more extensive lowland hinterland"; and*
- *"the landscape is broader, rolling and pastoral, with hedges, woodlands, scattered villages and a sense of quietness away from main roads".*

2.2.10 A small part of the outer extents of the Study Area lies in NLCA 03 Arfon (Ref 2.2) where *"Pastoral Land cover predominates"* and in NLCA 06 Snowdonia (Ref 2.3). The NLCA is a *"sublime, picturesque, iconic visual and sensory landscape of great drama"*. The rural upland areas include *"numerous high ridges and peaks offer wider ranging panoramas across much of north-west Wales"*.

2.2.11 At the Unitary authority level, the Bryncir works site and Study Area covers the Landscape Character Area (LCA) LCA 10 Central Llyn. LCA 5 Snowdon Massif lies to the north-east of the Bryncir works site and LCA 8 Pwllheli-Criccieth Coast lies to the south of the Study Area.

2.2.12 LCA as defined in the Snowdonia National Park Supplementary Planning Guidance 7 – Landscape and Seascapes of Eryri (Ref 2.4) consider the setting of the National Park. LCA 04 Moel Hebog Uplands lies in the north-east of the Study Area.

2.2.13 LCA 04 Moel Hebog Uplands is characterised by:

- *"Classic U-shaped valleys carving through the mountains";*
- *"Unenclosed mountain summits surrounded by large-scale regular enclosures of ffridd";*
- *"Rough common land grazing by sheep on the mountains, with semi-improved pastures and rough grassland fields on lower slopes"; and*
- *"Valleys defined by a small-scale historic field pattern".*

2.3 Arboriculture Baseline

2.3.1 Semi-natural broadleaved woodland of medium biodiversity importance is present within the Bryncir works site, however this is unlikely to be Priority habitat. An area of wet woodland which is present to the north-west of the Bryncir works site. There are also scattered broadleaved trees and mixed parkland or scattered trees within the Bryncir works site.

2.3.2 Two trees within the Bryncir works site have been identified as having ancient tree status. Five further trees within the Bryncir works site exhibit features associated with

veteran status. Please refer to ES **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment** for further information.

2.4 Ecology Baseline

2.4.1 There are five international statutory sites for nature conservation (i.e. Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites) within the 10 km Study Area and one further SAC designated for bats within 30 km.

2.4.2 Nine other statutory designated sites for nature conservation (Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs)) are present within the 5 km Study Area.

2.4.3 There are 39 non-statutory sites designated for nature conservation within the 2 km Study Area, all are Candidate Wildlife Sites (cWSs).

2.4.4 For further information on the ecological baseline of the Bryncir works site, including habitats and notable and protected species, please refer to ES **Volume 3, Chapter 5 Ecology and Nature Conservation**.

3. Construction Mitigation

3.1 Approach to Mitigation

3.1.1 The proposed works have been designed, as far as possible, following the mitigation hierarchy in order to, in the first instance, avoid or reduce impacts and effects through the process of design development, and by embedding measures into the design of the proposed works. Where avoidance is not possible, the next steps of minimisation, rehabilitation/restoration and ultimately offsetting, have been followed (where relevant and appropriate).

3.1.2 Mitigation measures typically fall into one of three categories: embedded measures; control and management measures; and additional mitigation measures. All mitigation measures for the proposed works will be captured within the full LEMP and full Construction Environmental Management Plan (CEMP). Control and management measures will also be captured within the full LEMP and full CEMP.

3.2 Impact Avoidance

3.2.1 Avoidance of features of landscape and ecological value has been a primary consideration throughout the development of the proposed works, including the design and selection of alternatives. The proposed works has been designed to avoid the temporary or permanent loss of notable habitats, as far as is practicable.

3.2.2 **ES Volume 3, Chapter 3: Assessment of Alternatives** details the main alternatives considered in relation to the proposed works.

3.3 Impact Mitigation

3.3.1 Mitigation measures will be implemented, as relevant and appropriate, prior to and during the construction phase of the proposed works, the purpose being to minimize the impact of works on landscape and biodiversity features and to achieve legislative compliance.

3.3.2 Standard environmental best practice and mitigation will be implemented to ensure construction and operation of the proposed works complies with legislation relating to protected species. It will also ensure the proposed works does not compromise the local conservation status of ecological receptors present within or in the vicinity of the Study Area.

3.3.3 Commitments embedded within the proposed works design that will contribute to the avoidance of and/ or reduction of potential effects on landscape and visual amenity, biodiversity, and trees will be included within the full LEMP and full CEMP.

3.4 Protected Species Licenses

3.4.1 Any protected species licenses that are expected to be required for the proposed works will be detailed in the full LEMP. The associated control measures and mitigation measures will be detailed in the full LEMP.

3.5 Tree Works

3.5.1 The proposed works have been designed to minimise the removal of mature trees.

3.5.2 Where works near retained trees cannot be practicably avoided, these works will be undertaken in accordance with an Arboricultural Method Statement and final Tree Protection Plan. All works will be undertaken in accordance with the current best practice, which is defined in:

- British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations;
- National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees; and
- BS 3998: 2010 Tree works – Recommendations (British Standards Institution, 2010).

3.5.3 All necessary protective fencing would be installed prior to the commencement of any construction works. This would be set out in an Arboricultural Method Statement, the full CEMP and a final Tree Protection Plan to be prepared pre-construction.

4. Landscape and Ecological Reinstatement

4.1.1 The full LEMP will set out the reinstatement process for any habitat that is to be replaced. This will detail the habitat to be lost, the process to reinstate the habitat and identify any further management plans, control measures or mitigation measures that are to be undertaken.

4.1.2 A temporary loss of 1.5 ha of poor condition improved grassland, 0.03 ha of marshy grassland and 0.01 ha of poor-semi-improved grassland is required to facilitate the Bryncir works. Where temporary removal is needed; the grassland will be reseeded within 2 years of construction. Where top soil and sub soil require removal, these will be returned to the same location as taken from and kept separately for different habitat types, to preserve the original soil profile and seed bank. Further details of the methodology for reinstatement and details of the management and monitoring of these habitats will be provided within the full LEMP.

4.1.3 Hedgerow and cloddiau removal will be kept to a minimum to reduce fragmentation. Where temporary removal is needed, replacement sections with similar species and improved condition will be reinstated, either at the location of removal or in close proximity. Cloddiau with hedgerows on top will also be restored to maintain habitat continuity. These actions will help retain connectivity across the site.

4.1.4 Habitats will be reinstated to the baseline condition and habitat type within two years of the initial impact.

4.1.5 One veteran tree [T240] will be removed and translocated within the Bryncir works site, to retain the irreplaceable natural resource. For methods and risk associated with veteran tree translocation, refer to section 6.8 of (**Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment**). Whilst the veteran tree will be translocated, to account for the risk associated with this, in addition to the translocation, compensation measures will also be provided. Tree planting will be provided at a minimum 6:1 planting ratio as per PPW 12.

5. Long-term Landscape and Ecological Proposals

5.1 Landscape and Ecological Strategy and Proposals

5.1.1 Good design has been a key consideration from the outset of the Project. The Environmental Impact Assessment (EIA) has informed the iterative design process, guided by design principles developed specifically to address the opportunities and constraints presented by the Project. These principles have been developed in response to policy requirements, published landscape character assessment guidance and fieldwork analysis.

5.1.2 Design mitigation has been embedded in the proposed works to minimise effects on the environment, including landscape character, visual amenity, biodiversity, and heritage assets. These design mitigation measures and design proposals will be detailed in the full LEMP. Any measures and proposals such as habitat creation will require design, management, and monitoring will be required, and will be detailed in the full LEMP.

5.2 Phasing of Landscape Proposals

5.2.1 Where planting areas do not conflict with construction compounds and activities, consideration will be given to advanced planting being undertaken in available areas in the first available planting season prior to construction commencing. These areas will be developed in detail as part of the full LEMP subject to contractor discussions.

5.3 Habitat Enhancement and Creation Proposals

5.3.1 A total of 0.73 ha of grassland habitat is to be enhanced from poor condition improved grassland to species rich grassland.

5.3.2 The area of improved grassland is heavily grazed by sheep and cattle, dominated by *Lolium* species with frequent *Holcus* and *Agrostis*, and contains limited forb diversity, including *Trifolium repens* (white clover) and *Cerastium fontanum* (common mouse-ear). It is proposed to enhance this area of grassland by overseeding the area with an appropriate species rich seed mix that holds affinities with a MG5 *Cynosurus cristatus - Centaurea nigra* grassland.

5.3.3 Ongoing management following the establishment of the habitat can be undertaken through managed grazing, however the stocking density and timings will differ from the current grazing regime at the Site.

5.3.4 Further details of the methodology to be undertaken, management prescriptions and monitoring schedule will be presented in the full LEMP.

5.3.5 As detailed in Section 4, additional trees are to be planted to account for the risk associated with the translocation of the veteran tree. A total of six trees (minimum) are proposed in line with the 6:1 ratio detailed within the PPW 12.

5.3.6 Hedgerows will be planted at a ratio of 3:1. An additional 0.71km of species-rich hedgerow will be planted to adjoin to the existing species-poor hedge within the Bryncir works site.

6. Maintenance and Management Aims, Prescriptions, and Objectives

6.1 Introduction

6.1.1 This section introduces how existing and proposed habitats will be protected or implemented during construction, maintained, and managed in the long term for the lifetime of the proposed works.

6.1.2 As the detailed design progresses, further details will be provided, particularly in relation to plant species selection, specification of seed mixes, management prescriptions and timescales, and site-specific mitigation and enhancement elements.

6.1.3 Implementation and monitoring works will be supervised by the ECoW.

6.2 Management Periods

6.2.1 Any planting associated with the proposed works will be maintained for a period of time that will be determined in the full LEMP. The full LEMP will detail all mitigation measures associated with habitats and protected or notable species and the timeframe that they will be maintained for. This will likely be a five-year aftercare period for all reinstatement and mitigation planting for the proposed works.

6.3 Existing Retained Trees and Shrubs

6.3.1 During construction any retained hedgerows, woodland and trees will be protected in accordance with an Arboricultural Method Statement and Tree Protection Plan. The measures to be employed will likely include the use of clearly defined stand-offs (secured with temporary protective fencing), managing the structure and integrity of the retained vegetation and the soil upon which it relies, and undertaking any pruning outside of the bird breeding season.

6.3.2 Any retained trees will be periodically inspected by an arboriculturist during construction to ensure that the tree protection measures detailed in an Arboricultural Method Statement and Tree Protection Plans are adhered to. Where sensitive operations are required within Root Protection Areas (RPA) of any retained trees, works will be undertaken under the supervision of an arboriculturist to ensure that agreed methodologies are fully implemented, to record any root pruning and to recommend further arboricultural remedial works where required. All works requiring arboricultural supervision will be detailed within an Arboricultural Method Statement.

6.3.3 Any retained trees will likely require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access and will be the responsibility of the tree owner.

6.3.4 During the construction and operation of the proposed works, all staff operating on site are to be made aware of the need to look out for obvious signs of tree defects and to report them to the Site Manager who will seek further advice as necessary.

6.4 Other Habitat Proposals

6.4.1 As the identification of required habitat maintenance and management proposals for proposed works is ongoing, the full LEMP will detail all final proposals for existing and proposed habitats.

7. Monitoring

7.1 Pre and Post Construction Monitoring and Reporting

7.1.1 Monitoring and reporting is required in order to determine that the functions documented within the full LEMP are being achieved and to determine whether any remedial management action may be required.

7.1.2 A post-construction monitoring programme and reporting procedures will be formalised, agreed with the relevant planning authority and included within the full LEMP.

7.1.3 Post-construction monitoring and reporting programmes will be established for some habitats and species following completion of construction works, where agreed with the relevant planning authority.

7.1.4 Results from the post-construction monitoring will feed into the management plan and, if required, management may be amended accordingly.

7.2 Reinstatement of habitats

7.2.1 A monitoring protocol to determine successful restoration of any habitat will be agreed with the local planning authority. This will be based on a combination of survey data for the existing pre-construction habitat, and any relevant guidance. This will be detailed within the full LEMP.

7.3 Adaptive Management Monitoring

7.3.1 The adoption of an adaptive management programme for the landscape planting is proposed to achieve optimum levels of plant growth and growing conditions and ultimately provide greater confidence that effective screening will be achieved by the tree planted areas. It will also allow flexibility to adapt to future climate changes and trends with regard to species selection and maintenance requirements. Monitoring will be undertaken throughout the implementation and maintenance and management periods to ascertain progress of tree growth to inform the subsequent steps to be taken as part of the adaptive management programme.

7.3.2 The full LEMP will define the adaptive management programme in agreement with the relevant planning authority. New activities or adaptions to the management and maintenance regime will respond to the results of monitoring and changes as a result of climate change. It will comprise a landscape aftercare supervision structure that specifically addresses the quality and annual growth of different planting areas, with monitoring against agreed objectives. It will provide mechanisms to target specific measures to improve any areas where planting is not establishing satisfactorily. These measures could include, replacement of failed trees and shrubs with different species if repeated failure of species is occurring and other remediation measures to improve growth including but not limited to watering, targeted weeding and soil analysis.

7.4 Non-Compliance Procedure

7.4.1 The ECoW will be responsible for undertaking the inspections during and post construction to check compliance with the LEMP. All incidents and non-conformance with the LEMP, will be reported and investigated, with the necessary procedures identified in the LEMP.

7.5 Change Process

7.5.1 The full LEMP will identify the process to amend aspects of the full LEMP once it has been approved, if required. Changes would not alter any underlying commitments, mitigation or methodologies, which would be set out in the full LEMP. An example may be where a preconstruction survey identifies that a measure already committed to is no longer required in the full LEMP. This change process will be fully set out in the full LEMP in discussion with stakeholders.

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Bryncir Substation

Ecological Appraisal Report

National Grid

October 2022

Delivering a better world

Quality information

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1. Introduction

1.1 Background

1.1.1 In December 2017, Gwynedd Council (GC) granted National Grid planning permission (planning reference C17/0772/36/LL[1]) for a new 400/132kV electricity substation on land near Bryncir, Gwynedd. The planning permission will lapse in December 2022 which is the timescale of the permission imposed by Condition 1. National Grid is seeking to extend the life of the permission by a variation of Condition 1.

1.1.2 AECOM Limited (AECOM) was commissioned by National Grid to complete a refresh of the Bryncir Substation Ecology Report which was produced by AECOM in July 2017 to support the planning application. This updated report presents the methods and findings of ecology surveys that were repeated in 2022 to provide up-to-date information, along with proposed mitigation and enhancement agreed with National Grid.

1.2 Description of the Proposed Substation

1.2.1 The function of Bryncir substation would be to take power from the existing Pentir - Trawsfynydd 400 kV OHL, transforming it to a voltage of 132 kV and connecting this to the existing 132 kV distribution network operated by SP Manweb. One existing pylon on the 400 kV OHL at Bryncir would be replaced to connect to the new substation.

1.2.2 A temporary construction compound for the bellmouth and access road works would be established to the south of the A487 and a second compound for the main works would be established in an improved grassland field to the north of the proposed substation.

1.2.3 A new permanent access road (with a maximum width of 6m) would be constructed to provide a transport link between the new substation and the A487.

1.2.4 As part of the proposed development, effective drainage design for impermeable surfaces, incorporating SuDS elements, will be implemented. It can be assumed at this stage that this feature will be located immediately south-west of the proposed substation within the same field.

1.3 Proposed Development Site Location and Setting

1.3.1 The proposed substation red line boundary is illustrated on **Figures 1 to 4**. Throughout this report, the area within the red line boundary is referred to as 'the proposed development site', which is centred on approximate Ordnance Survey National Grid Reference (OSNGR) SH486431. The ecological 'Study Area' includes the proposed development site, its immediate surrounding habitats and up to 10 kilometre (km) radius from the proposed development site (regarding protected habitats and species data; various search distances apply).

1.3.2 The proposed development site lies within agricultural fields, used for pasture. The A487 is approximately 250m to the north east of the proposed substation area. The

[1] Available at: https://amg.gwynedd.llyw.cymru/planning/index.html?fa=getApplication&id=27681

B4411 and the Afon Dwyfach are approximately 410m west and 445m south-west of the proposed development site respectively.

1.4 Survey Aims and Objectives

1.4.1 The overall objective of this report is to verify that the previously identified potential ecological constraints, mitigation, licensing and enhancement requirements for the proposed Bryncir Substation remain the same. This objective has been met by carrying out an updated desk-based study and field surveys including; a Phase 1 habitat survey, habitat suitability assessments for a range of protected and notable species, a badger survey and bat roost surveys.

1.5 Legislation

1.5.1 Relevant wildlife legislation and policy is summarised in **Appendix A**. This is a brief summary of the legislation only and is not to be regarded as the full and exhaustive legal text for each piece of legislation.

2. Assessment Methodology

2.1 Desk Study

2.1.1 The desk study was refreshed in August 2022 to identify current nature conservation designations and protected and notable habitats and species potentially relevant to the proposed development site.

2.1.2 The approach to the desk study was based upon an understanding of the maximum distances typically considered by statutory consultees. Accordingly, all international, national and local statutory designated sites for nature conservation within a 2 km radius of the proposed development site were identified. In accordance with Bat Conservation Trust (BCT) recommendations, Special Areas of Conservation (SACs) designated because of a known bat population were included in a search of up to 10 km radius from the proposed development site.

2.1.3 The desk study identified local non-statutory nature conservation designations and protected and notable species records within a 2km radius of the proposed development site.

2.1.4 The desk study was carried out using the data sources detailed in Table 2.1. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); Schedules 2 and 4 of The Conservation of Habitat & Species Regulations 2017 (as amended); and species and habitats of Principal Importance for nature conservation in Wales listed under Section 7 of the Environment (Wales) Act 2016 were identified. Records of invasive non-native species (INNS) of plants were also collated, i.e. species that are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Table 2.1: Desk Study Data Sources

Data Source	Assessed	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website	August 2022	SAC designations for bats within 10km Other statutory designations within 2km
Ordnance Survey (OS) Mastermap 1:1250, OS mapping 1:25000 mapping and aerial photography (google.com/maps)	July 2022	Watercourses and other standing waterbodies within 500m
Local Records Centre (Cofnod)	August 2022	Non-statutory designations within 2km Protected and notable species records within 2km (records for the last 10 years only)
MAGIC website and aerial photography (google.com/maps)	August 2022	Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints

Data Source	Assessed	Data Obtained
Natural Resources Wales Interactive Map Viewer	August 2022	Habitats of Principal Importance for nature conservation in Wales listed under Section 7 of the Environment (Wales) Act 2016 within 2km
Gwynedd Council website	August 2022	Information on habitats and species included in the Natur Gwynedd Biodiversity Action Plan
Welsh Government website and Gwynedd Council website	August 2022	Information on regional and local policies and plans

2.2 Regional and Local Policies

2.2.1 Regional and Local planning policy was reviewed for policies concerned within the natural environment that are relevant to the proposed development, including;

- Planning Policy Wales (Edition 11, February 2021) Welsh Government; Chapter 6- Distinctive and Natural Places; and
- Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026.

2.3 Field Survey

Phase 1 Habitat Survey

2.3.1 An updated Phase 1 habitat survey was undertaken in accordance with the standard survey method[2]. Phase 1 habitat survey is a standard method of environmental audit and involves categorising different habitat types and habitat features within the survey area and recording these using standard Phase 1 habitat survey codes as described in the Handbook for Phase 1 habitat Survey[2]

2.3.2 Phase 1 target notes (TN) were made with the aim to increase the value of the habitat maps by providing supplementary information on features of interest, information on habitats too small to map and areas requiring further survey.

2.3.3 Photographs were also taken where considered appropriate to provide supplementary information, in particular of notable ecological features.

Protected Species Habitat Suitability Appraisal

2.3.4 Where relevant ecological receptors were identified within and up to 50m from the proposed development site (where accessible); the standard Phase 1 habitat survey method was “extended” to record target notes on protected, notable and invasive species with the location of these recorded as TNs. This took in to account direct sightings of individual species, evidence of presence through their activities (droppings, prints, hairs, pathways etc.) and presence of suitable habitat.

2.3.5 A note was made of any visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

2.3.6 Aerial photography and OS mapping was examined to attempt to identify all ponds and drainage ditches within 500m of the proposed development site boundary. This

[2] JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough

process could not guarantee to definitively identify all waterbodies present, but is the best that can be achieved within the limits of available data.

Badger Survey

2.3.7 An updated badger survey was carried out in conjunction with the Phase 1 habitat survey, on 11th July 2022. A search for evidence of badger activity was carried out on the proposed development site and to a distance of at least 30m from the boundary.

2.3.8 The survey area was searched for evidence of badger, which is typically identified via the presence of field signs such as latrines, prints, hairs, scratch posts and snuffle holes. The survey also included searching for evidence of setts or digging by badger that may be present.

Preliminary Bat Roost Appraisal

2.3.9 A preliminary bat roost appraisal survey was repeated on all mature trees within the proposed development site. The appraisal was carried out on 11th July 2022 by a suitably experienced ecologist, and in accordance with the Bat Conservation Trust (BCT) Bat Survey Guidelines[3]. Each tree within and up to 50m of the proposed development site (where accessible) was individually inspected from the ground from multiple angles for potential roost features (PRF), using binoculars and a high-powered torch where required.

2.3.10 Each tree was categorised as potentially offering negligible, low, moderate or high suitability for roosting bats, in accordance with the BCT Bat Survey Guidelines[3].

Bat Dusk Emergence Surveys

2.3.11 The preliminary bat roost appraisal identified two mature ash (*Fraxinus excelsior*) trees as having moderate bat roost suitability. Both of these trees are in a hedgerow along the proposed development site's eastern boundary (**Figure 4** TN4 and TN5). In line with the Bat Survey Guidelines[3], these trees were subject to two dusk emergence surveys.

2.3.12 The first dusk emergence survey was carried out on 8th August 2022 and the second dusk survey was carried out on 14th September 2022. Each survey commenced approximately 15 minutes before sunset and finished 90 minutes after sunset. The surveys were undertaken by suitably experienced surveyors, during suitable weather conditions.

2.3.13 During each survey, each surveyor positioned themselves in a suitable location next to one of the two ash trees identified as having moderate bat roost suitability, so that they could view the identified PRFs. An infrared camera was also positioned next to each of the two trees during each survey, with the aim to record any bats emerging from the trees (if present).

2.3.14 The surveyors listened/recorded (using a bat detector) and watched for bats emerging or returning to a roost, if present. Information including species and numbers of bats, access points used, and roosting locations would be recorded if bats were found to be present.

2.4 Desk Study and Field Survey Limitations

2.4.1 The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be

[3] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good practice Guidelines (3rd edn). The Bat Conservation trust, London.

captured by site surveys alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. A lack of records for particular habitats or species does not necessarily mean that the habitats or species do not occur in the Study Area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development.

3. Desk Study Results and Policy Review

3.1 Nature Conservation Designations

Statutory Designated Sites

3.1.1 Table 3.1 details the statutory sites designated for nature conservation identified by the desk study, based on the method given in Section 2 of this report. The designations are listed in descending order, with those closest to the proposed development site listed first. The locations of the designated sites are illustrated on **Figure 1**.

Table 3.1: Sites with Statutory Designations for Nature Conservations

Site Name	Reason(s) for Designation	Relationship to the Proposed Development Site (approximate distances)
Llystyn Isaf Site of Special Scientific Interest (SSSI)	The site is of botanical interest and consists of grazing pasture, adjoining the Afon Dwyfach at an altitude of 90m which supports a range of acidic and neutral grassland vegetation types. The drier neutral grassland communities are the main features of interest. Wood bitter-vetch *Vicia orobus* is uncommon nationally and it occurs here in its only known meadow locality in West Gwynedd. There are also patches of wet heath vegetation present, whilst the streamlines and adjoining wet flushed areas support a range of characteristic wetland species including several rush and sedge species together with various herbs. Fen meadow vegetation is also present in the southern part of the site.	885m north west of the proposed development site
Ffriddoedd Garndolbenmaen SSSI	Species-rich lowland grassland; an important and increasingly rare wildlife habitat. Small areas of other habitats, including dwarf shrub heath, marshy grassland and acid flush, occur in association with the grassland and add to the interest of the site. The site supports several uncommon and declining plant species, including wood bitter-vetch, moonwort *Botrychium lunaria* and adder's tongue *Ophioglossum vulgatum*.	1.65km north east of the proposed development site
Corsydd Eifionydd Special Area of Conservation (SAC)	Annex I habitats that are a primary reason for selection of this site are Transition mires and quaking bogs. Corsydd Eifionydd embraces two isolated topogenous peatlands situated within the upland-fringe transition between Snowdonia and the Lleyn Peninsula. Annex II species that are a primary reason for selection of this site are Marsh fritillary butterfly	1.9km north east of the proposed development site

Site Name	Reason(s) for Designation	Relationship to the Proposed Development Site (approximate distances)
	Euphydryas aurinia and Slender green feather-moss *Drepanocladus vernicosus*.	
Cors Graianog SSSI	Floristic and entomological interest. A relatively undisturbed example of acidic basin mire. The present peatland surface, lying at c.170m, is partially developed over old peat-cuttings and includes ombrogenous vegetation, poor-fen swam, willow carr and peripheral acidic flushes. Several uncommon mire plants are present including the intermediate bladderwort *Utricularia intermedia*. The mire also supports an interesting invertebrate community including a range of nationally and regionally rare species e.g. the endangered British weevil *Otiorrhyncus auropunctatus*	1.9km north east of the proposed development site

3.1.2 Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC falls within 10km of the proposed development site. This composite site includes most of the known maternity roosts in Meirionnydd and some hibernacula, and comprises the centre of distribution for lesser horseshoe bats *Rhinolophus hipposideros* in Wales. Glynllifon SAC also falls just within 10km of the proposed development site. This site is both a maternity and hibernation site for a large population of lesser horseshoe bats. As these SACs are approximately 7.8km south east and 10km north-west respectively of the proposed development site (at their closest points) there will be no effects to the integrity of these sites as a result of the works.

3.1.3 Chapter 8: Water Quality, Resources and Flood Risk**Error! Bookmark not defined.** of the Bryncir Environmental Report submitted as part of the planning application (C17/0772/36/LL); identifies three further designations downstream of the Afon Dwyfach, outside of the 2km radius applied to the ecological desk study, but hydrologically connected to the proposed development site.

3.1.4 Talhenbont SSSI is approximately 4.5km downstream on the Afon Dwyfach, and is designated for its botanical interest. Glanllynnau a Glannau Pen-Ychain I Gricieth SSSI is within the Tremadog Bay (approximately 8.5km downstream of the proposed development site) and is designated for the biological features and habitats. Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC, also located within the Tremadog Bay, is also designated for the biological features and habitats.

3.1.5 The above citations have been checked and remain current.

Non Statutory Designated Sites

3.1.6 Data received from Cofnod indicate that there are numerous candidate Wildlife Sites located within 2km of the proposed development site (**Figure 2**). The closest candidate Wildlife Sites are Bryn-yr-efail-uchaf; located approximately 30m east of the proposed development site and Dolwar Heath; located approximately 45m south and south east of the proposed development site. Both of these Wildlife Sites comprise marshy grassland habitat.

Priority Habitats and Ancient Woodland

3.1.7 The Natural Resources Wales Interactive Map identifies extensive areas of purple moor grass and rush pastures in the wider area, but outside of the proposed development site. The closest area of this habitat is approximately 30m east of the proposed development site and is associated with a candidate Wildlife Site. No areas of priority habitat are shown within the proposed development site itself (**Figure 3**). The closest area of ancient woodland is over 1km from the proposed development site (**Figure 2**).

3.2 Protected and Notable Species

3.2.1 **Table 3.2** provides records of protected and notable species within a 2km radius of the proposed development site, provided by Cofnod. Records are for the last 10 years.

Table 3.2: Protected and Notable Species Records within 2 km of the Proposed Development Site

Species	Protected Status / Designation	Date of Record (Closest Provided)	Approximate Distance of Record from Proposed Development Site
Mammals			
Badger *Meles meles*	Protection of Badgers Act 1992	2019	411m east
Otter *Lutra lutra*	WCA* Schedule 5	2021	669m west
Common pipistrelle *Pipistrellus pipistrellus*	WCA* Schedule 5	2017	1.1km north east
Daubenton's Bat *Myotis daubentonii*	WCA* Schedule 5	2018	1.1km north east
Lesser Horseshoe Bat *Rhinolophus hipposideros*	WCA* Schedule 5	2017	1.1km north east
Myotis bat species *Myotis spp*	WCA* Schedule 5	2018	1.1km north east
Natterer's Bat *Myotis nattereri*	WCA* Schedule 5	2018	1.1km north east
Noctule Bat *Nyctalus noctula*	WCA* Schedule 5	2018	1.1km north east
Brown hare *Lepus europaeus*	Environment Act (Wales) 2016	2022	1.64km south east
Birds			
Linnet *Linaria cannabina*	BoCC* Red list, Environment Act (Wales) 2016	2015	659m north
Red kite *Milvus*	WCA* Schedule 1	2014	285m east
Barn Owl *Tyto alba*	WCA* Schedule 1	Prior to 2008	1.40km north west
Yellowhammer *Emberiza citrinella*	BoCC* Red list, Environment Act (Wales) 2016	22/05/2015	1.29km north east
Plants			
Indian balsam *Impatiens glandulifera*	WCA* Schedule 9	2017	412m north
Japanese knotweed *Fallopia japonica*	WCA* Schedule 9	Prior to 2017	768m north east

*Wildlife and Countryside Act 1981 (as amended) (WCA), Birds of Conservation Concern (BoCC), UK Biodiversity Action Plan (BAP).

3.3 Regional and Local Planning Policy

Planning Policy Wales (Edition 11, February 2021) Welsh Government; Chapter 6- Distinctive and Natural Places

3.3.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties such as the Socio-economic Duty.

3.3.2 Section 6.4 *Biodiversity and Ecological Networks* specifies that Development plan strategies, policies and development proposals must consider the need to:

- *'support the conservation of biodiversity, in particular the conservation of wildlife and habitats;*
- *ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;*
- *ensure statutorily and non-statutorily designated sites are properly protected and managed;*
- *safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and*
- *secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks'.*

Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026

3.3.3 Policy concerned with 'Conserving and Enhancing the Natural Environment' contained within the joint Local Development Plan and of relevance to the Bryncir substation proposals include; Strategic Policy PS 19: Conserving and where Appropriate Enhancing the Natural Environment and Policy AMG 5: Local Biodiversity Conservation.

4. Field Survey Results

4.1 Habitats

Phase 1 Habitat Survey

4.1.1 The habitats recorded, their extent and distribution are shown on **Figure 4**. The associated target notes are provided in **Appendix C** and illustrative photographs are provided as appropriate in **Appendix D**. Descriptions of the habitats recorded within the survey area are provided below.

Improved Grassland

4.1.2 The proposed substation and temporary construction compounds would be constructed within improved grassland fields used for pasture. The access road would also pass through improved grassland. This habitat is considered to be of low ecological value at local level.

Marshy Grassland

4.1.3 A small area of marshy grassland is present in the southern section of the improved grassland field in which the proposed substation will be constructed, however this will not be directly affected by the proposed substation. Species present here include hard rush *Juncus inflexus*, perennial rye grass *Lolium perenne*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, creeping thistle *Cirsium arvense*, tormentil *Potentilla erecta* and meadow buttercup *Ranunculus acris*.

Scattered Trees

4.1.4 Scattered trees are uncommon throughout the proposed development site but, where present, are associated with field boundary hedgerows. A linear extent of broadleaved scattered trees is present east of the proposed development site; species include mature ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna*.

Species-poor Hedgerow with Trees

4.1.5 This classification refers to a species-poor hedgerow (see below) with one or more trees present within a particular section. The proposed access road runs parallel to a length of this hedgerow type and associated stone wall which may be representative of remnant cloddiau (a dry stone outer with a compacted earth, or earth/rubble core). Species recorded in the hedgerow included blackthorn *Prunus spinosa*, hawthorn and ash.

Species-poor Hedgerow

4.1.6 The northern extent of the aforementioned hedgerow connects with another hedgerow running parallel to the A487. Woody species recorded within this intact hedgerow were limited to hawthorn and blackthorn and consequently classified as species-poor.

4.1.7 A further species-poor hedgerow which is defunct, lies to the south and outside of the proposed development.

4.1.8 None of the hedgerows recorded on proposed development site are classed as ‘important’ under the Hedgerow Regulations 1997. However, should further surveys find that a tree within the hedgerow that runs parallel to the proposed access road is used by roosting bats (European and UK protected species) then this hedgerow

would then be classed as important under the regulations as it meets other criteria but not enough at present.

Scattered Scrub

4.1.9 Scattered gorse *Ulex* sp. scrub was present to the south of the species poor hedgerow with trees, along the boundary of an improved grassland field and adjacent to the proposed access road.

Stone wall

4.1.10 Stone walls are present within the Site. There is also a culvert which runs through the stone wall at the northern extent of the proposed development site and under the A487, however, this is outside of the site itself (TN1, **Figure 4**).

Buildings

4.1.11 There is a stone farm building located to the east of the proposed development Site, as shown on TN6, **Figure 4**. However, this building will not be affected by the proposed development.

4.2 Protected and Notable Species

Badger

4.2.1 No evidence of badger was found during the survey. The proposed development site is flat and offers little vegetation cover, which is considered sub-optimal for sett construction. It is possible that badgers could use the proposed development site for foraging and commuting, however, no evidence of this species was found. Badger is not therefore considered to be constraint to the proposed development.

Bats

Preliminary Bat Roost Appraisal

4.2.2 Two ash trees were assessed as having moderate suitability for roosting bats. These trees (**Figure 4**, TN4 and TN5) form part of a hedgerow (species-poor hedgerow with trees) which runs parallel to the proposed access road, along the eastern boundary of the proposed development site. Potential roost features noted on the most northern of the two ash trees (**Figure 4**, TN4) included a large broken central branch/trunk. Several woodpecker holes/gaps were present in the south-facing broken trunk, approximately 5m from ground level. Potential roost features noted on the second ash tree (**Figure 4**, TN5) included a split in a leaning branch, approximately 4.5m from ground level, with potential for bats to enter the trunk via this split, if hollow inside. The leaning branch also featured a smaller branch beneath which also contained a split near the base of the branch, approximately 4m from ground level, which again could provide opportunities for bats to enter.

4.2.3 An additional ash tree located along a linear extent of broadleaved scattered trees (**Figure 4,** TN3) was categorised as offering low suitability for roosting bats. However, this tree will not be affected by the proposed development.

4.2.4 All other trees assessed were found to have negligible suitability for roosting bats.

Dusk Emergence Surveys

4.2.5 The dusk emergence surveys undertaken in August and September 2022 did not identify any bats emerging from the two ash trees identified as having moderate bat roost suitability. During the August survey, common pipistrelle and soprano pipistrelle *Pipistrellus pygmaeus* bats were recorded foraging along the hedgerow,

two noctule *Nyctalus noctule* passes were also recorded. During the September survey pipistrelle bats *Pipistrelle sp* and a small number of noctule passes were also recorded.

Great Crested Newt

4.2.6 The terrestrial habitats within and close to the proposed development site offer some suitable foraging and refuge habitat for great crested newt (GCN) *Triturus cristatus* (albeit limited) in the form of marshy grassland, stone walls and hedgerows.

4.2.7 During the desk study no ponds were identified within 500m of the proposed development site and no records for this species were received from Cofnod. During previous field surveys undertaken by AECOM in 2016 one waterbody was identified approximately 300 m south-west of the proposed development site (Photograph 14, **Appendix D**). This waterbody appeared to be ephemeral and was considered to be unsuitable for breeding GCN. The potential presence of GCN on the proposed development site is therefore considered to be very low.

Reptiles

4.2.8 The majority of the proposed development site is grazed improved grassland and therefore of low suitability for reptiles, which are generally associated with varied habitat structures, including a mixture of vegetation heights, close to open areas suitable for basking. The stone walls, a rock pile (TN2, **Figure 4**) and a spoil heap (TN7, **Figure 4**) however offer opportunities for refuge and basking.

4.2.9 There is potential for reptiles to be present within the purple moor grass and rush pastures in the wider local area, however this habitat will not be affected by the proposed development.

Birds

4.2.10 The grassland habitats, field boundary hedgerows and scattered scrub offer foraging and nesting opportunities for common passerine species. The potential for ground nesting species is considered to be low as the fields are grazed by cattle. During a previous survey undertaken at the Site by AECOM in 2017, blue tit *Cyanistes caeruleus* and crow *Corvus corone* were observed to be nesting within one of the ash trees located in the species-poor hedgerow which runs parallel to the proposed access road. A rock pile (TN2, **Figure 4**) is also considered to potentially offer opportunities for nesting birds, such as grey wagtail *Motacilla alba*.

5. Proposed Mitigation

5.1 Introduction

5.1.1 This section of the report details potential ecological constraints to the proposed development and identifies mitigation measures where appropriate. Potential constraints associated with the construction and operation of the proposed development are considered. The mitigation described has been discussed and agreed with National Grid.

5.2 Designated Sites

5.2.1 Due to the nature, scale and location of the proposed development, no potential pathways have been identified that would result in a significant effect to any ecologically statutory designated sites located within 2km of the proposed development site. OS mapping indicates that the marshy grassland to the south and east of the proposed development site could be hydrologically linked to the Afon Dwyfach and Afon Dwyfor. The Afon Dwyfach is linked to Llystyn Isaf SSSI (approximately 0.88km north-west of the proposed development site), however the SSSI is upstream of the proposed development site; therefore no potential effects have been identified. Likewise, Corsydd Eifionydd/ Eifionydd Fens SAC (approximately 1.9km north-east of the proposed development site), Ffriddoedd Garndolbenmaen SSSI (1.65km north-east of the proposed development site and Cors Graianog SSSI (approximately and 1.91km north-east of the proposed development site) are upstream of the proposed substation and no potential effects are anticipated.

5.2.2 Chapter 8: Water Quality, Resources and Flood Risk[Error! Bookmark not defined.] of the Bryncir Environmental Report submitted as part of the planning application (C17/0772/36/LL)[Error! Bookmark not defined.]; concludes that there will be no significant effect (subject to appropriate mitigation) on Talhenbont SSSI, Glanllynnau a Glannau Pen-Ychain I Gricieth SSSI and Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, located more than 2km downstream of the proposed substation.

5.2.3 Mitigation would be implemented to protect the non-statutory Wildlife Sites that are situated close to the proposed development site; including the prevention of encroachment into these areas and standard pollution prevention controls.

5.3 Habitats

Grassland - Improved and Marshy Grassland

5.3.1 Construction of the proposed substation and associated access road would result in the permanent loss of improved grassland.

5.3.2 Establishment of the two temporary compounds would result in the temporary loss of improved grassland; however the grassland would be reinstated post construction.

5.3.3 The grassland habitats on the proposed development site are considered to be of low ecological value at local level, but may provide some foraging habitat for protected and notable species including bats and birds.

5.3.4 The marshy grassland adjacent to the proposed development site is not anticipated to be affected by any drainage modifications associated with the proposed substation. As outlined above, mitigation would be implemented to protect habitats located close to the proposed development site, including priority habitats. This

would include the prevention of encroachment into such areas and appropriate pollution prevention controls.

Hedgerows

5.3.5 Hedgerow removal/trimming is proposed at the proposed development site. The length of hedgerow to which the proposed access road would run parallel would be protected during construction of the road; however a small section of this hedgerow, close to the A487, will require removal to accommodate a visibility splay. Sections of the hedgerow which runs alongside the A487 would also require removal/trimming to accommodate the splay. Neither of these species-poor hedgerows are classed as 'important' under the Hedgerow Regulations 1997, however, they offer potential habitat for species including birds and bats.

5.3.6 Hedgerows containing trees supporting roosting bats (European and UK protected species) are classed as important under the regulations in conjunction with other criteria. However, as detailed elsewhere in this report, surveys have shown no bat roosts to be present within or adjacent to the proposed development site. It is noted that should further surveys (required if development works are not undertaken by September 2024), or during on site works (such as during soft felling of a tree in the presence of an ecologist) it is found that a tree within the hedgerow that runs parallel to the proposed access road is used by roosting bats then this hedgerow would then be reclassed as Important under the regulations.

5.3.7 To compensate for the permanent loss of small sections of hedgerow associated with the proposed substation, it is proposed that new species-rich hedgerows are planted. New lengths of hedgerow would contain a mix of native species, appropriate to the locality. Species could include hawthorn, elder *Sambucus nigra*, oak *Quercus* sp, rowan *Sorbus aucuparia* and beech *Fagus sylvatica*. It is noted that although present within the proposed development site, the planting of ash has been omitted due to the prevalence of ash dieback and the risks of introducing this fungus (*Hymenoscyphus fraxineus*) to the locality.

5.4 Protected Species

Badger

5.4.1 No evidence of badger was found during the badger survey. Similarly, no evidence of badger was found during a previous badger survey undertaken at the proposed development site by AECOM in October 2016. Badgers are not therefore considered to be a constraint to the proposed substation.

5.4.2 As no evidence of badger was found there is no requirement for a licence and no specific mitigation for this species is proposed during construction.

5.4.3 New planting around the proposed substation, including the establishment of new hedgerows, could enhance the suitability of the proposed development site for faunal species including badgers.

Bats

5.4.4 Where possible trees will be retained, particularly the two ash trees that were identified as offering moderate bat roost suitability (TN4 and TN5, **Figure 4**). No bats were recorded emerging from either of these trees during the dusk emergence surveys undertaken in August and September 2022, therefore it is concluded that roosting bats are likely absent from the trees at this time. However, although no bats were recorded within the trees, as a precaution, if they cannot be retained they will be soft felled in the presence of a suitably qualified ecologist in sections if they cannot be retained, or if any works are required to remove branches. Given the

presence of bat activity within the Site, and known presence within the wider area, the trees will require further surveys should the works have not been commenced within 24 months of the dusk emergence surveys, i.e. by September 2024.). A tool box talk for bats will be provided to construction staff on site by an ecologist.

Great Crested Newt

5.4.5 The potential for GCN on the proposed development site is considered to be low as no potential breeding ponds have been identified within 500m and no records for this species were provided by Cofnod. GCN is not therefore considered to be a potential constraint to the proposed substation and no specific mitigation for this species is proposed.

Reptiles

5.4.6 The potential for reptiles on the proposed development site is considered to be low and therefore are not considered to be a potential constraint to the proposed development. Therefore no specific mitigation in relation to reptiles is required. Creation of log piles on the site from any trees that may be required to be removed would be beneficial for reptiles and other species.

Birds

5.4.7 Consideration will be given to the timing of the works in relation to nesting birds. Active nests are protected under the Wildlife & Countryside Act 1981 (as amended). Any necessary hedgerow or tree removal or thinning/modification works will be programmed to take place between September and February, outside of the core breeding bird season. If these works cannot be scheduled for a time outside this period, a suitably experienced ecologist will check vegetation to be cleared for active birds' nests before, and within, 24 hours of the clearance works. If an active nest is found an exclusion zone will be established to protect the nest from accidental damage or destruction, until the ecologist determines that the nest is no longer active. The appointed ecologist will continue to monitor the nest during this time. The distance of the exclusion zone and time of the exclusion period would be dependent on the bird species and adjacent habitat/vegetation.

6. Conclusion

6.1.1 There has been no material change to the ecology of the proposed development site since the previous assessment was undertaken in 2017, which supported the application and led to the grant of planning permission C17/0772/36/LL.

6.1.2 The ecological mitigation and enhancements identified within this report have been agreed with National Grid. These measures will appropriately address potential impacts to the ecological interest at the site and its locale from the development.

6.1.3 Suitable mitigation will be implemented during construction to protect the retained habitats within and surrounding the development site. This will include the protection of close by priority habitats and designated sites through the prevention of encroachment into these areas and approriate pollution prevention controls.

6.1.4 Habitats will be retained and protected where possible and any temporary habitat loss will be reinstated post construction. To compensate for the permanent loss of hedgerows associated with the proposed substation, new native species-rich hedgerows will be planted. The removal of mature trees will be avoided where possible, but where unavoidable will be used to create log piles on the site.

6.1.5 Two ash trees (**Figure 4**, TN 4 and TN5) to the east of the proposed access road were assessed as having moderate bat roost suitability. Two dusk emergence surveys were carried out on these trees (in August and September 2022) and no bats were recorded emerging or entering these trees. Reassessment of the trees discussed in this report for their suitability to support roosting bats would be necessary prior to construction should the works not commence within 24 months of the dusk emergence surveys, i.e. by September 2024. As stated above, the removal of mature trees will be avoided where possible, however if removal cannot be avoided these trees will be soft felled in sections as a precaution. A tool box talk for bats will be provided to construction staff on site by an ecologist prior to works affecting trees commencing.

6.1.6 Consideration will be given to the timing of the works in relation to nesting birds. Any necessary hedgerow or tree removal will be programmed to take place between September and February. If these works cannot be scheduled for a time during this period, a suitably experienced ecologist will check vegetation to be cleared for active birds' nests before, and within, 24 hours of the clearance works.

6.1.7 If an active nest is found an exclusion zone will be established to protect the nest from accidental damage or destruction, until the appointed ecologist determines that the nest is no longer active.

Appendix A Relevant Legislation

Legislation

The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. The Environment Act 2021 has also been introduced on the 17th November 2021 which now acts as the UK's new framework of environmental protection.

The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the *Conservation of Habitats and Species Regulations 2017* (referred to as the 2017 Regulations) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

Designated Sites

Special Protection Areas (SPA) / Special Areas of Conservation (SAC)

These sites in the UK no longer form part of the EU's Natura 2000 ecological network. The *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* (referred to as the 2019 Regulations) have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- existing SACs and SPAs
- new SACs and SPAs designated under these Regulations

Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new National Site Network.

Formal Appropriate Assessment is required to be undertaken by the competent authority before undertaking, or giving consent, permission or other authorisation for any work which are likely to have a significant effect on such a site.

Wetland of International Importance (Ramsar site)

Designated under the *Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971* (the Ramsar Convention), in the UK, these sites are treated as having the same level of protection as SPA's and SAC's.

Sites of Special Scientific Interest

Under the *Wildlife and Countryside Act 1981* (as amended), it is an offence to carry out or permit to be carried out any operations likely to damage the Site of Special Scientific Interest (SSSI). These operations are listed in the SSSI notification.

Owners, occupiers, public bodies and statutory undertakers must give notice and obtain the appropriate consent under S.28 of the *Wildlife and Countryside Act 1981* (as amended), before undertaking operations likely to damage a SSSI.

National Nature Reserve

National Nature Reserves (NNR) are established under the National Parks and Access to the Countryside Act 1949. Most NNRs are also underpinned by SSSIs and are therefore protected by the measures detailed above. For NNRs not underpinned by SSSIs it is still an offence to carry out or permit to be carried out any potentially damaging operation.

NNRs are given protection through policies in a local development plan.

Local Nature Reserve

A Local Nature Reserve (LNR) is a statutory designation made under National Parks and Access to the Countryside Act 1949, by principal local authorities (district, borough or unitary councils).

The local authority must control the LNR land - either through ownership, a lease or an agreement with the owner.

LNRs are given protection through policies in a local development plan.

Locally Designated Sites

Local Wildlife Sites are sites with ‘substantive nature conservation value’. They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a region.

They are usually selected by the relevant Wildlife Trust, along with representatives of the local authority and other local wildlife conservation groups.

The LWS selection panel, select all sites that meet the assigned criteria, unlike SSSIs, which for some habitats are a representative sample of sites that meet the national standard. Consequently, many sites of SSSI quality are not designated and instead are selected as LWSs. Consequently, LWSs can be amongst the best sites for biodiversity.

Relevant Protected Species

Bats / Great Crested Newt

These species, previously known as European Protected Species, are protected under Regulation 43 of the 2017 Regulations as amended by the 2019 Regulations. This makes it an offence to deliberately capture, injure or kill an animal; deliberately disturb an animal; or damage or destroy a breeding site or resting place used by an animal.

Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural Resources Wales can be obtained to facilitate the works that would otherwise be illegal.

These species are also protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

Lower levels of disturbance not covered by the *Conservation of Habitats and Species Regulations 2017* remain an offence under the *Wildlife and Countryside Act 1981* although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Nesting Birds

All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended), with some species afforded greater protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended). In addition to the protection from killing or taking that all birds receive, Schedule 1 birds and their young must not be disturbed at the nest.

There are no licensing purposes that explicitly cover development activities affecting wild birds.

Common Species of Reptile (common lizard, slow worm, grass snake and adder)

Common species of reptile are protected against intentional killing and injury under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). There is no requirement for a licence where development works affect common species of reptiles. Instead, where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

Badgers and their setts are protected under the *Protection of Badgers Act 1992* (as amended). This makes it an offence to wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett.

It is not illegal to carry out disturbance activities near setts that are not occupied, i.e. those that do not show signs of current use.

Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural Resources Wales. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process.

Natural Resources Wales provide guidance on working close to badger setts and the methods that can be employed to avoid or minimise impacts to active badger setts[4].

Licences are normally not granted from December to June inclusive (the badger breeding season) because dependent cubs may be present within setts.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

Section 7 of the Environment (Wales) Act 2016 replaces the duty in section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living

[4] *Badgers – A Guide for Developers*. Natural Resources Wales. January 2018.

organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales.

The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section and encourage others to take such steps.

Part 1 of the Act, including Sections 6 and 7, came into force on May 21, 2016.

Hedgerows

Under the Hedgerows Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing hedges that are at least 20 metres in length, over 30 years old and contain certain species of plant. The local planning authority will assess the importance of the hedgerow using criteria set out in the regulations.

Non-native Invasive Plant Species

Under the Wildlife and Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause these species to grow in the wild.

Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the *Environmental Protection Act 1990*.

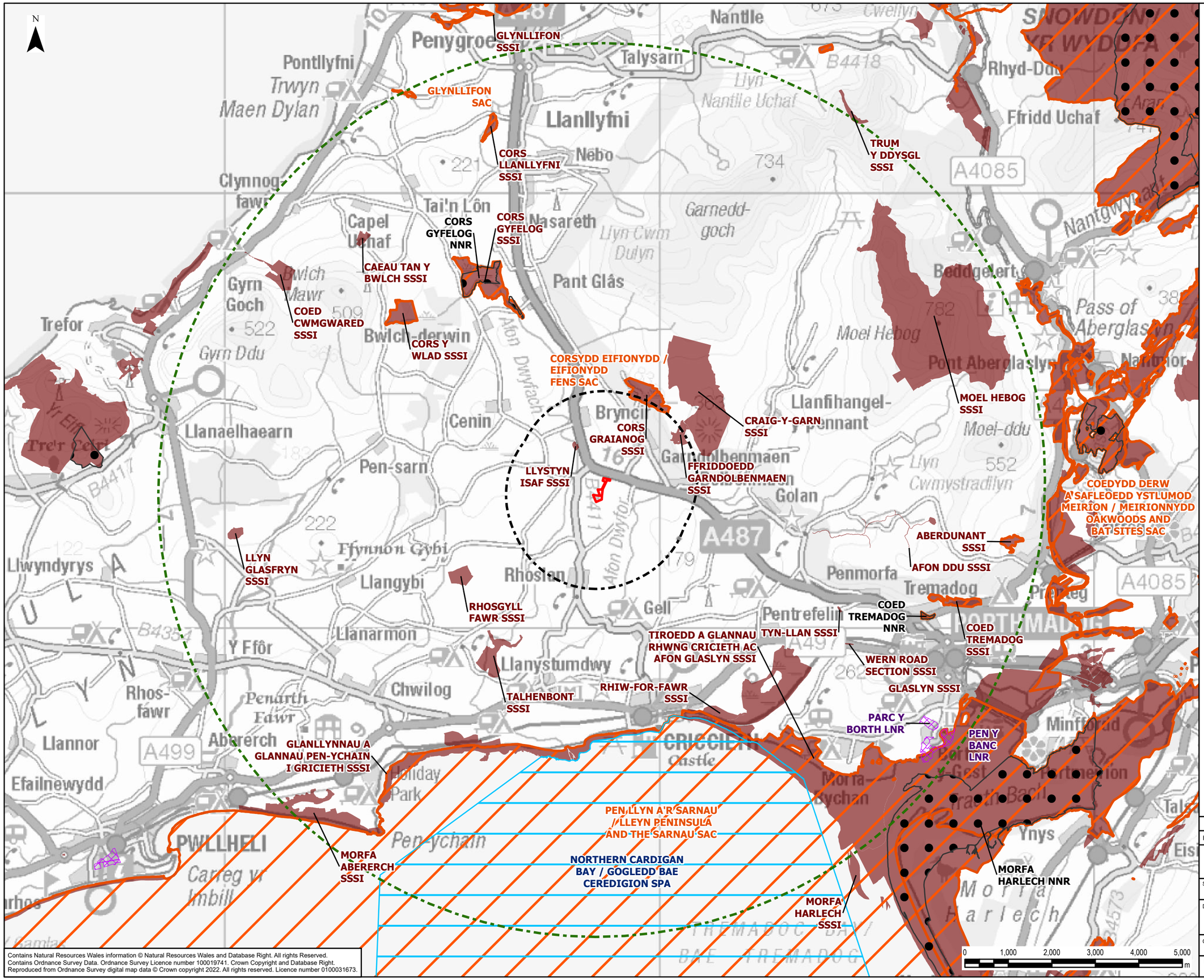
Appendix B Figures

Figure 1: Statutory Sites Designated for Nature Conservation

Figure 2: Non Statutory Sites Designated for Nature Conservation

Figure 3: Priority Habitats

Figure 4: Phase 1 Habitat Map



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nationalgrid

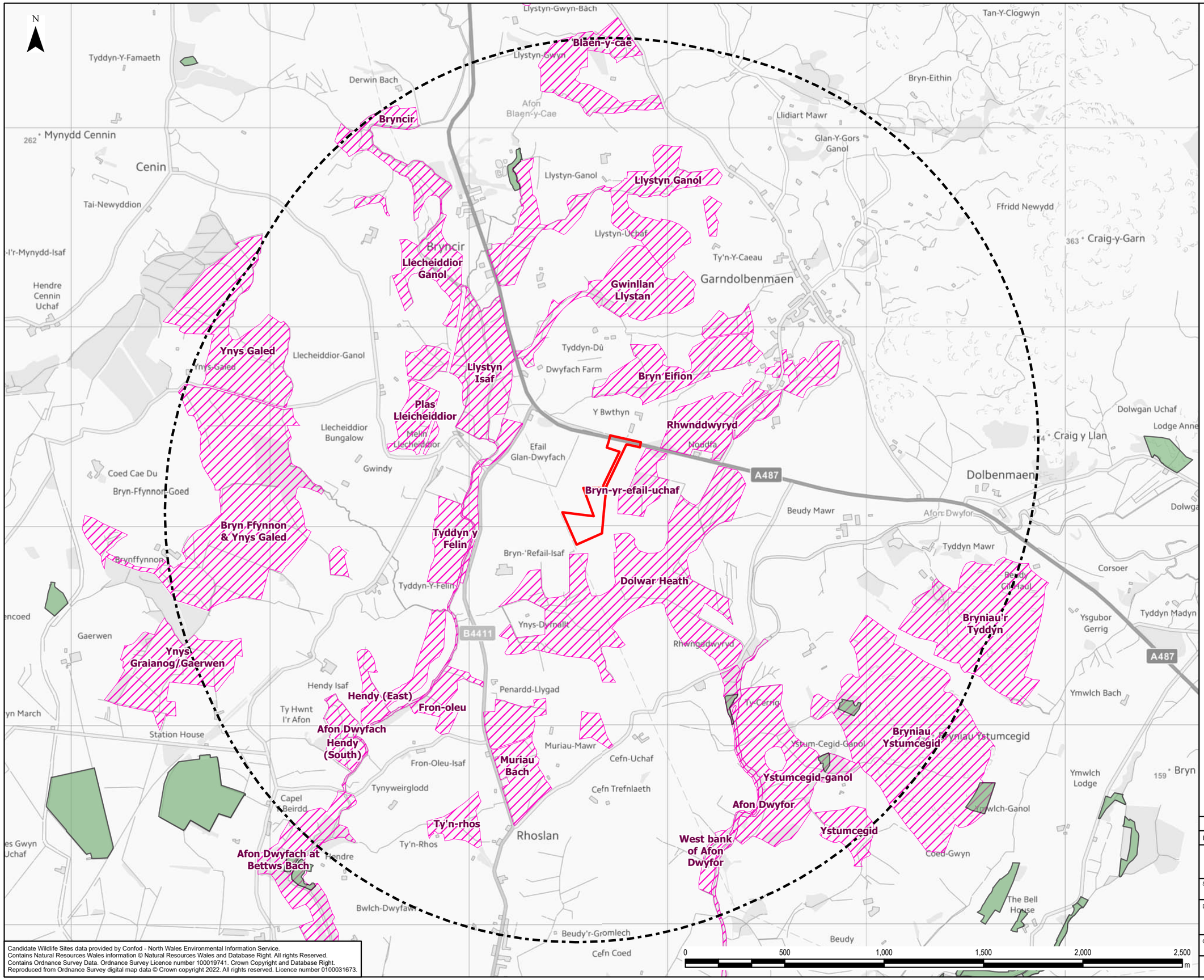
Scheme: BRYNCIR SUBSTATION

Document Title: STATUTORY SITES DESIGNATED FOR NATURE CONSERVATION

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	29/09/2022	DF	29/09/2022	TA	29/09/2022

Document Ref:	Scale:	Format:	Sheets:	Rev:
FIGURE 1	1:80,000	A3	1	0

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Legend

- Scheme Boundary
- Scheme Boundary - 2km Study Area
- Ancient Woodland
- Candidate Wildlife Sites

Candidate Wildlife Sites data provided by Confod - North Wales Environmental Information Service.
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Scheme: BRYNCIR SUBSTATION

Document Title: NON-STATUTORY SITES DESIGNATED FOR NATURE CONSERVATION

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	30/09/2022	DF	30/09/2022	TA	30/09/2022

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FIGURE 2	1:17,500	A3	1	0

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N

Legend

- Scheme Boundary
- Scheme Boundary - 2km Study Area

Priority Habitats (Sensitivity Layer)

- Lowland Dry Acid Grassland
- Lowland Fens and Reedbeds
- Lowland Heathland
- Lowland Meadows
- Purple Moor Grass and Rush Pastures

Cenin
Derwin Bach
Llystyn-Ganol
Llystyn-Uchaf
Bryn-hir
Ty'n-Y-Caeau
Garndolbenmaen
Tyddyn-Da
Llecheiddior-Ganol
Llecheiddior Bungalow
Gwindy
Efail Isan-Dwyfach
Y Bwthyn
Nodfaig
Beudy Mawr
Craig-y-Garn
Dolbenmaen
Coed Cae Du
Brynffynnon-Goed
Bryn-'Refail-Isaf
Tyddyn-Ffraid
Ynys-Dafolog
Gaerwen
Henryd Isaf
Ty Hwnt i'r Afon
Penardd-Llygad
Station House
Muriau-Mawr
Cefn-Uchaf
Fron-Oleu-Isaf
Tynyweirglodd
Capel Beirdd
Ty'n-Rhos
Ce'n Trefnlaeth
Rhoslan
Bwlch-Dwysaint
Beudy'r-Gromlech
Ce'n Coed
Tyddyn Mawr
Ty'n-Y-Cerrig
Ymwlch Bach
Ymwlch Lodge
Ty'n-Y-Gwyn
The Bell House
Tyddyn Madyn
Ysgubor
A487
B4411

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0 500 1,000 1,500 2,000 2,500 m

Rev	Date	Description	GIS	Chk	App
0	29/09/2022	PRELIMINARY ENVIRONMENTAL APPRAISAL	EB	DF	TA

nationalgrid

Scheme: BRYNCIR SUBSTATION

Document Title: PRIORITY HABITATS

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	29/09/2022	DF	29/09/2022	TA	29/09/2022

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FIGURE 3	1:17,500	A3	1	0

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N

Glan-Dwyfach

Y Bwthyn

B4411

A487

TN1

TN2

TN3

TN4

TN5

TN6

TN7

Bryn-'Refail-Isaf

0 100 200 300 400 500 m

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Legend

- Scheme Boundary
- Target Note
- Broadleaved parkland/scattered trees (individual)
- Scrub - scattered
- Broadleaved parkland/scattered trees (line)
- Intact hedge - species-poor
- Defunct hedge - species-poor
- Hedge with trees - species-poor
- Fence
- Wall
- Improved grassland
- Marsh/marshy grassland
- Buildings

Rev	Date	Description	GIS	Chk	App
0	29/09/2022	PRELIMINARY ENVIRONMENTAL APPRAISAL	EB	DF	TA

nationalgrid

Scheme: BRYNCIR SUBSTATION

Document Title: PHASE 1 HABITAT MAP

Creator:	Date:	Checker:	Date:	Approver:	Date:
EB	29/09/2022	DF	29/09/2022	TA	29/09/2022

Document Ref:	Scale:	Format:	Sheets:	Rev:
FIGURE 4	1:3,500	A3	1	0

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Appendix C Target Notes

Target Note (TN)	Description
1	Culvert running under A487
2	Rock pile with potential to support birds, invertebrates and reptiles
3	North-facing hole in trunk of ash tree, categorised as offering low suitability for roosting bats
4	Ash tree with central wood damage with woodpecker hole in remaining area. Categorised as offering moderate suitability for roosting bats
5	Ash tree with some damage present on branches. Categorised as offering moderate suitability for roosting bats
6	Remnants of brick farm building with no suitability for bats.

Appendix D Photographs

Photograph	Description/Feature
	Photo 1: Target Note (TN) 1 - culvert
	Photo 2: TN2 – rock pile





Photos 3 and 4: TN 3 – tree with low suitability for roosting bats





Photos 5 and 6: TN 4 – northernmost ash tree with moderate bat roost suitability





Photos 7 and 8: TN 5 – southernmost ash tree with moderate bat roost suitability



Photo 9: TN 6 – remnants of farm building



Photo 10: Example of improved grassland within proposed development site



Photo 11: Example of species-poor hedgerow with trees



Photo 12: Example of species-poor hedgerow



Photo 13: Example of marshy grassland



Photo 14: Waterbody identified by AECOM in 2016, approximately 300m south-west of the proposed development site.

Bryncir SPEN 132 kV Connection

Preliminary Ecological Appraisal Report

National Grid

December 2023

Delivering a better world

Prepared for:

National Grid

Prepared by:

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Executive Summary

Site Details	The Site is approximately 45 hectares (ha) in area and is located to the south of the A487 at Glan-Dwyfach, near Bryncir in Gwynedd, LL51 9EZ at Ordnance Survey National Grid reference SH 4788 4289. There is also a section of the site located south of the A487 at Ordnance Survey national grid reference SH 48460 42954.
Scheme Details	The Scheme comprises the installation of a new 132kV overhead line from Bryncir substation (the construction of which has recently received an extension to the planning consent) into the SPEN Four cross circuit; and the installation of downlead cables from Bryncir substation and Tower 4ZC067. The redundant part of the extant 132 kV line will be decommissioned; this will involve recovering the conductors and fittings on supports, removing those supports and reinstating habitats.
Ecological Features that may be affected by the Scheme	Ecological features that could potentially be affected by the Scheme comprise: • Bats, if using the trees, hedgerows, watercourse, and scrub within the Site for roosting, foraging and commuting; • Badger, if using woodland within the Site (that could not be accessed at the time of survey) for sett building; • Hedgehog (*Erinaceus europaeus*) and brown hare (*Lepus europaeus*), if using the scrub, hedgerow and grassland habitats; • Nesting birds, if using the trees, hedgerows and scrub; • Otter and water vole, and notable aquatic species, if using the Afon Dwyfach, streams and associated field drains; • Reptiles, if using the poor semi-improved and marshy grassland; • Priority habitat (marshy grassland, wet heath / acid grassland mosaic, running water, species rich hedgerows).
Recommendations for further survey and assessment	The following further surveys are recommended, **depending on the exact location and extent of the Scheme,** including ancillaries (site compound, access routes etc); • Bat survey of trees/ structures with bat roost potential that could be directly or indirectly impacted by the Scheme; • Bat activity surveys within the Site; • Badger surveys of suitable habitat within the Site that was inaccessible at the time of survey; • Otter/ water vole survey of the Afon Dwyfach, streams and associated field drains; • Terrestrial invertebrate survey, including a specific survey for marsh fritillary (*Euphydryas aurinia*); • National Vegetation Classification (NVC) of notable habitats (if potentially directly or indirectly impacted); • If hedgerows within the Site are to be removed, a targeted hedgerow survey to determine whether they are classed as 'Important', under the Hedgerows Regulations 1997 (as amended), when assessed against the Wildlife and Landscape Criteria; • Habitat Regulations Assessment (HRA).

Recommendations for Mitigation	Recommendations are provided for both habitats and species, these include: • Retain/ avoid habitats where possible. If loss cannot be avoided, mitigation for loss of these habitats should be undertaken. • Best practice measures should be implemented, including adherence to appropriate pollution prevention controls. • Bats – If structures or trees containing confirmed bat roosts would be directly or indirectly impacted by the Scheme, then a Natural Resources Wales (NRW) bat licence will be required. If structures or trees with limited potential for bats or containing bat roosts with minimal anticipated indirect effects, then the Scheme must proceed under a suitable precautionary working method statement and under an ecological watching brief. Impacts to foraging and commuting habitat should be minimised where possible. • Badger – If badger setts would be directly or indirectly impacted by the Scheme, then an NRW badger licence will be required; if limited indirect effects are predicted, then the Scheme must proceed under a suitable precautionary working method statement and under an ecological watching brief. • Birds - All wild birds at the nest are protected under the Wildlife and Countryside Act 1981 (as amended). Therefore, if the disturbance of habitat suitable for breeding birds cannot be avoided by design, then the proposed works should be undertaken outside of the period March to August inclusive when bird species are likely to be breeding. If this is not possible, then an appropriately experienced ecologist should check the areas for nests immediately (no more than 24 hours) prior to removal. If nests are found, they must be retained and remain undisturbed until an ecologist has confirmed that the young have fledged. If any signs of active use of bird nests are noted during the proposed works, activity within the vicinity of the nest (size of exclusion zone to be determined by the ecologist) should halt until young are fledged and the nest no longer in active use. • Otter/ water vole - if otter breeding holts or water vole burrows would be directly impacted by the Scheme, then an NRW licence or method statement will be required; if limited indirect effects are anticipated, then the Scheme must proceed under a suitable precautionary working method statement and under an ecological watching brief. • Hedgehog and brown hare - A precautionary working method statement should be produced for any works that may take place in suitable habitat, which would include measures such as ecological watching briefs. Where possible, any works should be planned to take account of likely mitigation requirements for these species. This may include checking vegetation and hedgerows prior to their removal. This is concordant with the requirements for nesting birds. As such, it is recommended that site clearance and preparatory works be undertaken over the autumn/winter period of September to February inclusive. • Reptiles – Works within suitable habitat should be undertaken in accordance with a precautionary working method statement. • Marsh fritillary - Works within suitable habitat should be undertaken in accordance with a precautionary working method statement. • Avoid night working and the use of artificial lighting as far as possible, to limit disturbance to protected/notable species which may be present. Any artificial lighting required during construction should be task-specific and directed away from sensitive habitats (e.g., trees, hedgerows, watercourses and scrub) and the species which may be using them e.g., bats, birds and hedgehog. • Invasive Non-Native Species - Control and management of invasive plant species on Site through an appropriate Invasive Non-Native Species Management Plan (INNSMP).

Opportunities for Biodiversity Enhancements	The following enhancements could be delivered for biodiversity as part of the Scheme. • Installation of bird, bat and invertebrate boxes in appropriate locations. • Replanting native trees removed at a 2:1 ratio (minimum) and replanting of hedgerows with native species (if removal necessary). • Seeding of appropriate native wildflower and grass species within the Site. • Removal and/or control of Invasive Non-Native Plant Species Detailed opportunities for enhancement can be established when further information on the proposed development is known and an assessment is carried out for net benefit for biodiversity.

1. Introduction

Background

1.1 This Preliminary Ecological Appraisal report (PEAR) has been prepared by AECOM Ltd on behalf of National Grid, to assess the potential ecological constraints associated with the Bryncir SPEN 132kV Connection Scheme. The Scheme comprises the installation of a new 132kV overhead line from Bryncir substation (the construction of which has recently received planning consent) into the SPEN Four cross circuit (hereafter referred to as the Scheme), and associated downlead cables from Bryncir substation and Tower 4ZC067 The redundant part of the extant 132 kV line will be decommissioned; this will involve recovering the conductors and fittings on supports, removing those supports and reinstating habitats. Access routes and the location of site compound(s) to facilitate works have not yet been agreed.

1.2 The Scheme is located to the south of the A487 at Glan-Dwyfach, near Bryncir in Gwynedd, LL51 9EZ at Ordnance Survey National Grid reference SH 4788 4289. The Scheme is located to either side of the B441; with the eastern section located at national grid reference SH 48460 42954, as shown by the red line boundary on Figure 1 in Appendix A. All land situated within this red line is hereafter referred to as the Site.

1.3 The assessment of ecological constraints has been undertaken with reference to current good practice[1] and forms part of the technical information commissioned by National Grid in connection with the Scheme. The PEAR addresses relevant wildlife legislation and planning policy as summarised in Appendix B and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development.*

1.4 This PEAR is intended for advice in respect of Scheme design, site layout and / or site investigation. Further ecological surveys and / or ecological impact assessment (including detailed mitigation measures) may be required in connection with a Screening application or to contribute to an Environmental Impact Assessment once the Scheme proposals have been finalised and any required surveys have been completed.

The Site

1.5 The Site is located approximately 1 km south of Bryncir 100 m southwest of the A487 and located to either side of the B4411. The Site is approximately 45 ha in area and is shown in Appendix A, Figure 1.

1.6 The Site is dominated by poor semi-improved grassland (cattle and sheep grazed), improved grassland and marshy grassland. Other habitats identified within the Site include acid grassland/heath mosaic, species poor and species rich intact and defunct hedgerow (including potential cloddiau), semi-natural broadleaved woodland, scattered trees, areas of dense and scattered scrub and bracken (*Pteridium aquilinum)* and watercourses (rivers, streams and field drains).

[1] CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

Purpose of the Preliminary Ecological Appraisal

1.1 This PEAR presents ecological information obtained during the following:

- A desk-study undertaken on 30th October 2023 to obtain records of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and Ramsar sites within 10 km of the Site; and records of other statutory and non-statutory designated sites, notable habitats[2] and protected and notable species[3] within 2 km of the Site (the area covered by the desk study is hereafter referred to as the Study Area); and,
- An extended phase 1 habitat survey of accessible land within and up to 50m adjacent to the Site (the area covered by the survey is hereafter referred to as the Survey Area) on 9th June 2023, 1st and 2nd November 2023 and 14th December 2023.

1.2 The purpose of the PEAR is to provide a high-level ecological appraisal of the Site, specifically to:

- establish baseline conditions and determine the presence of Important Ecological Features (IEF)[4] (or those that could be present), as far as is possible;
- identify potential ecological constraints to the Scheme and make initial recommendations to avoid impacts on IEFs, where possible;
- identify requirements for mitigation, where possible, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final scheme design);
- establish any requirements for more detailed surveys; and,
- identify any opportunities offered by the Scheme to deliver biodiversity enhancements.

1.7 The methodology followed for undertaking the desk study and field surveys is detailed in Appendix C, including any limitations to the assessment.

[2]Notable habitats are those considered to be of key significance to sustain and improve biodiversity in Wales and are listed under Section 7 of the Environment (Wales) Act 2016; habitats listed under the Gwynedd Biodiversity Action Plan (BAP); hedgerows identified as being 'important' under the wildlife criteria of the *Hedgerow Regulations 1997*, ancient woodlands and veteran trees.
[3]Notable species are those considered to be of key significance to sustain and improve biodiversity in Wales and are listed under Section 7 of the Environment (Wales) Act 2016; any species listed in an IUCN Red Data Book; and any other species listed under the Gwynedd BAP.
[4] Important Ecological Features are habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the Scheme.

2. Ecological Baseline, Constraints and Recommendations

2.1 The following sections detail the results of the desk and field-based studies undertaken to inform this PEAR. Where necessary, recommendations for mitigation measures to protect known IEFs, or further surveys to determine the presence or likely absence of likely IEFs, are provided.

2.2 With regard to background data, 'recent' records are considered to be those no older than 10 years from the date of the desk study. Records outside of this period are historical and have only been reported where more recent records for a feature do not exist. Exceptions to this are detailed in the appropriate sections below.

Designated Sites

Desk Study

2.3 Table 1 summarises the statutory designated sites for nature conservation situated within the Study Area. These are shown on Figure 2 and Figure 3 in Appendix A.

Table 1. Statutory Designated Sites within Study Area

Statutory Designated Site	Reason for Designation	Location of Statutory Designated Site[5]
Corsydd Eifionydd / Eifionydd Fens Special Area of Conservation (SAC)	The Annex I species that are a primary reason for selection of this site are: - 7140 Transition mires and quaking bogs Annex II species that are a primary reason for selection of this site - 1065 Marsh fritillary butterfly (*Euphydryas aurinia)* 1393 Slender green feather-moss (*Drepanocladus (Hamatocaulis) vernicosus)*	1.93 km northeast of the Site
Pen Llyn a'r Sarnau/ Lleyn Peninsula and the Sarnau SAC	Annex 1 habitats that are a primary reason for selection of this site: - Sandbanks which are slightly covered by seawater all the time - Estuaries - Coastal lagoons - Large shallow inlets and bays - Reefs Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: - Mudflats and sandflats not covered by seawater at low tide - Salicornia and other annuals colonizing mud and sand - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Annex II species present as a qualifying feature, but not a primary reason for selection of this site: - Bottlenose dolphin (*Tursiops truncates*) - Otter (*Lutra lutra*) - Grey seal (*Halichoerus grypus*)	5.01 km south of the Site

[5]Where designated sites are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site

Statutory Designated Site	Reason for Designation	Location of Statutory Designated Site[5]
Gogledd Bae Ceredigion/ Northern Cardigan Bay SPA	Species listed in Annex I of the directive: Red-throated diver (*Gavia stellata*): 1,186 individuals representing 7% of the wintering population in Great Britain (2001/02 – 2003/04)	5.09 km southeast of the Site
Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat SAC	Annex I habitats that are a primary reason for selection of this site are: - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; and - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) (priority feature). Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site are: - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation - Northern Atlantic wet heaths with *Erica tetralix* - European dry heaths - *Tilio-Acerion* forests of slopes, screes and ravines (priority feature); and - Bog woodland (priority feature) The Annex II species that is a primary reason for selection of this site is lesser horseshoe bat *(Rhinolophus hipposideros)*. This large composite site includes most of the known maternity roosts in Meirionnydd and some hibernacula and comprises the centre of distribution for lesser horseshoe bats in Wales. The sheltered river valleys provide excellent tree cover and numerous suitable maternity roosts.	7.79 km east of the Site
Glynllifon SAC	The Annex II species that is a primary reason for selection of this site is lesser horseshoe bat. Glynllifon is both a maternity and hibernation site for a large population of lesser horseshoe bats.	9.22 km
Llystyn Isaf Site of Special Scientific Interest (SSSI)	The site is of botanical interest and consists of grazing pasture, adjoining the Afon Dwyfach at an altitude of 90m which supports a range of acidic and neutral grassland vegetation types. The drier neutral grassland communities are the main features of interest. Wood bitter-vetch (*Vicia orobus*) is uncommon nationally and it occurs here in its only known meadow locality in West Gwynedd. There are also patches of wet heath vegetation present, whilst the streamlines and adjoining wet flushed areas support a range of characteristic wetland species including several rush and sedge species together with various herbs. Fen meadow vegetation is also present in the southern part of the site.	0.31 km north of the Site
Cors Graianog (SSSI)	The site supports three features of international importance namely transition mire and quaking bog, marsh fritillary and slender green feather moss. The site also supports a range of other wetland habitats including marshy grassland, fen, bog, wet woodland and swamp habitats.	1.93 km east of the Site
Ffriddoedd Garndolbenmaen (SSSI)	The site is of special scientific interest primarily for its species-rich lowland grassland which is an important and increasingly rare wildlife habitat. Small areas of other habitats, including dwarf shrub heath, marshy grassland and acid flush, occur in association with the grassland and add to the interest of the site.	1.97 km northeast of the Site

2.4 There are 43 non statutory designated sites for nature conservation (Candidate County Wildlife Sites (cCWS)) within the Study Area. These are shown on Figure 4 in Appendix A. Table 2 provides details of those within 500 m of the Site.

Table 2. Non-Statutory Designated Sites within Study Area

Non-statutory Designated Site	Reason for Selection	Location of Non-statutory Designated Site[6]
Llystyn Isaf Candidate County Wildlife Site (cCWS)	Priority habitat – marshy grassland; wet heath/acid grassland mosaic	Within Site extents
Afon Dwyfach cCWS	Priority habitat – running water	Within Site extents
Tyddyn-y-Felin cCWS	Priority habitat – marshy grassland	Within Site extents
Hendy East cCWS	Priority habitat – marshy grassland; wet heath/acid grassland mosaic	Within Site extents
Dolwar Heath cCWS	Priority habitat – marshy grassland	0.05 km south of the Site
Bryn-yr-efail-uchaf	Priority habitat – marshy grassland	0.07 km east of the Site
Plas Lleicheiddior cCWS	Priority habitat – marshy grassland	0.01 km north of the Site
Bryn Ffynnon & Ynys Galed cCWS	Priority habitat – marshy grassland	0.10 km northwest of the Site
Gwinllan Lyystan cCWS	Priority habitat - dry heath/acid grassland mosaic; acid grassland; acid/neutral flush	0.11 km northeast of the Site
Fron-oleu cCWS	Priority habitat – marshy grassland	0.21 km south of the Site
Llecheiddior Ganol cCWS	Priority habitat – marshy grassland, acid/ neutral flush, acid grassland	0.3 km northwest of the Site
Rhwnddwyryd cCWS	Priority habitat – marshy grassland, wet heath/acid grassland mosaic, acid grassland	0.39 km northeast of the Site
Hendy (South) cCWS	Priority grassland – marshy grassland, wet heath/acid grassland mosaic	0.43 km southwest of the Site
Muriau Bach cCWS	Priority habitat – marshy grassland; wet heath/acid grassland mosaic	0.43 km south of the Site
Llystyn Ganol cCWS	Priority grassland – acid grassland, marshy grassland, dry heath/acid grassland mosaic	0.43 km north of the Site
Bryn Eifion cCWS	Priority habitat – acid grassland, marshy grassland, wet heath/acid grassland mosaic	0.46 km east of the Site

Constraints and Recommendations

2.5 Pen Llyn a'r Sarnau/ Lleyn Peninsula and the Sarnau SAC is located approximately 5.01 km south of the Site. The Afon Dwyfach (which bisects the Site) would provide a hydrological link between the Site and the SAC, and provides habitat for otter, which are an Annex II species present as a qualifying feature of this SAC. Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat SAC and Glynllifon SAC are located approximately 7.79 km and 9.22 km from the Site respectively. These SACs comprise most of the known maternity roosts and hibernacula for lesser horseshoe bats in Meirionnydd and habitats within the Site could potentially provide habitat for lesser horseshoe bats. A Habitat Regulations Assessment (HRA) Stage 1 Screening is therefore recommended to determine whether the Scheme will have an adverse effect on these SACs or their functional habitat. The Gogledd Bae Ceredigion/ Northern Cardigan Bay SPA lies 5.09km south of the Site but is designated for species that would not be affected by the Scheme.

2.6 Llystyn Isaf SSSI is located 0.31 km north of the Scheme, connected hydrologically, but sited upstream and therefore no impact from the Scheme due to changes in water quality are expected. No impacts from deterioration of air quality are anticipated due to the small scale and temporary nature of the Scheme.

[6]Where designated sites are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site

2.7 Due to the small scale and temporary nature of the Scheme, and the distance and lack of connectivity a of the remaining statutory designated sites with the Scheme, it is considered unlikely that the Scheme will have an adverse effect on this any other statutory designated sites for nature conservation and no further mitigation is considered necessary.

2.8 Non statutory designated sites for nature conservation (cCWS) and Priority habitats are present within and adjacent to the Site boundary. CWS and Priority habitats should be avoided, both by working areas and access routes. If avoidance is not possible, and the Scheme could result in the loss of deterioration of either, ecology surveys will be required, at the appropriate time of year, to determine the nature and extent of the habitats present, allowing for a more detailed assessment of the impacts of the Scheme. It may be feasible to design the works, including temporary works and access routes, around the more important areas or find a design that would not be detrimental to the site/ habitat in question. Mitigation, based on the results of the surveys, will need to be implemented as appropriate. If both avoidance and mitigation are not possible, compensation will be required, however compensation should only be considered as a last resort due to the difficulty in replicating priority habitat types.

Habitats

Desk Study

2.9 Table 3 summarises the records of notable habitats and protected or notable flora[7] (including veteran trees[8]) within the Study Area. These are shown on Figure 5 in Appendix A.

Table 3. Notable Habitats and Protected and Notable Flora within Study Area

Habitat/ Flora Feature	Reason for Conservation Interest	Location of Habitat/ Flora[9]
Ancient woodland (Semi-natural, restored, plantation)	Irreplaceable habitat	Seven areas within the Study Area; the closest is 0.91 km north of the Site
Purple moor grass rush pasture	Priority habitat	Within Site boundary
Lowland dry acid grassland	Priority habitat	Within Site boundary
Lowland fen and reedbed	Priority habitat	0.10 km northeast of the Site
Lowland meadow	Priority habitat	0.32 km north of the Site
Lowland heathland	Priority habitat	0.38 km northwest of the Site
Open mosaic of previously developed land	Priority habitat	1.07 km north of the Site
Traditional orchard	Priority habitat	1.16 km south of the Site
Bluebell (*Hyacinthoides non-scripta*)	Protected under Schedule 8 of the Wildlife & Countryside Act 1981 (as amended in respect of section 13(2) only	Five records within the Study Area, the closest approximately 0.2 km north
Varnished Hook-moss (*Hamatocaulis vernicosus*)	Protected under Schedule 8 of the Wildlife & Countryside Act 1981 (as amended)	One record within Study Area. Exact location unknown as data provided in 1km grid square

Field Survey

2.10 Summary descriptions of the habitats within the Survey Area are provided below and shown on Figure 6, with specific features highlighted by Target Notes (TNs). TN descriptions and photographs are provided in Appendix D. It should be noted that a substantial extent of the Site could not be accessed at the time of

[7] For this assessment 'flora' includes vascular and non-vascular plants, fungi and lichens.
[8] For this assessment the definition of a veteran tree is taken from Annex 2 of the National Planning Policy Framework (glossary): "A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape, or culturally."
[9]Where features are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site

Survey, due to lack of land access permission. Further survey of these areas is therefore recommended when access permission is granted.

Improved grassland

2.11 Habitats to the east of the B4411 and also adjacent to the Afon Dwyfach on its southeastern edge are dominated by fields of improved grassland used for pasture. Species present here include perennial rye grass (*Lolium perenne*), white clover (*Trifolium repens*), dock spp. (*Rumex* spp.), dandelion (*Taraxacum officinale*) and scattered nettles (*Urtica dioica*). This habitat is considered to be of low ecological value at local level.

Poor semi-improved grassland

2.12 Much of the western extent of the Site located on the higher ground comprises close grazed poor semi-improved grassland (Photographs 1 & 2, Appendix D). Species present include Yorkshire fog (*Holcus lanatus*), perennial rye grass, red fescue (*Festuca rubra*), creeping buttercup (*Ranunculus repens*), white clover, meadow buttercup (*Ranunculus acris*), dandelion, broad-leaved dock (*Rumex Obtusifolius*), ribwort plantain (*Plantago lanceolata*), creeping thistle (*Cirsium arvense*), common mouse ear (*Cerastium fontanum*) and occasional soft rush (*Juncus effusus*).

Marshy Grassland

2.13 The majority of the central, eastern and northern area of the Site that lies on lower ground comprises marshy grassland, including wet grassland areas dominated by rushes (Photograph 3, Appendix D) and purple moor grass (*Molinia caerulea*) rush pasture (Photograph 4, Appendix D; much of the latter was behind fencing or was in areas within which land access was not permitted, and could only be observed remotely). This area is largely located within the cCWS and areas of Priority habitat identified above. Species present here include tussocks of purple moor grass and abundant bog myrtle (*Myrica gale*) with patches of tufted hair grass (*Deschampsia cespitosa*) and soft rush. Scattered scrub forms a component of this habitat; willow (*Salix* sp.), gorse (*Ulex* sp.) and bramble scrub (*Rubus fruticosus* agg.) is abundant. (Photograph 5, Appendix D). More floristically rich areas of marshy grassland include grasses of common bent (*Agrostis capillaris*) and Yorkshire fog in addition to jointed rush (*Juncus articulatus*), marsh marigold (*Caltha palustris*), cuckooflower (*Cardamine pratensis*), lesser spearwort (*Ranunculus flammula*), meadowsweet (*Filipendula ulmaria*) and marsh thistle (*Cirsium palustre*). The Invasive Non-Native Species (INNS) Himalayan balsam (*Impatiens glandulifera*) is present within some of the marshy grassland / purple moor grass rush pasture, and within marshy grassland adjacent to Afon Dwyfach.

2.14 A small section of marshy grassland is also present in fields to the eastern side of the B4411. Species present here include hard rush (*Juncus inflexus)*, perennial rye grass, Yorkshire fog, sweet vernal grass (*Anthoxanthum odoratum)*, creeping thistle, tormentil (*Potentilla erecta)* and meadow buttercup. This area lies outside of the cCWS and Priority habitat described above.

Scrub

2.15 In addition to scattered scrub, which forms a component of the marshy grassland areas described above, a more extensive area of willow and gorse scrub is located in the southern eastern edge of the Site, with associated bracken and bramble (Photograph 6, Appendix D). This latter area is located in land within which access was not permitted and could only be observed remotely.

Hedgerows

2.16 Hedges are present within the Site, both intact and defunct and mostly species poor, some with trees. A species rich partially managed hedgerow is present adjacent to the road that abuts the Afon Dwyfach bridge. (Photograph 7, Appendix D). Stone walls which could be potential cloddiau (a dry-stone outer wall with a compacted earth, or earth/rubble core) are a feature of several of the hedgerows within the Site (Photograph 8, Appendix D).

Line of trees

2.17 Lines of mature and semi-mature broadleaved trees are present throughout the Site, predominantly aligning watercourses, both the Afon Dwyfach and tributaries as well as field drains. Some of the ash trees (*Fraxinus excelsior*) show signs of poor health (Photo 9, Appendix D).

Woodland

2.18 Two areas of woodland are present within the Site. To the western edge, on an area of sloping ground, lies an area of mature alder (*Alnus glutinosa*) and willow (*Salix* sp.) woodland with a field layer dominated by bramble with occasional pendulous sedge (*Carex pendula*). The INNS Himalayan balsam (*Impatiens glandulifera*) is present throughout this woodland. (Photo 10, Appendix D). The second area of woodland is located along the Afon Dwyfach centrally within the Site and is dominated by willow and hazel (*Corylus avellana*) with occasional oak (*Quercus* spp.) and ash. The field layer is dominated by bramble and bracken, which was largely impenetrable at the time of survey, preventing detailed assessment.

Watercourses

2.19 The Afon Dwyfach bisects the Site (Photograph 11, Appendix D) and is joined by a fast-flowing tributary (Photo 12, Appendix D). Numerous field ditches are present across the Site, most of which contained flowing water at the time of survey, which had taken place following a period of heavy rain.

Invasive Non-Native Species

2.20 Himalayan balsam is present throughout the Site, concentrated along watercourses and within areas of broadleaved woodland and marshy grassland / purple moor grass rush pasture.

Constraints and Recommendations

2.21 The Proposed Scheme would result in small scale permanent impacts to habitats within the Site due to the installation of supports to permit the installation of the new 132KV line. Temporary impacts will also be likely due to ancillary works to the Scheme, such as the location of access routes and site compounds.

2.22 Habitats of greater conservation value, such as marshy grassland, scrub, woodland, hedgerow and watercourses should be avoided, both by working areas and access routes. If avoidance is not possible, and the Scheme could result in the loss of deterioration of either, ecology surveys will be required, at the appropriate time of year, to determine the nature and extent of the habitats present, allowing for a more detailed assessment of the impacts of the Scheme. Mitigation, based on the results of the surveys, will need to be implemented as appropriate. If both avoidance and mitigation are not possible, compensation will be required.

Badger

Desk Study

2.23 There are five recent (within last ten years) records of badger (*Meles meles*) within the Study Area. The closest of these records is of a badger found dead on a road approximately 0.25 km from the Site boundary.

Field Survey

2.24 No evidence of badger was identified within the Survey Area and large parts of the Site appear to be permanently wet and unsuitable for sett building. However, a woodland block within the Site could not be accessed for survey due to dense vegetation, and although no signs of badger were recorded at its edge there remains the possibility that badger could be utilising this woodland area for sett building, albeit periodically.

Constraints and Recommendations

2.25 No evidence of badger was found during the survey. However, as not all the Site could be accessed at the time of survey, the potential for badger setts to be present within the Site remains. It is also possible that badgers could use the Site for foraging and commuting. Dependant on the final footprint of the Scheme within the Site boundary, further surveys for badger and/ or mitigation are therefore recommended.

Bats

Desk Study

2.26 There are 17 recent records of bats within the Study Area. The closest/ most relevant of these records is associated with a potential lesser horseshoe maternity roost which is approximately 0.85 km southwest of the Site boundary.

Field Survey

Table 4 summarises both the evidence of bats being present within the Survey Area, and the potential for features and habitats within the Survey Area to support bats based on standard survey guidance[10].

2.27 Features and habitats in Table 4 are shown on Figure 6 in Appendix A. Photographs are provided in Appendix D.

Table 4. Summary of Bat presence/ potential presence within the Survey Area

Feature	Description	Location[11]	Relevant Target Notes
Stone bridge. No direct access as bridge crossing river.	Well maintained historic stone bridge crossing Afon Dwyfach. Exposed shallow holes/ cracks within mortar. **Low potential** to support roosting bats.	Within northern extents of Site where local road crosses Afon Dwyfach	B1
Derelict stone farm building. No access to internal structure.	Poor state of repair. Multiple broken and loose tiles and cracks in stone work. Doesn't appear to have loft space. **Moderate potential** to support roosting bats.	Within north western extent of Site adjacent to local road	B2
Corrugated metal barn. No access to internal structure.	Large barn of corrugated metal, internal skin breeze block. Shallow and exposed crevices in external wall. **Negligible potential** to support roosting bats.	Within north western extent of Site adjacent to local road.	B3
Corrugated metal barn. No access to internal structure.	Corrugated metal barn with wooden beams. **Negligible potential** to support roosting bats.	Within north western extent of Site adjacent to local road.	B4
Semi-mature ash tree in poor health.	Multiple exposed potential roost features. Unable to determine depth of features from ground level. **Potential to support multiple roosting bats – PRF M.**	Within northern extent of Site along ditch line.	T1
Mature ash tree in poor health.	Clad in thick extents of ivy (*Hedera* sp). No obvious roost features however of suitable age and species for roost features to be obscured by ivy. **Potential to support individual roosting bats – PRF I.**	Within northern extent of Site close to Afon Dwyfach to north of bridge.	T2
Mature ash tree x 3. No access to riverside of tree.	Multiple branch cavities/ knot holes. Appear largely exposed but unable to determine depth of features	Within northern extent of Site on bankside of Afon Dwyfach to north of bridge.	T3, T4 & T5

[10]Collins (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines. Fourth Edition.* London: The Bat Conservation Trust.
[11]Where features are situated outside of the Site boundary, the distance and direction is given at the closest point of the feature from the Site

Feature	Description	Location[11]	Relevant Target Notes
	from ground level. **Potential to support multiple roosting bats – PRF M.**		
Mature willow tree. No access to riverside of tree.	Bankside mature willow with spreading and cracking limbs; several crevices and holes present. **Potential to support multiple roosting bats – PRF M.**	Within northern extent of Site on bankside of Afon Dwyfach to north of bridge.	T6
Semi-mature sycamore (Acer *pseudoplatanus)* tree. No access to riverside of tree.	Bankside ivy clad semi-mature sycamore with single observable split. **Potential to support individual roosting bats – PRF I.**	Within northern extent of Site on bankside of Afon Dwyfach to north of bridge.	T7
Semi-mature willow tree.	Bankside semi-mature willow with single split in branch overhanging river. **Potential to support individual roosting bats – PRF I.**	Within northern extent of Site on bankside of Afon Dwyfach to north of bridge.	T8
Mature ash tree. No access to riverside of tree.	Bankside ash clad in thick extents of ivy. No obvious roost features however of suitable age and species for roost features to be obscured by ivy. **Potential to support individual roosting bats – PRF I.**	Within northern extent of Site on bankside of Afon Dwyfach to south of bridge.	T9
Mature alder tree.	Mature alder with a large cavity within one of the limbs. **Potential to support multiple roosting bats – PRF M.**	Within northern extent of Site on bankside of Afon Dwyfach to south of bridge, abutting an adjoining ditch/ drain.	T10
Mature multi-stemmed willow tree.	Multi-stemmed bankside willow with several knot/ rot holes within branches. **Potential to support multiple roosting bats – PRF M.**	Within southern extent of Site on bankside of stream that joins with Afon Dwyfach.	T11
Mature beech (*Fagus sylvatica)* tree x 3. No access to riverside of trees.	Bankside mature beech with a large hole within one of the branches that could lead to a cavity. **Potential to support multiple roosting bats – PRF M.**	Within southern extent of Site on bankside of stream that joins with Afon Dwyfach.	T12, T14, T15
Mature ash tree.	Semi mature ash on field boundary with several areas of lifted bark. **Potential to support individual roosting bats – PRF I.**	Within southern extent of Site within hedge boundary.	T13
Mature ash tree x 2.	Mature ash within hedgebank boundary with a large hole within one of the branches that could lead to a cavity. **Potential to support multiple roosting bats – PRF M.**	Within southern extent of Site within hedge boundary.	T16, T17
Mature ash tree in poor health.	Mature ash clad in thick extents of ivy. No obvious roost features however of suitable age and species for roost features to be obscured by ivy. **Potential**	Within southern extent of Site within hedge boundary	T18

Feature	Description	Location[11]	Relevant Target Notes
	to support individual roosting bats – PRF I.		
Mature ash tree x 2.	Mature ash within with a large hole within one of the branches that could lead to a cavity and broken branches. **Potential to support multiple roosting bats – PRF M.**	Within southern extent of Site on bankside of stream that joins with Afon Dwyfach.	T19, T20
Semi-mature oak x 1 and mature sycamore x 1	Mature oak and sycamore clad in thick extents of ivy. No obvious roost features however of suitable age and species for roost features to be obscured by ivy. **Potential to support individual roosting bats – PRF I.**	Within southern extent of Site on bankside of stream that joins with Afon Dwyfach.	T21, T22
Mosaic of poor semi improved and marshy grassland, hedgerows, watercourses, scrub and woodland heath.	**High suitability** commuting and foraging habitat for bats.	Within and adjacent to the Site.	N/A

Constraints and Recommendations

2.28 The definitive extents of the Scheme within the Site boundary are yet to be confirmed. Should the Scheme have the potential to directly or indirectly impact potential bat roosts; further surveys will be required in accordance with standard survey guidance[12]. Trees will be subject to climbing and assessment of the identified Potential Roost Feature (PRF) where safe to do so, to confirm if the tree could be used as a roost and/ or if there are signs of bats. Where tree climbing confirms that the PRF does have potential to support a roost and /or where it is not possible to safely climb a tree, bat emergence/ re-entry surveys will be undertaken at dusk and dawn. Bat emergence/ re-entry surveys will also be undertaken on any structures with bat roost suitability that will be impacted by the Scheme, although it is anticipated that the Scheme can be designed to avoid affecting structures.

2.29 If trees or structures that contain bat roosts are to be directly or indirectly impacted by the Scheme then further appropriate mitigation will be required, which could include the requirement for a licence from NRW in order to permit works to proceed.

2.30 The Site comprises poor semi improved and marshy grassland, hedgerows, scrub and woodland; with a tree-lined river flowing through its entire length. There are numerous records of bats within the Study Area, including a potential lesser horseshoe maternity roost approximately 0.85 km southwest of the Site boundary. The Site is therefore considered to be of high value for foraging/ commuting bats.

2.31 To determine bat activity levels within the Site it is recommended that three bat activity transects are undertaken (one in spring (May/June), summer (July/August) and autumn (September)) in addition to monthly bat static detector deployment.

2.32 To avoid disturbance to foraging and/ or commuting bats during the construction of the Scheme it is recommended that works at night are avoided. Should this not be possible, or if artificial lighting is required during times when natural light levels are low, then task specific lighting, no brighter than is necessary for the specific works tasks, should be used. Such lighting should be directed towards the area of works and not upwards and/ or into adjacent habitats. This will reduce any potential disturbance to foraging/ commuting bats.

[12] Collins (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines. Fourth Edition.* London: The Bat Conservation Trust.

Otter

Desk Study

2.33 There are five recent records of otter (*Lutra lutra*) within the Study Area. The closest / most relevant of these records is of an otter latrine recorded within the Site boundary adjacent to Afon Dwyfach.

Field Survey

2.34 Table 5 summarises both the potential for features and habitats within the Survey Area suitable to support otter. Photographs are provided in Appendix D.

Table 5. Summary of potential for otter presence within the Survey Area

Feature	Description	Location[13]	Relevant Target Notes
Afon Dwyfach	Unmodified river approximately 5m wide. Mostly fenced off, preventing access and in spate at time of survey.	Bisects the Site	TN1
Tributaries of Afon Dwyfach	Tributary of Afon Dwyfach and associated branchings. Mostly fenced off, preventing access and in spate at time of survey.	Crosses the Site	TN2
Dense willow scrub/woodland	Areas of dense scrub and woodland situated along the banks of the Afon Dwyfach have potential to support otter resting and breeding sites.	Within the Site.	TN3

Constraints and Recommendations

2.35 The Afon Dwyfach bisects the Site. This watercourse and its associated tributaries, field drains and the riparian vegetation growing alongside all provide potential foraging/ commuting/ resting and breeding habitat for otter. Cofnod provided a recent record of an otter latrine along this river, which shows that otter are currently utilising this stretch of the river. The Pen Llyn a'r Sarnau/ Lleyn Peninsula and the Sarnau SAC is located 5.1 km downstream of the Site and linked by the Afon Dwyfach, and otter are also a qualifying feature of this SAC. A detailed otter survey was not conducted as part of the extended Phase 1 habitat survey and no incidental signs of otter were recorded. However, watercourses within the Site were in spate at the time of survey, following prolonged rain, and any signs (should they have been present) would likely have been washed away. Additionally large areas of both the Afon Dwyfach and its tributary were fenced off preventing close access.

2.36 The definitive extents of the Scheme within the Site boundary are yet to be confirmed. However, it is considered likely that works could take place within proximity (c10 m) of otter habitat and therefore further survey for otter is required. Presence/absence surveys will be required, looking for field signs along watercourses and a search for otter holts will be extended up to 250m both upstream and downstream of the Site. Surveys will be undertaken in accordance with standard guidance[14].

2.37 If otter are recorded utilising the watercourses and surrounding habitats on Site, and an appropriate buffer zone cannot be implemented, then further mitigation will be required. A suitable precautionary working method statement and an ecological watching brief will be required, and if breeding holts are identified during the survey, and an appropriate buffer zone is not possible, then a licence from NRW will be required in order to permit the works to proceed.

[13]Where features are situated outside of the Site boundary, the distance and direction is given at the closest point of the feature from the Site
[14] Chanin, P. (2003) *Ecology of European Otter, Conserving Natura 2000 Rivers Ecology Series No.10* English Nature.

Water Vole

Desk Study

2.38 There are no recent (within ten years) records of water vole (*Arvicola amphibius*) within the Study Area.

Field Survey

2.39 Table 6 summarises the potential for features and habitats within the Survey Area to support water vole. Photographs are provided in Appendix D.

Table 6. Summary of Water Vole presence/ potential presence within the Survey Area

Feature	Description	Location[15]	Relevant Target Notes
Afon Dwyfach	Unmodified river approximately 5m wide. Possible suboptimal, however, fenced off preventing access and in spate at time of survey; and suitability for water vole could not be determined.	Bisects the Site	TN1
Tributaries of Afon Dwyfach	Fenced off preventing access and in spate at time of survey; embankment suitability for water vole could not be determined.	Crosses the Site	TN 2
Field ditches within Site	Field ditches cross the majority of the Site with both earth and stoney banks that could provide suitable habitat.	Crosses the Site	TN4

Constraints and Recommendations

2.40 A detailed water vole survey was not conducted as part of the extended phase 1 habitat survey and no incidental signs of water vole were recorded. The Afon Dwyfach and its tributaries and numerous field drains within the Site could potentially provide habitat for water vole. Fencing prevented access to large extents of the watercourses within the Site at the time of survey. Adverse weather conditions prior to and during the survey resulted in high water levels that likewise prevented access and observation of potential suitability for water vole from a distance (eg bank composition) and any water vole signs (should they have been present) would likely have been washed away.

2.41 The definitive extents of the Scheme within the Site boundary are yet to be confirmed. However, it is considered likely that works could take place within proximity (c 10m) of water vole habitat and therefore further survey for water vole is required. Presence/absence surveys will be required, looking for field signs along watercourses int the appropriate season. Surveys will be undertaken in accordance with standard guidance[16],[17].

2.42 If water vole are recorded utilising the watercourses on Site, and an appropriate buffer zone cannot be implemented, then further mitigation will be required. A suitable precautionary working method statement and an ecological watching brief will be required.

2.43 **It is not possible to issue a licence for development under the Wildlife and Countryside Act** in a similar way to some of the licences issued under the Habitats Regulations. Licences can be issued for the purpose of preserving public health and public safety e.g. restoration of a canal bank. However, not all developments fit under this heading.

2.44 The Wildlife and Countryside Act provides a defence against the above offences where the action is the incidental result of an otherwise lawful operation and could not reasonably be avoided (10(3)(c)). As this defence is open to interpretation, **it is not NRW policy to recommend sole reliance on this defence**.

[15]Where features are situated outside of the Site boundary, the distance and direction is given at the closest point of the feature from the Site

[16] Dean, M., Strachan, R. Gow, D. and Andrews, R. (2016) *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).* London: The Mammal Society.

[17] Strachan, R., Moorhouse, T., Gelling, M. (2011) *Water Vole Conservation Handbook. Third Edition.* University of Oxford: WildCRU.

2.45 Where the nature of development works is such that an offence is likely then the matter should be discussed at the earliest opportunity with NRW. A Method Statement detailing how any impacts to water vole will be mitigated and compensated for will need to be approved by NRW.

Great Crested Newt

Desk Study

2.46 There are no recent records of great crested newts (GCN) (*Triturus cristatus*) within the Study Area. There are two waterbodies within 0.5 km of the Site, located 0.3 km northwest and 0.32 km northeast respectively; the latter is separated from the Site by the A487 carriageway. Each is approximately 25 m x 8 m, associated with residential properties, located within dense woodland and considered suboptimal for GCN breeding ponds.

Field Survey

No aquatic habitat suitable to support GCN has been identified within the Survey Area. However, the grassland, scrub and woodland within the Site offers some terrestrial opportunities for GCN.

Constraints and Recommendations

2.47 The potential for GCN to be present within the Site is considered to be low as no potential breeding ponds have been identified within 0.5 km and no records for this species were provided by Cofnod. GCN is not therefore considered to be a potential constraint to the Scheme and no specific mitigation for this species is proposed.

Common Species of Reptile

2.48 Common species of reptile refers to common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), adder (*Vipera berus*) and grass snake (*Natrix helvetica*).

Desk Study

2.49 There is one recent record of grass snake within the Study Area, which was found dead on the road approximately 1.9 km northwest of the Site. Adder have been recorded within the Site, although not within the last ten years.

Field Survey

2.50 Much of the Site provides good habitat for reptiles with varied habitat heights and structures suitable for foraging, refuge and hibernacula.

Constraints and Recommendations

2.51 The areas of marshy grasslands, scrub, heathland acid grassland mosaic, stone walls and hedgerows could provide suitable habitat for reptiles. A precautionary working method statement should be produced for any works that may take place within suitable habitat for reptiles, which would include measures such as ecological watching briefs to prevent potential disturbance to these species, and seasonal restrictions to timing of works in suitable habitats.

Birds

Desk Study

2.52 There are recent records for 48 notable[18] bird species within the Study Area. These include two species listed on Annex I of the EC Birds Directive, six species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), 21 Species of Principal Importance (SPI), 19 species on the Birds of Conservation Concern 5 (BoCC5) Red list and 26 species on the BoCC5 Amber list. The records also include three species of bird that are priority species in Gwynedd and listed on the Natur Gwynedd BAP.

Field Survey

2.53 The scattered trees, hedgerows, woodland and scrub within the Site offer suitability to support common bird species and provide nesting opportunities. The marshy grassland also offers suitability for ground nesting birds.

Constraints and Recommendations

2.54 Given the localised extent of the Scheme within the overall Site boundary, further surveys for breeding or wintering bids are not considered necessary. However, breeding birds are likely to be present within the Site, therefore vegetation that may support breeding birds (scrub, trees and marshy grassland) which requires clearance should be removed outside of the nesting season (typically considered to be March to August, inclusive). Should avoidance of these timings not be possible, removal should only be carried out within 24 hours following a nesting bird check, undertaken by a suitability experienced ecologist.

2.55 All birds are protected by the Wildlife and Countryside Act, 1981 (as amended). Should an occupied nest be found during the vegetation clearance works, a buffer zone, the distance of which will need to be determined by an ecologist, will need to be incorporated to reduce the risk of the nest being abandoned by the birds, until the nest is no longer in use and dependant offspring have fledged. Additional measures would apply if the species was listed on Schedule 1 of the Wildlife and the Countryside Act, which affords birds additional protection from disturbance when nesting.

2.56 Working at night should be avoided, however, if this is not possible, any artificial lighting used, including during low light levels in the daytime, should be minimised and only directed towards (i.e downward pointing) absolutely necessary areas in order to reduce the potential impacts to breeding, sheltering and roosting birds in hedgerows and trees.

Terrestrial Invertebrates

Desk Study

1.3 There are six recent records of notable[19] terrestrial invertebrates within the Study Area including Marsh fritillary butterfly which has been recorded approximately 100 m from the Site boundary. Parts of the Site are likewise recorded as Marsh fritillary Priority Habitat.

[18] Notable bird species are taken as those listed: on Annex I of the EC Birds Directive (2009/147/EC); on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); as Species of Principal Importance (SPI) for the Conservation of Biodiversity in Wales listed in Section 7 of the Environment (Wales) Act 2016; as Red or Amber in the *Birds of Conservation Concern (BoCC) 5* (Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom*, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: (723-747); bird species or groups listed under the Natur Gwynedd BAP.

[19] Notable terrestrial invertebrates are taken as principal species for the conservation of biodiversity listed under Section 7 of the Environment (Wales) Act 2016; any invertebrate listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); any invertebrate listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); any invertebrate listed in the IUCN Invertebrate Red Data Book (1991); and any invertebrate listed under a Natur Gwynedd BAP.

Field Survey

2.57 The mosaic of semi-natural habitats within the Site are considered to offer suitable habitat to support terrestrial invertebrates, including marsh fritillary. The areas of marshy grassland and scattered scrub abutting the watercourses and the damp grassland and wet heathland mosaic are considered to be particularly valuable.

Constraints and Recommendations

2.58 Much of the habitat within the Site boundary is considered valuable for terrestrial invertebrates, including marsh fritillary; priority habitat for marsh fritillary is likewise recorded within the Site extents (although not included on Figure 4 in Appendix A). Dependant on the final agreed location and extent of the Scheme, further surveys for marsh fritillary may be recommended in accordance with appropriate guidance[20] in order to determine any potential impacts from the works and to inform mitigation measures.

Other Notable Species

Desk Study

1.4 There are multiple records of other notable species[21] within the Study Area including two recent records of European hedgehog (dead individuals recorded on the A487 carriageway) and six of brown hare (*Lepus europaeus*). Freshwater pearl mussel (*Margaritifera margaritifera*), Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*), sea trout (*Salmo trutta trutta*) and eel (*Anguilliformes* spp.) have all been recorded within the Afon Dwyfach, within the last twenty years.

Field Survey

2.59 The poor semi-improved and improved grassland habitat within the Site offers foraging opportunities for European hedgehog and brown hare. The Afon Dwyfach and its tributaries continue to provide potential habitat for freshwater pearl mussel, Atlantic salmon, brown/ sea trout and eel.

Constraints and Recommendations

2.60 The poor semi-improved and improved grassland habitat within the Site offers potential foraging opportunities for European hedgehog and brown hare. A precautionary working method statement should be produced for any works that may take place in suitable habitat, which would include measures such as ecological watching briefs to prevent potential disturbance to these species. This will be in keeping with the precautionary working method statement requirements for reptiles.

2.61 Records of freshwater pearl mussel, Atlantic salmon, brown / sea trout and eel have been identified within the Study Area, therefore, should there be any potential for direct and/or indirect effects on any watercourse and/or should works be proposed within 10m of any watercourse, further assessment will be required by a suitably experienced aquatic ecologist, potentially leading to further surveys during appropriate seasons. Mitigation could include seasonal restrictions on the timing of works affecting the watercourses.

[20] Natural England (2007). *Surveying terrestrial and freshwater invertebrates for conservation evaluation.*
[21] Notable species are those considered to be of key significance to sustain and improve biodiversity in Wales and are listed under Section 7 of the Environment (Wales) Act 2016; any species listed in an IUCN Red Data Book; and any other species listed under the Natur Gywnedd BAP that are not referred to in previous sections of the report.

3. Opportunities for Enhancements

3.1 This section highlights opportunities for providing ecological enhancements, based on the current Scheme details. These are high level opportunities and would need to be developed in greater detail once further surveys have been completed and the Scheme proposals, such as detailed areas of habitat loss are confirmed.

3.2 The following enhancements could be delivered for biodiversity as part of the Scheme:

- Enhancement of remaining habitats not affected by the Scheme;
- Hedgerow and tree planting;
- Removal and/or control of Non-Native Invasive Plant Species;
- Installation of bird, bat and invertebrate boxes.

4. Conclusion

4.1 This PEAR is based on a desk study and ecological surveys undertaken on the 9th June 2023, 1st and 2nd November 2023 and 14th December 2023 to assess the ecological constraints to the Scheme and to provide advice in respect of Scheme design, site layout and / or site investigation.

4.2 The following further surveys, summarised in Table 7, are recommended to support the detailed design of the Scheme.

Table 7. Summary of Recommendations

Feature	Recommendation	Timing
Bats	If trees or structures with bat roost potential could be directly or indirectly impacted further surveys are required comprising tree climbing and/or emergence-re-entry surveys. To determine bat activity levels within the Site, three bat activity transects should be undertaken with the deployment of static detectors on a monthly basis. To avoid disturbance to foraging and / or commuting bats during the construction of the Scheme, it is recommended that works at night are avoided. Should this not be possible, or if artificial lighting is required when light levels are low, then task specific lighting, no brighter than is necessary for the specific work tasks, should be used. Such lighting would be directed towards the area of works and not upwards and/or into adjacent habitats.	Tree climbing – any time of year Presence/absence surveys May to September (with at least one of surveys between May and August) Seasonal transect surveys; one in spring (April/May), one in summer (June/July/August) and one in autumn (September/October) Monthly static deployment (April-October inclusive) During the works
Badger	Dependant on the location and extent of the Scheme within the Site, further surveys for badger may be required to determine the location of active setts.	Any time of year, however optimal time is October to April
Birds	Vegetation that may support breeding birds (trees, hedgerows, scrub and grassland) which requires clearance would be removed outside the nesting season (typically considered to be March to August, inclusive). However, should avoidance of these timings not be possible, removal should be carried out within 24 hours following a nesting bird check undertaken by a suitably experienced ecologist. If nests are found, they must be retained and remain undisturbed until an ecologist has confirmed that the young have fledged. If any signs of active use of bird nests are noted during the proposed works, activity within the vicinity of the nest (~2-5 m) should halt until young are fledged and the nest no longer in active use. Working at night should be avoided, however, if this is not possible, any artificial lighting used, including during low light levels in the daytime, should be minimise and only directed towards (i.e downward pointing) absolutely necessary areas in order to reduce the	Avoidance of vegetation clearance between March – August inclusive During the works

Feature	Recommendation	Timing
	potential impacts to breeding, sheltering and nesting birds.	
Otter/ water vole	If works are proposed within 10 m of the watercourses on site, further surveys for water vole are required with a buffer **greater** than 10m required for otter.	Otter – one survey at any time of year Water vole – two surveys; one in the first half of the breeding season (April to June) and a further survey the second half of the breeding season (July to September)
Hedgehog & brown hare	A precautionary working method statement should be produced for any works that may take place in suitable habitat, which would include measures such as ecological watching briefs. Where possible, any works should be planned to take account of likely mitigation requirements for these species. This may include checking vegetation and hedgerows prior to their removal.	During the works
Reptiles	Works within suitable habitat should be undertaken in accordance with a precautionary working method statement.	During the works
Invertebrates (Marsh fritillary)	Dependant on the location and extent of the Scheme within the Site, further surveys for marsh fritillary may be required to determine mitigation measures.	August-September
Invasive Non-Native Species	Control and management of invasive plant species on Site through an appropriate Invasive Non-Native Species Management Plan (INNSMP)	During the works

4.3 Other enhancements for biodiversity that could be delivered as part of the Scheme include enhancement of remaining habitat not affected by the Scheme, and installation of bird, bat and invertebrate boxes.

Recommendations are provided for both habitats and species, these include:

- Enhancement of remaining habitats not affected by the Scheme
- Hedgerow and tree planting
- Installation of bird, bat and invertebrate boxes
- Removal and/or control of Invasive Non-Native Plant Species

Further Survey of Site

4.4 Parts of the Site could not be accessed at the time of survey as permissions to access by the landowner had not been granted, and further survey of those areas is required once this is forthcoming. Further ecological constraints may be identified, following completion of this survey and confirmation of the location, extent and details of the Scheme.

4.5 Furthermore, due to the mobility of animals and the potential for colonisation of the Site, it is recommended that an updated ecological survey be undertaken of the whole Site prior to the development of this Site should this not occur within 12 months of the date of the field survey (i.e. by 14th December 2024).

Appendix A Figures

Figure 1 Scheme Boundary

Figure 2 & 3 Statutory designated sites for nature conservation

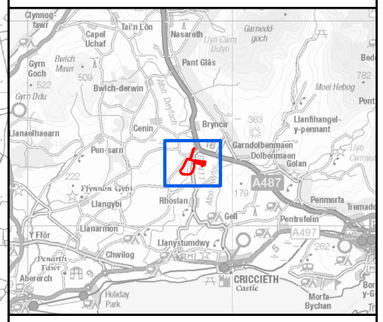
Figure 4 Non statutory designated sites for nature conservation

Figure 5 Notable Habitats and Protected or Notable Flora

Figure 6 Phase 1 Habitat Survey

N

ROUTE LEGEND



Legend

Survey Boundary

A	19/12/2023	Environmental Report	AB	RR	NL
Rev	Date	Description	GIS	Chk	App

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Scheme: BRYNCIR SPEN 132KV CONNECTION

Document Title: PRELIMINARY ECOLOGICAL APPRAISAL
FIGURE 1
LOCATION PLAN

Creator:	Date:	Checker:	Date:	Approver:	Date:
AB	19/12/2023	RR/TA	19/12/2023	NL	19/12/2023

Document Type:	Scale:	Format:	Sheets:	Rev:
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Metres

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N

R F O N

Glynllifon SAC

Corsydd Eifionydd / Eifionydd Fens SAC

Afon Gwyrfai a Llyn Cwellyn SAC

Eryri / Snowdonia SAC

Coedydd Derw a Safleoedd Ystlumod Meirion / Meirionnydd Oakwoods and Bat Sites SAC

Clogwyni Pen Llyn / Seacliffs of Lleyn SAC

Corsydd Llyn / Lleyn Fens SAC

Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC

Northern Cardigan Bay / Gogledd Bae CeredigionSPA

Morfa Harlech a Morfa Dyffryn SAC

CRICCIETH / CRICIETH

PWLLHELI

PORTHMADOG

TREMADOG BAY / BAE TREMADOG

MENAI STRAIT / AFON MENAI

ROUTE LEGEND

Legend

- Survey Boundary
- 10km Study Area

Statutory Designated Sites

- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

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0 1 2 3 4 5 Kilometers

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A	15/12/2023	Environmental Report	AB	RR	NL

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Scheme: BRYNCIR SPEN 132KV CONNECTION

Document Title: PRELIMINARY ECOLOGICAL APPRAISAL - FIGURE 2 STATUTORY DESIGNATED SITES FOR NATURE CONSERVATION IN THE WIDER AREA

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AB	15/12/2023	RR/TA	15/12/2023	NL	15/12/2023

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N

Corsydd Eifionydd / Eifionydd Fens SAC

Cors Graianog SSSI

Craig-y-Garn SSSI

Llystyn Isaf SSSI

Ffriddoedd Garndolbenmaen SSSI

Rhosgyll Fawr SSSI

Cenin

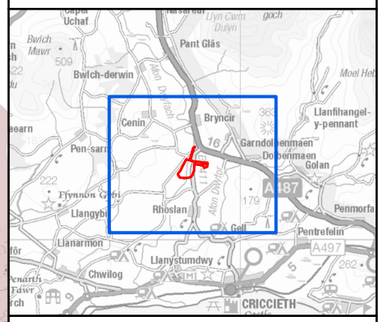
Bryncir

Garndolbenmaen

Dolbenmaen

Rhoslan

ROUTE LEGEND



Legend

- Survey Boundary
- 2km Study Area

Statutory Designated Sites

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

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0 250 500 750 1,000 1,250
Meters

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A	15/12/2023	Environmental Report	AB	RR	NL

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Scheme: BRYNCIR SPEN 132KV CONNECTION

Document Title: PRELIMINARY ECOLOGICAL APPRAISAL - FIGURE 3 STATUTORY DESIGNATED SITES FOR NATURE CONSERVATION

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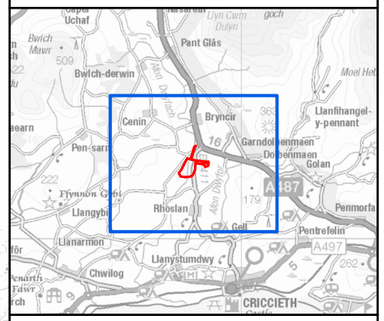
N

Gwyn [Candidate] WS
Coed Bwlch-derwin [Candidate] WS
Cae Gors [Candidate] WS
Mynydd Cennin [Candidate] WS
South of plantation - Mynachdy Gwyn [Candidate] WS
Tuhwnt-i'r-mynydd-isaf [Candidate] WS
Bryn Engan Fen [Candidate] WS
Bryn Engan [Candidate] WS
Above Bryn Engan [Candidate] WS
Above Ynys Creua [Candidate] WS
Pont Ynys Creua [Candidate] WS
Coed Ynys Wen [Candidate] WS
North of Cadair Elwa [Candidate] WS
Coed Ynys Creua [Candidate] WS
Rhosgyll Fawr [Candidate] WS
Gwinllan y Caerwen [Candidate] WS
Cefn-Rhosgyll [Candidate] WS
Coed Penbryn [Candidate] WS
Gwinllan Cefn Rhosgyll [Candidate] WS
Gaerwen [Candidate] WS
Ynys Graianog/Gaerwen [Candidate] WS
Below Hendre Cennin [Candidate] WS
Hendy and Bettws Bach [Candidate] WS
Coedydd Betws-fawr [Candidate] WS
Derwin [Candidate] WS
Pont Dafarn Faig [Candidate] WS
Coed Hendre Cennin [Candidate] WS
Bryn Ffynnon & Ynys Galed [Candidate] WS
Ynys Galed [Candidate] WS
Llecheiddior Ganol [Candidate] WS
Plas Lleicheiddior [Candidate] WS
Tyddyn y Felin [Candidate] WS
Hendy (East) [Candidate] WS
Hendy (South) [Candidate] WS
Gwinllan Rhos-ddu [Candidate] WS
Fron-oleu [Candidate] WS
Afon Dwyfach [Candidate] WS
North of Gwinllan Rhos-ddu plantation [Candidate] WS
Afon Dwyfach at Bettws Bach [Candidate] WS
Ty'n-rhos [Candidate] WS
Syntur [Candidate] WS
Below Derwin Bach [Candidate] WS
Bryncir [Candidate] WS
Llystyn Gwyn [Candidate] WS
Llystyn Isaf [Candidate] WS
Blaen-y-cae [Candidate] WS
Gwinllan Llystan [Candidate] WS
Llystyn Ganol [Candidate] WS
Muriau Bach [Candidate] WS
Bryn Eifion [Candidate] WS
Bryn-yr-efail-uchaf [Candidate] WS
Dolwar Heath [Candidate] WS
West bank of Afon Dwyfor [Candidate] WS
Coed Mawr [Candidate] WS
Ystumcegid-isaf [Candidate] WS
Rhwnddwyryd [Candidate] WS
Afon Dwyfor [Candidate] WS
Ystumcegid-ganol [Candidate] WS
Bryniau Ystumcegid [Candidate] WS
Ystumcegid [Candidate] WS
Ymwlch Bach WS
Braich-y-saint [Candidate] WS
Ynys-ddu
Bryniau'r Tyddyn [Candidate] WS
Ymwlch 2 [Candidate] WS
Ymwlch 1 [Candidate] WS
Ymwlch Fawr [Candidate] WS
Dolwgan [Candidate] WS
Tyddyn Madyn [Candidate] WS

Cenin
Bryncir
Rhoslan
Garndolbenmaen
Dolbenmaen

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Metres

ROUTE LEGEND



Legend
- Survey Boundary
- 2km Study Area
- Wildlife Site (WS) - Confirmed
- Wildlife Site (WS) - Candidate

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Scheme: BRYNCIR SPEN 132KV CONNECTION

Document Title: PRELIMINARY ECOLOGICAL APPRAISAL - FIGURE 4 NON-STATUTORY DESIGNATED SITES FOR NATURE CONSERVATION

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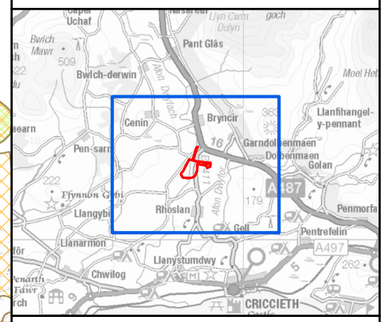
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Local Wildlife Site Boundaries supplied by Cofnod.

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N

ROUTE LEGEND



Legend

- Survey Boundary
- 2km Study Area
- Ancient Woodland

Priority Habitats Inventory[1]

- Blanket bog
- Lowland dry acid grassland
- Lowland fens and Reedbeds
- Lowland heathland
- Lowland meadows
- Purple moor grass and rush pastures
- Open mosaic habitats of previously devel
- Raised bog
- Upland heathland
- Traditional Orchard

Species Records from Data Search[2]

- Bluebell
- Varnished Hook-moss

NOTES

1: Due to availability of priority habitat data from Data Map Wales, not all priority habitat types are shown on the figure.
2: Records provided by Cofnod for Ecological Records Search Request. Due to the accuracy of the grid reference supplied some records are approximate. Any records with a grid reference accurate to a 100m square or less have been represented by a polygon rather than a point.

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Scheme: BRYNCIR SPEN 132KV CONNECTION

Document Title: PRELIMINARY ECOLOGICAL APPRAISAL - FIGURE 5 NOTABLE HABITATS AND PROTECTED OR NOTABLE FLORA

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AB	19/12/2023	RR/TA	19/12/2023	NL	19/12/2023

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Appendix B Relevant Legislation and Planning Policy

Legislation

1.5 The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

1.6 The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the *Conservation of Habitats and Species Regulations 2017* (referred to as the 2017 Regulations*)* so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

Designated Sites

Special Protection Areas (SPA) / Special Areas of Conservation (SAC)

1.7 These sites in the UK no longer form part of the EU's Natura 2000 ecological network. The *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* (referred to as the 2019 Regulations) have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- existing SACs and SPAs
- new SACs and SPAs designated under these Regulations

1.8 Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

1.9 Formal Appropriate Assessment is required to be undertaken by the competent authority before undertaking, or giving consent, permission or other authorisation for any work which are likely to have a significant effect on such a site.

Wetland of International Importance (Ramsar site)

1.10 Designated under the *Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971* (the Ramsar Convention), in the UK, these sites are treated as having the same level of protection as SPA's and SAC's.

Sites of Special Scientific Interest

1.11 Under the *Wildlife and Countryside Act 1981* (as amended), it is an offence to carry out or permit to be carried out any operations likely to damage the Site of Special Scientific Interest (SSSI). These operations are listed in the SSSI notification.

1.12 Owners, occupiers, public bodies and statutory undertakers must give notice and obtain the appropriate consent under S.28 of the *Wildlife and Countryside Act 1981* (as amended), before undertaking operations likely to damage a SSSI.

National Nature Reserve

1.13 National Nature Reserves (NNR) are established under the National Parks and Access to the Countryside Act 1949. Most NNRs are also underpinned by SSSIs and are therefore protected by the measures

detailed above. For NNRs not underpinned by SSSIs it is still an offence to carry out or permit to be carried out any potentially damaging operation.

1.14 NNRs are given protection through policies in a local development plan.

Local Nature Reserve

1.15 A Local Nature Reserve (LNR) is a statutory designation made under National Parks and Access to the Countryside Act 1949, by principal local authorities (district, borough or unitary councils).

1.16 The local authority must control the LNR land - either through ownership, a lease or an agreement with the owner.

1.17 LNRs are given protection through policies in a local development plan.

Locally Designated Sites

1.18 Local Wildlife Sites are sites with 'substantive nature conservation value'. They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a region.

1.19 They are usually selected by the relevant Wildlife Trust, along with representatives of the local authority and other local wildlife conservation groups.

1.20 The LWS selection panel, select all sites that meet the assigned criteria, unlike SSSIs, which for some habitats are a representative sample of sites that meet the national standard. Consequently, many sites of SSSI quality are not designated and instead are selected as LWSs. Consequently, LWSs can be amongst the best sites for biodiversity.

Protected Species

Bats / Otter / Great Crested Newt

1.21 These species, known as European Protected Species, are protected under Regulation 43 of the 2017 Regulations as amended by the 2019 Regulations. This makes it an offence to deliberately capture, injure or kill an animal; deliberately disturb an animal; or damage or destroy a breeding site or resting place used by an animal.

1.22 Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

1.23 Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural Resources Wales can be obtained to facilitate the works that would otherwise be illegal.

1.24 These species are also protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

1.25 Lower levels of disturbance not covered by the *Conservation of Habitats and Species Regulations 2017* remain an offence under the *Wildlife and Countryside Act 1981* although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Water Vole

1.26 Water voles are protected under the *Wildlife and Countryside Act 1981* (as amended). There are no licensing purposes that explicitly cover development or other construction activities which could have an impact on water voles.

1.27 When development work is proposed in or near an area which is either known to or likely to contain water voles, then the developer will need to implement suitable mitigation to prevent impacts to water voles. The preferred mitigation option is to leave water voles *in situ*, with the development works adopting avoidance measures through redesign of the proposals.

1.28 Where impacts cannot be avoided, operations aimed at displacing water voles from a development site are now no longer covered by the "*incidental result of an otherwise lawful action*" defence in the *Wildlife and Countryside Act 1981* (as amended). Displacement of water voles now needs to be undertaken under a licence.

1.29 In Wales, small scale (limited to continuous lengths of bank not exceeding 50 m) displacement of water voles can be carried out at certain times of the year (February to April) for the purposes of conservation under a Class Licence by a registered person. For larger scale displacements or displacements outside of this period, displacement can be undertaken under a site-specific conservation licence.

1.30 Where it is considered that the best outcome for water voles is capture and translocation to a different location then this action is considered by Natural Resources Wales to be outside the scope of the defence as the intentional capture of water voles is unlikely to be considered 'incidental'. In these circumstances there may be genuine grounds for issuing a conservation licence for the purpose of translocating the water vole population to suitable alternative habitat.

Nesting Birds

1.31 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended), with some species afforded greater protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended). In addition to the protection from killing or taking that all birds receive, Schedule 1 birds and their young must not be disturbed at the nest.

1.32 There are no licensing purposes that explicitly cover development activities affecting wild birds.

Common Species of Reptile (common lizard, slow worm, grass snake and adder)

1.33 Common species of reptile are protected against intentional killing and injury under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). There is no requirement for a licence where development works affect common species of reptiles. Instead, Natural Resources Wales advise[22] that where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

1.34 Badgers and their setts are protected under the *Protection of Badgers Act 1992* (as amended). This makes it an offence to wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett.

1.35 It is not illegal to carry out disturbance activities near setts that are not occupied, i.e. those that do not show signs of current use.

1.36 Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural Resources Wales. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process.

1.37 Natural Resources Wales provide guidance on working close to badger setts and the methods that can be employed to avoid or minimise impacts to active badger setts[23].

1.38 Licences are normally not granted from December to June inclusive (the badger breeding season) because dependent cubs may be present within setts.

[22]Reptiles: guidelines for developers, English Nature 2004
[23] *Badgers – A Guide for Developers*. Natural Resources Wales. January 2018.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

1.39 Section 7 of the Environment (Wales) Act 2016 replaces the duty in section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales.

1.40 The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section and encourage others to take such steps.

1.41 Part 1 of the Act, including Sections 6 and 7, came into force on May 21, 2016.

Hedgerows

1.42 Under the Hedgerows Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing hedges that are at least 20 metres in length, over 30 years old and contain certain species of plant. The local planning authority will assess the importance of the hedgerow using criteria set out in the regulations.

Non-native Invasive Plant Species

1.43 Under the Wildlife and Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause these species to grow in the wild.

1.44 Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the *Environmental Protection Act 1990*.

Regional and Local Planning Policy

1.45 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties such as the Socio-economic Duty.

1.46 Section 6.4 *Biodiversity and Ecological Networks* specifies that Development plan strategies, policies and development proposals must consider the need to:

- *'support the conservation of biodiversity, in particular the conservation of wildlife and habitats;*
- *ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;*
- *ensure statutorily and non-statutorily designated sites are properly protected and managed;*
- *safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and*
- *secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks'.*

Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026

1.47 Policy concerned with 'Conserving and Enhancing the Natural Environment' contained within the joint Local Development Plan and of relevance to the Scheme include; Strategic Policy PS 19: *Conserving and where Appropriate Enhancing the Natural Environment* and Policy AMG 5: *Local Biodiversity Conservation.*

Natur Gywnydd Biodiversity Action Plan

1.48 Natur Gwynedd is the Local Biodiversity Action Plan (LBAP) for Gwynedd outside the Snowdonia National Park. It has been developed by a wide partnership of organisations and individuals. Natur Gwynedd identifies the actions needed to safeguard and enhance our very special local wildlife and habitats.

1.49 The aims of Natur Gwynedd

- to help conserve the biodiversity of Gwynedd and, thereby, contribute to biodiversity conservation in Wales, the UK and the world.
- to develop effective local partnerships to make sure that what we do will be maintained long term.
- to increase our knowledge of Gwynedd's biodiversity.
- to raise public awareness of biodiversity in Gwynedd.

Appendix C Methodology

Desk Study

Background Records Search

1.50 The preliminary ecological assessment includes a desk study to obtain background records relevant to a Site and the Scheme. The data obtained provides contextual information for the scope of field surveys, to aid the evaluation of field survey results, and to provide supplementary information where complete field survey coverage is not possible.

1.51 The Study Area is dependent upon the nature, timing and scale of the Scheme, as well as the location of the Site and the surrounding landscape. These variables all contribute to what is referred to as the Zone of Influence (ZoI) of the Scheme, which is the area over which ecological features may be affected by biophysical changes because of the works and associated activities.

1.52 In October 2023 Cofnod was contacted to obtain the following ecological data:

- Records of non-statutory designated sites within 2 km of the Site boundary;
- Records of legally protected and notable species (fauna and flora) within 2 km of the Site boundary, including Species of Principal Importance for the Conservation of Biodiversity listed under Section 7 of the Environment (Wales) Act 2016.

1.53 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for the following information:

Designated sites of nature conservation importance (statutory sites only) within 2 km of the Site and internationally designated sites: Special Protection Areas (SPAs), Wetlands of International Importance (Ramsar sites) and Special Areas of Conservation (SACs within 10 km; and

- Notable habitats within 2 km of the Site, these being areas of ancient woodland and 'Habitats of Principal Importance for the Conservation of Biodiversity' included in Section 7 of the Environment (Wales) Act 2016.

Great Crested Newt Pond Search

1.54 Ordnance Survey maps and the *Where's the Path* website (https://wtp2.appspot.com/wheresthepath.htm) have been used to identify the presence of water bodies within 500 m of the Site boundary, in order to help establish if the land within and immediately surrounding the Site could be used by great crested newts. This species can use suitable terrestrial habitat up to 500 m from a breeding pond[24], though there is a notable decrease in great crested newt abundance beyond 250 m from a breeding pond[25].

Field Survey

1.55 The preliminary ecological assessment includes a walkover survey of the Survey Area (all land within the Site and a 50 m buffer) on the 9th June 2023, 1st and 2nd November 2023 and 14th December 2023, broadly following the Phase 1 habitat survey methodology as set out in Joint Nature Conservation Committee guidance (JNCC, 2010)[26]. This survey method records information on habitat types and is 'extended' to record any evidence of and potential for protected or notable species to be present. Plant names recorded during the survey follow Stace (2019)[27].

1.56 During the walkover survey, the following protected or notable species are considered:

[24] Great Crested Newt Mitigation Guidelines (English Nature, 2001).

[25] Natural England. An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt (ENRR576) http://publications.naturalengland.org.uk/publication/134002.

[26] Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - a technique for environmental audit*.

[27] Stace, C E (2019) *New Flora of the British Isles, 4th edition*. Cambridge University Press.

- **Badger:** the survey involves searching for signs of badger activity including setts, tracks, snuffle holes and latrines, following the methodology detailed in Scottish Badgers (2018)[28] and Harris et al (1989)[29];
- **Bats**: the survey involves searching for potential roosting sites for bats within structures (such as buildings, bridges or underground features such as mines) and categorising the potential of those structures to support roosting bats (negligible to high, or confirmed roost). The survey also assessed trees for their potential to support individual bats (PRF I) and multiple bats (PRF-M), in accordance with Bat Conservation Trust (BCT) guidance (2023)[30];
- **Otter**: the survey involves assessing the potential of watercourses and water bodies, and adjacent terrestrial habitat within the Survey Area to support otter, following RSPB (1994)[31] and Chanin, P. (2003)[32] guidance;
- **Water vole**: the survey involves assessing the potential of watercourses and water bodies within the Survey Area to support water vole, following The Mammal Society (2016)[33] guidance;
- **Birds**: the survey involves assessing the potential of habitats within the Survey Area to support breeding, wintering or migrating birds, either individually notable species or assemblages of both common and rarer species;
- **Great crested newt**: the survey involves assessing the potential of habitats within the Survey Area to support great crested newt, following English Nature (2001)[34] and Froglife (2001)[35] guidance;
- **Reptiles:** the survey involves assessing the potential of habitats within the Survey Area to support reptiles (adder, grass snake, common lizard and slow worm), following Froglife (1999)[36] and JNCC (2003)[37] guidance;
- **Notable species of invertebrate**: the survey involves assessing the potential of habitats within the Survey Area to support notable species of invertebrates;
- **Protected or Notable species of plants**: the survey involves recording protected or notable plant species;
- **Other notable species**: the survey involves assessing the potential of habitat within the Survey Area to support other Notable Species, such as hedgehog, brown hare, polecat or common toad;
- **Non-native invasive plant species**: the survey involves recording evidence of the presence of invasive plants listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) and subject to strict legal control.

Limitations and Assumptions

1.57 Records obtained as part of the desk study provide some indication of the presence of certain species. They do not, however, represent a definitive inventory of all species present within the Study Area. The inclusion of a species, or conversely the absence of a species does not necessarily mean that species remains present or absent beyond the time of that record.

1.58 The desk study data obtained from Cofnod in November 2023 was tailored to be up to 2km from the Site boundary of the installation of a new 132kV overhead line from Bryncir substation, not including the additional downlead cables from Bryncir substation and Tower 4ZC067. Therefore, for these additional areas the desk study only accounts for up 1.7km from the Site boundary.

[28] Scottish Badgers (2018). *Surveying for Badgers: Good Practice Guidelines*. Version 1.
[29] Harris, S. Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*.
[30] Collins, J.(ed) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conversation Trust. London.
[31] Ward, D. Holmes, N. Jose, P. (1994). *The New Rivers and Wildlife Handbook*. Royal Society for the Protection of Birds. Bedfordshire.
[32] Chanin, P (2003b). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. English Nature, Peterborough.
[33] Dean, M. Strachan, R. Gow, D. Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Guidance Series).* Eds Fiona Mathews and Paul Chanin. The Mammal Society. London.
[34] English Nature (2001). *The Great Crested Newt Mitigation Guidelines*.
[35] Froglife (2001). *The Great Crested Newt Conservation Handbook*.
[36] Froglife (1999). *Reptile Survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.
[37] Joint Nature Conservation Committee (2003). *Herpetofauna Workers Manual*.

1.59 Land access was not permissible to substantial parts of the Site, and therefore these areas could only be assessed from adjacent land parcels. Further survey is recommended of these areas to identify any additional potential ecological constraints.

Appendix D Target Notes and Photographs

Target Notes and Site photographs	Description	Photograph(s)
Photo 1	Poor semi-improved grassland	
Photo 2	Poor semi-improved grassland	
Photo 3	Marshy grassland	

Target Notes and Site photographs	Description	Photograph(s)
Photo 4	Purple moor grass rush pasture	
Photo 5	Scrub forming component of purple moor grass rush pasture	
Photo 6	Scrub forming component of purple moor grass rush pasture	
Photo 7	Species rich hedgerow	

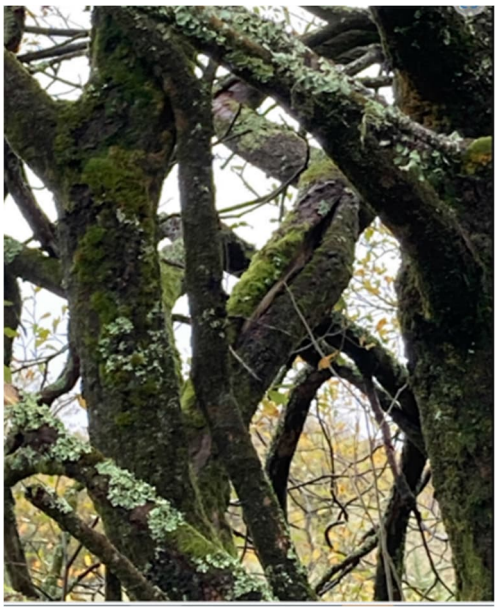
Target Notes and Site photographs	Description	Photograph(s)
Photo 8	Hedgerow with possible cloddiau	
Photo 9	Line of trees abutting Afon Dwyfach	
Photo 10	Alder willow woodland on slope	

Target Notes and Site photographs	Description	Photograph(s)
Photo 11	Afon Dwyfach	
Photo 12	Tributary of Afon Dwyfach	
B1	Stone bridge crossing Afon Dwyfach. Low bat roost potential.	
B2	Derelict stone farm building. Moderate bat roost potential.	

Target Notes and Site photographs	Description	Photograph(s)
B3	Corrugated metal barn. Negligible bat roost potential.	
B4	Corrugated metal barn. Negligible bat roost potential.	
T1	Semi-mature ash tree in poor health. Moderate bat roost potential with potential for multiple bats. **PRF - M**	

Target Notes and Site photographs	Description	Photograph(s)
T2	Mature ash tree in poor health. Low bat roost potential with potential for individual bats. **PRF – I.**	
T3	Mature ash tree. Moderate bat roost potential with potential for multiple bats. **PRF - M**	
T4	Mature ash tree. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	

Target Notes and Site photographs	Description	Photograph(s)
T5	Mature ash tree. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T6	Mature willow. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T7	Semi-mature sycamore Low bat roost potential with potential for individual bats. **PRF – I.**.	

Target Notes and Site photographs	Description	Photograph(s)
T8	Semi mature willow. Low bat roost potential with potential for individual bats. **PRF – I.**	
T9	Mature ash tree. Low bat roost potential with potential for individual bats. **PRF – I.**	
T10	Mature alder tree. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	

Target Notes and Site photographs	Description	Photograph(s)
T11	Mature multi-stemmed willow. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T12	Mature beech. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	

Target Notes and Site photographs	Description	Photograph(s)
T13	Mature ash. Low bat roost potential with potential for individual bats. **PRF – I.**	
T14	Mature beech. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T15	Mature beech. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	

Target Notes and Site photographs	Description	Photograph(s)
T16	Mature ash. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T17	Mature ash. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T18	Mature ash. Low bat roost potential with potential for individual bats. **PRF – I.**	

Target Notes and Site photographs	Description	Photograph(s)
T19	Mature ash. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T20	Semi-mature ash. Moderate bat roost potential with potential for multiple bats. **PRF - M**.	
T21	Semi-mature oak. Low bat roost potential with potential for individual bats. **PRF – I.**	

Target Notes and Site photographs	Description	Photograph(s)
T22	Mature sycamore. Low bat roost potential with potential for individual bats. **PRF – I.**	
TN1	The Afon Dwyfach could provide potential foraging/ commuting/ resting/ breeding sites for otter. There may also be potential for water vole.	
TN2	Extensive areas of dense and scattered scrub adjacent to Afon Dwyfach could provide potential resting/ breeding sites for otter.	

Target Notes and Site photographs	Description	Photograph(s)
TN3	Tributaries of the Afon Dwyfach and associated riparian vegetation could provide potential foraging/ commuting/ resting/ breeding sites for otter. There may also be potential for water vole.	
TN4	Several drains across the Site could provide potential habitat for water vole.	

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3.5.C. Ecology Report: Bryncir Habitats

nationalgrid

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1. Introduction

1.1 Introduction

1.1.1 This document has been prepared on behalf of National Grid Electricity Transmission plc (NGET) who seek to construct and operate the Pentir to Trawsfynydd Reinforcement Project (the 'Project').

1.1.2 This document concerns the section of the Project relating to Bryncir (the proposed works) and is a Technical Appendix to the Environmental Statement (ES) **Volume 3, Chapter 5: Ecology and Nature Conservation** being submitted as part of the Environmental Impact Assessment (EIA), which accompanies the consent applications for the Project.

1.2 Description of the Proposed Works

1.2.1 The proposed works would be on agricultural land approximately 750 metres (m) south-west of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen ('the Bryncir works site), in the administrative boundary of Gwynedd Council. The approximate centre would be Grid Reference SH 485430.

1.2.2 The Bryncir works site shown in ES **Volume 3, Chapter 2: Bryncir Works**, **Figure 3.2.1** covers an area approximately 12 hectares (ha).

The proposed works would comprise the following:

- New 400 Kilovolt (kV) substation, including a permanent access road.
- New section of 132 kV underground cable.
- Relocation of existing Tower 4ZC067 80 m north-west of its current position.
- Realignment of the SPEN DB route and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner access track.

1.2.3 A description of the proposed works is provided in **ES Volume 3, Chapter 2: Bryncir Works**. The location of the Bryncir works site is shown on **ES Volume 3, Chapter 2: Bryncir Works, Figure 3.2.1**.

1.3 Purpose of the Habitats Report

1.3.1 This report provides baseline information on habitats that could potentially be affected by the proposed works. Information on hedgerows is provided separately in **ES Volume 8, Appendix 3.5.D: Hedgerow Report**.

1.3.2 Baseline information was obtained through desk-based assessments and the following field surveys completed during 2023, 2024 and 2025:

- Phase 1 Habitat Survey.

- National Vegetation Classification (NVC) survey.

1.3.3 This report details the baseline information collated for habitats present in the Study Area (see definition in **Section 1.5**) and identifies relevant legislation and planning policy relating to plants and habitats, which are outlined in **Section 2** of this report.

1.4 Objectives

1.4.1 The objectives of the surveys and report are to:

- Review existing ecological data to identify any statutory or non-statutory designated sites for habitats in the Study Area (**Figure 3.5.C.2** and **Figure 3.5.C.3** in **Appendix A**).
- Identify the presence of Habitats of Principal Importance (HoPI) in the Study Area (**Figure 3.5.C.4 in Appendix A**).
- Identify and categorise habitats present in the Survey Area (see definition in **Table 1.1**) with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (Ref 1.1) and the Handbook for Phase 1 habitat survey (Ref 1.2).
- Carry out a high-level appraisal of the potential for habitats recorded to support protected or notable species of fauna and flora in the Survey Area.
- Provide maps showing habitat types and their location in the Survey Area (**Appendix A: Figure 3.5.C.1 Phase 1 Habitat Survey**).
- Provide baseline information about the presence and distribution of any important NVC communities in the Survey Area and evaluate their status.
- Use this information to determine whether notable habitat and plants could be affected by the proposed works (see **Section 3**).
- Inform the mitigation requirements for the proposed works to prevent or reduce any negative impacts on habitats present.
- Inform the landscape assessment, Green Infrastructure Strategy and Net Benefits for Biodiversity (NBB) proposals in ES **Volume 8, Appendix 3.5.J: Net Benefit for Biodiversity Assessment and Green Infrastructure Statement**.

1.5 Study Areas and Survey Areas

1.5.1 The Study Areas discussed in this report are:

- Statutory and non-statutory designated sites in the Bryncir works site plus a 2 km buffer;
- Existing ecological records relating to notable plants and invasive non-native plant species (INNPS) in the Bryncir works site plus a 50 m buffer.

1.5.2 The Bryncir works site plus 50 m buffer was used for the desk-based assessment to collate existing ecological records relating to sites designated for nature conservation, notable plants and INNPS. A larger Study Area for statutory designated sites is applied and discussed in the ES **Volume 3, Chapter 5: Ecology and Nature Conservation**, where applicable. This report presents only the records of notable and INNPS in the Bryncir works site, along with a 50 m buffer, as identified through

professional judgment for their potential to be most affected by the proposed works. Plants outside of this buffer are unlikely to be directly impacted by the works.

1.5.3 The Survey Areas discussed in this report are the Bryncir Works site plus 50 m buffer for the Extended Phase 1 habitat survey and the Bryncir site only for the NVC surveys. **Table 1.1** – Survey Area details where each habitat survey type was carried out. The Survey Area locations were determined using professional judgement and the likely extent of impacts on plants and habitats.

Table 1.1 – Survey Area

Survey Type	Survey Area	Justification for the Survey Area
Extended Phase 1 habitat survey. Plant INNPS were also recorded where observed.	The Bryncir works site and to a maximum of 50 m, where viewable or access was permitted.	The Bryncir works site, plus a 50 m buffer, is an appropriate Survey Area. Habitats that are likely to be impacted by the proposed works are limited to those in the Bryncir works site.
Botanical and NVC survey	Appropriate locations in the Bryncir works site. See **Appendix A: Figure 3.5.C.6 Botanical Survey Locations**.	Habitats of potential botanical importance that are likely to be impacted by the proposed works are limited to those in the Bryncir works boundary.

2. Legislation

2.1 Introduction

2.1.1 This section lists the legislation, planning policy framework and guidance that is relevant to plants and habitats.

2.1.2 More detailed information is in ES **Volume 8, Appendix 1.1.A: Legislation, Policy and Guidance.**

2.2 Legislation

2.2.1 The following legislation is relevant to Ecology and Nature Conservation:

- The Conservation of Habitats and Species Regulations 2017 (as amended) (the (Habitats Regulations) (Ref. 2.1).
- The Countryside and Rights of Way Act 2000 (Ref. 2.2).
- The Hedgerows Regulations 1997 (Ref. 2.3).
- Wildlife and Countryside Act 1981 (WCA) (as amended) (2.4).
- The Environment Act (2021) (Ref. 2.5).
- The Natural Environment and Rural Communities Act 2006 (NERC) (Ref. 2.6).
- The Environment (Wales) Act 2016 (Ref. 2.7).
- Regulation (EU) 1143/2014 on the introduction and spread of invasive alien species (Ref. 2.8).
- The Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref. 2.9).

2.3 Planning Policy

2.3.1 The following planning policy is relevant to Ecology and Nature Conservation:

- Planning Policy Wales – Edition 12 (2024) (Ref. 2.10).
- Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026 (Ref. 2.11).
- Anglesey and Gwynedd Joint Local Development Plan Review Report (Ref. 2.12).

2.4 Guidance

2.4.1 The following guidance is relevant to Ecology and Nature Conservation:

- The International Union for Conservation of Nature Red List of Threatened Species 2025 (Ref. 2.13).
- UK Biodiversity Framework (Joint Nature Conservation Committee (JNCC)) on behalf of the Four Countries' Biodiversity Group (2024) (Ref. 2.14).

- Natur Gwynedd Biodiversity Action Plan (BAP) (Ref. 2.15).
- The Vascular Plant Red Data List for Wales (Ref. 2.16).
- The Vascular Plant Red Data List for Great Britain (Ref. 2.17).

3. Methodology

3.1 Desk Study

Designated Sites

3.1.1 The desk study incorporates a review of all international and national statutory designated sites for nature conservation in the Study Area.

3.1.2 It also includes a review of non-statutory designated Wildlife Sites (WS) and Candidate WS (cWS). WSs are of local nature conservation value and in some cases the quality of habitat may be equal to that found on a Site of Special Scientific Interest (SSSI) but may not meet the national criteria for selection as a SSSI, which receive statutory protection. Although cWS have not yet been designated, they are included in this report.

Existing Records

3.1.3 Ecological data for the Study Area were gathered from the following sources:

- JNCC website (Ref. 3.1) for site information and designation details of Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites.
- Natural Resources Wales (NRW) website (Ref. 3.2) for information on statutory designated sites of nature conservation interest, such as SSSI, and to confirm reasons for designation.
- DataMapWales website (Ref. 3.3) to identify the locations of HoPI and ancient woodland.
- Woodland Trust Ancient Tree Inventory (Ref. 3.4) for records of ancient and veteran trees.
- Natur Gwynedd Biodiversity Action Plan website (Ref. 2.16) for biodiversity action plan habitats and species.
- Aerial photography (Google Earth).
- Cofnod, the local environmental records centre for North Wales.

3.1.4 Protected and notable habitats and species record data (including INNPS) have been provided by Cofnod, the local environmental record centre. Data is refreshed on a six-monthly basis; the date of the latest refresh provided is November 2024. Only records in the last ten years (2014-2024) are considered in the baseline.

3.1.5 Protected and notable habitats and species data include those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) (Ref 2.4), Schedules 2 and 4 of The Conservation of Habitat and Species Regulations 2017 (as amended) (Ref. 2.1) and Habitats and Species of Principal Importance listed under Section 7 of the Environment (Wales) Act 2016 (Ref. 2.7). INNS are species listed under Schedule 9

of the Wildlife and Countryside Act 1981 (as amended) (Ref. 2.4) and as species of EU concern listed in the EU Invasive Alien Species Regulation 2014 (Ref. 2.9).

Existing Report Reviews

3.1.6 Historic data collected from 2016 to 2018, including botanical and NVC survey results gathered in support of the National Grid North Wales Connection Project that was paused in 2019, were also reviewed for relevant information.

National Vegetation Classification

3.1.7 To inform the NVC survey, a desk-top scoping exercise was carried out, comprising a review of aerial photography, habitat and target note (TN) data recorded during the extended Phase 1 habitat survey carried out in 2023 and previous botanical surveys completed in 2018-19 in support of the National Grid North Wales Connection Project that was paused in 2019. Records received from Cofnod concerning notable plant species in the Study Area were also reviewed.

3.1.8 From this, areas of potential botanical interest were identified for more detailed vegetation survey in 2024.

3.2 Field Surveys

Phase 1 Habitat Survey

3.2.1 Phase 1 habitat survey is a standard method of environmental audit and involves categorising different habitat types and habitat features in the survey area and recording these using standard Phase 1 habitat survey codes as described in the Handbook for Phase 1 Habitat Survey: A technique for environmental audit (Ref. 1.2). The approach applied accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref. 1.1).

3.2.2 Phase 1 habitat surveys were carried out on multiple site visits between July 2022 and March 2025 to take account of adjustments to the Bryncir works site boundary. Phase 1 survey data collected as part of the adjacent Wider Works component of the Project was also reviewed. See ES **Volume 6, Chapter 5: Ecology and Nature Conservation.**

National Vegetation Classification Survey

3.2.3 The NVC system provides a standardised method for classifying and mapping semi-natural habitats and ensures that surveys are carried out to a consistent level of detail and accuracy. NVC surveys are undertaken in accordance with the methodology outlined in the NVC Users' Handbook (Ref. 3.5).

3.2.4 The NVC surveys focussed on areas in which the proposed works have the potential to cause direct or indirect impacts to habitats of botanical interest and were recorded as non-statutory designated sites for nature conservation or HoPI. Parts of the Bryncir works site have been recorded as purple moor-grass and rush pasture HoPI and lowland dry acid grassland HoPI by DataMapWales (Ref. 3.3) as well as cWS.

3.2.5 In 2024, NVC surveys were carried out when the Bryncir works site covered a larger area. The surveys focused on four marshy grassland areas (Areas A, B, C, and D) where work was anticipated to take place. See **Figure 3.5.C.6 Botanical Survey Locations** in **Appendix A.**

3.2.6 However, following revisions to the Bryncir works site boundary, only two of these survey locations now fall in the boundary. This report includes the results from all four areas to provide a comprehensive overview of the surrounding habitat.

3.2.7 Surveys were conducted by suitably experienced botanical surveyors on 10 July, 08 August and 25 September 2024, which are in the optimal period for NVC surveys.

3.2.8 Habitats were subject to an initial walkover to identify homogeneous stands of vegetation. From each homogenous stand, five samples were taken to determine the frequency of species present using a 2 m by 2 m quadrat.

3.2.9 The presence and percentage cover for every plant species was recorded in each quadrat. In NVC this is estimated using the Domin Scale by which a score is attributed to different ranges of abundance, as summarised in **Table 3.1**.

Table 3.1 – Domin Scale Cover/Abundance	Domin value
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

3.2.10 For each quadrat, results were tabulated to provide figures for cover expressed as a Domin value, range and frequency of occurrence across the five quadrats. The range is given by the Domin value of any one plant found in any of the survey squares. For example, if creeping buttercup (*Ranunculus repens*) is found in two quadrats out of the five sampled, and the Domin value in these quadrats was 6 and 7, this means that the abundance range is 6 to 7.

3.2.11 Frequency of species presence was then established. Frequency is used to describe how often a species is encountered in different stands or samples of a vegetation type, irrespective of species cover within each stand or sample. It is summarised in floristic tables using the Roman numerals I-V and referred to in descriptions of vegetation types using the terms listed in **Table 3.2.**

Table 3.2 – Vegetation frequency class

Frequency Class	Range of Frequency Class	Terms used to Describe Frequency Class
I	1-20% (i.e. 1 stand in 5)	Scarce
II	21-40%	Occasional
III	41-60%	Frequent
IV	61-80%	Constant
V	81-100%	Constant

3.2.12 Species that were absent from the quadrats but present in the same stand of vegetation were recorded with a '+'. This information is not used in analysis but can be useful for allocating species-poor or heterogeneous samples.

3.2.13 Botanical nomenclature follows that of Stace (Ref. 3. 6) for vascular plants and Atherton et al. (2010) (Ref. 3.7) for bryophytes. The names of the NVC plant communities follow Rodwell (1991) (Ref. 3. 8 – Ref. 3.12).

NVC Data Analysis

3.2.14 Data gathered from the field surveys were analysed and NVC communities were assigned using surveyor experience and matching sample field data against published NVC floristic tables. Stands were classified to sub-community level where possible. The computer programme MAVIS (Ref. 3.13) was used to analyse the sample field data. MAVIS mathematically compares the sample data with the constancy profiles for all NVC plant communities and sub-communities and produces a list of similarity coefficients, which is ranked in order of the best fit.

Evaluation

3.2.15 The intrinsic values of the identified habitats in the Survey Area and conservation importance of these habitats were evaluated with reference to HoPI identified in Section 7 of the Environment Wales Act (2016) (Ref. 2.7). Individual species were evaluated against the species listed in Schedule 8 of WCA (Ref. 2.4), Schedule 5 of The Conservation of Habitats and Species) Regulations 2017 (as amended) (Ref. 2.1), Section 7 of the Environment Wales Act (2016) (Ref. 2.7), and the Vascular Plant Red Data List for Wales (Ref. 2.17). The importance of habitats and species were also evaluated with reference to the Natur Gwynedd BAP (Ref. 2.15).

Arboricultural Survey

3.2.16 In December 2024, a preliminary visual survey was carried out from ground level to evaluate the quality of trees in the Bryncir works site. Data was gathered on trees which met the stem girth parameters for ancient tree status, or exhibited features associated with veteran tree status. See **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment** for further information.

3.3 Assumptions and Limitations

Desk Study

3.3.1 The aim of the desk study is to characterise the baseline context of the proposed works and provide valuable background information that would not be captured by surveys alone. Information obtained during a desk study is dependent upon people and organisations having made and submitted records for the area of interest; a lack of records for habitats or species does not mean that they do not occur in a Study Area. Likewise, the presence of records for habitats and species does not automatically mean that these still occur or are relevant in the context of proposed works.

3.3.2 The detail and accuracy of the desk study records rely on those provided to Cofnod from a variety of sources. The results of the updated desk study undertaken in November 2024 have been considered for the baseline assessment.

Phase 1 Habitat Survey

3.3.3 Phase 1 habitat surveys were conducted year-round to accommodate boundary changes and temporary access restrictions. Where surveys were carried out in suboptimal months (e.g. November-December) as outlined in the Handbook for Phase 1 habitat survey (Ref. 1.2.), these were re-verified alongside protected species assessments to ensure data accuracy. The information gathered during the surveys has facilitated a robust evaluation of the dominant habitats in the Bryncir works site. Sufficient data was obtained to provide recommendations for further surveys and to highlight key areas in which to focus those surveys.

National Vegetation Classification

3.3.4 NVC surveys were carried out in July, August and September 2024 coinciding with the peak flowering period for the majority of grassland and mire species.

3.3.5 Should the proposed works area be amended in the future, the NVC assessment must be reviewed and updated as necessary. Ecosystems are inherently dynamic, with potential shifts in species distribution and abundance across the Survey Area over time. However, the habitat communities identified through the NVC at Bryncir are relatively stable and are not particularly prone to rapid ecological change. Consequently, a significant and sustained disturbance or change in land management would be required to alter the existing community types.

3.3.6 If no changes occur, a follow-up habitat survey is recommended after two years. The current NVC data should not be relied upon beyond July–September 2026. After this period, updated surveys are likely needed, and advice should be sought from a qualified ecologist to determine the appropriate scope and methods.

3.3.7 Although some plant species may have been undetected during the NVC survey, particularly if they were only present in early spring, this has not impacted the habitat assessments in this report. This is because the optimal time to survey marshy grassland are the summer months, when most expected species would have germinated or been in flower.

4. Results

4.1 Desk Study Results

Important Ecological Features (Designated Sites)

4.1.1 The locations of designated sites, HoPI, and the results of the desk study are shown in the following figures in **Appendix A**:

- **Figure 3.5.C.2**: Relevant Statutory Designated Sites for Habitats.
- **Figure 3.5.C.3**: Relevant Non-Statutory Sites Designated for Habitats.
- **Figure 3.5.C.4**: HoPI and Ancient Woodland.
- **Figure 3.5.C.5**: Invasive Non-Native Species.

4.1.2 **Table 4.1** summarises the statutory designated sites in the Study Area.

Table 4.1 – Statutory designated sites for nature conservation in the 2 km Study Area

Designated Site	Reason for Designation	Location of Designated Site
Corsydd Eifionydd/Eifionydd Fens SAC	Annex I habitats that are a primary reason for selection of this site are: • Transition mires and quaking bogs. Annex II species that are a primary reason for selection of this site: • Marsh fritillary butterfly (*Euphydryas aurinia*). • Slender green feather-moss (*Drepanocladus* (*Hamatocaulis*) *vernicosus)*.	1.88 km north-east
Llystyn Isaf SSSI	The site is of botanical interest and supports a range of acidic and neutral grassland vegetation types. The drier neutral grassland communities are the main features of interest. Wood bitter-vetch (*Vicia orobus*) is uncommon nationally and it occurs here in its only known meadow locality in West Gwynedd. There are also patches of wet heath vegetation present, whilst the streamlines and adjoining wet flushed areas support a range of characteristic wetland species including several rush and sedge species together with various herbs. Fen meadow vegetation is also present in the southern part of the site.	0.31 km north-west
Ffriddoedd Garndolbenmaen SSSI	The site is of interest for its species-rich lowland grassland, which is an important and increasingly rare wildlife habitat. Dwarf shrub heath, marshy grassland and acid flush occur in association with the grassland and add to the interest of the site.	1.55 km north-east
Cors Graianog SSSI	The site supports three features of international importance: transition mire and quaking bog, marsh fritillary and slender green feather moss. The site also supports marshy grassland, fen, bog, wet woodland and swamp habitats.	1.88 km north-east

4.1.3 **Table 4.2** summarises the non-statutory designated sites in the Study Area and the reason for their designation.

Table 4.2 – Non-statutory designated sites for nature conservation in the 2 km Study Area

Non-statutory Designated Site	Reason for Designation	Location of Designated Site
Llystyn Isaf Candidate cWS	Marshy grassland and wet heath with acid grassland mosaic.	In Bryncir works site
Afon Dwyfach cWS	Running water.	In Bryncir works site
Tyddyn-y-Felin cWS	Marshy grassland.	In Bryncir works site
Dolwar Heath cWS	Marshy grassland.	In Bryncir works site
Bryn-yr-efail-uchaf cWS	Marshy grassland.	In Bryncir works site
Rhwnddwyryd cWS	Marshy grassland, wet heath with acid grassland mosaic, and acid grassland.	In Bryncir works site
Gwinllan Lyystan cWS	Dry heath and acid grassland mosaic, acid grassland and acid and neutral flush.	0.08 km north-east
Plas Lleicheiddior cWS	Marshy grassland.	0.13 km west
Bryn Eifion cWS	Acid grassland, marshy grassland and wet heath with acid grassland mosaic.	0.18 km north
Llecheiddior Ganol cWS	Marshy grassland, with acid and neutral flush, and acid grassland.	0.30 km north-west
Llystyn Ganol cWS	Acid grassland, marshy grassland and dry heath with acid grassland mosaic.	0.42 km north
Bryn Ffynnon & Ynys Galed cWS	Marshy grassland.	0.50 km south-west
Hendy East cWS	Marshy grassland with wet heath and acid grassland mosaic.	0.51 km south-west
Fron-oleu cWS	Marshy grassland.	0.71 km south-west
Muriau Bach cWS	Marshy grassland and wet heath with acid grassland mosaic.	0.71 km south
Ynys Galed cWS	Acid grassland and marshy grassland.	0.81 km north-west
Bryncir cWS	Marshy grassland.	0.85 km north-west
West bank of Afon Dwyfor cWS	Broadleaved woodland, marshy grassland and acid flush.	0.90 km south-east

Afon Dwyfor cWS	Running water.	0.95 km south-east
Ystumcegid-ganol cWS	Fen and broadleaved woodland.	1.03 km south-east
Hendy (South) cWS	Marshy grassland and wet heath with acid grassland mosaic.	1.12 km south-west
Ynys Graianog/Gaerwen cWS	Wet heath with acid grassland mosaic and fen.	1.18 km south-west
Ty'n-rhos cWS	Wet heath with acid grassland mosaic.	1.23 km south
Gaerwen cWS	Coniferous woodland and wet heath with acid grassland mosaic.	1.24 km south-west
Below Derwin Bach cWS	Acid grassland and wet heath with acid grassland mosaic.	1.29 km north
Bryniau Ystumcegid cWS	Acid grassland, dry heath with acid grassland mosaic and broadleaved woodland.	1.29 km south-east
Blaen-y-cae cWS	Acid grassland.	1.35 km north
Coed Hendre Cennin cWS	Coniferous woodland.	1.38 km north-west
Bryniau'r Tyddyn cWS	Acid grassland, dry heath with acid grassland mosaic and fen.	1.44 km south-east
Below Hendre Cennin cWS	Wet heath with acid grassland mosaic and marshy grassland.	1.50 km west
Derwin cWS	Marshy grassland and wet heath with acid grassland mosaic.	1.51 km north-west
Afon Dwyfach at Bettws Bach cWS	Marshy grassland, broadleaved woodland and standing water.	1.53 km south-west
Llystyn Gwyn cWS	Acid grassland and bracken.	1.54 km north
North of Gwinllan Rhos-ddu plantation cWS	Wet heath with acid grassland mosaic and marshy grassland.	1.60 km south-west
Gwinllan Rhos-ddu cWS	Coniferous woodland.	1.70 km south-west
Ystumcegid cWS	Marshy grassland, basin mire, acid flush, acid grassland and broadleaved woodland.	1.73 km south-east
Pont Dafarn Faig cWS	Marshy grassland, acid grassland and scrub.	1.82 km north

Ystumcegid-isaf cWS	Marshy grassland, wet heath with acid grassland mosaic, broadleaved woodland and acid flush.	1.83 km south-east
Hendy and Bettws Bach cWS	Marshy grassland.	1.92 km south-west

Ancient Woodland

4.1.4 There are six areas of Ancient Semi Natural Woodland, one site of Restored Ancient Woodland and one site of Ancient Woodland of Unknown category in the Study Area, as shown in **Figure 3.5.C.4** in **Appendix A**. The closest is 0.9 km north of the Bryncir works site and is Ancient Semi Natural Woodland.

Ancient or Veteran Trees

4.1.5 There are no records in the Woodland Trust Ancient Tree Inventory (Ref. 3.4) of any individual ancient or veteran trees in the 2 km buffer Study Area.

4.1.6 In December 2024, a non-intrusive, visual survey was undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Bryncir works site. During the fieldwork, dimensional data and observational information were collected. This survey identified two trees in the Bryncir works site that met the stem girth parameters of ancient tree status (T121 and T125). Nine trees which did not have the stem girth to be considered ancient, but which exhibited features associated with veteran status, such as extensive hollowing, decay and deadwood habitat were also recorded: T41, T60, T95, T105 T137, T211, T240, T272 and T274.

4.1.7 A veteran grey willow (*Salix cinerea*), T240, will be removed and translocated elsewhere in the Bryncir works site to facilitate the construction of the Bryncir Substation.

4.1.8 The remaining ancient or veteran trees are outside of the proposed works area and the Zone of Influence (ZoI).

4.1.9 See ES **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment** and its associated Tree Constraints Plan for further information.

4.1.10 A further four trees were identified that exhibited features associated with veteran status (refer to **Figure 3.5.C.4**). This includes tree T211, which lies along the path of the undergrounded 132 kV cable, and tree T240, which is just within the Bryncir works site (ES **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment**).

Important Ecological Features (Habitats)

4.1.11 Data supplied by Cofnod and Datamap Wales (Ref. 3.3) identified the following HoPI in the Study Area.

Table 4.3 – Important Ecological Features (HoPI) in the Study Area

Feature	Environment (Wales) Act 2016 Priority Habitat	Gwynedd BAP	Location of habitat
Lowland dry acid grassland	Y	Y	In Bryncir works site
Lowland heathland	Y	Y	In Bryncir works site
Purple moor-grass and rush pasture	Y	Y	In Bryncir works site
Lowland fen and reedbed (lowland wetland)	Y	Y	0.08 km north
Lowland meadows	Y	Y	0.32 km north
Open mosaic habitats of previously developed land	Y	N	1.06 km north
Traditional orchards (extant and meets criteria)	Y	N	1.48 km north-east

4.1.12 Further HoPI present in the Bryncir works site, but not currently identified by Cofnod or on the Datamap Wales website (Ref: 3.3), are:

- Hedgerows.
- Rivers.
- Wet woodland.

Notable Plant Species

4.1.13 Cofnod data returned no notable flowering plant, fern, lower plant, lichen or fungi species within 50 m of the Bryncir works site in the last 10 years (since 2014).

Invasive Non-Native Species (INNS)

4.1.14 Cofnod identified Himalayan balsam (*Impatiens glandulifera*) listed on Schedule 9 of the WCA 1981 (Ref. 2.5) in the Study Area.

4.2 Phase 1 Habitat Survey Results

Habitat Overview in the Survey Area

4.2.1 The Bryncir works site contains a variety of habitats typical of rural pastoral farmland. These are largely characterised by improved, poor semi-improved and marshy grasslands grazed by cattle and sheep.

4.2.2 Field boundaries are typically fences, species-rich and species- poor intact and defunct hedgerows, dry stone walls and cloddiau (dry stone outers with compacted earth, or earth and rubble cores).

4.2.3 Other habitats present in the Bryncir works site include acid grassland and wet heath mosaic, fen-basin mire, semi-natural broadleaved woodland, scattered trees, areas of dense and scattered scrub and bracken (*Pteridium aquilinum*) and watercourses (rivers, streams and field drains).

4.2.4 The habitats recorded during the Phase 1 habitat survey are provided on **Figure 3.5 C.1 Phase 1 Habitat survey** in **Appendix A.**

General Habitat Descriptions

Broadleaved Semi-Natural Woodland

4.2.5 There is one area of broadleaved-semi-natural woodland in the north of the Bryncir works site. The woodland is secondary, colonising the drier parts of a marshy grassland field that abuts the Afon Dwyfach. The trees are young but include hazel (*Corylus avellana*), eared willow (*Salix aurita*) and grey willow (*Salix cinerea*), as well as hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*).

4.2.6 Abutting the western boundary of the Bryncir works site is an area of mature common alder (*Alnus glutinosa*) and willow (*Salix* sp.) woodland with a field layer dominated by bramble (*Rubus fruticosus* agg.) with occasional pendulous sedge (*Carex pendula*). Himalayan balsam is present throughout this woodland.

Mixed Semi-Natural Woodland

4.2.7 There are two areas of mixed semi-natural woodland approximately 25 m east of the Bryncir works site. The trees are semi mature, dominated by willows (*Salix* sp.), but with occasional rowan (*Sorbus aucuparia*), pedunculate oak (*Quercus robur)*, Scots pine (*Pinus sylvestris*), hazel and holly (*Ilex aquifolium*).

Dense or Continuous Scrub

4.2.8 Dense bramble and European gorse (*Ulex europaeus*) scrub border the Bryncir works site in discrete locations and at the base of Tower 4ZC070.

Scattered Scrub

4.2.9 Scattered scrub is present in the Bryncir works site comprising scattered European gorse, willows and bramble along with patches of bog myrtle (*Myrica gale*) scrub, in marshy grassland areas.

Broadleaved Parkland or Scattered Trees

4.2.10 There is no broadleaved parkland in the Bryncir works site. Lines of mature and semi-mature broadleaved trees are present throughout the Bryncir works site, predominantly aligning watercourses, both the Afon Dwyfach and tributaries as well as field drains and along field boundaries. Some of the ash trees (*Fraxinus excelsior*) show signs of poor health.

Coniferous Parkland or Scattered Trees

4.2.11 There are no scattered coniferous trees or coniferous parkland in the Bryncir works site. Several scattered coniferous trees (*Cypress* sp.) line the top of a river bank in the wider Survey Area.

Mixed Parkland or Scattered Trees

4.2.12 There is no mixed parkland in the Bryncir works site. A line of semi mature mixed trees borders the A487 to the north of the Bryncir works site. The trees are being managed to maintain highway sight lines.

Improved Grassland

4.2.13 Improved grassland swards are identified by a limited range of species typical of heavily grazed pastures. The majority of fields to the east of the B4411 comprise improved grassland grazed by cattle and sheep. Species present here include perennial rye grass (*Lolium perenne*), white clover (*Trifolium repens*), dock spp. (*Rumex* sp.), dandelion (*Taraxacum officinale* agg.) and scattered nettles (*Urtica dioica*).

Marshy Grassland

4.2.14 Typically, marshy grassland habitat is classified by communities with greater than 25% cover of rush species, which include jointed rush (*Juncus articulatus*), soft-rush (*Juncus effusus*) and sharp-flowered rush (*Juncus acutiflorus*).

4.2.15 Parts of the central and northern parts of the Bryncir works site that lie on lower ground comprise marshy grassland, including wet grassland areas dominated by rushes and purple moor-grass (*Molinia caerulea*) rush pasture. This area is largely in the cWS and areas of HoPI identified previously. Species present here include tussocks of purple moor-grass and bog myrtle, with patches of tufted hair grass (*Deschampsia cespitosa*) and soft rush. Scattered willow, gorse and bramble scrub form a component of this habitat. More floristically rich areas of marshy grassland include grasses of common bent (*Agrostis capillaris*) and Yorkshire fog (*Holcus lanatus*) in addition to jointed rush, marsh marigold (*Caltha palustris*), cuckooflower (*Cardamine pratensis*), lesser spearwort (*Ranunculus flammula*), marsh violet (*Viola palustris*) meadowsweet (*Filipendula ulmaria*), marsh thistle (*Cirsium palustre*) and devil's bit scabious (*Succisa pratensis*). Himalayan balsam is present in some of the marshy grassland and purple moor-grass rush pasture, adjacent to Afon Dwyfach.

Poor Semi-improved Grassland

4.2.16 The characteristics of this habitat are like those found in semi-improved neutral grassland although the diversity of herbaceous species is much more restricted.

4.2.17 Parts of the western section of the Bryncir works site, on slightly elevated ground, consist of closely grazed, poor semi-improved grassland. Species present include Yorkshire fog, perennial rye grass, red fescue (*Festuca rubra*), creeping buttercup, white clover, meadow buttercup (*Ranunculus acris*), dandelion, broad-leaved dock (*Rumex obtusifolius*), ribwort plantain (*Plantago lanceolata*), creeping thistle (*Cirsium arvense*), common mouse ear (*Cerastium fontanum*) and occasional soft rush.

Other Tall Herb and Fern-Ruderal

4.2.18 There is no Other Tall Herb and Fern-Ruderal in the Bryncir works site. An abandoned garden vegetated with rosebay willowherb (*Chamerion angustifolium*) is present in the wider Survey Area.

Fen-basin mire

4.2.19 To the south-east of Tower 4ZC070 is an area of fen-basin mire that has formed in a wet depression. Species recorded include purple moor grass, jointed rush, devil's bit scabious, tormentil (*Potentilla erecta*) and greater birds foot trefoil (*Lotus pedunculatus*). The presence of abundant sphagnum moss, marsh violet and occasional lousewort (*Pedicularis sylvatica*), skullcap (*Scutellaria galericulata*) and flea sedge (*Carex pulicaris*) indicates fen or mire conditions.

Running Water

4.2.20 The Afon Dwyfach river bisects the Bryncir works site and is joined by several field drains, most of which contained flowing water at the time of survey. The Dwyfach is a fast-flowing river, up to 12 m wide in places, with steep earth banks 1-3 m high. The water height is highly variable in relation to the bank profile, with water height increasing by more than a metre following heavy rain. Trees and shrubs provide bankside shading, and bankside herbaceous vegetation includes hemlock water dropwort (*Oenanthe crocata*) and yellow flag iris (*Iris pseudacorus*), in addition to dense swards of Himalayan balsam.

Cultivated or Disturbed Land – Amenity Grassland

4.2.21 There is no Cultivated or Disturbed Land (Amenity Grassland) in the Bryncir works site. A small parcel is present adjacent to a public house in the wider Survey Area.

Native Species-rich Hedge

4.2.22 Where the structural species making up a 30 m section of hedgerow include at least five (or at least four in northern and eastern England, upland Wales and Scotland) woody species that are either native somewhere in the UK, or which are archaeophytes, the hedgerow is defined as species-rich (Ref. 2.4).

4.2.23 Following detailed hedgerow surveys, six (hedges 3.3, 3.4, 3.6, 3.8, 3.9, and 3.10) of the sixteen hedgerows recorded in the Survey Area are classified as Important under the Hedgerow Regulations 1997 (Ref. 2.4). Two of these (hedges 3.3 and 3.8) are classified as species-rich. See ES **Volume 8, Appendix 3.5.D: Hedgerow Report**. Frequently recorded woody species include hawthorn, blackthorn, ash, willow species, hazel, sycamore (*Acer pseudoplatanus*) and holly).

Species-poor Hedge

4.2.24 This classification of a species-poor hedgerow is defined as those with less than five woody species native to the UK within a 30 m length or at least four in northern and eastern England, upland Wales and Scotland (Ref. 2.4).

4.2.25 Following detailed hedgerow surveys, fourteen of the sixteen hedgerows recorded in the Survey Area are classified as species-poor. See ES **Volume 8, Appendix 3.5.D: Hedgerow Report**.

Other Miscellaneous Habitats

4.2.26 The Phase 1 habitat survey also recorded other miscellaneous habitats, such as Built-up Areas (i.e. buildings), areas of Bare Ground and linear habitats, such as Walls and Dry Ditches.

Invasive Non-Native Species (INNS)

4.2.27 Himalayan balsam is present in large quantities along the Afon Dwyfach and field drainage ditches and present in woodland on the western edge.

4.3 Habitat Area

4.3.1 A summary of the approximate area or length of each habitat in the Bryncir works site and the Survey Area is shown in **Table 4.4**. The percentage contribution of each of the area habitats in the Bryncir works site and in the Survey Area is also provided. The linear habitats have been excluded from the percentage contribution calculations.

Table 4.4 Summary of habitat area within the Survey Area

Habitat type	Phase 1 habitat survey code	Area (ha)/length (km) (site limits)	% contribution to site limits (area only)	Area (ha)/length (km) (survey area limits)	% contribution to survey area (area only)
Semi-natural broadleaved woodland	A1.1.1	0.39 ha	1.98	1.48 ha	3.09
Semi-natural mixed woodland	A1.3.1	-	0.01	0.67 ha	1.40
Dense or Continuous Scrub	A2.1	0.07 ha	0.36	0.42 ha	0.87
Scattered scrub	A2.2	- 0.12 km	0.01 -	0.02 ha and 0.30 km	0.03
Broadleaved parkland or scattered trees	A3.1	0.3 km	-	1.15 km	-
Coniferous parkland or scattered trees	A3.2	-	-	0.07 km	-
Mixed parkland or scattered trees	A3.3	0.05 km	-	0.07 km	-
Improved grassland	B4	13.11 ha	66.83	27.77 ha	57.79
Marshy grassland	B5	3.46ha	17.64	10.29 ha	21.40
Poor semi-improved grassland	B6	1.93 ha	9.94	4.50 ha	9.36
Other tall herb and fern - ruderal	C3.1	-	-	0.08 ha	0.16
Fen-basin mire	E3.2	0.01 ha	0.06	0.29 ha	0.61
Running water	G2	0.08 ha and 0.34 km	0.39	0.18 ha and 1.15 km	0.38
Running water - oligotrophic	G2.3	0.10 ha and 0.43 km	0.52	0.28 ha and 1.13 km	0.58
Cultivated/ disturbed land – amenity grassland	J1.2	-	-	0.08 km	0.16

Intact species-rich hedge	J2.1.1	-	-	0.05 km	-
Intact species-poor hedge	J2.1.2	0.37 km	-	0.67 km	-
Defunct species-poor hedge	J2.2.2	0.26 km	-	0.36 km	-
Species-rich hedge with trees	J2.3.1	0.24 km	-	0.42 km	-
Species-poor hedge with trees	J2.3.2	0.13 km	-	0.29 km	-
Other linear habitats (including fence, wall, dry ditch, earth bank)	J2.4; J2.5; J2.6; J2.8;	4.12 km	-	6.64 km	-
Other area habitats (including, buildings, bare ground)	J3.4; J3.6; J4; J5	-	-	0.08 ha	0.17
Hardstanding	Z99	0.46 ha	2.37	1.20 ha	2.49

The total area used for the percentage contribution calculations was 19.61 ha for the Bryncir works site and 48.06 ha for the Survey Area.

4.4 NVC Survey Results

Desk Based Assessment

4.4.1 The desk-based assessment identified areas in which the proposed works had the potential to cause direct impacts to habitats recorded as HoPI or that were in non-statutory sites of ecological importance. Four locations (Areas A, B, C and D) were identified for further botanical survey to confirm the habitat type. See **Figure 3.5.C.6 Botanical Survey Locations** in **Appendix A.**

- Area A and Area B are in Tyddyn-y-Felin cWS and purple moor-grass and rush pasture HoPI.
- Area C is in Llystyn Isaf cWS and purple moor-grass and rush pasture HoPI.
- Area D is in Llystyn Isaf cWS and lowland dry acid grassland HoPI.

4.4.2 Following revisions to the Bryncir works site boundary, only two of these survey locations (Area A and Area C) now fall within the updated boundary. This report includes the results from all four areas to provide a comprehensive overview of the surrounding habitat.

Summary of the NVC Field Surveys

4.4.3 The NVC surveys confirmed the following NVC plant communities present:

- Area A: M25c *Molinia caerulea/Potentilla erecta* mire *Angelica sylvestris* sub-community
- Area B: M25 *Molinia caerulea/Potentilla erecta* mire
- Area C: M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture
- Area D: M25 *Molinia caerulea/Potentilla erecta* mire

4.4.4 The quadrat locations are shown in **Figure 3.5.C.6 Botanical Survey Locations in Appendix A**. Photographs are presented in **Appendix B** and the floristic tables summarising the quadrat survey data are provided in **Appendix C**.

Area A: M25c *Molinia caerulea-Potentilla erecta* mire *Angelica sylvestris* sub-community

4.4.5 The Phase 1 habitat survey identified an area of marshy grassland on the eastern edge of the Afon Dwyfach characterized by dense tussocks of purple moor-grass (Area A – Quadrats A1 to A5). The NVC survey classified this habitat as *M25c Molinia caerulea-Potentilla erecta* mire, specifically the *Angelica sylvestris* sub-community. This plant community was on gently sloping ground and appeared ungrazed, with a mean sward height of 0.9 m and no bare ground observed. The mean number of species per quadrat was 12, ranging from seven to 16 species.

4.4.6 The plant community exhibited five constant species: purple moor-grass, sharp-flowered rush, Himalayan balsam, angelica (*Angelica sylvestris*) and common sorrel (*Rumex acetosa*). Additionally, tormentil (*Potentilla erecta*), soft rush and greater bird's foot trefoil (*Lotus pedunculatus*) were recorded in four of the five quadrats. The presence of purple moor-grass and tormentil as constant and near constant species aligns with the M25 *Molinia caerulea-Potentilla erecta* mire classification, with the constant occurrence of angelica confirming its designation as the *Angelica sylvestris* sub-community.

Area B: M25 *Molinia caerulea/Potentilla erecta* mire

4.4.7 The Phase 1 habitat survey recorded this overall area as a mosaic of marshy grassland, small wet acid grassland patches and scattered willow scrub on level terrain adjacent to the Afon Dwyfach (Area B – Quadrats B1 to B5). The NVC survey focussed on the area in which works were proposed (at the time of survey) and recorded this habitat as predominantly composed of purple moor-grass and bog myrtle, interspersed with patches of heathy vegetation and areas of short acid grassland. The mean sward height was 0.9 m, with no bare ground observed, though minor signs of cattle poaching were present. The mean number of species per quadrat was six, with a range of three to nine species, reflecting the dominance of purple moor-grass and bog myrtle.

4.4.8 The plant community was characterized by two constant species: purple moor-grass and bog myrtle. Sharp-flowered rush and tormentil were recorded in four out of five quadrats. Given that the constant species for M25 *Molinia caerulea-Potentilla erecta* mire include purple moor-grass and tormentil, the vegetation composition in this area is a strong match for this community.

Area C: M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture *Juncus acutiflorus* sub-community

4.4.9 Initially recorded as marshy grassland in the Phase 1 habitat survey, the NVC survey identified Area C (Quadrats C1-C5) as M23 *Juncus effusus/acutiflorus-Galium palustre* grassland. This plant community was on flat terrain that had been grazed and exhibited signs of cattle poaching. The vegetation had a mean sward height of 0.7 m, with no bare ground observed. The mean number of species per quadrat was 14, ranging from 13 to 16 species.

4.4.10 Six constant species were present in all quadrats: sharp flowered rush, purple moor-grass, soft rush, red fescue, marsh violet and greater birds foot trefoil. Soft-rush is a constant species for M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture, while greater bird's-foot trefoil is a near constant. The prominence of sharp-flowered rush supports the classification of this area as the *Juncus acutiflorus* sub-community.

Area D: M25 *Molinia caerulea/Potentilla erecta* mire

4.4.11 Area D was recorded as fen-basin mire in the Phase 1 Habitat Survey. The vegetation had a mean sward height of 0.8 m, with no bare ground observed, although moderate poaching was evident. The mean number of species per quadrat was 18, ranging from 16 to 22 species.

4.4.12 The plant community exhibited nine constant species: sharp flowered rush, purple moor-grass, *sphagnum* sp., greater birds foot trefoil, marsh violet, common sorel, Yorkshire fog, marsh bedstraw and tormentil. While the presence of purple moor-grass and tormentil aligns with the M25 *Molinia caerulea-Potentilla erecta* mire classification, the vegetation composition in this area also closely resembles that of the M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture.

Evaluation

4.4.13 The four areas assessed through the NVC survey were confirmed as either M25 *Molinia caerulea-Potentilla erecta* mire or M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture. These communities are closely related in terms of species composition and are representative of purple moor-grass and rush pasture HoPI.

5. Conclusion

5.1 Phase 1 Habitat Survey

5.1.1 The Survey Area encompasses a variety of habitats typical of rural pastoral farmland. The dominant habitat types comprise improved grassland, poor semi-improved grassland and marshy grassland. A small area of fen-basin mire is just to the south of tower 4ZC070.

5.1.2 Woodland is relatively limited in the Survey Area; young secondary woodland is present to the very north of the Bryncir works site and mature alder-willow woodland abuts the western boundary. Scattered scrub (willow, gorse and bramble) is present throughout and aquatic habitats comprise the Afon Dwyfach, which bisects the Bryncir works site, and adjoining field drains.

5.1.3 Construction of the Bryncir substation will require permanent loss of habitat. The area to be permanently lost comprises primarily improved grassland and is of negligible conservation importance. A small area of marshy grassland will be lost to accommodate the edge of the substation works and the construction of a new landowner access track. Marshy grassland that comprises purple moor grass and rush pasture HoPI is of medium conservation value.

5.1.4 Llystyn Isaf cWS and purple moor-grass and rush pasture HoPI have been identified in the Bryncir works site. Small areas of habitat will be temporarily lost or disturbed, to facilitate removal of a section of the SPEN DB route north to south. Works will be reinstated to their former habitat type on completion of the construction works so there will be minimal long-term effects. Tyddyn y Felin cWS and purple moor-grass and rush pasture HoPI and the Afon Dwyfach cWS will be oversailed by a short new section of SPEN DB route east to west, but no supports will be located within these areas.

5.1.5 Indirect impacts to non-statutory designated sites and HoPI, for example from construction dust or pollution risk, will be mitigated by standard environmental protection measures, which will be outlined as provided in the Construction and Environmental Management Plan (CEMP) (ES **Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan**).This will include suitable measures to suppress dust, reduce site runoff and reduce spillage risk and water pollution risk.

5.2 National Vegetation Classification

5.2.1 The NVC survey confirms the following NVC plant communities are present in the works site in Area A: M25c *Molinia caerulea-Potentilla erecta* mire *Angelica sylvestris* sub-community and in Area C: *M23 Juncus effusus/acutiflorus-Galium* palustre.

5.2.2 These NVC communities qualify as purple moor-grass and rush pasture HoPI.

5.3 Potential Impacts and Constraints

5.3.1 Potential effects on habitats and plants from the proposed works and the mitigation measures proposed, are provided in ES **Volume 3, Chapter 5: Ecology and Nature Conservation.**

5.4 Monitoring

5.4.1 Following completion of the proposed works and mitigation, the Bryncir works site will be monitored to confirm the re-establishment of habitats. The composition of the colonising plant species will be identified, along with the need for any additional management measures, such as removal of pernicious weeds or encroaching scrub that may be detrimental to the habitats. Details of monitoring and management proposals to be implemented following completion of the proposed works will be included in the ES **Volume 8, Appendix 3.4.C: Landscape and Ecological Management Plan (LEMP).**

5.5 Enhancement

5.5.1 Recommendations for NBB are not covered in this report but included in ES **Volume 8, Appendix 4.5.J: Net Benefit for Biodiversity Assessment and Green Infrastructure Statement**.

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Appendix A Figures

Figure 3.5.C.1: Phase 1 Habitat Survey

Figure 3.5.C.2: Relevant Statutory Designated Sites for Habitats

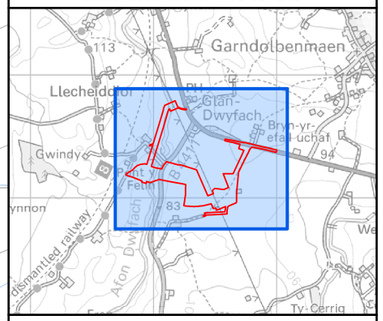
Figure 3.5.C.3: Relevant Non-Statutory Designated Sites for Habitats

Figure 3.5.C.4: Habitats of Principal Importance and Ancient Woodlands

Figure 3.5.C.5: Invasive Non-Native Species

Figure 3.5.C.6: Botanical Survey Locations

BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 50m Buffer of Bryncir Works Site Boundary
- Cloddiau

Phase 1 Habitat Feature

- A2.2 - Scrub - scattered
- A3.1 - Broadleaved parkland/scattered tree
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved parkland/scattered trees
- A3.2 - Coniferous parkland/scattered trees
- A3.3 - Mixed parkland/scattered trees
- G2 - Running water
- G2.3 - Running water - oligotrophic
- J2.1.1 - Intact hedge - native species-rich
- J2.1.2 - Intact hedge - species-poor
- J2.2.1 - Defunct hedge - native species-rich
- J2.2.2 - Defunct hedge - species-poor
- J2.3.1 - Hedge with trees - native species-rich
- J2.3.2 - Hedge with trees - species-poor
- J2.4 - Fence
- J2.5 - Wall
- J2.6 - Dry ditch
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.3.1 - Mixed woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- E3.2 - Fen - basin mire
- G2 - Running water
- G2.3 - Running water - oligotrophic
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- Hardstanding
- Not Surveyed/ No Access

Rev	Date	Description	GIS	Chk	App
A	05/09/2025	Environmental Statement	CA	RR	NL

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title:
FIGURE 3.5.C.1
PHASE 1 HABITAT SURVEY

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Corsydd Eifionydd / Eifionydd Fens SAC

Cors Graianog SSSI

Ffriddoedd Garndolbenmaen SSSI

Llystyn Isaf SSSI

Cenin

Bryncir

Garndolbenmaen

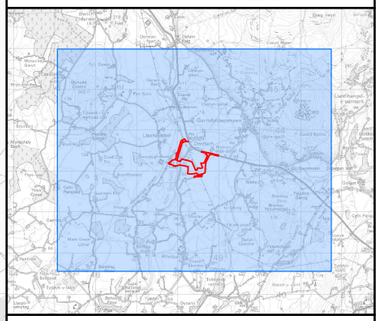
Dolbenmaen

Rhoslan

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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 2km Buffer of Bryncir Works Site Boundary

Relevant[1] Statutory Designated Sites for Habitats

- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

NOTES

1: Relevant designated sites are those designated for their habitats within 2km of the Bryncir works site boundary.

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BRYNCIR WORKS

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Pont Dafarn Faig cWS
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Derwin cWS
Below Derwin Bach cWS
Pont Dafarn Faig cWS
Blaen-y-cae cWS
Blaen-y-cae cWS
Llystyn Gwyn cWS
Llystyn Ganol cWS
Bryncir cWS
Bryncir cWS
Llecheiddior Ganol cWS
Llystyn Ganol cWS
Gwinllan Llystan cWS
Bryn Eifion cWS
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Gaerwen cWS
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Afon Dwyfor cWS
Ynys Graianog/Gaerwen cWS
Muriau Bach cWS
Hendy (South) cWS
Muriau Bach cWS
Ystumcegid-ganol cWS
North of Gwinllan Rhos-ddu plantation cWS
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North of Gwinllan Rhos-ddu plantation cWS
Fron-oleu cWS
Muriau Bach cWS
Afon Dwyfach cWS
Ty'n-rhos cWS
Gwinllan Rhos-ddu cWS
Ystumcegid cWS
Hendy and Bettws Bach cWS
West bank of Afon Dwyfor cWS
Ystumcegid-isaf cWS
Afon Dwyfach at Bettws Bach cWS

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Garndolbenmaen
Dolbenmaen
Rhoslan

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Wildlife Sites data supplied by Cofnod.

BRYNCIR WORKS ROUTE LEGEND

Legend

Bryncir Works Site Boundary

2km Buffer of Bryncir Works Site Boundary

Relevant[1] Non-Statutory Designated Sites for Habitats

Wildlife Site - Candidate (cWS)[2]

NOTES

1. Relevant designated sites are those designated for their habitats within 2km of the Bryncir works site boundary.
2. Wildlife Sites data supplied by Cofnod.

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

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BRYNCIR WORKS

Document Title: FIGURE 3.5.C.3
RELEVANT NON-STATUTORY DESIGNATED SITES FOR HABITATS

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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 2km Buffer of Bryncir Works Site Boundary

Arboricultural Survey December 2024 / February 2025

- Ancient Tree
- Veteran Tree

Habitats of Principal Importance (HoPI)[1]

- Ancient woodland
- Blanket bog
- Lowland dry acid grassland
- Lowland fens and reedbeds
- Lowland heathland
- Lowland meadows
- Open mosaic habitats of previously developed land
- Purple moor grass and rush pastures
- Raised bog
- Upland flushes, fens and swamps
- Upland heathland
- Traditional orchard

NOTES

1. Due to availability of Habitat of Principal Importance (HoPI) data from Data Map Wales, not all HoPI types are shown on the figure.

Rev	Date	Description	GIS	Chk	App
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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.5.C.4
HABITATS OF PRINCIPAL IMPORTANCE
& ANCIENT WOODLAND

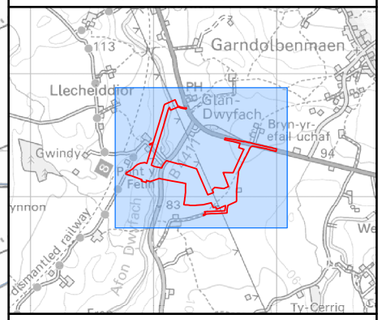
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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 50m Buffer of Bryncir Works Site Boundary

Terrestrial INNS Features (2023 to 2024)[1&2]

- Himalayan balsam (*Impatiens glandulifera*)
- Montbretia (*Crocosmia x crocosmiiflora*)
- Himalayan balsam (*Impatiens glandulifera*)
- Himalayan balsam (*Impatiens glandulifera*)

INNS Records from Data Search [3]

- Himalayan balsam (*Impatiens glandulifera*)

NOTES

1: The figure includes locations of INNS identified during March 2023 - August 2024. Records were collated during all habitat and species surveys during this time.
2: INNS locations are representative of the time they were noted and may not reflect what is on site at present or in the future. Locations of stands could change and spread beyond what is noted at present. Invasive species may be present in locations other than those indicated.
3. Records provided by Cofnod. Due to the accuracy of the grid reference supplied some records are approximate. Any records with a grid reference accurate to a 100m square or less have been represented by a polygon rather than a point.

Rev	Date	Description	GIS	Chk	App
A	29/08/2025	Environmental Statement	CA	RR	NL

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.5.C.5
INVASIVE NON-NATIVE SPECIES

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CA	29/08/2025	RR	29/08/2025	NL	29/08/2025

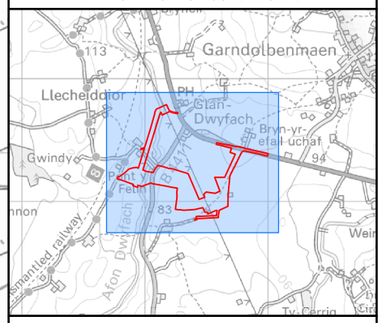
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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

NVC Survey Results 2024 - Quadrat Locations and Plant Communities

- *Juncus effusus/acutiflorus-Galium palustre* rush pasture (M23)
- *Molinia caerulea/Potentilla erecta* mire (M25)
- *Molinia caerulea/Potentilla erecta* mire *Angelica sylvestris* sub-community (M25c)

Rev	Date	Description	GIS	Chk	App
A	11/09/2025	Environmental Statement	CA	RR	NL

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.5.C.6
BOTANICAL SURVEY LOCATIONS

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Appendix B Photos

Phase 1 Habitat Survey Photos



Plate 1: Improved grassland on site of proposed substation.



Photo 2: Marshy grassland in Dolwar Heath cWS.



Photo 3: Dense scrub adjacent to new SPEN DB route.



Photo 4: Marshy grassland in Llystyn Isaf cWS.



Photo 5: Semi-natural broadleaved woodland in Llystyn Isaf cWS.



Photo 6: Marshy grassland in Llystyn Isaf cWS.

NVC Survey Photos



Area A



Area B



Area C



Area D

Appendix C. Floristic Tables

Area A: M25c *Molinia caerulea-Potentilla erecta* mire *Angelica sylvestris* sub-community

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Purple moor-grass	*Molinia caerulea*	*3*	10	9	9	9	V	3-10
Sharp-flowered rush	*Juncus acutiflorus*	*8*	6	6	6	9	V	6-9
Himalayan balsam	*Impatiens glandulifera*	*1*	2	4	7	9	V	1-9
Angelica	*Angelica sylvestris*	4	4	4	5	5	V	4-5
Common sorrel	*Rumex acetosa*	*2*	3	2	2	3	V	2-3
Tormentil	*Potentilla erecta*	3	4	6	4	-	IV	4-6
Soft-rush	*Juncus effusus*	*4*	4	5	-	3	IV	3-5
Greater bird's-foot trefoil	*Lotus pedunculatus*	-	1	4	3	4	IV	1-4
Marsh bedstraw	*Galium palustre*	-	4	1	3	-	III	1-4
Marsh thistle	*Cirsium palustre*	-	3	4	2	-	III	2-4
Marsh willowherb	*Epilobium palustre*	-	3	3	1	-	III	1-3
Marsh pennywort	*Hydrocotyle vulgaris*	-	3	-	5	-	II	3-5
Marsh violet	*Viola palustris*	-	3	4	-	-	II	3-4
Cleavers	*Gallum aparine*	1	2	-	-	-	II	1-2
Creeping thistle	*Cirsium arvense*	1	2	-	-	-	II	1-2
Common valerian	*Valeriana officinalis*	-	2	-	2	-	II	2
Yorkshire-fog	*Holcus lanatus*	*6*	-	-	-	-	I	6
Common bent	*Agrostis capillaris*	5	-	-	-	-	I	5
Sweet vernal-grass	*Anthoxanthum odoratum*	4	-	-	-	-	I	4

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Meadow buttercup	*Ranunculus acris*	*2*	-	-	-	-	I	2
Meadowsweet	*Filipendula ulmaria*	-	-	1	-	-	I	1

Area B: M25 *Molinia caerulea-Potentilla erecta* mire

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Purple moor-grass	*Molinia caerulea*	10	9	9	10	9	V	9-10
Bog myrtle	*Myrica gale*	*6*	9	8	4	9	V	4-9
Sharp-flowered rush	*Juncus acutiflorus*	-	6	6	8	6	IV	6-8
Tormentil	*Potentilla erecta*	4	4	3	-	4	IV	3-4
Soft-rush	*Juncus effusus*	*3*	-	5	-	4	III	3-5
Marsh bedstraw	*Galium palustre*	-	1	3	-	-	II	1-3
Lesser spearwort	*Ranunculus flammula*	-	-	4	-	-	I	4
Heath wood-rush	*Luzula multiflora*	*3*	-	-	-	-	I	3
Marsh willowherb	*Epilobium palustre*	2	-	-	-	-	I	2
Yorkshire-fog	*Holcus lanatus*	*2*	-	-	-	-	I	2
Wavy hair-grass	*Deschampsia flexuosa*	2	-	-	-	-	I	2
Sheep's sorrel	*Rumex acetosella*	-	-	2	-	-	I	2
Purple loosestrife	*Lythrum salicaria*	-	-	1	0	0	I	1
Narrow buckler-fern	*Dryopteris carthusiana*	*1*	-	-	-	-	I	1

Area C: M23 *Juncus effusus/acutiflorus-Galium palustre* rush pasture *Juncus acutiflorus* sub-community

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Sharp-flowered rush	*Juncus acutiflorus*	9	8	9	8	8	V	8-9
Purple moor-grass	*Molinia caerulea*	7	7	7	7	6	V	6-7
Soft-rush	*Juncus effusus*	6	4	6	6	4	V	4-6
Red fescue	*Festuca rubra*	4	5	5	5	5	V	4-5
Marsh violet	*Viola palustris*	4	4	2	5	4	V	2-5
Greater bird's-foot trefoil	*Lotus pedunculatus*	4	3	4	4	2	V	2-4
Tormentil	*Potentilla erecta*	4	4	-	4	4	IV	4
Marsh bedstraw	*Galium palustre*	4	2	-	4	4	IV	2-4
Marsh thistle	*Cirsium palustre*	1	3	2	2	-	IV	1-3
Marsh willowherb	*Epilobium palustre*	2	-	1	3	1	IV	1-3
Ragged robin	*Silene flos-cuculi*	2	2	1	3	-	IV	1-3
Red-stemmed feather-moss	*Pleurozium schreberi*	6	6	4	-	-	III	4-6
A bog moss species	*Sphagnum* sp.	4	-	3	-	6	III	3-6
Marsh cinquefoil	*Potentilla palustris*	4	4	2	-	-	III	2-4
Yorkshire-fog	*Holcus lanatus*	2	3	3	-	-	III	2-3
Sweet vernal-grass	*Anthoxanthum odoratum*	-	-	-	2	2	II	2
Carnation sedge	*Carex panicea*	-	-	1	-	2	II	1-2
Common lousewort	*Pedicularis sylvatica*	-	-	3	-	-	I	3
Creeping bent	*Agrostis stolonifera*	-	-	-	-	2	I	2
Meadow buttercup	*Ranunculus acris*	-	-	-	-	2	I	2
A hawkweed species	*Hieracium sp.*	2	-	-	-	-	I	2

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Angelica	*Angelica sylvestris*	-	-	-	-	1	I	1
Cuckooflower	*Cardamine pratensis*	-	-	-	1	-	I	1

Area D: *M23 Juncus effusus/acutiflorus-Galium palustre* rush pasture

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Sharp-flowered rush	*Juncus acutiflorus*	9	9	8	9	7	V	7-9
Purple moor-grass	*Molinia caerulea*	9	5	6	5	5	V	5-9
A bog moss species	*Sphagnum* sp.	6	9	8	9	5	V	5-9
Greater bird's-foot trefoil	*Lotus pedunculatus*	4	4	3	4	3	V	3-4
Marsh violet	*Viola palustris*	3	4	4	4	3	V	3-4
Common sorrel	*Rumex acetosa*	3	3	1	4	3	V	1-4
Yorkshire-fog	*Holcus lanatus*	1	4	1	4	3	V	1-4
Marsh bedstraw	*Galium palustre*	1	3	1	3	2	V	1-3
Tormentil	*Potentilla erecta*	3	3	3	3	3	V	3
Red-stemmed feather-moss	*Pleurozium schreberi*	7	3	1	-	6	IV	1-7
Soft rush	*Juncus effusus*	1	2	-	4	1	IV	1-4
Marsh thistle	*Cirsium palustre*	3	4	1	-	4	IV	1-4
Marsh willowherb	*Epilobium palustre*	3	2	-	2	2	IV	2-3
Heath wood-rush	*Luzula multiflora*	-	2	1	2	2	IV	1-2
Common bent	*Agrostis capilllaris*	1	2	-	-	2	III	1-2
Water horsetail	*Equisetum fluviatile*	-	1	-	3	2	III	1-3
Marsh cinquefoil	*Potentilla palustris*	-	-	4	6	-	II	4-6
Marsh hair-moss	*Polytrichum commune*	-	-	1	4	-	II	1-4
Sheep's fescue	*Festuca ovina*	-	-	3	-	1	II	1-3
Carnation sedge	*Carex panicea*	-	1	-	-	1	II	1
Common heather	*Calluna vulgaris*	-	-	6	-	-	I	6
Tufted hair-grass	*Deschampsia caespitosa*	-	-	-	4	-	I	4

Common name	Scientific name	Q1	Q2	Q3	Q4	Q5	Frequency	Abundance
Bog bead-moss	*Aulacomnium palustre*	-	3	-	-	-	I	3
Meadow buttercup	*Ranunculus acris*	-	-	-	-	2	I	2
Lesser spearwort	*Ranunculus flammula*	-	-	-	2	-	I	2
Bog asphodel	*Narthecium ossifragum*	-	-	2	-	-	I	-2
Sweet vernal-grass	*Anthoxanthum odoratum*	-	-	1	-	-	I	1
Common lousewort	*Pedicularis sylvatica*	-	-	1	-	-	I	1
Cuckooflower	*Cardamine pratensis*	1	-	-	-	-	I	1
Cocksfoot grass	*Dactylis glomerata*	1	-	-	-	-	I	1
Star sedge	*Carex echinata*	-	-	1	-	-	I	1
Hard-fern	*Blechnum spicant*	-	-	1	-	-	I	1
Common cotton grass	*Eriophorum angustifolium*	-	1	-	-	-	I	1
Devil's-bit scabious	*Succisa pratensis*	-	-	1	-	-	I	1

3.5.D Ecology Report: Bryncir Hedgerows

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1. Introduction

1.1 Background

1.1.1 This document has been prepared on behalf of National Grid Electricity Transmission plc (NGET) who seek to construct and operate the Pentir to Trawsfynydd Reinforcement Project (the 'Project').

1.1.2 This document concerns the section of the Project relating to Bryncir (the proposed works) and is a Technical Appendix to the Environmental Statement (ES) **Volume 3, Chapter 5: Ecology and Nature Conservation** being submitted as part of the Environmental Impact Assessment (EIA), which accompanies the consent applications for the Project.

1.2 Description of the Proposed works

1.2.1 The proposed works would be on agricultural land approximately 750 metres (m) south-west of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen, in the administrative boundary of Gwynedd Council. The approximate centre would be Grid Reference SH 485430, and hereafter referred to as the 'Bryncir works site'.

1.2.2 The Bryncir works site shown in ES **Volume 3, Chapter 2: Bryncir Works, Figure 3.2.1** covers an area approximately 12 hectares (ha).

1.2.3 The proposed works would comprise the following:

- New 400 kilovolt (kV) substation, including a permanent access road.
- New section of 132 kV underground cable.
- Relocation of existing Tower 4ZC067 80 m north-west of its current position.
- Realignment of the SPEN DB route and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner access track.

1.2.4 A description of the proposed works is provided in ES **Volume 3, Chapter 2: Bryncir Works**. The location of the Bryncir works site is shown in ES **Volume 3, Chapter 2: Bryncir Works, Figure 3.2.1.**

1.3 Introduction to the Hedgerow Report

1.3.1 This Hedgerow Survey Report has been prepared as an assessment of the relative importance, nature conservation value and species richness of the hedgerow resource associated with the Bryncir works site plus a 50 m buffer. Hedgerows are a highly valued landscape feature that are characteristic of much of lowland Britain. They are important for landscape, archaeological, cultural and agricultural reasons, and are a significant wildlife habitat. Hedgerows provide an essential refuge for many woodland

and farmland plants and animals, and act as wildlife corridors allowing movement and dispersal between other habitats (Defra, 2007) (Ref. 1.1).

1.3.2 This report identifies where ecologically and historically Important hedgerows have been recorded in the Bryncir works site plus a 50 m buffer, with reference to the Hedgerow Regulations Act 1997 (Ref 1.2) identified through a combination of desk-based assessment and field surveys carried out during 2024 and 2025.

1.3.3 This report also identifies relevant legislation and planning policy relating to hedgerows, which are outlined in **Section 2**.

1.4 Survey Area

1.4.1 All hedgerows in the Bryncir works site plus a 50 m buffer (the 'Survey Area') have been surveyed, as shown in **Appendix A: Figure 3.5.D.1**.

1.5 Objectives

1.5.1 The hedgerow surveys and report:

- Provide baseline information and assessment of hedgerows within the survey area in accordance with The Hedgerow Regulations 1997 (Ref 1.2) to determine if the hedgerows in the Survey Area are classified as ecologically Important.
- Identify hedgerows that may not meet the criteria for importance, but which are of greater species diversity, in particular those that are species-rich.
- Provide the aforementioned information to inform the ES by summarising the extent of hedgerow habitat to be lost (temporarily or permanently) by the proposed works.
- Provide baseline information that can be used as part of the landscape assessment regarding appropriate hedgerow and tree species to include in planting schemes.

1.6 Definition of a Hedgerow

1.6.1 The hedgerow survey followed the approach given in the Hedgerow Survey Handbook (Defra, 2011) (Ref 1.1) and used the broad definition of a hedgerow developed by the Hedgerow Action Plan Working Group. This defines a hedgerow as:

"any boundary line of trees or shrubs over 20 m long and less than 5 m wide at the base, provided that at one time the trees or shrubs were more or less continuous. It includes an earth bank or wall only where such a feature occurs in association with a line of trees or shrubs. This includes 'classic' shrubby hedgerows, lines of trees, shrubby hedgerows with trees and very gappy hedgerows (where each shrubby section may be less than 20 m long, but the gaps are less than 20 m)."

1.6.2 A critical consideration is defining where an individual hedgerow starts and stops. To ensure that definable lengths of hedgerow are identified and surveyed consistently, individual hedgerows have been identified with reference to the Hedgerow Survey Handbook (Defra, 2011) (Ref 1.1):

- The point at which a hedgerow stops and there is a gap of more than 20 m to the next hedgerow (e.g. where the hedgerow ends in the middle of a field).
- The point at which the hedgerow links to a woodland, stands of scrub or a pond.

2. Relevant Legislation and Policy

2.1 Introduction

2.1.1 This section lists the legislation, planning policy framework and guidance that is relevant to hedgerows.

2.1.2 More detailed information can be found in ES **Volume 8, Appendix 1.1.A: Legislation, Policy and Guidance**.

2.2 Hedgerow Regulations 1997

2.2.1 The Hedgerows Regulations 1997 (the Regulations) (Ref 1.2), made under the Environment Act 1995 (Ref 2.1), were introduced in England and Wales in 1997 to protect this characteristic element of the countryside.

2.2.2 The Regulations prevent the removal of Important hedgerows without first submitting a hedgerow removal notice to the local planning authority. This is not required if the removal is part of a planning application (as is the case for the proposed works). However, the Regulations still have value in these circumstances because the prescribed survey methods result in detailed contextual information to inform ecological impact assessment.

2.2.3 The Regulations specify the criteria to be used to determine which hedgerows are Important. The criteria relate to the value of the hedgerows from an archaeological, historical, landscape or ecological perspective (see **Appendix A**). Hedgerows that are younger than 30 years old are excluded if supportive evidence of age can be provided, as are any hedgerows that mark the boundary of a house.

2.2.4 In addition, the Regulations only apply to hedgerows that meet at least one of these criteria:

- Hedgerows that are 20 m or more long.
- Hedgerows that are less than 20 m long, if they are connected at each end to another hedgerow – thereby forming a continuous network of hedgerows. The length of the adjoining hedgerows is immaterial, the significant factor being the connection.
- Any hedgerows that are over 30 years old and qualify as Important under any one of those criteria.

2.3 Environment (Wales) Act 2016

2.3.1 Section 6 of the Environment (Wales) Act 2016 (Ref 2.2) places a duty on public authorities to "*seek to maintain and enhance biodiversity … and in so doing promote the resilience of ecosystems, so far as it is consistent with the proper exercise of those functions*."

2.3.2 To assist in complying with this duty, public authorities must have regard to relevant evidence provided in the State of Natural Resources Report (SoNaRR) (Ref 2.3) and any relevant area statement for an area in which the authority exercises functions, as

well as having regard to the list of species and habitats published under Section 7 of the Act.

2.3.3 Hedgerows are listed under Section 7 of the Act (Boundary and linear features). Section 7 is a list of habitats and species of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. This list is currently under review by the Welsh Government in consultation with National Resources Wales (NRW).

2.4 Planning Policy Wales

2.4.1 Planning Policy Wales (PPW) (Ref 2.4) is the Welsh Government's principal land use planning document, setting out national policies to guide local development plans and decisions. The PPW promotes sustainable development and the protection of natural and cultural heritage across Wales.

2.4.2 In relation to hedgerows, PPW emphasizes the importance of maintaining and enhancing green infrastructure, biodiversity, and landscape features. Hedgerows are recognized as valuable ecological assets, contributing to wildlife corridors, habitat connectivity, and the character of the countryside. Their protection is encouraged through careful planning and management.

2.5 Local Policy

2.5.1 There are several local planning policies set out in the Anglesey and Gwynedd Joint Local Development Plan 2017 (Ref 2.5) that relate to ecology and nature conservation:

2.5.2 Strategic Policy PS 19 relates to conserving and enhancing the natural environment. This policy requires both the protection and enhancement of biodiversity and to enhance or restore networks of natural habitats (of which hedgerows are included therein) in accordance with Policy AMG 5.

2.5.3 Policy AMG 5 relates to the protection and enhancement of local biodiversity. This policy places the requirement to protect and, where appropriate, enhance biodiversity that has been identified as being important to the local area. Further considerations are given to creating, improving and managing wildlife and natural habitats, which includes hedgerows.

2.5.4 Policy PYCFF 4 relates to retaining and complementing natural features through design and landscaping. Hedgerows are mentioned as topographical features to be retained, with the requirement to justify any circumstances that may result in their loss and removal.

2.5.5 The Strategic Policy PS 19 specifically highlights the need to protect, retain or enhance hedgerows of ecological value.

2.5.6 Following a decision by Cyngor Gwynedd and the Isle of Anglesey County Council to cease the joint working agreement on Planning Policy matters on 31 March 2023, the Gwynedd Planning Policy Service has been established.

2.5.7 The process of preparing a new Local Development Plan (LDP) for the Gwynedd Local Planning Authority area only has commenced. The new LDP will cover a period between 2024 and 2039. The Anglesey and Gwynedd Joint LDP continues to provide the local policy framework for decisions on planning applications, until the Gwynedd LDP is adopted.

2.6 National Grid Policy

2.6.1 National Grid Policy (Ref 2.6) seeks to reduce the fragmentation of habitats and species, prevent permanent habitat loss, and deliver new opportunities to reconnect the landscape and enhance the natural environment.

2.7 Biodiversity Policy

2.7.1 As a result of devolution and new country-level and international drivers and requirements, much of the work previously carried out by the UK Biodiversity Action Plan (BAP) (Ref 2.7) is now focused at a country-level rather than a UK-level and the UK BAP was succeeded by the UK 2024 Biodiversity Framework (Ref 2.8).

2.7.2 The original UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland. In Wales the current lists are those under Section 7 of the Environment (Wales) Act 2016 (Ref 2.2), which includes hedgerows as a Habitat of Principle Importance (HoPI) requiring conservation.

2.7.3 The national strategy for biodiversity is delivered at local level via Local Biodiversity Action Plans (LBAP). Species and habitats of local conservation concern or value are included in the LBAP and an action plan is created for each species and certain habitat types.

2.7.4 The proposed works lie in the Gwynedd Local Authority area for which the LBAP is Natur Gwynedd (Ref 2.9).

2.7.5 Cloddiau are included in the Natur Gwynedd LBAP. These features can support a range of bankside and hedgerow flora and fauna. Hedgerows are also linked with many of the other LBAP Habitat Action Plans and Species Action Plans.

2.7.6 The Wales Biodiversity Partnership (WBP) (Ref 2.10) brings together key members from the public, private and voluntary sectors to promote and monitor biodiversity and ecosystem action in Wales. WBP provides a leadership role and an expert steer on priorities for action on biodiversity and ecosystems in Wales. The WBP Steering Group has now formally disbanded and the biodiversity action work programme taken on by the Wales Biodiversity Strategy Board (WBSB) and the WBP working groups.

3. Methodology

3.1.1 A desk study and field surveys were carried out between May 2023 and March 2025, as detailed in the following sections

3.2 Desk Study

Ecologically Important Hedgerows

3.2.1 To inform the survey, a desk-top scoping exercise was carried out using aerial photography (Bing and Google), Ordnance Survey (OS) maps, species records and design layouts to identify potential hedgerows in the survey Area that could be affected by the proposed works. Particular attention was given to areas where access tracks will intersect with hedgerows

Historically Important Boundaries

3.2.2 Information was obtained to inform review and identification of historically Important hedgerows in the Survey Area. In line with the guidance on identifying historic hedgerows (**Appendix B)**, the following was obtained:

- Parish boundaries - taken from the 1901 County Series OS map.
- Tithe Map hedges - interpreted from the Rectified Tithe Maps (dated between 1838 and 1850) (Ref 3.1). The presence and categorisation of historic hedgerows at these locations were assessed and verified through field surveys.
- Cloddiau have been identified where possible through a combination of desk-based study and field surveys.

3.3 Field Survey

3.3.1 The criteria used to identify Important hedgerows are provided in **Appendix B.**

3.3.2 Hedgerows can be species-rich or species-poor. A species-rich hedgerow has on average five or more woody native or archaeophyte species per 30 m length (Ref 1.2). This should be assessed with reference to the species list provided in Appendix 11 of the Hedgerow Survey Handbook (Ref 1.1). However, consistent with Hedgerow Survey Handbook (Ref 1.1), where the hedgerow concerned occurs in upland Wales this threshold is reduced to four or more woody species. Bryncir is approximately 200 m above sea level and is not part of upland Wales. Species-poor hedgerows are those with an average of four or less woody species per 30 m survey section, or three woody species where the hedgerow concerned is in upland Wales.

3.3.3 Important hedgerows are those consisting predominantly (i.e. 80% or more cover) of at least one woody UK native tree or shrub species.

3.3.4 Climbers such as honeysuckle (*Lonicera periclymenum*) and bramble (*Rubus fruticosus* agg.) are recognised as integral to many hedgerows, however they require other woody

plants to be present to form a hedgerow and are not considered woody species for the purposes of survey.

3.3.5 Phase 1 habitat surveys were conducted on multiple occasions between July 2022 and March 2025 to identify and map the habitats present in the survey area (Bryncir works site plus a 50 m buffer). This survey followed the Phase 1 habitat survey methodology (JNCC, 2010) (Ref 3.2) and the Hedgerow Survey Handbook (Defra 2011) (Ref 1.1).

3.3.6 The Phase 1 habitat survey was extended to verify, through field surveys, relevant records from historical maps and the Local Environment Records Centre for North Wales data (Cofnod, 2025) (Ref 3.3). The field surveys assessed all hedgerows against the 'Wildlife and Landscape' criteria detailed in the Hedgerow Regulations 1997 (Ref. 1.2) (refer to **Appendix B**). All hedgerows were appraised against the definitions for species-rich or priority hedgerows provided in the Phase 1 habitat survey handbook (Ref 3.2) and the Hedgerow Survey Handbook (Ref 1.1).

3.3.7 A hedgerow survey of hedgerows within the Survey Area was also carried out in March 2025 to verify the data.

3.3.8 Each hedgerow was inspected in its entirety with data gathered on the number of qualifying tree and shrub species present in 30 m survey sections. The number of 30 m survey sections required was determined by the length of the hedgerow concerned (as measured prior to or during survey) as follows:

- Where the length of the hedgerow did not exceed 30 m all qualifying tree and shrub species present in the hedgerow were counted.
- Where the hedgerow was 31-100 m long, qualifying tree and shrub species were counted for the central 30 m stretch of hedgerow.
- Where the hedgerow was 101-200 m long it was divided into equal halves and qualifying tree and shrub species were counted for the central stretch of 30 m in each half of the hedgerow. A mean species count was derived based on this.
- Where the hedgerow was greater than 201 m long it was divided into equal thirds and qualifying tree and shrub species were counted for the central stretch of 30 m in each third of the hedgerow. A mean species count was derived based on this.

3.4 Nature Conservation Evaluation

3.4.1 The Hedgerow Regulations 1997 (Ref 1.2) have been applied to identify those hedgerows that qualify as Important under the Regulations. However, the Regulations are intended for a very specific purpose, and it is not appropriate that they be applied as the sole criteria for determining the biodiversity value of hedgerows. In addition, Chartered Institute of Ecology and Environmental Management (CIEEM, 2024) (Ref 3.4) guidance has been followed to assess the biodiversity importance of hedgerows in the Survey Area. This allows resources to be assigned to one of the following geographic scales of value: International, National, County, Borough or District and Local (**Table 3-1**).

3.4.2 The assignment of value to a specific resource requires that the assessor make use of relevant published evaluation criteria (where available). The published evaluation criteria for hedgerows are listed in **Table 3-1** against the relevant geographic scale of biodiversity value and are subsequently described in more detail. Where published evaluation criteria do not exist, then it has been necessary for the assessor to apply their best judgement, supported by a reasoned argument.

3.4.3 There are no criteria established that would allow the identification of hedgerows of county or higher importance, although general guidance given in the Biodiversity Methods Handbook (Ref 3.5) has been considered where relevant. Whilst hedgerows are a HoPI in the planning process and are suffering a nationwide deterioration in extent and quality, the habitat has not yet declined to the extent that an individual hedgerow network is of more than county nature conservation value (as supported in the Biodiversity Methods Handbook).

3.4.4 There are no relevant criteria for the identification of hedgerows at borough level or below, only wildlife sites.

Table 3-1 – Geographic scales of biodiversity value listed in descending order of importance and cross-referenced to the relevant published evaluation criteria for hedgerows (based on CIEEM, 2024 (Ref 3.4)

Geographic scale of value	Published evaluation criteria
International	No published criteria, not applicable
National	No published criteria but guidance in Hill et al. (2005) (Ref 3.5)
County	No published criteria but guidance in Hill et al. (2005) (Ref 3.5)
Borough	Not applicable
Local	Not applicable

3.5 Limitations

3.5.1 Ecological desk studies are a valuable tool for understanding the distribution of species and the impact of human activities on ecosystems. However, there are several limitations to these studies. These studies rely on people, companies and authorities to provide and record data. This means that the data may be incomplete or inaccurate, as it is based on the observations of others. Additionally, the data may be biased, as it may be more likely to reflect the presence of common or easily observed species. As the hedgerows have been surveyed by suitably experienced ecologists this is not seen as a significant limitation.

3.5.2 The Tithe Maps (Ref 3.1) reviewed for the historically Important hedgerows are quite variable, with some having every hedge and road boundary marked, while others appear more sparsely recorded.

3.5.3 Due to the timing of the survey, some woodland ground flora may have been missed, which may affect the results of the survey for hedgerow importance.

4. Results

4.1 Ecologically Important and Species-rich Hedgerows

4.1.1 Six hedgerows were classified as Important, in accordance with the Hedgerow Regulations, from the 16 hedgerows surveyed. This equates to 1.85 km of ecologically Important hedgerows in the survey area. Three hedgerows (Hedges 3.4, 3.8 and 3.9) were classified as Important under criterion 7 of the Hedgerow Regulations 1997, and three hedgerows (Hedges 3.3, 3.6 and 3.10) were classified as Important under criterion 8 of the Hedgerow Regulations 1997 (Ref 1.2).

4.1.2 All hedgerows assessed qualified as Priority Habitat as defined by the Environment (Wales) 2016 Act (Ref 2.2).

4.1.3 Two hedgerows (Hedges 3.3, and 3.8) were classified as species-rich. This equates to approximately 350 m of species-rich hedgerows in the survey area. Both of these species-rich hedgerows were also classified as Important. The remaining 14 hedgerows were assessed as being species poor, equating to 3.34 km of species poor hedgerow in the survey area.

Table 4-2 Classification and Species Richness of Hedgerows under the Hedgerow Regulations 1997 (Ref 1.2).

Hedgerow ID	Criteria met for importance	Species-rich Yes or No
3.1	None	No
3.2	None	No
3.3	8	Yes
3.4	7	No
3.5	None	No
3.6	8	No
3.7	None	No
3.8	7	Yes
3.9	7	No
3.10	8	No
3.11	None	No
3.12	None	No
3.13	None	No
3.14	None	No
3.15	None	No
3.16	None	No

4.2 Priority Hedgerows

4.2.1 All sixteen of the surveyed hedgerows were comprised of native tree and shrub species, so all are examples of Section 7 Priority Habitat under the Environment (Wales) Act (Ref 2.2).

4.2.2 Nine of the sixteen hedgerows surveyed (Hedge 3.5, 3.6, 3.7, 3.8, 3.11, 3.13, 3.14, 3.15 and 3.16) are associated with a possible cloddiau, and qualify as a Natur Gwynedd LBAP Priority Habitat. Additional cloddiau are present in the Bryncir works site, but not associated with hedgerows. Please see ES **Volume 8, Appendix 3.5.C: Ecology Report: Habitats Report, Figure 3.5.C.1** for their locations.

4.3 Nature Conservation Evaluation

4.3.1 Hedgerows are not covered by criteria for the identification of Local Wildlife Sites in Gwynedd. Only those hedgerows containing cloddiau have a dedicated Habitat Action Plan in the Natur Gwynedd LBAP (Gwynedd Council, 2003) (Ref 2.9).

4.3.2 All surveyed hedgerows are of national priority under Section 7 of the Environment (Wales) Act (Ref 2.2) with six hedgerows classified as Important under the Hedgerow Regulations 1997 Act (1.2).

4.3.3 None of the Important hedgerows fall within the area of the new substation. Two (H3.3 and H3.10) fall within the 50 m Survey Area, but not in the Bryncir works site. Three are in the Bryncir works site for the SPEN DB route works only in areas of access requirement and existing SPEN DB line poles to be removed or reconnected with the new line. A fourth lies along the B4411 and will be oversailed by the new SPEN DB route. Two non-important –species poor hedges (H3.13 and H3.12) along the A487 require removal to incorporate the new access route for the substations and enable the required visibility splay.

5. Conclusions

5.1.1 Of the sixteen assessed hedgerows:

- Six are Important under the Hedgerow Regulations 1997 (Ref 1.2) (**Appendix A: Figure 3.5.D.1**).
- Two are species-rich hedgerows.
- All are Section 7 Priority Habitat under the Environment (Wales) Act 2016 (Ref 2.2).
- Nine are associated with cloddiau and have a dedicated Habitat Action Plan in the Natur Gwynedd Biodiversity Action Plan LBAP (Gwynedd Council 2003) (Ref 2.9).

5.1.2 All surveyed hedgerows should initially be sought to be retained, or improved. None of the Important hedgerows are in the area of the new substation. Two (H3.3 and H3.10) are in the 50 m Survey Area, nor in the Bryncir works site. Three are within the Bryncir works site for the SPEN DB route works only. One hedge (H3.13) which is both unimportant and species poor is required to be removed along the access road to the substation and to facilitate the new visibility splay.

5.1.3 The Hedgerow Regulations 1997 (Ref 1.2) prevent the removal of Important hedgerows without first submitting a hedgerow removal notice to the local planning authority. This is not required if the removal is part of a planning application, as is the case for the proposed works. In cases where a hedgerow is deemed Important according to the Hedgerow Regulations, the local authority may attach a condition to consent, for example that any removal is offset by appropriate mitigation measures. These measures may include reinstatement or replanting to a predefined standard, or the establishment of an equivalent boundary in another location.

5.1.4 Although six hedgerows are Important under the Hedgerow Regulations 1997 (Ref 1.2), all of the hedgerows present (as reflected by their status as HoPI) have an inherent ecological value individually and as part of the broader hedgerow network. Apart from providing habitat for a diverse range of species, hedgerows also act as valuable corridors for wildlife movement. In line with the provisions of the Environment (Wales) Act 2016 (Ref 2.2), as well as the Local Plan (Ref 2.8), any development proposals for the Bryncir works site should prioritize the preservation and enhancement of these corridors for the benefit of wildlife.

5.1.5 Opportunities for hedgerow enhancement should include targeted gap planting with locally appropriate native species, management to encourage structural diversity, and the creation of buffer strips to improve connectivity with adjacent habitats. Such measures strengthen the resilience of the hedgerow network, increase its biodiversity value, and ensure compliance with best practice for habitat conservation.

5.1.6 Where the removal of hedgerows is necessary to facilitate the proposed works, focus will be required on mitigating (including compensating) any losses by creating new habitats and wildlife links and enhancement of current hedgerows. Two hedgerows requiring removal along the A487 to enable the new access road for the substation and associated visibility splay, will be replaced behind the visibility splay and additional hedgerows created including along the access road.

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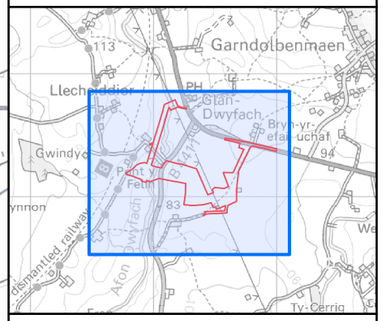
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Appendix A – Figures

Figure 3.5.D.1 –Hedgerow Survey.

BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 50m Buffer of Bryncir Works Site Boundary

Hedgerow Survey Results

- Important Hedgerow Species Rich
- Important Hedgerow Species Poor
- Unimportant Hedgerow Species Poor

Rev	Date	Description	GIS	Chk	App
A	05/08/2025	Environmental Statement	CA	SR	NL

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.5.D.1
HEDGEROW SURVEY

Creator:	Date:	Checker:	Date:	Approver:	Date:
CA	05/08/2025	SR	05/08/2025	NL	05/08/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
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Appendix B – Hedgerow Regulations Criteria

Wildlife and Landscape Criteria

In Gwynedd a hedgerow is important for Wildlife and Landscape if it is at least 30 years old and meets one of the criteria for importance given below.

6. (1) The hedgerow—

(a) contains species listed or categorised as mentioned in sub-paragraph (3); or

(b) is referred to in a record held immediately before the relevant date by a biological record centre maintained by, or on behalf of, a local authority within the meaning of the Local Government Act 1972, and in a form recognised by the Nature Conservancy Council for England, the Countryside Council for Wales or the Joint Nature Conservation Committee, as having contained any such species—

(i) in the case of animals and birds, subject to sub-paragraph (2), within the period of five years immediately before the relevant date.

(ii) in the case of plants, subject to sub-paragraph (2), within the period of ten years immediately before the relevant date;

(2) Where more than one record referable to the period of five or, as the case may be, ten years before the relevant date is held by a particular biological record centre, and the more (or most) recent record does not satisfy the criterion specified in sub-paragraph (1)(b), the criterion is not satisfied (notwithstanding that an earlier record satisfies it).

(3) The species referred to in sub-paragraph (1) are those—

(a)listed in Part I (protection at all times) of Schedule 1 (birds which are protected by special penalties), Schedule 5 (animals which are protected) or Schedule 8 (plants which are protected) to the Wildlife and Countryside Act 1981;

(b)categorised as a declining breeder (category 3) in “Red Data Birds in Britain” Batten LA, Bibby CJ, Clement P, Elliott GD and Porter RF (Eds.), published in 1990 for the Nature Conservancy Council and the Royal Society for the Protection of Birds (ISBN 0 85661 056 9); or

(c)categorised as “endangered”, “extinct”, “rare” or “vulnerable” in Britain in a document mentioned in sub-paragraph (4).

(4) The documents referred to in sub-paragraph (3)(c) are—

(a) of the books known as the British Red Data Books:

1.“Vascular Plants” Perring FH and Farrell L, 2nd Edition, published in 1983 for the Royal Society for Nature Conservation (ISBN 0 902484 04 4);

2.“Insects” Shirt DB (Ed.), published in 1987 for the Nature Conservancy Council (ISBN 0 86139 380 5); and

3.“Invertebrates other than insects” Bratton JH (Ed.), published in 1991 for the Joint Nature Conservation Committee (ISBN 1 873701 00 4); and

(b) of the books known as the Red Data Books of Britain and Ireland:“Stoneworts” Stewart NF and Church JM, published in 1992 for the Joint Nature Conservation Committee (ISBN 1 873701 24 1).

7. (1) Subject to sub-paragraph (2), the hedgerow includes—

(a) at least 7 woody species;

(b) at least 6 woody species, and has associated with it at least 3 of the features specified in sub-paragraph (4);

(c) at least 6 woody species, including one of the following—black-poplar tree (*Populus nigra* ssp *betulifolia*); large-leaved lime (*Tilia platyphyllos*); small-leaved lime (*Tilia cordata*); wild service-tree (*Sorbus torminalis*); or

(d) at least 5 woody species, and has associated with it at least 4 of the features specified in sub-paragraph (4),

and the number of woody species in a hedgerow shall be ascertained in accordance with sub-paragraph (3).

(2) Where the hedgerow wholly or partly in the county (as constituted on 1st April 1997) of the City of Kingston upon Hull, Cumbria, Darlington, Durham, East Riding of Yorkshire, Hartlepool, Lancashire, Middlesbrough, North East Lincolnshire, North Lincolnshire, Northumberland, North Yorkshire, Redcar and Cleveland, Stockton-on-Tees, Tyne and Wear, West Yorkshire or York, the number of woody species mentioned in paragraphs (a) to (d) of sub-paragraph (1) is to be treated as reduced by one.

(3) For the purposes of sub-paragraph (1) (and those of paragraph 8(b))—

(a) where the length of the hedgerow does not exceed 30 metres, count the number of woody species present in the hedgerow;

(b) where the length of the hedgerow exceeds 30 metres, but does not exceed 100 metres, count the number of woody species present in the central stretch of 30 metres;

(c) where the length of the hedgerow exceeds 100 metres, but does not exceed 200 metres, count the number of woody species present in the central stretch of 30 metres within each half of the hedgerow and divide the aggregate by two;

(d) where the length of the hedgerow exceeds 200 metres, count the number of woody species present in the central stretch of 30 metres within each third of the hedgerow and divide the aggregate by three.

(4) The features referred to in sub-paragraph (1)(b) and (d) (which include those referred to in paragraph 8(b)) are—

(a) a bank or wall which supports the hedgerow along at least one half of its length;

(b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;

(c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree;

(d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;

(e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;

(f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;

(g) a ditch along at least one half of the length of the hedgerow;

(h) connections scoring 4 points or more in accordance with sub-paragraph (5);

(i) a parallel hedge within 15 metres of the hedgerow.

(5) For the purposes of sub-paragraph (4)(h) a connection with another hedgerow scores one point and a connection with a pond or a woodland in which the majority of trees are broad-leaved trees scores 2 points; and a hedgerow is connected with something not only if it meets it but also if it has a point within 10 metres of it and would meet it if the line of the hedgerow continued.

8. The hedgerow—

(a) is adjacent to a bridleway or footpath, within the meaning of the Highways Act 1980, a road used as a public path, within the meaning of Section 54 (duty to reclassify roads used as public paths) of the Wildlife and Countryside Act 1981, or a byway open to all traffic, within the meaning of Part III of the Wildlife and Countryside Act 1981, and

(b) includes at least 4 woody species, ascertained in accordance with paragraph 7(3) and at least 2 of the features specified in paragraph 7(4)(a) to (g).

Archaeology and History Criteria

In upland Wales a hedgerow is important for archaeology and historic if it meets the following criteria from Schedule 1 of the Hedgerow Regulations:

1. The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township; and for this purpose “historic” means existing before 1850.

2. The hedgerow incorporates an archaeological feature which is—

(a)included in the schedule of monuments compiled by the Secretary of State under Section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979(7); or

(b)recorded at the relevant date in a Sites and Monuments Record.

3. The hedgerow—

(a) is wholly or partly within an archaeological site included or recorded as mentioned in paragraph 2 or on land adjacent to and associated with such a site; and

(b)is associated with any monument or feature on that site.

4. The hedgerow—

(a)marks the boundary of a pre-1600 AD estate or manor recorded at the relevant date in a Sites and Monuments Record or in a document held at that date at a Record Office; or

(b)is visibly related to any building or other feature of such an estate or manor.

5. The hedgerow—

(a)is recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Enclosure Acts(8); or

(b)is part of, or visibly related to, any building or other feature associated with such a system, and that system—

(i)is substantially complete; or

(ii)is of a pattern which is recorded in a document prepared before the relevant date by a local planning authority, within the meaning of the 1990 Act(9), for the purposes of development control within the authority's area, as a key landscape characteristic

Appendix C – Survey Data

Table C.1 Ecological features of the hedgerows surveyed, and confirmation of whether they are species-rich or important under the Hedgerow Regulations 1997 under Criteria 7 (Ref. 1.2)

Hedge ID	Hedge length (m)	>30 years old?	Mean number of qualifying woody species	*Significant number of trees (no. of trees in hedgerow)?	*Three woodland herbs within 1m of hedge margins	*Gaps <10% of hedge?	*Bank or wall along at least half of hedge?	*Ditch along at least half of hedge?	*Connections scoring four points or more (points scored)?	*Parallel hedge within 15 m?	Protected species (as defined by the Regs)	Important hedgerow (under Criteria)?	Species – rich?
3.1	200	✓	3	✓ (5)	✓	✓	x	x	x (0)	✓	x	x	x
3.2	400	✓	2	x (0)	✓	✓	x	✓	x (0)	✓	x	x	x
3.3	150	✓	5	x (1)	x	✓	x	x	x (0)	✓	x	✓ (8)	✓
3.4	700	✓	4.33	✓ (25)	x	✓	✓	x	x (0)	✓	x	✓ (7)	x
3.5	50	✓	3	✓ (1)	x	x	✓	x	x (0)	✓	x	x	x
3.6	200	✓	2	x (0)	x	✓	✓	x	x (0)	✓	x	✓ (8)	x
3.7	170	✓	3	x (1)	x	✓	✓	x	x (1)	x	x	x	x
3.8	200	✓	5	✓ (5)	x	✓	✓	✓	x (1)	x	x	✓ (7)	✓
3.9	350	✓	4	x (3)	✓	✓	x	✓	x (3)	✓	x	✓ (7)	x
3.10	350	✓	4.66	x (2)	✓	x	x	x	x (1)	✓	x	✓ (8)	x
3.11	150	✓	1.66	x (1)	x	x	✓	x	x (0)	x	x	x	x
3.12	85	✓	2.5	x (0)	✓	✓	x	x	x (2)	✓	x	x	x

Hedge ID	Hedge length (m)	>30 years old?	Mean number of qualifying woody species	*Significant number of trees (no. of trees in hedgerow)?	*Three woodland herbs within 1m of hedge margins	*Gaps <10% of hedge?	*Bank or wall along at least half of hedge?	*Ditch along at least half of hedge?	*Connections scoring four points or more (points scored)?	*Parallel hedge within 15 m?	Protected species (as defined by the Regs)	Important hedgerow (under Criteria)?	Species – rich?
3.13	120	✓	2	x (0)	x	x	✓	x	x (1)	✓	x	x	x
3.14	210	✓	2	✓ (5)	x	x	✓	x	x (2)	x	x	x	x
3.15	125	✓	2.33	x (0)	x	✓	✓	x	x (2)	✓	x	x	x
3.16	230	✓	2.33	x (2)	x	x	✓	x	x (1)	x	x	x	x

Table C.2 Summary of hedgerows parallel to BOATs (bridleway, footpath or byway open to all traffic) and whether they are important under paragraph 8 of the Hedgerow Regulations

Hedge No.	Adjacent to all traffic (BOAT)	4+ Woody Species	2+ of criteria	Important Hedgerow under criteria 8 of Hedgerow Regulations 1997
3.1	✓	x	✓	x
3.2	✓	x	✓	x
3.3	✓	✓	✓	✓
3.4	✓	✓	✓	x
3.5	✓	x	✓	x
3.6	✓	✓	✓	✓
3.7	✓	x	✓	x
3.8	x	✓	✓	x
3.9	✓	✓	✓	x
3.10	✓	✓	✓	✓
3.11	x	x	x	x
3.12	✓	x	x	x
3.13	✓	x	✓	x
3.14	x	x	✓	x
3.15	✓	x	✓	x
3.16	x	x	x	x

Table C.3. Woody species (trees and shrubs) recorded from each of the hedgerows surveyed.

Hedge ID	Alder (*Alnus glutinosa*)	Ash (*Fraxinus excelsior*)	Blackthorn (*Prunus spinosa*)	Common hawthorn (*Crataegus* [illegible])	Eared Willow (*Salix aurita*)	Elder (*Sambucus nigra*)	Goat willow (*Salix caprea*)	Gorse (*Ulex europaeus*)	Hazel (*Corylus avellana*)	Holly (*Ilex aquifolium*)	Pedunculate oak (*Quercus robur*)	Rowan (*Sorbus aucuparia*)	Sessile Oak (*Quercus petraea*)	Sycamore (*Acer pseudoplatanus*)	Willow sp.agg. (*Salix spp.*)	Total
3.1			✓	✓										✓		3
3.2			✓	✓												2
3.3			✓	✓				✓						✓	✓	5
3.4		✓	✓	✓								✓		✓	✓	6
3.5		✓	✓						✓							3
3.6			✓	✓					✓			✓				4
3.7		✓		✓											✓	3
3.8			✓	✓		✓		✓		✓				✓	✓	7
3.9			✓	✓				✓		✓	✓				✓	6
3.10		✓	✓	✓	✓			✓					✓			6
3.11		✓		✓												2
3.12			✓	✓				✓								3
3.13			✓	✓												2
3.14		✓		✓												2
3.15		✓	✓	✓												3

Hedge ID	Alder (*Alnus glutinosa*)	Ash (*Fraxinus excelsior*)	Blackthorn (*Prunus spinosa*)	Common hawthorn (*Crataegus* [illegible])	Eared Willow (*Salix aurita*)	Elder (*Sambucus nigra*)	Goat willow (*Salix caprea*)	Gorse (*Ulex europaeus*)	Hazel (*Corylus avellana*)	Holly (*Ilex aquifolium*)	Pedunculate oak (*Quercus robur*)	Rowan (*Sorbus aucuparia*)	Sessile Oak (*Quercus petraea*)	Sycamore (*Acer pseudoplatanus*)	Willow sp.agg. (*Salix spp.*)	Total
3.16				✓				✓								2

3.5.E: Bryncir Aquatic Survey Report

nationalgrid

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1. Introduction

1.1 Background

1.1.1 This appendix details the approach and findings of the aquatic ecology desk study and aquatic ecology surveys of freshwater habitats undertaken in 2024 within the Bryncir element of the Pentir to Trawsfynydd Reinforcement Project (the 'Project') and has been prepared by AECOM on behalf of National Grid Electricity Transmission plc (NGET). Baseline data presented within this appendix has been used to inform the assessment in the Environmental Statement (ES) **Volume 3, Chapter 5: Ecology and Nature Conservation**.

1.1.2 The terms of reference used to describe the proposed works in this report are broadly consistent with those defined within **Volume 3, Chapter 2: Bryncir Works** of the ES.

1.1.3 This appendix is supported by the **Figure 3.5.E.1**: Aquatic Survey Locations.

1.2 Project Description

1.2.1 This appendix of the ES covers the Bryncir Works element only (as shown in ES **Volume 3 Figure 3.2.2):**

- New 400 kilovolts (kV) substation, including a permanent access road and impermeable surface drainage.
- New section of 132 kV underground cable.
- Relocation of existing Tower 4ZC067 80 m north-west of its current position.
- Realignment of the DB route and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner access track.

1.2.2 Based on the proposed works, the potential impacts associated with the Construction phase are:

- Disturbance – direct and indirect impacts resulting from a change in normal conditions (i.e. increased light, noise, vibration, human activity) that result in individuals or populations of species changing behaviour or range.
- Habitat degradation – indirect impacts resulting in change to condition of aquatic habitats e.g., changes in water quality from chemical pollution or soil spills.
- Species mortality – indirect impacts resulting in change to condition of aquatic habitats e.g., changes in water quality from chemical pollution or soil spills.
- Spread of Invasive Non-Native Species (INNS) – construction methods resulting in spread of INNS.

1.2.3 There are no anticipated Operational or Maintenance impacts to aquatic receptors.

1.3 Scope

1.3.1 Surveys that were undertaken within 2 kilometres (km) of the Bryncir works site have been considered within this baseline.

1.3.2 The desk study and survey work undertaken in 2024 reported in this appendix:

- Outline the legislation and guidance relevant to aquatic receptors, notably: fish, aquatic macrophytes, and aquatic macroinvertebrates;
- Present relative desk study information;
- Provide species data and information on the aquatic macroinvertebrate, macrophyte and fish species and assemblages within the relevant area; and,
- Inform the ecological impact assessment and identification of mitigation measures (where required).

1.3.3 Recommendations for any avoidance, mitigation and enhancement for aquatic species are provided in ES **Volume 3, Chapter 5: Ecology and Nature Conservation**.

1.4 Study Area

1.4.1 The Study Area was defined to include ecological features likely to be at risk from direct and indirect impacts that might arise from the proposed works and is the initial basis for determining a Zone of Influence (ZoI). CIEEM guidance (CIEEM, 2024) (Ref 1.1) defines a ZoI as: *"…the area over which biodiversity features may be affected by biophysical changes as a result of the proposed project and associated activities"*.

1.4.2 The ZoI is based on the:

- Nature of the proposed works, activities, and the potential for effects at the construction, operation and maintenance phases.
- Nature of the land use and habitats in the vicinity, the number of watercourses and waterbodies, their connectivity within and outside of the proposed works area and how they may be used by different species or species groups.
- Habitats, behaviours and preferences of different species or species groups and whether these could be affected both spatially and temporally.

1.4.3 In determining the extent of the ZoI in this assessment, consideration has been given to the fact that these works form a component of a larger overall Project.

1.4.4 All designated sites, sensitive habitats, and protected and notable species that occur within the ecological ZoI of the proposed works have been considered in this assessment.

2. Legislation

2.1.1 This assessment has been undertaken within the context of some or all the following legislative instruments, planning policies and guidance documents:

- Convention on the Conservation of Migratory Species (CMS) of Wild Animals 1979 (or Bonn Convention) (Ref 2.1);
- The Trade in Endangered Species of Wild Fauna and Flora (Amendment) (EU Exit) Regulations 2018 (Ref 2.2);
- Joint Nature Conservation Committee (JNCC) Global Red List (Ref 2.3);
- The Council of Europe's Convention on the Conservation of European Wildlife and Natural Habitats 1979 (or Bern Convention) (Ref 2.4);
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') (Ref 2.5);
- Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 2.6);
- Oslo and Paris Conventions (OSPAR) 1992 (Ref 2.7);
- Environmental Protection Act 1990 (Ref 2.8);
- Environment (Wales) Act 2016 (Ref 2.9);
- The Salmon and Freshwater Fisheries Act (1975) (Ref 2.10);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 'Water Framework Directive' or WFD) (Ref 2.11);
- Wildlife and Countryside Act 1981 (as amended) (WCA) (Ref 2.12);
- The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 2.13);
- The Eels (England and Wales) Regulations 2009 (Ref 2.14);
- Natural Environment and Rural Communities (NERC) Act 2006 (Ref 2.15) and
- JNCC - UK Biodiversity Framework 2024 (Ref 2.16).

3. Methods

3.1 Desk Study

3.1.1 A desk-based study was conducted to identify nature conservation designations, protected and priority habitats, and species relevant to the proposed works.

3.1.2 Designated sites within the Study Area were screened using the Multi Agency Geographic Information for the Countryside (MAGIC) website (Ref 3.1) and using data provided by Cofnod (Ref 3.2) obtained in November 2024, the North Wales Environmental Information Service, following the below criteria:

- 10 km from the Bryncir works site for statutory designated sites of international nature conservation value with aquatic interest (Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Wetlands of International Importance that have been designed under the criteria of the Ramsar Convention of Wetlands (Ramsar), as well as proposed or potential sites);
- 5 km from the Bryncir works site for other statutory designated sites of aquatic interest (Site of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserve (LNR));
- 2 km from the Bryncir works site for non-statutory sites for nature conservation (e.g. Local Wildlife Sites (LWS), candidate LWS (cLWS) and Sites of Importance for Nature Conservation (SINC)); and,
- 2 km from the Bryncir works site for Habitats of Principal Importance (HoPI), as listed under Section 7 of the Environment Wales Act (2016) (Ref 3.9);

3.1.3 Notable (protected and invasive) aquatic receptors (fish, macroinvertebrates, and macrophyte species) within a 2 km from the Bryncir works site from the last 10 years (2014 onwards) were collected from the following sources:

- Cofnod – the Local Environmental Records Centre for North Wales;
- National Biodiversity Network Atlas database (Ref 3.3) – records with licences allowing for commercial use (OGL, CCO and CC-BY); and,
- Natural Resources Wales (NRW) DataMapWales website (Ref 3.4, Ref 3.5 and Ref 3.6)

3.1.4 Water Framework Directive (WFD) waterbodies located within 2 km from the Bryncir work site was also identified from the NRW DataMapWales website (Ref 3.7).

3.2 Aquatic Surveys

3.2.1 Survey sites were selected according to the proposed works watercourse crossings. Four sites were scheduled to be surveyed (**Table 3-1** and **Figure 3.5.E.1)**. The survey sites comprised four running water sites along the Afon Dwyfach; 3E related directly to the Bryncir works site with the remaining three sites being surveyed to provided context to the wider environment in line with existing NRW data. The surrounding ditches were not surveyed as these were categorised as dry during the Terrestrial Phase 1 surveys.

3.2.2 Access to site 3F was not possible and no surveys could be completed here.

3.2.3 All surveys where access was possible were completed within their respective seasons (see subsequent sections) in 2024.

Table 3-1 - Bryncir aquatic survey sites

Site ID	National grid reference	Aquatic scoping	Macro-invertebrates	Macrophytes
3E	SH 48138 43774	✓	✓	✓
3F	SH 47958 44209			No access
3G	SH 47821 44503	✓	✓	n/a
3H	SH 47687 44813	✓	✓	n/a

Aquatic Scoping Surveys

3.2.4 During the initial visit to each survey site, aquatic scoping surveys were completed. This involved a qualified aquatic ecologist completing a walkover to assess the site for its suitability for notable aquatic species (protected and invasive) and therefore the requirement for addition species surveys. This is based on expert judgement and involves assessing hydromorphological features of a watercourse, water quality, and the surrounding riparian environment.

Aquatic Macroinvertebrate Surveys

3.2.5 Aquatic macroinvertebrate surveys were undertaken at three sites on the Afon Dwyfach in 2024, all within 2 km of the proposed Bryncir works site. The specific locations and dates of the surveys are shown in **Table 3-2** below.

Table 3-2 Aquatic macroinvertebrate survey locations and dates

Site name	National grid reference	Survey date	Season	Distance from the works site
3E	SH 48111 43657	01/11/2024	Autumn	0.01 km east
3G	SH 47811 444499	31/10/2024	Autumn	0.77 km north-west
3H	SH 47874 44670	31/10/2024	Autumn	0.95 km north-west

3.2.6 The aquatic macroinvertebrate surveys were undertaken by suitably qualified and experienced aquatic ecologists. Sampling procedures followed those standardised by the Environment Agency (Ref 3.8), which conform to British Standard-European Standard-International Organisation for Standardisation (BS-EN-ISO) 10870:2012 Water Quality – Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters (Ref 3.9). These methods allow characterisation of aquatic macroinvertebrate communities and can be used to

determine whether rare or notable species or communities are present. The samples were taken using a standard Freshwater Biological Association (FBA) (Ref 3.10) pattern kick net (mesh size: 1 millimetres (mm)). The habitats present were proportionally sampled through a combination of kick sampling and sweep sampling for three minutes followed by a one-minute active search of larger substrates in accordance with the standard methods. Collected samples were subsequently preserved in Industrial Methylated Spirit (IMS) for laboratory processing. No surveys were undertaken during or immediately following periods of high flow in accordance with best practice guidance.

3.2.7 Each of the samples collected was sorted and analysed in a laboratory setting by suitably trained and experienced aquatic ecologists. Lists of the aquatic macroinvertebrate taxa present were produced in line with Environment Agency guidance (Ref 3.8). The samples were identified to 'mixed-taxon level' using a stereo-microscope and identified to species level (where practicable), except for the following:

- Worms (*Oligochaeta*), which were identified to sub-class;
- Marsh beetles (*Scirtidae*), which were identified to family;
- True-fly larvae, which were identified to the maximum resolution possible; and
- Immature or damaged specimens, which were identified to the maximum resolution possible on a case-by-case basis.

3.2.8 Aquatic macroinvertebrate species were cross referenced against the JNCC Taxon Designations list (Ref 3.11)) to identify any protected and/or notable species. The survey data was then used to calculate metrics that can be used to inform an assessment of relative nature conservation value, habitat condition, and general degradation as detailed below.

Community Conservation Index (CCI)

3.2.9 A Community Conservation Index (CCI) (Ref 3.12) was calculated for each site as detailed in **0** The CCI classifies many groups of aquatic macroinvertebrates according to their scarcity and nature conservation value in the UK as understood at the time that the classification was developed. Species scores range from 1 to 10, with 1 being Very Common and 10 being Endangered. Since its initial publication, in some cases the references used in the CCI classification to define scarcity and value have been superseded by more recent assessments. The most recent scores have been used within this report.

Lotic-invertebrate Index for Flow Evaluation (LIFE)

3.2.10 Lotic-invertebrate Index for Flow Evaluation (LIFE) scores were calculated using River flow indexing using British benthic macroinvertebrates: a framework for setting hydroecological objectives. Regulated Rivers: Research & Management: An International Journal Devoted to River Research and Management (Ref 3.13). This is an index that links benthic macroinvertebrate data to flow regimes prevailing in UK waters. Flow scores have been allocated to various macroinvertebrates based on species/family abundance and ecological association with different flows, as detailed in **0**. The overall LIFE score for a site is calculated as the sum of the individual scores divided by the number of scoring species/families. LIFE scores increase with current velocity, scores <6.00 generally indicating sluggish or still water conditions and score >7.5 indicate fast flows. LIFE allows the mean flow preference of invertebrates colonising a site to be

determined so that effect of habitat changes such as sediment accumulation can be monitored.

Proportion of Sediment-sensitive Invertebrates (PSI)

3.2.11 Calculations were undertaken to determine the proportion of sediment sensitive macroinvertebrates present using the Proportion of Sediment-sensitive Invertebrates (PSI) index (Ref 3.14). Using this approach, individual taxa of aquatic macroinvertebrate are assigned a Fine Sediment Sensitivity Rating (FSSR) ranging from A to D, as detailed in **0**. The PSI score for each aquatic macroinvertebrate sample was derived from individual species scores and abundances. The derived PSI score corresponds to the percentage of fine sediment-sensitive taxa present in a sample and ranges from 0 to 100, where low scores correspond to watercourses with high fine sediment cover. The PSI score provides an indication of the extent to which watercourses are influenced by fine sediments, and therefore by inference the potential sensitivity of the associated aquatic macroinvertebrate community to changes in silt load and deposition.

Whalley, Hawkes, Paisley & Trigg (WHPT)

3.2.12 The aquatic macroinvertebrate data were analysed to generate the Whalley, Hawkes, Paisley & Trigg (WHPT) (Ref 3.15) score Average Score Per Taxon (ASPT), and Number of scoring taxa (NTAXA) values, which provides an indication of the ecological quality in the watercourse (WFD-UKTAG (Ref 3.15)). This assigns numerical value to taxa according to their sensitivity to organic pollution. The average of the values for each taxon in a sample, known as ASPT is a stable and reliable index of organic pollution. Therefore, these assessments can indicate to what extent an aquatic macroinvertebrate community is exposed to organic pollution (further information is provided in **0**). It is important to note that these indices can vary between geological regions and habitat types. Ditches for example are unable to support many of the high-scoring taxa associated with fast flowing habitats. Therefore, the resultant metrics should be reviewed with an awareness of their potential limitations, and the site-specific context, as described in this report.

3.2.13 The WHPT method has been primarily designed to respond to organic pollution, however it is suitable for monitoring other types of impact and is used for assessing the WFD classification parameter “General degradation” (WFD-UKTAG) Ref 3.15)).

River Invertebrate Classification Tool (RICT)

3.2.14 The resultant WHPT-ASPT and NTAXA values and environmental data collected were processed through the River Invertebrate Classification Tool version 3 (RICT) web application, available on the Freshwater Biological Association website (Ref 3.10)

3.2.15 RICT predicts the WHPT-ASPT and NTAXA scores for the surveyed locations based on the site location, altitude, alkalinity, slope, discharge category, distance from source, channel dimensions and substrate composition. The predicted scores are then compared to actual scores and the output is an Ecological Quality Ratio (EQR). The EQR can be translated into a WFD classification (High, Good, Moderate, Poor, or Bad). Alkalinity data should be obtained from monthly analysis of samples from each over a period of at least one year, whereas here, alkalinity was based on the average of two samples collected during the survey visits, which is typical for an assessment of this type.

3.2.16 Analysis using RICT is only suitable for freshwater (not estuarine or marine) sites on rivers or streams that are naturally permanently flowing. RICT analysis was not undertaken for those sites identified as ditches due the nature (i.e., not naturally permanently flowing condition).

Aquatic Macrophyte Surveys

3.2.17 Aquatic macrophyte (plant) surveys were undertaken in summer 2024 at one location within the site, led by a suitable qualified ecologists **(Table 3-3**). This location was chosen as the waterbody had the greatest potential to be impacted by the proposed works. The recommended optimal period for undertaking aquatic macrophyte surveys is between 1st of June and 30th of September and should not be undertaken during or immediately after periods of high flow.

Table 3-3 - Aquatic macrophyte survey locations and dates

Surface water reference	Watercourse name	National grid reference			Survey date	Distance from the works site
		Upstream	Mid	Downstream		
WCX85	Afon Dwyfach	SH 48125 43810	SH 48139 43776	SH 48136 43745	18/09/2024	Within

3.2.18 The aquatic macrophyte surveys followed guidance set out in the UKTAG River Assessment Method (Macrophytes and Phytobenthos) for use with LEAFPACS2 (Ref 3.15), which conforms to BS EN 14184:2014 Water quality - Guidance for the surveying of aquatic macrophytes in running waters (Ref 3.17). The survey was carried out by walking within the channel of each watercourse along a 100 m transect, where safely accessible. Any inaccessible areas were bypassed as necessary before re-entering the channel at the next available access point. A list of all macrophytes encountered was collated and their relative abundance was recorded using Taxon Cover Values, detailed below (**Table 3-4**).

Table 3-4 - Taxon Cover Value and corresponding percentage macrophyte cover

TCV	Percentage cover by macrophyte taxon
B	Bank only
C1	<0.1%
C2	0.1 to 1%
C3	1 to 2.5%
C4	2.5 to 5%
C5	5 to 10%

TCV	Percentage cover by macrophyte taxon
C6	10 to 25%
C7	25 to 50%
C8	50 to 75%
C9	>75%

3.2.19 Aquatic macrophyte data was processed through the River LEAFPACS2 calculator, available from the WFD UKTAG website (WFD-UKTAG (Ref 3.18). Four metrics were calculated using macrophyte species and groups data:

- River macrophyte nutrient index (RMNI) – Macrophyte taxa are allocated a score based on their relative tolerance of nutrients. The overall observed RMNI score for a survey is the cover weighted average of the individual scores of the different taxa found.
- Number of macrophyte taxa (NTAXA) – The number of scoring taxa recorded in the field survey. Only true hydrophytes are included.
- Number of functional groups (NFG) – Hydrophytes are allocated to one of 24 “functional groups”. These are groups of organisms which exploit a resource in a similar way.
- Cover of filamentous green algae (ALG) – The percentage cover of filamentous green algae over the whole of the surveyed section.

3.2.20 LEAFPACS2 predicts the RMNI, NTAXA and NFG scores for the surveyed reach based on altitude, alkalinity, and slope. The predicted scores are then compared to reference scores and the output is an Ecological Quality Ratio (EQR). The EQR can be translated into a Water Framework Directive (WFD) classification (High, Good, Moderate, Poor, or Bad) as shown in **0**.

3.2.21 River LEAFPACS2 analysis was designed to reflect the impact of nutrient enrichment on macrophyte communities, with High status indicating there is no impact and Bad status indicating there is a severe impact. The method may also be sensitive to alterations in river flow and/or modifications to morphological conditions which may impact macrophyte communities (WFD-UKTAG (Ref 3.16)).

3.2.22 Aquatic macrophyte species were cross referenced against the JNCC Taxon Designations list (Ref 3.11) to identify if any protected and/or notable species were recorded during the surveys.

Fish Surveys

3.2.23 Fish surveys were not completed due to the availability of suitable desk study data.

3.3 Limitations

Desk Study

3.3.1 The desk study is not exhaustive and relies on records being submitted and available within the Study Area.

Field Surveys

3.3.2 Access for the spring surveys was limited due to some land parcels being inaccessible.

3.3.3 Access to site 3F was not available for all surveys and respective seasons.

3.3.4 While this limited the ability to survey, it is believed that the watercourses were adequately accessed for the results of these surveys to be valid and sufficient to inform the ES. Ecosystems are dynamic and constantly changing, and therefore species may move, or new species may be recorded in subsequent years. For this reason and in accordance with current guidance, the field survey data detailed in this report are valid for two years from the date of the survey based on CIEEM, 2018 guidance (Ref 3.19). After this date, updated surveys may be required, and advice should be sought from an appropriately qualified ecologist to determine the survey scope and methods.

4. Results

4.1 Desk Study

Statutory and Non-statutory Designated Sites

4.1.1 A total of five statutory designated sites that contain aquatic ecology features were identified (**Table 4-1**) and 14 non-statutory designated sites were identified within the Study Area (**Table 4-2**).

Table 4-1 - Statutory designated sites located up to 10 km of the Proposed Works Site that contain aquatic features

Site name	Description	Approximate distance from works site
Corsydd Eifionydd/Eifionydd Fens SAC	Annex I habitats that are a primary reason for selection of this site: • Transition mires • Quaking bogs Annex II species that are a primary reason for selection of this site Slender green feather-moss *Drepanocladus (Hamatocaulis) vernicosus*	1.88 km north-east
Rhosgyll Fawr SSSI	Lowland acidic mire	2.80 km south-west
Talhenbont SSSI	Woodland habitat with Afon Dwyfach running through.	3.39 km south-west
Cors Gyfelog SSSI, NNR	Selected for its northern mesotrophic mire, other wetland (swamp) habitat and mature willow carr.	3.59 km north
Afon Ddu SSSI	The Afon Ddu is of special interest for its population of the freshwater pearl mussel (*Margaritifera margaritifera*) which is one of the few remaining breeding populations of this species in Wales. The freshwater pearl mussel is dependent on the	4.66 km east

Site name	Description	Approximate distance from works site
	local salmonid populations' sea trout spawn in the river and native brown trout (*Salmo trutta*) are abundant. There are areas of botanically interesting mire and wet heath adjacent to parts of the river and around Llyn Du which are also important in providing a protective buffer to the river channel and the mussels therein	

Table 4-2 - Non-statutory designated sites located within 2 km from the Proposed Works Site that contain aquatic features

Designation	Site name	Description	Approximate distance from works site
cLWS	Afon Dwyfach	Running water.	Partially in
cLWS	Llystyn Isaf	Marshy grassland and wet heath with acid grassland mosaic.	Partially in
cLWS	Hendy East	Marshy grassland and wet heath with acid grassland mosaic.	0.51 km south-west
cLWS	Ynys Graianog/Gaerwen	Wet heath with acid grassland mosaic and fen.	1.18 km south-west
cLWS	Gwinllan Llystan	Dry heath/acid grassland mosaic; acid grassland; acid/neutral flush.	0.08 km north-east
cLWS	Bryn Eifion	Acid grassland, marshy grassland and wet heath with acid grassland mosaic.	0.18 km north
cLWS	Afon Dwyfor	Running water.	0.95 km south-east
cLWS	Below Derwin Bach	Acid grassland with wet heath and acid grassland mosaic.	1.29 km north
cLWS	Ty'n-rhos	Wet heath with acid grassland mosaic.	1.23 km south
cLWS	Derwin	Marshy grassland and wet heath with acid grassland mosaic.	1.51 km north-west

Designation	Site name	Description	Approximate distance from works site
cLWS	Afon Dwyfach at Bettws Bach	Marshy grassland, broadleaved woodland and standing water.	1.53 km south-west
cLWS	North of Gwinllan Rhos-ddu plantation	Wet heath with acid grassland mosaic and marshy grassland.	1.60 km south-west
cLWS	Ystumcegid	Marshy grassland; basin mire; acid flush; acid grassland; broadleaved woodland.	1.73 km south-east
cLWS	Ystumcegid-isaf	Marshy grassland, wet heath with acid grassland mosaic, broadleaved woodland and acid flush.	1.83 km south-east

Water Framework Directive Status

4.1.2 There are two Water Framework Directive (WFD) waterbodies that have the potential to be impacted either directly or indirectly by the proposed works within the Study Area (**Table 4-3**).

Table 4-3 - Water Framework Directive (WFD) waterbodies located within 2 km of the Works Site

Water body	WFD water body ID	Ecological status	Approximate distance from works site
GB110065053660	Dwyfawr - lower	Good	0.79 km south-east
GB110065053730	Dwyfach	Good	Within

Dwyfawr - Lower

4.1.3 Dwyfawr - lower (WFD water body ID: GB110065053660) is a natural river with a ‘Good’ overall Ecological Status. It is classified as ‘Good’ for fish from surveys completed in 2019 and macrophytes and diatoms in 2018 and 2015, respectively. Moreover, it is classified as ‘High’ for invertebrates from surveys completed in 2015.

Dwyfach

4.1.4 Dwyfach (WFD water body ID: GB110065053730) is a natural river with a ‘Good’ overall Ecological Status. It was classified as ‘High’ for fish in 2019 and for macrophytes and invertebrates in 2018. Furthermore, it was classified as ‘Good’ for diatoms in 2018.

Habitats of Principal Importance (HoPI)

4.1.5 Rivers are HoPI under Section 7 of the Environment (Wales) Act (2016) (Ref 2.9). The Afon Dwyfach and smaller tributaries are present in the Bryncir works site.

Notable Species Identified in the Desk Study

Aquatic Macroinvertebrates

4.1.6 No notable aquatic macroinvertebrate species were identified within 2 km of the works area from all data sources.

Aquatic Macrophytes

4.1.7 No notable aquatic macrophyte species were identified within 2 km of the works from all data sources.

Fish

4.1.8 Five notable and protected fish species were identified within 2 km of the works area. These, along with their respective legislation, are outlined in **Table 4-4** below.

4.1.9 *Lampetra sp*. covers both brook and river lamprey, which have different legislative protections. The larvae of these species (which are found in freshwater) are virtually indistinguishable except when nearing metamorphosis. Following the precautionary principle, it has been assumed that both species are present.

Table 4-4 - Notable fish species identified in the Study Area

Species	Conservation designation(s)	Number of records	Most recent record	Location of the closest record	Data source
European eel (*Anguilla anguilla*)	Global Red List Post 2001 – Critically Endangered Appendix II of the Bonn Convention Section 42 species (Ref 2.1), NERC Act 2006 Section 7 (Species of Principal Importance), Environment (Wales) Act 2016 (Ref 2.9), Eels (England and Wales) Regulations (2.14) Salmon and Freshwater Fisheries Act (SAFFA)	4	2022	0.06 km east	NRW

Species	Conservation designation(s)	Number of records	Most recent record	Location of the closest record	Data source
	(Ref 2.10) OSPAR (Ref 2.7) The Trade in Endangered Species of Wild Fauna and Flora (Amendment) (EU Exit) Regulations 2018 (Ref 2.2)				
Lamprey (*Lampetra sp.*)	Brook lamprey (*L. planeri*): Annex II of the Habitats Directive (Ref 2.5) Appendix III of the Bern Convention (Ref 2.4) River lamprey (*L. fluviatilis*): Annex II and V of the Habitats Directive (Ref 2.5) Appendix III of the Bern Convention (Ref 2.4) Section 7 (Species of Principal Importance), Environment (Wales) Act 2016 (Ref 2.9), Section 42 species, NERC Act 2006 Schedule 4 species (Ref 2.15), The Conservation of Habitats and Species Regulations 2010	2	2022	0.06 km east	NRW
Atlantic salmon (*Salmo salar*)	Appendix III of the Bern Convention (Ref 2.4) Annex II and V of the Habitats Directive (Ref 2.5) OSPAR (Ref 2.7) Section 7 (Species of Principal Importance), Environment (Wales) Act 2016 (Ref 2.9), Schedule 4 species, The Conservation of Habitats and Species	5	2022	0.06 km east	NRW

Species	Conservation designation(s)	Number of records	Most recent record	Location of the closest record	Data source
	Regulations 2010 Section 42 species, NERC Act 2006 (Ref 2.15)				
Brown trout (*Salmo trutta*)	Section 7 (Species of Principal Importance), Environment (Wales) Act 2016 (Ref 2.9), Section 42 species, NERC Act 2006 (Ref 2.15)	6	2022	0.06 km east	NRW

Invasive Non-Native Species and Non-Native Species

4.1.10 Two Invasive Non-Native Species (INNS) were identified in the Study Area. A summary of these and the respective legislation is below in **Table 4-5**. These are not directly aquatic species but are commonly found in the riparian zone, and specifically in the case of Himalayan balsam (*Impatiens glandulifera*), rivers help to facilitate their dispersal.

Table 4-5 - INNS and non-native species recorded within the Study Area

Species	Conservation designation (s)	Number of records	Most recent record	Location of the closest record	Data source
Japanese knotweed (*Fallopia japonica*)	Wildlife and Countryside Act 1981 Schedule 9 (Ref 2.12)	12	2023	0.07 km north-east	Cofnod
Himalayan balsam (*Impatiens glandulifera*)	Wildlife and Countryside Act 1981 Schedule 9 (Ref 2.12), Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 2.6)	36	2022	0.03 km east	Cofnod

4.2 Aquatic Surveys

Aquatic Macroinvertebrate Surveys

4.2.1 The full aquatic macroinvertebrate taxa list is in **0**. A description of the macroinvertebrate community at each site is provided below. When cross-referenced with the JNCC Taxon Designations list (Ref 3.11), the presence of the nationally scarce river skater (*Aquarius najas*) at site 3E was identified. The non-native New Zealand mud snail (*Potamopyrgus antipodarum*) and *Crangonyx pseudogracilis*/*floridanus* were recorded at sites 3G and 3H.

Site 3E

4.2.2 Reach 3E was on the Afon Dwyfach within an area of tilled arable land. The channel (average width: 8.0 m; average depth: 0.40 m) was lightly shaded, with the substrate dominated by boulders (30%) and gravel (30%), with sand (20%), cobble (10%) and pebbles (10%) also present. The reach was dominated by runs, with macrophytes and moss identified during the walkover surveys covering 5% and 2% respectively.

4.2.3 The autumn community at Site 3E was dominated by caddisflies (42%), with snails forming the next dominant group (32%). Notably within this community, a small abundance of the Nationally Scarce river skater, was identified. However, it is of “least concern” according to UK red list guidelines and only considered “Local” according to its Conservation Score.

Site 3G

4.2.4 Reach 3G was in the Afon Dwyfach adjacent to a bridge and was surrounded by arable land. The channel (average width: 7.5 m; average depth: 0.60 m), was unshaded with the substrate being dominated by pebbles (40%), followed by gravels (33%), cobbles (30%) and minor presence of boulders (5%) and sand (2%). The reach was dominated by riffles and glides with macrophytes covering 5% of the channel.

4.2.5 The autumn community of Site 3G was dominated by snails (30%), with 94% of snails constituting of the non-native, non-invasive, New Zealand mud snail and 6% by the wandering snail, *Ampullaceana balthica*. The next dominant group within the community was mayflies (21%). A small abundance of the community also included non-native, non-invasive, *C. pseudogracilis/floridanus* (0.47%).

Site 3H

4.2.6 Reach 3H was on Afon Dwyfach in an arable landscape. The channel (average width: 10 m, average depth: 0.40 m), was unshaded with the substrate dominated by sand (50%), with gravel (20%), cobbles (20%) and pebbles (10%) also present. The reach was dominated by riffles and glides with macrophytes covering 20% of the channel.

4.2.7 The autumn community at 3H, was dominated by caddisflies (41%). Nine caddisfly taxa were identified, with the Glossosomatidae taxa being the majority taxa. The next most abundant group were mayflies (39%), mostly composed by *Baetis rhodani/atlanticus* and *Rhithrogena* species. Both non-native, non-invasive species New Zealand mud snail and *C. pseudogracilis/floridanus* were identified at 3H.

Macroinvertebrate Index Results

4.2.8 **Table 4-6** provides a summary of the macroinvertebrate indices WHPT NTAXA, WHPT ASP, CCI score, LIFE score (species) and PSI score (species) for each survey site.

Table 4-6 - Macroinvertebrate index scores

Site name	Season	WHPT-NTAXA	WHPT-ASPT	CCI score – interpretation	LIFE score (species) - interpretation	PSI score (species) – interpretation
3E	Autumn	17	6.25	10.8 – Fairly High conservation value	7.77– High sensitivity to reduced flows	72.00 – Slightly sedimented
3G	Autumn	22	6.46	7.9 – Moderate conservation value	8.12 – High sensitivity to reduced flows	69.44 – Slightly sedimented
3H	Autumn	22	7.23	9.3 – Moderate conservation value	8.29 – High sensitivity to reduced flows	78.38 – Slightly sedimented

4.2.9 The LIFE scores for all sites during the autumn survey season represented high sensitivity to reduced flows. Site 3H had the highest LIFE score (8.29) and Site 3E in autumn with the lowest LIFE score (7.77).

4.2.10 The PSI score for the autumn sites indicated that all sites were slightly sedimented (PSI score ranging between 69.44 to 78.38).

4.2.11 The CCI score for sites 3G and 3H was interpreted as Moderate conservation value, whereas Site 3E had a CCI score of 10.8 representing a ‘Fairly High’ conservation value.

4.2.12 In autumn 2024, the highest CCI-scoring species was the stonefly, *Protonemura meyeri* (CCI: 5) observed at 3E, 3G and 3H, the River Skater, *Aquarius najas* (CCI: 5), and true bug, *Corixa panzeri* (CCI: 5), all of which achieved a Conservation Score attributed as local. The dragonfly, *Cordulegaster boltonii* (CCI: 4), was also observed at Site 3H and is considered occasional.

4.2.13 In autumn 2024, the average WHPT-NTAXA score across all sites was 20, with the highest score of 22 achieved by Sites 3G and 3H. The WHPT-ASPT scores reflected very good, unpolluted, unimpacted conditions.

RICT Results

4.2.14 **Table 4-7** displays the Ecological Quality Ratio (EQR) and WFD macroinvertebrate status for the WHPT ASPT and NTAXA indices for each riverine survey site surveyed in spring and autumn 2024, alongside the most probable WFD status based on the combination of the modelled distributions for each of ASPT and NTAXA across all classes, termed MINTA (Minimum of NTAXA and ASPT EQRs). Note that, MINTA for all sites are based only on single season values and are included for interpretative purposes only.

4.2.15 Analysis using RICT is only suitable for freshwater (not estuarine or marine sites) rivers or streams that are permanently flowing. All survey sites here met this criterion and were considered for RICT analysis classification.

Table 4-7 - Macroinvertebrate indicative WFD classification.

Index	Season	3E	3G	3H
WHPT-NTAXA Ecological Quality Ratio (EQR)	Autumn	0.74 (Good)	1.00 (High)	0.93 (High)
WHPT-ASPT Ecological Quality Ratio (EQR)	Autumn	0.88 (Good)	0.91 (Good)	1.03 (High)
MINTA most probable WFD invertebrate classification	Autumn	Moderate†	Good†	High†

† MINTA WFD classifications should be completed across the two seasons, whereas the classification presented here is based on the single-season data available and should be treated with caution.

Aquatic Macrophyte Surveys

4.2.16 One macrophyte survey was completed at site WCX85. The full aquatic macrophyte taxa list can be found in **0**. When cross-referenced with the JNCC Taxon Designations list (Ref 3.11), none of the macrophyte taxa identified during the survey were protected and/or notable. The INNS Himalayan balsam was recorded at the site.

4.2.17 WCX85 was a largely cobbled fast-flowing stream with very dense shade from the tree canopy. As a result, the macrophyte community had a very low species richness. This was limited to the bryophytes *Fontinalis antypyretica* and Pelia sp., with the only higher plant present being very small quantities of alternate water-milfoil (*Myriophyllum alterniflorum*).

Macrophyte Indices and WFD Classification

4.2.18 The River Macrophyte Nutrient Index (RMNI), number of macrophyte taxa (NTAXA), Number of Functional Groups (NFG) and cover of filamentous green algae (ALG), observed and predicted scores, overall Ecology Quality Ratio (EQR) and WFD macrophyte status for the WCX85 survey reach are provided in

4.2.19 **Table** 4-8 below.

Table 4-8 - Macrophyte WFD metrics

Metric		WCX85
River macrophyte nutrient index (RMNI)	Observed	4.62
	Predicted	4.82
Number of macrophyte taxa (NTAXA)	Observed	2.00
	Predicted	8.53
Number of functional groups (NFG)	Observed	2.00
	Predicted	5.46
Cover of filamentous green algae (ALG)	Observed	0.00
Overall Ecological Quality Ratio (EQR)	-	0.73
Indicative WFD macrophyte classification	-	Good

4.2.20 The EQR of 0.73 for WCX85 corresponds to a Good WFD status, hence, a risk of low impact by eutrophication and/or modification to morphological conditions.

4.2.21 Alkalinity of all survey sites was <200 milligrams per litre (mg/L), however, analysis of alkalinity data should be treated with caution as it is based on one-point measurements rather than samples collected monthly over a period of at least one year as recommended.

5. Discussion

5.1.1 A desk study and complimentary field surveys were undertaken to help inform the proposed works for the Bryncir substation. This included a review of designated sites and species information of aquatic ecological receptors. Additional surveys were completed to compliment the desk study to provide a holistic assessment of the baseline conditions of the site.

5.2 Designated Sites

5.2.1 There are 5 statutory and 14 non-statutory designated sites within 2 km of the works site that require consideration t due to associated aquatic ecology receptors present at these sites.

5.2.2 Two WFD waterbodies have been identified within the works site and within the 2 km buffer: Dwyfawr – lower (WBID: GB110065053660) and Dwyfach (WBID: GB110065053730), both of which have a Good Ecological Status.

5.3 Aquatic Macroinvertebrates

5.3.1 No notable aquatic macroinvertebrate species were identified in the desk study. Notable species were observed during the Autumn field surveys, with two counts of the nationally scarce river skater, *Aquarius najas* identified at site 3E.

5.3.2 No INNS macroinvertebrates species were detected during the desk study, but two non-native, non-invasive species were identified during the surveys, the New Zealand mud snail, and the freshwater amphipod, *C. pseudogracilis*/*floridanus*. Both of these non-native taxa are wide-spread and common across the UK.

5.3.3 The surveys highlighted that all survey points possessed a macroinvertebrate community adapted towards slightly sedimented conditions with a highly sensitive to reduced flows.

5.3.4 Analysis by RICT demonstrated that sites 3G and 3H retained both good water quality and abundant habitat diversity/quality. However, 3E had a low enough NTAXA EQR (despite being noted Good) to acquire a moderate overall potential WFD classification, inferring habitat diversity/quality is under slight pressure.

5.3.5 A Moderate conservation value was observed for sites 3G and 3H, while a Fairly High conservation value was observed for site 3E, respectively.

5.4 Aquatic Macrophytes

5.4.1 No notable aquatic macrophyte species were recorded in the desk study and field surveys at WCX85.

5.4.2 The INNS Japanese knotweed and Himalayan balsam were identified within 2 km of the works area, however, only Himalayan balsam was identified at the survey site.

5.4.3 Analysis of collected macrophyte data indicated that WCX85 achieved a Good WFD status, hence, a risk of low impact by eutrophication and/or modification to morphological conditions.

5.5 Fish

5.5.1 The desk study revealed the presence of five notable fish species within 2 km of the proposed works, these were: brown trout, European eel, Atlantic salmon and *Lampetra sp*. As previously noted, *Lampetra* sp. covers both brook and river lamprey, which have different legislative protections (outlined in **Section 2**). The larvae of these species (which are found in freshwater) are virtually indistinguishable except when nearing metamorphosis. As such, following the precautionary principle, it has been assumed that both species are present.

5.5.2 All these identified fish, apart from brook lamprey, are migratory.

5.5.3 No invasive and/or non-native fish species were identified during the data search and field surveys.

5.6 Mitigation Measures

5.6.1 Given the presence of protected and non-native species, to inform the ecological impact assessment, mitigation measures have been identified below.

5.6.2 Works where possible should be completed at least 10 m away from watercourses;

5.6.3 Works should be designed to avoid watercourses where practicable;

5.6.4 For Bryncir, no in rivers works are proposed, however the Afon Dwyfach will be crossed (NGR: SH 48003 43186) by the installation of new 132 kV overhead lines to connect with the SPEN DB route which runs north to south through the western extent of the Bryncir works site, west of the Afon Dwyfach. Additional works at Tower 4ZC070, notably the removal of old, and the installation of new, connections between 132 kV SPEN DB route and the 400 kV network will be completed in close proximity to the Afon Dwfach (< 10 m). Due to this, additional mitigation measures may be required.

5.6.5 This report identifies fish as the most notable aquatic receptors herein, and therefore suitable timing of works may need to be completed, where practicable, to avoid impacting the migration and subsequent spawning of these species. To inform these timings it is proposed that pre-construction fish habitat surveys are completed at Afon Dwyfach within the area of Tower 4ZC070. The results will support the baseline survey findings and inform the presence of their respective spawning habitat. This will also help to identify any additional mitigation requirements including the presence of INNS. Where suitable spawning habitat is identified, then suitable timings of works are recommended to avoid impacting the migration and spawning of these species. However, where these species or habitats are absent, then these timings will not need to be considered A summary of these specific timings have been outlined in **Table 6-1** below.

Table 6-1 Key ecological timings for the migratory fish assemblage identified

Receptor	Life Stage	J	F	M	A	M	J	J	A	S	O	N	D
European eel	Glass eel migration				■	■	■						
	Silver eel migration									■	■	■	
Atlantic salmon	Smolt migration			■	■	■							
	Adult migration						■	■	■	■	■		
	Spawning	■									■	■	■
Brown/sea trout	Smolt migration			■	■	■							
	Adult migration						■	■	■	■	■		
	Spawning										■	■	■
River lamprey	Transformer migration	■	■	■									
	Adult migration									■	■	■	
	Spawning				■	■							
Brook lamprey	Spawning				■	■							

5.6.6 It must be noted that these timings represent the worst-case scenarios by accounting for environmental variability that trigger migratory and/or spawning cues i.e. temperature and flow. Therefore, where all species and spawning habitat is present, it is recommended that consultation with NRW is completed to streamline these months based on their local expert knowledge to identify months that they are happy represent the least possible ecological harm.

5.6.7 This provides a worst-case window of least ecological sensitivity between December - February to complete these works. Although there is scope to reduce the seasonal restrictions following the results of habitat surveys and NRW consultation.

5.6.8 Works to be supervised by an Ecological Clerk of Works (ECoW) to identify any additional aquatic ecological constraints.

5.6.9 Construction Environmental Management Plan (CEMP) to be adhered to prevent pollution spills from construction or temporary site drainage. This will also cover appropriate biosecurity measures for INNS.

5.6.10 Any lighting as part of the construction/operation to be directed away from watercourses.

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Appendix A Community Conservation Index (CCI)

The Community Conservation Index (Chadd & Extence, 2004) allows a classification of the nature conservation value associated with a macroinvertebrate community. The CCI score for one sample is derived from individual Conservation Scores (CS), assigned to some species of aquatic macroinvertebrates and relating closely to the available published Red Data Books and subsequently updated Red Lists. Conservation Scores assigned to individual species vary from 1 to 10, as detailed on the **Table A-1** below. The derived CCI scores generally vary from 0 to > 20, as detailed in the **Table A- 2** below. **Table A- 2** below provides a guide to interpreting CCI scores.

Table A-1 Conservation scores from the Community Conservation Index (from Chadd & Extence, 2004)

Conservation score	Relation to Red Data Books
10	RDB1 (Endangered)
9	RDB2 (Vulnerable)
8	RDB3 (Rare)
7	Notable (but not RDB status)
6	Regionally notable
5	Local
4	Occasional (species not in categories 10-5, which occur in up to 10% of all samples from similar habitats)
3	Frequent (species not in categories 10-5, which occur in up to >10-25% of all samples from similar habitats)
2	Common (species not in categories 10-5, which occur in up to >25-50% of all samples from similar habitats)
1	Very common (species not in categories 10-5, which occur in up to >50-100 % of all samples from similar habitats)

Table A- 2 General guide to CCI scores (from Chadd & Extence, 2004)

CCI score	Description	Interpretation
0 to 5.0	Sites supporting only common species and/or community of low taxon richness	Low conservation value
> 5.0 to 10.0	Sites supporting at least one species of restricted distribution and/or a community of moderate taxon richness	Moderate conservation value

CCI score	Description	Interpretation
> 10.0 to 15.0	Sites supporting at least one uncommon species, or several species of restricted distribution and/or a community of high taxon richness	Fairly high conservation value
> 15.0 to 20.0	Sites supporting several uncommon species, at least one of which may be nationally rare and/or a community of high taxon richness	High conservation value
> 20.0	Sites supporting several rarities, including species of national importance and/or a community of very high taxon richness	Very high conservation value

Appendix B Lotic-Invertebrate Index of Flow Evaluation (LIFE)

The Lotic-Invertebrate Index for Flow Evaluation (LIFE) provides an assessment of the impact of variable flows on benthic macroinvertebrate communities (Extence et al., 1999). Under the assessment, individual species of aquatic macroinvertebrates are assigned to a flow group varying from I to VI, as detailed on the **Table B-1** below. The LIFE score for a macroinvertebrate sample is then derived (mean of individual scores) from individual taxon scores and abundances, as detailed in the **Table B-2** . LIFE scores for a macroinvertebrate sample ranges from 1 to 12, where highest scores describe communities adapted to rapid flows.

Table B-1 Flow groups used to derive LIFE scores (from Extence, Balbi & Chadd, 1999)

LIFE score group	Description	Mean current velocity
I	Taxa primarily associated with rapid flows	Typically > 100 centimetres per second (cm/s)
II	Taxa primarily associated with moderate to fast flows	Typically 20 to 100 cm/s
III	Taxa primarily associated with slow or sluggish flows	Typically < 20 cm/s
IV	Taxa primarily associated with (usually slow) and standing waters	
V	Taxa primarily associated with standing waters	
VI	Taxa frequently associated with drying or drought impacted sites	

Table B-2 LIFE scoring matrix combining flow groups and abundance categories (from Extence, Balbi & Chadd, 1999)

Flow Groups	Abundance categories			
	A (1 to 9)	B (10 to 99)	C (100 to 999)	D/E (> 1000)
I	9	10	11	12
II	8	9	10	11
III	7	7	7	7
IV	6	5	4	3
V	5	4	3	2
VI	4	3	2	1

Appendix C Proportion of Sediment-sensitive Invertebrates (PSI)

The Proportion of Sediment-sensitive Invertebrates (PSI) index allows an assessment of the extent to which a water body is composed of, or covered by, fine sediments (Extence, *et al.*, 2013). Under this system, individual species of aquatic macroinvertebrates are assigned a Fine Sediment Sensitivity Rating (FSSR) as detailed in **Table C-1**, and an abundance rating. The PSI score for the aquatic macroinvertebrate sample is then derived from the individual species scores and abundances, as detailed in **Table C-2**. The PSI score corresponds to the percentage of fine sediment-sensitive taxa present in a sample and ranges from 0 to 100, with low scores corresponding to waterbodies with high fine sediment cover (**Table C-2**).

Table C-1 Fine Sediment Sensitivity Rating (FSSR) groups used to derive PSI scores

FSSR group	Description
A	Highly sensitive
B	Moderately insensitive
C	Moderately insensitive
D	Highly insensitive

Table C-2 Abundance categories and scoring matrix used to derive PSI scores

FSSR group	Abundance categories			
	A (1 to 9)	B (10 to 99)	C (100 to 999)	D/E (> 1000)
A	2	3	4	5
B	2	3	4	5
C	1	2	3	4
D	1	2	3	4

Appendix D Whalley, Hawkes, Paisley & Trigg (WHPT) Metric

There are approximately 4,000 species of aquatic macroinvertebrates in the British Isles. To simplify the analysis of the samples and the data we do not identify individual species but only the major types (taxa), mostly at the family taxonomic level. A key piece of information is the number of different taxa at a site. A fall in the number of taxa indicates ecological damage, including pollution (organic, toxic and physical pollution such as siltation, and damage to habitats or the river channel).

The WHPT scoring system (WFD-UKTAG, 2023) is based upon the sensitivity of macroinvertebrate families to organic pollution. It replaces the Biological Monitoring Working Party (BMWP) system[1] previously used in the UK.

The WHPT system assigns a numerical value to about 100 different taxa (known as the WHPT-scoring taxa) according to their sensitivity to organic pollution. In addition to the presence of macroinvertebrate taxa at a sampling Reach, as in the BMWP scoring system, the WHPT system also uses another type of information, this being the abundances of different scoring taxa.

Taxa abundances are classified in four categories (Class 1: 1 to 10 individuals, Class 2: 11 to 100 individuals, Class 3: 101 to 1,000 individuals, and Class 4: > 1,000 individuals). A score (Pressure Sensitivity Scores (PSs)) is then assigned to each taxa, depending of the taxa sensitivity and abundances recorded.

The total WHPT score for a sample corresponds to the sum of PSs of scoring taxa recorded. The Average Score Per Taxon (ASPT) values are calculated as the Sum PSs divided by the number of scoring taxa (NTAXA). As such, three metrics are calculated:

- WHPT score
- NTAXA
- ASPT

Some animals are more susceptible to organic pollution than others, and the presence of sensitive species indicates good water quality. This fact is taken into account by the WHPT metrics.

The most useful way of summarising the biological data was found to be one that combined the number of taxa and the ASPT. The best quality is indicated by a diverse variety of taxa, especially those that are sensitive to pollution. Poorer quality is indicated by a smaller than expected number of taxa, particularly those that are sensitive to pollution. Organic pollution sometimes encourages an increased abundance of the few taxa that can tolerate it. However, maximum achievable values will vary between geological regions. For example, pristine lowland streams in East Anglia will always score lower than pristine Welsh mountain streams because they are unable to support many of the high-scoring taxa associated with fast flowing habitat. WHPT scores and ASPT for different types watercourse are dependent on the quality and diversity of habitat, natural water chemistry (associated with geology, distance from source etc.), altitude, gradient, time of year the sample was taken and other factors.

[1] Hawkes, H., (1997). Origin and development of the Biological Monitoring Working Party score system. *Water Research*, pp. 32(3): 964-968.

Appendix E Macroinvertebrate Taxa List

Table E-1 Macroinvertebrate taxa list in autumn 2024.

Family	Species	3E	3G	3H
Flatworms				
Planariidae	*Polycelis felina*		3	
Snails				
Lymnaeidae	*Ampullaceana balthica*		4	
Hydrobiidae	*Potamopyrgus antipodarum*	49	60	17
Limpets and mussels				
Anyclidae	*Ancylus fluviatilis*	1	3	1
Sphaeriidae	*Pisidium/Euglesa/Odhneripisidium*		1	1
Worms				
Oligochaeta	Oligochaeta	9	40	8
Leeches				
Glossiphoniidae	*Glossiphonia complanata*	1		
Erpobdellidae	*Erpobdella* sp.		2	
Crustaceans				
Crangonyctidae	*Crangonyx floridanus/pseudogracilis*	1	1	1
Mayflies				
Baetidae	Baetidae (juvenile/damaged)	2	7	
Baetidae	*Baetis* sp.	1		1
Baetidae	*Baetis rhodani/atlanticus*	11	7	31
Baetidae	*Alainites muticus*			1
Heptageniidae	*Rhithrogena* sp.			39

Family	Species	3E	3G	3H
Heptageniidae	*Rhithrogena semicolorata*	3	15	
Heptageniidae	*Ecdyonurus* sp.	1	14	8
Stoneflies				
Nemouridae	*Protonemura meyeri*	3	1	6
Nemouridae	*Nemoura avicularis*	1		
Leuctridae	*Leuctra* sp.			1
Perlodidae	*Perlodes mortoni*		4	2
Dragonflies				
Cordulegasteridae	*Cordulegaster boltonii*			2
True bugs				
Gerridae	*Aquarius najas*	1		
Beetles				
Dytiscidae	*Oreodytes sanmarki*		2	
Hydraenidae	*Hydraena gracilis*			1
Elmidae	*Elmis aenea*		2	
Elmidae	*Esolus parallelepipedus*	1		
Elmidae	*Limnius volckmari*		6	3
Caddisflies				
Rhyacophilidae	Rhyacophilidae (juvenile/damaged)			
Glossosomatidae	Glossosomatidae (juvenile/damaged)	50		51
Glossosomatidae	*Glossosoma boltoni*			1
Glossosomatidae	*Agapetus* sp.		4	
Hydropsychidae	*Hydropsyche pellucidula*			2
Hydropsychidae	*Hydropsyche siltalai*	1	1	4
Limnephilidae	Limnephilidae (juvenile/damaged)	1	16	3
Odontoceridae	*Odontocerum albicorne*			4

Family	Species	3E	3G	3H
Goeridae	*Silo* sp.			
Goeridae	*Silo pallipes*	6	2	7
Lepidostomatidae	Lepidostomatidae (juvenile/damaged)			
Lepidostomatidae	*Lepidostoma hirtum*		3	12
Sericostomatidae	Sericostomatidae (juvenile/damaged)			2
Sericostomatidae	*Sericostoma personatum*	6	7	2
True flies				
Chironomidae	Orthocladiinae			5
Simuliidae	*Simulium ornatum* group	1		
Tabanidae			5	
Athericidae	Athericidae			1
Athericidae	*Ibisia marginata*	1	3	

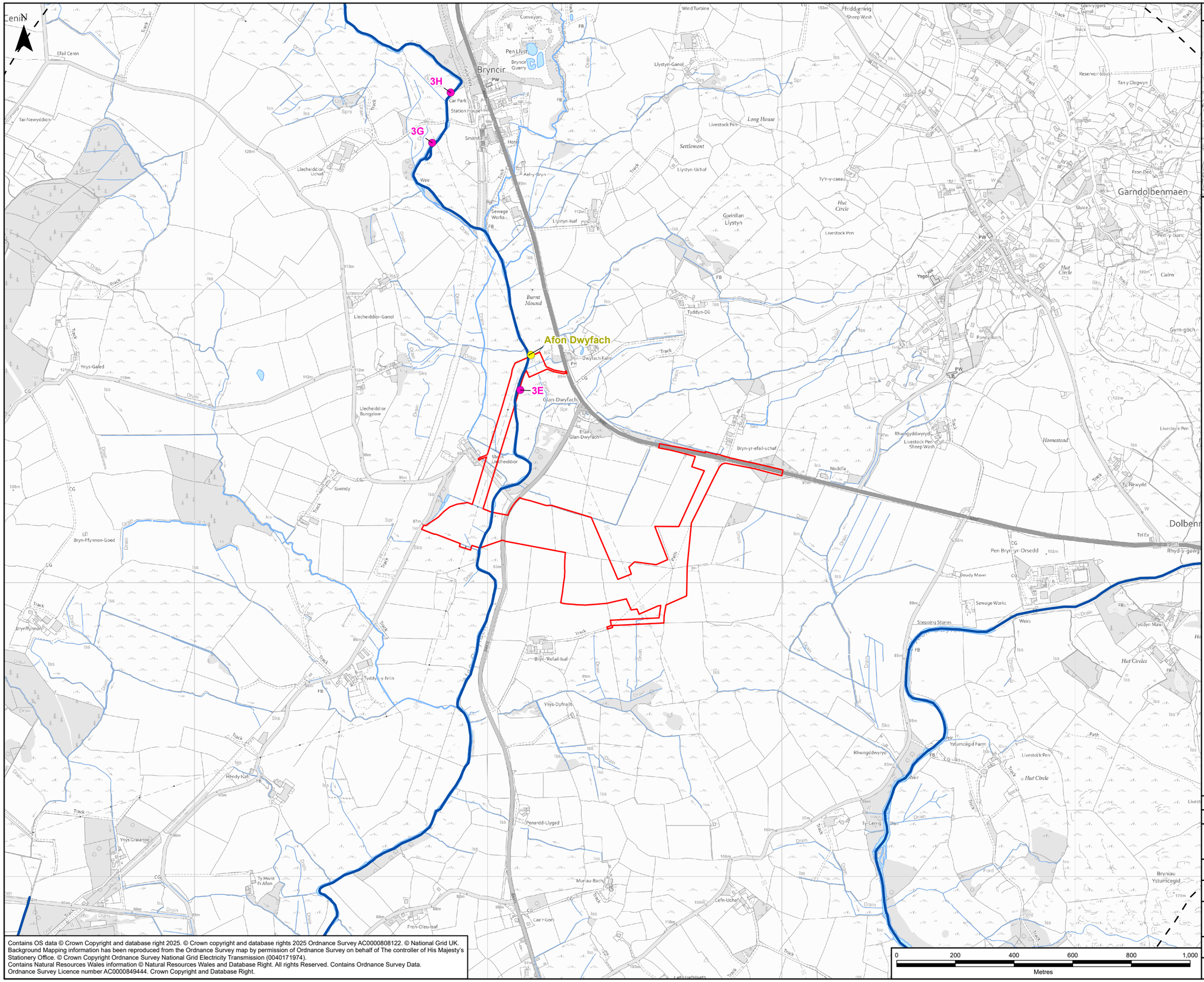
Appendix F Macrophyte Taxa List

Table F-1 Water Framework Directive boundary values for macrophytes in rivers

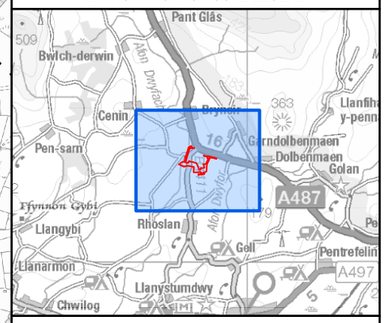
Ecological Quality Ratio (EQR)	WFD ecological status for macrophytes
≥ 0.80	High
≥ 0.60	Good
≥ 0.40	Moderate
≥ 0.20	Poor
< 0.20	Bad

Table F-2 Macrophyte taxa list and associated over values

Scientific name	Common name	Afon Dwyfach
Fontinalis antipyretica	Greater water-moss	C3
Myriophyllum alterniflorum	Alternate water-milfoil	C2
Pellia sp.	Pelia	C1



BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- Main River
- Ordinary Watercourse
- Macroinvertebrate Survey Location
- Macrophyte Survey Location

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Rev	Date	Description	GIS	Chk	App
A	01/08/2025	Environmental Statement	JH	RC	JS

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.5.E.1
AQUATIC SURVEY LOCATIONS

Creator:	Date:	Checker:	Date:	Approver:	Date:
JH	01/08/2025	RC	01/08/2025	JS	01/08/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
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3.5.F Bryncir Bat Survey Report

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1. Introduction

1.1 Introduction

1.1.1 This document has been prepared on behalf of National Grid Electricity Transmission plc (NGET) who seek to construct and operate the Pentir to Trawsfynydd Reinforcement Project (the 'Project').

1.1.2 This document concerns the section of the Project relating to Bryncir (the Bryncir works) and is a Technical Appendix to the Environmental Statement (ES) **Volume 3, Chapter 5: Ecology and Nature Conservation** being submitted as part of the Environmental Impact Assessment (EIA), which accompanies the consent applications for the Project.

1.2 Description of the Proposed Works

1.2.1 The proposed works would be on agricultural land approximately 750 metres (m) south-west of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen ('the Bryncir works site', in the administrative boundary of Gwynedd Council. The approximate centre would be Grid Reference SH 485430.

1.2.2 The Bryncir works site shown in ES **Volume 3, Chapter 2: Bryncir Works, Figure 3.2.1** covers an area approximately 12 hectares (ha).

1.2.3 The proposed works would comprise the following:

- New 400 kV substation, including a permanent access road.
- New section of 132 kV underground cable.
- Relocation of existing Tower 4ZC067 80 m north-west of its current position.
- Realignment of the DB connection route and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner access track.

1.2.4 A description of the proposed works is provided in ES **Volume 3, Chapter 2: Bryncir Works**. The location of the Bryncir works site is shown on ES **Volume 3, Chapter 2: Bryncir Works, Figure 3.2.1**.

1.3 Introduction to the Bat Report

1.3.1 This bat report identifies relevant legislation and planning policy relating to bats, which is outlined in **Section 2** of this report. Baseline information was obtained through desk-based assessments and field surveys, comprising Ground Level Tree Assessments (GLTA) and Night-time Bat Walkovers (NBW), undertaken in the Survey Area, as defined by the desk study, between 2023 and 2025. This report details the approach and findings of the bat surveys, prepared on behalf of NGET. Baseline data presented

in this appendix has been used to inform the assessment in ES **Volume 3, Chapter 5: Ecology and Nature Conservation**.

1.3.2 This technical appendix is supported by the following figures (**Appendix A**):

- **Figure 3.5.F.1**: Relevant Designated Sites for Bats
- **Figure 3.5.F.2**: Bat Species Desk Study Records - CONFIDENTIAL
- **Figure 3.5.F.3**: Bat Roost Suitability of Building and Trees
- **Figure 3.5.F.4**: Night-time Bat Walkover May 2024 & Automated Bat Detector Locations

1.4 Objectives

1.4.1 This report of the surveys undertaken between 2023 and 2025:

- Outlines the legislation and guidance relevant to bats;
- Presents desk study information, such as existing records of bats in 2 km, information on internationally designated sites of relevance to bats in 30 km, and nationally designated sites of relevance to bats in 5 km of the Bryncir works site (Study Area);
- Identifies habitats and features in the Bryncir works site that have the potential to be used by bats;
- Presents the results of GLTAs and Preliminary Roost Assessments of structures undertaken within the Bryncir works site, but also includes a wider area previously under consideration for the site;
- Summarises the results of NBWs and automated bat detector surveys conducted between May and September 2024.

1.4.2 Recommendations for avoidance, mitigation and enhancement for bats are provided in ES **Volume 3, Chapter 5: Ecology and Nature Conservation**.

2. Legislation and Policy

2.1 Introduction

2.1.1 This section lists the legislation, planning policy framework and guidance that is relevant to bats.

2.1.2 More detailed information can be found in ES **Volume 8, Appendix 1.1.A: Legislation, Policy and Guidance**.

2.2 Legislation

2.2.1 All UK bat species are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 2.1). This makes it an offence to deliberately capture, injure or kill a bat; deliberately disturb a bat; or damage or destroy a breeding site or resting place used by a bat.

2.2.2 Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing. Deliberate disturbance of bats includes, in particular, any disturbance that is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species of bat to which the individuals belong.

2.2.3 Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 2.1) remain an offence under the Wildlife and Countryside Act 1981 (as amended) (Ref 2.2), as it is an offence to recklessly disturb, injure, or kill bats, or damage their roosts, although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

2.2.4 A bat roost is defined as being "*any structure or place that is used for shelter or protection*", and since bats regularly move roost site throughout the year, a roost is protected whether or not bats are present at the time.

2.2.5 It is illegal to carry out work affecting bats or their roosts if that work would result in one of the above offences. Licences to permit otherwise illegal activities relating to bats and their roost sites can be issued for specific purposes and by the relevant licensing authority, which in Wales is Natural Resources Wales (NRW). European Protected Species Mitigation Licences (EPSMLs) are issued under the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 2.1). It is an offence not to comply with the terms and conditions of an EPSML once issued.

2.2.6 The Environment (Wales) Act 2016 (Ref 2.3) provides Wales' approach to planning and managing natural resources at a national and local level (Part 1 of the Act). Section 7 of Part 1 of this Act ("*Biodiversity lists and duty to take steps to maintain and enhance biodiversity*") replaces the duty in Section 40 of the Natural Environment and Rural Communities (NERC) Act (2006) (Ref 2.4) in relation to Wales and provides a list of organisms and habitat types in Wales that are considered to be of key significance to sustain and improve biodiversity in relation to Wales. Eight of the UK bat species are listed as species of principal importance within Section 7 of the Act: barbastelle bat (*Barbastella barbastellus)*, Bechstein's bat (*Myotis bechsteinii)*, noctule (*Nyctalus noctula)*, common pipistrelle (*Pipistrellus pipistrellus),* soprano pipistrelle (*Pipistrellus*

pygmaeus), brown long-eared bat (*Plecotus auritus)*, greater horseshoe bat (*Rhinolophus ferrumequinum)* and lesser horseshoe bat (*Rhinolophus hipposideros)*.

2.2.7 Section 6 of the Environment (Wales) Act 2016 (Ref 2.3) places a duty on public authorities to "*seek to maintain and enhance biodiversity*" so far as it is consistent with the proper exercise of those functions. In so doing, public authorities must also seek to "*promote the resilience of ecosystems*". The duty replaces the Section 40 duty in the NERC Act (Ref 2.4), in relation to Wales, and applies to those authorities that fell within the previous duty.

2.2.8 To assist in complying with this duty, public authorities must have regard to relevant evidence provided in the State of Natural Resources Report and any relevant area statement for an area in which the authority exercises functions, as well as having regard to the list of living organisms and habitats published under Section 7 of the Act. Section 7 is a list of species and habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. This list is currently under review by the Welsh Government in consultation with NRW.

2.3 Natural Resources Wales Licences

2.3.1 Any operations that may impact upon bats or their places of rest or shelter may require a NRW EPSML. An EPSML is required where development or construction activity will impact bats through:

- Capturing, injury or killing.
- Damaging or destroying their breeding or resting place.
- Obstructing access to their resting or sheltering place.
- Disturbing a bat while it's in a structure, or place of shelter, or protection.

2.3.2 In the first instance, impacts to bats should be avoided by retaining known or potential roost site such as structures or trees with suitable features. In addition, through considerate construction practices (e.g. restricting work to hours of daylight, avoiding light spill, reducing noise) near to roosts, commuting routes and foraging areas, and through the implementation of buffer zones from known roosts.

2.3.3 Where such buffer zones cannot be implemented, it is likely that the works will require a licence from NRW. The licence application will include a Method Statement using a NRW template, which will stipulate how bats will benefit from mitigation measures, habitat creation, habitat management and habitat maintenance.

2.3.4 Consultation is recommended with NRW where bats may be affected.

2.4 Planning Policy

National Policy

2.4.1 Government planning policy guidance throughout the UK requires local planning authorities to take account of the conservation of protected species when determining planning or development consent applications. This makes the presence of a protected species a material consideration when assessing a development proposal.

2.4.2 In Wales this is implemented through Planning Policy Wales - Edition 12 (PPW (12), February 2024 (Ref 2.6) and is supplemented by Technical Advice Note (TAN) 5 (Ref 2.7) which sets out the land use planning polices of the Welsh Government.

2.4.3 Chapter 6 of PPW (12) sets out the Welsh Government's objectives for the natural heritage of Wales which includes the safeguarding of protected species. It states at paragraph 6.4.35 that "*the presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016, is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population is sustained*". It further states at paragraph 6.4.35 that "*an ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the development management process*."

2.4.4 Planning Policy Wales (12) includes a step-wise approach to protecting and enhancing biodiversity and building resilient ecological networks by ensuring that any adverse environmental effects are minimised and mitigated. PPW (12) also includes the following objectives:

- "Secure the maintenance and enhancement of ecosystem resilience and resilient ecological networks by improving diversity, extent, condition, and connectivity"
- "The contribution of the designated site to wide resilient ecological networks should be recognised and captured as part of a strategic approach to planning policy and decision making";
- "Proposed SSSIs [Sites of Special Scientific Interest] will be treated in the same way as notified SSSIs"
- "Policies for non-statutory sites should make it clear that such designations do not preclude appropriate developments where there are no adverse impacts on the features for which a site is designated and on wider ecosystem resilience".

Local Policy

2.4.5 The following local planning policies set out in the Anglesey and Gwynedd Joint Local Development Plan 2017 (Ref 2.8) relate to ecology and nature conservation which in combination with other planning policies will guide local authority expectations in relation to the proposed works:

- Strategic Policy PS 19 relates to conserving and enhancing the natural environment.
- Policy AMG 5 relates to the protection and enhancement of local biodiversity.
- Policy AMG 6 relates to protecting sites of regional or local significance.

Biodiversity Policy

2.4.6 As a result of devolution, and country-level and international drivers and requirements, much of the work previously carried out by the UK Biodiversity Action Plan (BAP) is now focussed at a country-level rather than a UK-level. The UK BAP was succeeded in July 2012 by the UK Post-2010 Biodiversity Framework. The UK list of priority species and habitats, however, remains an important reference source and has been used to help draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland. In

Wales the current lists are those under Part 1, Section 7 of the Environment (Wales) Act 2016 (Ref 2.3).

2.4.7 The national strategy for biodiversity is delivered at local level via Local Biodiversity Action Plans (LBAP). Species and habitats of local conservation concern or value are included in the LBAP and an action plan is created for each species and certain habitat types (respectively termed Species Action Plans (SAP); and Habitat Action Plans, (HAP)).

2.4.8 The LBAP relevant to the proposed works is the Natur Gwynedd LBAP for Gwynedd developed by a partnership of organisations and individuals (Ref 2.9). A Species Action Plans has been produced for lesser horseshoe bat within the Natur Gwynedd LBAP.

2.4.9 The Wales Biodiversity Partnership (WBP) brings together key members from the public, private and voluntary sectors to promote and monitor biodiversity and ecosystem action in Wales. WBP provides a leadership role and an expert steer on priorities for action on biodiversity and ecosystems in Wales. The WBP Steering Group has now formally disbanded, and the biodiversity action work programme has been taken on by the Wales Biodiversity Strategy Board and the WBP working groups.

3. Methodology

3.1 Desk Study

3.1.1 Desk study data relevant to bats was obtained from the following sources:

- Internationally designated sites for bats up to 30 km and nationally designated sites for bats up to 5 km from the Bryncir works site, using data provided by Cofnod (Ref 3.1), the North Wales Environmental Information Service, most recently updated in November 2024;
- Existing records of bat species from the last 10 years up to 2 km from the Bryncir works site, using data provided by Cofnod (Ref 3.1), most recently updated in November 2024; and
- Habitats of potential importance to bats in the Bryncir works site and surrounding 50 m using aerial photographs and Ordnance Survey maps.

3.2 Field Surveys

Day-time Bat Walkover

3.2.1 A day-time bat walkover was completed to identify any potential features that support roosting, foraging and commuting bats. Information from this walkover was used to inform the survey design and followed guidelines outlined in the Bat Conservation Trust's Bat Surveys for Professional Ecologists (Ref 3.2).

Ground-Level Tree Assessments (GLTA)

3.2.2 GLTA were first undertaken in November 2023 by a lead surveyor who is registered to use the NRW bat survey licence assisted by an ecologist. Further updated surveys were undertaken as required, up to March 2025.

3.2.3 The GLTA surveys were carried out in accordance with guidance outlined within the Bat Conservation Trust's Bat Surveys for Professional Ecologists (Ref 3.2).

3.2.4 Trees were examined from the ground using close focusing binoculars and a high-powered torch to identify Potential Roost Features (PRF) that could be used by bats These could occur as a result of disease or decay (e.g. knot holes, tear outs, cankers), damage (e.g. loose bark, hazard beams, frost cracks) or associated features such as ivy *Hedera helix*. Where possible and features were accessible, trees were also checked externally for any signs of bats such as droppings using close focusing binoculars.

3.2.5 Following the inspections, each tree was either classified as having no PRF (None), further assessment required (FAR) or one or more PRF visible (PRF).

3.2.6 Trees with one or more PRF were given a precautionary category as PRF-I (potential roosting features suitable for individual or a small number of bats) or PRF-M (potential roosting features suitable for multiple or hibernating bats).

Preliminary Roost Assessment – Structures

3.2.7 In November 2023 an external inspection of three buildings was carried out (two barns and a small outhouse) and a bridge in the Survey Area. The external inspection was carried out by an ecologist who is registered to use the NRW bat survey licence using a high-powered torch, endoscope and binoculars.

Table 3-1. Criteria for assessing the suitability of Potential Roost Features (PRF)

Roost suitability	Description for structures
Confirmed	Confirmed signs of bat presence/occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions (e.g., temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions (e.g., temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter protection, appropriate conditions and/or suitable habitat to be used on a regular basis or by large numbers of bats (i.e., unlikely to be suitable for maternity).
Negligible	No obvious habitat features likely to be used by roosting bats.

Night-time Bat Walkovers

3.2.8 Night-time bat walkovers (NBW) were undertaken in the most suitable areas of habitat of the site boundary safely accessible at the time of survey on 27 May 2024, 6 August 2024 and 2 September 2024, with reference to current guidelines (Ref 3.2).

3.2.9 The walkovers commenced at sunset and continued for approximately 2 hours after sunset. The surveys were conducted during suitable weather conditions (i.e., without heavy rain or strong wind, and with a sunset temperature over 10°C).

3.2.10 The route is shown in **Appendix A, Figures 3.5.F.4**. The route was designed to efficiently cover the suitable habitats for bat.

3.2.11 The NBW involved two surveyors commencing the survey at sunset, at which point they waited between 30-60 minutes at a designated start point before proceeding to walk along a pre-determined route as shown on **Appendix A, Figures 3.5.F.4**. The start point was positioned on potential flight lines close to potential roost sources and

potentially higher value feature with regards to foraging and or commuting bats such as woodland edges and hedgerows. All bat activity encountered whilst walking between points was also noted. The direction of the route was varied during each survey visit to ensure different areas of the Survey Area were walked at different times.

3.2.12 Surveyors carried a full spectrum bat echolocation detector (Batlogger M, Batlogger M2 or Anabat Scout) to record bat calls during the survey. The time, location, species (where possible), and direction of flight (where possible) was recorded for each bat pass (discrete burst of echolocation heard, or bat activity observed) encountered during the surveys. The echolocation calls detected for all surveys were recorded in WAV format by the detectors to allow for further analysis in Analook W (version 4.5) or BatExplorer (version 2.2.4.0).

Automated Bat Detector Surveys

3.2.13 Two automated bat detectors (Anabat Swift and SM-4s) were deployed in June, August and September 2024, with one (north) detector being placed in suitable habitat on the edge of the current Bryncir works site and one detector being placed to the South of the current Bryncir works site. The static detectors were both deployed within hedgerows at the edge of field boundaries. Deployment locations are detailed in **Appendix A, Figures 3.5.F.4**.

3.2.14 The automated bat detectors were programmed to constantly record bat activity from 30 minutes before sunset to 30 minutes after sunrise, for a period of five consecutive nights as per guidance (Ref 3.2).

3.2.15 All microphones were located at least 1 metre above the ground, on trees within the hedgerows, so they were clear of vegetation between the adjacent habitats and the microphone. All automated bat detectors were set on default settings to record in full spectrum format.

Automated Bat Detector Monitoring Bat Sound Analysis and Bat Activity Indexes

3.2.16 Bat calls were analysed using Analook W (version 4.5) to determine the number of bat passes and the species recorded during each period of monitoring. The automated static data was collected and analysed to determine the total number of bat passes for each species or species group (depending on the level of identification possible from the recordings made) and used to derive a metric; the Bat Activity Index (BAI) for the relative bat activity at each Survey Area. This analysis provides an indication of seasonal variation in species activity and composition.

3.2.17 BAI values for the Survey Areas are calculated by averaging the number of bat passes per hour over the number of nights. This data was used to calculate the BAI for each location and can be used to compare relative bat abundance and activity for the survey period. For the analysis, the number of survey hours per night (between sunset and sunrise) were 7 hours for June, 10 hours for August, and 11 hours for September.

3.2.18 The term bat ‘pass’ is defined as a single static detector file made up of bat echolocation pulses of a single species, therefore a single bat pass may comprise recordings of one or more bats. It is not possible to separate the pulses out to identify the number of bats involved, so the number of bat passes recorded on static detectors cannot be reliably correlated to actual bat abundance. However, it does provide an

indication of the level of bat activity at a site over a longer period than is recorded during NBWs.

3.2.19 Limited guidance is available on what constitutes low to high bat activity on a site based on number of passes. A relative scale was used for automated bat detector data:

- Low activity: 0-20th percentiles.
- Low to moderate activity: 21st-40th percentiles.
- Moderate activity: 41st-60th percentiles.
- Moderate to high activity: 61st-80th percentiles.
- High activity: 81st-100th percentiles.

3.2.20 For NBW data, relative bat activity levels were described to aid the discussion. No guidance is available on what constitutes low, moderate or high bat activity based on number of passes during an NBW. A relative scale is used in this report where:

- Very low activity is up to 5 passes per survey.
- Low activity is 6 to 25 passes per survey.
- Moderate activity is 26 to 99 passes per survey.
- High activity is 100 passes per survey.

Aerial / Feature Bat Roost Inspection

3.2.21 Trees that require felling or translocation to facilitate the proposed works were subject to an aerial or feature inspection from where the feature or features were accessible, using an endoscope. The objective of the survey was to closely inspect PRF that could not be adequately inspected from the ground, to look for evidence of bat use.

3.2.22 The inspection is carried out by an experienced ecologist who:

- Holds a valid NRW bat survey licence (typically Class 2 or above);
- Is trained and certified in aerial access techniques (e.g. rope and harness, MEWP); and
- Has demonstrated competence in bat ecology and identification.

3.2.23 Surveys are conducted in daylight under safe and suitable weather conditions (dry, low wind). Aerial inspections can be performed year-round.

3.2.24 At height, each PRF is carefully examined using an endoscope or torch. The surveyor records:

- Presence (visual or audible) or absence of bats;
- Signs of use (droppings, urine staining, scratch marks, feeding remains);
- Internal dimensions and microclimatic conditions; and
- PRF condition and suitability rating (low / moderate / high / confirmed).

3.2.25 If a bat is found, the inspection is halted immediately to avoid disturbance. Observations are recorded and the PRF is not probed further. Findings are reported to NRW if required under licence conditions.

Nature Conservation Evaluation

3.2.26 A hierarchical geographical approach has been used to assign a level of biodiversity importance to any bat roosts found, and bat foraging and commuting habitat associated with the Site. This approach is based upon the Chartered Institute for Ecological and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment (Ref 3.3) and the CIEEM Bat Mitigation Guidelines (Ref 3.4), moderated using professional judgement.

3.3 Limitations

3.3.1 The aim of a desk study is to help characterise the baseline context of a project/proposed development and provide valuable background information that would not be captured by field surveys alone. Information obtained during a desk study is dependent upon people and organisations having made and submitted records for the area of interest. A lack of records for a particular bat species does not necessarily mean that the species does not occur in the area searched. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of that project/proposed development.

3.3.2 Access was not granted to the land surrounding the three buildings earmarked for structural preliminary roost assessment and some potential roosting features may have been missed. As these buildings should not be removed or interfered with, this does not pose a significant constraint on development.

3.3.3 During the GLTA, PRFs were surveyed from ground level using binoculars, without the use of an endoscope or aerial inspection. Internal features of cavities, cracks, and holes could not be examined in detail, and it was not possible to confirm the depth, suitability, or occupancy of these features by bats. This introduces uncertainty, as some features may appear suitable from the ground but may prove unsuitable upon closer inspection, while others may be obscured or missed entirely. Consequently, this assessment has adopted a precautionary approach by assigning higher bat roost potential to certain trees than would be the case with more invasive inspection methods. Further survey effort, such as climbing inspections or activity surveys, should be undertaken on those trees due to be impacted, where they cannot be avoided.

3.3.4 NBW were undertaken on the most suitable areas of habitats in the area defined as the site at the time of the surveys. Some areas surveyed in the NBW and GLTA no longer fall within the Bryncir works site, however they are useful to show what activity levels are present within the most suitable areas of habitat safe to access. Areas of marshy grassland closer to the Afon Dwyfach were unsafe to walk across at night. No NBW was undertaken on the site of the substation or cable. This area is of lower quality habitat in comparison to the area surveyed west of the Afon Dwyfach, as it comprises improved grassland with field boundaries dominated by fences and walls, with some hedgerows and cloddiau present mainly to the boundaries or outside of the Bryncir works site. This is not a limitation as the level of activity of bats is anticipated to be lower in the substation location than that recorded in the more suitable habitats surveyed.

4. Results

Desk Study

Statutory Designations

4.1.1 There are two Special Areas of Conservation (SAC) within 30 km of the Bryncir work site which are designated for bats specifically. These include: Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC and Glynllifon SAC located 7.62 km south-east and 9.23 km north-west respectively. There are 12 more statutory designated sites within 30 km of the Bryncir works site which are not designated for bats specifically, of these the closed is Llystyn Isaf SSSI located approximately 0.31 km north west. Bat relevant statutory designations can be found within **Appendix A, 3.5.F.1: Relevant Designated Sites for Bats**.

4.1.2 **Table 4-1** details the designations behind these sites and their distance from the Bryncir works site.

Table 4-1: Bat specific International Statutory Designated Sites within 30 km of the Bryncir works site

Site name	Description	Approximate distance (km) and direction from closest point to the Bryncir works site
Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat SAC	This site is designated for Annex I habitats including old sessile oak woods with holly (*Ilex aquifolium*) and hard fern (*Blechnum spicant*), and priority alluvial forests of alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*). Other qualifying habitats include watercourses with stream water-crowfoot (*Ranunculus* spp.) vegetation, Northern Atlantic wet heaths with cross-leaved heath (*Erica tetralix*), European dry heaths, lime-ash (*Tilio-Acerion*) forests of slopes, screes, ravines and bog woodland. The site is also designated for lesser horseshoe bat, supporting most known maternity roosts in Meirionnydd and several hibernacula, forming the core of the species' Welsh distribution.	7.62 km south east
Glynllifon SAC	The primary Annex II species for which this site is designated is the lesser horseshoe bat. Located in north Wales, the site serves as both a maternity and hibernation site for a	9.23 km north west

	substantial colony, supporting around 6% of the entire UK population.

Existing Bat Species Records

4.1.3 The desk study returned records of at least seven bat species including soprano pipistrelle, common pipistrelle, Daubenton's bat (*Myotis daubentonii*), lesser horseshoe bat, Natterer's bat (*Myotis nattereri*), noctule and brown long-eared bat. There were also recordings of unidentified Myotis (*Myotis sp.)* and pipistrelle species. Records included live sightings, flight records and three confirmed roosts within 2km (noctule 1.76 km, Daubenton's myotis 1.77 km, and common pipistrelle 1.84). (**Appendix A, Figure 3.5.F.2: Bat Species Desk Study Records**).

4.1.4 The closest bat species record was a flight record of common pipistrelle, soprano pipistrelle, lesser horseshoe, natterer's bat, and noctule all recorded 670 m of the Bryncir works site.

Field Surveys

Ground Level Tree Assessments (GTLA)

4.1.5 A total of 35 trees were identified as having PRFs within the Survey Area which were potentially to be impacted or removed by the proposed works. Of these, 15 were estimated as PRF-I (potential roosting features suitable for individual or a small number of bats) with a further 20 trees estimated as PRF-M (potential roosting features suitable for multiple or hibernating bats). Based on the confirmed design of the proposed works, only tree 3.T240 has PRFs that will require removal and translocation which was assessed during a dedicated PRF inspection as being PRF-I and is in the proposed substation location. No other trees with PRFs will be directly impacted. There are seven trees or groups of trees that will require removal or pruning to facilitate the proposed works which have been assessed as having no PRFs; are described in the arboriculture report (ES **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment**) and include T123, T124, G144, G13, G20, H248, H277 (using the tree numbers used in the AIA). Roosting bats are not a constraint upon these trees, hedgerows or groups of trees.

4.1.6 Details of the assessed trees are in **Table 4-2** and photographs are in **Appendix B**. The locations of trees are shown in **Appendix A, Figure 3.5.F.3: Bat Roost Suitability of Building and Trees.** Where there is overlap of assessment between trees for the Proposed Works and that for the Wider Works, both tree numbers have been incorporated onto the figure.

4.1.7 There is the potential that during the construction of the proposed works that access may require pruning some trees with PRF. Although this is not currently anticipated, if this is required the affected trees will need to be subjected to aerial or feature bat roost assessments to determine the presence or likely absence of roosting bats before the trees are pruned.

Table 4-2: GTLA results and their roost feature(s)

Tree reference	Tree description	Bat roost feature	Further survey requirements should tree be affected	BRS Collins (2023) (precautionary assigned category)
Trees identified as being lost or translocated				
3.T240	Mature goat willow (*Salix cinerea*)	Trunk butt rot	Yes – Further survey carried out.	PRF-I
Trees identified as being retained				
3.T75	Mature ash (*Fraxinus excelsior*)	Vertical crack	Yes – Further survey required. Climb not possible	PRF-M
3.T67	Mature ash	Dense ivy cover	Yes – Further survey required. Climb not required	PRF-I
3.TE4	Mature ash	Knot holes and hazard beams	Yes – Further survey required. Climb possible	PRF-M
3.TE3	Mature ash	Knot holes, snapped branches and hazard beams	Yes – Further survey required. Climb possible	PRF-M
3.G47B	Mature ash	Knot holes	Yes – Further survey required. Climb not possible	PRF-M
3.G47A	Mature goat willow (*Salix caprea*)	Vertical crack and hazard beams	Yes- Further survey required. Tree unsafe to climb	PRF-M
3.T40	Semi mature sycamore (*Acer pseudoplatanus*)	Dense ivy and hazard beam	Yes – Further survey required. Climb not required.	PRF-I
3.T42	Mature goat willow	Hazard beam	Yes – Further survey required. Climb not required.	PRF-I
6.T129/3.T129	Mature ash	Dense ivy with possible obscured secondary features	Yes – Further survey required. Climb not required.	PRF-I
3.T121	Mature alder (*Alnus glutinosa*)	Hazard beam	Yes – Further survey required. Climb possible	PRF-M

Tree reference	Tree description	Bat roost feature	Further survey requirements should tree be affected	BRS Collins (2023) (precautionary assigned category)
3.T.E5	Mature goat willow	Knot and rot holes	Yes- Further survey required. Tree unsafe to climb	PRF-M
3.T.E7	Semi mature ash	Rot hole and vertical crack	Yes- Further survey required. Tree unsafe to climb	PRF-M
3.T.E8	Mature beech (*Fagus sylvatica*)	Woodpecker hole and cavity	Yes – Further survey required. Climb possible	PRF-M
3.T.E6	Semi mature ash	Lifted bark	Yes – Further survey required. Climb not required.	PRF-I
3.T.E9	Mature beech	Rot hole and knot hole with potential cavities	Yes – Further survey required. Climb possible	PRF-M
3.T.E10	Mature beech	Wound with potential cavity	Yes – Further survey required. Climb possible	PRF-M
3.T.E11	Mature ash	Knot hole	Yes – Further survey required. Climb possible	PRF-M
3.T.E12	Mature ash	Knot hole and hazard beams	Yes – Further survey required. Climb possible	PRF-M
3.T.E17	Mature ash	Dense ivy cover	Yes – Further survey required. Climb not required.	PRF-I
3.T.E15	Mature ash	Knot hole and hazard beams	Yes – Further survey required. Climb possible	PRF-M
3.T.E16	Mature ash	Knot hole and broken branches	Yes – Further survey required. Climb possible	PRF-M
3.T.E13	Mature oak (*Quercus* sp.)	Dense ivy cover	Yes – Further survey required. Climb not required.	PRF-I
3.T.E14	Mature sycamore (*Acer pseudoplatanus*)	Dense ivy cover	Yes – Further survey required. Climb not required.	PRF-I

Tree reference	Tree description	Bat roost feature	Further survey requirements should tree be affected	BRS Collins (2023) (precautionary assigned category)
3.T.E18	Mature willow (*Salix* sp.)	Rot hole and hazard beams	Yes – Further survey required. Climb not required.	PRF-I
3.T101	Mature alder (*Alnus glutinosa*)	Dense ivy cover	Yes – Further survey required. Climb not required.	PRF-I
3.T102	Mature alder	Dense ivy cover	Yes – further survey required. Climb not required.	PRF-I
3.T104	Mature ash	Dense ivy cover	Yes – further survey required. Climb not required.	PRF-I
3.T98	Alder	Dense ivy cover	Yes – further survey required. Climb not required.	PRF-I
6.T.E1/3.T.E1	Mature hawthorn (*Crataegus monogyna*)	Welds and fluting	Yes – further survey required. Climb not required.	PRF-I
6.T.E2/3.T.E2	Mature goat willow	Large horizontal stem cavity	Yes – Further survey required. Climb possible	PRF-M
3.T253	Semi-mature alder (*Alnus glutinosa*)	Two wounds within trunk with deep cavities	Yes – Further survey required. Climb possible	PRF-M
3.T261	Ash	Woodpecker hole within trunk	Yes – Further survey required. Climb possible	PRF-M
3.T257	Ash	Wound present within secondary trunk	Yes – Further survey required. Climb possible	PRF-M
3.T274	Rowan (*Sorbus acuparia*)	Knot hole and broken trunk	Yes – Further survey required. Climb possible	PRF-M

Preliminary Roost Assessment – Structures

4.1.8 Four structures were assessed for bat roosts. The bridge (B3.1) was assessed as having Low suitability for bat roosts, the outhouse (B3.2) was assessed as having Moderate suitability for roosting bats with the two barns (B3.3 and B3.4) assessed as

having Negligible suitability for bat roosts. Details of the roosting features and their suitability can be found in **Table 4-3** below with photos located in **Appendix B**. The locations of these features are shown in **Appendix A, Figure 3.5.F.3: Bat Roost Suitability of Building and Trees**.

Table 4-3: Preliminary Roost Assessment Results

Building number	Structure type	Potential roosting features	Roosting suitability
B3.1	Stone bridge	Exposed shallow and small cracks and holes within stonework.	Low
B3.2	Outhouse	Pitch slate roof with multiple loose and cracked tiles and cracks in stonework.	Moderate
B3.3	Barn	Shallow and exposed cracks within stone wall	Negligible
B3.4	Barn	Gaps between corrugated metal walls and roof	Negligible

Aerial/Feature Bat Roost Inspection

4.1.9 A feature bat roost inspection was undertaken on tree 3.T240 in July 2025. The inspection was undertaken at ground level of a prominent basal cavity on the tree's east-facing side, using an endoscope. The cavity extended approximately 1.3 m vertically and connects to a secondary opening located on the western face of the tree. The internal inspection revealed that the main cavity narrows to approximately 15 cm in width at a height of 1 metre from ground level. The internal timber exhibits signs of advanced desiccation, with dry and friable substrate, offering little to no suitability for bat roosting. The surrounding callous roll on both the eastern and western sides is tight, with no internal pocketing or extended fissures observed.

4.1.10 From the western opening, two additional cavities were identified extending into the southern fork of the tree. These secondary cavities measure between 20–25 cm in external diameter. The first of these contains a 20 cm deep extension with a 5 cm internal diameter, tapering toward the terminus. The second cavity extends 15 cm and has an internal diameter of approximately 3–4 cm. The internal substrate in both cavities appeared relatively clean, with no accumulation of droppings or insect feeding remains; observed detritus is consistent with invertebrate activity (e.g. slugs, snails, woodlice). No staining, odour, or other field signs commonly associated with bat use (such as grease marks or urine scaling) were observed at any of the entry points.

4.1.11 While the physical structure of the southern fork cavities could, in theory, accommodate a crevice-dwelling bat species, the overall features are of **low suitability (PRF-l)**. Furthermore, the lack of canopy or structural connectivity to adjacent hedgerows reduces the likelihood of regular bat access, making any potential usage by bats incidental or opportunistic.

Night-time Bat Walkovers

4.1.12 **Appendix A, Figures 3.5.F.4** illustrate the route walked, with weather conditions described in **Table 4-4**.

4.1.13 Bat activity was recorded during all three NBWs. Bat passes were associated with areas with ditches, line of trees and hedgerows across all three surveys, with less bat activity recorded in more open field areas.

4.1.14 The Bryncir substation area was assessed as having low activity in May, and high activity in August and September. Soprano pipistrelle was the most frequently recorded species during each of the NBW, with common pipistrelle being the second most recorded species during each of the transects.

4.1.15 Myotis genus bats were the third most recorded group in August and September although no Myotis recordings were made during the May NBW. Noctules were recorded six times during the August NBW and once during the September NBW. No noctule recordings were made during the May NBW.

4.1.16 Lesser horseshoe bats were recorded four times during the August NBW and twice during the September NBW, with no recordings made during the May NBW. Records of lesser horseshoe were picked up during sound analysis and were not observed within the field so their activity type (e.g. foraging commuting is unknown). One Leisler's bat was recorded commuting during the August NBW with no further recordings made during the other NBWs.

4.1.17 There were six recordings of unidentified pipistrelle species during the August NBW with only one recording of unidentified pipistrelle made during each of the NBWs in May and September.

Table 4-4: NBW Survey Timings and Weather Summary

Date	Start/End Time	Weather Conditions
27 May 2024	Start Time: 20:09 End Time: 23:24 Sunset: 20:24	9-15°C, Wind speed 10mph, clear, dry. Wind dropped to occasional low gusts then picked up again after 20:30.
06 August 2024	Start Time: 21:05 End Time: 00:20 Sunset: 21:20	15°C, No wind, Cloud cover 1-3 Oktas, Humidity 62%, dry. Cool in evening, very hot preceding day.
02 September 2024	Start Time: 21:36 End Time: Sunset: 21:45	17°C, light air, broken/heavy clouds, dry, mild

Table 4-5: Number of bat passes per species during NBW

Date	Number of bat passes (bats seen or heard)							Total No. of Bat Passes Bat Activity Level
	Myotis sp.	Common pipistrelle	Soprano pipistrelle	Unidentified pipistrelle (Pipistrellus sp) (50kHz1)	Noctule	Lesser Horseshoe	Leisler's	
27 May 2024	0	3	7	1	0	0	0	11Low
06 August 2024	9	55	106	6	6	4	1	187High
02 September 2024	13	35	77	1	1	2	0	129High

Automated Bat Detector Monitoring Surveys

4.1.18 In June, soprano pipistrelle was the most frequently recorded species at the North Static site, with 155 passes, followed by unidentified pipistrelles (36 passes), common pipistrelle (23 passes), and Myotis sp. (21 passes). Lesser horseshoe bats were also detected, with nine passes, and noctule with 4 passes. The total number of bat passes at the North Static in June was 248. At the South Static site, common pipistrelles were the most frequently recorded species (127 passes), followed by unidentified pipistrelles (92 passes) and soprano pipistrelles (92 passes). Lesser horseshoe bats (11 passes) and brown long-eared bats (10 passes) were also recorded. The total bat activity at South Static in June was 357 passes.

4.1.19 In August, bat activity increased at both locations. At the North Static location, soprano pipistrelles remained the most frequently recorded species with 306 passes, followed by common pipistrelles (89 passes), unidentified pipistrelles (80 passes) and Myotis sp. (74 passes). Lesser horseshoe bats were detected, with five passes. Other species such as noctules (35 passes), serotines (2 passes), and brown long-eared bats (3 passes) were detected at lower levels, resulting in a total of 594 bat passes. At the South Static, soprano pipistrelles again exhibited the highest number of recordings (335 passes), with common pipistrelles (88 passes) as the second most recorded species. Notably, brown long-eared bats showed increased activity at this site (49 passes), while noctules were also observed (24 passes). The total number of bat passes at the South Static location in August was 559.

4.1.20 September saw a substantial increase in bat activity, particularly at the North Static location, where soprano pipistrelles recorded totalled 3182 passes. Common pipistrelles (521 passes) and Myotis sp. (259 passes) were also highly active during this period. Lesser horseshoe bats displayed increased activity, with 36 passes recorded. The total bat passes at northern static location in September was 4054 passes. At the South Static location, soprano pipistrelles had the largest number of recorded passes, with 494 passes, followed by Myotis sp. (42 passes) and common pipistrelles (38 passes). Brown long-eared bats (23 passes) and noctules (22 passes) were also present, contributing to a total of 646 bat passes.

[1] Pipistrelle bats with a peak frequency between 49 kHz and 51 kHz has been classified as 'pipistrelle species' and are either common or soprano pipistrelle.

4.1.21 Overall, soprano pipistrelles consistently exhibited the highest activity levels across all months and locations, with a marked peak in September at the North Static location. The South Static location showed lower overall activity but exhibited a greater diversity of species, including consistent detections of brown long-eared bats and noctules. Lesser horseshoe bats were detected at both sites, with their activity increasing at the Northern Static as the season progressed.

4.1.22 Bat activity was concentrated along commuting lines e.g. hedgerows and foraging areas e.g. lines of trees, hedgerows and watercourses.

4.1.23 The highest number of bat passes was from soprano pipistrelle bats, which may indicate that this species is more reliant on the habitats in the Survey Area.

4.1.24 The survey data suggests lesser horseshoe, serotine (*Eptesicus serotinus*), and some *Myotis* species do not use the Survey Area frequently as there was a much lower number of bat passes recorded for these species.

4.1.25 **Table 4-6** shows the date, sunrise and sunset timings, and weather conditions for each survey with **Table 4-7** summarising the number of passes per bat species across each consecutive night of survey during each Survey month (June, August and September 2024) at each location at the Bryncir works site. Graphical representation of the results is shown in **Graph 4-1**. The data presented in the **Table 4-7** details bat activity recorded over five nights per survey month across two locations, (the North Static location and the South Static location) during June, August, and September 2024. The results illustrate significant spatial and temporal variation in species-specific activity levels.

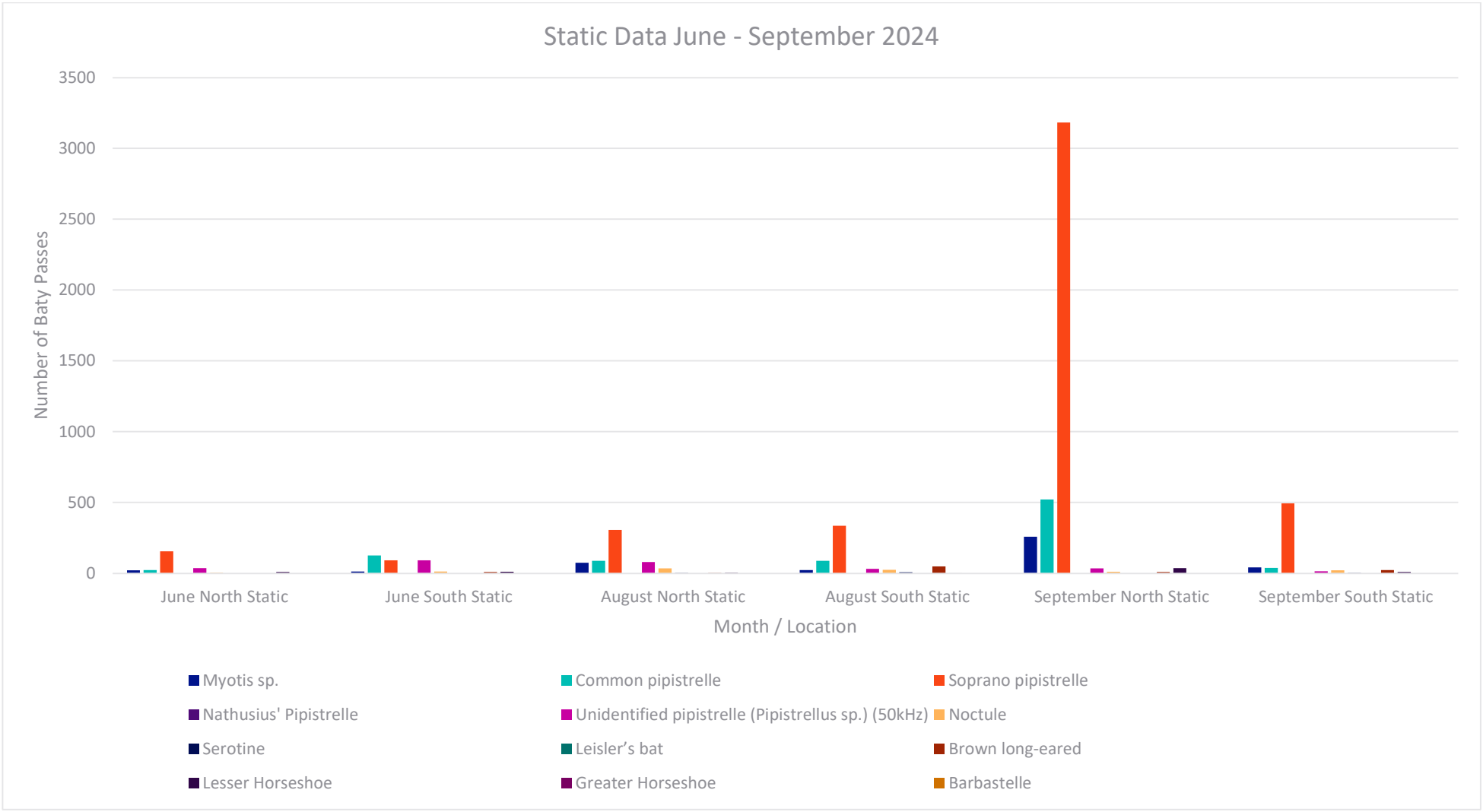
Table 4-6: Automated bat detector survey date, sunrise and sunset timings and weather conditions

Deployment dates	Date	Weather Conditions (temperature range, max wind, precipitation/cloud cover)	Sunrise/Sunset
June 2024	1st June 2024	5°C – 16°C, 7 – 5 mph, clear, dry	04:54, 21:35
	2nd June 2024	12°C – 17°C, 6-11 mph, overcast, dry	04:53, 21:36
	3rd June 2024	12°C – 14°C, 11-25 mph, overcast, dry	04:53, 21:37
	4th June 2024	7°C - 12°C, 9-11 mph, overcast, dry	04:52, 21:38
	5th June 2024	08°C – 12°C, 11-16 mph, over cast, dry	04:51, 21:39
August 2024	6th August 2024	13°C - 15°C, 21 – 24 mph, overcast, dry .	05:42, 21:03
	7th August 2024	14°C-15°C, 16-21 mph overcast then light rain	05:43, 21:01
	8th August 2024	14°C- 17°C, 24 - 29 mph, light rain then overcast	05:45, 20:59
	9th August 2024	15°C - 16°C, 23 mph, overcast then light rain	05:47, 20:57
	10th August 2024	8°C - 21°C, 2 - 8 mph, dry and clear	05:48, 20:55
September 2024	4th September 2024	9°C - 14°C, 6 - 7 mph, overcast, dry	06:31, 20:00
	5th September 2024	14°C - 20°C, 10-19 mph, passing clouds, dry	06:33, 19:57
	6th September 2024	14°C - 22°C, 7 - 11 mph, passing clouds, dry	06:35, 19:55
	7th September 2024	14°C - 18°C, 4 - 8 mph, passing clouds then light rain	06:36, 19:53
	8th September 2024	11°C - 14°C, 11 – 14 mph, light rain then overcast	06:38, 18:50

Table 4-7: Static detector results and Bat Activity Index

Location	Myotis sp.	Common pipistrelle	Soprano pipistrelle	Nathusius' Pipistrelle	Unidentified pipistrelle	Noctule	Serotine	Leisler's bat	Brown long-eared	Lesser Horseshoe	Greater Horseshoe	Barbastelle	Total bat passes (over 5 nights)	Bat Activity Index (mean passes/hr over 5 nights)	Bat Activity Level (Percentile)
June-24															
North Static (Static 1)	21	23	155	0	36	4	0	0	0	9	0	0	248	35.43	Moderate-High
South Static (Static 2)	12	127	92	0	92	13	0	0	10	11	0	0	357	51.00	High
Aug-24															
North Static (Static 1)	74	89	306	0	80	35	2	0	3	5	0	0	594	59.4	High
South Static (Static 2)	23	88	335	0	32	24	7	0	49	1	0	0	559	55.9	High
Sep-24															
North Static (Static 1)	259	521	3182	0	35	11	0	0	10	36	0	0	4054	368.55	High
South Static (Static 2)	42	38	494	0	15	22	2	0	23	10	0	0	646	58.73	High

Graph 4-1 Static data results (July - September 2024)



5. Summary and Evaluation of Results

Roosting Bats

5.1.1 There were no existing records or observations of roosting bats in the Bryncir works site.

5.1.2 A total of 35 trees were identified as having PRFs within the Survey Area. Of these 15 were estimated as PRF-I (potential roosting features suitable for individual or a small number of bats) with a further 20 trees estimated as PRF-M (potential roosting features suitable for multiple or hibernating bats). Only tree 3.T240 is to be removed and translocated; this was determined to be absent of bats and assigned as PRF-I. There are seven trees or groups of trees that will require removal or pruning to facilitate the proposed works which have been assessed as having no PRFs. These are in the arboriculture report (**ES Volume 8, Appendix 3.5.I**) and include T123, T124, G144, G13, G20, H248, H277. Roosting bats are not a constraint on these trees or groups of trees.

5.1.3 Four buildings or structures have potential roosting features. One of these has Moderate potential to support roosting bats, one was assessed as having Low suitability to support roosting bats with two buildings were assessed as having Negligible potential for supporting roosting bats. No buildings are scheduled to be removed or impacted in any way as part of the proposed works.

Foraging and Commuting Bats

5.1.4 Seven species of bat were recorded in the Survey Area during the walked transects and via automated bat detectors. Three of these are relatively common and widespread bat species (common pipistrelle, soprano pipistrelle, and brown long-eared) along with unidentified pipistrelle. One is widespread but locally distributed (noctule), and three are rarer and less common (serotine, Leisler's bat and lesser horseshoe). *Myotis* species have both common and uncommon species within the genus and cannot be assigned to a rarity category.

5.1.5 Most activity recorded was common and soprano pipistrelles, which are the most common species in both the county and in Wales. Lower activity was noted from *Myotis* species, brown long-eared bat, noctule, unidentified pipistrelles, lesser horseshoes and serotine. Behaviours including foraging (with feeding buzzes) and commuting were recorded during the walked transects, occasionally with more than one bat present.

5.1.6 In 2024, seasonal variations in activity were evident. High levels of bat activity were recorded in June, August and September at all automated static detector locations besides the northern static location where bat activity values were recorded as being Moderate-High in June. During September much higher numbers of common pipistrelle, soprano pipistrelle and *Myotis* were observed

compared to other locations and months. These results are somewhat consistent with observations of bat activity during the transect surveys which recorded High activity in August and September, but Low activity in May.

5.1.7 Consistently higher numbers of bats were recorded along ditches, tree lines and hedgerows within the Survey Area demonstrate preferred feeding grounds in these areas. These areas offer greater opportunities for bats to forage, shelter and increased protection from predation. The High and High-Moderate levels of activity across all survey periods are considered likely to be the result of regular or continuous foraging activity by a small number of bats within these areas. This assumption is based on observational data from the transect surveys assessed against the number of individual bats represented in the automated bat detector data, which combined do not necessarily indicate the presence of a large number of bats.

Nature Conservation Evaluation

5.1.8 There are currently no known roosts in the trees or buildings in or adjacent to the Bryncir works site, however there is the potential for bats to roost in trees identified as having PRFs. Taking a precautionary approach, the importance of roosts is of up to County importance for common pipistrelle, soprano pipistrelle, brown-long-eared and Myotis species. Lesser horseshoe can be discounted as there is no suitable roosting habitat for this species in the Bryncir works site. Only one Leisler pass and two very low numbers of serotines passes were recorded during the NBW and from the automated bat detector deployment so these species are likely to be commuting through the Bryncir works site.

5.1.9 Using the method given below in **Table 5-1** (and **Appendix C**), the bat assemblage using the Bryncir work site achieves the threshold for County value for roosting and foraging (Ref 3.3).

5.1.10 Leisler's bat and serotine have been discounted given these species' wide-ranging behaviour, low numbers of bat passes (just one pass for Leisler) and the absence of any evidence of more than a chance transitory occurrence during the bat activity transect surveys.

5.1.11 The main substation site was not included in the NBW. However, the suitability of that habitat is of lower quality than the SPEN DB route works area covered by the NBW. It comprises larger grazed agricultural fields with boundaries of mainly walls and fencings with some hedgerows and cloddiau on the edge of the site and beyond. The section of underground cables to be installed from the substation will only temporarily affect lower quality habitats. The use of this area of the site by bats is likely to be lower, but not greater than equal to, the levels presented in the results and subsequent evaluation.

Table 5-1: Summary of conservation importance of the Site for foraging bats

Species	Importance of roosts	Importance of commuting and foraging habitat (summary of justification)	Importance of assemblage
Widespread: Common pipistrelle Soprano pipistrelle Brown long-eared	No known roosts, however potential for bats to use PRFs in trees. Unlikely to exceed County importance for each species.	There is higher reliance on habitats by two widespread bat species (soprano and common pipistrelles) as demonstrated by the regular use and the large number of passes recorded.	(1 point per species) Score 3 for this part of the assemblage.
Widespread in many geographies but not as abundant in all: Myotis species Noctule	No known roosts, however potential for bats to use PRFs in trees. Unlikely to exceed County importance for each species.	Moderate reliance on habitats by noctule and Myotis species	(2 points per species) Score 6 for this part of the assemblage.
Rarer or restricted distributions: Lesser horseshoe	No known roosts. No suitable roosting habitat.	Moderate reliance on habitats by lesser horseshoe bat	(3 points per species) Score 3 for this part of the assemblage.
Summary evaluation:	County importance as potential roosting habitat.	The commuting and foraging habitats are of County importance for all species.	Overall assemblage is of up to County importance (12 points)

6. Conclusions

6.1.1 No confirmed bat roosts were recorded within the Bryncir works site. However, 356 trees with Potential Roost Features (PRFs) were identified—15 assessed as suitable for individual or small numbers of bats (PRF-I), and 20 assessed as suitable for multiple or hibernating bats (PRF-M). Changes in design and avoidance of trees where possible have limited the number of trees to be affected. Of the trees identified as having suitable bat features, only Tree 3.T240 is proposed for removal, but is to be translocated due to being classified as a veteran tree. This tree has been subject to a detailed PRF inspection and has been classified as PRF-I, with no evidence of roosting bats visible. Should additional trees become affected as the development progresses, they should also be subject to assessments for suitable features, and further pre-construction surveys conducted as required.

6.1.2 Four buildings and structures were assessed for their potential to support roosting bats. One building was assessed as having Moderate potential, one Low, and two Negligible.

6.1.3 Bat activity surveys identified seven species using the works site, including common (e.g. common and soprano pipistrelle and brown long-eared bats) and rarer species (e.g. lesser horseshoe, serotine, noctule and Leisler's bat). Activity was concentrated along ditches, hedgerows, and treelines, particularly during summer and early autumn. These features were frequently used for both foraging and commuting by the more common species and mainly for commuting by those rarer species. The Bryncir works site is of County importance for roosting and foraging.

6.1.4 While no evidence of active bat roosts was found during the survey, several trees with PRF were identified, and the site offers suitable habitat for foraging and commuting bats. To minimise potential impacts on bats during construction and operation of the development, bat-sensitive lighting will be incorporated into the project design. This will follow current best practice guidance (Ref 6.1 and Ref 6.2), avoiding unnecessary illumination of features such as tree lines, hedgerows, and watercourses used by bats for navigation and feeding. Where lighting is necessary, it should be low-level, directional, and use warm-spectrum LEDs to reduce disturbance. These measures will help safeguard local bat populations and ensure the development proceeds in accordance with relevant wildlife legislation and ecological best practice.

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Ref 6.2 Institute of Lighting Professionals (2021). Guidance Note 1 for the reduction of obtrusive light 2021.

Appendix A Figures

Figure 3.5.F.1: Relevant Designated Sites for Bats

Figure 3.5.F.2: Bat Species Desk Study Records - CONFIDENTIAL

Figure 3.5.F.3: Bat Roost Suitability of Building and Trees

Figure 3.5.F.4: Night-time Bat Walkover May 2024 & Automated Bat Detector Locations

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BAE CAERNARFON

Glynllifon SAC

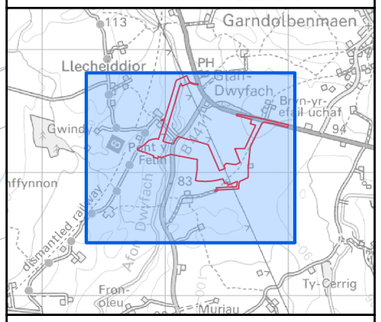
Coedydd Derw a Safleoedd Ystlumod Meirion / Meirionnydd Oakwoods and Bat Sites

Figure 3.5.F.2
CONFIDENTIAL

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3.T40
3.T42
3.G47A
3.G47B
3.T75
3.T.E3
3.T.E4
3.T67
B3.1
6.T129/3.T129
3.T121
B3.3
B3.4
B3.2
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3.T274
3.T261
3.T257
3.T240
3.T253
3.T104
3.T102
3.T98
3.T101
3.T.E5
3.T.E8
3.T.E6
3.T.E7
3.T.E9
3.T.E10
3.T.E11
3.T.E12
3.T.E13
3.T.E14
3.T.E16
3.T.E15
3.T.E18
3.T.E17

BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

Tree - Bat Roost Suitability - Potential Roost Feature (PRF)

PRF-M

PRF-I

Structure - Bat Roost Suitability

Moderate

Low

Negligible

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Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

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BAT ROOST SUITABILITY OF BUILDING AND TREES

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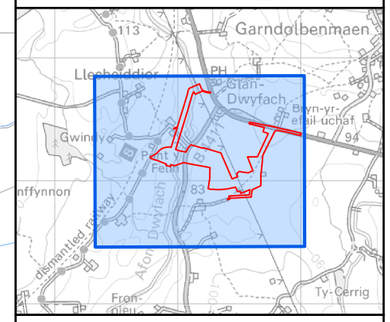
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End point
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Start point
1x CP 22:15
ABD 1
1x Lei 22:19
2x SP 22:25
1x CP 23:10
1x Wh 22:24
2x CP 22:30
1x SP 22:50
1x CP 23:04
1x Noc 23:04
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1x CP 22:51
ABD 2

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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- Automated Bat Detector (ABD) Location
- Route
- Survey Start/End Location

Bat Species (Number of Bats and Record Time)

Pipistrelle Species

- Common pipistrelle (CP)
- Soprano pipistrelle (SP)

Nyctalus Species

- Leisler's (Lei)
- Noctule (Noc)

Bat Species Flight Line (Number of Bats and Record Time)

Pipistrelle Species

- Common pipistrelle (CP)
- Soprano pipistrelle (SP)

Myotis Species

- Whiskered (WH)

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Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

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NIGHT-TIME BAT WALKOVER MAY 2024
& AUTOMATED BAT DETECTOR LOCATIONS

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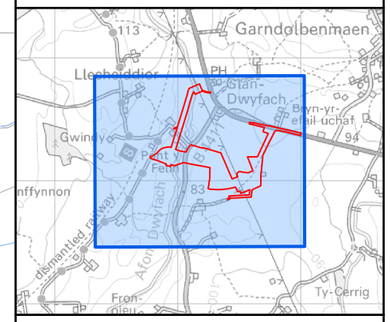
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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- Automated Bat Detector (ABD) Location
- Route
- Survey Start/End Location

Bat Species (Number of Bats and Record Time)

Pipistrelle Species

- Common pipistrelle (CP)
- Soprano pipistrelle (SP)

Nyctalus Species

- Noctule (Noc)

Species

- Unknown (Unk)

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Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

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NIGHT-TIME BAT WALKOVER AUGUST 2024
& AUTOMATED BAT DETECTOR LOCATIONS

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CP 20:47

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Start point

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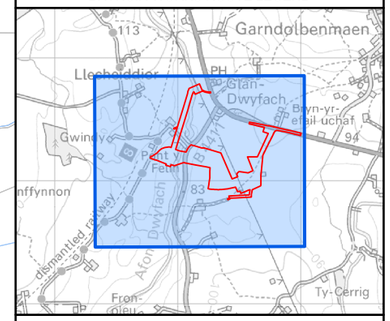
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ABD 2

BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- Automated Bat Detector (ABD) Location
- Route
- Survey Start/End Location

Bat Species (Number of Bats and Record Time)

Pipistrelle Species

- Common pipistrelle (CP)
- Soprano pipistrelle (SP)

Nyctalus Species

- Noctule (Noc)

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NIGHT-TIME BAT WALKOVER SEPTEMBER 2024
& AUTOMATED BAT DETECTOR LOCATIONS

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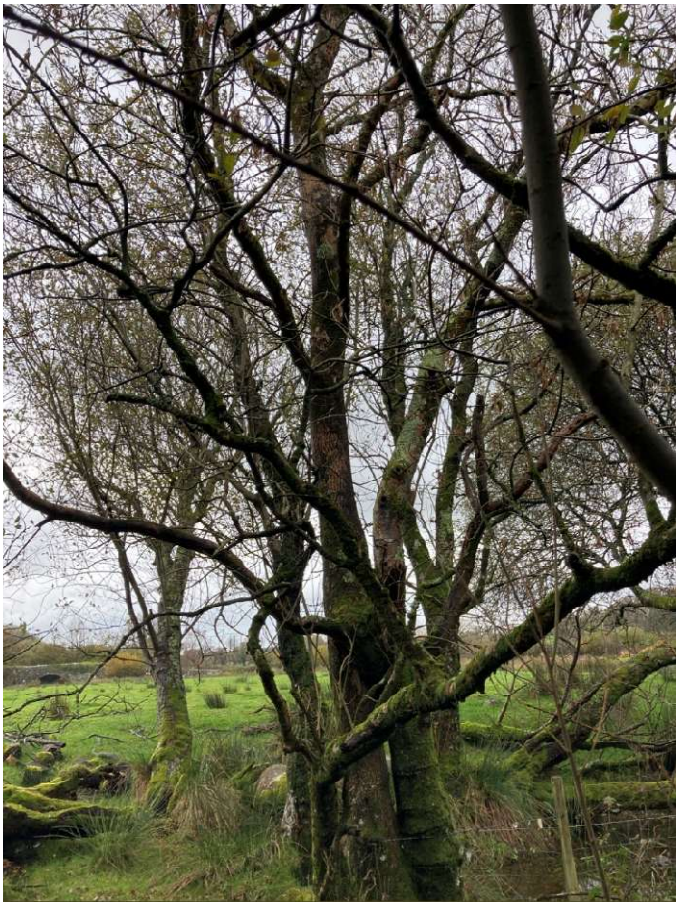
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Appendix B Photographs

Tree or Building Number and Feature	Photograph
3.T75 Ash with vertical crack	
3.T67 Ash with dense ivy cover	

Tree or Building Number and Feature	Photograph
3.T.E4 Ash with knot holes and hazard beams	
3.T.E3 Ash with knot holes, snapped branches and hazard beams	

Tree or Building Number and Feature	Photograph
3.G47B Ash with knot holes	
3.G47A Goat willow with vertical crack and hazard beams	

Tree or Building Number and Feature	Photograph
3.T40 Sycamore with dense ivy and hazard beam	
3.T42 Goat willow with hazard beam	

Tree or Building Number and Feature	Photograph
6.T129/3.T129 Ash with dense ivy with possible obscured secondary features	

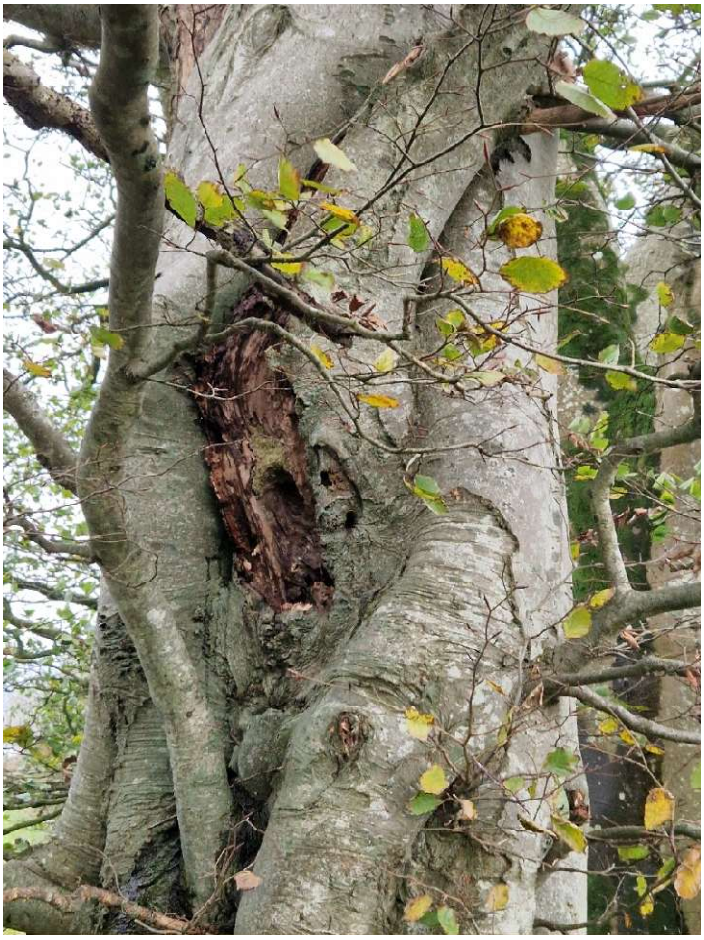
Tree or Building Number and Feature	Photograph
3.T121 Alder with hazard beam	

Tree or Building Number and Feature	Photograph
3.T.E5 Goat willow with knot and rot holes	

Tree or Building Number and Feature	Photograph
3.T.E7 Ash with rot hole and vertical crack	

Tree or Building Number and Feature	Photograph
3.T.E8 Beech with woodpecker hole and cavity	

Tree or Building Number and Feature	Photograph
3.T.E6 Ash with lifted bark	

Tree or Building Number and Feature	Photograph
3.T.E9 Beech with rot hole and knot hole with potential cavities	

Tree or Building Number and Feature	Photograph
3.T.E10 Beech with wound and potential cavity	

Tree or Building Number and Feature	Photograph
3.T.E11 Ash with knot hole	

Tree or Building Number and Feature	Photograph
3.T.E12 Ash with knot hole and hazard beams	

Tree or Building Number and Feature	Photograph
3.T.E17 Ash with dense ivy cover	

Tree or Building Number and Feature	Photograph
3.T.E15 Mature ash with knot hole and hazard beams	

Tree or Building Number and Feature	Photograph
3.T.E16 Ash with knot hole and broken branches	

Tree or Building Number and Feature	Photograph
3.T.E13 Oak with dense ivy cover	
3.T.E14Sycamore with dense ivy cover	

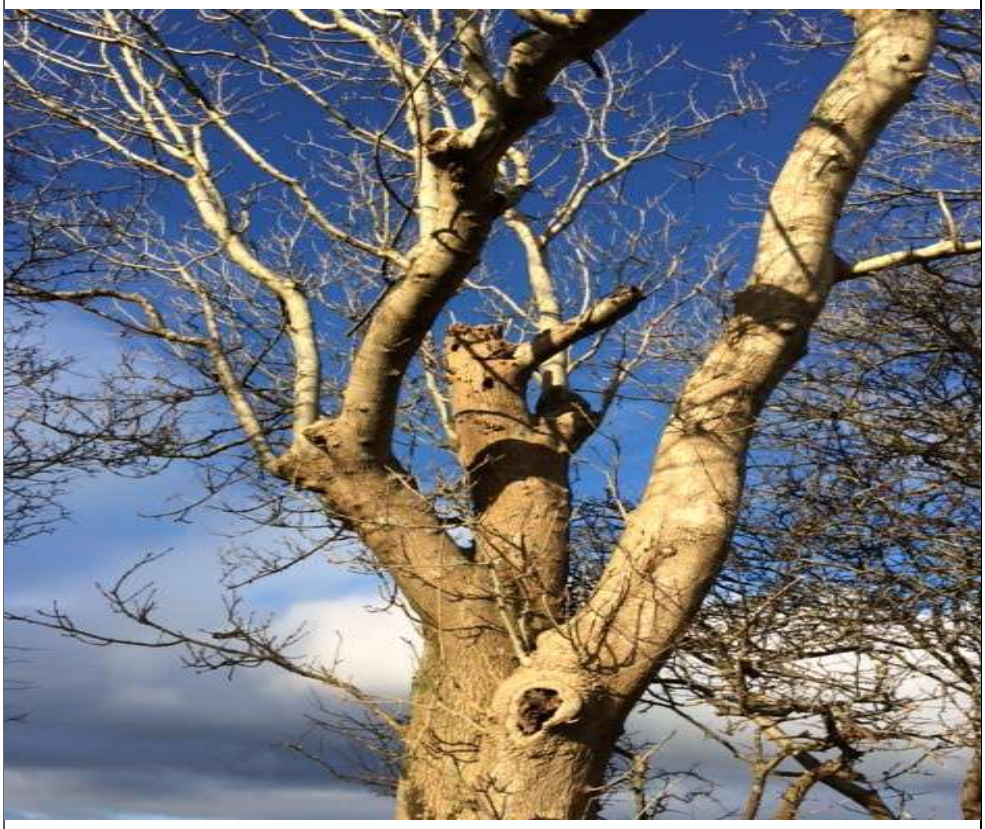
Tree or Building Number and Feature	Photograph
3.T.E18 Willow with rot hole and dense ivy cover	

Tree or Building Number and Feature	Photograph
3.T240 Mature goat willow with butt rot – requires removal and will be translocated	

Tree or Building Number and Feature	Photograph
3.T253 Semi-mature alder with two wounds within trunk	

Tree or Building Number and Feature	Photograph
3.T.261Mature ash with woodpecker holes	

Tree or Building Number and Feature	Photograph
T83 Mature ash with large wound present	

Tree or Building Number and Feature	Photograph
T84 Mature rowan with knothole and broken trunk	
B1 Stone bridge with exposed shallow cracks and holes within stonework	

Tree or Building Number and Feature	Photograph
B2 Outhouse with pitch slate roof with multiple cracked and loose tiles with further cracks in stonework.	

Tree or Building Number and Feature	Photograph
B3 Barn with shallow and exposed cracks within stone wall	

Tree or Building Number and Feature	Photograph
B4 Barn with gaps between corrugated metal walls and roof	

3.5.G Ecology Report: Bryncir Riparian Mammals - CONFIDENTIAL

3.5.H. Bryncir Statutory Sites Citations

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1. Statutory sites designated for nature conservation

1.1.1 This document concerns the section of the Pentir to Trawsfynydd Reinforcement Project relating to Bryncir and is a Technical Appendix to Environmental Statement (ES) **Volume 3, Chapter 5: Ecology and Nature Conservation** being submitted as part of the Environmental Impact Assessment (EIA) which accompanies the applications for consent for the Project.

1.1.2 This Appendix provides details on the designated sites in the ecology Study Areas of the Bryncir works site, as described below and in **Section 5.3** of ES **Volume 3, Chapter 5: Ecology and Nature Conservation**.

1.1.3 **Table 1.1** presents the international designated sites (Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites) within 10 kilometres (km) of the Bryncir works site (extended to 30 km for SACs designated for bats), and their respective reasons for designation. These sites are shown in ES **Volume 3, Figures 3.5.1 and 3.5.2**.

1.1.4 **Table 1.1** also presents the national and local statutory designated sites (Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR)) within 5 km of the Bryncir works site, and their respective reasons for designation. These sites are shown in ES **Volume 3, Figure 3.5.2**.

1.1.5 There are five international statutory sites designated for nature conservation within the 10 km Study Area. There are no further SACs designated for bats within 30 km of the Bryncir works site. Nine other national and local statutory designated sites for nature conservation are present within the 5 km Study Area.

Table 1.1 – Statutory sites designated for nature conservation within 10 km (international) and 5 km (national and local) of the Bryncir works site (extended to 30 km for international sites designated for bats).

Site name	Description	Approximate distance (km) and direction from closest point to the Bryncir works site
Corsydd Eifionydd/Eifionydd Fens SAC	Annex I habitat that is a primary reason for selection of this site is: Transition mires and quaking bogs. Annex II species that are a primary reason for selection of this site are: Marsh fritillary butterfly (*Euphydryas* (*Eurodryas, Hypodryas*) *aurinia*). Slender green feather-moss (*Drepanocladus* (*Hamatocaulis*) *vernicosus*).	1.88 km north-east
Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC	Annex I habitats that are a primary reason for selection of this site are: Sandbanks which are slightly covered by sea water all the time. Estuaries. Coastal lagoons **Priority feature.* Large shallow inlets and bays. Reefs. Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site are: Mudflats and sandflats not covered by seawater at low tide. Salicornia and other annuals colonizing mud and sand. Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). Submerged or partially submerged sea caves. Annex II species present as a qualifying feature, but not a primary reason for site selection are: Bottlenose dolphin (*Tursiops truncates*). Otter (*Lutra lutra*).	5.13 km south-east

Site name	Description	Approximate distance (km) and direction from closest point to the Bryncir works site
	Grey seal (*Halichoerus grypus*).	
Gogledd Bae Ceredigion/ Northern Cardigan Bay SPA	Over winter the area regularly supports: red-throated diver (*Gavia stellata*), 1,186 individuals representing 7% of the wintering population in Great Britain (2001/02 – 2003/04).	5.16 km south
Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat SAC	Annex I habitats that are a primary reason for selection of this site are: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). **Priority feature*. Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site are: Watercourses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Northern Atlantic wet heaths with *Erica tetralix.* European dry heaths. *Tilio-Acerion* forests of slopes, screes and ravines **Priority feature*. Bog woodland **Priority feature*. The Annex II species that is a primary reason for selection of this site is lesser horseshoe bat (*Rhinolophus hipposideros*). This large composite site includes most of the known maternity roosts in Meirionnydd and some hibernacula and comprises the centre of distribution for lesser horseshoe bats in Wales. The sheltered river valleys provide excellent tree cover and numerous suitable maternity roosts.	7.62 km south-east
Glynllifon SAC	The Annex II species that is a primary reason for selection of this site is lesser horseshoe bat. This single site in north Wales is both a maternity and hibernation site for a large population, comprising about 6% of the UK population.	9.23 km north-west

Site name	Description	Approximate distance (km) and direction from closest point to the Bryncir works site
Mwyngloddiau Fforest Gwydir/Gwydyr Forest Mines SAC	The Annex I habitat that is a primary reason for selection of this site is Calaminarian grasslands of the *Violetalia calaminariae.* The Annex II species present as a qualifying feature, but not a primary reason for site selection is lesser horseshoe bat.	29.78 km north-east
Llystyn Isaf SSSI	The site is of botanical interest and supports a range of acidic and neutral grassland vegetation types. The drier neutral grassland communities are the main features of interest. Wood bitter-vetch (*Vicia orobus*) is uncommon nationally and it occurs here in its only known meadow locality in West Gwynedd. Patches of wet heath vegetation are present, whilst the streamlines and adjoining wet flushed areas support a range of characteristic wetland species. Fen meadow vegetation is also present in the southern part of the site.	0.31 km north-west
Ffriddoedd Garndolbenmaen SSSI	The site is of special scientific interest primarily for its species-rich lowland grassland which is an important and increasingly rare wildlife habitat. Small areas of other habitats, including dwarf shrub heath, marshy grassland and acid flush occur in association with the grassland and add to the interest of the site.	1.55 km north-east
Cors Graianog SSSI	The site supports three features of international importance namely transition mire and quaking bog habitat, marsh fritillary butterfly and slender green feather moss. The site also supports a range of other wetland habitats including marshy grassland, fen, bog, wet woodland and swamp habitats.	1.88 km east
Rhosgyll Fawr SSSI	This site is of biological interest, principally as an example of a lowland acidic mire. Particularly noteworthy is the high frequency of cranberry (*Vaccinium oxycoccus*).	2.80 km south-west
Talhenbont SSSI	The site is of botanical interest, both for the woodland habitat represented and as an important site for epiphytic lichens. Uncommon species include hay-scented buckler fern (*Dryopteris aemula*), globeflower (*Trollius europaeus*) and the bryophytes *Isoethecium holtii* and *Porella pinnata*. The diverse epiphytic flora of this site includes	3.39 km south

Site name	Description	Approximate distance (km) and direction from closest point to the Bryncir works site
	over 100 corticolous species. A range of rare and uncommon species are present, including *Catinaria grossa* and *Arthothelium ilicinum*.	
Cors Gyfelog SSSI and Cors Gyfelog NNR	The site is a part of Corsydd Eifionydd SAC and is selected for its biological interest, as an example of a northern mesotrophic mire, for other wetland (swamp) habitats and for its mature willow carr (*Salix cinerea*) habitat, the latter supporting rich lichen and bryophyte communities. The site also qualifies for the slender green feather-moss for the important assemblage of bryophytes including the nationally rare liverwort *Scarpania paludicola* and for the marsh fritillary butterfly.	3.59 km north-west
Afon Ddu SSSI	The Afon Ddu is of special interest for its population of the freshwater pearl mussel (*Margaritifera margaritifera*) which is one of the few remaining breeding populations of this species in Wales. The freshwater pearl mussel is dependent on the local salmonid populations' sea trout spawn in the river and native brown trout (*Salmo trutta fario*) are abundant. Otter and water vole have been recorded in the Afon Ddu catchment. There are areas of botanically interesting mire and wet heath adjacent to parts of the river and around Llyn Du which are also important in providing a protective buffer to the river channel and the mussels therein.	4.66 km east
Cors y Wlad SSSI	The site is a part of Corsydd Eifionydd SAC and is selected for supporting the marsh fritillary butterfly. A population of the nationally scarce narrow-bordered bee hawk-moth (*Hemaris tityus*) also occurs on the site.	4.95 km north-west

3.5.I Bryncir Arboricultural Impact Assessment

nationalgrid

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1. Introduction

1.1 Background

1.1.1 This document forms part of the Environmental Statement (ES), which accompanies applications by National Grid Electricity Transmission plc (NGET) to construct and operate developments which comprise parts of the Pentir to Trawsfynydd Reinforcement Project (the 'Project').

1.1.2 The survey area captured tree data in the area south of the A487 in the fields to the east and west of the B4411. The location of the tree features captured during the surveys are shown in the Tree Constraints Plan (TCP) (**Appendix A**) and in the Tree Protection Plan (TPP) (**Appendix C**).

1.1.3 The proposed works site (indicated by the red line boundary (RLB) in the TCP (**Appendix A**)) would be on a series of open fields on the eastern side of the existing 400 kilovolt (kV) overhead line, approximately 1.4 kilometres (km) south of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen approximately 750 metres (m) south of Bryncir, Garndolbenmaen in North West Wales (at its closest point), in the administrative boundary of Gwynedd Council. The Proposed Works are shown on the (TPP) at **Appendix C**. Works would include:

- the construction of a new 400 kV substation including a permanent access road,
- a new section of 132 kV underground cable,
- the relocation of Tower 4ZC067 80 m north-west of its current position,
- realignment of the DB connection route to connect into the new substation and decommissioning and removal of the redundant section,
- permanent diversion of the Dolbenmaen No 18 footpath and a new landowner track and the decommissioning.

1.1.4 Construction of the Bryncir Substation would include the installation of a super grid transformer, support and electrical equipment, ancillary buildings, an access road and security fencing. The relocated Tower 4ZC067 would be built with excavation, concrete foundations, steel assembly, and stringing of overhead conductors, followed by dismantling the existing tower. The DB connection route includes the installation of a 132 kV underground cables and overhead lines via trenching and pole erection. The redundant section of the DB connection route will be dismantled and the ground fully reinstatement. Dolbenmaen No 18 footpath where it intersects the Bryncir works site will be temporarily closed during construction and permanently diverted during operation. To allow the landowner access across field boundaries south of the proposed Bryncir Substation, a hardcore track extending an existing track will be provided to the south-west of the proposed Bryncir Substation.

1.1.5 This report identifies preliminary information in relation to the nature and level of constraints posed by existing trees on the site and considers the likely direct and indirect impacts of a proposed development, the TPP identifies trees to be removed or retained and illustrates how retained trees are to be protected.

1.2 Trees and the Planning Process

Planning Policy Wales

1.2.1 Planning Policy Wales (PPW) (Edition 12, 2024) (Ref 1.1) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. The primary objective of PPW (Ref 1.1) is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural wellbeing of Wales.

1.2.2 PPW (Ref 1.1) contains specific policies in relation to trees, woodlands and hedgerows and these are set out in **Appendix D.1**.

Local Policy Context

1.2.3 Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order (TPO) or other statutory designation) is therefore a material consideration.

1.2.4 The Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026, adopted 31 July 2017 (Ref 1.2), sets out the policies that the Local Planning Authorities use to guide development and use of land in their area. It outlines the long-term vision for the area, including how it will be developed, what types of development will be permitted, and how the local environment and community needs will be addressed. It illustrates how important trees, woodland and hedgerows are to the character of the area and the environment and outlines the policies of the two local authorities with regards to the protection of trees.

1.2.5 Extracts from the Local Authority Local Development Plan are in **Appendix D.2**.

British Standard

1.2.6 '*BS5837:2012 Trees in relation to design demolition and construction – Recommendations (BS5837)*' (Ref 1.3) provides a framework which sets out how trees should be considered in the context of the development.

1.2.7 BS5837 (Ref 1.3) recommends that a tree survey is undertaken to identify the quality and benefits of trees, and the spatial constraints associated with them. This is then used to produce a TCP showing the above and below ground constraints associated with trees. This drawing is used to inform the design process and to allow the retention of good quality trees where appropriate.

1.2.8 An Arboricultural Impact Assessment is developed to identify the likely direct and indirect impacts of the Project, and a TPP is prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected.

1.2.9 An Arboricultural Method Statement (AMS) is often required as a condition of planning consent to detail how sensitive operations are to be undertaken near to retained trees.

1.3 Methodology

1.3.1 A desk study has been undertaken to identify key constraints from statutory and non-statutory designations on site. The findings of the desk study are in **Section 3**.

1.3.2 The tree survey fieldwork was undertaken in December 2024 and has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees in the survey area. During the fieldwork dimensional data and observational information were collected. A diameter tape measure was used to measure stem diameters where feasible.

1.3.3 Trees have been plotted indicatively with reference to Ordnance Survey base mapping, GPS positions, site features and publicly available aerial photography. All positions must be considered indicative only and the relative distances of features must be measured on the site.

1.3.4 The survey was otherwise conducted in accordance with the requirements of BS5837 Trees in relation to design, demolition and construction – Recommendations (BS5837) (Ref 1.3).

1.3.5 Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified in the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.

1.3.6 The Root Protection Area (RPA) is the notional extent of what is the key rooting area for tree health and function. This is generally depicted as a circle but can be amended to a polygon with an equivalent area in accordance with Section 4.6.2 of BS5837 (Ref 1.3) where the RPA is likely to have developed asymmetrically. Without strong evidence to guide changes to the RPA of plotted tree features an assumption has been made that the hard surfacing has not restricted root growth and therefore the RPA of all surveyed trees is depicted as a circle and no RPA shapes have been amended.

1.3.7 The RPA of veteran or ancient trees has been amended in accordance with standing advice (Ref 1.4) from Natural England and the Forestry Commission and established best practice which requires the RPA to be a radius equivalent to 15 x stem diameter or canopy spread +5 m whichever is the greater area.

1.3.8 ATCP showing the position of trees and the spatial constraints associated with them is included as **Appendix A** of this report, which corresponds with the Tree Survey Schedule presented in **Appendix B**.

1.3.9 The tree categorisation process recommended by BS5837 (Ref 1.3) is summarised in the **Table 1-1** and corresponds with the tree canopy outline shown on the tree constraint plan included as **Appendix A** and the information in the Tree Survey Schedule included as **Appendix B**.

Table 1-1 BS5837:2012 tree categorisation (Ref 1.3)

Category	Definition
A	High quality, minimum of 40+ years remaining contribution
B	Moderate quality, minimum of 20+ years remaining contribution
C	Low quality, minimum of 10+ years remaining contribution
U	Unsuitable for retention, <10 years remaining contribution
1	Arboricultural value
2	Landscape value
3	Conservation or cultural value

2. General Arboricultural Principles

2.1 General Principles

2.1.1 Trees are dynamic living organisms that provide essential benefits to society and the wider environment. Any proposed works with the potential to impact on trees must take into consideration the value of trees on the site, the impact of any proposed activity along with any potential future conflicts on the site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered and may be subject to a condition of planning consent.

2.1.2 Tree branches and roots frequently grow across site boundaries and off-site trees can pose a significant constraint and should be carefully considered when assessing the developable space in a site.

2.2 Below ground constraints

2.2.1 Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.

2.2.2 Roots can be damaged by physical severance or wounding (e.g. following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

2.2.3 The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. Older trees are particularly sensitive to damage and changes in conditions.

2.2.4 The RPA is the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It is generally accepted that tree roots are predominantly in the upper 1000 millimetres (mm) of soil; however, roots may develop at deeper levels where conditions allow.

2.2.5 The RPA of the existing tree stock is an important material consideration when considering site constraints and planning development activities. The RPA of significant trees on the site is shown on the TCP included in **Appendix A**.

2.2.6 The default position must be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be

appropriate to use special measures to install structures, services or surfacing in RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

2.2.7 Further steps to improve or increase the useable rooting area available to the tree may also be required.

2.3 Above ground constraints

2.3.1 Tree stems and branches can restrict available space on the site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed works and future land use. Annual tree growth can lead to direct damage if stems or branches come into physical contact with structures and this must also be taken into consideration.

2.4 Trees and Risk in the Context of Development

2.4.1 Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate. Further guidance is available from the National Tree Safety Group (Ref 2.1).

2.4.2 The tree survey carried out as the basis of this report has been undertaken primarily for planning purposes and is not designed to assess the safety of trees on the site.

2.4.3 The Construction (Design and Management) Regulations (2015) (Ref 2.2) states that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition, the Health and Safety Executive (HSE) could seek to prosecute those responsible. Additionally, third parties may make claims for damages.

2.5 Trees and Wildlife

2.5.1 Consideration must be given to the presence of species protected under the Wildlife and Countryside Act 1981 - as amended (Ref 2.3), the Countryside and Rights of Way Act 2000 (Ref 2.4) and the Conservation of Habitats and Species Regulations 2017 (Ref 2.5), in particular the presence of bats and nesting birds. It is recommended that wherever possible, significant tree/hedge works take place outside of the typical bird nesting season of March to September. The advice of a suitably qualified Ecologist is recommended in relation to any potential impacts on protected species.

2.6 Tree Works

2.6.1 Any tree surgery recommendations in this report are to be undertaken in accordance with BS3998:2010 Tree work – Recommendations (BS3998) (Ref 2.6) by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the

optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

3. Statutory and Non Statutory Designations

3.1 Statutory Designations

Tree Preservation Orders (TPO) and Conservation Areas

3.1.1 AECOM contacted Gwynedd Council on 2nd July 2024 and there were no TPOs or Conservation Area designations identified which could affect trees in or adjacent the site.

The Hedgerow Regulations

3.1.2 The Hedgerow Regulations 1997 (Ref 3.1) protect agricultural or countryside hedgerows which meet the requirements of an 'important hedgerow'. These include a minimum length of 20 m (or meets another hedge at each end) and a minimum age of at least 30 years.

3.1.3 A wide range of other ecological and archaeological/heritage features can constitute an important hedgerow and further advice from a qualified ecologist is recommended in advance of any planned works that could impact established hedgerows on or bordering agricultural or countryside land.

3.1.4 Prior to the removal or destruction of a protected hedgerow an application must be made to the Local Planning Authority. Full planning consent is an exemption to this requirement.

Site of Special Scientific Interest (SSSI)

3.1.5 AECOM checked Datamap Wales (Ref 3.2) on 3rd January 2025 and there were no SSSI designations in or adjacent the site.

Felling Licence

3.1.6 A felling licence may be required by Natural Resources Wales to fell more than 5 (cubic metres m^3) of timber in any calendar quarter (subject to relevant exemptions including tree safety works, tree works for a statutory undertaking and tree works in gardens, churchyards and designated public open space).

3.1.7 Full planning consent is an exemption from the need to apply for consent for works to trees protected by the Hedgerow Regulations (Ref 3.1), a Tree Preservation Order, the need to give notice of the intention to undertake works in a Conservation Area and the need to apply for a Felling Licence with Natural Resources Wales (to fell more than 5 m^3 per calendar quarter). Tree Preservation Orders can be made at any time. Relevant checks should be made to Gwynedd Council to check for new TPOs prior to commencement of any works on site.

3.2 Non-Statutory Designations:

Ancient Woodland

3.2.1 AECOM checked the DataMap Wales website (Ref 3.2) on 3rd January 2025. No ancient semi natural woodland and/or replanted ancient woodland is in or adjacent the proposed site. However, Ancient Woodland is in the wider landscape with ancient woodland records approximately 1.5 kilometres (km) to the south, 2 km west and 3 km east of the site. There are no risks to these woodland sites from the proposed works.

3.2.2 Ancient woodland and ancient and veteran trees are an irreplaceable natural resource that is afforded a high priority in the planning process, *"Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their loss or deterioration unless very exceptionally there are significant and clearly defined public benefits"* (Ref 1.1*).*

3.2.3 AECOM also checked the Woodland Trust Ancient Tree Inventory (Ref 3.3) (3rd January 2025) for the presence of any notable, veteran or ancient trees in or adjacent the site and none have been recorded. However, trees with veteran and ancient characteristics have been identified during detailed tree survey fieldwork. This is discussed further in **Section 4** of this report.

4. Field Work Observations

4.1 The Site

4.1.1 The location of the proposed works is shown on the TCP in **Appendix A**. The approximate centre of the site is Grid Reference SH 479430.

4.1.2 The site is located on undulating land and is characterised by pastoral fields bordered by a mix of field boundary types, being predominantly dry stone wall and post and wire fences.

4.1.3 The existing 4ZC overhead line runs to the east of the Bryncir works site and would intersect the Bryncir works site at two locations. The pylons are visible from many views in the vicinity of the Bryncir works site due to the relatively flat topography. An existing 132 kilovolt (kV) overhead line owned by Scottish Power Energy Networks (SPEN) (hereafter referred to as the 'DB Route) runs north to south through the centre of the Bryncir works site, west of the Afon Dwyfach.

4.2 The Trees

4.2.1 A combined total of 279 individual trees, tree groups, hedgerow groups and woodland groups have been recorded during the survey of the site.

4.2.2 The surveyed trees are predominantly low to moderate quality, category C and B. However, across the site the trees vary in their quality with some trees being categorised as very low category U and other high value trees being categorised as category A.

4.2.3 Of these identified tree features, 21 features are of high quality (category A); 103 of moderate quality (category B); 128 of low quality (category C); and 27 identified as unsuitable for retention as living trees for more than ten years in the context of the current land use (category U).

4.2.4 **Table 4-1** below summarises the number of trees in each quality category recorded in, or adjacent to, the site.

Table 4-1 Summary of tree features in each quality category.

Quality Category	A	B	C	U
Number of tree features	21	103	128	27

4.2.5 Of the individually recorded trees, the frequency of each species are shown in **Table 4-2.** Ash was the commonest species representing over 40% of the total. The spread of ash dieback represents a significant threat to the tree population in the survey area. Grey willow, hawthorn and common alder were also present in significant numbers.

Table 4-2 Species composition table

Species	Count	Percentage
Ash (*Fraxinus excelsior*)	51	33.77%
Grey willow (*Salix cinerea*)	27	17.88%
Hawthorn (*Crataegus monogyna*)	36	23.84%
Common Alder (*Alnus glutinosa*)	15	9.93%
Goat Willow (*Salix caprea*)	5	2.65%
Hazel (*Corylus avellana*)	5	3.31%
Sycamore (*Acer pseudoplatanus*)	3	1.99%
Rowan (*Sorbus aucuparia*)	3	1.99%
Crab Apple (*Malus sylvestris*)	4	2.65%
Elder (*Sambucus nigra*)	1	0.66%
Rhododendron (*Rhododendron sp.*)	1	0.66%
Common Oak (*Quercus robur*)	1	0.66%

4.2.6 The most significant tree features are trees of ancient or veteran status which are considered to provide irreplaceable habitat and are often culturally important to the locale. Trees T121 and T125 meet the stem girth parameters of ancient tree status. Trees T41, T60, T95, T105, T137, T211, T240, T272 and T274 exhibit features associated with veteran status such as extensive hollowing, decay and deadwood habitat.

4.2.7 Across the site, there is a broad spread of age class with similar numbers of semi mature, early mature and mature trees. The following percentages are based on individual tree records:

- Young: 4.64%
- Semi Mature: 26.49%
- Early Mature: 28.12%
- Mature: 33.47%
- Veteran: 5.96%
- Ancient: 1.32%

4.2.8 As would be expected there are lower numbers of trees classed as ancient than other age classes. Younger trees are possibly underrepresented in the numbers of individual trees as these trees are often grouped. Over half of the groups contain young trees.

4.2.9 Site photography can be found at **Appendix E** located to the rear of this report.

5. The Proposed Works

5.1.1 The Bryncir works site covers an area approximately 19.6 hectares (ha); however, the permanent Bryncir Substation compound would cover approximately 1.6 ha. The land in the Bryncir works site will comprise the Bryncir Substation, DB route, permanent access road, construction compound (comprising office and welfare facilities) and laydown areas.

5.1.2 Works are described in **Section 1.1.4**

5.1.3 Construction of the Bryncir Substation would require topsoil removal, stone capping, and installation of perimeter fencing, followed by foundation works, and installation of the underground earth grid, and erection of support structures and electrical equipment and the installation of an attenuation pond.

5.1.4 The relocated Tower 4ZC067 would be built with excavation, concrete foundations, steel assembly, and stringing of overhead conductors, followed by dismantling the existing tower.

5.1.5 The DB route connection includes installation of 132 kV underground cables and overhead lines via trenching and pole erection. The redundant section of DB route will be dismantled and the ground fully reinstatement.

5.1.6 Dolbenmaen No 18 footpath where it intersects the Bryncir works site will be temporarily closed during construction and permanently diverted during operation.

6. Arboricultural Impact Assessment

6.1 Purpose

6.1.1 This impact assessment sets out the likely principal direct and indirect impacts of the proposed works on the trees on or adjacent to the site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate.

6.1.2 A summary of trees to be removed, tree works and incursions related to the proposed works is detailed in the **Table 6-1**.

Table 6-1 Summary of removals, incursions and pruning to facilitate the proposed works

Impact	Category A	Category B	Category C	Category U
Trees to be removed to facilitate the proposed works	**T240 (Translocated)**	**T123, T124 & G144, H264 (part) & W279 (part)**	**G13 (part), G20 (part), H204 (part), H245, H248 & H277(part)**	**T273**
Total	**1**	**5**	**6**	**1**
Trees which may require some incursion into their construction exclusion zone to allow the proposed works	**-**	**H264**	**G9, G13, G15, G20 & H204**	**-**
Total	**n/a**	**1**	**5**	**n/a**
Trees to be pruned to facilitate the proposed works	**-**	**G144 (if retained), G278**	**G13, G20, H248, H265 & H277**	**-**
Total	**n/a**	**2**	**5**	**n/a**

6.2 Trees Features to be Removed

6.2.1 Four individual trees (one of which will be translocated), one group, part of two groups, two hedgerows, three part hedgerows and part of one woodland will be removed to facilitate the proposed works:

- An A category veteran grey willow, T240, (considered to be an irreplaceable natural resource according to the PPW (Ref 1.1)) will be removed and translocated to facilitate the construction of the Bryncir Substation and an attenuation pond. As the success of translocation is uncertain the tree is included as removed for the purpose of assessment but will be translocated to attempt to retain the tree as an irreplaceable natural resource. The bellmouth entrance and visibility splay requirements will require the removal of H245, H248 and H277 (part) and part of W279.
- The access road will result in partial removal and an incursion into the RPA of one category B tree feature (H264) and the loss of one U category tree, (T273). The cable installation over the B4411 will necessitate the reduction in height or loss of a group of hawthorn (G144).
- Decommissioning of a section of the DB route will require excavation in the RPAs of T123 and T124, necessitating their removal. The decommissioning works have the potential to result in further losses in two scrub groups (G13 and G20).

6.2.2 All of the trees to be removed are in the red line application boundary.

6.2.3 Tree removals are required for fire safety reasons and to avoid inappropriate tree retention close to new electricity infrastructure.

6.2.4 Where part of a group of trees is to be removed, the final extent of loss will be determined on site by an arboriculturist and the suitability and stability of retained trees will be assessed following tree clearance. The arboriculturist will determine if any additional remedial works are required and will liaise with the LPA as required.

6.2.5 Tree removals will be mitigated with a scheme of new tree planting and associated landscaping works as detailed in the landscape mitigation plan which will represent an opportunity to enhance the quality, benefits and resilience of trees on the site.

6.2.6 Tree replacement numbers will be provided in the Landscape Plan and will be appropriate to the loss and a minimum of 3:1 for each individual tree lost and for shelterbelt trees in groups and hedgerows it will be a minimum of 1600 stems per hectare.

6.2.7 Retained trees will be protected by the installation of tree protection fencing as per the TPP and where necessary, the use of suitable ground protection measures.

6.2.8 Where access is required with RPAs of retained trees or groups, the construction working zone CWZ procedures will be followed.

6.3 Incursions in the RPA or Canopy Spread

Background

6.3.1 Construction activity, if unmanaged, can result in the premature death of retained trees through the compaction of soils and the severance of roots allowing the ingress of decay and disease organisms into the roots; a reduction of water uptake and energy storage; and a potentially significant negative effect on tree stability.

6.3.2 Root death may also result where soil levels are increased in RPAs causing a reduction in the normal exchange of soil gases, soil water and a significant increase in mechanical resistance in the soil.

6.3.3 Action can be taken to avoid, reduce or mitigate the above impacts, as outlined in the subsections below.

Permanent Site Access Road

6.3.4 A new access road, capable of allowing access for an Abnormal Indivisible Load (AIL) will be constructed from its entrance at the A487. The proposed route of the access road will create a small incursion on the western side of the RPA of the retained section of H264. Ground excavation along this section in the RPA (shown as CWZ in sheet 4 in the TPP) will be hand dug to the first 1 m and be supervised by an arboriculturist who will advise on impacts to retained trees and supervise the clean severance of any exposed roots.

6.3.5 Retained tree features to the east of the access road will be protected from damage with robust tree protection fencing in accordance with the guidance in BS5837: 2012.

High Voltage Cable Installation

6.3.6 The DB route will connect to the proposed substation using part underground cables and part overhead line.

6.3.7 The cables would be laid via an open cut trench of approximate section 1 m x 1 m. The method of trenching will be via mechanical excavator with subsoil and topsoil stored separately and used during backfill to reinstate the surface as existing.

6.3.8 The indicative cable route shown on the TPP runs close to veteran tree T211. However, this tree and its RPA will be protected by tree protection fencing and the cable route, works access and spoil storage will be routed east, outside of the RPA of the tree.

6.3.9 No excavation for cable installation will take place in RPAs of retained trees. All cable trenches will be repositioned to avoid RPAs, which will be fenced as exclusion zones. If any roots <25 mm are encountered, they will be carefully pruned back to the face of the trench and any larger roots or bundles of smaller roots will be assessed by the arboriculturist who will advise on appropriate management. Following root pruning the arboriculturist will consider the requirement for any additional tree removals or remedial works and will liaise with the Local Authority Tree Officer as required. Further details on root management are provided in **Appendix F**.

6.3.10 A section of new 132 kV overhead line will cross the B4411 and the Afon Dwyfach. The method of installing the overhead line involves taking materials to each support site, assembling the support structure on the ground, excavating a trench approximately 1 m deep, 1 m wide and 4 m long, lifting the support structure into the trench and compacting and backfilling. These works will avoid trees and shrubs.

6.3.11 Should soft ground in RPAs need to be accessed, ground protection adequate to prevent compaction will be used in RPAs to preserve soil structure on unsurfaced ground. Where appropriate, trench boxes or sheet piles will be employed to reduce the extent of excavation and access required in RPAs.

6.3.12 Spoil from excavations will be stored on appropriate ground protection where storage in RPAs cannot be avoided. Excavations are to be lined with impermeable sheeting to prevent the leaching of any toxic chemicals into the surrounding soil.

Temporary Construction Facilitation Access

6.3.13 It is anticipated that two excavators and a 4x4 pick-up truck would be required to visit each support site for construction. Access would be via a temporary haul road alongside the cable route, with access points from the perimeter of the substation and the B4411. Aluminium / steel trackway or 'bog mats' would be used to avoid or minimise ground disturbance from vehicles tracking to the working areas and around them as appropriate.

6.3.14 In areas where access is required in RPAs, appropriate ground protection, specified to dissipate the greatest load likely to occur will be utilised as set out in section 6.2.3.3 of BS5837:2012 (Ref 1.3). The following ground protection measures will be appropriate:

> *"- Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100mm of woodchip on a geotextile separation layer.*
>
> *Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150mm woodchip or sharp sand; and*
>
> *Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice (such as the utilisation of a no dig installation, proprietary three-dimensional cellular raft system)."*

6.3.15 This approach is not suitable for operating in the RPAs or buffer zones of retained ancient or veteran trees. Those trees and their RPAs will be excluded from construction working zones.

6.4 Tree Works

6.4.1 Tree removals and tree pruning works to facilitate the proposed works are detailed in the Tree Survey Schedule included as **Appendix B**.

- G144 is likely to require a reduction in height to allow the new 132 kV overhead line to be installed over the B4411. This tree has been shown as a removal on the TPP and in the Tree Survey Schedule as the reasonable worst case, however it is likely that this group can be retained with pruning in practice.
- In addition to the removal of hedge H248 and part of H277 to enable to creation of a bellmouth for the access road to the substation, pruning works to H265 and G278 may be required to make the visibility splay compliant.
- Additional tree works may be required to trees and shrubs in G13 and G20 to enable access to decommission the poles along the existing DB route and where necessary, to remove the foundations. Access routes will avoid trees and their RPAs (as shown in the TPP in **Appendix C**) wherever possible. Where access is required in RPAs, contractors will adhere to the working procedures outlined in **Section 6.7**.

6.5 The Future Impact of Retained Trees

6.5.1 The future impact of trees on the site must be considered in relation to any development proposals. Trees and groups to be retained must be afforded suitable space to ensure they remain viable in the long term. Trees which are currently not fully grown will

increase in size and this must be considered in conjunction with the Proposed Development and future use of the site.

6.5.2 The retained trees are located outside the proposed substation extents and will not have a significant future impact on the future use of the site. Management of the trees on and adjacent to the site will be consistent with current management at other similar substations.

6.5.3 For electricity infrastructure, the main future impacts will be the safety requirement to maintain clearance from overhead power lines, pylons and related infrastructure and considerations with regards to the future growth of trees in proximity to above ground apparatus. For existing infrastructure this represents no change from current use. Where new high voltage cables over sail trees, there will be a minimum clearance requirement which will be managed via statutory powers into the future.

6.5.4 National Joint Utilities Group (NJUG) 4 (Ref 6.1) succinctly summarises the reasons for the clearances in Section 3.3:

> *"3.3 Special Considerations when Planning the Installation of Above Ground Apparatus*
>
> *The aerial parts of a tree are constantly growing larger and are prone to bend and flex in windy conditions. As a result parts of a tree may come close to or into contact with above ground apparatus.*
>
> *3.3.1 Electricity The overhead apparatus belonging to the electricity supply industry is subject to minimum clearances from adjacent trees and other structures. This is to ensure the safety of the public and protect against flashover and loss of supply. Local conditions may require an increase in the clearances specified in current electricity industry standards.*
>
> *Part IV of The Electricity Supply Regulations covers the construction of power lines above ground. Schedule 4(9) of the Electricity Act 1989 enables electricity companies to require the felling or lopping of trees which obstruct or interfere with the working of their lines or constitute an unacceptable source of danger.*
>
> *In addition to the above reference should be made to the Energy Networks Association (ENA) document Engineering Recommendation G55/1- Safe Tree Working in Proximity to Overhead Electric Lines (see section 8).*
>
> *Clearances between overhead electricity cables and vegetation are specified in TS 43-8 (Issue 5) Overhead Line Clearances, 2019: This specification defines the minimum clearances between ENAMC overhead lines at all nominal system voltages and objects, ground etc…."*

6.6 Tree Protection

6.6.1 Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant. Root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and Canopy spread of trees to be retained will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted. Where access is necessary in this area special measures such as the use of ground protection and arboricultural supervision are generally required.

6.6.2 To the south of the proposed substation is the route of the redirected footpath. In these locations there will be no requirement for tree protection fencing as no works are proposed.

6.6.3 Outline tree protection measures are considered in **Appendix F** of this report. An AMS is often required as a condition of planning consent to set out the phasing of site operations, the finalised tree protection measures for the site and to provide detail on how sensitive elements of work are to be achieved in proximity to retained trees. Issues to be addressed by the AMS are listed in the Conclusion of this report.

6.7 Site Organisation, Storage and Use of Materials, Plant and Machinery.

6.7.1 All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the RPA or crown spread of retained trees, including those not specifically covered in this report. Space is likely to be constrained on the site and will need to be carefully considered. The Construction Exclusion Zones identified on the TPP must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.

6.7.2 The use, mixing and washing of materials can lead to run-off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders' sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.

6.7.3 The storage of materials and arising's can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

6.7.4 For these reasons the storage of materials and any washing, mixing or refuelling will take place in agreed allocated areas at least 5 m from the edge of the RPA of retained trees.

6.7.5 Any slope effect must be taken into account and where there is a potential for run-off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

6.7.6 Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with in proximity to retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5m of any part of a retained tree to ensure no damage is sustained.

6.8 Tree Translocation and Planting

6.8.1 Existing areas of unsurfaced ground must be protected during the demolition and construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 (Ref 1.3) or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.

6.8.2 T240 will be translocated to retain the irreplaceable natural resource. Translocation is challenging and places a large amount of stress on the tree being moved. Translocation

is considered likely to be successful for T240, a veteran willow, due to several favourable factors. Willow species are known for their resilience, with a high tolerance for pruning and disturbance, and a strong capacity to produce new growth from cut or damaged wood. T240, is in good physiological condition, which supports its ability to withstand the stress of translocation. While it is conservatively counted as removed in a worst-case scenario, the species' inherent robustness and the tree's current health make successful translocation a realistic expectation.

6.8.3 Where new trees are to be planted, the minimum planting distances detailed in Annexe A, Table A.1 of BS5837:2012 (Ref 1.3) must be adhered to, to prevent direct damage to services and structures from future tree growth.

6.8.4 New tree planting should be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations (Ref 6.2).

7. Conclusion

7.1.1 In total, 279 tree features including, 151 individual trees, 88 tree groups, 37 hedgerows and three woodland groups have been recorded during the survey.

7.1.2 The surveyed trees are predominantly low to moderate quality, (category C and B) with high value (category A) trees and very low quality (category U) trees present across the site.

7.1.3 Of these identified tree features, 21 features are of high quality (category A); 103 of moderate quality (category B); 128 of low quality (category C); and 27 identified as unsuitable for retention as living trees for more than ten years in the context of the current land use (category U).

7.1.4 Retained trees will be protected by the installation of tree protection fencing as per the TPP and where necessary, the use of suitable ground protection measures.

7.1.5 Where access is required with RPAs of retained trees or groups, the CWZ procedures will be followed.

7.1.6 The proposed substation will require the removal of an A category veteran grey willow tree (T240), which will be translocated in the red line boundary. This tree is shown as a loss on the TPP (as a worst case) and will require suitable compensation planting of a minimum ratio of 6:1 to mitigate against the loss. Further details will be included in the Landscape Mitigation Plan.

7.1.7 The bellmouth entrance and access road will require the removal of sections of a B category hedgerow and a B category woodland and three C category hedgerow features. A U category tree will also be removed to enable the development; however, the removal of the tree would be required regardless of the proposed development due to its condition.

7.1.8 Additionally, H265 and G278 will require pruning works to maintain the visibility splay from the site access road bellmouth.

7.1.9 A further group (G144) will be reduced or removed to enable installation of the proposed overhead line over the B4411.

7.1.10 Decommissioning of a section of the DB route will result in the loss of T123 and T124 and has potential to require areas of loss within two scrub groups G13 and G20.

7.1.11 Tree replacement numbers will be provided in the Landscape Plan and will be appropriate to the loss. A minimum replacement ratio of 3:1 for each individual tree lost will be applied, and for shelterbelt trees in groups and hedgerows replacement will be a minimum of 1600 stems per hectare.

7.1.12 G144 is likely to require a reduction in height to allow the new overhead cable to be installed over the B4411. This tree has been shown as a removal in the TPP and in the schedule as the reasonable worst case, however it is likely that this tree can be retained in practice with pruning.

7.1.13 Pruning of H265 and G278 will likely be required to maintain visibility splays for site traffic entering the A487 from the access road.

7.1.14 Additional tree works may be required to trees and shrubs in G15 and G20 to enable access to decommission the poles along the existing DB route and where necessary, to remove the foundations. Access routes will avoid trees and their RPAs (as shown in the TPP in **Appendix C**) and where access is required in RPAs the construction working procedures will be adhered to.

7.1.15 Across the site, 27 category U trees do not require removal for the proposed works but are arguably not suitable for long term retention regardless of the proposed works.

7.1.16 Ongoing tree management will be necessary beneath existing the energy infrastructure and equipment. This will represent no additional impact as a result of the proposals.

7.1.17 Tree loss can be mitigated with a scheme of new tree planting which represents an opportunity which represents an opportunity to increase the quality, impact, diversity and resilience of the local tree stock.

7.1.18 Soil structure for areas of new tree planting where the ground is currently unsurfaced will either be protected using ground protection or fenced exclusion zones; or the soil structure will be ameliorated or replaced following the completion of construction works on the site.

7.1.19 Issues to be addressed by an AMS:

- Conditions of planning consent.
- Pre commencement meeting and site briefing.
- Order and phasing of operations.
- Tree works.
- Translocation of T240.
- Tree protection fencing.
- Ground protection.
- Movement of people, plant and materials.
- Enabling works.
- Removal of tree protection measures.

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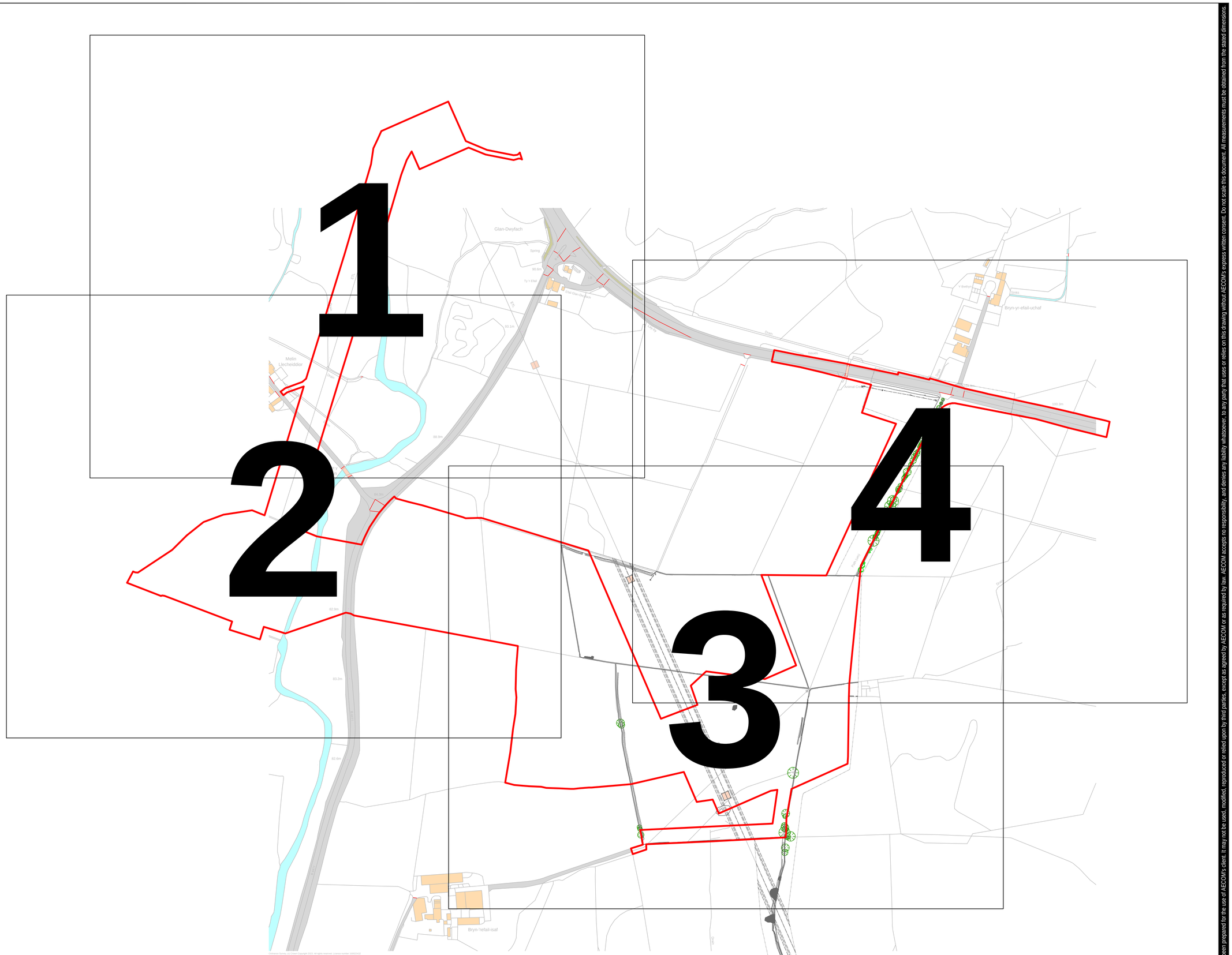
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Appendix A Tree Constraints Plan

Author: JR Designer: LH Checked: TR Approved: AW



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PTR BRYNCIR

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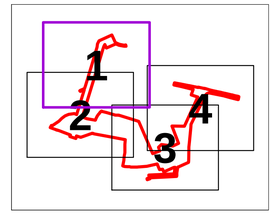
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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
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   XREF_PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg

KEY PLAN



KEY

FEATURE ID TAGS
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*

T#

SITE BOUNDARY

A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(HIGH QUALITY & VALUE)

B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(MODERATE QUALITY & VALUE)

C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(LOW QUALITY & VALUE)

U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(UNSUITABLE FOR RETENTION)

ROOT PROTECTION AREAS (RPA)
(AS DEFINED BY BS 5837:2012)

APPROXIMATE CURRENT SHADING ARCS
(AS DEFINED BY BS 5837:2012)

ANCIENT TREE WITH EXPANDED RPA BUFFER ZONE
(TREE IDENTIFIED BY AECOM WITH RPA SHOWN AS BUFFER ZONE AS PER STANDING ADVICE [FORESTRY COMMISSION AND NATURAL ENGLAND, 2022])

VETERAN TREE WITH EXPANDED RPA BUFFER ZONE
(TREE IDENTIFIED BY AECOM WITH RPA SHOWN AS BUFFER ZONE AS PER STANDING ADVICE [FORESTRY COMMISSION AND NATURAL ENGLAND, 2022])

ISSUE/REVISION

P02	31.07.25	RLB UPDATE
P01	29.05.25	FIRST ISSUE
I/R	DATE	DESCRIPTION

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PROJECT NUMBER

60686216

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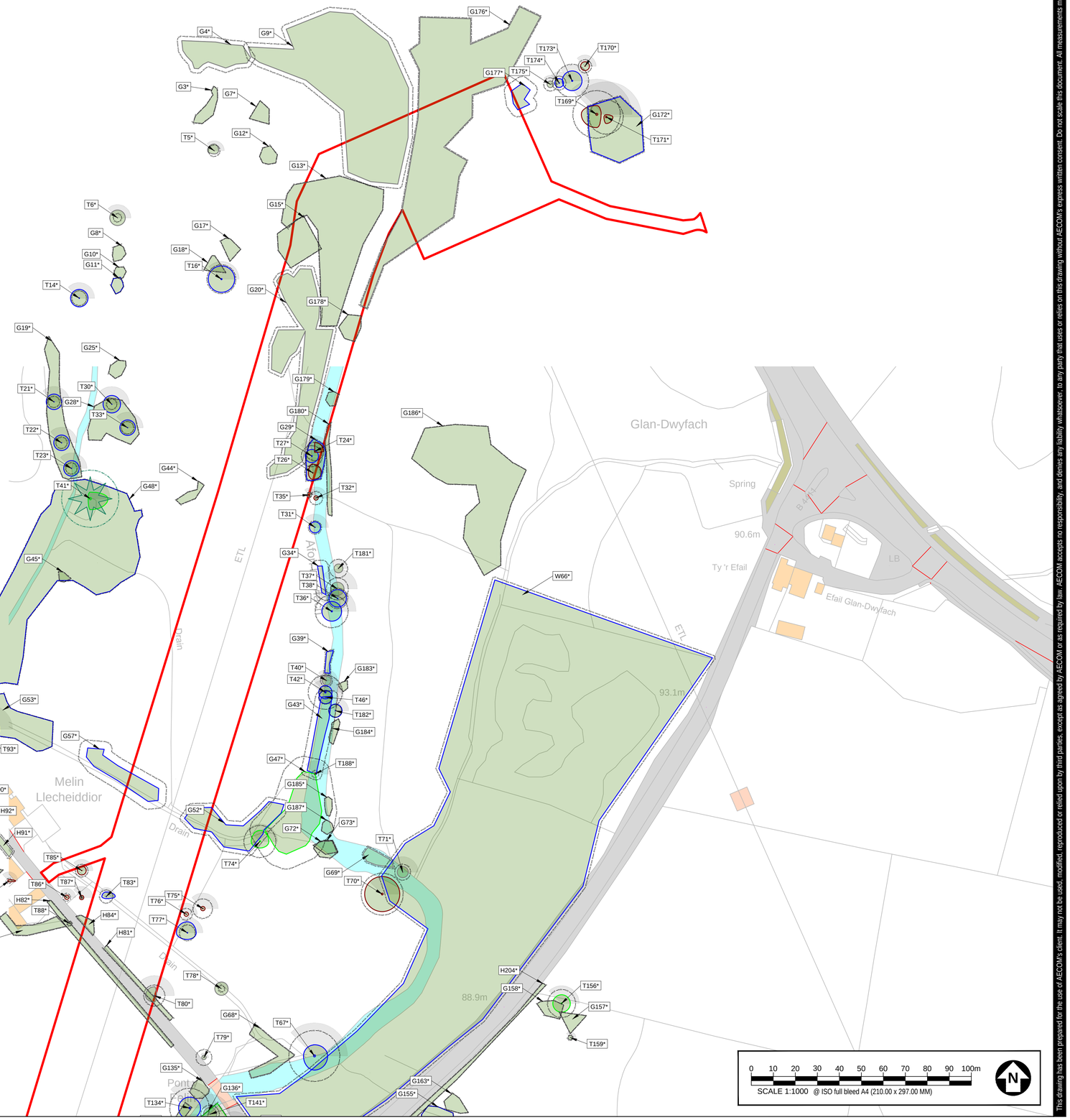
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SHEET NUMBER **REV.**

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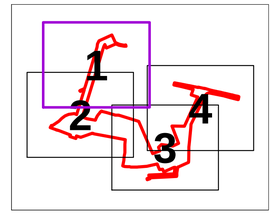
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(TREE IDENTIFIED BY AECOM WITH RPA SHOWN AS BUFFER ZONE AS PER STANDING ADVICE [FORESTRY COMMISSION AND NATURAL ENGLAND, 2022])

VETERAN TREE WITH EXPANDED RPA BUFFER ZONE
(TREE IDENTIFIED BY AECOM WITH RPA SHOWN AS BUFFER ZONE AS PER STANDING ADVICE [FORESTRY COMMISSION AND NATURAL ENGLAND, 2022])

ISSUE/REVISION

P02	31.07.25	RLB UPDATE
P01	29.05.25	FIRST ISSUE
I/R	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60686216

SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 01)

SHEET NUMBER **REV.**

60686216-ACM-XX-XX-AB-TCP-001 P02

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Author: JR Designer: LH Checked: TR Approved: AW



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PROJECT

PTR BRYNCIR

CLIENT

NATIONAL GRID

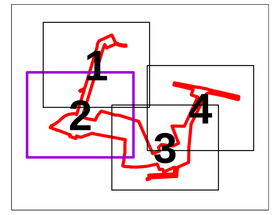
CONSULTANT

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Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
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   XREF_PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg

KEY PLAN



KEY

FEATURE ID TAGS
(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*

SITE BOUNDARY

A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(HIGH QUALITY & VALUE)

B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(MODERATE QUALITY & VALUE)

C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(LOW QUALITY & VALUE)

U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND
(UNSUITABLE FOR RETENTION)

ROOT PROTECTION AREAS (RPA)
(AS DEFINED BY BS 5837:2012)

APPROXIMATE CURRENT SHADING ARCS
(AS DEFINED BY BS 5837:2012)

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60686216

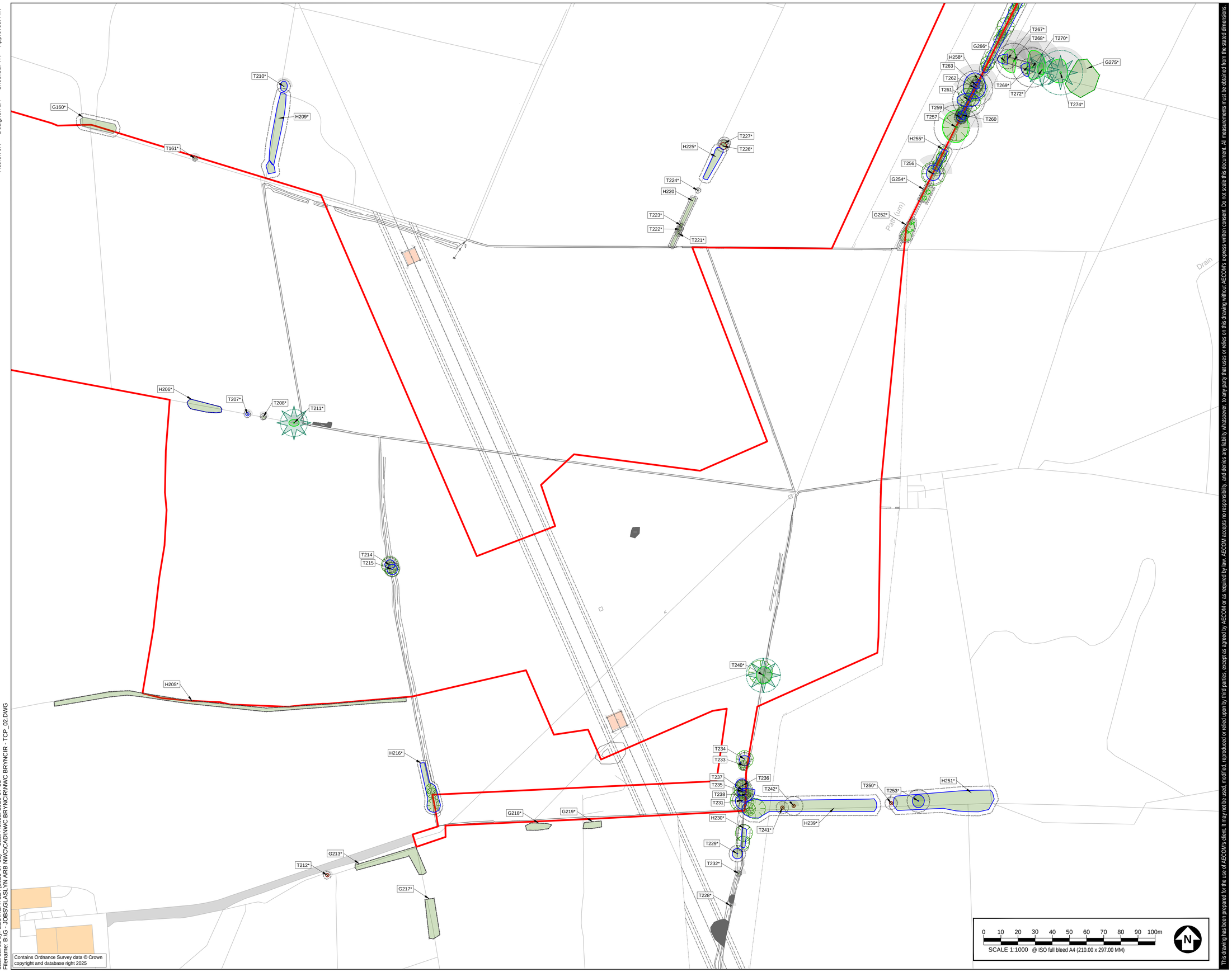
SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 02)

SHEET NUMBER **REV.**

60686216-ACM-XX-XX-AB-TCP-002 P02

Author: JR Designer: LH Checked: TR Approved: AW



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PROJECT

PTR BRYNCIR

CLIENT

NATIONAL GRID

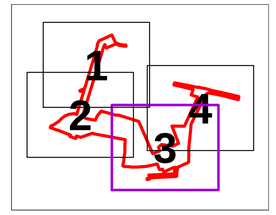
CONSULTANT

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   XREF_PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg

KEY PLAN



KEY

FEATURE ID TAGS
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ISSUE/REVISION

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P01	29.05.25	FIRST ISSUE
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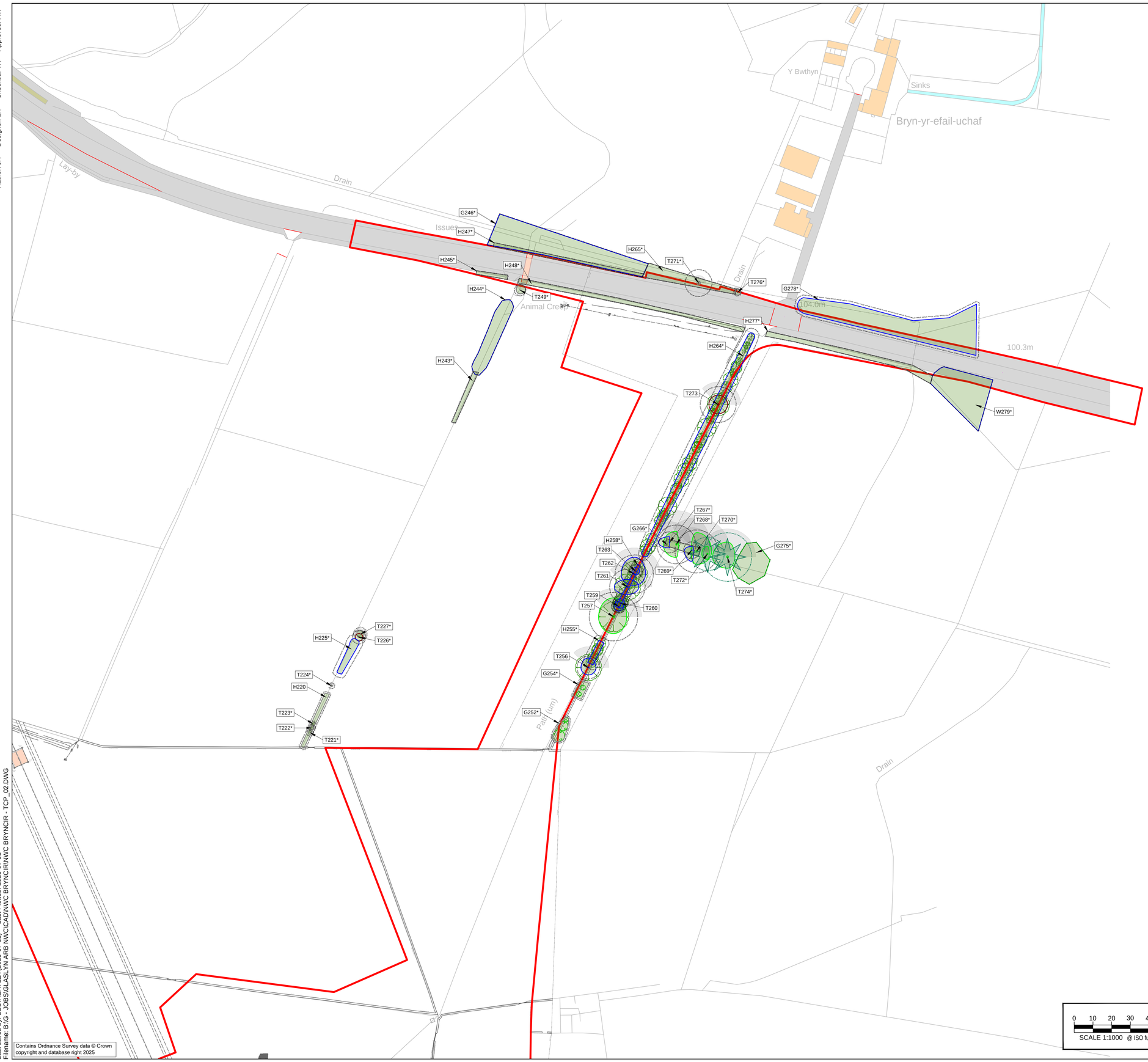
SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 03)

SHEET NUMBER 60686216-ACM-XX-XX-AB-TCP-003

REV. P02

Author: JR Designer: LH Checked: TR Approved: AW



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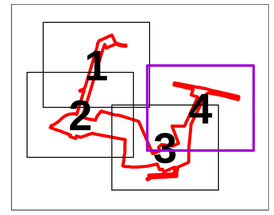
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   XREF_PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg

KEY PLAN



KEY

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ISSUE/REVISION

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P01	29.05.25	FIRST ISSUE
I/R	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60686216

SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 04)

SHEET NUMBER **REV.**

60686216-ACM-XX-XX-AB-TCP-004 P02

Appendix B Tree Survey Schedule

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T1*	Sycamore (Acer pseudoplatanus)	10	550#	4	4	4	4		4	Good	EM	Good	No access. Ivy clad.	n/a		20+	B2	6.6
G2*	Hawthorn (Crataegus monogyna), Willow (Salix sp), Blackthorn (Prunus spinosa), Grey willow (Salix cinerea)	6	250	1	1	1	1	n/a		Good - Fair	Y-SM	Good - Fair	N/a	n/a		10+	C2	3
G3*	Grey willow (Salix cinerea)	4	<80#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair		n/a		10+	C2	0.96
G4*	Grey willow (Salix cinerea), Holly (Ilex aquifolium)	6	<250#	1	1	1	1	n/a		Good	SM	Good - Fair	Outside survey area. Boggy area. Scrub group, predominantly multi-stemmed willow.	n/a		10+	C2	3
T5*	Grey willow (Salix cinerea)	4	100,60,60,60,70,50,90,60,70,70#	3	1.5	2	3	n/a	1	Good	EM	Fair	Likely historic layering or similar of main stem.	n/a		10+	C1	2.62
T6*	Goat Willow (Salix caprea)	6	80,80,80,80,30,30,30#	3.5	3.5	3.5	3.5	n/a	0.5	Good	SM	Good	Multi stemmed from 0.5 m. Congested main union. Tussocky wet ground and low limbs surround stems. Not accessed.	n/a		10+	C2	1.86
G7*	Grey willow (Salix cinerea)	3	<20#	1	1	1	1	n/a	0	Good	Y	Good - Fair		n/a		10+	C2	0.24
G8*	Goat Willow (Salix caprea)	7	<150#	3.5	3.5	3.5	3.5	n/a	0.5	Good	Y-SM	Fair	Low limbs and scrub surround stems. Not accessed. Minor crown competition between crowns.	n/a		10+	C2	1.8
G9*	Goat Willow (Salix caprea), Holly (Ilex aquifolium),	6	<250#	1	1	1	1	n/a		Good	SM	Good - Fair	Boggy area, limited access. Gorse. Scrub group, predominantly multi-stemmed willow.	n/a		10+	C2	3

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Hazel (Corylus avellana), Eared Willow (Salix aurita), Grey willow (Salix cinerea)																	
G10*	Hawthorn (Crataegus monogyna), Elder (Sambucus nigra)	4	<90#	1.5	1.5	1.5	1.5	n/a	0.5	Good	Y	Good	Stems surrounded by scrub, not accessed.	n/a		10+	C2	1.08
G11*	Hazel (Corylus avellana), Hawthorn (Crataegus monogyna)	6	<200#	3.5	3.5	3.5	3.5	n/a	0.5	Good	SM	Good - Fair	Stems surrounded by scrub, not accessed. Proximal stems with competing crowns.	n/a		20+	B2,3	2.4
G12*	Gorse (Ulex sp.)	2	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good - Fair	Gorse scrub.	n/a		10+	C2	0.24
G13*	Blackthorn (Prunus spinosa), Willow (Salix sp), Grey willow (Salix cinerea), Gorse (Ulex sp.), Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior)	3	<100#	1	1	1	1	n/a		Good	SM	Good	Boggy area, limited access.	n/a	Fell in part as per Tree Protection Plan	10+	C2	1.2
T14*	Grey willow (Salix cinerea)	7	280#	4	4	4	4	1.0/S	1	Good	M	Good	Stems situated in waterlogged area. Surveyed from afar. Species ident low confidence.	n/a		20+	B1,2	3.36
G15*	Hawthorn (Crataegus monogyna), Grey willow (Salix cinerea)	3	<90#	1	1	1	1	n/a	0	Good	SM	Good	Predominantly gorse with occasional hawthorn and willow.	n/a		10+	C2	1.08

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T16*	Grey willow (Salix cinerea)	8	250,200, 150,200, 150,140, 140,180, 200,120 #	6	6	6	6	0.5/N	0	Good	M	Good	No access to base due to ground conditions. Cluster of stems from ground level distributed over a circa 3m area. Good value as a seed tree.	n/a		20+	B1,2	6.56
G17*	Grey willow (Salix cinerea)	3	20	1	1	1	1	n/a	0	Good	Y-SM	Good	Cluster of willow - typical genus of habitat.	n/a		10+	C2	0.24
G18*	Grey willow (Salix cinerea)	3	20	1	1	1	1	n/a	0	Good	Y-SM	Good	Cluster of willow - typical genus of habitat.	n/a		10+	C2	0.24
G19*	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana)	7	<140#	3	3	3	3	n/a	1	Good	Y-SM	Good - Fair	Boundary row of trees on steep slope. Barrier of water body blocking path to stems, not accessed. Surveyed from afar. Moderate lean bias'.	n/a		10+	C2,3	1.68
G20*	Silver Birch (Betula pendula), Willow (Salix sp), Grey willow (Salix cinerea), Hazel (Corylus avellana), Blackthorn (Prunus spinosa), Gorse (Ulex sp.)	5	<200#	1	1	1	1	n/a	5	Good - Fair	Y-EM	Good - Fair	Wetland area. Gorse. Stream to west of group.	n/a	Partial removal where access is required for decommissioning of overhead cable poles and removal of foundations. Access to follow CWZ working procedures. Pruning where necessary to provide access clearance.	10+	C2	2.4
T21*	Hazel (Corylus avellana)	7	100,100, 80,80,80 ,80#	3.5	3.5	3.5	3.5	n/a	1	Good	SM	Good	Water body blocking access to stems. Surveyed from afar. Stand out specimen in row.	n/a		20+	B1,2	2.55
T22*	Hazel (Corylus avellana)	7	100,100, 80,80,80 ,80#	3.5	3.5	3.5	3.5	n/a	1	Good	SM	Good	Water body blocking access to stems. Surveyed from afar. Stand out specimen in row.	n/a		20+	B1,2	2.55
T23*	Hazel (Corylus avellana)	7	100,100, 80,80,80 ,80#	3.5	3.5	3.5	3.5	n/a	1	Good	SM	Good	Water body blocking access to stems. Surveyed from afar. Stand out specimen in row.	n/a		20+	B1,2	2.55
T24*	Ash (Fraxinus excelsior)	7	350	4	0.5	4	0	2.0/N	2	Dead	EM	Poor	Riverside tree. Dead/moribund, ivy into apex, epiphytes (likely polypoidal ferns) on stem.	n/a		<10	U1	4.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
													Value as standing deadwood habitat.					
G25*	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana)	5	<130#	1.5	1.5	1.5	1.5	n/a	0.5	Good	Y	Good	Stems surrounded by scrub, unable to access. Proximal stems with competing crowns.	n/a		10+	C3	1.56
T26*	Ash (Fraxinus excelsior)	7	300	4	3	4	2	2.0/E	2	Dead	SM	Poor	Riverside tree. Dead/moribund, ivy into apex, epiphytes (likely polypoidal ferns) on stem. Value as standing deadwood habitat.	n/a		<10	U1	3.6
T27*	Grey willow (Salix cinerea)	7	400	3	3	3	3	n/a	0	Good	EM	Good	Located on bank of stream.	n/a		20+	B2,3	4.8
G28*	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Goat Willow (Salix caprea)	5	<140#	2	2	2	2	n/a	0	Good - Fair	Y	Good - Fair	Stems surrounded by scrub, unable to access. Proximal stems with competing crowns.	n/a		10+	C3	1.68
G29*	Grey willow (Salix cinerea)	4	<200#	2	2	2	2	n/a	0	Good	Y-EM	Good - Poor	Riparian tree group. Stems in water, harping. Likely trapping material and creating micro habitats.	n/a		20+	B3	2.4
T30*	Goat Willow (Salix caprea)	8	80,80,80,80,80,80#	4	4	4	4	1.0/N	2	Good	SM	Good	Stand out specimen in stand. Stems surrounded by scrub, not accessed.	n/a		20+	B1,2	2.35
T31*	Ash (Fraxinus excelsior)	6	250	2.5	2.5	2.5	2.5	n/a	2	Good	SM	Fair	Co-dominant stem.	n/a		20+	B1	3
T32*	Ash (Fraxinus excelsior)	5	250#	1	1	1	1	n/a	5	Poor - Dead	SM	Poor	No access. Moribund. Extensive dieback, sparse watershoots. Ivy to circa 2.5m.	n/a		<10	U1	3
T33*	Goat Willow (Salix caprea)	7	230,30,30,30#	3.5	3.5	3.5	3.5	1.0/W	1.5	Good	SM	Good	Stand out specimen in stand.	n/a		20+	B1,2	2.83
G34*	Hazel (Corylus avellana),	4	<300#	1	1	1	1	n/a	n/a	Good - Fair	Y-EM	Good - Fair	Located on bank of stream. Multi-stemmed.	n/a		20+	B2	3.6

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Ash (Fraxinus excelsior)																	
T35*	Hawthorn (Crataegus monogyna)	3	100#	1	1	1	1	n/a	0	Good	SM	Good - Fair	Stem aggregate estimated. Seedling at crown edge south.	n/a		10+	C1	1.2
T36*	Ash (Fraxinus excelsior)	11	440,440	4.5	4.5	4.5	4.5	2.0/N	2	Fair	M	Fair	Located on bank of stream. Co-dominant stems, compression fork. Epicormic growth in crown, sparse crown.	n/a		20+	B1	7.47
T37*	Ash (Fraxinus excelsior)	9	300,150, 200,150 #	3	3	3	3	n/a	n/a	Fair	EM	Fair	Presenting symptoms of ADB. Crown dieback, epicormic growth in crown. Multi-stemmed.	n/a		10+	C1	5.02
T38*	Grey willow (Salix cinerea)	5	380#	4	4	4	4	n/a	0	Good	EM	Fair	Viewed from opposite side of stream. Layering. Leaning crown extending into stream.	n/a		20+	B1	4.56
G39*	Hazel (Corylus avellana), Grey willow (Salix cinerea), Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna)	5	<120#	1	1	1	1	n/a		Good	SM	Good	Hazel coppice.	n/a		20+	B2	1.44
T40*	Sycamore (Acer pseudoplatanus)	5	180,130 #	2	2	2	2	n/a	2	Fair	SM	Fair	Stem bifurcates at circa 1m. Squirrel damage.	n/a		10+	C1	2.66
T41*	Goat Willow (Salix caprea)	9	490	3	5	8	1	n/a	0	Poor	V	Poor	Major stem failure. Extensive deadwood. Decay present with fungus, N at base. Cavities in stem.	n/a		40+	A3	13

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T42*	Grey willow (Salix cinerea)	8	300,200, 150,310, 300,250, 200#	3	3	3	3	n/a	0	Good	M	Good	Multi-stemmed. On bank of stream. Layering. Ivy.	n/a		20+	B1	7.76
G43*	Hazel (Corylus avellana), Grey willow (Salix cinerea), Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna), Gorse (Ulex sp.)	5	<300#	1	1	1	1	n/a	n/a	Good	Y-EM	Good	Hazel coppice.	n/a		20+	B2	3.6
G44*	Grey willow (Salix cinerea)	3	<50#	1	1	1	1	n/a	0	Good	Y-SM	Good	N/a	n/a		10+	C2	0.6
G45*	Grey willow (Salix cinerea)	5	<100#	1	1	1	1	n/a	0	Good	Y-SM	Good	N/a	n/a		10+	C2	1.2
T46*	Ash (Fraxinus excelsior)	8	260	3	3	3	3	n/a	n/a	Good	SM	Good	N/a	n/a		20+	B2	3.12
G47*	Grey willow (Salix cinerea), Hazel (Corylus avellana), Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior)	8	<650#	1	1	1	1	n/a	n/a	Good	Y-V	Good	Multiple Multi-stemmed veteran willows. Various cavities, hollowing of stems. Adjacent stream. Good example of species. Habitat potential. Layering.	n/a		40+	A3	7.8
G48*	Hazel (Corylus avellana), Goat Willow (Salix caprea)	8	<350#	4	4	4	4	n/a	1	Good - Fair	Y-EM	Good - Fair	Predominantly multi stemmed hazel on uneven profile. Proximal stems with competing crowns.	n/a		20+	B1,2,3	4.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T49*	Ash (Fraxinus excelsior)	11	600,350, 300,180, 300#	7	7	7	7	3.0/N	2	Good	M	Good	Stem at base north likely recently removed, circa 260mm in diameter. Normal branching pattern and bud density. Ivy to circa 9m. Established on likely old stone wall. Underpinning of roots.	n/a		40+	A1	10
T50*	Ash (Fraxinus excelsior)	11	350,250 #	2	1	3	1	n/a	7	Good	EM	Fair	No access to base. Dead limb east circa 3 units of deadwood. Ivy to circa 9m. Codominant in canopy. Daldinia concentrica likely present on dead limb east. Dead stem central to crown south.	n/a		20+	B1,2	5.16
G51*	Ash (Fraxinus excelsior)	11	<280	4	4	4	4	n/a	3	Good	SM	Good - Fair	Situated on steep slope. Proximal stems with competing crowns. Pruning wound on stem at 1 m, S.	n/a		20+	B2	3.36
G52*	Hazel (Corylus avellana), Grey willow (Salix cinerea), Ash (Fraxinus excelsior)	6	<250#	1	1	1	1	n/a	n/a	Good - Fair	Y-SM	Good - Fair	N/a	n/a		20+	B2	3
G53*	Hazel (Corylus avellana), Blackthorn (Prunus spinosa)	10	<300#	4	4	4	4	n/a	0.5	Good	SM-EM	Good - Fair	Situated on undulating ground. Proximal stems with competing crowns. Multi stemmed from base.	n/a		20+	B2,3	3.6
T54*	Ash (Fraxinus excelsior)	11	350,250 #	5	6	6	4	n/a	7	Good	EM	Fair	No access to base. Established on likely old stone wall. Roots underpinning. Dense ivy to circa 9m. Normal bud density and branching pattern	n/a		20+	B1,2	5.16
T55*	Ash (Fraxinus excelsior)	5	230	0	7	1	1	3.0/S	2	Good	SM	Fair	Significant structural suppression, likely cause of circa 45 degree lean south at circa 3m. Open cavity on upperside of stem at circa 3m.	n/a		10+	C1	2.76
T56*	Ash (Fraxinus excelsior)	8	230	1	2	3	3	1.5/E	2	Fair - Poor	SM	Fair	Significant dieback, mass proliferation of	n/a		<10	U1	2.76

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
													watershoots. Ivy to circa 4m. Value as standing deadwood habitat.					
G57*	Hazel (Corylus avellana), Grey willow (Salix cinerea), Downy Birch (Betula pubescens)	5	<380#	1	1	1	1	n/a	n/a	Good	SM-M	Good	Predominantly coppiced hazel.	n/a		20+	B2	4.56
G58*	Grey willow (Salix cinerea), Gorse (Ulex sp.), Broom (Cytisus scoparius), Grey willow (Salix cinerea), Butterfly bush (Buddleja sp.), Hazel (Corylus avellana)	3	<30#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	Predominantly mixed scrub on bank around agricultural unit.			10+	C2	0.36
G59*	Blackthorn (Prunus spinosa), Hawthorn (Crataegus monogyna), Gorse (Ulex sp.)	3	<130#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	Scrub at and beyond boundary fence.	n/a		10+	C2	1.56
T60*	Grey willow (Salix cinerea)	6	550#	3.5	3.5	3.5	3.5	n/a	3	Good	V	Fair	Basal cavity, suspected stem decay. Multiple cavities in secondary limbs. Previously reduced. Leaning west.	n/a		40+	A1,3	8.5
G61*	Gorse (Ulex sp.), Broom (Cytisus scoparius), Hawthorn (Crataegus monogyna),	4	<30#	1	1	1	1	n/a	0	Good	Y-SM	Good	Predominantly scrub.	n/a		10+	C2	0.36

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				N	S	E	W											
	Grey willow (Salix cinerea)																	
G62*	Hawthorn (Crataegus monogyna)	3	<150#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	Two hawthorns on bank above informal access track.	n/a		10+	C2	1.8
G63*	Hawthorn (Crataegus monogyna)	5	<180#	2	2	2	2	n/a	1	Good	SM-M	Good	Established on stone wall. Potential remnant hedgerow.	n/a		20+	B2	2.16
T64*	Common Oak (Quercus robur)	8	500#	4	4	4	4	n/a	2	Good	EM	Good	Ivy. Situated on bank above storage yard area and gate.	n/a		20+	B2	6
H65*	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Elder (Sambucus nigra)	3	<200#	1	1	1	1	n/a	0	Good	Y-EM	Good - Fair	Established at retaining wall edge. Scrubby hedgerow.	n/a		10+	C2	2.4
W66*	Hazel (Corylus avellana), Ash (Fraxinus excelsior), Grey willow (Salix cinerea), Common Oak (Quercus robur)	15	<350#	3	3	3	3	n/a	0	Good - Fair	Y-M	Good - Fair	Riparian broadleaved woodland, regular structure	n/a		20+	B2,3	4.2
T67*	Ash (Fraxinus excelsior)	15	860,440	5	6.5	6	5	2.0/E	3	Fair	M	Fair	Presenting symptoms of ADB. Ivy clad. Significant crown dieback. Major deadwood. Epicormic growth throughout crown.	n/a		20+	B1,3	11.59
G68*	Hawthorn (Crataegus monogyna), Gorse (Ulex sp.), Ash (Fraxinus excelsior)	3	<100#	1	1	1	1	n/a	0	Good - Dead	Y-SM	Good - Poor	Scrub, gorse dominant.	n/a		10+	C2	1.2
G69*	Hawthorn (Crataegus monogyna),	4	<130#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	N/a	n/a		10+	C2	1.56

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Grey willow (Salix cinerea)																	
T70*	Ash (Fraxinus excelsior)	8	300,300, 500,450 #	8	8	8	8	2.0/ W	2	Poor	M	Fair - Poor	Limited access to base due to water course. Extensive apical dieback, watershoots throughout crown.	n/a		<10	U1	9.54
T71*	Ash (Fraxinus excelsior)	7	300#	2.5	2.5	2.5	2.5		5	Fair	SM	Fair	Presenting symptoms of ADB. Viewed from adjacent bank of river.	n/a		10+	C2	3.6
G72*	Grey willow (Salix cinerea)	4	<150#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	Watercourse edge, species typical of riparian habitats.	n/a		10+	C2	1.8
G73*	Grey willow (Salix cinerea)	4	<100#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	Species typical of riparian habitats.	n/a		10+	C2	1.2
T74*	Grey willow (Salix cinerea)	8	530,300	5	3	4	4	1.0/N	1.5	Good	M	Fair		n/a		40+	A1	7.31
T75*	Ash (Fraxinus excelsior)	7	370	1	1	1	1	n/a	n/a	Dead	EM	Poor	Monolith. Likely Daldinia concentricia across stem.	n/a		<10	U1	4.44
T76*	Ash (Fraxinus excelsior)	5	170,150	1	1	1	1	1.0/ W	n/a	Dead	SM	Poor	Moribund. Daldinia consentrica throughout.	n/a		<10	U1	2.72
T77*	Grey willow (Salix cinerea)	7	300#	5	3	4	5	n/a	0	Good	M	Fair	Likely layering of crown.	n/a		20+	B2	3.6
T78*	Hawthorn (Crataegus monogyna)	3	120#	3	3	3	3	0.5/E	0.5	Good	SM	Good	Stem aggregate estimated.	n/a		10+	C1	1.44
T79*	Hazel (Corylus avellana)	2	300#	1	1	1	1	n/a	n/a	Good	EM	Good	Hazel coppice, in contact with wall. Previously reduced in height.	n/a		10+	C1	3.6
T80*	Ash (Fraxinus excelsior)	9	400#	4	3	1	4	3.0/N	3	Fair - Poor	EM	Fair	No access to base. Apical dieback. Watershoots in crown. Ivy to circa 5m.	n/a		10+	C1	4.8
H81*	Hazel (Corylus avellana), Ash (Fraxinus excelsior), Holly (Ilex aquifolium),	3	<100#	1	1	1	1	n/a	n/a	Good - Fair	Y-EM	Good - Fair	Managed hedgerow. Previously flailed.	n/a		10+	C2	1.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Blackthorn (Prunus spinosa), Hawthorn (Crataegus monogyna)																	
H82*	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Hazel (Corylus avellana)	2	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Managed hedgerow.	n/a		10+	C2	0.24
T83*	Elder (Sambucus nigra)	4	250#	2	1	4	2	1.0/E	0	Good	M	Good	No access. Good example of species. Previous second order union failure south at circa 1m, no visible dysfunction/decay.	n/a		20+	B1	3
H84*	Hazel (Corylus avellana), Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)	3	<100#	1	1	1	1	n/a	n/a	Good - Fair	SM-EM	Good - Fair	Managed hedgerow. Previously flailed. Lichen.	n/a		10+	C2	1.2
T85*	Ash (Fraxinus excelsior)	5	130,100, 100,100, 70,90#	2	2	2	2	n/a	n/a	Dead	SM	Poor	Standing dead tree.	n/a		<10	U1	2.89
T86*	Ash (Fraxinus excelsior)	4	100,100 #	1	1	1	1	n/a	n/a	Fair	SM	Fair	Growing on boundary wall.	n/a		<10	U1	1.7
T87*	Ash (Fraxinus excelsior)	5	40#	1	1	1	1	n/a	2	Dead	Y	Poor	Moribund. Blackthorn sapling northeast.	n/a		<10	U1	0.48
T88*	Hawthorn (Crataegus monogyna)	1	90#	1	1	1	1	n/a	n/a	Fair	SM	Fair	Ivy clad.	n/a		10+	C2	1.08
T89*	Rhododendron (Rhododendron sp.)	4	250#	2	2	2	2	n/a	3	Good	M	Good	N/a	n/a		10+	C1	3
T90*	Ash (Fraxinus excelsior)	8	200,200, 200,150 #	3	3	3	3	n/a	n/a	Fair	EM	Fair	Cavity at base. Presenting symptoms of ADB. Mechanical damage at circa 4m.	n/a		<10	U1	4.53

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
H91*	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)	2	<100#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good - Fair	Managed. Ivy throughout.	n/a		10+	C2	1.2
H92*	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)	1	<80#	1	1	1	1	n/a	n/a	Fair - Poor	EM	Fair - Poor	Ivy clad. Previously reduced.	n/a		10+	C2	0.96
T93*	Ash (Fraxinus excelsior)	11	270,170, 140#	5	5	5	5	2.0/S	2	Good	SM	Fair - Poor	Emergent in hazel. Codominant union at circa 3m south with split, likely to result in circa 20% loss of crown.	n/a		20+	B1	4.18
W94*	Common Alder (Alnus glutinosa), Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna), Common Oak (Quercus robur), Sessile Oak (Quercus petraea) Willow (Salix sp.)	12	<400#	2	2	2	2	n/a	0	Good - Fair	Y-M	Good - Fair	Regular structure, areas of monospecific high forest species of alder and willow.	n/a		20+	B2,3	4.8
T95*	Grey willow (Salix cinerea)	11	750#	5	6	6	3	n/a	4	Good	A	Fair	Ivy clad, no access. Cavities in secondary limbs.	n/a		40+	A1,3	11.25
H96*	Hazel (Corylus avellana), Grey willow (Salix cinerea), Holly (Ilex aquifolium)	3	200	1	1	1	1	n/a	n/a	Good - Fair	SM-EM	Good - Fair	Managed hedgerow. Predominantly coppiced grey willow.	n/a		10+	C2	2.4

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T97*	Ash (Fraxinus excelsior)	7	150,180, 300,300, 110#	3	4	3	0.5	2.0/S	4	Poor	M	Fair - Poor	Moribund. Dense ivy to apex. Poor epicormic flushing	n/a		<10	U1	5.96
T98*	Common Alder (Alnus glutinosa)	8	450#	2	4	3	1	1.0/ W	2	Fair	M	Fair	No access to base. Ivy to circa 5m. Likely previous loss of main stem at circa 4m, obscured by ivy	n/a		20+	B2	5.4
T99*	Common Alder (Alnus glutinosa)	10	550	5	5	2	5		5	Good	M	Good	Over head cables. Ivy clad. Previously reduced back from road.	n/a		20+	B1	6.6
H100*	Blackthorn (Prunus spinosa), Hazel (Corylus avellana), Gorse (Ulex sp.)	1	<10#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	N/a	n/a		10+	C2	0.12
T101*	Ash (Fraxinus excelsior)	15	700#	5	5	5	5		5	Fair	M	Fair	Presenting symptoms of ADB. Ivy clad.	n/a		20+	B1	8.4
T102*	Ash (Fraxinus excelsior)	15	850#	5	5	5	5	n/a	5	Fair	M	Fair	Presenting symptoms of ADB. Ivy clad.	n/a		20+	B1	10.2
H103*	Hawthorn (Crataegus monogyna), Grey willow (Salix cinerea), Blackthorn (Prunus spinosa)	3	<80#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Multiple small gaps.	n/a		10+	C2	0.96
T104*	Ash (Fraxinus excelsior)	11	450#	4	5	2	4	3.0/ W	2	Good	EM	Good	Hedgerow tree. No access to base. Dense ivy to circa 9m. Normal bud density and branching pattern.	n/a		20+	B1	5.4
T105*	Common Alder (Alnus glutinosa)	9	350,250, 200,60#	4	2	5	2	2.0/ W	2.5	Good	V	Fair - Poor	Hedgerow tree, on bank. Multi-stemmed, previous failed stems north, decay of stool at union points, considered extensive.	n/a		40+	A3	10
T106*	Common Alder (Alnus glutinosa)	8	200,130, 120,100 #	3	4	2	2	2.0/N	2	Good	M	Good - Fair	Hedgerow tree, established on bank. Stems arising from significant bole to circa 1m. Mass of young stems north. Bole circa 900mm in diameter.	n/a		20+	B1,2	3.42

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T107 *	Common Alder (Alnus glutinosa)	4	200,150 #	3	3	1	3	0.5/N	1	Good	EM	Fair	No access to base. Squat form, lean of stem west.	n/a		20+	B2	3
T108 *	Grey willow (Salix cinerea)	5	300#	3	3	3	3	n/a	0	Good	EM	Good	Multi-stemmed layering. On bank of river.	n/a		20+	B1	3.6
G109 *	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Gorse (Ulex sp.), Holly (Ilex aquifolium)	5	<150#	2	2	2	2	n/a	0	Good - Fair	Y-EM	Good - Fair	Mixed riparian scrub.	n/a		10+	C2	1.8
G110 *	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana)	4	<130#	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good - Fair	Riparian mixed scrub.	n/a		10+	C2	1.56
T111 *	Ash (Fraxinus excelsior)	4	70#	0.5	0.5	0.5	0.5	n/a	2	Poor	Y	Fair - Poor	No access to base. Significant symptoms of ash dieback.	n/a		<10	U1	0.84
T112 *	Grey willow (Salix cinerea)	4	110,60,70#	2	2	2	2	n/a	1	Good	SM	Fair	No access to base. Typical species of riparian habitats.	n/a		10+	C1	1.72
T113 *	Common Alder (Alnus glutinosa)	10	560	5	5	5	5	n/a	3	Good	EM	Good	N/a	n/a		20+	B1	6.72
T114 *	Hawthorn (Crataegus monogyna)	4	250#	1	1	1	1	2.0/W	0	Good	SM	Good	Gorse at base.	n/a		10+	C1	3
T115 *	Hawthorn (Crataegus monogyna)	5	200,200, 150,150, 100#	3	2	2	3	0.5/W	0	Good	M	Good - Fair	No access.	n/a		20+	B1	4.41
T116 *	Hawthorn (Crataegus monogyna)	4	160#	1	1	1	1	n/a	n/a	Poor	SM	Poor	Moribund. Unstable, liable to stem failure.	n/a		<10	U1	1.92
G117 *	Grey willow (Salix cinerea)	8	<300#	4	4	4	4	n/a	0	Good	SM-M	Good - Fair	Species typical of riparian habitat.	n/a		20+	B2,3	3.6
G118 *	Grey willow (Salix cinerea)	8	<300#	4	4	4	4	n/a	0	Good	SM-M	Good - Fair	Species typical of riparian habitat.	n/a		20+	B2,3	3.6

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T119 *	Common Alder (Alnus glutinosa)	9	270	2	2	2	2	n/a	1	Good	EM	Good	n/a	n/a		20+	B1	3.24
T120 *	Common Alder (Alnus glutinosa)	6	450#	1	3	3	3	n/a	1	Fair	EM	Fair	Previously topped at height of circa 4m, secondary limb now apically dominant. Lower crown development.	n/a		20+	B3	5.4
T121 *	Common Alder (Alnus glutinosa)	8	770	5	6	5	3	2.0/S	1.5	Good	A	Good	Established on stream bank, likely flushed habitat. Hawthorn at base. Veteran / approaching ancient dimensions.	n/a		40+	A3	11.55
T122 *	Common Alder (Alnus glutinosa)	7	400,250 #	1	3	3	3	n/a	2	Good	M	Fair	Ivy clad. Epicormic growth.	n/a		20+	B3	5.66
T123 *	Hawthorn (Crataegus monogyna)	4	200,250 #	2.5	2.5	2.5	2.5	0.5/E	1	Fair	M	Good	Ivy clad. Minor deadwood.	n/a	Fell	20+	B3	3.84
T124 *	Hawthorn (Crataegus monogyna)	4	250#	2.5	2.5	2.5	2.5	0.5/S	1	Good	M	Good	Ivy clad. Minor deadwood.	n/a	Fell	20+	B3	3
T125 *	Common Alder (Alnus glutinosa)	10	700,330, 350#	5	5	5	5	2.0/S	2	Good	A	Fair - Poor	Established streamside. Extensive cavity to dominant stem, from ground level to circa 2.5m, maximum opening of approx., 500mm, depth of around 350mm. Columnar woundwood.	n/a		40+	A3	12.74
G126 *	Hawthorn (Crataegus monogyna), Gorse (Ulex sp.)	5	<100#	3	3	3	3	n/a	1	Good	SM	Good - Fair	Approx., 4 hawthorn, likely hedgerow remnant.	n/a		10+	C2	1.2
T127 *	Common Alder (Alnus glutinosa)	8	660	5	5	5	5	n/a	2.5	Good	M	Good	Good example of species. Small cavity at base. Ivy clad. Previously reduced.	n/a		40+	A2	7.92
G128 *	Grey willow (Salix cinerea), Holly (Ilex aquifolium), Hazel (Corylus avellana)	7	<350#	3	3	3	3	n/a	0	Good	Y-M	Good - Fair	Willow dominant. No access to bases.	n/a		20+	B2,3	4.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T129 *	Ash (Fraxinus excelsior)	10	450	4	4	4	4	n/a	4	Poor	EM	Fair	Presenting symptoms of ADB. Significant crown dieback.	n/a		10+	C2	5.4
T130	Ash (Fraxinus excelsior)	5	130#	1	1	1	1	n/a	n/a	Poor - Dead	SM	Poor	Dead tree.	n/a		<10	U1	1.56
G131 *	Hazel (Corylus avellana), Common Alder (Alnus glutinosa), Grey willow (Salix cinerea), Cotoneaster (Cotoneaster sp.)	6	<150#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	Bankside scrub.	n/a		10+	C2	1.8
G132 *	Ash (Fraxinus excelsior), Grey willow (Salix cinerea)	8	<380#	1	1	1	1	n/a	n/a	Good - Fair	EM	Good - Fair	Multi-stemmed, adjacent to river.	n/a		10+	C2	4.56
G133 *	Hazel (Corylus avellana), Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior)	5	<130#	2	2	2	2	n/a	0	Good - Fair	Y	Good - Fair	Bankside regeneration.	n/a		10+	C2	1.56
T134 *	Ash (Fraxinus excelsior)	12	600,450	5	5	5	5	n/a	4	Fair	M	Fair	Presenting symptoms of ADB. Epicormic growth in crown.	n/a		20+	B3	9
G135 *	Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna), Hazel (Corylus avellana)	8	<150#	2	2	2	2	n/a	0	Good - Dead	Y-SM	Good - Poor	One dead young tree at group periphery.	n/a		10+	C2	1.8
G136 *	Grey willow (Salix cinerea), Hazel (Corylus avellana), Hawthorn	6	<350#	4	4	4	4	n/a	0	Good	SM-M	Good - Fair	Numerous layered/phoenix regenerating stems. One significant hazel coppice. Numerous deadwood habitats.	n/a		40+	A3	4.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	(Crataegus monogyna), Gorse (Ulex sp.), Ash (Fraxinus excelsior)																	
T137 *	Grey willow (Salix cinerea)	9	430,310, 390	5	9	6	7	n/a	0	Good	V	Fair	Layering. Stem decay and hollowing. Cavities. Major deadwood.	n/a		40+	A3	14
T138 *	Hazel (Corylus avellana)	7	250,150, 100,100, 150,100, 130,120 #	2	4	4	5	n/a	0	Good	M	Good - Poor	Established on retaining wall. Unknown effect on structural rootplate stability.	n/a		20+	B1	4.67
T139 *	Ash (Fraxinus excelsior)	9	210,200	3	3	3	3	2.0/ W	2	Fair	SM	Fair	Heterogenous distribution of apical dieback. Prolific watershoot development throughout crown.	n/a		10+	C1,2	3.48
G140 *	Ash (Fraxinus excelsior), Hawthorn (Crataegus monogyna), Grey willow (Salix cinerea), Hazel (Corylus avellana)	7	<500#	1	1	1	1	n/a	n/a	Good - Fair	SM-M	Good - Fair		n/a		20+	B2,3	6
T141 *	Ash (Fraxinus excelsior)	9	350#	3	3	3	3	2.0/ W	2	Fair - Poor	EM	Fair	Heterogenous distribution of apical dieback. Prolific watershoot development throughout crown.	n/a		10+	C1,2	4.2
T142 *	Grey willow (Salix cinerea)	3	100#	1	1	1	1	n/a		Good	Y	Good		n/a		10+	C1	1.2
T143 *	Hawthorn (Crataegus monogyna)	5	200#	2	2	2	2	n/a	1	Fair	EM	Fair	No access to base. Stem aggregate estimated. Ivy to crown apex, beginning to shroud crown.	n/a		20+	B2	2.4
G144 *	Hawthorn (Crataegus monogyna)	5	<180#	2	2	2	2	n/a	0	Good - Fair	SM-EM	Good - Fair	Approx., three trees. Ivy shrouding southern tree.	n/a	Reduce or remove (if required) to provide adequate clearance for cable installation oversailing B4411.	20+	B2	2.16

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T145 *	Hawthorn (Crataegus monogyna)	4	300#	2	2	2	2	n/a	2	Fair	EM	Fair	Ivy.	n/a		20+	B1	3.6
G146 *	Hawthorn (Crataegus monogyna)	5	<200#	4	4	4	4	n/a	1	Good	SM-M	Good - Fair	Cluster of circa 3 hawthorn.	n/a		20+	B2	2.4
T147 *	Sycamore (Acer pseudoplatanus)	8	450,300#	4	4	4	4	n/a	3	Good	EM	Fair	Hedgerow tree, limited access to base.	n/a		20+	B1	6.49
H148 *	Hawthorn (Crataegus monogyna), Ash (Fraxinus excelsior), Blackthorn (Prunus spinosa)	3	<80#	1	1	1	1	n/a	0	Good	EM	Good	Managed hedgerow. Previously failed to height of circa 3m. Predominantly hawthorn.	n/a		10+	C2	0.96
H149 *	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Elder (Sambucus nigra)	5	<150#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good - Fair	Managed hedgerow.	n/a		10+	C2	1.8
T150 *	Hawthorn (Crataegus monogyna)	6	380#	3	3	3	3	n/a	2	Good	M	Good		n/a		20+	B1	4.56
G151 *	Sycamore (Acer pseudoplatanus), Grey willow (Salix cinerea), Hazel (Corylus avellana)	9	<250#	3	3	3	3	n/a	0	Good	SM	Good - Fair	Hedgerow trees.	n/a		20+	B2	3
G152 *	Gorse (Ulex sp.)	1	<10#	1	1	1	1	n/a	0	Good	Y-SM	Good	Gorse scrub.	n/a		10+	C2	0.12
G153 *	Grey willow (Salix cinerea), Sycamore (Acer pseudoplatanus)	6	<250#	3	3	3	3	n/a	0	Good	Y-EM	Good - Fair	Hedgerow trees.	n/a		10+	C1,2	3

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
G154 *	Sycamore (Acer pseudoplatanus)	11	350	4	4	4	4	n/a	n/a	Good	EM	Good	Multi-stemmed. Ivy clad.	n/a		20+	B2	4.2
G155 *	Grey willow (Salix cinerea)	5	<400#	5	5	5	5	n/a	0	Good	M	Good - Fair	No access. Two willow.	n/a		20+	B1,2	4.8
T156 *	Grey willow (Salix cinerea)	8	400,350 #	4	4	4	4	n/a	2	Good	M	Good	No access. Viewed from highway.	n/a		40+	A1	6.38
G157 *	Gorse (Ulex sp.)	1	<10#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Gorse scrub.	n/a		10+	C2	0.12
G158 *	Hawthorn (Crataegus monogyna), Gorse (Ulex sp.)	2	<80#	1	1	1	1	n/a	n/a	Good	SM	Good	Viewed from roadside.	n/a		10+	C2	0.96
T159 *	Hawthorn (Crataegus monogyna)	2	100#	1	1	1	1	n/a	1	Fair	SM	Fair	No access. Viewed from highway. Stem aggregate estimated. Moderate crown sparsity - deviating branching pattern.	n/a		10+	C1	1.2
G160 *	Hawthorn (Crataegus monogyna)	5	<260#	1	1	1	1	n/a	n/a	Good - Fair	EM	Good - Fair	Viewed from roadside.	n/a		10+	C2	3.12
T161 *	Hawthorn (Crataegus monogyna)	3	130#	1	1	1	1	n/a	n/a	Fair	SM	Fair	No access, viewed from highway.	n/a		10+	C1	1.56
G162 *	Hawthorn (Crataegus monogyna)	5	<260#	1	1	1	1	n/a	n/a	Good - Fair	EM	Good - Fair	Viewed from roadside.	n/a		10+	C2	3.12
G163 *	Gorse (Ulex sp.)	1	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Gorse scrub.	n/a		10+	C2	0.24
G164 *	Grey willow (Salix cinerea), Gorse (Ulex sp.)	4	<100#	3	3	3	3	n/a	0	Good	Y-SM	Good - Fair	No access. Viewed from highway.	n/a		10+	C2	1.2
H165 *	Hawthorn (Crataegus monogyna), Ash (Fraxinus excelsior)	4	<100#	1	1	1	1	n/a	0	Good - Dead	Y-SM	Good - Poor	Boundary scrub. Young ash in poor condition.	n/a		10+	C1,2	1.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
G166 *	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa)	4	<100#	1	1	1	1	n/a		Good - Fair	SM-EM	Good - Fair	In contact with building.	n/a		10+	C2	1.2
T167 *	Ash (Fraxinus excelsior)	4	70,70#	0.5	0.5	3	0.5	n/a	2	Good	Y	Fair	Self sown adjacent to agricultural structure. Base likely in contact.	n/a		<10	U1	1.19
T168 *	Ash (Fraxinus excelsior)	9	350#	3	3	3	3	n/a	3	Poor	EM	Poor	Moribund. Significant crown dieback.	n/a		<10	U1	4.2
T169 *	Ash (Fraxinus excelsior)	16	900	4	6	2	7	1.0/W	2	Poor	M	Fair - Poor	No access to base. Significant dieback. Prolific development of watershoots throughout crown. Ivy to circa 8m.	n/a		<10	U1	10.8
T170 *	Ash (Fraxinus excelsior)	5	250#	2	2	2	2	n/a	n/a	Poor	SM	Poor	No access. Moribund.	n/a		<10	U1	3
T171 *	Ash (Fraxinus excelsior)	16	650	1	3	3	1	n/a	n/a	Poor	M	Fair - Poor	No access to base. Significant dieback. Prolific development of watershoots throughout crown. Ivy to circa 8m.	n/a		<10	U1	7.8
G172 *	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Hawthorn (Crataegus monogyna)	16	<450#	5	5	5	5	n/a	n/a	Good - Poor	SM-EM	Good - Poor	Semi mature ash east in poor condition.	n/a		20+	B1,2	5.4
T173 *	Willow (Salix sp)	7	500,380	4.5	4.5	4.5	4.5	n/a	n/a	Good	M	Good	Major deadwood.	n/a		20+	B3	7.54
T174 *	Grey willow (Salix cinerea)	5	180,150, 120#	2	2	2	2	n/a	0.5	Fair	EM	Fair	Leaning. Layering.	n/a		20+	B3	3.16
T175 *	Grey willow (Salix cinerea)	4	250#	1.5	1.5	1.5	1.5	n/a	n/a	Good	Y	Good	Twin-stem.	n/a		10+	C1	3
G176 *	Hawthorn (Crataegus monogyna), Blackthorn (Prunus	8	200	2	2	2	2	n/a	0	Good - Dead	Y-EM	Good - Poor	Limited access due to ground conditions. Mixed scrub, occasional willow, ash or sycamore. Shrub	n/a		10+	C1,2	2.4

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	spinosa), Gorse (Ulex sp.), Grey willow (Salix cinerea), Ash (Fraxinus excelsior), Sycamore (Acer pseudoplatanus), Hazel (Corylus avellana), Common Alder (Alnus glutinosa)												species dominance variable.					
G177 *	Grey willow (Salix cinerea)	7	<350#	1	1	1	1	n/a	n/a	Good - Fair	EM	Good - Fair	X5 willow. Layering.	n/a		20+	B2	4.2
G178 *	Grey willow (Salix cinerea), Gorse (Ulex sp.)	5	<100#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	N/a	n/a		10+	C2	1.2
G179 *	Grey willow (Salix cinerea), Gorse (Ulex sp.)	5	<100#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	N/a	n/a		10+	C2	1.2
G180 *	Gorse (Ulex sp.), Hazel (Corylus avellana)	3	<20#	1	1	1	1	n/a	0	Good	Y-SM	Good	N/a	n/a		10+	C2	0.24
T181 *	Grey willow (Salix cinerea)	4	350#	2	2	2	2	n/a	n/a	Fair	EM	Fair	Layering, tear-outs.	n/a		10+	C1	4.2
T182 *	Grey willow (Salix cinerea)	6	240	3	3	3	3	n/a	1	Good	EM	Good	N/a	n/a		20+	B1	2.88
G183 *	Gorse (Ulex sp.)	2	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Gorse scrub.	n/a		10+	C2	0.24
G184 *	Grey willow (Salix cinerea), Gorse (Ulex sp.), Grey willow (Salix cinerea),	2	<60#	1	1	1	1	n/a	0	Good - Dead	Y-SM	Good - Poor	Predominantly gorse scrub, range of physiological conditions. One dead young ash.	n/a		10+	C2	0.72

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Ash (Fraxinus excelsior)																	
G185 *	Gorse (Ulex sp.), Hazel (Corylus avellana)	2	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	N/a	n/a		10+	C2	0.24
G186 *	Gorse (Ulex sp.), Grey willow (Salix cinerea), Silver Birch (Betula pendula)	4	<75#	1	1	1	1	n/a	n/a	Good - Fair	Y-SM	Good - Fair	Wetland area. Dense group of predominantly gorse.	n/a		10+	C2	0.9
G187 *	Hawthorn (Crataegus monogyna)	3	<20#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	No access.	n/a		10+	C2	0.24
T188 *	Ash (Fraxinus excelsior)	6	130#	0.5	0.5	0.5	0.5	n/a	n/a	Poor	SM	Poor	Moribund, at watercourse edge.	n/a		<10	U1	1.56
T189 *	Ash (Fraxinus excelsior)	5	138	1	1	1	1	2.0/S	2	Good	Y	Good	Ivy to circa 2m.	n/a		10+	C1	1.66
G190 *	Common Alder (Alnus glutinosa)	9	<250#	1	1	1	1	n/a	n/a	Good - Fair	SM	Good - Fair	X7 alder stems.	n/a		10+	C2	3
T191 *	Hawthorn (Crataegus monogyna)	4	100#	1	1	1	1	n/a	n/a	Fair	SM	Fair		n/a		10+	C1	1.2
T192 *	Ash (Fraxinus excelsior)	7	190	1	3	2	2	3.0/S	4	Good	SM	Good	Ivy to circa 4m.	n/a		10+	C1	2.28
H193 *	Hawthorn (Crataegus monogyna), Grey willow (Salix cinerea)	2	<10#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	Remnant hedgerow section.	n/a		10+	C2	0.12
G194 *	Common Alder (Alnus glutinosa), Grey willow (Salix cinerea)	7	<250#	1	1	1	1	n/a	n/a	Good - Fair	SM	Good - Fair	Ivy clad stems.	n/a		10+	C2	3
H195 *	Hawthorn (Crataegus monogyna),	4	<90#	1	1	1	1	n/a	0	Good	Y-SM	Good	N/a	n/a		10+	C2	1.08

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	Blackthorn (Prunus spinosa)																	
H196 *	Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Gorse (Ulex sp.)	2	<30#	0.5	0.5	0.5	0.5	n/a	0	Good - Fair	Y-SM	Good - Fair	Remnant hedgerow section.	n/a		10+	C2	0.36
G197 *	Gorse (Ulex sp.)	1	<50#	1	1	1	1	n/a	n/a	Good	SM	Good	N/a	n/a		10+	C2	0.6
H198 *	Hawthorn (Crataegus monogyna), Gorse (Ulex sp.), Grey willow (Salix cinerea)	2	<20#	0.5	0.5	0.5	0.5	n/a	0	Good - Dead	Y-SM	Good - Poor	Managed. Few dead gorse.	n/a		10+	C2	0.24
T199 *	Hawthorn (Crataegus monogyna)	2	80#	1	1	1	1	n/a	0	Good	SM	Good	Previously reduced.	n/a		10+	C1	0.96
H200 *	Hawthorn (Crataegus monogyna), Gorse (Ulex sp.), Broom (Cytisus scoparius)	1	<10#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Gappy, managed.	n/a		10+	C2	0.12
T201 *	Hawthorn (Crataegus monogyna)	2	70#	1	1	1	1	n/a	0	Good	SM	Good	Previously reduced.	n/a		10+	C1	0.84
T202 *	Hawthorn (Crataegus monogyna)	2	70#	1	1	1	1	n/a	0	Good	SM	Good	Previously reduced.	n/a		10+	C1	0.84
T203 *	Grey willow (Salix cinerea)	8	300,260, 250#	3	3	3	3	n/a	3.5	Fair	M	Fair	Ivy clad. Limited access.	n/a		20+	B3	5.63

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
H204 *	Hawthorn (Crataegus monogyna), Ash (Fraxinus excelsior), Blackthorn (Prunus spinosa)	3	<80#	1	1	1	1	n/a	0	Good	EM	Good	Managed hedgerow. Previously flailed to height of circa 3m. Predominantly hawthorn.	n/a	Remove in part as per Tree Protection Plan	10+	C2	0.96
H205 *	Hawthorn (Crataegus monogyna),Gorse (Ulex sp.)	2	<40#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Numerous significant gaps.	n/a		10+	C2	0.48
H206 *	Hawthorn (Crataegus monogyna)	4	<220#	3	3	3	3	n/a	2	Good	SM-EM	Good - Poor	Established on apex of stone wall/mound. Numerous open cavities with heart rot, ground contact and chimneys throughout hedge.	n/a		20+	B2,3	2.64
T207 *	Hawthorn (Crataegus monogyna)	3	160	1	1	1	1	0.5/S	0.5	Fair	EM	Fair	Likely previous failure of northern stem, extensive heartwood decay, daylight visible through stem. Prolific insect holes. Likely mix of wet and dry rot types.	n/a		20+	B3	1.92
T208 *	Hawthorn (Crataegus monogyna)	3	100,100, 40,30#	0.5	1.5	1.5	1	0.5/S	1	Fair	SM	Fair	Established on apex of stone wall/mound. Dieback of Northern crown, minor deadwood.	n/a		10+	C1	1.8
H209 *	Hawthorn (Crataegus monogyna),Gorse (Ulex sp.)	4	<300#	1	1	1	1	n/a	1.5	Good - Fair	M	Good - Fair	Mature hedgerow on top of stone mound/wall. Exposed roots likely from deteriorating mound, soil erosion. Gaps within hedge. X6 hawthorn, x2 gorse.	n/a		20+	B2,3	3.6
T210 *	Hawthorn (Crataegus monogyna)	5	320	3	3	2	2	1.5/N	2	Good	M	Good	Established on apex of stone wall/mound.	n/a		20+	B1	3.84
T211 *	Hawthorn (Crataegus monogyna)	4	220,320	2	2	3	3	0.5/N	1.5	Good	V	Fair - Poor	Established on apex of stone wall/mound. Likely historic split of stems, now with extensive heartwood decay, likely dry brown rot, rot type, around	n/a		40+	A3	8

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
													1mx150mm on the inside of either stem.					
T212 *	Hawthorn (Crataegus monogyna)	3	150,100 #	1	1	1	1		3	Poor	EM	Poor	Poor vitality. Minor deadwood in remaining crown. Previous stem failure, laying in field. Stem decay, and cavity at base.	n/a		<10	U1	2.16
G213 *	Gorse (Ulex sp.)	2	<50#	1	1	1	1	n/a		Good	Y-EM	Good	Scattered gorse on stone mound/wall.	n/a		10+	C2	0.6
T214 *	Common Alder (Alnus glutinosa)	5	360	3	2	3	3	2.0/N	3	Good	M	Good	Established on apex of stone wall/mound.	n/a		20+	B1,2	4.32
T215 *	Hawthorn (Crataegus monogyna)	5	360	3	3	3	3	1.0/N	2	Good	M	Good - Fair	Established on apex of stone wall/mound. Stem measured at ground level due to bank.	n/a		20+	B1,2	4.32
H216 *	Hawthorn (Crataegus monogyna),Gorse (Ulex sp.)	4	<200#	1	1	1	1	n/a	2	Good - Fair	M	Good - Fair	Mature hedgerow on top of stone mound/wall. Exposed roots likely from deteriorating mound, soil erosion. Gaps within hedge. X5 hawthorn, x1 gorse.	n/a		20+	B2	2.4
G217 *	Gorse (Ulex sp.)	2	<50#	1	1	1	1	n/a	n/a	Good	SM	Good	Scattered gorse on stone mound/wall.	n/a		10+	C2	0.6
G218 *	Gorse (Ulex sp.)	1	30	0.5	0.5	0.5	0.5	n/a	0	Good - Poor	Y-SM	Good - Fair	Crown sparsity of older growth throughout.	n/a		10+	C2	0.36
G219 *	Gorse (Ulex sp.)	1	30	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good - Fair		n/a		10+	C2	0.36
H220	Hawthorn (Crataegus monogyna)	4	<150#	1	1	1	1	n/a	1	Good - Dead	SM	Good - Poor	Established on apex of stone wall/mound. Central extent windblown with basal stem failure. Approx., 4 trees.	n/a		10+	C2	1.8
T221 *	Hawthorn (Crataegus monogyna)	2	150#	1	1	1	1	n/a	0	Poor	EM	Poor	Root plate failure. Laying in field. Live buds at time of survey.	n/a		10+	C1	1.8
T222 *	Hawthorn (Crataegus monogyna)	2	150#	1	1	1	1	n/a	0	Poor	EM	Poor	Root plate failure. Laying in field. Live buds at time of survey.	n/a		10+	C1	1.8

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T223 *	Hawthorn (Crataegus monogyna)	2	100#	1	1	1	1	n/a	0	Poor	EM	Poor	Root plate failure. Laying in field. Live buds at time of survey.	n/a		10+	C1	1.2
T224 *	Hawthorn (Crataegus monogyna)	2	100,70	0.5	0.5	0.5	0.5	n/a	1	Fair	SM	Fair - Poor	Numerous bark wounds with heartwood decay, daylight visible through base of stem.	n/a		10+	C1	1.46
H225 *	Hawthorn (Crataegus monogyna)	4	<250#	1	1	1	1	n/a	n/a	Good - Fair	EM-M	Good - Fair	Mature hedgerow on top of stone mound/wall.	n/a		20+	B2	3
T226 *	Crab Apple (Malus sylvestris)	4	300	2	2	2	2	n/a	0	Poor	M	Poor	Root plate failure. Laying in field. Live buds at time of survey.	n/a		<10	U1	3.6
T227 *	Hawthorn (Crataegus monogyna)	3	300#	2	2	2	2	n/a	0	Poor	M	Poor	Root plate failure. Laying in field. Live buds at time of survey.	n/a		10+	C1	3.6
T228 *	Rowan (Sorbus aucuparia)	3	40#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	At boundary, gorse at base.	n/a		10+	C1	0.48
T229 *	Grey willow (Salix cinerea)	4	400#	3	3	3	3	n/a	0	Fair	EM	Poor	Historic stem failure, stem decay, harping. Within boggy area, waterlogged. FFB on second order limb likely willow bracket.	n/a		20+	B3	4.8
H230 *	Hawthorn (Crataegus monogyna)	4	<260#	1	1	1	1	n/a	1	Good - Poor	M	Good - Poor	Crown dieback, deadwood. Either side of barbed wire fence.	n/a		20+	B2	3.12
T231 *	Grey willow (Salix cinerea)	6	470	3	5	3	4	1.0/W	1	Good	M	Good	Wound to stem base, approx., 1mx150mm, ingress of decay by approx.,,100mm, accumulation of woodmould or similar. Cavity forming with ground contact, no chimney, not considered extensive at this stage. Good adaptive growth and woundwood.	n/a		20+	B2,3	5.64
T232 *	Hawthorn (Crataegus monogyna)	4	130#	1	1	1	1	n/a	0.5	Good	SM	Good	Stem estimated from ground level due to mass proliferation of stems at circa 1.5m agl.	n/a		10+	C1	1.56
T233 *	Hawthorn (Crataegus monogyna)	3	190	1	3	1	2	1.5/S	2	Good	EM	Good	Stem measured at circa 1m due to proliferation of crown structure at 1.5m.	n/a		10+	C1	2.28

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T234 *	Grey willow (Salix cinerea)	4	320	2	4	3	3		0.5	Good	EM	Fair	Species typical of wet ground conditions. Hazard beam type fracture in central crown, likely recent based on inner wood substrate colour. Minor branch collar cavities, likely confined to branch attachment zone. One previous hazard beam style fracture in crown to west.	n/a		20+	B2,3	3.84
T235 *	Hawthorn (Crataegus monogyna)	5	290	1	2	2	3	1.0/S	2	Good	M	Good	Stem measured at ground level due to fusion of stems at 1.5m.	n/a		20+	B2	3.48
T236 *	Grey willow (Salix cinerea)	5	280	4	2	3	4	1.5/S	1	Good	EM	Fair	Species typical of wet ground conditions. Minor partial failure of limb in upper crown east and north.	n/a		20+	B2,3	3.36
T237 *	Grey willow (Salix cinerea)	5	480	1	7	7	3	2.0/E	0	Good	M	Fair - Poor	Previous partial failure of main stem at circa 2.5m, tear circa 1m x 300mm. Aerial rooting. No obvious visual decay of inner wood substrate. Failure potentially recent. Crown apices of partially failed stem in contact with ground level east.	n/a		20+	B2,3	5.76
T238 *	Hawthorn (Crataegus monogyna)	4	110	1	1	1	1	n/a	1.5	Fair	SM	Fair		n/a		10+	C1	1.32
H239 *	Hawthorn (Crataegus monogyna)	5	<280#	1	1	1	1	n/a	2	Good - Poor	M	Good - Poor	Mature hedgerow on top of stone mound/wall. Major deadwood. Exposed roots likely from deteriorating mound, soil erosion. Gap to the west currently used as farm vehicle access. Gaps within hedge.	n/a		20+	B2,3	3.36
T240 *	Grey willow (Salix cinerea)	5	510	5	5	5	4	2.0/S	2	Good	V	Fair	Established on apex of stone wall/mound. Open cavity northwest with ground contact and no chimney. Daylight visible through stem, extensive. Good adaptive growth with columnar woundwood.	n/a	Translocate within red line boundary.	40+	A3	10

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
													Cavity circa 900mmx400mm, likely minor vol. Woodmould accumulating.					
T241 *	Hawthorn (Crataegus monogyna)	3	300	1	1	1	1	n/a	0	Poor	M	Poor	Moribund, appears largely dead. Root plate failure, crown laying on adjacent field.	Retain as deadwood habitat.		<10	U1	3.6
T242 *	Rowan (Sorbus aucuparia)	3	460	1	1	1	1	n/a	0	Poor	M	Poor	Moribund. Stem failure at circa 2m, crown laying on adjacent field, still live buds at time of survey. Visible stem decay.	Retain as deadwood habitat.		<10	U1	5.52
H243 *	Hawthorn (Crataegus monogyna)	3	<100#	1	1	1	1	n/a	1	Good	Y-SM	Fair	Established on mound/stone wall.	n/a		10+	C2	1.2
H244 *	Hawthorn (Crataegus monogyna)	6	250	4	4	4	4	n/a	2	Good - Fair	SM-M	Good - Poor	Established on apex of stone wall/mound. Circa 4 windblown trees within group. Numerous features throughout of exposed inner wood - none considered extensive on an individual level.	n/a		20+	B2,3	3
H245 *	Hawthorn (Crataegus monogyna),Blackthorn (Prunus spinosa)	2	<50#	0.5	0.5	0.5	0.5	n/a	1	Good	SM	Good	Established on apex of stone wall/mound. Managed.	n/a	Fell	10+	C2	0.6
G246 *	Common Alder (Alnus glutinosa),Common Oak (Quercus robur),Grey willow (Salix cinerea),Holly (Ilex aquifolium),Rowan (Sorbus aucuparia)	9	<350#	4	4	4	4	n/a	0	Good - Fair	Y-M	Good - Fair	Highwayside tree belt. Recently pruned back from highway.	n/a		20+	B1,2	4.2
H247 *	Hawthorn (Crataegus monogyna),Blackthorn (Prunus	3	<70#	1	1	1	1	n/a	n/a	Good	SM-EM	Good	Recently flailed back from road/grass verge. Reduced to approx.., 1m at front of hedge. Predominantly blackthorn. Ivy clad.	n/a		10+	C2	0.84

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
	spinosa),Gorse (Ulex sp.)																	
H248 *	Hawthorn (Crataegus monogyna),Blackthorn (Prunus spinosa)	2	<50#	0.5	0.5	0.5	0.5	n/a	1	Good	SM	Good	Established on apex of stone wall/mound. Managed.	n/a	Fell	10+	C2	0.6
T249 *	Ash (Fraxinus excelsior)	6	250#	3	2	3	2	1.0/W	1	Fair	SM	Good	No access to base. Prolific internal crown epicormic growth, no obvious deviation to the normal crown branching pattern.	n/a		10+	C1	3
T250 *	Hawthorn (Crataegus monogyna)	4	300#	1	1	1	1	n/a	0	Poor	M	Poor	Moribund. Decaying stubs from previous stem failures. Recent stem failure laying in field. Major deadwood. Growing on top of stone mound/wall.	n/a		<10	U1	3.6
H251 *	Hawthorn (Crataegus monogyna)	5	<280#	1	1	1	1	n/a	2	Good - Poor	M	Good - Poor	Mature hedgerow on top of stone mound/wall. Major deadwood. Previously reduced, with several dead stems. Exposed roots likely from deteriorating mound, soil erosion.	n/a		20+	B2,3	3.36
G252 *	Gorse (Ulex sp.)	2	100	0.5	0.5	0.5	0.5	n/a	0	Good	Y-M	Good - Fair		n/a		10+	C2	1.2
T253 *	Rowan (Sorbus aucuparia)	7	310,300, 190,190, 210	3.5	4	3.5	3.5	2.5/W	3.5	Fair	M	Fair	Multistemmed. Grazing damage to base of stems, sapwood exposed. Cavity to southernmost stem circa 130mm deep, 25mm high, 100mm wide. Cavity to main stem 180mm deep, 160mm wide, 100mm high. Minor deadwood.	n/a		20+	B3	6.6
G254 *	Gorse (Ulex sp.)	2	100	0.5	0.5	0.5	0.5	n/a	0	Good	Y-M	Good - Fair		n/a		10+	C2	1.2
H255 *	Hawthorn (Crataegus monogyna)	3	<300#	1	1	1	1	n/a	1	Good - Fair	M	Good - Fair	Mature hedgerow. Decay and cavities present. Growing on top of stone mound/wall.	n/a		20+	B2,3	3.6
T256 *	Ash (Fraxinus excelsior)	11	510	5	4	4	4	2.0/S	4	Good	EM	Good	Previously reduced second order limb east at circa 4m. Slit to first order limb at	n/a		20+	B2	6.12

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
													circa 3m. Contact wound to buttress root. Growing out of stone mound/wall.					
T257 *	Ash (Fraxinus excelsior)	15	910,580	10	9	7	8	5.0/W	4	Good	M	Good	Subdominant southernmost stem with lean (self correcting), previously reduced limbs, with hazard beam crack and likely Daldinia concentrica. Growing on top of stone mound/wall. Major deadwood.	n/a		40+	A2	12.95
H258 *	Hawthorn (Crataegus monogyna)	3	<300#	1	1	1	1	n/a	1	Good - Fair	M	Good - Fair	Mature hedgerow. Decay and cavities present. Growing on top of stone mound/wall.	n/a		20+	B2,3	3.6
T259 *	Crab Apple (Malus sylvestris)	5	300	2.5	2.5	2.5	2.5		3.5	Good	EM	Good	Growing on top of stone mound/wall.	n/a		20+	B2	3.6
T260 *	Crab Apple (Malus sylvestris)	5	250,200	2.5	2.5	2.5	2.5		3.5	Good	M	Good	Stem bifurcates at circa 0.5m. Growing on top of stone mound/wall.	n/a		20+	B2	3.84
T261 *	Ash (Fraxinus excelsior)	13	450,650	4	4	6	7	3.0/W	6	Fair	M	Fair	Stem bifurcates at circa 1m, with cup shaped union. Decay to stem at fork at circa 4m, second order stem regrowth above decay. Growing on top of stone mound/wall. Major deadwood.	n/a		20+	B2,3	9.49
T262 *	Ash (Fraxinus excelsior)	14	340,570, 540	9	6	6	7	3.0/N	6	Fair	M	Fair	Likely historic coppice. X3 is main stems. Growing on top of stone mound/wall. Major deadwood.	n/a		20+	B2	10.27
T263 *	Crab Apple (Malus sylvestris)	4	280	2	2	2	2		3	Fair	M	Fair	Minor deadwood, previously reduced back from access gate to north. Regeneration from stub cuts. Growing on top of stone mound/wall.	n/a		20+	B2	3.36
H264 *	Hawthorn (Crataegus monogyna)	3	<300#	1	1	1	1	n/a	1	Good - Fair	M	Good - Fair	Mature hedgerow. Decay and cavities present. Growing on top of stone mound/wall. Ivy present.	n/a	Fell in part as per TPP and incursion along retained section	20+	B2,3	3.6

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
H265 *	Hawthorn (Crataegus monogyna),Blackthorn (Prunus spinosa),Gorse (Ulex sp.)	3	<80#	1	1	1	1	n/a	n/a	Good	SM-EM	Good	Recently flailed back from road/grass verge. Circa 2.5m wide. Predominantly blackthorn.	n/a	Reduce away from road to allow and maintain visibility splay as per TPP	10+	C2	0.96
G266 *	Hawthorn (Crataegus monogyna)	3	<100#	1	1	1	1	n/a	n/a	Good	SM	Good - Fair	Sparse underwood, approx., 7 trees. Established on apex of stone wall/mound.	n/a		10+	C2	1.2
T267 *	Ash (Fraxinus excelsior)	11	470	3	3	0	6	3.5/W	4	Good	EM	Fair	Established on apex of stone wall/mound. Structurally suppressed by ash west. Lower crown previously pruned, stubs retained, wounds up to circa 150mm diam, King Alfred's cakes fungi present.	n/a		20+	B1,2	5.64
T268 *	Ash (Fraxinus excelsior)	18	570,650	7	7	1	7	2.0/S	2	Good	M	Fair	Established on apex of stone wall/mound. Codominant stems from circa 500mm. Cup union. Codominant in canopy. Lower limb previously pruned south, stub circa 1.5mx280mm. Recent tear out wound immediately above, considered minor.	n/a		40+	A2	10.37
T269 *	Ash (Fraxinus excelsior)	12	210,170, 100,230	2	6	1	4	n/a	4	Fair	EM	Fair	Established on apex of stone wall/mound. Structurally suppressed. Multistemmed from stool.	n/a		20+	B2	4.42
T270 *	Ash (Fraxinus excelsior)	18	830,480	10	7	8	3	3.0/E	4	Good	M	Fair	Established on apex of stone wall/mound. Codominant union from circa 400mm with included bark and minor cup. No crown gaps. Lower crown previously pruned, stubs retained. Up to circa 300mm in diameter. King Alfred's cakes ffbs present. Few minor tear out wounds.	n/a		40+	A2	11.51
T271 *	Ash (Fraxinus excelsior)	4	600#	1	1	1	1	n/a	2	Fair	M	Fair	Circa 1.5m stump, with approx.., 3m regeneration. Ivy clad.	n/a		10+	C1	7.2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
T272 *	Hawthorn (Crataegus monogyna)	5	230,270, 270	4	3	1	3	1.5/N	4	Good	V	Fair	Established on apex of stone wall/mound. Mid to lower crown previously pruned, stubs retained with wounds less than circa 100mm. Structurally suppressed form. Cavity at base east with daylight visible through stem. Peripheral columnar woundwood. Basal cavity to stem west, likely dry brown heart rot - rot type. Tree may be two individuals or one with fusion of roots.	n/a		40+	A3	9
T273 *	Ash (Fraxinus excelsior)	12	800#	5	5	5	5	5.0/N	5	Poor	M	Fair	Presenting symptoms of ADB. Prolific water shoots throughout crown. Major deadwood. Included union at circa 2m, no signs of active separation, large ears. Growing on top of stone mound/wall.	n/a	Fell	<10	U1	9.6
T274 *	Ash (Fraxinus excelsior)	15	390,360, 460,340, 310,210	8	6	4	8	3.0/S	2	Good	V	Fair	Established on apex of stone wall/mound. Significant stool, circa 3.3m in diameter along wall. Cavity central to stool. Circa 500mm x 600mm. Inspection obstructed by sound wood and likely wood mould or detritus, humus etc. Moderate deadwood. Small cavity to second order limb south at approx., 3m, with decay likely localised to branch attachment zone.	n/a		40+	A3	13
G275 *	Ash (Fraxinus excelsior)	18	<800#	10	10	10	10	n/a	2	Good - Poor	EM-M	Good - Fair	Established on apex of stone wall/mound. Five stems, two dead. Lower canopy previously pruned. Stubs with wounds up to circa 350mm.	n/a		40+	A2	9.6
T276 *	Hawthorn (Crataegus monogyna)	3	160#	1.5	1.5	1.5	1.5		1	Fair	EM	Good	No access. Ivy clad. Minor deadwood.	n/a		10+	C1	1.92

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread				First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category	RPA (m)
				N	S	E	W											
H277*	Hawthorn (Crataegus monogyna),Blackthorn (Prunus spinosa),Gorse (Ulex sp.)	3	<50#	0.5	0.5	0.5	0.5	n/a	1	Good	SM	Good	Established on apex of stone wall/mound. Managed.	n/a	Fell in part as per TPP	10+	C2	0.6
G278*	Grey willow (Salix cinerea),Common Alder (Alnus glutinosa),Norway Spruce (Picea abies),Larch (Larix sp),Hazel (Corylus avellana),Hawthorn (Crataegus monogyna),Field Maple (Acer campestre),Holly (Ilex aquifolium),Ash (Fraxinus excelsior),Beech (Fagus sylvatica),Cider Gum (Eucalyptus gunnii),Lawson Cypress (Chamaecyparis lawsoniana)	15	<450#	4	4	4	4	n/a	0	Good - Fair	Y-M	Good - Fair	Highwayside tree belt. Recently pruned back from highway.	n/a	Reduce away from road to allow and maintain visibility splay as per TPP	20+	B1,2	5.4
W279*	Grey willow (Salix cinerea),Common Alder (Alnus glutinosa),Common Oak (Quercus robur)	10	<250#	3	3	3	3	n/a	2	Good - Fair	Y-SM	Good	Regular structure. Likely early stem exclusion stage. Ivy and brambles.	n/a	Fell in part as per TPP	20+	B2,3	3

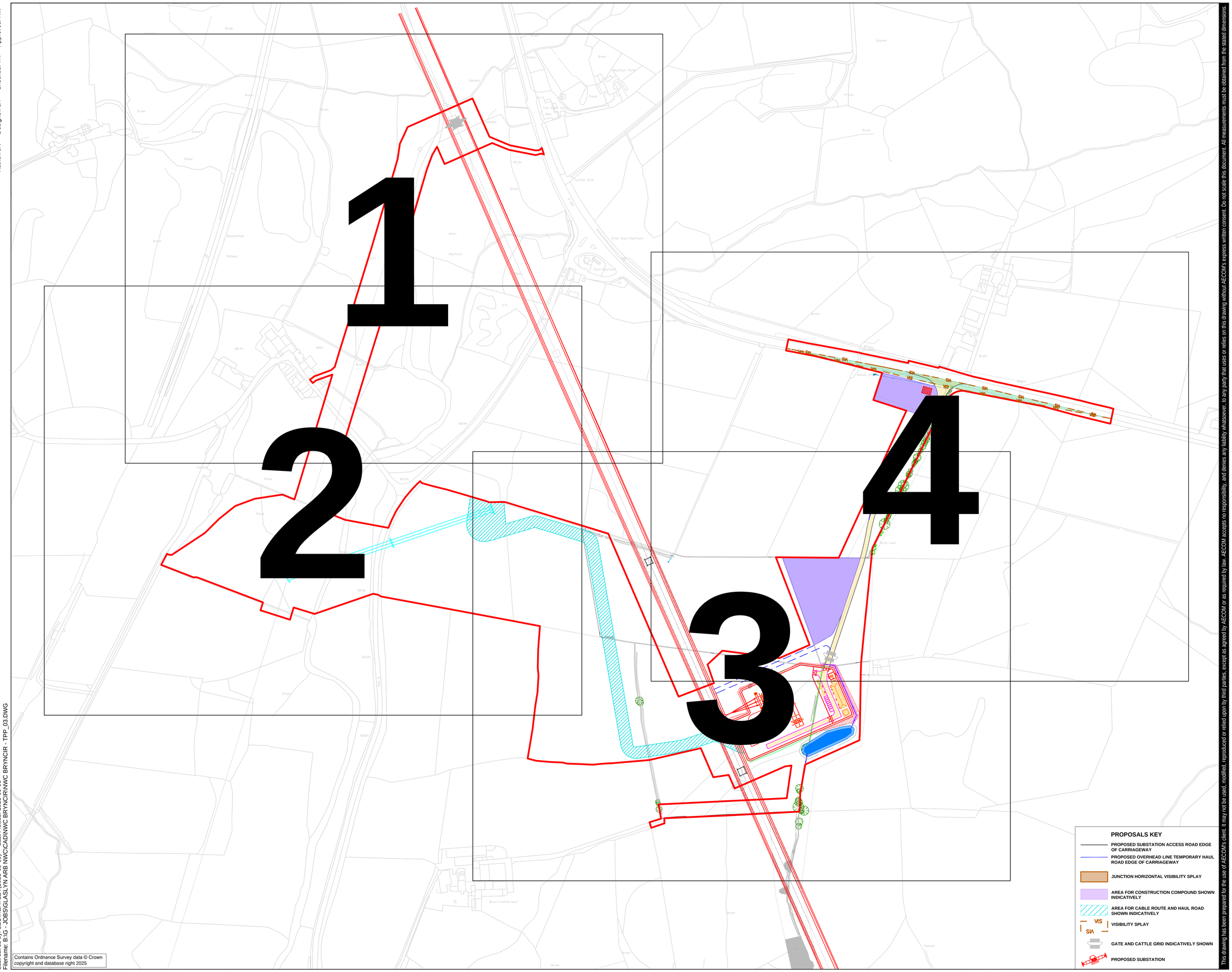
Key to Abbreviations

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland	
Species	Common name followed by botanical name shown in *italics*	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem, measured in millimeters at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	Av / Average: indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*****	Indicates estimated position of tree (not indicated on topographical survey).	
Category	Categorisation of the quality and benefits of trees on the site as per Table 1 and 2 of BS5837 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation)	
	A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	**Young (Y):** Newly planted tree 0-10 years. **Semi-Mature (SM):** Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). **Early Mature (EM):** Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) **Mature (M):** Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). **Over Mature (OM):** Tree beyond the normal life expectancy for the species. **Veteran (V):** Tree, which is of interest biologically, aesthetically or culturally because of its condition, size or age.	

Structural condition	**Good:** No significant structural defects **Fair:** Structural defects which can be resolved via remedial works. **Poor:** Structural defects which cannot be resolved via remedial works. **Dead:** Dead.
Physiological condition	**Good:** Normal vitality including leaf size, bud growth, density of crown and wound wood development. **Fair:** Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. **Poor:** Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. **Dead:** Dead **Fair/Good** = Indicates an intermediate condition **Fair – Good** = Indicates a range of conditions (e.g. within a group)
Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the site (where relevant reference has been made to tree management based on the potential future context of the site).
Works to facilitate the development	Tree works identified as necessary to facilitate the proposed works following a desk top analysis of the proposals in relation to tree constraints.

Appendix C Tree Protection Plan

Author: JR Designer: LH Checked: TR Approved: AW



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Last saved by: LEO.HEATLEY(2025-09-09) Last Plotted: 2025-09-09
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PROJECT

PTR BRYNCIR

CLIENT

NATIONAL GRID

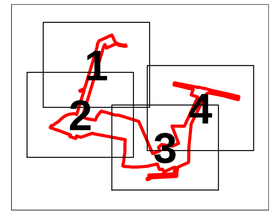
CONSULTANT

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   - Xref-Prelim_Drainage.dwg
   - PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg
   - Xref-Bryncir_RLB.dwg

KEY PLAN



KEY

- **FEATURE ID TAGS** *(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*
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DRAWING STATUS

ISSUE

PROJECT NUMBER

60686216

SHEET TITLE

TREE PROTECTION PLAN (SHEET 00)

SHEET NUMBER **REV.**

60686216-ACM-XX-XX-AB-TPP-000 P02

Author: JR Designer: LH Checked: TR Approved: AW

PROPOSALS KEY

- PROPOSED SUBSTATION ACCESS ROAD EDGE OF CARRIAGEWAY
- PROPOSED OVERHEAD LINE TEMPORARY HAUL ROAD EDGE OF CARRIAGEWAY
- JUNCTION HORIZONTAL VISIBILITY SPLAY
- AREA FOR CONSTRUCTION COMPOUND SHOWN INDICATIVELY
- AREA FOR CABLE ROUTE AND HAUL ROAD SHOWN INDICATIVELY
- VISIBILITY SPLAY (VIS / SVA)
- GATE AND CATTLE GRID INDICATIVELY SHOWN
- PROPOSED SUBSTATION

Construction routes to avoid small trees and scrub in these groups wherever possible and access within these areas to follow guidance on working in construction working zone

0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 @ ISO full bleed A4 (210.00 x 297.00 MM)

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PROJECT

PTR BRYNCIR

CLIENT

NATIONAL GRID

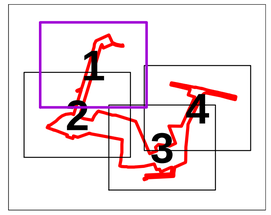
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www.aecom.com

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   - Xref-Prelim_Drainage.dwg
   - PTNO-WSP-SS50-C00484-DRW-CP-000009-10.dwg
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KEY PLAN



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ISSUE

PROJECT NUMBER

60686216

SHEET TITLE

TREE PROTECTION PLAN (SHEET 01)

SHEET NUMBER 60686216-ACM-XX-XX-AB-TPP-001

REV. P02

Author: JR Designer: LH Checked: TR Approved: AW

PROPOSALS KEY

- PROPOSED SUBSTATION ACCESS ROAD EDGE OF CARRIAGEWAY
- PROPOSED OVERHEAD LINE TEMPORARY HAUL ROAD EDGE OF CARRIAGEWAY
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- AREA FOR CABLE ROUTE AND HAUL ROAD SHOWN INDICATIVELY
- VISIBILITY SPLAY (VIS / SVA)
- GATE AND CATTLE GRID INDICATIVELY SHOWN
- PROPOSED SUBSTATION

Electrical pole and footings removed from here.

0 10 20 30 40 50 60 70 80 90 100m

SCALE 1:1000 @ ISO full bleed A4 (210.00 x 297.00 MM)

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PTR BRYNCIR

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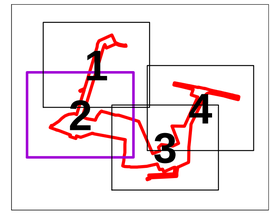
CONSULTANT

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GENERAL NOTES

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KEY PLAN



KEY

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- TREE PROTECTION FENCING
- CONSTRUCTION EXCLUSION ZONE (TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)
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P01	29.05.25	FIRST ISSUE
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DRAWING STATUS

ISSUE

PROJECT NUMBER

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SHEET TITLE

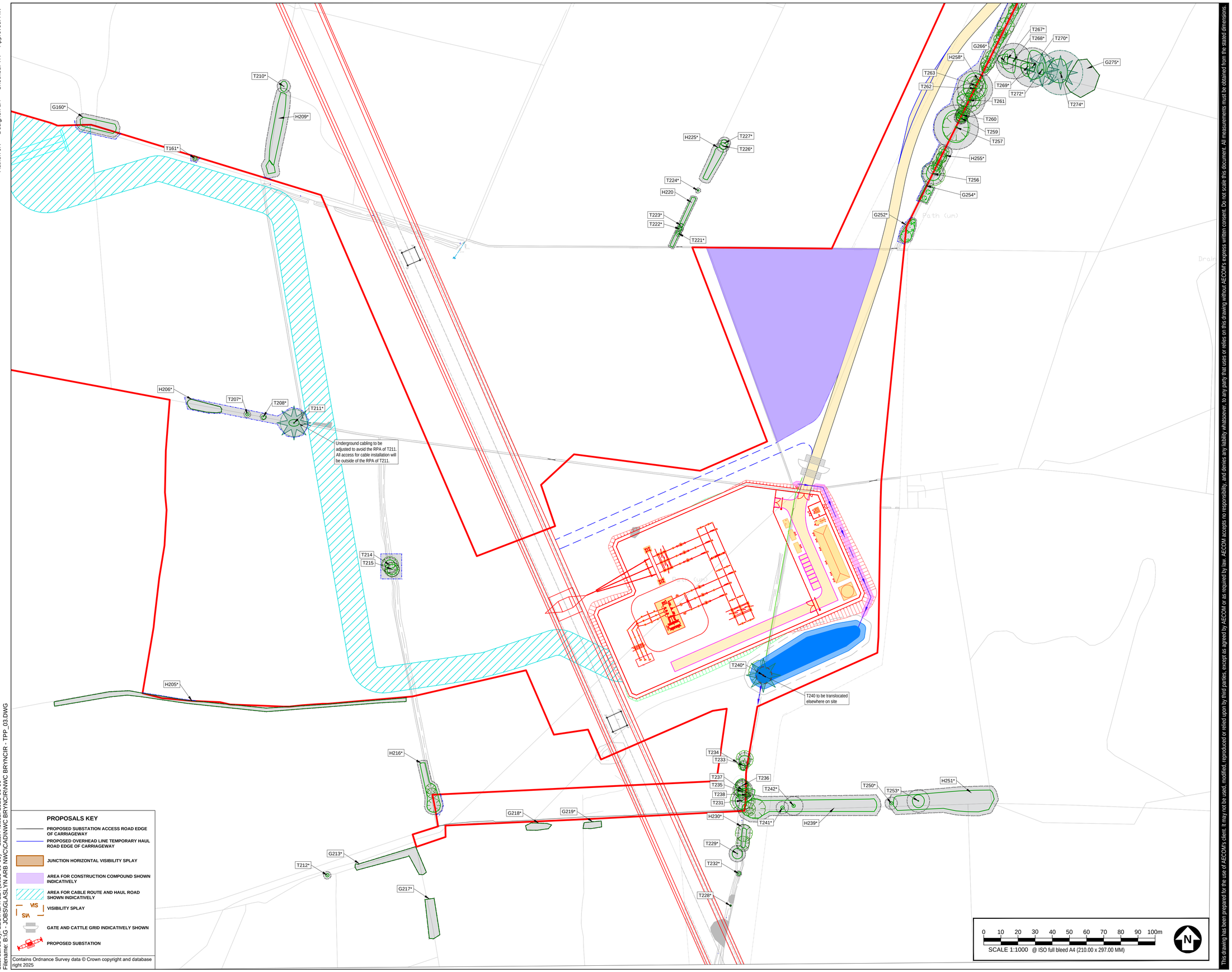
TREE PROTECTION PLAN (SHEET 02)

SHEET NUMBER 60686216-ACM-XX-XX-AB-TPP-002

REV. P02

Author: JR Designer: LH Checked: TR Approved: AW

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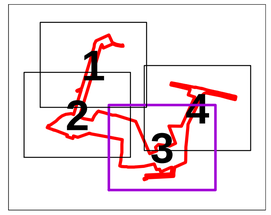
CONSULTANT

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KEY PLAN



KEY

T#
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EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE REMOVED

ROOT PROTECTION AREA OF RETAINED TREES
(AS DEFINED BY BS 5837:2012)

ROOT PROTECTION AREA INCURSION WITH ARBORICULTURAL SUPERVISION

TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE
(TRACKING OF PLANT, MATERIALS STORAGE, EXCAVATION AND ALL OTHER CONSTRUCTION ACTIVITIES ARE EXCLUDED WITHIN THESE AREAS FOR THE PURPOSES OF PROTECTING TREE HEALTH)

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(TREE IDENTIFIED BY AECOM WITH RPA SHOWN AS BUFFER ZONE AS PER STANDING ADVICE (FORESTRY COMMISSION AND NATURAL ENGLAND, 2022))

VETERAN TREE WITH EXPANDED RPA BUFFER ZONE
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ISSUE/REVISION

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ISSUE

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60686216

SHEET TITLE

TREE PROTECTION PLAN (SHEET 03)

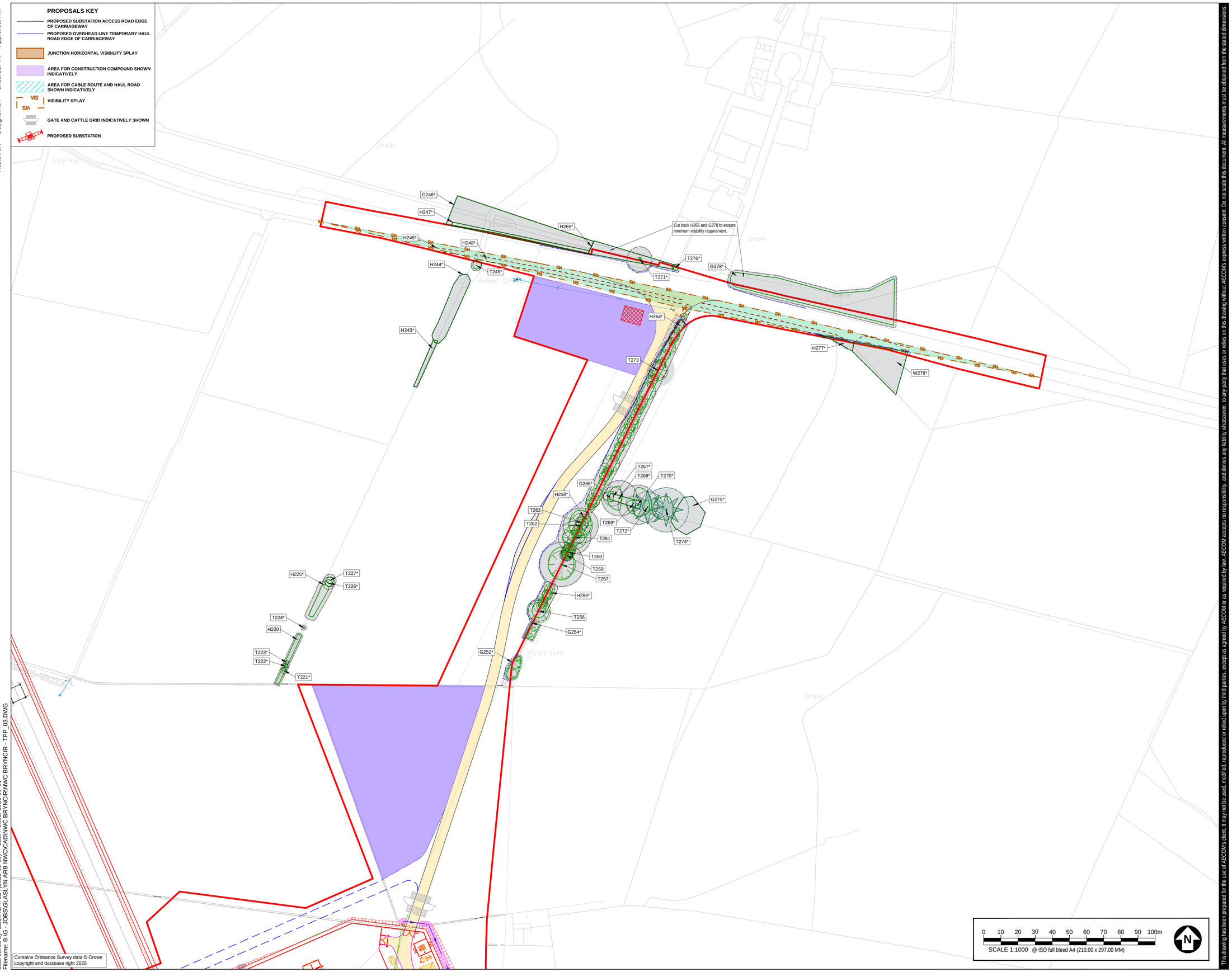
SHEET NUMBER **REV.**

60686216-ACM-XX-XX-AB-TPP-003 P02

Author: JR Designer: LH Checked: TR Approved: AW

PROPOSALS KEY

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0 10 20 30 40 50 60 70 80 90 100m

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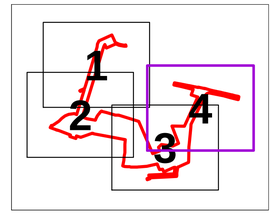
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P01	29.05.25	FIRST ISSUE

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PROJECT NUMBER

60686216

SHEET TITLE

TREE PROTECTION PLAN (SHEET 04)

SHEET NUMBER 60686216-ACM-XX-XX-AB-TPP-004

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Appendix D Planning Policy Extracts

D.1 Planning Policy Wales

Planning Policy Wales (PPW) (Edition 12, 2024) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well being of Wales.

PPW contains specific policies in relation to trees, woodlands and hedgerows and these are set out below:

6.4.37 Trees, hedgerows, groups of trees and areas of woodland are of great importance for biodiversity. They are important connecting habitats for resilient ecological networks and make an essential wider contribution to landscape character, culture, heritage and sense of place, air quality, recreation and local climate moderation. They also play a vital role in tackling the climate emergency by locking up carbon, and can provide shade, shelter and foraging opportunities, wider landscape benefits such as air and diffuse pollution interception, natural flood management, and building materials. The importance of trees, in particular urban trees, in creating distinctive and natural places which deliver health and well being benefits to communities, now and in the future should be promoted as part of plan making and decision taking.

Planning authorities must promote the planting of new trees, hedgerows, groups of trees and areas of woodland as part of new development.

6.4.38 Welsh native tree and hedge species, characteristic of the local area, provide a strong ecosystem resilience function, and they provide resources for local wildlife, particularly other native plants and species. Native tree and hedge species can also complement opportunities for natural regeneration. Alongside broader woodland habitat types, such as wood pasture, parkland and traditional orchards, native tree and hedge species help to define our cultural heritage and landscape, creating a strong sense of place and connection to the past.

6.4.39 Planning authorities must protect trees, hedgerows, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial green infrastructure function. Planning authorities should consider the importance of trees and woodland, particularly native woodland and valued trees, and should have regard to local authority tree strategies or SPG and the Green Infrastructure Assessment. Planning authorities should adopt appropriate, locally relevant, time sensitive, minimum tree canopy cover targets for their authority area to guide the protection and where appropriate the expansion of canopy cover. The Green Infrastructure Assessment and tools such as NRW's Tree Cover in Wales' Towns and Cities study and Forest Research's i Tree Eco tool will help establish a baseline of canopy cover and guide the identification of appropriate and measurable canopy targets.

6.4.40 Where trees, woodland and hedgerows are present, their retention, protection and integration should be identified within planning applications. Where surveys identify trees, hedgerows, groups of trees and areas of woodland capable of making a significant contribution to the area, these trees should be retained and protected. The provision of services and utilities infrastructure to the application site should also avoid the loss of trees, woodlands or hedges and must be considered as part of the development proposal; where such trees are lost, they will be subject to the replacement planting ratios set out below.

6.4.41 Whilst most focus within the planning system is targeted at urban trees, planning authorities should recognise the importance of trees within the countryside, either as woodlands, within hedgerows and hedgebanks, or free standing trees in fields, or as wood pasture. This is particularly important as the effects of climate change are leading towards pests and diseases that are damaging many of our native species in the rural landscape. Positive mechanisms of rural tree retention should be considered, and measures taken to replace them in an effective and economic manner, either with new planting or by allowing them to grow to their full potential.

6.4.42 Permanent removal of trees, woodland and hedgerows will only be permitted where it would achieve significant and clearly defined public benefits. Where individual or groups of trees and hedgerows are removed as part of a proposed scheme, planning authorities must first follow the step wise approach as set out in paragraph 6.4.15. Where loss is unavoidable developers will be required to provide compensatory planting (which is proportionate to the proposed loss as identified through an assessment of green infrastructure value including biodiversity, landscape value and carbon capture). Replacement planting shall be at a ratio equivalent to the quality, environmental and ecological importance of the tree(s) lost and this must be preferably onsite, or immediately adjacent to the site, and at a minimum ratio of at least 3 trees of a similar type and compensatory size planted for every 1 lost. Where a woodland or a shelterbelt area is lost as part of a proposed scheme, the compensation planting must be at a scale, design and species mix reflective of that area lost. In such circumstances, the planting rate must be at a minimum of 1600 trees per hectare for broadleaves, and 2500 trees per hectare for conifers. The planting position for each replacement tree shall be fit to support its establishment and health, and ensure its unconstrained long term growth to optimise the environmental and ecological benefits it affords.

6.4.43 Ancient woodland, semi natural woodlands, individual ancient, veteran and heritage trees and ancient hedgerows are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their loss or deterioration unless very exceptionally there are significant and clearly defined public benefits; this protection must prevent potentially damaging operations and their unnecessary loss. In the case of a site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory, work to improve its completeness and use it to ensure the protection of trees and woodland and identify opportunities for more planting as part of the Green Infrastructure Assessment, particularly in terms of canopy cover.

6.4.44 The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs). They should also be incorporated into Green Infrastructure Assessments and plans.

D.2 Local Policy Context

Local Planning Authorities (LPA) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a TPO or other statutory designation) is a material consideration. The site is within Gwynedd Council administrative boundary.

The Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026,[1] adopted 31 July 2017, illustrates how important trees, woodland and hedgerows are to the character of the area

[1] Current Joint Local Development Plan (gov.wales)

and outlines the policies of the two local authorities (outside of Eryri) with regards to the protection of trees:

Strategic Policy PS 19: Conserving and Where Appropriate Enhancing The Natural Environment

6.5.3 There are valuable biodiversity assets to be found in both the rural and urban settings of the Plan area, which are outside the formally designated areas. Vacant brownfield land can provide an ideal habitat in which wildlife can thrive. Parks, green spaces, roadside verges and rivers are examples that can cumulatively create a green/blue infrastructure network of biodiversity sites and 'corridors'/stepping stones in which wildlife can both reside and travel through. Therefore, there is a need to ensure that development within both rural and urban areas does not damage valuable habitats or encroach upon land forming part of the wider network of wildlife corridors. Trees, woodland, copses, hedgerows and traditional field boundaries such as cloddiau are important wildlife habitats as well as contributing to the character and beauty of the landscape.

Policy AMG 3: Protecting and Enhancing Features and Qualities That Are Distinctive To The Local Landscape Character

Proposals that would have significant adverse impact upon landscape character as defined by the Landscape Character Areas included within the current Landscape Strategy for the relevant authority, must demonstrate through a landscape assessment how landscape character has influenced the design, scale, nature and site selection of the development. A proposal will be granted provided it doesn't have significant adverse impact upon features and qualities which are unique to the local landscape in terms of visual, historic, geological, ecological or cultural aspects. Measures should be taken to ensure that the development does not: 1. Cause significant adverse impact to the character of the built or natural landscape; 2. Fail to harmonise with, or enhance the landform and landscape; 3. Lose or fails to incorporate traditional features, patterns, structures and layout of settlements and landscape of both the built and natural environment. Particular emphasis will be given to the landscapes identified by the Landscape Character Areas as being of high and outstanding quality because of a certain landscape quality or a combination of qualities. Additional consideration will also be given to development that directly affect the landscape character and setting of the AONBs or the National Park.

6.5.13 Protecting, conserving and enhancing the unique landscape features and character of the Plan Area are essential for maintaining the unique scenery and sense of place. Although protection is afforded to some of the features in question (e.g. trees and hedgerows, through Tree Preservation Orders and the Hedgerows Regulations), some of the other features that are not afforded protection have features that are unique to the local landscape. These contribute to local distinctiveness, and where appropriate should be protected.

Appendix E Site Photography



Plate E-1 Veteran willow (T240) will be translocated to enable the construction of the substation



Plate E-2 Group of hawthorn (G144) will require height reduction or removal to enable the installation of the overhead cable across the B4411



Plate E-3 Scrub and small tree group (G20) may require partial removal and incursion to enable decommissioning of the SPEN DB 132Kv line and removal of foundations.



Plate E-4 Veteran hawthorn T211 will be protected by rerouting the underground cabling and erection of tree protection fencing around its RPA.

Appendix F Outline Tree Protection Measures

F.1 Tree Protection Fencing

The default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ) unless agreed otherwise. Protection measures will be installed as set out in the TPP included as **Appendix C** of this report.

The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of the LPA Tree Officer. Any damage to tree protection measures must be reported immediately.

Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached as per BS 5837:2012 Figure 7 (included as **Plate F-1**). Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees.

Alternative equivalent robust and immovable fencing specification including site hoarding will also be appropriate.

Suitable all weather signage will be fixed to fencing to notify site staff and visitors of the construction exclusion zone and its purpose (example included as **Appendix G**).

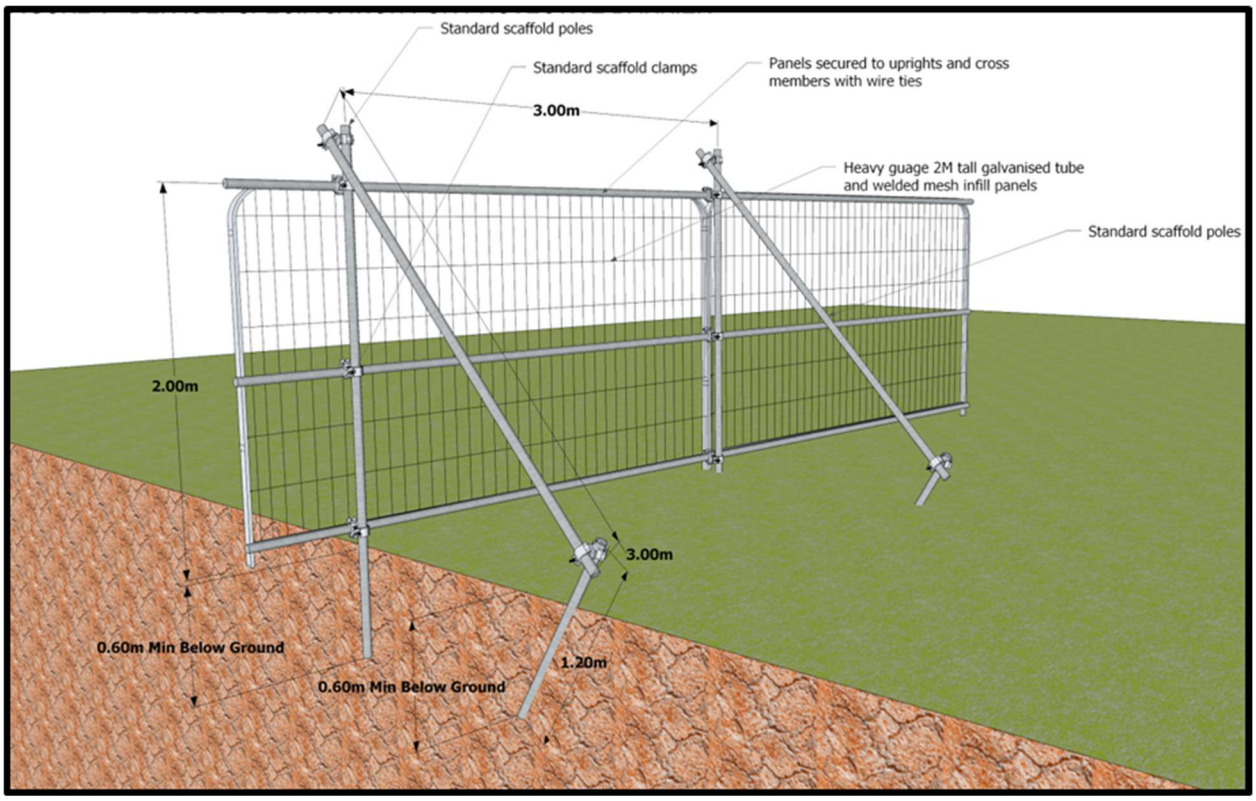


Plate F-1 Default specification for protective barrier

F.2 Ground Protection

Should access be unavoidable within the RPA of a retained tree, fit for purpose ground protection must be in place which is sufficient to protect the structure of the soil from damage based on the heaviest anticipated load.

As set out in section 6.2.3.3 of BS5837:2012 the following ground protection measures will be appropriate:

Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100 mm of woodchip on a geotextile separation layer.

Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150 mm woodchip or sharp sand.

Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.

As a guide the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4 g per cm^3(grams per cubic centimetre) for clay soils, to 1.75 g per cm^3 for sandy soils.

Tree protective measures shall stay in place until all construction operations are completed and removal is agreed with the site arboriculturist and/or the Local Authority Tree Officer as appropriate.

F.3 General Guidance for the Management of Exposed Roots

Excavation must only take place within the RPA of a retained tree with the prior agreement of an arboriculturist and the Local Authority Tree Officer. All excavation must be undertaken using hand tools or compressed air (such as an air spade).

The following general principles will apply:

Individual or small groups of roots less than 25 mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean cut end (ideally 100 mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.

Where roots are encountered which are larger than 25 mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action (following consultation with the Local Authority Tree Officer where appropriate).

Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations should utilise the parent material and must not be significantly compacted.

F.4 Storage, Use and Mixing of Materials

The use, mixing and washing of materials can lead to run-off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides), can result in the death of tree roots and beneficial soil organisms; and have a significant impact on the future health and appearance of trees.

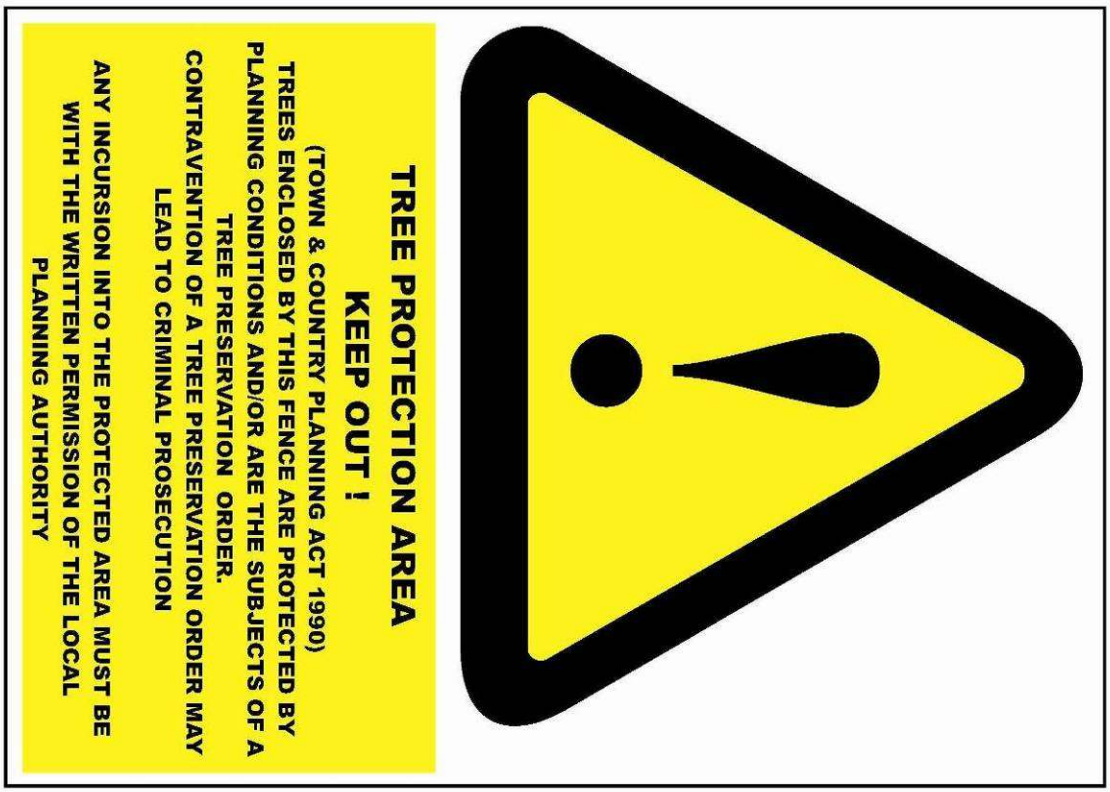
The storage of materials can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5 m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run-off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

Appendix G Tree Protection Signage





3.5.J. Net Benefit for Biodiversity and Green Infrastructure Statement

nationalgrid

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1. Introduction

1.1 Introduction

1.1.1 This document has been prepared on behalf of National Grid Electricity Transmission (plc) (NGET) to present a Net Benefit for Biodiversity (NBB) assessment and Green Infrastructure (GI) Statement to support the full planning permission for works at Bryncir in North West Wales ('The proposed works'). This planning application is required to support the wider Pentir to Trawsfynydd Reinforcement Project ('the Project'). Further details on the need case for the proposed works and the Project, refer to the **Bryncir Works Planning Statement and the Environmental Statement (ES) and Volume 1: Project Introduction.**

1.1.2 This report combines both the NBB assessment and GI Statement outputs into one document.

1.2 The Proposed Works

1.2.1 The proposed works are located approximately 750 metres (m) south-west of Bryncir and 1.4 kilometres (km) west of Garndolbenmaen, in the administrative boundary of Gwynedd Council, Grid Reference (GR) SH 485 430 ('the Bryncir works site). The Bryncir works site covers an area approximately 17.7 hectares (ha), including both the Town and Country Planning Act (TCPA) application boundary and S37 planning application boundary. Planning permission will be sought for the underground cables and consent under s37 of the Electricity Act 1989.

1.2.2 The permanent Bryncir Substation compound would cover approximately 1.6 ha. The remainder of the land within the proposed works area will comprise an existing 132 kilovolts (kV) overhead line owned by Scottish Power Energy Networks (SPEN) (hereafter referred to as the 'SPEN DB route'). The proposed works will include the following components:

- New 400 kV substation, including a permanent access road.
- Replacement of Tower 4ZC067 80 m north west of its current position and new downleads into Bryncir substation.
- Realignment of the SPEN DB route and removal of a redundant section of SPEN DB route.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner track.

1.2.3 For further details on the permanent proposed works at Bryncir, refer to the Environmental Statement (ES) **Volume 3, Chapter 2 Bryncir Works**.

1.2.4 The existing Pentir – Trawsfynydd 400 kV overhead line runs through the proposed works and would intersect the proposed works at three locations. For further information related to the Project refer to ES **Volume 3, Chapter 2 Bryncir Works.**

1.3 Rationale and Objectives

1.3.1 The following NBB Assessment and GI Statement has been produced in response to the approach to delivering NBB and GI in Wales, produced by the Welsh Government (Ref 1.3). The following legislative frameworks collectively ensure that developments in Wales must demonstrate they have maintained, and enhanced biodiversity and created resilient ecological networks:

- Environment (Wales) Act 2016 (Ref 1.1).
- Well-Being of Future Generations (Wales) Act 2015 (Ref 1.2).
- Planning Policy Wales (PPW). Edition 12 (2024) (Ref 1.3).
- Future Wales. The National Plan 2040 (2021) (Ref 1.4).

1.3.2 The combined NBB Assessment and GI Statement demonstrates how the proposed works have:

- Applied the stepwise approach.
- Utilised the DECCA (diversity, extent, condition, connectivity and aspects of ecosystem resilience) framework to promote ecosystem resilience with regards to green infrastructure.
- Achieved a NBB, including through the provision of biodiversity mitigation or restoration, enhancement, and or creation.
- Demonstrate that a proportional management and monitoring plan is to be achieved for any net benefit.

1.3.3 The objectives of this GI Statement are to demonstrate how the proposed works have:

- Identified priorities of green infrastructure, and
- Considered how significant benefits can be delivered through green infrastructure, paying due regard to the building with nature standard framework (BwNSF) (BwNSF, 2022) (Ref 1.5).

1.4 National Grids Position

1.4.1 National Grid are committed to delivering a NBB and GI Statement across all new developments in Wales, in line with PPW 12 (Ref 1.3).

1.4.2 National Grid aim to deliver NBB and GI on-site following the stepwise approach, with any biodiversity or ecological creation or enhancement following the DECCA framework.

1.4.3 Where NBB and GI are delivered within National Grids land ownership, a proportionate management and monitoring commitment will be applied, and determined on a case-by-case basis.

2. Policy Context

2.1 National Planning Policy

Environment (Wales) Act 2016

2.1.1 The Environment (Wales) Act 2016 provides legislation needed to plan and manage Wales's natural resources (Ref 1.1). It delivers against the Welsh Government's Programme for Government commitment to introduce new legislation for the environment (Ref 2.8. This positions Wales as a low-carbon, green economy, ready to adapt to the impacts of climate change. Section 6 of Part 1 of the Environment (Wales) Act 2016 introduced an enhanced duty (the S6 duty) for public authorities in the exercise of functions in relation to Wales. The S6 duty requires that public authorities *''must seek to maintain and enhance biodiversity… and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of their functions''*. This will apply to the Local Planning Authority responsible for the determining planning application (Ref 1.1).

The Well-Being of Future Generations (Wales) Act 2015

2.1.2 The Well-being of Future Generations (Wales) Act 2015 aims to improve the social, economic, environmental, and cultural well-being of Wales (Ref 1.2). The Act emphasises the importance of maintaining and enhancing biodiversity to ensure ecosystem resilience and sustainability for future generations.

Planning Policy Wales. Edition 12 (2024)

2.1.3 Planning Policy Wales (PPW) 12 (Ref 1.3) sets out the land use planning policies of Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs) (Ref 2.9), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW 12 sets out the importance of delivery of NBB and GI, aligning with Section 6 of the Environment (Wales) Act 2016. The following are relevant to NBB and GI within the planning process in Wales:

2.1.4 Paragraph 6.2.1 states that *" Green Infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places''* Green Infrastructure can function at a range of different scales; from entire ecosystems such as wetlands and rivers to parks, fields and gardens at the local scale and street trees, hedgerows, roadside verges, and green roofs/walls at the micro scale.

2.1.5 Paragraph 6.2.5 states that *"planning authorities must, as part of adopting a strategic and proactive approach to green infrastructure, biodiversity and ecosystems resilience, produce up to date inventories and maps of existing green infrastructure and ecological assets and networks''*. Green Infrastructure Assessments provide key evidence to support the preparation of development plans and where authorities are not already

actively undertaking assessments, they should be undertaken as part of development plan preparation.

2.1.6 Paragraph 6.4.5 states that *''Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site''*. The Stepwise approach and DECCA Framework should be used as methods to deliver a Net Benefit for any development.

2.1.7 Paragraph 6.2.12 states that *"A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal."*

Future Wales. The National Plan (2040)

2.1.8 Future Wales: The National Plan 2040 ('Future Wales') (Ref 1.4) is the National Development Framework for Wales. Future Wales sets out the spatial strategy for growth and development in Wales. Green Infrastructure is set out as a 'Strategic Placemaking Principle' in which *''Through Green Infrastructure Assessments, specific opportunities should be identified to ensure that green infrastructure is fully integrated."*

2.1.9 'Policy 9 - Resilient Ecological Networks and Green Infrastructure' states:

"To ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure, the Welsh Government will work with key partners to:

- *identify areas which should be safeguarded and created as ecological networks for their importance for adaptation to climate change, for habitat protection, restoration or creation, to protect species, or which provide key ecosystems services, to ensure they are not unduly compromised by future development; and*
- *identify opportunities where existing and potential green infrastructure could be maximised as part of placemaking, requiring the use of nature-based solutions as a key mechanism for securing sustainable growth, ecological connectivity, social equality and well-being.*
- *Planning authorities should include these areas and/or opportunities in their development plan strategies and policies in order to promote and safeguard the functions and opportunities they provide. In all cases, action towards securing the maintenance and enhancement of biodiversity (to provide a net benefit), the resilience of ecosystems and green infrastructure assets must be demonstrated as part of development proposals through innovative, nature-based approaches to site planning and the design of the built environment."*

2.1.10 A summary of these relevant local and national planning policies as well as legislation is provided in **Appendix B.**

2.1.11 For the precise wording of each specific policy refer to the source document. These planning policies have been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for design options and ecological mitigation.

2.2 Area Statements

2.2.1 Area statements have been produced by Natural Resource Wales (NRW), under Section 11 of the Environment (Wales) Act 2016 (Ref 2.1)(Ref 2.5). Area Statements are published for the seven regions of Wales to facilitate the implementation of the national natural resources policy (2017) (Ref 2.6). Each Area Statement outlines the key challenges facing particular localities and provides guidance on what can be done to meet those challenges and how natural resources can be better managed. Area statements should be used as an important source of information for planning of green infrastructure and net benefit (Ref 1.3).

2.2.2 Bryncir Substation is in the area addressed in the North West Wales Area Statement (Ref 2.7). The five key themes highlighted within the North West Wales Area Statement are as follows:

- Climate and Environment Emergency.
- Encouraging a Sustainable Economy.
- Reconnecting People with Nature.
- Opportunities for a Resilient Ecosystem.
- Supporting Sustainable Land Management.

2.2.3 GI is mentioned throughout the themes within the Area Statement including sustainable management of natural resources and opportunities for a resilient ecosystem. Opportunities for North West Wales which were identified within the statement include restoration of habitat, creation of green corridors, improving connectivity of existing habitat, strategic planning and creation of habitat.

2.3 Local Planning Policy

2.3.1 Relevant local planning policies and supplementary guidance for Gwynedd are currently covered by the Anglesey and Gwynedd Joint Local Development Plan until the new Local Development Plan for the Gwynedd Planning Authority is adopted. The adopted Anglesey and Gwynedd Joint Local Development Plan (2012) (Ref 2.1) does not mention green infrastructure assessment however the Review Report (2022) (Ref 2.2) refers to green infrastructure implementation essential to comply with the National Plan.

2.3.2 Nature Gwynedd (Ref 2.3). produced a series of Local Biodiversity Action Plans (LBAP) and Topic Action Plans (TAP) alongside Supplementary Planning Guidance (Ref 2.4). The action plans do not explicitly detail green infrastructure, but detail how habitats contribute to green infrastructure networks.

2.3.3 Gwynedd Council has not produced a Green Infrastructure Assessment. In the absence of a document outlining the Gwynedd green infrastructure aims, relevant policy within the Anglesey and Gwynedd Joint Local Development Plan (Strategic Policy PS19) has been used. Strategic Policy PS19 states:

''The Councils will manage development so as to conserve and where appropriate enhance the Plan area's distinctive natural environment, countryside and coastline, and proposals that have a significant adverse effect on them will be refused unless the need for and benefits of the development in that location clearly outweighs the value of the site or area and national policy protection for that site and area in question''.

3. Assumptions and Limitations

3.1.1 For general ecology assumptions and limitations in reference to survey findings see ES **Volume 3, Chapter 5 Ecology and Nature Conservation.**

3.1.2 All on-site habitat was identified through on-site field observation surveys see ES **Volume 3, Chapter 5 Ecology and Nature Conservation**. Habitats of Principal Importance (HoPI) and Section 7 Habitats were identified by Cofnod biological records centre (Ref 3.1) and DataMap Wales (Ref 3.2) and confirmed by on-site field observations.

3.1.3 The Phase 1 Habitat Survey data includes the TCPA planning boundary and the planning boundary consented under S37 of the Electricity Act 1989 ('the Bryncir works site').

3.1.4 The Phase 1 Habitat Survey records habitats based on their physical form and location. Area habitats are mapped as polygons and include features like woodland, grassland, and scrub. Linear habitats are mapped as lines and include features such as hedgerows, streams, and ditches. Point features are mapped as individual points and include items like mature trees or ponds.

3.1.5 NBB and GI mitigation and compensation has been concentrated to areas within the TCPA planning boundary for this assessment.

3.1.6 The details presented on the landscape plan have formed the basis of this assessment. The following assumptions have been made, based on the details within the landscape plan:

- Vegetation clearance areas indicated on the landscape plan were identified as area habitat. For this assessment, hedgerows identified within areas of vegetation clearance were re-classified as linear features, and removed, with their corresponding lengths. The area habitat underneath the hedgerow will be classified as retained.
- One area identified for vegetation clearance, located on the east side of the Bryncir works site, overlaps with part of the woodland canopy of an area of 0.03ha of woodland. No trees from the woodland require removal, although pruning will be required from the woodland edge, where the woodland canopy overhangs the works site. The woodland itself will be retained, and the ground flora vegetation under the overhanging canopy where pruning will take place, will also be retained.
- Sustainable Drainage Systems (SuDS) have been identified for creation. On the landscape plan these areas are identified as their original habitat type. For this assessment, the original habitat type is classed as permanently lost, with the SuDS feature created.
- Small areas containing individual trees and tree groups have been documented in the ES **Volume 8, Appendix 3.5.I Arboricultural Impact Assessment (AIA),** rather than in the ES **Volume 8, Appendix 3.5.C Habitat Survey Report** (see **Appendix A** of this document). This is due to the broad habitat classification approach used in Phase 1, which does not capture such detailed tree data. The datasets were cross-

checked and updated accordingly. Where trees were not recorded in the Phase 1 baseline but are identified as retained within the AIA, they have been excluded from this assessment. This ensures consistency between habitat and arboriculture data sources.

- A small length of hedgerow to the west of the access track was not recorded within the Phase 1 habitat survey. For this assessment, the length has been determined via OS master mapping and ariel photography. Condition has been assumed based on surrounding hedgerow condition assessments.
- Veteran Trees on-site have not been identified via desk-based study. Veteran Status has been determined by on-site field observations, exhibiting features associated with veteran status such as hollowing and deadwood habitat and meeting the stem girth diameter associated with Veteran Trees (Ref 3.3). For further information on the categorisation of Veteran Trees refer to **Volume 8, Appendix 3.5.I Arboricultural Impact Assessment.**
- It is assumed that the mitigation recommended to support the delivery of NBB and GI will be set out in a Landscape Environmental Management Plan (LEMP) **Volume 8, Appendix 3.4.C.** All habitat and species mitigation will be managed and monitored by National Grid for at least five years post-construction.

4. Baseline Site Assessment

4.1.1 The identification of existing GI assets and networks and understanding of existing biodiversity assets forms an essential step in the NBB assessment and GI Statement. The baseline conditions for the Bryncir works site are detailed in the following datasets and reports, and have been considered in this assessment:

Datasets:

- LANDMAP Landscape Habitats (Ref 4.1);
- Urban Tree Canopy Cover (Ref 4.2);
- Habitat Networks (Ref 4.3).

Supporting Planning Documents:

- **ES Volume 3: Bryncir Works**
- **ES Volume 8: Appendix 3.5.B Bryncir SPEN 132 kV Connection – Preliminary Ecological Appraisal**
- **ES Volume 8, Appendix 3.5.I Arboricultural Impact Assessment**

4.2 Designated Sites

4.2.1 No designated sites lie within the Bryncir works site.

4.2.2 For full details of designated sites within 10 km of the Bryncir works site, and within 5 km for other statutory designated sites of nature conservation value refer to **Table 5-1 in Volume 3, Chapter 5: Ecology and Nature Conservation and Volume 8, Appendix 3.5.H**, **Bryncir Statutory Designated Sites**. For the distribution of these designated sites, please refer to **Figure 3.5.1** and **Figure 3.5.2**.

4.3 Irreplaceable Habitat

4.3.1 Irreplaceable habitats (as defined in PPW 12) are *''habitats, including the natural resources which underpin them, which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, considering their age, uniqueness, species diversity or rarity. Examples include, ancient woodland and veteran trees, ancient hedgerows, wet woodlands, sand dunes, peatland, species-rich grassland, long undisturbed soils, blanket bog, salt marsh and lowland fen''* (Ref 1.3).

4.3.2 A review of the Woodland Trust Ancient Tree Inventory (Ref 4.4) did not indicate any individual ancient or veteran trees within the proposed works Site. An arboriculture baseline assessment, undertaken in 2024, identified two trees (T121 and T125) (see **Volume 8, Appendix 3.5.I Arboricultural Impact Assessment**) within the Bryncir works site which meet the stem girth parameters of ancient tree status and one tree which exhibited features associated with veteran status (T240) (refer to **Figure 3.5.4**). The woodland group W20 contains willows with the dimensions which indicate ancient

status. W22 also contains several multi-stemmed willows with veteran features. See **Volume 8, Appendix 3.5.I: Arboricultural Impact Assessme**nt for further information on the identification of ancient and veteran trees within the proposed works site.

4.3.3 Three trees have been identified as irreplaceable habitat defined by PPW 12 (Ref 1.3) within the Bryncir works site. Two trees (T121 and T125) are ancient and will not be affected by the proposed works. One tree (T240) is veteran, as identified in the AIA report as exhibiting features associated with veteran status; will be removed and translocated by the proposed works, for this assessment it will be classified as temporary loss. Tree T240 will be mitigated and compensated for accordingly (see **Section 77**). Compensation has been applied of Tree T240 as a precaution in case of translocation failure (see **Section 7**).

4.4 Priority Habits

4.4.1 Section 7 lists Priority Habitats (as defined by Environment Act (Wales) 2016) (Ref 1.1) that are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales. Developers are required to take all reasonable steps to maintain and enhance habitats included in Section 7 list (Ref 4.5).

4.4.2 The following Priority Habitats have been identified on-site:

- Purple moor grass and rush pasture.
- Lowland dry acid grassland.
- Semi-natural broadleaved woodland.
- Hedgerows.

4.5 Habitats

4.5.1 Baseline data was collected using Phase 1 survey methodology (for further details refer to **Volume 3, Chapter 5: Ecology and Nature Conservation and Appendix 3.5.C Habitat Survey Report).** The following habitats with their Phase 1 habitat codes are present within the Bryncir works site:

- A1.1.1 Broadleaved woodland semi-natural
- A1.3.1 Mixed woodland -semi-natural
- A2.1 Scrub- dense/continuous
- A2.2 Scrub – scattered.
- A3.1 – Broadleaved parkland/ scattered tree
- A3.2 Coniferous parkland/scattered trees
- A3.3 Mixed parkland/ scattered trees
- B4 Improved grassland
- B5 Marsh/marshy grassland
- B6 Poor semi-improved grassland

- C3.1 Other tall herb and fern-ruderal
- E3.2 Fen-basin mire
- G2 Running water.
- G2.3 – Oligotrophic
- J1.2 Cultivated/disturbed land-amenity grassland.
- J2.6 Dry ditch
- J2.1.1 Intact hedge – native species-rich
- J2.1.1- Intact hedge – species-poor
- J2.2.1- Defunct hedge – native species-rich
- J2.2.2- Defunct hedge – species-poor
- J2.3.1- Hedgerow with trees – native species- species rich
- J2.3.2 – Hedgerow with trees- species-poor
- J2.4 Fence
- J2.5 Wall
- J3.6 Buildings
- Hardstanding

4.5.2 Detailed descriptions of baseline habitat are presented within the **ES Volume 3, Chapter 5: Ecology and Nature Conservation.**

4.6 Species

4.6.1 In summary, species present, or potentially present within surrounding habitat at the time of survey are as follows:

- The mosaic of semi-natural habitats in the Bryncir works site are considered to offer suitable habitat to support terrestrial invertebrates, including marsh fritillary (*Euphydryas aurinia*). The areas of marshy grassland and scattered scrub abutting the watercourses and the damp grassland and wet heathland mosaic are most suitable.
- The nationally scarce river skater (*Aquarius najas*) was recorded during the field surveys.
- The scattered trees, hedgerows, river corridor and scrub within the Bryncir works site and adjacent woodland provide nesting opportunities. The open fields and marshy grassland also offer suitability for ground-nesting bird species. Pylons Towers could potentially be used by nesting peregrines (*Falco peregrinus*).
- Eight species of bat were recorded within the Survey Area during the walked transects and via automated bat detectors. Four of these are relatively common and widespread bat species (common pipistrelle (*Pipistrellus pipistrellus),* soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auritus*) and Myotis

species), one is widespread but locally distributed (noctule (*Nyctalus noctule*)), and three are rarer and less common (serotine (*Eptesicus serotinus*), Leisler's (*Nyctalus leisleri*) and lesser horseshoe (*Rhinolophus hipposideros*)). Most activity was from common and soprano pipistrelles, which are the most commonly recorded species in both the county and in Wales.

- Surveys carried out in 2024 confirmed that otter (*Lutra lutra*) use the Afon Dwyfach, through the presence of spraints. However, no resting places or holts were recorded. No evidence of otter was recorded along the tributaries of the river, although otter could use these smaller watercourses for dispersal and seasonal feeding opportunities.
- The marshy grassland and tributaries and the Afon Dwyfach may support common amphibians, and the stone walls may provide opportunities for refuge. However, the intrusive works will be predominantly within grazed improved grassland, which has limited suitability for amphibians.
- Hedgehog (*Erinaceus europaeus*), Brown hare (*Lepus europaeus*) and polecat (*Mustela putorius*) may be present in the Bryncir works site.
- Himalayan balsam (*Impatiens glandulifera*) has been recorded in and close to the Bryncir works site. Japanese knotweed (*Reynoutria japonica*) has also been recorded during aquatic macrophyte surveys. Both are invasive non-native species.

4.6.2 For full details of the species present, or potentially present, within the proposed works Site, please refer to **Table 5-4 in Volume 3, Chapter 5: Ecology and Nature Conservation.**

4.6.3 For full details on aquatic species present, or potentially presented, within the proposed works Site, please refer to **Volume 8, Appendix 3.5.E: Aquatic Survey Report**.

4.7 Public Rights of Way

4.7.1 There are two public rights of way (PRoW) that are within the Bryncir works site:

- Public Right of Way Dolbenmaen No 18 crosses the Bryncir works site.
- Public Right of Way Dolbenmaen No 17 falls marginally within the Bryncir works site.

4.8 Water

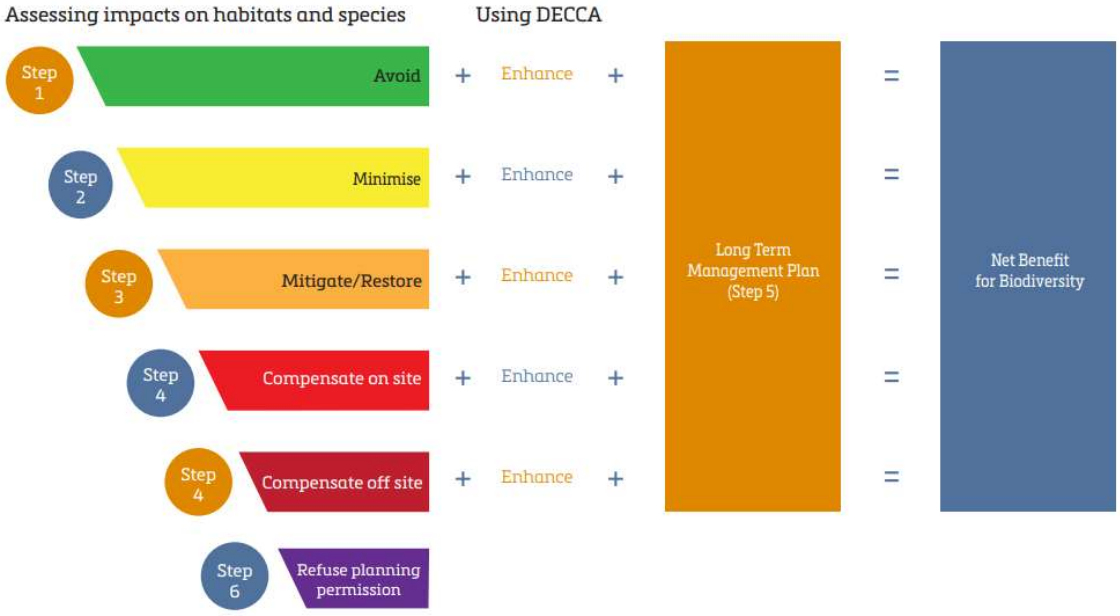
- One main river (Afon Dwyfach) passes directly through the Bryncir works site.
- Six ditches pass directly through the Bryncir works site.
- One dry ditch passes directly though the Bryncir works site.

5. Methodology

5.1 Stepwise Approach

5.1.1 The proposed works have been designed in accordance with the stepwise approach (**see Section 7**). Biodiversity restoration, enhancements or creation that achieve NBB must be delivered following the implementation of the stepwise approach.

5.1.2 The stepwise approach sets out the steps in order of priority (see Plate 5-1) to ensure that adverse effects on biodiversity is reduced. The measures undertaken at each step must be incorporated with enhancement measures and the principles of the DECCA Framework to ensure a net benefit for biodiversity is achieved.



(Source: Planning Policy Wales)

Plate 5-1:Stepwise Approach

5.1.3 The proposed works must adhere to the following steps highlighted within the stepwise approach:

5.1.4 The first priority is the avoidance of impacts on biodiversity.

5.1.5 If avoidance is not possible, adverse impacts to biodiversity must be minimised, by reducing the size of proposed works and maintaining the connectivity of habitats. Impacts must also be minimised for Section 7 habitats and features used by Section 7 species to ensure their populations are maintained.

5.1.6 If impacts cannot be avoided or sufficiently minimised then adverse effects to biodiversity must be mitigated against, and/ or habitats and features for

species restored. The mitigation and restoration must target the specific adverse effects of the proposed works, seek to restore in excess of like-to-like, and account for factors like time lags in recovery of habitats and species populations.

5.1.7 When these first three steps have been exhausted, compensation on-Site (4a), or off-Site (4b) if not otherwise feasible on-site, is required. Compensation must always be a last resort and must be of significant magnitude to fully compensate for any loss, be place based, and take account of the Section 6 Duty, the DECCA framework and appropriate ecological advice from the local authority Ecologist, NRW or a suitably qualified ecologist.

5.1.8 A Long-Term Management Plan should be produced setting out the management of the Bryncir works site and future monitoring arrangements for all secured measures. The management plan must identify the funding mechanisms in place to meet the management plan objectives and the achievement of net benefits for biodiversity.

5.1.9 Failure to action any of these steps will result in a planning application being refused.

DECCA Framework

5.1.10 PPW 12 defines Ecosystem resilience as *"the capacity of ecosystems to deal with disturbances, either by resisting them, recovering from them, or adapting to them, whilst retaining their ability to deliver services and benefits now and in the future' (Disturbances are interpreted to mean pressures and demands on the ecosystem)"* (Ref 1.3). NRW has developed a framework for evaluating ecosystem resilience based on five attributes and properties specified in the Environment (Wales) Act 2016 (Ref 1.1), referred to as the DECCA Framework (see Plate 5-2). The DECCA framework comprises the following objectives:

- **Diversity** at all scales including genetic, species, habitat and ecosystems or landscape scale;
- **Extent** of ecosystems and habitats;
- **Condition** of ecosystems and biodiversity, including their structure and functioning;
- **Connectivity** between and within ecosystems and habitats; and
- **Adaptability to change** of strengthening ecosystems to withstand and recover from environmental or anthropogenic pressures.

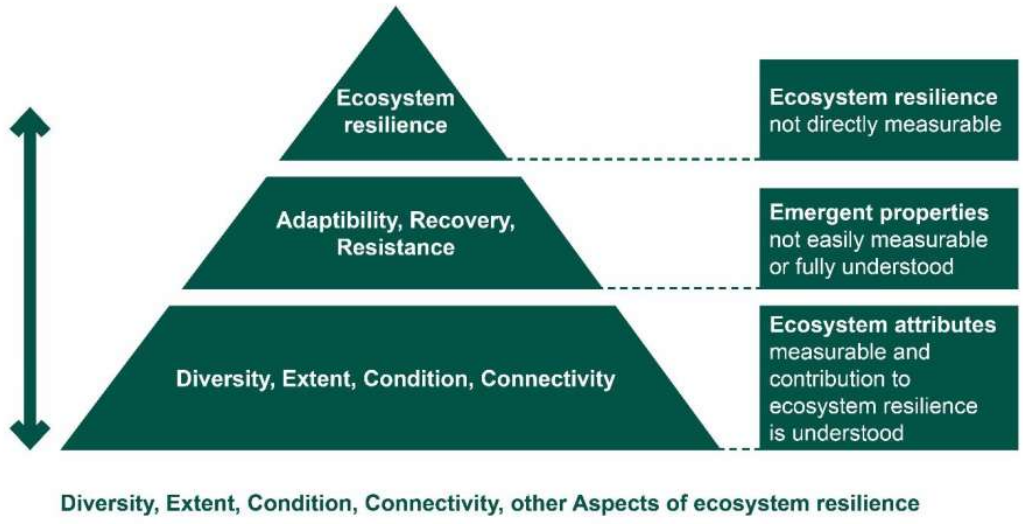


Plate 5-2: DECCA Framework (Ref 5.1)

Building with Nature Standards

5.1.11 PPW 12 (Ref 1.3) requires the submission of a proportionate GI Statement, signposting the BwNSF 2.0 (Ref 1.5). The twelve (12) Standards provide a pathway for and recognition of early and sustained engagement in the design, implementation and long-term stewardship of high-quality GI. The standards focus on the opportunities to put existing and planned-for habitat and wildlife at the heart of development for the benefit of people and nature. Each Standard is defined by its purpose and key characteristics, which are presented in the form of questions. These questions have been used to inform how the proposed works meets each Standard. **Table 5-1**Table 5-1:Building with Nature Standards Framework Themes highlights the BwNSF 2.0 that will be used to inform the GI Statement.

Table 5-1:Building with Nature Standards Framework Themes

Building with Nature Standard Framework Theme	Description of Theme
Standard 1: Optimises Multifunctionality and Connectivity	*The green infrastructure optimises multifunctionality and connectivity within the boundary of the project and links with existing and planned for green infrastructure in the surrounding area.*
Standard 2: Positively Responds to the Climate Emergency	*The green infrastructure is designed to be climate resilient by incorporating mitigation and adaptations that respond to the impacts of climate change. The green infrastructure is designed to promote low carbon behaviours and contributes to achieving zero carbon development by optimising carbon sequestration and demonstrating low carbon approaches to design, construction and long-term maintenance.*
Standard 3: Maximises Environmental Net Gains	*The green infrastructure is designed to actively mitigate any unavoidable harmful environmental impacts of development on soil and air quality and to minimise light and noise pollution. In addition, it delivers environmental net gains, including improving air and water quality and wherever possible includes quiet spaces for people and wildlife.*
Standard 4: Champions a Context Driven Approach	*The green infrastructure positively responds to the local context, including the physical environment, such as landscape and urban character and social, economic and environmental priorities, including the evidenced needs and strengths of existing and future local communities.*
Standard 5: Creates Distinctive Place	*The green infrastructure is integral to the project and is designed to reinforce local distinctiveness and/or create a distinctive sense of place.*
Standard 6: Secures Effective Place-Keeping	*The green infrastructure is subject to management arrangements that demonstrate a commitment to effectively implement, establish and maintain features at all stages of the development process. This should include details of funding, governance, maintenance, monitoring, remediation and, where appropriate, community involvement and stewardship.*
Standard 7: Brings Nature Closer to People	*The green infrastructure is close to where people live, work, learn, play and/or visit and is designed to optimise use and enjoyment for everyone across the year, to maximise health*

	and wellbeing outcomes and to promote active living for existing and future communities.
Standard 8: Supports Equitable and Inclusive Places	*The green infrastructure is designed to encourage and enable everyone, including those from vulnerable or excluded groups, to use and enjoy it, to help reduce health inequalities and to build a shared sense of community and belonging.*
Standard 9: Delivers Climate Resilient Water Management	*The green infrastructure is integral to sustainable drainage using above ground features to manage flood risk, maintain the natural water cycle and improve water quality within the boundary of the project and at a catchment scale. The green infrastructure is designed to be drought resistant and wherever possible, includes measures for the retention and reuse of rainwater.*
Standard 10: Brings Water Close to People	*The green infrastructure is designed to integrate water, including areas of standing water, flowing water, seasonal and ephemeral features, to bring additional amenity and wildlife benefits.*
Standard 11 Delivers Wildlife Enhancement	*The green infrastructure optimises long term and climate resilient net benefits for nature, by retaining and enhancing existing ecological assets and creating locally relevant new habitats within the boundary of the project. Wildlife measures are secured at all stages of implementation and where applicable, across multiple phases of development.*
Standard 12 Underpins Nature's Recovery	*The green infrastructure creates effective links with existing and planned for ecological features and networks beyond the boundary of the project to support the creation and restoration of resilient ecological networks in the wider landscape.*

6. Review of Habitat Change

6.1.1 This section has been informed by a review of the proposed works detail within the following documents:

- **ES Volume 3, Chapter 2: Bryncir Works**
- **ES Volume 3, Chapter 5: Ecology and Nature Conservation**
- **ES Volume 3, Chapter 4: Landscape and Visual Amenity**
- **ES Volume 8, Appendix 3.5.I Arboriculture Impact Assessment**
- Bryncir Landscape Plan.

6.1.2 The Bryncir works site falls predominantly within poor condition semi-improved grassland and marshy grassland (see **Appendix 3.5.C – Habitat Survey Report**). The majority of work will result in temporary loss of habitat, with habitats impacted being reinstated to their original condition post-construction. Enhancement is proposed to achieve a net benefit and maintain the proposed works green infrastructure..

6.1.3 Habitats presented in **Appendix A** will be either retained, temporarily lost (reinstated), permanently lost, created or enhanced as part of the proposed works.

6.1.4 No designated sites have been impacted as part of the proposed works.

6.2 Irreplaceable Habitat

6.2.1 As detailed in **Section 4.3**, irreplaceable habitat includes ancient woodland, semi-natural woodland, individual ancient, veteran, heritage and ancient hedgerows. The proposed works will result in direct impact to one veteran tree.

6.2.2 One Veteran tree is to be removed and translocated within the Bryncir works site (see ES **Volume 8, Appendix 3.5.I Arboriculture Impact Assessment**). Despite consideration of alternative design and construction approaches, its removal is unavoidable due to the nature of the proposed works. The tree is located in close proximity to new electricity infrastructure, and its retention would pose significant fire safety risks and operational constraints. The removal of the tree is justified by significant and clearly defined public benefits, including the delivery of essential energy infrastructure that supports national decarbonisation targets, improves grid resilience, and contributes to the long-term well-being goals set out in the Well-being of Future Generations (Wales) Act (Ref 1.2). As acknowledgement of the status of the veteran tree, the tree will be translocated, with the aim of maintaining the biodiversity resource of this feature. All other veteran and ancient trees will be retained and suitably buffered ensuing no works occur within their root protection areas (RPAs).

6.2.3 Veteran tree removal will be mitigated and compensated for. See **Table 7-1** for details on mitigation and compensation measures. See ES **Volume 8 Appendix 3.5.I Arboriculture Impact Assessment**, for further details.

6.3 Other Habitats

6.3.1 The following habitats will be **temporarily lost** from the proposed works and reinstated within two years [exception of 1 veteran tree which will be classified as temporarily lost, and must be reinstated within 6 months of removal to ensure the survival of the tree]:

- 1.5 ha of poor condition improved grassland
- 0.01 ha of poor-semi-improved grassland
- 0.03 ha of marshy grassland

6.3.2 The following habitats will be **permanently lost** from the proposed works:

- 0.23 km of species-poor hedgerow
- 0.01 ha of poor semi-improved
- 2.31 ha of improved grassland
- 0.01 ha of Marshy Grassland

6.3.3 The following **net benefit provisions** will be implemented as part of the proposed works:

- Translocation of 1 Veteran Tree
- Planting of 7 standard willow trees
- 0.81 ha of grassland enhancement [poor improved grassland to species-rich meadow
- 0.71 km of species-rich hedgerow planting

7. Demonstration of Policy Compliance

7.1 Application and Compliance of Stepwise

7.1.1 This section outlines the 'stepwise approach' that has been followed to avoid, minimise, mitigate and compensate impacts resulting from the proposed works.

Avoid

7.1.2 Biodiversity and wider ecosystem benefits were considered early in the design process for the proposed works. This led to design and programme changes, including the retention of habitats and avoidance of disturbance where possible.

7.1.3 The proposed works will avoid all designated sites. The design is such that the construction and operational footprint required has been minimised as far as possible, thereby avoiding land take of designated sites within proximity to the Bryncir works site. Works directly impacting the Afon Dwyfach (Pen Llyn a'r Sarnau/ Lleyn Peninsula and the Sarnau Special Area of Conservation) and associated riparian corridor will be avoided by oversailing the river, where the new SPEN DB route will cross. Any new permanent features to support the SPEN DB route will be constructed at least 30 m from the bank top of the river.

7.1.4 This accords with the 'Avoidance' principle of the stepwise approach.

Minimise

7.1.5 Where it was not possible to avoid specific biodiversity impacts, measures to minimise the impacts were recommended. This led to the recommendation of several strategies which will aim to minimise the proposed works impact on biodiversity. This accords with the 'Minimise' principle of the stepwise approach.

Mitigate

7.1.6 Where predicted impacts still occur following avoidance measures and measures to minimise impacts, mitigation measures will be implemented for habitats and species. Species mitigation, habitat mitigation and enhancement measures have been designed to reduce the impacts of the proposed works. On-site habitat mitigation options are identified on the landscape plan. On-site species mitigation is **presented in ES Volume 3, Chapter 5: Ecology and Nature Conservation.** The following mitigation will be applied as part of the proposed works:

- ACEMP (**Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan**) will detail the measures required to manage the environmental effects of the proposed works and

demonstrate how compliance with environmental legislation will be achieved. The CEMP will detail the measures required to mitigate construction related effects on important ecological features (IEFs), including those associated with construction dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. For further detail on an assessment of construction impacts and significance of effects on IEFs during construction and construction mitigation measures refer **to Section 5.9 of Volume 3, Chapter 5: Ecology and Nature Conservation**.

- Habitat avoidance measures to be implemented during construction, inclusive of species mitigation, irreplaceable habitat, watercourses and vegetation clearance.
- The proposed works have been designed to avoid IEFs present in or adjacent to the Bryncir works site as far as is practicable. The following minimum buffers from key habitat features will be applied to reduce the likelihood of significant ecological effects, where practicable:
  - 15 m from woodlands; to prevent incursion into Root Protection Areas (RPAs).
  - 5 m from hedgerows increasing to 15 m where there are hedgerow trees to prevent incursion into RPAs.
  - 15 m from individual retained trees to prevent incursion into RPAs to protect the tree and reduce the likelihood of disturbing any roosting bats that could be present.

Compensate

7.1.7 Where habitat is to be permanently lost, PPW12 planting compensation ratios have been applied (Ref 1.3). Habitat compensation has been identified accordingly. The stepwise approach applied for ecological receptors permanently and temporarily effected by the proposed works is summarised in **Table 7-1.**

7.1.8 Efforts were made to explore and maximise on-site habitat mitigation and compensation opportunities, where possible, resulting in multiple iterations to the landscape design to ensure that all feasible habitat mitigation and compensation could be delivered within the Bryncir works site. All habitat, where feasible, has been retained, or will be reinstated within 2 years of the proposed works. Where required, habitat loss has been mitigated through additional planting elsewhere within the Bryncir works site and satisfies wider environmental regulation. To ensure that permanent habitat loss has been compensated for, habitat compensation measures include species-rich grassland, species-rich hedgerow and individual tree planting.

7.1.9 This accords with the ‘Compensate’ principle of the stepwise approach.

Table 7-1:Stepwise approach taken to deliver NBB for Bryncir works site

Habitat Type	Permanently/ Temporarily / No Impact	Avoid	Minimise	Mitigate	Compensate
Irreplaceable Habitat (Ancient and Veteran Trees)	Temporary Impact	All ancient woodland is to be avoided as part of the proposed works. Veteran trees have been avoided wherever possible, provided that doing so does not present a substantial issue to operation or compromise the safety of the proposed works. The initial indicative cable installation design resulted in an incursion on veteran tree T211 (**Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment)** Underground cabling design was then adjusted to avoid the RPA of T211. All	The design is such that the construction and operational footprint required has been minimised as far as possible, thereby reducing the land take of ancient and veteran trees wherever possible.	RPAs and tree protection fencing will be in place to protect veteran trees, where practicable. One veteran tree [T240] will be removed and translocated within the Bryncir works site, to retain the irreplaceable natural resource. For methods and risk associated with veteran tree translocation, refer to section 6.8 of (**Volume 8, Appendix 3.5.I: Arboricultural Impact Assessment**).	T240 will be translocated to retain the irreplaceable natural resource. Translocation is challenging and places a large amount of stress on the tree being moved. Translocation is considered likely to be successful for T240, a veteran willow, due to several favourable factors. Willow species are known for their resilience, with a high tolerance for pruning and disturbance, and a strong capacity to produce new growth from cut or damaged wood. T240, is in good physiological condition, which supports its ability to withstand the stress of translocation. While it is conservatively counted as removed in a worst-case scenario, the species' inherent robustness and the tree's current health make successful translocation a realistic expectation. Whilst the veteran tree will be translocated, to account for the risk associated with this, in addition to the

Habitat Type	Permanently/ Temporarily / No Impact	Avoid	Minimise	Mitigate	Compensate
		access for cable installation will be outside of the RPA of T211.			translocation, compensation measures will also be provided. Tree planting will be provided at a minimum 6:1 planting ratio as per PPW 12 (Ref 1.3). 7 individual trees will be planted to accommodate the risk of veteran tree translocation. 7 newly planted individual trees will be planted, managed and monitored for 5 years, with management detailed in the LEMP **Volume 8, Appendix 3.4.C.**
Hedgerows	Permanent Loss	Wherever possible, existing hedgerows have been retained and buffered (minimum of 5 m) to avoid direct impacts, in line with the stepwise approach.	The design is such that the construction and operational footprint required has been minimised as far as possible, thereby reducing the land take of hedgerows where possible.	Loss of 0.23 km of species-poor hedgerow is unavoidable. Hedgerow and cloddiau removal will be kept to a minimum to reduce fragmentation. Where temporary removal is needed, replacement sections with similar species and improved condition will be reinstated. Cloddiau with hedgerows on top	To compensate for the unavoidable loss of 0.23 km of species-poor hedgerow, a 3:1 planting ratio has been applied in line with PPW12. A total of 0.69 km of species-rich hedgerow will be planted. Planting locations have been identified in the landscape plan to support both landscape mitigation and biodiversity net benefit/green infrastructure objectives. Newly planted habitat will be managed and monitored for 5 years, with

Habitat Type	Permanently/ Temporarily / No Impact	Avoid	Minimise	Mitigate	Compensate
				will also be restored to maintain habitat continuity. These actions will help retain connectivity across the site.	management detailed in the LEMP **Volume 8, Appendix 3.4.C.**
Species-Poor Grassland	Permanent and Temporary Loss	1.9 ha of poor-semi-improved grassland is retained. 9.28 ha of poor condition improved grassland is retained.	The design is such that the construction and operational footprint required has been minimised as far as possible, thereby reducing the land take of species-poor grassland.	A permanent loss of 0.01 ha of poor semi-improved and 2.31 ha of improved grassland (poor condition) is unavoidable. A temporary loss of 1.5 ha of poor condition improved grassland and 0.01 ha of poor-semi-improved grassland is required. Where temporary removal is needed; the grassland will be reseeded within 2 years of construction. Where top soil and sub soil require removal, these will be returned	To compensate for the loss of 2.25 ha of species-poor grassland, 0.81 ha of species-rich meadow will be created within the Bryncir works site. The proposed enhancement area is currently improved grassland in poor condition, as identified in the 2024 survey. The field is heavily grazed by sheep and cattle, dominated by *Lolium* species with frequent *Holcus* and *Agrostis*, and contains limited forb diversity, including *Trifolium repens* (white clover) and *Cerastium fontanum* (common mouse-ear). Newly planted habitat will be managed and monitored for 5 years, with management detailed in the LEMP **Volume 8, Appendix 3.4.C.**

Habitat Type	Permanently/ Temporarily / No Impact	Avoid	Minimise	Mitigate	Compensate
				to the same location as taken from and kept separately for different habitat types, to preserve the original soil profile and seed bank.	
Species-Rich Grassland [S7 Habitat]	Permanent Loss	3.41 ha of species-rich grassland (marshy grassland) is retained.	The design is such that the construction and operational footprint required has been minimised as far as possible, thereby reducing the land take of species-rich grassland.	A permanent loss of 0.01 ha of species-rich grassland (marshy grassland, moderate condition) is unavoidable. A temporary loss of 0.03 ha of marshy grassland in a moderate condition is required. Where temporary removal is needed; marshy grassland will be reinstated within two years of completion. Where top soil and sub soil require removal, these will be returned	

Habitat Type	Permanently/ Temporarily / No Impact	Avoid	Minimise	Mitigate	Compensate
				to the same location as taken from and kept separately for different habitat types, to preserve the original soil profile and seed bank.	

7.2 Application and Compliance of DECCA

7.2.1 The construction of the proposed works will result in a permanent loss of several habitat types (hedgerow, trees and grassland). Habitat compensation will ensure that any lost habitats are replaced with habitats of equal or greater extent and quality**.** For compensation replacement ratios per habitat type see **Table 7-2**Table 7-2**.**

7.2.2 Where impacts to biodiversity are predicted, following the application of avoidance measures and measures to minimise impacts, mitigation and compensation measures have been identified. The measures aiming to increase ecosystem resilience could be categorised per mitigation/compensation type and are summarised below in **Table 7-2**Table 7-2**.** Each measure's contribution to ecosystem resilience is also highlighted using the DECCA Framework.

Table 7-2: Mitigation and compensation measures and their contribution to ecosystem resilience

Habitat Impacted	Mitigation or Compensation measure	Diversity	Extent	Condition	Connectivity	Adaptability to Change
Trees	Translocation of one veteran tree (mitigation) Tree planting for one veteran tree (compensation)	Translocating a pre-existing veteran tree will maintain the diversity of species, and support more complex structures for the wider biodiversity of the site. Planting of additional trees will ensure the diversity of species remains if translocation fails.	To account for the risks associated with the translocation of one veteran tree, tree planting will be provided at a minimum 6:1 planting ratio as per PPW 12 (Ref 1.3). This planting will maintain the extent of trees within the Bryncir works site.	Trees will be replanted in areas that promote ecological connectivity, where possible, these will be near priority ecological network areas, priority green infrastructure areas, or areas where tree removal occurred.	By maintaining veteran, ancient and standard trees within the Bryncir works site the ecological continuity of the site remains. This helps preserve the existing biodiversity and supports species that rely on the specific conditions provided by these tree types.	Tree planting is likely to support adaptability to change through the provision of ecosystem service resilience and climate adaptation. Tree planting directly supports green infrastructure objectives set out in **Section 7.3.**
Hedgerow	Replanting of hedgerow (mitigation) Hedgerow creation (compensation)	A mix of whips and standard sized shrubs of native species of local provenance in-keeping with the overall species composition of hedgerows affected	Additional hedgerows will be planted within the Bryncir works site. Hedgerows will be planted at a ratio of 3:1. An additional 0.71 km of species-	Hedgerows planted will naturally mature to form part of a fully functioning hedgerow.	Replanting where gaps are created by the proposed works will maintain connectivity of the hedgerow network.	This mitigation and compensation measure is likely to support adaptability to change through the provision of ecosystem service resilience and

Habitat Impacted	Mitigation or Compensation measure	Diversity	Extent	Condition	Connectivity	Adaptability to Change
		will be used in replanting of hedgerows to maintain the species diversity of the existing species-rich hedgerows.	rich hedgerow will be planted to adjoin to the existing species-poor hedge within the Bryncir works site.			expansion of green infrastructure networks, directly supporting green infrastructure objectives set out in **Section 7.3.**
Species-Rich Meadow	Enhancement of poor condition improved grassland to Species-Rich Meadow (compensation)	0.81ha of species-poor grassland is proposed to be enhanced to species-rich meadow, which will enhance the genetic diversity of the grassland. The enhancement to species-rich meadow will increase the plant species diversity and add structural complexity of habitat established within the Bryncir works site. This diversity supports a broader range of ecological niches	0.81 ha of species rich meadow is proposed in an area to the northwest of the substation. This will increase the extent of grassland within the Bryncir works site and surrounding area.	Enhancing the grassland type will improve the overall condition of grassland habitat. Detailed management prescriptions are presented in the LEMP **Volume 8, Appendix 3.4.C**.	Preserving and replanting grasslands can enhance habitat connectivity, allowing species to move and disperse more freely.	A diverse seedbank allows for greater adaptability to changing environmental conditions. In addition, by enhancing semi-improved grassland post-construction it provides essential ecosystem services such as soil stabilisation, water filtration and carbon sequestration.

Habitat Impacted	Mitigation or Compensation measure	Diversity	Extent	Condition	Connectivity	Adaptability to Change
		compared to species-poor grasslands, which are often dominated by a few competitive species.				

7.3 Application and Compliance of Building with Nature Standards Framework

7.3.1 Opportunities for incorporating green infrastructure have been undertaken paying due regard to the BwNSF (Ref 7.1). The BwNSF sets out best practice standards to define a benchmark of good green infrastructure and how to deliver it. **Table 7-3** evidence how the proposed works have been worked towards upholding and achieving these standards where applicable.

Table 7-3: Summary of Proposed Green Infrastructure Mitigation and Enhancement and its Link to BwNSF

Standard	Justification for meeting the standard
1 Optimises Multifunctionality and Connectivity	Ecological connectivity has been preserved where possible, through the replanting and creation of hedgerows, trees and species-rich grassland. Translocation and replacement planting of one veteran tree and compensation planting of hedgerows will help to maintain connectivity with wider habitats for species such as bats. Within the compensation area, additional planting of species-rich grassland will be undertaken. This has been considered to link with habitats in the surrounding landscape. The existing Public Right of Way (PRoW) crossing the site will be closed during construction to ensure public safety. The PRoW will be realigned around the substation and reopened.
2 Positively responds to the Climate Emergency	The design will satisfy current construction standards to ensure the design is resilient to changes in climate. Where appropriate, the Construction Contractor will use low carbon approaches to construction. A robust CEMP (**Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan**) will detail the measures required to manage the environmental effects of the proposed works and demonstrate compliance with environmental legislation will be implemented. The habitat mitigation and compensation planting proposed increases climate adaptation of the Bryncir works site, by increasing ecological function and reducing vulnerability to environmental and anthropogenic pressures. This is achieved through the provision of a wider mix of species, which increases resilience.
3 Maximises Environmental Net Gains	A net benefit for biodiversity will be delivered through habitat mitigation and compensation planting. All environmental/ species impacts associated with the proposed works will be actively mitigated. A robust CEMP (**Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan**) will detail the measures required to manage the environmental effects of the proposed works and

	demonstrate compliance with environmental legislation will be implemented.
4 Champions a Context Driven Approach	Net Benefit will be achieved on-site. The like-for-like replacement of GI and creation of grassland will ensure that Gwynedd Council Strategic Policy PS19 of the Joint Local Development Plan will be met.
5 Creates Distinctive Places	Net Benefit will be achieved on-site. The like-for-like replacement of GI and creation of grassland will ensure that Gwynedd Council Strategic Policy PS19 of the Joint Local Development Plan will be met.
6 Secures Effective Place-keeping	All habitat creation and enhancement proposed as part of this NBB assessment will require regular maintenance and monitoring. Management of all habitats created or enhanced will be detailed within the LEMP and monitored for at least 5 years. This demonstrates a commitment to effectively implement, establish and maintain mitigation at all stages of the development process.
7 Brings Nature Closer to People	The existing PRoW will be closed during the construction works to ensure public safety. On completion of the works, the PRoW will be realigned around the substation before being reopened The nature of the operation of the Bryncir works site restricts opportunities to bring people closer to nature.
8 Supports Equitable and Inclusive Places	The proposed works is an operational substation this restricts opportunities to make the site more equitable and inclusive.
9 Delivers Climate Resilient Water Management 10 Brings Water Closer to People	The proposed works will avoid impact to the Afon Dwyfach and minimise impact to the remaining watercourses on-site. Working buffers and active mitigation will be applied to all construction works surrounding watercourses on-site, to protect the resilience of watercourse. A robust CEMP (**Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan**) will detail the measures required to manage the environmental effects of the proposed works and demonstrate compliance with environmental legislation will be implemented. SuDS features including a swale and attenuation basin are proposed as part of the proposed works. SuDS features will minimise natural drainage, reduce flood risk and improve water quality within the Bryncir works site.
Standard 11 Delivers Wildlife Enhancement	A veteran tree which would need to be felled as part of the proposed works, will be translocated. To account for the risks associated with translocation, in addition, tree planting will be provided at a minimum 6:1 planting ratio as per PPW 12 (Ref 1.3), to account for the potential loss of the veteran tree (a total of 7 trees are to be planted along the access road).

	Trees and hedgerows removed as part of the proposed works will be replanted on-site with a 3:1 planting ratio. To achieve wildlife enhancement species-poor grassland will be enhanced to good condition and a species-rich meadow will be created within the Bryncir works site.
12 Underpins Nature's Recovery	Habitat creation and/or enhancement discussed in **Table 7-1** andTable 7-2 **Table 7-2** will enhance the quality of existing habitats and improve connectivity on and off-site.

8. Management and Monitoring

8.1.1 All on-site habitat creation and enhancement will be monitored and maintained by National Grid for the 5-year management duration.

8.1.2 Mitigation, compensation and enhancement measures (see **Table 7-1**Table 7-1) will be included within the CEMP and LEMP to ensure these measures are implemented fully.

8.1.3 The LEMP will identify the landscape provisions within the Bryncir works site. It will include a clear timetable, management and monitoring commitments. The frequency of habitat monitoring will be in line with best practice.

8.1.4 The monitoring of establishing habitats (good quality, semi-improved neutral grassland, and species-rich meadow) should include a condition assessment, including the presence of negative and positive indicator species, and any remedial actions (e.g. removal of INNS). Post-construction monitoring will determine the efficacy of mitigation measures and help to identify where management, mitigation improvements or changes are necessary.

8.1.5 Veteran Tree translocation methodology will be fully detailed in the CEMP and referred to within **Appendix 3.5.I Arboriculture Impact Assessment**.

8.1.6 The implementation of the above measures will help to ensure the delivery of NBB, GI and ecosystem resilience in the long-term.

9. Conclusion

9.1.1 The NBB assessment and GI Infrastructure Statement incorporates guidance from the stepwise approach, the DECCA Framework and the BwNSF (Ref 7.1) to inform a qualitative comparison between baseline biodiversity and proposed post-development biodiversity (habitat change). This comparison has been used to determine the overall impact on green infrastructure from the proposed works and to determine whether a Net Benefit for Biodiversity has been achieved.

9.1.2 Through consideration of this guidance, the proposed works will also contribute to overcoming the key biodiversity challenges in Gwynedd as outlined in the North West Wales Area Statement (Ref 2.7), notably reversing the decline of, and enhancing, biodiversity.

9.1.3 Due to the nature of the proposed works a large proportion of habitat on-site will be temporarily affected during construction and will be reinstated post construction. For habitats that will be permanently impacted the additional steps within the stepwise approach and adherence to the DECCA framework has been presented in **Table 7-1** Table 7-1and Table 7-2**Table 7-2** NBB is achieved through habitat mitigation and compensation highlighted in Table 7-1**Table 7-1** and includes:

- 0.81 ha of species-rich meadow creation.
- 7 Individual Trees.
- 1 Veteran tree translocation, and
- 0.71 km of species-rich hedgerow planting.

9.1.4 The location of habitat compensation is identified on the landscape plan.

9.1.5 Mitigation measures are also to be included in the CEMP to reduce potential effects on-site to IEFs. For further information on mitigation measures refer to ES **Volume 3, Chapter 5: Ecology and Nature Conservation and Volume 8, Appendix 3.2.A: Outline Construction Environmental Management Plan.**

9.1.6 All habitat compensation, as identified above, will be managed and monitored by National Grid for 5 years. A LEMP will be produced to determine the frequency and requirements for ongoing management and monitoring to ensure the desired habitat is achieved.

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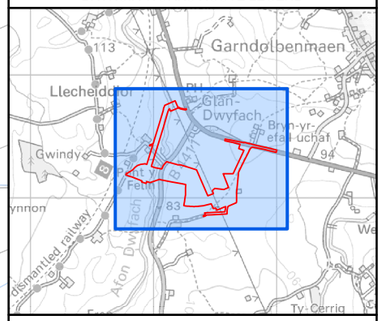
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Appendix A – Baseline Constraints

N

BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- Cloddiau

Phase 1 Habitat Feature

- A2.2 - Scrub - scattered
- A3.1 - Broadleaved parkland/scattered tree
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved parkland/scattered trees
- A3.3 - Mixed parkland/scattered trees
- G2 - Running water
- G2.3 - Running water - oligotrophic
- J2.1.2 - Intact hedge - species-poor
- J2.2.2 - Defunct hedge - species-poor
- J2.3.1 - Hedge with trees - native species-rich
- J2.3.2 - Hedge with trees - species-poor
- J2.4 - Fence
- J2.5 - Wall
- J2.6 - Dry ditch
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.3.1 - Mixed woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- B6 - Poor semi-improved grassland
- E3.2 - Fen - basin mire
- G2 - Running water
- G2.3 - Running water - oligotrophic
- Hardstanding

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0 100 200 300 400 500
Metres

Rev	Date	Description	GIS	Chk	App
A	10/09/2025	Environmental Statement	CA	JC	SK

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title:
FIGURE 3.5.J.1
PHASE 1 BASELINE HABITATS

Creator:	Date:	Checker:	Date:	Approver:	Date:
CA	11/09/2025	JC	11/09/2025	SK	11/09/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:4,200	A3	1 OF 1	A

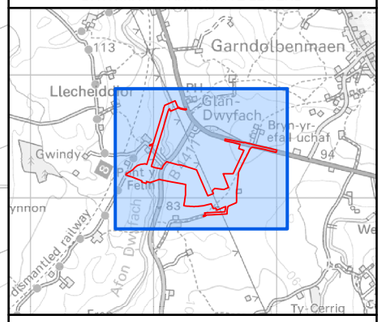
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N

Tree to be translocated

0 100 200 300 400 500
Metres

BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

Purpose of Planting

Trees

- Retained
- Created
- Removed
- Location of Translocated Tree

Linear Habitats

- Retained
- Created
- Removed

Area Habitats

- Retained
- Reinstated
- Enhanced
- Created

Rev	Date	Description	GIS	Chk	App
A	15/09/2025	Environmental Statement	CA	JC	SK

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 4.5.J.2
NET BENEFIT FOR BIODIVERSITY
POST WORKS PLAN

Creator:	Date:	Checker:	Date:	Approver:	Date:
CA	15/09/2025	JC	15/09/2025	SK	15/09/2025

Document Type:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:4,200	A3	1 OF 1	A

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Table A.1: Habitat reinstatement, enhancement, creation and loss as part of the Bryncir proposed works

Phase 1 Habitat Type	Baseline Area (km/ha)	Post-Works Area (km/ha)	Change in Habitat Area	Post-Works Nature
Polygon Features (ha)				
A1.1.1 - Broadleaved woodland - semi-natural	0.39	0.39	0	Temporarily Lost
A1.3.1 - Mixed woodland - semi-natural	0	0	0	Temporarily Lost
A2.1 - Scrub - dense/continuous	0.07	0.07	0	Temporarily Lost
A2.2 - Scrub - scattered	0.15	0.15	0	Temporarily Lost
A3.1 - Broadleaved parkland/scattered trees	0.34	0.15	0.19	Permanently Lost
B4 - Improved grassland	13.11	10.86	2.25	Permanently Lost
B5 - Marsh/marshy grassland	3.46	3.45	0.01	Permanently Lost
B6 - Poor semi-improved grassland	1.93	1.92	0.01	Permanently Lost
B2.2 Semi improved neutral grassland (species rich meadow)	0	0.81	0.81	Enhanced from species-poor grassland
E3.2 - Fen - basin mire	0.01	0.01	0	Temporarily Lost

Z99 - Hardstanding	0.46	1.90	1.44	Created
J5 Other Habitat (SuDS)	0	0.15	0.15	Created
Hedge Features (km)				
J2.1.2 - Intact hedge - species-poor	0.39	0.18	0.21	Permanently Lost
J2.2.2 - Defunct hedge - species-poor	0.26	0.26	0	Temporarily Lost
J2.3.1 - Hedge with trees - native species-rich	0.25	0.25	0	Temporarily Lost
J2.3.2 - Hedge with trees - species-poor	0.19	0.18	0.01	Permanently Lost
J2.4 Species-rich hedges	0	0.71	0.71	Created
Water Features (km)				
J2.6 - Dry ditch	0.04	0.04	0	Temporarily Lost
G2 - Running water	0.34	0.34	0	Temporarily Lost
G2.3 - Running water - oligotrophic	0.43	0.43	0	Temporarily Lost
Individual Tree Features (point)				
A2.2 - Scrub - scattered	4 Individual Trees	4 Individual Trees	0	Temporarily Lost
A3.1 - Broadleaved parkland/scattered trees	18 Individual Trees	39 Individual Trees	21	Created
Veteran Tree	1	1	0	Temporarily Lost

Appendix B – Summary of Legislation and Policy

Legislation

The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of the UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 11.00pm on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the *Conservation of Habitats and Species Regulations 2017* (referred to as the 2017 Regulations) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

Designated Sites

Locally Designated Sites

Local Wildlife Sites (LWSs) are sites with 'substantive nature conservation value' and include Site of Importance for Nature Conservation (SINC). They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species within a region.

They are usually selected by the relevant Wildlife Trust, along with representatives of the local authority and other local wildlife conservation groups.

The LWS selection panel select all sites that meet the assigned criteria, unlike Site of Species Scientific Interest (SSSI) which for some habitats are a representative sample of sites that meet the national standard. Consequently, many sites of SSSI quality are not designated and instead are selected as LWSs. LWSs can therefore be amongst the best sites for biodiversity.

Protected Species

Bats/Otter

These species, known as European Protected Species, are protected under Regulation 43 of the 2017 Regulations (as amended). This makes it an offence to:

- deliberately capture, injure or kill an animal.
- deliberately disturb an animal; or,
- damage or destroy a breeding site or resting place used by an animal.

Deliberate capture or killing is taken to include 'accepting the possibility' of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely to:

- impair their ability to survive, breed, reproduce or rear or nurture young;
- in the case of animals of hibernating or migratory species, to hibernate or migrate; or,
- significantly affect the local distribution or abundance of the species to which they belong.

Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural Resources Wales can be obtained to facilitate the works that would otherwise be illegal.

These species are also protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

Lower levels of disturbance not covered by the *Conservation of Habitats and Species Regulations 2017* (as amended) remain an offence under the *Wildlife and Countryside Act 1981* although a defence is available where such actions are the incidental result of lawful activity that could not reasonably be avoided.

Nesting Birds

All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended), with some species afforded great protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended). In addition to the protection from killing or taking that all birds receive; Schedule 1 birds and their young must not be disturbed at, or in the vicinity of the nest.

There are no licensing purposes that explicitly cover development activities affecting wild birds.

Common Species of Reptile (common lizard, slow worm, grass snake and adder)

Common species of reptile are protected against intentional killing and injury under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). There is no requirement for a licence where development works affect common species of reptiles. Instead, Natural Resources Wales advise that where legally protected reptiles are present[1], they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

Badgers and their setts are protected under the *Protection of Badgers Act 1992* (as amended). This makes it an offence to:

- wilfully kill, injure or take a badger;

[1] NRW (no date) legally-protected-reptiles-and-amphibians-in-wales.xls

- intentionally or recklessly damage, destroy or obstruct access to a badger sett; or,
- disturb a badger in its sett.

It is not illegal to carry out disturbance activities near setts that are not occupied, *i.e.* those that do not show signs of current use.

Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural Resources Wales. Licences for activities involving watercourse maintenance, drainage works, or flood defences are issued under a separate process.

When assessing the requirement for a licence in respect of development, Natural Resources Wales state that badgers are relatively tolerant of moderate levels of noise and activity around their setts, and that a low or moderate level of apparent disturbing activity at or near to badger setts does not necessarily disturb the badgers occupying these setts[1].

Licences are normally not granted from December to June inclusive (the badger breeding season) because dependent cubs may be present within setts.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

Section 7 of the *Environment (Wales) Act 2016* sets out the duty for public authorities to conserve biodiversity in Wales. Habitats and species of principal importance for the conservation of biodiversity are referred to in Section 7 of the *Environment (Wales) Act 2016*. The list can be found on the Natural Resources Wales website[2].

The list is used as a guide for decision makers such as public bodies, including local and regional authorities, in implementing their duty under Section 7 of the *Environment (Wales) Act 2016* to have regard to the conservation of biodiversity in Wales when carrying out their normal functions.

[1] Interpretation of 'Disturbance' in relation to badgers occupying a set, Natural England (2009)

[2] https://www.biodiversitywales.org.uk/Section-7

Hedgerows

Under the Hedgerow Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing "important hedgerows" that are at least 20 m in length, over 30 years old and meet specific archaeological and historical or wildlife and landscape criteria. The local planning authority will assess the importance of the hedgerow using the criteria set out in the regulations.

Invasive Non-Native Plant Species

Under the *Wildlife and Countryside Act 1981* (as amended), it is an offence to plant or otherwise cause species listed under Schedule 9 Part II to grow in the wild.

Species listed on Invasive Alien Species of Union concern under the *Invasive Alien Species (Enforcement and Permitting) Order 2019* are subject to restrictions and measures set out in the Regulations. These include restrictions on keeping, importing, selling, breeding, growing and releasing into the environment.

Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the *Environmental Protection Act 1990.*

Environment Act (Wales 2016).

The Environment (Wales) Act 2016 replaced the existing biodiversity duty (in the Natural Environment and Rural Communities Act 2006) which required public authorities to have a regard to conserving biodiversity. The new Section 6 duty takes this further, requiring all public authorities, when carrying out their functions in Wales, to seek to *"maintain and enhance biodiversity"* where it is within the proper exercise of their functions. In doing so, public authorities must also seek to "promote the resilience of ecosystems". This was introduced to plan and manage Wales' natural resources in a sustainable and joined-up way and is intended to work alongside the Wellbeing of Future Generations Act 2015

The Well-being of Future Generations Act 2015

The Wellbeing of Future Generations Act 2015 requires national government, local government, local health boards and other specified public bodies to carry out sustainable development and work towards objectives that contribute to seven wellbeing goals. Sustainable development in the Act means "the process of improving the economic, social, environmental and cultural wellbeing of Wales by taking action, in accordance with the sustainable development principle (i.e. not compromising the ability of future generations to meet their needs), aimed at achieving the well-being goals".

Nature Recovery Action Plan (Wales) (NRAP)

The NRAP complements The Well-being of Future Generations (Wales) Act 2015 and the Environment Act (Wales) 2016. The NRAP[4] sets out how the United Nations Environment Programme's Convention on Biological Diversity's (CBD) Strategic Plan for Biodiversity (and the

[4] Welsh Government (2020) Nature Recovery Action Plan.

associated Aichi Biodiversity Targets for 2011-20 in Wales) is addressed in Wales[5]. The ambition of the plan is 'To reverse the decline in biodiversity, for its intrinsic value, and to ensure lasting benefits to society'. The NRAP is split into three parts:

Part 1: Our Strategy for Nature sets out the commitment to reversing the loss of biodiversity in Wales, and the objectives for action. These objectives are listed below:

- Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.
- Safeguard species and habitats of principal importance and improve their management.
- Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.
- Tackle key pressures on species and habitats.
- Improve our evidence, understanding and monitoring.
- Put in place a framework of governance and support for delivery.

Planning Policy

Planning Policy Wales, 2024

PPW sets out the land use planning policies of Welsh Government. It is supplemented by a series of TANs, Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

Chapter 6. Distinctive and Natural Places outlines Welsh Government's objectives for the environmental and cultural components of placemaking. These components are complementary to those of the Active and Social and Productive and Enterprising themes and collectively the three themes come together to contribute towards the national sustainable placemaking outcomes.

The Environment (Wales) Act 2016 Part 1 – Section 6 'Biodiversity and resilience of ecosystems duty' states that public authorities "*must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions".* Planning Policy Wales (Ref 1.3) (PPW) expands on this by stating that "*This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity".*

To facilitate the fulfilment of Section 6, a NBB approach has been adopted by the Welsh Government. This approach has been included in the 12th edition of PPW[6] and sets out the requirement for a Green Infrastructure Statement. Relevant sections of PPW are:

Paragraph 6.2.11: *The quality of the built environment should be enhanced by integrating green infrastructure into development through appropriate site selection and use of creative design. With careful planning and design, informed by an appropriate level of assessment, green infrastructure can embed the benefits of biodiversity and ecosystem services into new*

[5] Covention on Biological Diversity (2011) Aichi Biodiversity Targets.

[6] Welsh Government (2024) Planning Policy Wales. Edition 12. February 2024.

development and places, help to overcome the potential for conflicting objectives, and contribute to health and well-being outcomes.

Paragraph 6.2.12: *A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal… The green infrastructure statement will be an effective way of demonstrating positive multi-functional outcomes which are appropriate to the site in question and must be used for demonstrating how the step-wise approach (see 'Method of Approach' below) has been applied.*

Paragraph 6.2.13: *There are multiple ways of incorporating green infrastructure, depending on the needs and opportunities a site presents, and the green infrastructure assessment should be referred to, as appropriate, in order to ascertain local priorities… In most cases the green infrastructure statement should highlight any baseline data considered and surveys and assessments undertaken, including but not limited to, habitats and species surveys, arboricultural surveys and assessments, sustainable drainage statements, landscape and ecological management plans, open space assessments and green space provision and active travel links.*

Section 6.4 addresses Biodiversity and Ecological Networks. The policy includes the duties and requirements set out in Section 6 the Environment Wales Act (2016) and pays due regard to the State of Natural Resources Report (Natural Resources Wales (NRW), 2016) by taking all reasonable steps to maintain and enhance biodiversity. There is a focus on ecosystem services and the benefits of protecting and enhancing biodiversity.

The relevant measures in place to conserve landscape and biodiversity include:

- Statutory designations;
- Non-statutory designations;
- Maintaining and enhancing biodiversity;
- Ecosystem resilience and connectivity of ecological networks; and,
- Protection and consideration of protected and notable species and habitats.
- Sections relevant to this Green Infrastructure Statement are detailed below.

Paragraph 6.4.5: *Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The step-wise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework:*

- diversity between and within ecosystems;
- the extent or scale of ecosystems;
- the condition of ecosystems including their structure and functioning;
- the connections between and within ecosystems; and

- adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example.

Paragraph 6.4.21: *Planning authorities must follow a step-wise approach to maintain and enhance biodiversity, build resilient ecological networks and deliver net benefits for biodiversity by ensuring that any adverse environmental effects are firstly avoided, then minimised, mitigated, and as a last resort compensated for. Enhancement must be secured by delivering a biodiversity benefit primarily on site or immediately adjacent to the site, over and above that required to mitigate or compensate for any negative impact.*

Paragraph 6.4.12: *Having worked iteratively through the stages of the step-wise approach (see 'Method of Approach' below), and providing evidence in the Green Infrastructure Statement that the step-wise approach has been followed, a scheme of enhancements must be provided to ensure a NBB. Where biodiversity enhancement proportionate to the scale and nature of the development is not proposed as part of an application, significant weight will be given to its absence, and unless other significant material considerations indicate otherwise, it will be necessary to refuse permission.*

Paragraph 6.4.13: *Improving ecosystem resilience, particularly improving connectivity to the immediate surroundings, would be a key contribution to on-site avoidance, minimisation, and mitigation strategies and enhancement. How a development would improve the attributes of resilience should be demonstrated as far as this is reasonably practical.*

Paragraph 6.4.20: *Statutorily designated sites must be protected from damage and deterioration, with their important features conserved and enhanced by appropriate management. The contribution of the designated site to wider resilient ecological networks should be recognised and captured as part of a strategic approach to planning policy and decision making. The links between planning and wider management activity for the restoration and recovery of nature should be made. Complementary, and joint, action between all sectors and beyond the boundaries of the designated sites themselves is necessary to improve extent, connectivity and adaptability and address the nature emergency.*

Paragraph 6.4.29: *SACs and SPAs are of European importance. Under the Conservation of Habitats and Species Regulations (2017) (the Habitats Regulations), all public bodies (including planning authorities) must have regard to the requirements of the EC Habitats and Birds Directives when carrying out their functions. SACs and SPAs on land are underpinned by notification as SSSIs and hence subject to protection afforded by the SSSI provisions. Before authorising development or adopting a land use plan which is likely to have a significant effect on a SACor SPA (including where outside the boundary of the SAC or SPA), planning authorities must carry out an appropriate assessment of the implications for the designated features, consult NRW and have regard to NRW's representations. The development can normally only be authorised, or the plan adopted, if the planning authority ascertains that it will not adversely affect the integrity of the site, if necessary taking into account any additional measures, planning conditions or obligations.*

Paragraph 6.4.31: *Although non-statutory designations do not have a statutory process for their protection, Sites of Importance for Nature Conservation, Local Wildlife Sites, Local Nature Reserves, and Regionally Importance Geodiversity Sites make a vital contribution to delivering an ecological network for biodiversity and resilient ecosystems, and they should be given protection in development plans and the development management process.*

Paragraph 6.4.35: *The presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to*

result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained.

Paragraph 6.4.39: *Planning authorities should protect trees, hedges, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial green infrastructure function.*

Paragraph 6.4.26: *Ancient woodland, semi-natural woodlands, individual ancient, veteran and heritage trees and ancient hedgerows are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees, woodlands and hedgerows are to be afforded protection from development which would result in their loss or deterioration unless very exceptionally there are significant and clearly defined public benefits; this protection must prevent potentially damaging operations and their unnecessary loss.*

Paragraph 6.4.44: *the protection and planting of trees and hedges should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission, and/or by making Tree Preservation Orders (TPOs).*

Technical Advice Note 5 (TAN5) Nature Conservation and Planning

The PPW is supplemented by a series of TANs. TAN 5 provides guidance on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It provides advice on areas including the key principles of positive planning for nature conservation, nature conservation in Local Development Plans and development management procedures. It also provides advice on development affecting designated sites and habitats, in addition to protected or habitats and species of principal importance.

Key Principles include that the town and country planning system in Wales should integrate nature conservation into all planning decisions; that the town and country planning system should look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally and that they should ensure that the UK's international and national obligations for site, species and habitat protection are fully met in all planning decisions.

The National Plan

The National Plan 2024[7] sets out Wales' national development framework that details the Welsh Government's twenty-year plan for shaping the growth and development of the country. Relevant to this Green Infrastructure Statement is Policy 9 – Resilient Ecological Networks and Green Infrastructure which is outlined below:

To ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure, the Welsh Government will work with key partners to:

- *identify areas which should be safeguarded and created as ecological networks for their importance for adaptation to climate change, for habitat protection, restoration or creation, to protect species, or which provide key ecosystems services, to ensure they are not unduly compromised by future development; and*
- *identify opportunities where existing and potential green infrastructure could be maximised as part of placemaking, requiring the use of nature-based solutions as a*

[7] Welsh Government (2021) Future Wales: The National Plan 2040. February 2021

key mechanism for securing sustainable growth, ecological connectivity, social equality and well-being.

Planning authorities should include these areas and/or opportunities in their development plan strategies and policies in order to promote and safeguard the functions and opportunities they provide. In all cases, action towards securing the maintenance and enhancement of biodiversity (to provide a net benefit), the resilience of ecosystems and green infrastructure assets must be demonstrated as part of development proposals through innovative, nature-based approaches to site planning and the design of the built environment.

Local Planning Policy

A summary of relevant local planning policies is provided in **Table B.1**Table0 below.

Table0 B.1 Summary of Local Planning Policy

Document	Planning Policy	Summary of Policy Text
Anglesey and Gwynedd Joint Local Development Plan	Policy AMG 2: Special Landscape Areas	When considering a proposal within Special Landscape Areas (SLA), as identified by the Proposals Map and listed below, there will be a need to appropriate consideration to the scale and nature of the development ensuring that there is no significant adverse detrimental impact on the landscape. The development should aim to maintain, enhance or restore the recognised character and qualities of the SLA. The proposal should have regard to the relevant 'Statement of Value and Significance'. Where appropriate, the Councils will require a Landscape and Visual Impact Assessment in order to consider the impact of the development on the designated area. In exceptional circumstances, where development is necessary and could result in significant impact on the landscape, appropriate mitigation and compensation measures should be provided.
	Policy AMG 3: Protecting and enhancing features and qualities that are distinctive to the local	Proposals that would have significant adverse impact upon landscape character as defined by the Landscape Character Areas included within the current Landscape Strategy for the relevant authority, must demonstrate through a landscape assessment how landscape character has influenced the design, scale, nature and site selection of the development.

	landscape character	
	Policy AMG 5: Local Biodiversity and Conservation	Proposals must protect and, where appropriate, enhance biodiversity that has been identified as being important to the local area by: • a. Avoiding significant harmful impacts through the sensitive location of development. • b. Considering opportunities to create, improve and manage wildlife habitats and natural landscape including wildlife corridors, stepping stones, trees, hedges, woodlands and watercourses. A proposal affecting sites of local biodiversity importance will be refused unless they can conform with all of the following criteria: • 1. That there are no other satisfactory alternative sites available for the development. • 2. The need for the development outweighs the importance of the site for local nature conservation. • 3. That appropriate mitigation or compensation measures are included as part of the proposal. • Where necessary, an Ecological Assessment which highlights the relevant local biodiversity issues should be included with the planning application.
	Policy AMG 6: Protecting Sites of Regional or Local Significance	Proposals that are likely to cause direct or indirect significant harm to Local Nature Reserves (LNR), Wildlife Sites (WS) or regionally important geological / geomorphologic sites (RIGS) will be refused, unless it can be proven that there is an overriding social, environmental and/or economic need for the development, and that there is no other suitable site that would avoid having a detrimental impact on sites of local nature conservation value or local geological importance. When a development is granted, it will be necessary to ensure that there are appropriate mitigation measures in place. It will be possible to use planning conditions and/or obligations in order to safeguard the site's biodiversity and geological importance.
Natur Gwynedd – Local Biodiversity Action Plan	Natur Gwynedd is the local biodiversity action plan for Gwynedd outside the Snowdonia National Park. The aims are to: • to help conserve the biodiversity of Gwynedd and, thereby, contribute to biodiversity conservation in Wales, the UK and the world. • to develop effective local partnerships to make sure that what we do will be maintained long term. • to increase our knowledge of Gwynedd's biodiversity.	

- to raise public awareness of biodiversity in Gwynedd.

Natur Gywnedd details the Habitat Action Plans and Species Action Plans for Gwynedd outside the Snowdonia National Park.

Supplementary Planning Guidance

The Green Infrastructure Supplementary Planning Guidance provides planning advice on a number of areas relating to development and the environment, including protection and provision of open space, ecology and biodiversity, trees, soils, public rights of way, and river corridors (as outlined further in associated technical notes). The green infrastructure approach combines all these elements to achieve a more joined-up approach to the environment.

With regards to Green Infrastructure Statements, the guidance states:

- The culmination of analysis and conclusions of an impact assessment should be used to inform a Green Infrastructure Statement, which shows how all elements of the proposed green infrastructure (retained and new) and any associated uses and movement have a clear role and purpose in the new development. Conclusions drawn from analysis of this resource should be expressed in an illustrative way, in the form of a Green Infrastructure Masterplan or Landscape Masterplan or similar. The resulting approach should explain how this is achieving good design.
- A Green Infrastructure Statement should apply the mitigation hierarchy. The application of the mitigation hierarchy should be appropriate to the scale of the development proposed and to the scale of the impact upon green infrastructure. Generally, the larger the proposed development, the more of the elements of green infrastructure listed in policy KP16 will need to be considered.

3.6.A Historic Environment Desk Based Assessment for the Bryncir Works

nationalgrid

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1. Introduction

1.1.1 This report is a desk-based assessment (DBA), which sets out the terrestrial heritage baseline conditions for the proposed works. This DBA is included as an Appendix (**Volume 8: Appendix 3.6.A**) to **Volume 3, Chapter 6: Historic Environment** of the Environmental Statement (ES).

1.1.2 The purpose of the DBA is to identify all known designated and non-designated terrestrial historic assets in the Bryncir works site and the defined study areas (as set out in **Section 3.1**) to establish the archaeological and historical background.

1.1.3 The DBA assesses the potential for the survival of previously unknown historic assets and archaeological remains to exist in the Bryncir works site and provides an assessment of the significance of the known historic assets and potential archaeological remains that have the potential to be affected by the proposed works. The DBA concludes with an assessment of potentially affected historic assets in the Bryncir works site and study areas.

1.2 Site Location and Proposed Works

1.2.1 National Grid Electricity Transmission plc (NGET) is proposing to reinforce the existing double circuit electric line which runs between Pentir Substation near Bangor and Trawsfynydd Substation in Eryri National Park (ENP) ('the Project'). These works will remove the existing 132 kilovolt (kV) supply to the existing SPEN DB overhead line (SPEN DB route) which is fed from Tower 4ZC070 south of Bryncir village and west of The Goat Inn on the A487. A new 400/132 kV substation is proposed close to existing Tower 4ZC067 and a connection from it to the existing SPEN DB route will be installed in part by 132 kV underground cables and in party by a new section of 132 kV overhead line.

1.2.2 Works at Bryncir would be on agricultural land approximately 750 metres (m) south of Bryncir, Garndolbenmaen in north west Wales at its closest point, in the administrative boundary of Gwynedd Council. The location of the proposed works is illustrated on **Figure 3.6.A.1**, (the 'Bryncir works site'). The approximate centre of the Bryncir works site would be Grid Reference SH 479430.

1.2.3 Further information on the proposed works is provided in ES **Volume 3, Chapter 2: Bryncir Works**.

1.2.4 The Bryncir works site shown on **Figure 3.6.A.1** covers an area approximately 12 hectares (ha). The land in the Bryncir works site will comprise an access road, construction compound and laydown area.

1.2.5 The Bryncir works site shown in ES **Volume 3: Bryncir, Figure 3.2.1** covers an area approximately 12 hectares (ha). The proposed works would comprise the following:

- New 400 kilovolt (kV) substation, including a permanent access road.
- New section of 132 kV underground cable.
- Relocation of existing Tower 4ZC067 80 m north-west of its current position.

- Realignment of the SPEN DB route and decommissioning and removal of a redundant section.
- Permanent diversion of the Dolbenmaen No 18 footpath.
- New landowner access track.

1.2.6 A description of the proposed works is provided in ES **Volume 3: Bryncir, Chapter 2: Bryncir Works.**

1.2.7 Following pre-construction surveys, initial preparatory works would include earthworks activities including the construction of the access road, bell-mouth, substation platform, site compound and laydown areas. These works will be managed from a temporary compound just off the main A487.

1.2.8 During construction there will be a requirement for temporary facilities including:

- Site offices including offices and meeting rooms.
- Staff welfare facilities including toilets, kitchen and mess room.
- Storage areas for construction vehicles, plant, equipment, materials and (where required) for storage of waste items to be removed.
- Appropriately bunded areas to be used for the storage of oils, other fuels and waste material, where required.

1.3 Aims

1.3.1 The aims of the assessment are:

- To place the Bryncir works site in its historical and archaeological context through the collection of baseline information.
- To identify the presence of known historic assets (both designated and non-designated) in the Bryncir works site and the 500 m and 3 kilometres (km) study areas (see **Section 3**).
- To assess the potential for previously unrecorded archaeological remains to exist in the Bryncir works site.
- To identify the extent of previous ground disturbance which may have affected the survival of archaeological remains in the Bryncir works site
- To assess the significance of historic assets in the Bryncir works site and study areas, and the likely significance of previously unrecorded archaeological remains that may be in the Bryncir works site.
- To identify historic assets and previously unrecorded archaeological remains that have the potential to be impacted by the proposed works which will be taken forward for assessment in the ES.

1.4 Structure of the Document

1.4.1 This DBA is divided into the following sections:

- The legislative and planning policy framework is provided in **Section 2** (Legislation, Policy and Guidance).

- The methodology for the assessment and for the determination of the study areas is set out in **Section 3** (Assessment Methodology).
- A description of the archaeological and historical background of the Bryncir works site and description of historic assets in the Bryncir works site and study areas, as well as a summary of previous archaeological investigations undertaken in the study areas, is set out in **Section** Error! Reference source not found. (Heritage Baseline).
- **Section** Error! Reference source not found. assesses the potential for unrecorded archaeological remains to exist in the site and provides an assessment of the significance of known and potential historic assets which have the potential to be impacted by the proposed works (Assessment of Baseline).
- A summary of the results of the assessment is provided in **Section** Error! Reference source not found. (Conclusions).

1.4.2 This DBA is supported by **Volume 8, Appendix 3.6.B: Gazetteer of Historic Assets** and by the following figures at the end of this report:

- **Figure 3.6.A.1**: Designated Historic Assets within 3 km of the Bryncir Works Site.
- **Figure 3.6.A.2**: Non-designated Historic Assets within 500 m of Bryncir Works Site.
- **Figure 3.6.A.3**: Extracts from Tithe Surveys of Dolbenmaen Parish and Llanfihangely Y Penant in the County of Carnarvon 1844.
- **Figure 3.6.A.4**: Historical OS Map 1888.
- **Figure 3.6.A.5**: Historical OS Map 1901.
- **Figure 3.6.A.6**: Historical OS Map 1920.
- **Figure 3.6.A.7**: Historical OS Map 1953.

2. Legislation, Policy and Guidance

2.1.1 Legislation, planning policy and guidance relevant to the historic environment and pertinent to the proposed works are detailed in ES **Volume 8: Appendix 1.1.A Legislation, Policy and Guidance,** and **Volume 3, Chapter 6. Historic Environment** and are summarised below.

2.1 Legislation

- Ancient Monuments and Archaeological Areas Act 1979 (Ref 2.1).
- Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref 2.2).
- The Historic Environment (Wales) Act 2016 (Ref 2.3).
- The Historic Environment (Wales) Act 2023 (Ref 2.4)
- The Hedgerow Regulations 1997 (Ref 2.5).

2.2 National Planning Policy

- The 2023 Overarching NPS for Energy (EN-1) (Ref 2.6).
- The 2023 NPS for Electricity Networks Infrastructure (EN-5) (Ref 2.7).
- Planning Policy Wales 2024 (Ref 2.8).
- Future Wales 2021 The National Plan to 2040 (Ref 2.9).
- Technical Advice Note 24: The Historic Environment (Ref 2.10).

2.3 Local Planning Policy

- Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026 (Ref 2.11).

2.4 World Heritage Convention

- The Slate Landscape of Northwest Wales. Nomination as a World Heritage Site. Property Management Plan 2020 – 2030 (Ref 2.12).

2.5 Guidance

2.5.1 This DBA has been carried out using guidance from the following sources:

- Conservation Principles for the sustainable management of the historic environment in Wales (Ref 2.13).
- Heritage Impact Assessment in Wales (Ref 2.14).
- Managing Change to Listed Buildings in Wales (Ref 2.15).

- Managing Change to Registered Historic Parks and Gardens in Wales (Ref 2.16).
- Managing Conservation Areas in Wales (Ref 2.17).
- Managing Historic Character in Wales (Ref 2.18).
- Managing Lists of Historic Assets of Special Local Interest (Ref 2.19).
- Setting of Historic Assets in Wales (Ref 2.20).
- Chartered Institute for Archaeologists Standard and guidance for historic environment desk-based assessment (Ref 2.21).

3. Assessment Methodology

3.1 Study Areas

3.1.1 The study areas set out below have been agreed through consultation with Heneb: The Trust for Welsh Archaeology and are presented on **Figures 3.6.A.2** and **3.6.A.3**.

Designated Historic Assets

3 km Study Area

3.1.2 A study area of 3 km from the Bryncir works site has been defined to provide historical and archaeological context and to identify designated historic assets with the potential to be affected by the proposed works.

3.1.3 Designated historic receptors are identified with their reference number assigned by Cadw. Each receptor identifier is placed in parentheses and highlighted in bold in the text.

3.1.4 The settings of designated historic assets of the highest value (i.e., World Heritage Sites, scheduled monuments, Grade I and II* listed buildings, registered parks and gardens and conservation areas containing a number of assets of the highest value) outside of the defined 3 km study area will be considered. These assets will be considered as the proposed works may have the potential to result in long-term change to the settings of designated historic assets, some of which may be at distance from the Bryncir works site.

Non-designated Historic Assets

500 m Study Area

3.1.5 A study area of 500 m from the Bryncir works site has been defined to provide historical and archaeological context and to identify non-designated historic assets with the potential to be affected by the proposed works. This study area will allow for non-designated historic assets to be set in their wider context and allow for the assessment of archaeological potential in the Bryncir works site.

3.1.6 Undesignated historic receptors are identified with their Historic Environment Record (HER reference number which uses the prefix ‘PRN’. Each receptor identifier is placed in parentheses and highlighted in bold in the text.

3.2 Data and Information Sources

3.2.1 This assessment has collated cultural heritage data from several sources, comprising:

- Search of the Heneb HER for Gwynedd for information relating to non-designated historic assets, previous archaeological investigations, and historic landscape character data.

- Records from the National Monuments Record (NMR) of Wales, held by the Royal Commission for Ancient and Historic Monuments Wales (Ref 3.1).
- Records from the Museums Wales collections (Ref 3.2).
- Records held by Cadw on designated historic assets in Wales (Ref 3.3).
- Published and unpublished literature (including a detailed review of reports for previous fieldwork carried out close to the Bryncir works site)
- Documentary, cartographic and other resources as deposited in the local archives.
- Local authority conservation area appraisals and management documents and their mapping.
- Various online resources including the British Geological Survey (BGS) Geology of Britain Viewer (Ref 3.4) and the British Geological Survey GeoIndex Onshore (Ref 3.5).
- Research Framework for the Archaeology of Wales (Ref 3.6).
- National Library of Scotland for historic maps (Ref 3.7).
- Vertical aerial photography of the study area available from the National Collection of Aerial Photographs (Ref 3.8), the APU Welsh Government Aerial Photography (Ref 3.9), and the Britain from Above database (Ref 3.10).
- Available 50cm to 1m spatial resolution light detecting and ranging (LiDAR) data published by the Welsh Government (Ref 3.11) and the National Library of Scotland (Ref. 3.7).
- Defence of Britain Archive (Ref 3.12).
- Relevant records available from the Portable Antiquities Scheme (PAS) (Ref 3.13).

3.3 Site Walkover Survey

3.3.1 A site visit and visual appraisal of historic assets in the Bryncir works site and study area was undertaken between 10th and 11th October 2024 to:

- Identify known historic assets in the Bryncir works site.
- Identify areas with the potential to contain any previously unidentified archaeological or historical remains.
- Identify and assess the setting of historic assets in the Bryncir works site and study areas.
- Identify the location, extent and severity of modern ground disturbance and previous construction impacts.
- Assess ground conditions and the suitability of the Bryncir works site for further evaluation.

3.4 Previous Ground Disturbance

3.4.1 The previous impact to buried archaeological remains caused by historic development has been assessed using a five-point scale of 'very high', 'high', 'medium', 'low' and 'very low', the definitions of which are set out in **Table 3-1**.

Table 3.1 – Level of Previous Ground Disturbance

Magnitude of Previous Disturbance	Description
Very High	Deep level basement/sub-basement excavated into the underlying natural geology resulting in the removal of all subsurface archaeological deposits.
High	Extensive and deep disturbance resulting in the removal of all but the deepest archaeological deposits such as wells or quarry pits, deep foundations, quarrying and large utilities.
Medium	Moderate previous disturbance which may extend to some depth, but where there remains the potential for archaeological remains to survive either between or beneath existing impact levels such as building foundations and utility trenches.
Low	Shallow previous disturbance such as areas of car parking and surfacing where archaeological remains may survive with limited truncation beneath the level of impact.
Very Low	No known historic development impacts to subsurface archaeological remains. Potential for the survival of archaeological horizons from Pre-history to the Post-medieval period.

3.5 Archaeological Potential

3.5.1 Archaeological potential assesses the possibility that unrecorded archaeological remains may exist in the Bryncir works site in addition to the known archaeological resource identified in the baseline. The potential for unrecorded archaeological remains to exist in the Bryncir works site has been determined by professional judgement guided by an assessment of the existing heritage resource and the impact of previous modern development or ground disturbance in the Bryncir works site.

3.5.2 The potential for an area to contain archaeological remains is rated 'high', 'medium', 'low', 'negligible,' or 'unknown'. This rating is based on an understanding of the archaeological resource as a whole and takes into account its national, regional, and local context. The rating also considers the number and proximity of known and predicted archaeological and historical sites or find spots in the Bryncir works site and the surrounding study areas.

3.6 Significance of Historic Assets

3.6.1 The assessment criteria used in the DBA is based on Cadw guidance on heritage impact assessment in Wales (Ref 2.15) and the setting of historic assets in Wales (Ref 2.21). Each heritage asset is assigned a significance (heritage value) rating in the DBA. The significance (heritage value) of historic assets has been determined by professional judgement guided by statutory and non-statutory designations, national, regional, and local policies, and archaeological research frameworks.

3.6.2 The value of a historic asset is guided by its designated status, but is derived also from its heritage interest, which is defined by Cadw as a combination of its evidential, historical, aesthetic, or communal interest. The setting of a historic asset can also contribute to its value. Using professional judgement and the results of consultation with heritage stakeholders, historic assets are also assessed on an individual basis and regional variations and individual qualities are considered where applicable. In articulating effects, professional judgement will be made on the level of impact (positive or negative) that a historic asset will experience because of the proposed works, supported by an appropriate narrative linking this to how the asset will have its significance changed.

3.6.3 **Table 3.2** below provides the criteria for assigning heritage value, but in all cases professional judgement will be applied regarding the appropriate category for individual historic assets, with a justification for this assessment provided.

Table 3.2 – Criteria for Determining the Value of Historic Assets

Value of Historic Assets	Description
High	World Heritage Sites. Scheduled Monuments. Aircraft crash sites. Grade I and II* Listed Buildings. Registered battlefields. Grade I and II* registered parks and gardens. Conservation areas of demonstrable high value. Non-designated historic assets (archaeological sites, historic buildings, monuments, parks, gardens, or landscapes) that can be shown to have demonstrable national or international importance. Well preserved historic landscape character areas, exhibiting considerable coherence, time-depth, or other critical factor(s).
Medium	Grade II Listed Buildings. Conservation areas. Grade II registered parks and gardens. Non-designated historic assets (archaeological sites, historic buildings, monuments, park, gardens, or landscapes) that can be shown to have demonstrable regional importance.

	Averagely preserved historic landscape character areas, exhibiting reasonable coherence, time-depth, or other critical factor(s). Historic townscapes with historic integrity in that the assets that constitute their make-up are clearly legible.
Low	Locally Listed Buildings. Non-designated historic assets (archaeological sites, historic buildings, monuments, park, gardens, or landscapes) that can be shown to have demonstrable local importance. Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade. Historic landscape character areas whose value is limited by poor preservation and/or poor survival of contextual associations.
Very Low	Assets identified on national or regional databases, but which have no evidential, historical, aesthetic, or communal value. Assets whose values are compromised by poor preservation or survival of contextual associations to justify inclusion into a higher grade. Landscape with no or little significant historical merit.

3.7 Limitations and Assumptions

3.7.1 The assessment has relied on data and records provided by third parties, and it has been assumed that this information is accurate and up to date at the time of reporting.

3.7.2 Historic aerial photographic coverage of the Bryncir works site and study area was not available from the National Collection of Aerial Photographs database (Ref 3.8), the APU Welsh Government Aerial Photography (available on DataMapWales) (Ref 3.9), or the Britain from Above database (Ref 3.10).

4. Heritage Baseline

4.1 Site Conditions

Geology

4.1.1 The underlying bedrock in the Bryncir works site is the Llanbedrog Volcanic Group. This is a sedimentary and igneous bedrock formed between 458.4 and 449 million years ago, during the Ordovician period (Ref 3.4).

4.1.2 In the late Devensian glaciation during the Pleistocene, sands and gravel was deposited in the eastern Llyn Peninsula, which comprises much of Caernarfonshire and Gwynedd. The superficial deposit in the Survey Area consists of glaciofluvial sheet deposits. These are sedimentary superficial deposits formed during the Quaternary period. There are alluvium deposits along the Afon Dwyfach, with peat lining the western side of the river (Ref 3.4).

Previous Geotechnical Investigations undertaken in the Bryncir Works Site

4.1.3 The Engineering Geology Unit undertook a borehole in 1987 in the western area of the Bryncir works site. The result identified a 0.3m brown clay topsoil. Below the topsoil was a pale brown fine to coarse-grained gravel which became finer with depth (up to 3m in depth) (**SH44SE24**). A second borehole opened in the eastern area of the proposed works site identified a brown clay topsoil measuring 0.3m in depth. Below the topsoil was a brown clay subsoil with coarse grained gravel inclusions 0.7m in depth. Below that was a brown fine to coarse grained gravel with occasional cobbles and boulders 1.2m in depth (**SH44SE19**) (Ref 3.5).

Topography

4.1.4 The Bryncir works site is approximately 1 km south of the small village of Bryncir, roughly in the area of grid reference: SH486430 The A487 is approximately 340 m to the north, and the B4411 and the Afon Dwyfach intersects the Bryncir work site.

4.1.5 The proposed works are in an agricultural landscape characterised by pastoral fields with a mix of field boundary types being predominantly dry-stone wall or post-and-wire fences. The highest points in the 500 m Study Area are c.93 m Above Ordnance Datum (AOD) in the north-east and c 80 m AOD in the north-west. The land falls toward the river and the lowest point along the river is in the south of the study area at c.75 m AOD.

4.1.6 The existing 4ZC overhead line runs to the east of the Bryncir works site and would intersect the Bryncir works site at two locations. The pylons are visible from many views in the vicinity of the Bryncir works site due to the relatively flat topography.

4.1.7 The SPEN DB route runs north to south through the Bryncir works site, west of the Afon Dwyfach.

4.1.8 There are a number of isolated farms and residential properties in the vicinity of the Bryncir works site; including the farm on which the Bryncir substation is proposed.

Findings from Site Walkover Surveys

4.1.9 A site walkover was carried out of the Bryncir works site between 10th and 11th October 2024 to examine the area of proposed works as well as the 500 m and 3 km study areas. No new assets were recorded as part of the walkover survey.

4.2 Previous Archaeological Investigations

4.2.1 There have been no previous archaeological investigations undertaken in the Bryncir works site.

4.2.2 There is a valid planning permission for a substation on part of the Bryncir works site but that the design is not suited to the contemporary need. The planning application was accompanied by information on the historic environment. The planning permission has a condition requiring pre-commencement site archaeological investigation (Ref. 4.1).

4.2.3 13 previous archaeological assessments and investigations have been undertaken in the 500 m study area. These archaeological investigations have been assigned a unique identification number HER public record numbers (PRN) by Heneb. The locations are illustrated on **Figure 3.6.A.3** and presented in the gazetteer (**Volume 8: Appendix 3.6.B Gazetteer of Historic Environment Assets**).

4.2.4 In 1998, Estell Warren Landscape Architects, on behalf of National Grid carried out a desk-based assessment of five different possible substation sites at Bryncir including part of the Bryncir works site. Each of the Sites comprised 0.54 hectares (**PRN 40458**) (Ref 4.2).

4.2.5 In 1998, Gwynedd Archaeological Trust (GAT) conducted a desk-based assessment for the Magnox CCGT Connection and Infrastructure works Bryncir substation (**PRN 40459**) (Ref 4.3).

4.2.6 In 2003, GAT produced a document listed as 'Prehistoric Funerary and Ritual Monument Survey: West' (**PRN 40526**) (Ref 4.4). In addition, in 2005, GAT produced 'Pan-Wales prehistoric funerary and ritual sites survey: trial data' (**PRN 40527**) (Ref 4.5).

4.2.7 GAT was provided a grant by Cadw in 2005 to conduct a project on Roman roads in North-West Wales between 2004-2005 (**PRN 40538** & **PRN 40544**) (Refs 4.6 & 4.7). This project was adapted in 2007 in Roman roads in North-West Wales (Revision 4) **(PRN 40542**) (Ref 4.8).

4.2.8 In 2010, K. Waddington, alongside Bangor University conducted a desk-based research project highlighting evidence for settlement from the Late Bronze Age to early medieval period (**PRN 44557**) (Ref 4.9).

4.2.9 In 2010, GAT undertook an archaeological record and watching brief during the improvements of the A487 road. The evidence from the investigation identified field boundaries, clearance cairn and a barn (**PRN 44820**) (Ref 4.10).

4.2.10 In 2013, GAT completed an archaeological assessment along the route of a new main between Dolbenmaen water treatment and Cwmystradllyn Water Treatment. To support

the scheme, groundworks measuring 21.8m wide were proposed along the transfer route alongside three compounds (**PRN 44878**) (Ref 4.11).

4.2.11 GAT produced a heritage assessment based on the results of a report about 'First World War sites in north-west Wales' which was funded by Cadw in 2015. In total 75 sites were identified in the gazetteer (**PRN 44889**) (Ref 4.12).

4.2.12 In 2012, GAT was commissioned by Cadw to record medieval and post-medieval sites in Caernarvonshire. In total 486 mill sites some of which showed potential for scheduling. Melin Llecheiddior, Watermill, Pont y felin (**PRN 2813**) and Tyddyn- felin, Llanystumdwy (**PRN 34363**) have both been recorded on the gazetteer (**PRN 45048**) (Ref 4.13).

4.3 Historic Assets

4.3.1 The historic assets discussed in this assessment, including designated and non-designated historic assets, are identified by their unique identification number assigned by Cadw for designated historic assets, and by the Heneb HER public record numbers (PRN) for non-designated historic assets. Any additional assets identified through other sources such as the PAS, NMR or National Museum Wales (NMW) databases are identified in the text using either the assigned prefix AEC or the number assigned by the organisation who holds the database. Each asset can be cross-referenced to the gazetteer in Appendix 3.6.B and shown on **Figures 3.6.B.2** and **3.6.B.3**.

Designated Historic Assets

Within the Bryncir Works Site

4.3.2 There are no designated historic assets in the Bryncir works site.

Within the 3 km Study Area

4.3.3 There are no World Heritage Sites and Registered Parks & Gardens in the 3 km study area.

Scheduled Monuments

4.3.4 There are ten scheduled monuments in the 3 km study area. These are listed below with their distance from the Bryncir works site:

- Dolbenmaen Castle Mound (**CN063**), approximately 1.8 km east;
- Hut Circle East of Taleifion (**CN280**), approximately 1.14 km north-east;
- Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**), approximately 890 m north-east;
- Standing Stone North of Bettws Fawr (**CN154**), approximately 2.88 km south-west;
- Cefn-Isaf Burial Chamber (**CN003**), approximately 1.95 km south;
- Llystyn Gwyn Inscribed Stone (**CN021**), approximately 1.74 km north;
- Ystum-Cegid Burial Chamber (**CN029**), approximately 2 km south-east;
- Castell Caerau (**CN044**), approximately 1.93 km east;

- Craig-y-Tyddyn Camp (**CN046**), approximately 1.60 km east; and
- Capel Gallt-Coed (**CN117**), approximately 2.85 km south-west.

4.3.5 There are 25 listed buildings within 3 km of the site. These include one Grade II* and 24 Grade II listed buildings.

4.3.6 The Grade II* listed building comprises Parish Church of St Mary (**Cadw 4278**), approximately 1.68 km east of the Bryncir works site.

4.3.7 The Grade II listed buildings are dispersed across the 3 km study area and comprise farmstead and associated farm buildings, ancillary buildings, bridges, a church and a milestone dating to the post-medieval and modern periods. The Grade II listed buildings are:

- Pont Dolbenmaen (**Cadw 4213**), approximately 1.79 km east;
- Plas Holland (**Cadw 4279**), approximately 1.66 km east;
- Plas Dolbenmaen (**Cadw 4280**), approximately 1.71 km east;
- North-West Range of Farm Buildings at Plas Dolbenmaen (**Cadw 4281**), approximately 1.70 km east;
- Ysgubor Gerrig (**Cadw 4282**), approximately 2.20 km south east;
- Ystumcegid (**Cadw 4288**), approximately 1.18 km south-east;
- Betws-bach (**Cadw 4367**), approximately 2.3 km south-west;
- Lychgate to the Church of St Mary (**Cadw 21522**), approximately 1.68 km east
- Milestone (**Cadw 21539**), approximately 2.75 km east;
- Pont y Felin (**Cadw 21543**), approximately 40 m east;
- Garreg lwyd Cottage (**Cadw 21544**), approximately 1.47 km north-east;
- Tan-y-braich, with attached farm buildings (**Cadw 21545**), approximately 1.49 km north-east;
- Haybarn at Tan-y-braich (**Cadw 21546**), approximately 1.50 km north-east;
- North East Range of Farm Buildings at Plas Dolbenmaen (**Cadw 21551**), approximately 1.71 km east;
- Washhouse Building at Plas Dolbenmaen (**Cadw 21552**), approximately 1.69 km east;
- Piggery at Ystumcegid (**Cadw 21560**), approximately 1.18 km south-east;
- Ty-newydd Farmhouse (**Cadw 21563**), approximately 1.16 km east;
- Outhouse at Ystumcegid (**Cadw 21564**), approximately 1.20 km south-east;
- Farm Building and Granary at Ystumcegid (**Cadw 21565**), approximately 1.18 km south-east;
- Beudy-y-gromlech (**Cadw 21591**), approximately 1.89 km south;
- Pont Rhyd-y-benllig (**Cadw 21592**), approximately 2.84 km south; and
- Pont Ynys Creua (**Cadw 21598**), approximately 2.8 km west.

- Lodge, formerly for Brynkir (Cadw 4289), approximately 2.91 km east
- Lodge Bridge (Cadw 21566), approximately 2.96 km east

4.3.8 There is one conservation area within 3 km of the Bryncir works site: Dolbenmaen Conservation Area (WAL/GWYN/32; WAL/SNOW/2), approximately 1.52 km east.

Non-Designated Historic Assets

Within the Bryncir Works Site

4.3.9 There is one non-designated historic asset in the Bryncir works site: the route of old road, Garn Dolbenmaen (**PRN 62168**).

4.3.10 A site visit and visual appraisal of this historic asset in the Bryncir works site did not identify any areas with the potential to contain any previously unidentified archaeological or historical remains.

Within the 500 m Study Area

4.3.11 A further 23 non-designated archaeological assets of Bronze Age, Roman, post-medieval, modern as well as of unknown date have been identified in the 500 m study area:

- Bank at Tyddn Felin, East of Afon Dwyfach (**PRN 62175**);
- Farm Track, Bryn-'refail-isaf (**PRN 62172**);
- Farm Track, Bryn-'refail-isaf (**PRN 62173**);
- Old Road, B4411 (**PRN 62174**);
- Bryn-refail-ganol, site of, Dolbenmaen (**PRN 62169**);
- Bryn-Refail-Isaf, Dolbenmaen (**PRN 101053**);
- Bryn-yr-efail-uchaf, Dolbenmaen (**PRN 101063**);
- Burnt Mound, East of Afon Dwyfach, South of Bryncir (**PRN 154**);
- Field Barn, Bryn-'refail-ganol (**PRN 62170**);
- Gwindy (Gwyndy), Dolbenmaen (**PRN 101386**);
- Llystyn-isaf, Dolbenmaen (**PRN 101511**);
- Melin Llecheiddior, Watermill, Pont y Felin (**PRN 2813**);
- Natural Feature, Tomen Gwindu, W of Pont Y Felin (**PRN 2804**);
- Outfarm, South of Gwyndy, Dolbenmaen (**PRN 101767**);
- Part of Roman Road, Segontium to Pen Llystyn to Tomen y Mur (**PRN 17558**);
- Plas-Llecheiddior, Dolbenmaen (**PRN 101994**);
- POW Camp, Site of, Bryncir (**PRN 7878**);
- Remnants of Wall, Dolbenmaen (**PRN 62171**);
- Sluice, Bryn-yr-efail-uchaf (**PRN 34375**);

- Tyddyn-du, Dolbenmaen (**PRN 102211**);
- Road to Garndolbenmaen, Dolbenmaen (**PRN 31033**);
- Drainage Ditches, S of Rhwngddwyryd (**PRN 31015**); and
- Drainage Channels, S of Rhwngddwyryd (**PRN 31016**).

4.4 Archaeological and Historical Background

Palaeolithic and Mesolithic (1,000,00 BC to 4,000 BC)

4.4.1 Remains from the Palaeolithic period are rare, and to date, no material from this period has been yet identified in the Bryncir works site or in the 500 m study area.

4.4.2 No Mesolithic findspots, archaeological remains or sites have been identified in the Bryncir works site or in the 500 m study area, however, a number of prehistoric flint and chert artefacts were found during archaeological excavations in advance of the Porthmadog bypass at Y Bryn near Tremadog (**PRN 33595**), approximately 7.6km south-east of the Bryncir works site, including a number of cores and broken flakes of possible later Mesolithic date.

Neolithic to Bronze Age (4,000 BC to 700 BC)

4.4.3 No Neolithic findspots, archaeological remains or sites have been identified in the Bryncir works site or the 500 m study area.

4.4.4 As elsewhere, Neolithic settlement sites are particularly rare and our interpretation could be due to a bias towards the survival of the large funerary monuments and ritual sites, the settlement sites having been destroyed by later activity and the erosion of topsoil in the later prehistoric and Romano-British periods.

4.4.5 Neolithic and early Bronze Age activity is mostly represented in the archaeological record by flint tools and funerary monuments.

4.4.6 More widely, North Wales contains numerous Neolithic funerary monuments, and has also recently yielded evidence, from Llanfaethlu on Anglesey, of an early Neolithic village – the first to be discovered in North Wales – which reveals a cluster of four houses.

4.4.7 Two designated historic assets of Neolithic date have been identified in the wider 3 km study area. The Cefn-Isaf Burial Chamber (**CN003**) is 1.95 km south of the Bryncir works site and consists of a chambered tomb, dating to the early Neolithic. The burial chamber consists of a capstone resting on four supporters. The chamber, which is open to the southeast measures 2.4 m along its axis from north-east to south-west and 1.8 m in width at its north-east end, and the internal height is 1m. The Ystum-Cegid Burial Chamber (**CN029**) is approximately 2 km north of the Bryncir works site and consists of the remains of a chambered long cairn, dating to early Neolithic. The site is a megalithic chamber with the remains of a passageway and associated cairn. The chamber is an irregular quadrilateral formed by five upright stones which support a capstone, 1.2 m above ground level; it measures 4.8 m in length and 3.5 m in width. The cairn material consists of turf covered stone which extends 10 m to the south and 5 m to the north of the chamber. The cairn is overlain by loose boulders and also by a field wall which is built through the chamber and follows the line of the passageway.

4.4.8 No Bronze Age findspots, archaeological remains or sites have been identified in the Bryncir works site.

4.4.9 The evidence for, and emphasis on, formal ritual and elaborate burial, so characteristic of the Earlier Bronze Age, fell away during the Later Bronze Age. Climate may, again, have contributed to the decline in popularity of the upland locations, which had previously been favoured for burial and ritual. In contrast, the evidence for settlement increases during this period. From the Later Bronze Age, hillforts begin to dominate the landscape. Undefended settlement is also well represented, as are field systems and other components of potentially contemporary landscapes. The quality of the field evidence in certain areas of Gwynedd is very high. The identifiable hierarchy of settlement reflects a perceived increase in the stratification of society dominated by a warrior aristocracy (Ref 4.13).

4.4.10 The following designated historic assets of Bronze Age date have been identified in the wider 3 km study area:

4.4.11 A Standing Stone North of Bettws Fawr (**CN154**) is approximately 2.88 km south-west of the Bryncir works site. The monument comprises the remains of a standing stone, which probably dates to the Bronze Age. It measures 2.7 m high by 0.85 m by 0.6 m and leans slightly to the south.

4.4.12 A non-designated historic asset of Bronze Age date has been identified in the 500 m study area – a burnt mound just east of the Afon Dwyfach, near the village of Bryncir (**PRN 154**), approximately 220 m north of the Bryncir works site.

Iron Age (800 BC to AD 43)

4.4.13 No Iron Age findspots, archaeological remains or sites have been identified in the Bryncir works site or the 500 m area.

4.4.14 The Iron Age roughly spans the centuries between approximately 800 BC and the beginning of the Roman conquest in AD 43. It is distinguished by the impressive numbers of surviving hillforts and settlements present in the archaeological record. However, archaeological excavations have been very rare and the material culture for the Iron Age in Wales is correspondingly sparse. What there is, largely recovered from deliberately deposited hoards, is exotic and unusual rather than domestic and every day. Swords, spearheads, and fine metalwork created in geographically widespread typological and artistic styles testify to broad cultural contacts and the presence of a warrior elite. However, the pottery or tools that could describe local society and the organisation of domestic life are usually lacking (Ref 4.14). Continuing into the Iron Age hillforts begin to dominate the landscape. Undefended settlement is also well represented, as are field systems and other components of potentially contemporary landscapes.

4.4.15 The following designated historic assets of Iron Age date have been identified in the wider 3 km study area:

4.4.16 The Hut Circle East of Taleifion (**CN280**) is approximately 1.14 km north-east of the Bryncir works site. The monument comprises the remains of an isolated hut circle with an adjoining enclosure or yard. The site probably dates to the Iron Age or Romano-British period. The hut circle is of massive orthostatic construction and in an impressive state of preservation.

4.4.17 The Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**) is approximately 900 m north-east of the Bryncir works site. The monument is the remains of a well-preserved

enclosed hut circle settlement, which probably dates from the first millennium BC. The site comprises four huts, two of which are circular, and two rectangular which could have been ancillary structures. All are likely to be contemporary but could represent different phases of construction.

4.4.18 Castell Caerau (**CN044**) is approximately 1.93 km east of the Bryncir works site. The monument comprises the remains of a hillfort, which probably dates to the Iron Age period. It comprises a sub-rectangular area enclosed by a strong stone wall, on the end of a spur south of Craig y Garn. The enclosing wall is 2-3 m wide and between 1 and 1.5 m high. On the east the wall has been largely removed to build modern field walls, and there is a similar gap on the south-west. The interior, which measures 18 m across, is broken by rocky outcrops, and is crossed by a modern field wall. A sheepfold has been constructed in the north-west corner.

4.4.19 Craig-y-Tyddyn Camp (**CN046**) is approximately 1.60 km east of the Bryncir works site. There are two sites scheduled in the area; a small fort on top of a rocky ridge, and a settlement at the foot of the ridge containing the remains of two round huts and a length of walling. Both are likely to date to the Iron Age or Romano-British period.

4.4.20 The fort on top of Craig-y-Tyddyn is a trapezoidal enclosure with grass-covered stone walls, 0.2 and 0.5 m in height and 1.5 m wide, running round the north, south and west sides, which fall steeply away, and a high bank cutting off the east side from the rest of the spur, 0.75 m high from the inside and nearly 3 m high from the outside. The entrance at the west end appears as a simple 3 m wide gap in the wall. There are no huts visible inside, although the south-east corner of the fort looks a possible site.

4.4.21 The lower settlement, north-west of the fort, consists of two huts with the slight remains of an enclosure. The first hut is 9 m in diameter, with grass-grown walls 0.25 m high and 1m wide. The entrance is on the east side. The second hut is revetted into the slope and has a diameter of 5 m. It appears to be outside the enclosure wall.

Roman (AD 43 to AD 410)

4.4.22 No Roman findspots, archaeological remains or sites have been identified in the Bryncir works site.

4.4.23 North-West Wales contains some of the defining type-sites of the Roman period in Wales – the enclosed and unenclosed hut-groups together with some of the best known and extensively excavated military installations; Segontium being a prime example. It is also one of the few British regions which Classical sources specifically mention: the Anglesey campaign of AD 60 and the final capture of the island by Julius Agricola in AD 77 being notable geographical markers in the context of first century military operations (Ref 4.15).

4.4.24 The upland region of Gwynedd, saw less Roman settlement compared to south-east Wales, and to a lesser extent south-west Wales. Following its conquest in the 70s of the first century and a garrisoning phase which effectively only lasted to the mid-second century, its native communities accepted Roman rule but seemingly played no part in the process of ‘Romanization’. Urban centres are notably absent, whilst there is no hint of villa development. Military remains are more obvious, and, in the case of Segontium, indicative of a long-lasting, but markedly localised garrisoning phase. There is evidence for the exploitation of the region’s metals by Mediterranean-style business partnerships (societates), whilst Romanization has been perceived as being essentially limited to the circulation of a range of consumer durables – pottery, coinage, metalwork and objects of worked stone, such as rotary querns – on settlement sites whose origins lie in the

latter centuries BC. When the politico-military infrastructure of Roman Britain collapsed in the early fifth century, there was a return to a pre-Roman socio-economic framework in the region (Ref 4.15).

4.4.25 The following designated historic assets of Roman date have been identified in the 3 km study area:

4.4.26 As mentioned above in paragraph 4.4.16, a Hut Circle East of Taleifion (**CN232**) probably dates to the Iron Age or Romano-British period and is approximately 1.25 km north-east of the Bryncir works site. The monument is the remains of an isolated hut circle with an adjoining enclosure or yard.

4.4.27 As mentioned above in paragraph 4.4.19, Craig-y-Tyddyn Camp (**CN046**) probably dates to the Iron Age or Romano-British period and is approximately 1.83 km east of the Bryncir works site. The monument is a small fort on top of a rocky ridge, and a settlement at the foot of the ridge containing the remains of two round huts and a length of walling.

4.4.28 During the Roman occupation of Wales and England arterial roads were built to allow the quick and decisive movement of the Roman legions to subdue any rebellions quickly. Gwynedd has several of these important road's crossing through it.

4.4.29 Part of a Roman Road linking Segontium to Pen Llystyn to Tomen y Mur (**PRN 17558**) is projected to run along the modern A487 road at the north edge of the Bryncir works site.

Early Medieval (AD 410 to 1066)

4.4.30 No early medieval findspots, archaeological remains or sites have been identified in the Bryncir works site or the 500 m study area.

4.4.31 The period c AD 400-1075 in north-west Wales, spanning the centuries between the end of Roman rule and the first Norman intervention, is still poorly understood. The documentary evidence is notoriously sparse and frequently difficult to interpret. It suggests the possibility of Irish settlement in the region and the movement of Cunedda and his followers from Manaw Gododdin around the end of the Roman period. It indicates the establishment of the important kingdom of Gwynedd by the early 6th century and its gradual rise at the expense of probable minor kingdoms such as Rhos and Meirionydd. It is also possible to chart to some extent Anglo-Saxon alliances and hostilities and from the 9th century onwards Viking raids and likely settlement. At the same time, the documentary evidence can throw light on the development of Christianity by helping to identify major ecclesiastical sites (Ref 4.16).

4.4.32 In 1934, the hut group at Pant-y-Saer (Anglesey) was heralded as the first possible early medieval settlement in Wales because of the recovery of a penannular brooch during excavation. This was followed in the late 1950s and 1960s by minor excavation of the hillforts at Dinas Emrys and Degannwy, the early medieval phases of which were recognised by the presence of imported pottery. Over the last 25 years or so evidence of early medieval activity has become known by chance on a few hut group sites such as Graeanog and Cefn Cwmwd. The most spectacular discovery has been the Viking Age and earlier settlement at Y Glŷn, Llanbedrgoch (Ref 4.16).

4.4.33 It is generally agreed that there was a mixed farming economy in the north-west as elsewhere in Wales during the early medieval period and that the best use of pasture was probably facilitated by transhumance. However, in contrast with South Wales, there is no evidence concerning landed estates in the documentary record. The farming

economy must have been sufficiently developed to have produced some excess in order to support the lifestyles evidenced on the few high-status sites that have been recognised (Ref 4.16).

4.4.34 The origins of Christianity in North West Wales lie in the Roman period, though no evidence has so far been found. During the 5th and 6th centuries the evidence of the inscribed stones suggests that Christianity expanded, at least amongst the upper echelons of society, and during the 6th century major monastic sites such as Bangor are likely to have been founded. Around the 8th century there may have been a gradual shift from burial in kin cemeteries to burial associated with ecclesiastical sites which eventually became parish churches and chapels of ease; in addition, some early cemeteries developed into local church sites. Some minor churches may have been connected with landed estates. Over the last few years there have been major advances enabling recognition and increased understanding of early medieval ecclesiastical and burial sites in North West Wales (Ref 4.16).

4.4.35 There is one designated historic asset of Early Medieval date identified in the 3km study area. it is the Llystyn Gwyn Inscribed Stone (CN021) which is approximately 1.74 km north of the Bryncir works site. The monument consists of an inscribed stone, a commemorative monument which has been inscribed with letters and symbols, probably dating to the early-medieval period. The stone has been built into the south wall of the farmyard at Llystyn Gwyn. It measures 1.05 m by 1.06 m by 0.33 m thick with a Latin inscription 'ICORI FILIVS / POTENTI / NI' (Icorix, the son of Potentius) in the top right corner and an Ogham inscription 'ICORIGAS' (of Icorix) along the upper right side. The Latin inscription is still visible, but the Ogham is barely discernible.

Medieval (1066-1640)

4.4.36 No medieval findspots, archaeological remains or sites have been identified in the Bryncir works site or the 500 m study area.

4.4.37 The 11th century saw the first Norman incursions into Wales, their initial defeat by Gruffydd ap Cynan (d. 1137) and the start of a successful period of Welsh rule which was to end in 1282/3 with the death of Llywelyn ap Gruffydd and conquest by Edward I. During the tense period which led to his eventual campaign of conquest, in July 1277, Edward launched a punitive expedition into North Wales with an army of 15,500 (Ref 4.17). From Chester the army marched into Gwynedd, camping first at Flint and then Rhuddlan and Deganwy, most likely causing widespread damage to the areas it passed through.

4.4.38 As a result of King Edward I’s attempt to bring Wales under England’s rule, a number of defensive structures were constructed during 1276 and 1295. The original Norman town of Caernarfon and Castell Caernarfon, approximately 9 km south-west of the Bryncir works site, was an example of King Edward I’s fortified towns and exceptional medieval architecture. The town and castle, designed by a military architect, Master James of St George was designed to withstand damage and protect royal interests in the region.

4.4.39 The following designated historic assets of Medieval date have been identified in the wider 3 km study area:

4.4.40 Dolbenmaen Castle Mound (**CN063**) is approximately 1.66 km east of the Bryncir works site. A motte built by the side of the Afon Dwyfor, part of which has been destroyed by the farmhouse and buildings which lie on the west side. It stands about 6 m high and is 36 m in diameter at the base. The top measures 8 m by and 11 m. A masonry wall 0.75 – 1 m thick high encircles the top. The area inside this wall has been damaged by trees

which have grown and subsequently fallen, creating large holes. The same thing has happened on the sides of the motte. The ditch, visible on the south and west sides, is between 0.75 and 1 m deep, and about 7 m wide.

4.4.41 Capel Gallt-Coed (**CN117**) is approximately 2.85 km south of the Bryncir works site. The monument consists of the remains of a chapel standing in a small enclosure measuring approximately 30 m square surrounded by a low bank of earth and boulders. Architecturally the chapel appears to be of the 16th or 17th century but is thought to be the successor to an earlier building. The chapel measures approximately 10 m by 6 m and is constructed of rubble masonry walls with quoins of massive boulders. The east gable stands to its full height of c.5 m and contains a 16th or 17th century window of two round-headed lights in a squared frame with moulded dressings of freestone; to the rear is a segmental arch. The south wall also stands to full height as far as the position of a doorway; it contains a single-light window of similar form to that in the gable, but without a rear arch. This part of the building has been consolidated and partly restored. The remaining walls are ruinous. Collapsed stonework lies in the south-west interior.

4.4.42 The Parish Church of St Mary's (**Cadw 4278**) is approximately 1.68 km east of the Bryncir works site. The church originated as a chapelry of St Beuno, Penmorfa, and was built in the 15th century, from which period the roof survives. It has been considerably altered at later dates.

Post-Medieval (1640 to 1900)

4.4.43 Post-medieval archaeological remains and sites have been identified in the 500 m study area.

4.4.44 The post-medieval period is one of the most significant periods to have shaped modern-day Wales. The majority of social, economic and landscape changes occurred during the post-medieval period because of heavy industry and agriculture.

4.4.45 Alongside farming, there were other primary industries that impacted the landscape, notably the slate industry which has shaped Gwynedd's landscape.

4.4.46 Eight non-designated historic assets of post-medieval date have also been identified in the 500 m study area.

4.4.47 Post-medieval farm activity is reflected with the presence of farmsteads at Bryn-Refail-isaf, Dolbenmaen (**PRN 101053**), Bryn-yr-efail-uchaf, Dolbenmaen (**PRN 101063**), Gwindy (Gwyndy) (**PRN 101386**), Llystyn-isaf, Dolbenmaen (**PRN 101511**), and Plas-Llecheiddior, Dolbenmaen (**PRN 101994**). An outfarm is also recorded south of Gwindy, Dolbenmaen (**PRN 101767**). A smallholding is also recorded at Tyddyn-du, Dolbenmaen (**PRN 102211**).

4.4.48 The road to Garndolbenmaen (**PRN 31033**) is a tarmac track which was first depicted on the 1840s tithe map, but probably predates this.

Modern (1900 to Present)

4.4.49 During the early 20th century, industry continued to boom, creating a stabilised economy and increased population. During the First World War (WWI), Wales prepared communities and the landscape for heavy impact, as seen with other areas around Britian. Due to the relatively sparse nature of Gwynedd, a substantial range of buildings were constructed or re-used for the purpose of defence (Ref 4.18). Both newly constructed hospitals in Bangor and Caernarfon were used for injured soldiers serving

in the war (Ref 4.18). Alongside this, other schemes such as large-scale food production (allotments) and forestry were also formed to help support the war effort.

4.4.50 During the Second World War (WWII), Wales continued to support the war effort, whilst also defending the coastline of Gwynedd against invasion. Notable defensive structures still extant are WWII-era anti-tank cubes along Fairbourne beach (Ref 4.19). Despite evidence of WWII remains in Gwynedd, there are no known remains dating to WWII in the 500 m study area.

4.4.51 Three non-designated historic assets of modern date have been identified in the Bryncir works site or the 500 m study area.

4.4.52 There is the site of a WWI prisoner of war camp near Bryncir (**PRN 7878**), approximately 270 m north-west of the Bryncir works site. It was a work camp affiliated to Frongoch, another prisoner of war camp in Gwynedd and opened by June 1919. It held 36 prisoners carrying out agricultural work (Ref. 4.19).

4.4.53 There are three drainage ditches south of Rhwngddwyryd (**PRN 31015**) approximately 480 m south-east of the Bryncir works site and another set of four drainage ditches south of Rhwngddwyryd (**PRN 31016**) approximately 450 m south-east of the Bryncir works site.

Undated

4.4.54 Only one non-designated historic asset of unknown date has been identified in the Bryncir works site. An old road is depicted on early maps such as the 1795 John Evans map and the Tithe Map running from Garn Dolbenmaen to Dafarn Faig (**PRN 62168**) in a general north-east to south-west orientation across the Bryncir works site.

4.4.55 11 other non-designated historic assets of unknown date have been recorded in the 500 m study area:

4.4.56 Communications are facilitated by farm tracks which still run from the present-day farm at Bryn-refail-isaf (**PRN 62172** & **62173**).

4.4.57 To the north and south of the latter farm track at Bryn' refail-isaf (**PRN 62173**), the former line of the B4411 (**PRN 62174**) is visible on early cartographic sources before it was realigned as part of road improvements.

4.4.58 Flood protection may have been an ongoing issue in certain locations on the Afon Dwyfach. A bank at Tyddyn Felin may have been constructed as a flood defence along the eastern bank of the Afon Dwyfach (**PRN 62175**).

4.4.59 A natural feature (**PRN 2804**), a large elongated knoll of glacial origin, may have had a settlement or defended site on it but it is not of any prehistoric funerary or ritual significance.

4.4.60 The location of a former farmstead called Bryn-refail-ganol (**PRN 62169**) is recorded on early cartographic sources and appears to have lain east of an upstanding field barn, also at Bryn-refail-ganol (**PRN 62170**). Possible traces of enclosures associated with the earlier farm are visible on aerial photographs.

4.4.61 Agricultural activities are reflected by the presence of a watermill known as Melin Llecheiddior at Pont y Felin (**PRN 2813**).

4.4.62 Water management in the area is evidenced by a sluice at Bryn-yr-efail-uchaf (**PRN 34375**).

4.4.63 There are several sections of a low drystone wall which may indicate the existence of a former building at Dolbenmaen (**PRN 62171**).

Cartographic Assessment

4.4.64 Historic cartographic sources of the area dating from before tithe maps of the mid- 19th century are county level surveys of limited detail. A map published by Rev. William Bingley to accompany his book *Excursions in North Wales, including Aberystwith and the Devil's Bridge…* (1839) depicts a settlement pattern similar to that which survives into the modern period with many of the large contemporary hamlets and villages in the study area and the surrounding landscape still evident today.



Plate 1: Extract from map. Published in Rev. W. Bingley 1839 Excursions in North Wales including Aberystwith and the Devil's Bridge. Third edition. Longmans & Co. (British Library 10369.f.4; viewable on OldMaps Online)

4.4.65 Noticeable changes between the first edition (1888) of the OS six-inch series mapping and the contemporary landscape are largely limited to the settlements of Bryncir and Garn Dolbenmaen which expanded in the 20th century, with the landscape of the Bryncir works site dominated by agricultural land, much of which appears to be pastural and marginal upland ground. A railway line which ran from north to south through the 500 m study area, the L & N.W.R. Carnarvonshire Branch, has been closed, though road bridges and traces of embankments associated with the former railway line are still visible (see **Figure 3.6.A.4**).

4.4.66 Similarly, no significant changes in the second (1901), third (1920) and fourth (1953) editions OS six-inch series are recorded in the Bryncir works site or 500 m study area (see **Figures 3.6.A.5** to **3.6.A.7**).

LiDAR Assessment

4.4.67 Accessible LiDAR data was reviewed from the LiDAR data available on the Data Map Wales website (LiDAR DTM 1.0m) (Ref 6.34) to highlight if any further archaeological assets are identifiable in the Bryncir works site or in the 500 m study area.

4.4.68 LiDAR analysis in the Bryncir works site highlights the current layout and appearance of the countryside through which the proposed works pass through. No new archaeological assets have been identified in the Bryncir works site.

4.4.69 The LiDAR imagery clearly illustrates the presence of an old meandering road which originally ran from Garn Dolbenmaen to Dafarn Faig (**PRN 62168**) in the area of proposed works. This road is marked on the tithe map of Dolbenmaen Parish (1844) (see **Figure 3.6.A.3**).

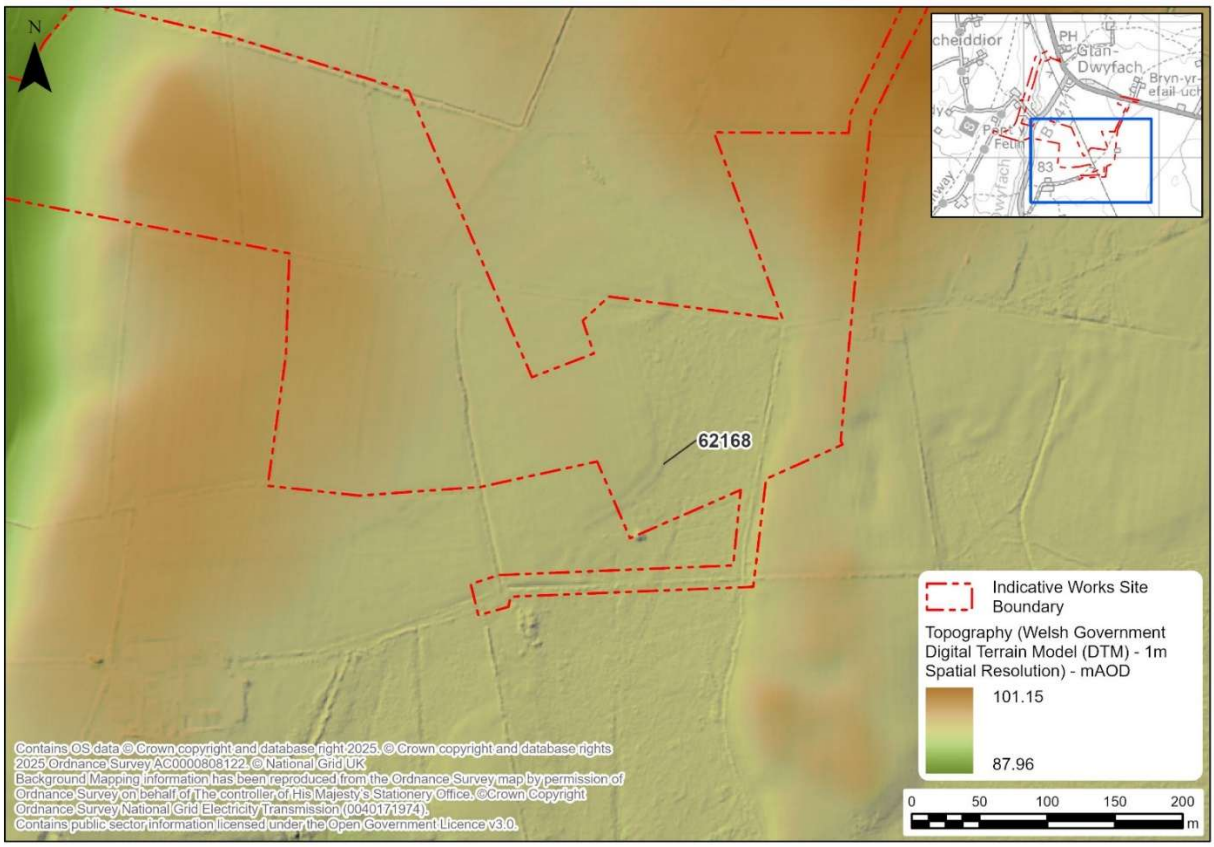


Plate 2: LiDAR imagery illustrating route of old road (PRN 62168) which runs in a north-east to south-west orientation across the eastern end of the site (Data Map Wales).

5. Assessment of Baseline

5.1 Previous Ground Disturbance

5.1.1 Historic cartographic evidence dating from the mid-19th to mid-20th centuries illustrates that the Bryncir component of the project would occupy a rural area, largely comprising pastural farmland of mixed quality, marshy ground and woodland. Historic settlement in the immediate area of the proposed works comprises mostly dispersed farmhouses and farmsteads. Limited geotechnical investigations were undertaken in the Bryncir works site in 1987 (see paragraph 4.1.3) in the western and eastern areas of the Bryncir works site which identified undisturbed natural subsoils comprising brown fine to coarse grained gravel with occasional cobbles and boulders (Ref 6.28).The original installation of the towers along the 4ZC overhead line (OHL) which crosses the eastern end of the Bryncir works site and the poles for the 132 kV overhead line which runs north to south through the centre of the Bryncir works site, west of the Afon Dwyfach, would have disturbed the topsoil and subsoil deposits and a high level of ground disturbance is assessed for the footprint of the towers and poles along these OHLs. For most of the Bryncir works site, however, there are no known historic development impacts on topsoil and subsurface deposits, and there is a very low level of ground disturbance assessed.

5.2 Archaeological Potential

Palaeolithic to Mesolithic

5.2.1 There are no known assets of a Palaeolithic or Mesolithic date recorded in the Bryncir works site. There is no indication that this activity extends to within the Bryncir works site or elsewhere in the 500 m and 3 km study areas, and the potential for encountering remains of this period is negligible.

Neolithic to Bronze Age

5.2.2 There are no known assets of a Neolithic date recorded in the Bryncir works site. The wider region sees the development of funerary monuments and settlement including the Cefn-Isaf Burial Chamber (**CN003**) approximately 1.95 km south of the Bryncir works site and the Ystum-Cegid Burial Chamber (**CN029**) approximately 2 km north of the Bryncir works site. There is no indication that this activity extends to within the Bryncir works site or elsewhere in the 500 m study area, and the potential for encountering remains of the Neolithic period is negligible (see paragraphs 4.4.3).

5.2.3 There are no known assets of a Bronze Age date recorded in the Bryncir works site.

5.2.4 A Standing Stone North of Bettws Fawr (**CN154**) is approximately 2.88 km south-west of the Bryncir works site.

5.2.5 A non-designated historic asset of Bronze Age date has been identified in the 500 m study area – a burnt mound just east of the Afon Dwyfach, near the village of Bryncir (**PRN 154**), approximately 220 m north of the Bryncir works site.

5.2.6 Given that a burnt mound of Bronze Age date has been recorded near the Afon Dwyfach in the 500 m study area, the potential for similar burnt mounds close to the river as well as other unknown remains from this period in the Bryncir works site would be medium in any areas of ground that have not been previously disturbed.

Iron Age

5.2.7 There are no known assets of Iron Age date recorded in the Bryncir works site.

5.2.8 The wider 3 km study area sees settlement of this period. The Hut Circle East of Taleifion (**CN280**) is approximately 1.14 km north-east of the Bryncir works site. The Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**) is approximately 890 m north-east of the Bryncir works site. Castell Caerau, a hillfort (**CN044**) is approximately 1.93 km east of the Bryncir works site. The fort and settlement of Craig-y-Tyddyn Camp (**CN046**) is approximately 1.60 km east of the Bryncir works site.

5.2.9 There is no indication that this activity extends to within the Bryncir works site or elsewhere in the 500 m study area, and the potential for encountering remains of this period is negligible (see paragraphs 4.4.13).

Roman

5.2.10 No Roman findspots, archaeological remains or sites have been identified in the Bryncir works site.

5.2.11 The wider 3 km study area sees settlement of this period. A Hut Circle East of Taleifion (**CN232**) probably dates to the Iron Age or Romano-British period and is approximately 1.25 km north-east of the Bryncir works site. Craig-y-Tyddyn Camp (**CN046**) also probably dates to the Iron Age or Romano-British period and is approximately 1.83 km east of the Bryncir works site.

5.2.12 A non-designated historic asset of Roman date has been identified in the 500 m study area – part of a Roman Road linking Segontium to Pen Llystyn to Tomen y Mur (**PRN 17558**) is projected to run from west to east along the route of the present day A487 road on the north edge of the Bryncir works site.

5.2.13 There is no indication that activity of this date extends to within the Bryncir works site, and the potential for encountering remains of this period is negligible (see paragraphs 4.4.22).

Early Medieval

5.2.14 There are no known assets of early medieval date recorded in the Bryncir works site (see paragraph 4.4.30).

5.2.15 The wider 3 km study area sees settlement of this period. The Llystyn Gwyn Inscribed Stone (**CN021**) is approximately 1.74 km north of the Bryncir works site.

5.2.16 There is no indication that this activity extends to within the Bryncir works site, and the potential for encountering remains of this period is negligible.

Medieval

5.2.17 There are no known assets of medieval date recorded in the Bryncir works site (see paragraph 4.4.35).

5.2.18 The wider 3 km study area sees settlement of this period. Dolbenmaen Castle Mound (**CN063**) is approximately 1.66 km east of the Bryncir works site. The 16th- or 17th-century Capel Gallt-Coed (**CN117**) is approximately 2.85 km south of the Bryncir works site.

5.2.19 There is no indication that this activity extends to within the Bryncir works site, and the potential for encountering remains of this period is negligible.

Post-Medieval

5.2.20 Eight non-designated historic assets of post-medieval date have been identified in the 500 m study area. These comprise farmsteads, an outfarm and a smallholding, as well as an existing track recorded on 1840s tithe map.

5.2.21 The potential for unknown remains from this period in the Bryncir works site would be medium in any areas of ground that have not been previously disturbed.

Modern

5.2.22 Three non-designated historic assets of modern date have been identified in the 500 m study area. One is the site of a WWI prisoner of war camp near Bryncir (**PRN 7878**), approximately 270 m north-west of the Bryncir works site. There are drainage ditches (**PRN 31015** and **31016**) recorded 340 m and310 m respectively of the Bryncir works site.

5.2.23 The potential for unknown remains from this period in the Bryncir works site would be medium in any areas of ground that have not been previously disturbed.

Unknown date

5.2.24 There is one non-designated historic of unknown date recorded in the Bryncir works site (see paragraph 4.4.46).

5.2.25 An old road is depicted on late 18th- and mid-19th-century maps running from Garn Dolbenmaen to Dafarn Faig (**PRN 62168**) in a general north-east to south-west orientation across the Bryncir works site (see **Figure 3.6.A.3**). The potential for remains of the old road in the Bryncir works site would be high in any areas of ground that have not been previously disturbed.

Summary of Archaeological Potential and Significance of Archaeological Remains

5.2.26 In the preceding section, the assessment of archaeological potential identified a high potential for archaeological remains associated with a road of unknown date depicted on the Bryncir works site in post-medieval cartographic sources. Any such remains would likely be of low value as they would be of local interest.

5.2.27 For the Bronze Age, post-medieval and modern periods, there is a medium potential to encounter archaeological remains.

5.2.28 For the Palaeolithic, Mesolithic, Neolithic, Iron Age, Roman, early medieval and medieval periods, there is a negligible potential to encounter archaeological remains.

5.2.29 The significance of potential unrecorded archaeological remains would derive from their archaeological and historical interest and their potential to contribute to our understanding of past human activity based on national, regional, or local frameworks.

Isolated artefactual material or truncated/disturbed remains are of low value, whilst well preserved and in situ evidence for occupation/settlement remains could be of medium or even high value.

5.3 Historic Landscape Sensitivity to Change

5.3.1 The importance and significance of historic landscape character is assessed in terms of sensitivity to change. Those with a high sensitivity to change should be accommodated and preserved where possible within new developments or should be subject to well managed changes. Historic landscapes with a lower sensitivity to change can be potentially enhanced by new developments and can absorb most types and scales of essential, well-managed change.

5.3.2 The Bryncir works site is in a post-medieval landscape comprising extant agricultural fields and woodland.

5.3.3 Post-medieval field systems are common throughout Gwynedd and Wales, reducing its sensitivity.

5.3.4 The historic landscape character of the Bryncir works site is assessed as being of low value and the sensitivity to change is assessed as low.

5.3.5 The proposed works would not alter the ability to appreciate the historic landscape of the Bryncir works site, as following the removal of a section of the existing SPEN DB route and the installation of the 132 kV underground cables and the new 132 kV OHL, the new infrastructure would be partly underground, or match in scale and form the existing SPEN DB route. The construction of the substation and the replacement of tower 4ZC067 with a new tower would introduce additional modern infrastructure into the landscape at this location, however this would form an extension to the existing modern infrastructural nature of the immediate landscape.

5.4 Significance of Designated Historic Assets

Scheduled Monuments

Within 3 km of the Bryncir Works Site

Dolbenmaen Castle Mound (CN063)

5.4.1 Dolbenmaen Castle Mound (CN063) is approximately 1.66 km east of the Bryncir works site (see paragraph 4.4.39 for description of monument).

5.4.2 The monument is of national importance for its potential to enhance our knowledge of medieval defence. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structures themselves may be expected to contain archaeological information concerning chronology and building techniques. The setting of the asset is the local medieval landscape in which it is situated.

5.4.3 The asset is shielded from the Bryncir works site by intervening woodland to the east and the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.4 The asset holds archaeological interest, with its value derived from its ability to inform on medieval castle building and settlement patterns. The asset is of high value.

Hut Circle East of Taleifion (CN280)

5.4.5 The Hut Circle East of Taleifion (CN280) is approximately 1.14 km north-east of the Bryncir works site (see paragraph 4.4.16 for description of monument).

5.4.6 The monument is of national importance for its potential to enhance our knowledge of later prehistoric domestic construction practices. The monument retains significant archaeological potential and there is a strong probability that structural evidence has survived, together with internal and external floor surfaces. The archaeological importance of the site is enhanced by indications of an early field system in the vicinity of the hut, but outside the scheduled area.

5.4.7 The asset holds a group association with the Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**), Castell Careau (**CN044**) and Craig-y-Tyddyn Camp (**CN046**). Based upon archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Iron Age and Romano-British settlement landscape. This group value also contributes to its significance and combined these assets provide a rare example of a well-preserved and large Iron Age and Romano-British settlement in Wales.

5.4.8 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.9 The asset holds archaeological interest, with its value derived from its ability to inform on Iron Age and Romano-British settlement patterns. The asset is of high value.

Enclosed Hut Group North-East of Llystyn Uchaf (CN281)

5.4.10 The Enclosed Hut Group North-East of Llystyn Uchaf (CN281) is approximately 890 m north-east of the Bryncir works site (see paragraph 4.4.17 for description of monument).

5.4.11 The site has archaeological importance because of its fortunate survival in an area of agricultural improvement and from the wide range of structural features which it presents. The monument is of national importance for its potential to enhance our knowledge of prehistoric settlement practices. It is an important relic of the prehistoric landscape and retains significant archaeological potential. There is a strong probability of the presence of environmental and structural evidence, including preserved internal and external floor levels.

5.4.12 The asset holds a group association with the Hut Circle East of Taleifion (**CN280**), Castell Careau (**CN044**) and Craig-y-Tyddyn Camp (**CN046**). Based upon archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Iron Age settlement landscape. This group value also contributes to its significance and combined these assets provide a rare example of a well-preserved and large Iron Age settlement in Wales.

5.4.13 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.14 The asset holds archaeological interest, with its value derived from its ability to inform on Iron Age settlement patterns. The asset is of high value.

Standing Stone North of Bettws Fawr (CN154)

5.4.15 The Standing Stone North of Bettws Fawr (**CN154**) is approximately 2.88 km south-west of the Bryncir works site (see paragraph 4.4.11 for description of monument).

5.4.16 The monument is of national importance for its potential to enhance our knowledge of prehistoric burial and ritual practices. It is an important relic of a prehistoric funerary and ritual landscape and retains significant archaeological potential. There is a strong probability of the presence of intact burial or ritual deposits, together with environmental and structural evidence. Standing stones are often part of a larger cluster of monuments and their importance can further enhanced by their group value.

5.4.17 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.18 The asset holds archaeological interest, with its value derived from its ability to inform on Bronze Age settlement patterns. The asset is of high value.

Cefn-Isaf Burial Chamber (CN003)

5.4.19 The Cefn-Isaf Burial Chamber (**CN003**) is approximately 1.95 km south of the Bryncir works site. The monument is the remains of a chambered tomb, dating to the Neolithic period (see paragraph 4.4.7 for description of monument).

5.4.20 The monument is of national importance for its potential to enhance our knowledge of prehistoric burial and ritual. The monument is an important relic of a prehistoric funerary and ritual landscape and retains significant archaeological potential, with a strong probability of the presence of both intact burial or ritual deposits and environmental and structural evidence, including a buried prehistoric land surface.

5.4.21 Chambered tombs may be part of a larger cluster of monuments and their importance can be further enhanced by their group value. The asset holds a group association with the Ystum-Cegid Burial Chamber (**CN029**). Based upon archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Neolithic ritual and funerary landscape. This group value also contributes to its significance and combined these assets provide rare examples of well-preserved and large Neolithic ritual and funerary practices in Wales.

5.4.22 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.23 The asset holds archaeological interest, with its value derived from its ability to inform on Neolithic settlement patterns. The asset is of high value.

Llystyn Gwyn Inscribed Stone (CN021)

5.4.24 The Llystyn Gwyn Inscribed Stone (CN021) is approximately 1.74 km north of the Bryncir works site. The monument consists of an inscribed stone, a commemorative monument which has been inscribed with letters and symbols, probably dating to the early-medieval period (see paragraph 4.4.36 for description of monument).

5.4.25 The monument is of national importance for its potential to enhance our knowledge of ritual and funerary practices and the organisation and practice of early-medieval Christianity.

5.4.26 It retains significant archaeological potential; an inscribed stone may be part of a larger cluster of monuments and their importance can further enhanced by their group value.

5.4.27 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.28 The asset holds archaeological interest, with its value derived from its ability to inform on early medieval settlement patterns. The asset is of high value.

Ystum-Cegid Burial Chamber (CN029)

5.4.29 The Ystum-Cegid Burial Chamber (**CN029**) is approximately 2 km south-east of the Bryncir works site. The monument consists of the remains of a chambered long cairn, dating to early Neolithic (see paragraph 4.4.7 for description of monument).

5.4.30 The monument is of national importance for its potential to enhance our knowledge of prehistoric burial and ritual practices. The features are an important relic of a prehistoric funerary and ritual landscape and retain significant environmental and structural evidence.

5.4.31 Chambered long cairns may be part of a larger cluster of monuments and their importance can further enhanced by their group value. The asset holds a group association with the Cefn-Isaf Burial Chamber (**CN003**). Based on archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Neolithic ritual and funerary landscape. This group value also contributes to its significance and combined these assets provide rare examples of well-preserved and large Neolithic ritual and funerary practices in Wales.

5.4.32 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.33 The asset holds archaeological interest, with its value derived from its ability to inform on Neolithic settlement patterns. The asset is of high value.

Castell Caerau (CN044)

5.4.34 Castell Caerau (**CN044**) is approximately 1.93 km north-east of the Bryncir works site. The monument is the remains of a hillfort, which probably dates to the Iron Age period (see paragraph 4.4.18 for description of monument).

5.4.35 The monument is of national importance for its potential to enhance our knowledge of later prehistoric defensive organisation and settlement. The site forms an important element in the wider later prehistoric context and in the surrounding landscape. The site is well preserved and retains considerable archaeological potential. There is a strong probability of the presence of evidence relating to chronology, building techniques and functional detail.

5.4.36 The asset holds a group association with the Hut Circle East of Taleifion (**CN280**), Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**) and Craig-y-Tyddyn Camp (**CN046**). Based upon archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Iron Age settlement landscape. This group value also contributes to its significance and combined these assets provide a rare example of a well-preserved and large Iron Age settlement in Wales.

5.4.37 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.38 The asset holds archaeological interest, with its value derived from its ability to inform on Iron Age settlement patterns. The asset is of high value.

Craig-y-Tyddyn Camp (CN046)

5.4.39 Craig-y-Tyddyn Camp (**CN046**) is approximately 1.60 km east of the Bryncir works site. There are two sites scheduled in the area; a small fort on top of a rocky ridge, and a settlement at the foot of the ridge containing the remains of two round huts and a length of walling. Both are likely to date to the Iron Age or Romano-British period (see paragraph 4.4.20 & 4.4.21 for description of monument).

5.4.40 The monument is of national importance for its potential to enhance our knowledge of prehistoric settlement and defence. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structures themselves may be expected to contain archaeological information concerning chronology and building techniques.

5.4.41 The asset holds a group association with the Hut Circle East of Taleifion (**CN280**), the Enclosed Hut Group North-East of Llystyn Uchaf (**CN281**) and Castell Careau (**CN044**). Based upon archaeological investigations in the wider area surrounding these assets, these are likely part of a wider and much larger Iron Age and Romano-British settlement landscape. This group value also contributes to its significance and combined these assets provide a rare example of a well-preserved and large Iron Age and Romano-British settlement in Wales.

5.4.42 While the asset is visible from the Bryncir works site, the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.43 The asset holds archaeological interest, with its value derived from its ability to inform on Iron Age and Romano-British settlement patterns. The asset is of high value.

Capel Gallt-Coed (CN117)

5.4.44 Capel Gallt-Coed (**CN117**) is approximately 2.85 km south of the Bryncir works site. The monument consists of the remains of a chapel standing in a small enclosure measuring approximately 30 m square surrounded by a low bank of earth and boulders (see paragraph 4.4.42 for description of monument).

5.4.45 The monument is of national importance for its potential to enhance our knowledge of post-medieval chapels. It retains significant archaeological potential, with a strong probability of the presence of associated archaeological features and deposits. The structures themselves may be expected to contain archaeological information concerning chronology and building techniques.

5.4.46 The setting of the asset is the local post-medieval landscape in which it is situated.

5.4.47 The asset is shielded from the Bryncir works site by intervening woodland to the south of the Bryncir works site and the Bryncir works site does not contribute to the understanding of the heritage interests of the asset.

5.4.48 The asset holds archaeological interest, with its value derived from its ability to inform on post-medieval church architecture, parish development and settlement patterns. The asset is of high value.

Conservation Areas

Within 3 km of the Bryncir Works Site

5.4.49 There is one Conservation Area within 3 km of the Bryncir Works Site.

Dolbenmaen Conservation Area (WAL/GWYN/32; WAL/SNOW/2)

5.4.50 Dolbenmaen Conservation Area (**WAL/GWYN/32**; **WAL/SNOW/2**) is approximately 1.52 km east of the Bryncir works site. The conservation area encompasses the area around one Grade II* and several Grade II listed structures associated with the village of Dolbenmaen.

5.4.51 The listed structures in the conservation area include the Grade II* listed parish church of St Mary's (**Cadw 4278**).

5.4.52 Also in the conservation area are the following Grade II listed buildings: a lychgate to the parish church of St. Mary's (**Cadw 21522**), Pont Dolbenmaen (**Cadw 4213**), Plas Holland (**Cadw 4279**), Plas Dolbenmaen (**Cadw 4280**), a north-west range of farm buildings at Plas Dolbenmaen (**Cadw 4281**), a north-east range of farm buildings at Plas Dolbenmaen (**Cadw 21551**) and a washhouse building at Plas Dolbenmaen (**Cadw 21552**).

5.4.53 Dolbenmaen Conservation Area and the listed buildings possess architectural and historic interest as surviving buildings of 18th and 19th-century date and earlier, displaying a range of domestic and religious building types and materials. Its setting also contributes to its significance. The asset is shielded from the Bryncir works site by intervening woodland and hilly terrain to the east of the Bryncir works site and the Bryncir works site does not contribute to the understanding of the heritage interests of the conservation area.

5.4.54 The buildings and conservation area are of medium value.

Listed Buildings

Within 3 km of the Bryncir Works Site

5.4.55 There are 25 listed buildings in the 3 km study area, comprising one Grade II* and 24 Grade II listed assets. Of these, one Grade II structure lies in 500 m of the Bryncir works site. All high value listed buildings (Grade II* listed buildings) in the wider 3 km study area are considered below, as well as all listed buildings within 500 m of the Bryncir works site.

Parish Church of St Mary (**Cadw 4278**) (Grade II*)

5.4.56 The Parish Church of St Mary's (**Cadw 4278**) is approximately 1.68 km east of the Bryncir works site. The church originated as a chapelry of St Beuno, Penmorfa, and was built in the 15th century, from which period the roof survives. It has been considerably altered at later dates. The church is a small single cell building constructed with uncoursed local rubble stone with long stone quoins, all partially rendered, with a 19th-century slate roof between raised gable parapets. The south door is near the west end, a pointed arch containing a 19th-century boarded door with ornamental ironwork. Pointed headed windows both sides, that at the centre of the south side having diamond leaded glazing set in timber transomed 'Y'-tracery, with another further east, and a

similar window opposite on the north side. The east window is round headed. The west wall has been rebuilt, and has a square headed high set west window, and corbelled gabled bellcote surmounted by a small stone cross. A slate sundial of the early C19 is set on the south side. The setting of the church is the surrounding graveyard, the lychgate (**Cadw 21522**) and the former rectory known now as Plas Holland (**Cadw 4279**). The setting also includes the hamlet of Dolbenmaen which includes the farmstead of Plas Dolbenmaen (**Cadw 4280, 4281, 21551 & 21552**). The Bryncir works site does not form part of its setting. There is no intervisibility between the Bryncir works site and the church, as a result of topography and screening from intervening trees to the east and south-east. The building possesses architectural interest and historic interest as a surviving medieval church building including the fine roof structure which appears unaltered. The building is of high value.

Pont y Felin (**Cadw 21543**) (Grade II)

5.4.57 The bridge of Pont y Felin (**Cadw 21543**) is approximately 40 m east of the Bryncir works site. The bridge carries a minor road, crossing the Afon Dwyfach near a road junction with the B4411 Penygroes to Criccieth road. The bridge is built of local rubble stone. A single segmental arch is formed with shaped rubble voussoirs, flush spandrels and a low flush parapet, slightly peaked at the centre and curving out at the ends. The south-west end of the bridge is reinforced by a buttressing wall and has a substantial pier. The road continues to the south-east on a raised embankment. The bridge spans approximately 9.1 m, rising 2.8 m at the centre, and carries the carriageway of 4.6m width with parapets 45 cm thick. The setting of the bridge is the Afon Dwyfach and the farmland on either bank of the river. The Bryncir works site forms part of setting of the bridge. There is intervisibility between the Bryncir works site (the section of the SPEN DB route which is to be removed) and the bridge, but there is no intervisibility with the remainder of the Bryncir works site as a result of topography and screening from intervening trees. The bridge possesses architectural interest as a good example of an early 19th-century road bridge. The listed structure is of medium value.

5.5 Significance of Non-Designated Historic Assets

Within the Bryncir Works Site

5.5.1 There is one non-designated historic asset in the Bryncir works site.

Route of old road, Garn Dolbenmaen (PRN 62168)

5.5.2 An old road running from Garn Dolbenmaen to Dafarn Faig is shown on the 1839 Dolbenmaen parish tithe map and early OS maps. Subsequent reorganisation of the field systems in the area saw the removal of the road, surviving only in places as a public right of way across fields. The value of the asset is derived from its archaeological interest as part of the post-medieval agricultural settlement pattern in the area during the 19th century. The asset would likely hold local interest and is of low value.

5.5.3 The bank has the potential to be impacted by the Proposed Development.

Within the 500 m study area

5.5.4 Non-designated buildings have the potential to be affected by the proposed works as a result of changes to their setting.

5.5.5 There are nine non-designated buildings and structures in the 500 m study area. These are largely associated with farmsteads situated across the study area. The setting of these non-designated buildings and structures has been considered and most of the buildings are in locations where due to intervening buildings, trees and terrain, there is no potential for them to be impacted by the Proposed Development. They are listed and described in **Volume 3: Appendix 3.6.B: Gazetteer of Historic Assets** but they are not considered further in the assessment, and they are scoped out of assessment in the ES.

5.5.6 The following non-designated buildings in rural locations, however, have the potential to be affected by the Proposed Development as a result of changes to their setting. They are discussed below.

Bryn-Refail-Isaf, Dolbenmaen (PRN 101053)

5.5.7 A post-medieval farmstead. It is approximately 180 m south-west of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.8 The farmstead possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Bryn-yr-efail-uchaf, Dolbenmaen (PRN 101063)

5.5.9 A post-medieval farmstead. It is approximately 70 m north-east of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.10 The farmstead possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Field Barn, Bryn-'refail-ganol (PRN 62170)

5.5.11 An existing barn comprising of coursed and mortared roughly dressed local stone under a slate roof. Depicted on 2nd OS six-inch series map. It is approximately 20 m east of the Bryncir works site.

5.5.12 The setting comprises the associated farm complex and surrounding agricultural land.

5.5.13 The barn possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The building is of low value.

Gwindy (Gwyndy), Dolbenmaen (PRN 101386)

5.5.14 A post-medieval farmstead. It is approximately 360 m north-west of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.15 The farmstead possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Llystyn-isaf, Dolbenmaen (PRN 101511)

5.5.16 A post-medieval farmstead. It is approximately 470 m north-east of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.17 The farmstead possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Melin Llecheiddior, Watermill, Pont y Felin (PRN 2813)

5.5.18 A post-medieval mill. It is approximately 50 m north-west of the Bryncir works site. The setting comprises the associated mill complex and surrounding agricultural land.

5.5.19 The watermill possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Outfarm, South of Gwyndy, Dolbenmaen (PRN 101767)

5.5.20 A post-medieval outfarm. It is approximately 400 m west of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.21 The outfarm possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Plas-Llecheiddior, Dolbenmaen (PRN 101994)

5.5.22 A post-medieval farmstead. It is approximately 480 m north-west of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.23 The farmstead possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

Tyddyn-du, Dolbenmaen (PRN 102211)

5.5.24 A post-medieval smallholding. It is approximately 480 m north-east of the Bryncir works site. The setting comprises the associated farm complex and surrounding agricultural land.

5.5.25 The smallholding possesses architectural and historic interest as surviving example of the post-medieval farm industry which has persisted and is of local interest. The buildings are of low value.

5.6 Assets Scoped Out of ES Assessment

5.6.1 The assessment of significance and setting outlined in the previous section allows for consideration of the potential for the proposed works to result in effects to designated and non-designated historic assets through change to their settings and/or physical impacts. It also allows for the identification of assets where there is no potential for the proposed works to result in such effects. Such assets can now be scoped out of further assessment. **Table 5-1** provides a summary of these assets which are scoped out of further assessment because the proposed works would not result in physical or additional setting impacts.

Table 5.1 – Assets Scoped Out of Further Assessment

Reference	Designation and Grade	Name
CN063	Scheduled Monument	Dolbenmaen Castle Mound
CN117	Scheduled Monument	Capel Gallt-Coed
Cadw 4278	Grade II* listed building	Parish Church of St Mary
Cadw 4213	Grade II listed building	Pont Dolbenmaen
Cadw 4279	Grade II listed building	Plas Holland
Cadw 4280	Grade II listed building	Plas Dolbenmaen
Cadw 4281	Grade II listed building	NW Range of Farm Buildings at Plas Dolbenmaen
Cadw 4282	Grade II listed building	Ysgubor Gerrig
Cadw 4288	Grade II listed building	Ystumcegid
Cadw 4367	Grade II listed building	Betws-bach
Cadw 21522	Grade II listed building	Lychgate to the Church of St Mary
Cadw 21539	Grade II listed building	Milestone
Cadw 21544	Grade II listed building	Garreg lwyd Cottage
Cadw 21545	Grade II listed building	Tan-y-braich, with attached farm buildings
Cadw 21546	Grade II listed building	Haybarn at Tan-y-braich
Cadw 21551	Grade II listed building	North East Range of Farm Buildings at Plas Dolbenmaen
Cadw 21552	Grade II listed building	Washhouse Building at Plas Dolbenmaen
Cadw 21560	Grade II listed building	Piggery at Ystumcegid
Cadw 21563	Grade II listed building	Ty-newydd Farmhouse
Cadw 21564	Grade II listed building	Outhouse at Ystumcegid
Cadw 21565	Grade II listed building	Farm Building and Granary at Ystumcegid
Cadw 21591	Grade II listed building	Beudy-y-gromlech
Cadw 21592	Grade II listed building	Pont Rhyd-y-benllig
Cadw 21598	Grade II listed building	Pont Ynys Creua
Cadw 4289	Grade II listed building	Lodge, formerly for Brynkir
Cadw 21566	Grade II listed building	Lodge Bridge
WAL/GWYN/32; WAL/SNOW/2	Conservation area	Dolbenmaen

5.6.2 The remaining assets discussed in the Assessment of the Baseline that are not listed above are those where the assessment has identified the potential for the proposed works to result in impacts to the assets, either through physical impacts or through change to their setting. These assets will be taken forward for assessment in **Volume 3, Chapter 6: Historic Environment**.

6. Conclusion

6.1.1 The assessment outlined in this report considers the potential for the proposed works to result in effects to historic assets either through change to their settings and/or physical impacts. It also allows for the identification for assets where there is no potential for the proposed works to result in such effects. Such assets, as detailed above, can be scoped out of further assessment. The remaining assets are those where the assessment has identified the potential for the proposed works to result in effects to the historic assets. The following historic assets set out in **Table 6-1** are scoped into further assessment in **Volume 3, Chapter 6: Historic Environment**.

Table 6-1 – Assets Scoped into Further Assessment

Reference	Designation and Grade	Name	Location
CN280	Scheduled Monument	Hut Circle East of Taleifion	1.25 km north-east of Bryncir works site
CN281	Scheduled Monument	Enclosed Hut Group North-East of Llystyn Uchaf	900 m north-east of Bryncir works site
CN154	Scheduled Monument	Standing Stone North of Bettws Fawr	2.9 km south-west of Bryncir works site
CN003	Scheduled Monument	Cefn-Isaf Burial Chamber	1.94 km south of Bryncir works site
CN021	Scheduled Monument	Llystn Gwyn Inscribed Stone	1.74 km north of Bryncir works site
CN029	Scheduled Monument	Ystum-Cegid Burial Chamber	1.99 km south-east of Bryncir works site
CN044	Scheduled Monument	Castell Caerau	2.06 km north-east of Bryncir works site
CN046	Scheduled Monument	Craig-y-Tyddyn Camp	1.83 km east of Bryncir works site
Cadw 21543	Grade II listed building	Pont y Felin	40 m east of Bryncir works site

Reference	Designation and Grade	Name	Location
PRN 62168	Non-designated asset	Route of old road, Garn Dolbenmaen	Within Bryncir works site
PRN 101053	Non-designated asset	Bryn-Refail-Isaf, Dolbenmaen	170 m south-west of Bryncir works site
PRN 101063	Non-designated asset	Bryn-yr-efail-uchaf, Dolbenmaen	80 m north-east of Bryncir works site
PRN 62170	Non-designated asset	Field Barn, Bryn-'refail-ganol	20 m east of site
PRN 101386	Non-designated asset	Gwindy (Gwyndy), Dolbenmaen	350 m north-west of Bryncir works site
PRN 101511	Non-designated asset	Llystyn-isaf, Dolbenmaen	480 m north-east of Bryncir works site
PRN 2813	Non-designated asset	Melin Llecheiddior, Watermill, Pont y Felin	45 m north-west of Bryncir works site
PRN 101767	Non-designated asset	Outfarm, South of Gwyndy, Dolbenmaen	400 m west of Bryncir works site
PRN 101994	Non-designated asset	Plas-Llecheiddior, Dolbenmaen	476 m north-west of Bryncir works site
PRN 102211	Non-designated asset	Tyddyn-du, Dolbenmaen	480 m north-east of Bryncir works site

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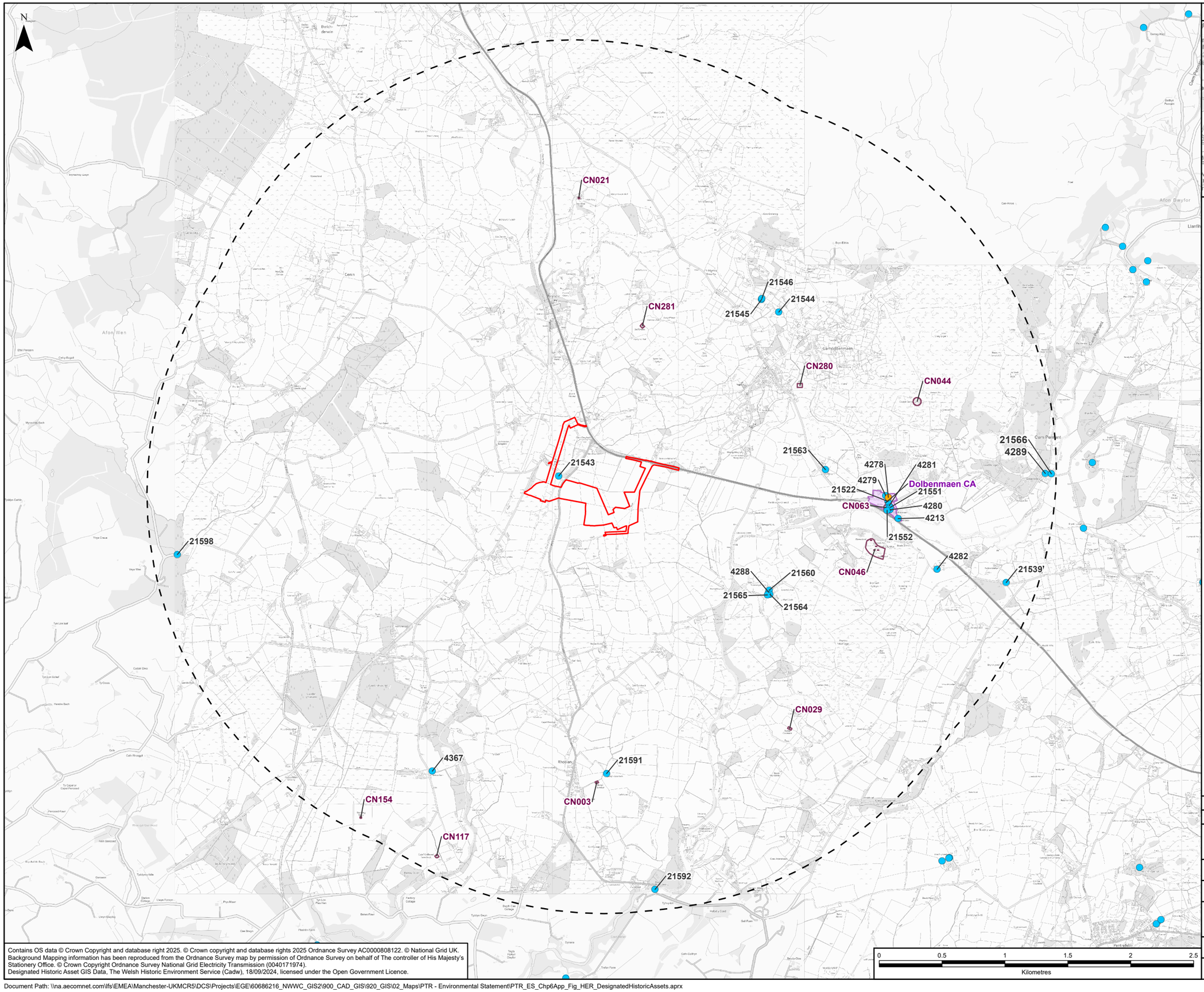
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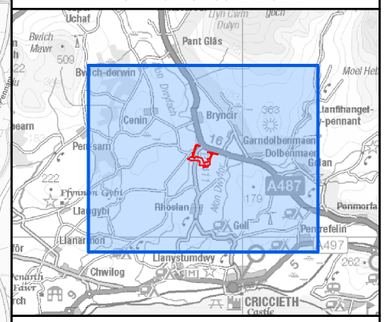
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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 3km Buffer of Bryncir Works Site Boundary

Designated Historic Assets

- Scheduled Monument
- Conservation Area (CA)

Listed Building

- Grade II*
- Grade II

Rev	Date	Description	GIS	Chk	App
A	27/08/2025	Environmental Statement	LP	AM	JL

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.6.A.1
DESIGNATED HISTORIC ASSETS WITHIN
3KM OF BRYNCIR WORKS SITE

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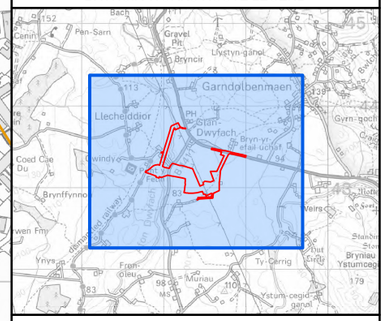
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BRYNCIR WORKS ROUTE LEGEND



Legend

- Bryncir Works Site Boundary
- 500m Buffer of Bryncir Works Site Boundary
- Non-Designated Historic Asset
- Non-Designated Historic Asset - Incorrect Location[1]
- Non-Designated Historic Asset - Corrected Location
- Roman Road (Indicative Alignment)

NOTES

1: The location of non-designated historic assets 62169 and 62172 are incorrectly shown in the HER data. Asset 62169 is sited to the east, as shown on the figure. Asset 62172 is the farm track to the east of Bryn-'Refail-Isaf, as shown on the figure.

Rev	Date	Description	GIS	Chk	App
A	01/08/2025	Environmental Statement	ID	EC	AM

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES BRYNCIR WORKS

Document Title: FIGURE 3.6.A.2 NON-DESIGNATED HISTORIC ASSETS WITHIN 500M OF BRYNCIR WORKS SITE

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ID	01/08/2025	EC	01/08/2025	AM	01/08/2025

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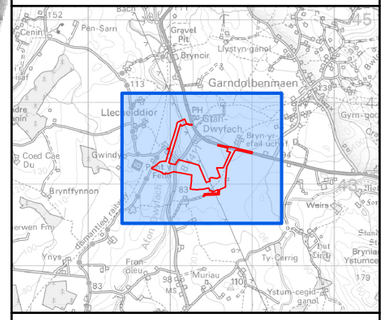
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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

Rev	Date	Description	GIS	Chk	App
A	15/08/2025	Environmental Statement	ID	JL	AM

nationalgrid

Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.6.A.3
EXTRACTS FROM TITHE SURVEYS OF
DOLBENMAEN PARISH AND LLANFIHANGELY Y PENANT
IN THE COUNTY OF CARNARVON 1844

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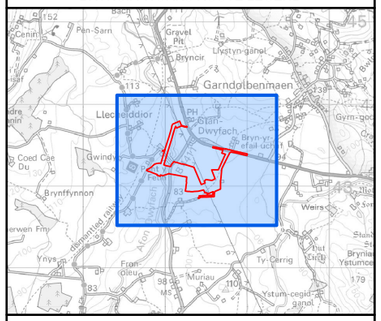
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FIGURE	1:5,750	A3	1 OF 1	A

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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.6.A.4
HISTORICAL OS MAP 1888

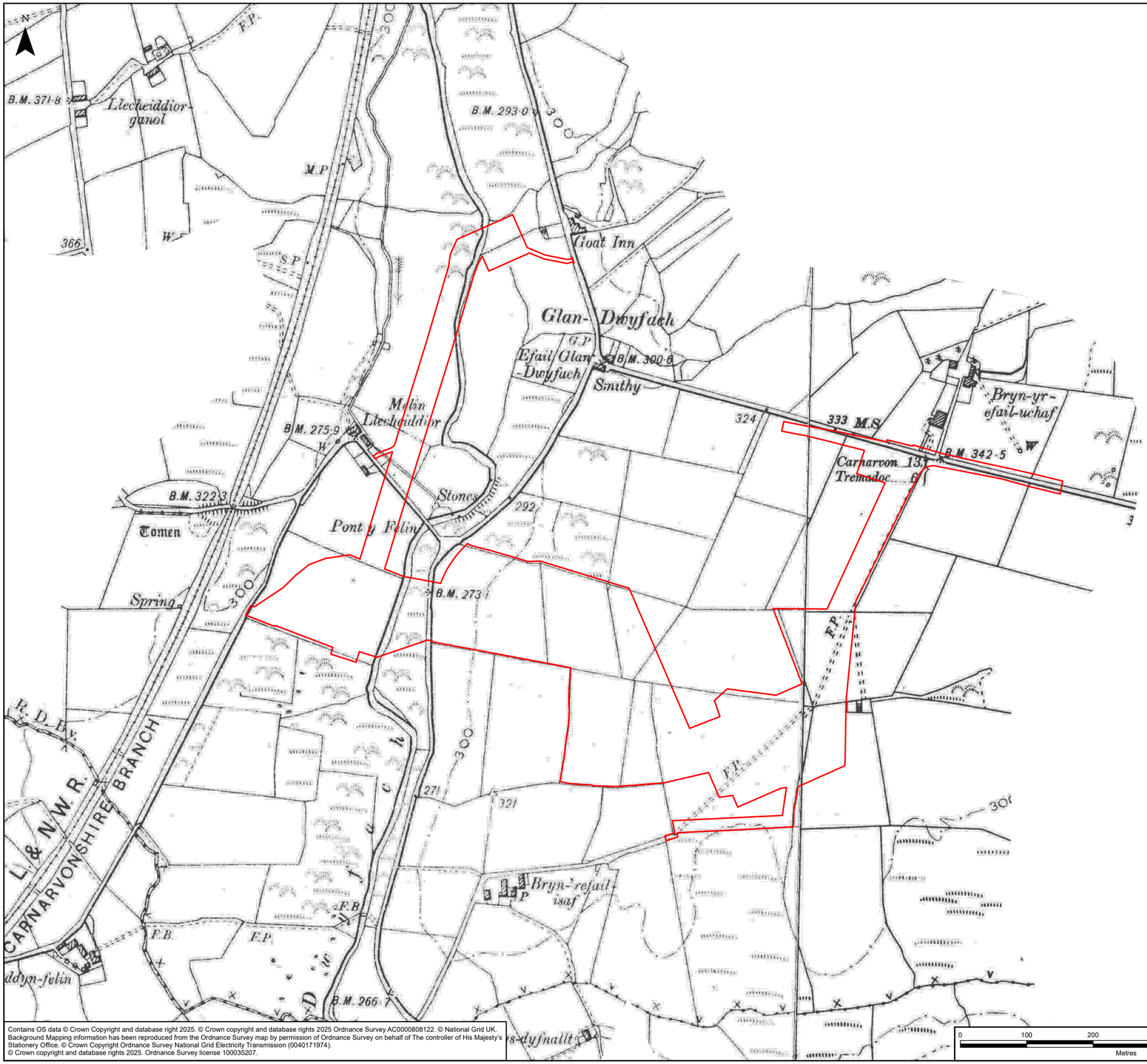
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FIGURE	1:5,750	A3	1 OF 1	A

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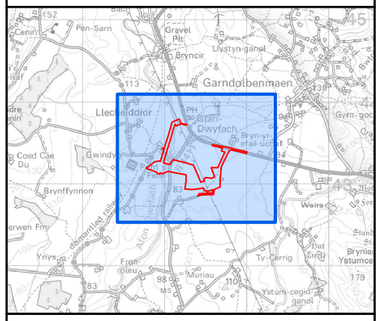
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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

Rev	Date	Description	GIS	Chk	App
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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

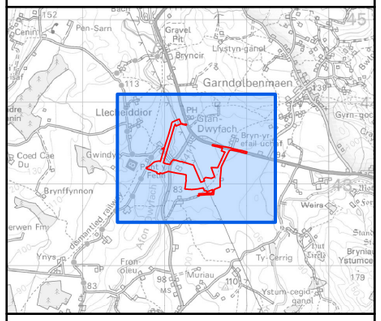
Document Title: FIGURE 3.6.A.5
HISTORICAL OS MAP 1901

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FIGURE	1:5,750	A3	1 OF 1	A

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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

Rev	Date	Description	GIS	Chk	App
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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.6.A.6
HISTORICAL OS MAP 1920

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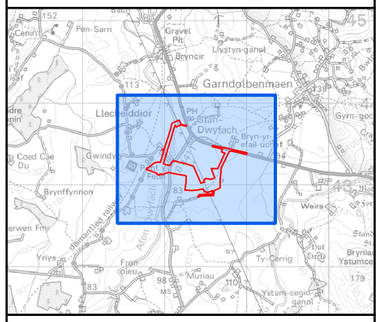
Document Type:	Scale:	Format:	Sheets:	Rev:
FIGURE	1:5,750	A3	1 OF 1	A

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BRYNCIR WORKS ROUTE LEGEND



Legend

Bryncir Works Site Boundary

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Scheme: PENTIR TO TRAWSFYNYDD REINFORCEMENT

Volume: VOLUME 8: APPENDICES
BRYNCIR WORKS

Document Title: FIGURE 3.6.A.7
HISTORICAL OS MAP 1953

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FIGURE	1:5,750	A3	1 OF 1	A

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3.6.B Gazetteer of Historic Assets and Archaeological Investigations (Bryncir)

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Scheduled Monuments

SAM No.	Grade	Name	Description	Period	NGR
CN029	SM	Ystum-Cegid Burial Chamber	The monument consists of the remains of a chambered long cairn, dating to early Neolithic (c. 4,200BC - 3,000BC). A long cairn is a roughly rectangular or trapezoidal mound of stone, usually between 25m and 120m long, with a length exceeding twice its greatest width. The mound may be edged with a timber or stone revetment, and they contain one or more stone or wooden burial chambers. The site comprises of a megalithic chamber with the remains of a passageway and associated cairn. The chamber is an irregular quadrilateral formed by five upright stones which support a capstone, 1.2m above ground level; it measures 4.8m in length and 3.5 m in width at its extremities and slopes downwards to the north. The remains of the passageway lie to the north of the chamber and are built into a modern field wall; it is defined by three low upright stones and a fourth stone which is now recumbent measuring 1.8m in length. The cairn material consists of turf covered stone which extends 10m to the south and 5m to the north of the chamber, material is prevented from falling into the chamber by dry-stone revetment walls. The cairn is overlain by loose boulders and also by a field wall which is built through the chamber and follows the line of the passageway.	Prehistoric	SH 49886 41315
CN044	SM	Castell Caerau	The monument comprises the remains of a hillfort, which probably dates to the Iron Age period (c. 800 BC - AD 74, the Roman conquest of Wales). Hillforts are usually located on hilltops and surrounded by a single or multiple earthworks of massive proportions. Hillforts must have formed symbols of power within the landscape, while their function may have had as much to do with ostentation and display as defence. A sub-rectangular area enclosed by a strong stone wall, situated on the end of a spur S of Craig y Garn. The enclosing wall is 2-3 m wide and between 1 and 1.5 m high. On the E the wall has been largely removed to build modern field walls, and there is a similar gap on the SW. The wall is built of oblong/rectangular blocks laid as headers. At points B and C on the plan there appear rs to be a secondary inner face to the wall, but, as mentioned by the RCAHMW, this could result from the method of construction and not from different periods of building. The interior, which measures 18 m across, is broken by rocky outcrops, and is crossed by a modern field wall. A sheepfold has been constructed in the NW corner. The monument is of national importance for its potential to enhance our knowledge of later prehistoric defensive organisation and settlement. The site forms an important element within the wider later prehistoric context and within the surrounding landscape. The site is well preserved and retains considerable archaeological potential. There is a strong probability of the presence of evidence relating to chronology, building techniques and functional detail.	Prehistoric	SH 50899 43912
CN046	SM	Craig-y-Tyddyn Camp	There are two sites scheduled within the area; a small fort on top of a rocky ridge, and a settlement at the foot of the ridge containing the remains of two round huts and a length of walling. Both are likely to date to the Iron Age or Romano-British period (c. 800 BC - AD 400). The fort on top of Craig-y-Tyddyn occupies the W end of the ridge. It is a trapezoidal enclosure with grass-covered stone walls running round the N, S and W sides, which fall steeply away, and a high bank cutting off the E side from the rest of the spur. The wall varies in height between 0.2 and 0.5 m, and is 1.5 m wide. The bank crossing the spur at the E end is 0.75 m high from the inside and nearly 3m high from outside. The enclosing wall is no longer visible on much of the N side, where a rock outcrop cuts across the line of the wall. The entrance at the W end appears as a simple 3 m-wide gap in the wall. There are no huts visible inside, although the SE corner of the fort looks a possible site. The lower settlement, NW of the fort, consists of two huts with the slight remains of an enclosure. Hut A [letters used on sketch plan] is 9 m in diameter, with grass-grown walls 0.25 m high and 1 m wide. The entrance is on the E side. Hut B is revetted into the slope and has a diameter of 5 m; it is 1 m deep at the rear. It appears to be located outside the enclosure wall. A low bank joins the two huts, and then continues as a terrace, running N. Another low bank appears to run back from this terrace towards Hut A.	Prehistoric	SH 50564 42738
CN280	SM	Hut Circle East of Taleifion	The monument comprises the remains of an isolated hut circle with an adjoining enclosure or yard. The site probably dates to the Iron Age or Romano-British period (c. 800 BC - AD 400). The hut circle is of massive orthostatic construction and in an impressive state of preservation.	Prehistoric	SH 49966 44039
CN281	SM	Enclosed Hut Group North-East of Llystyn Uchaf	The monument comprises the remains of a well-preserved enclosed hut circle settlement, which probably dates from the first millennium BC. The site comprises four huts, two of which are circular, and two rectangular which could have been ancilliary structures. All are likely to be contemporary but could represent different phases of construction.	Prehistoric	SH 48714 44513

SAM No.	Grade	Name	Description	Period	NGR
CN154	SM	Standing Stone N of Bettws Fawr	The monument comprises the remains of a standing stone, which probably dates to the Bronze Age (c. 2300 - 800 BC). It measures 2.7 m high by 0.85 m by 0.6 m and leans slightly to the south.	Prehistoric	SH 46475 40607
CN003	SM	Cefn-Isaf Burial Chamber	The monument comprises the remains of a chambered tomb, dating to the Neolithic period (c. 4,400 BC - 2,900 BC). Chambered tombs were built and used by local farming communities over long periods of time. There appear to be many regional traditions and variations in shape and construction. The burial chamber consists of a capstone resting on four supporters. The chamber, which is open to the southeast measures 2.4m along its axis from northeast to southwest and 1.8m in width at its northeast end, the internal height is 1m. The northeast end consists of two pillars, each c. 1.1m in height and 0.75m wide, the northernmost stone leans badly inwards; the southwest end was probably similar but only one pillar remains. The northwest side consists of a single slab 3.2m long and 1m high, set on its edge and also leaning slightly inwards. The fourth upright at the west corner is 1.1m in height and 0.5m wide. The domed capstone has a flat underside, with a maximum thickness of 1m and in plan is roughly rectangular measuring 3.5m in length and 2.75m wide, with the south corner broken off.	Prehistoric	SH 48352 40886
CN021	SM	Llystyn Gwyn Inscribed Stone	The monument consists of an inscribed stone, a commemorative monument which has been inscribed with letters and symbols, probably dating to the early-medieval period (c. AD400-AD1066 the period between the breakdown of Roman rule and the Norman Conquest). The stone has been built into the S wall of the farmyard at Llystyn Gwyn. It measures 1.05m by 1.06m by 0.33m thick with a Latin inscription 'ICORI FILIVS / POTENTI / NI' (Icorix, the son of Potentius) in the top right corner and an Ogham inscription 'ICORIGAS' (of Icorix) along the upper right side. The Latin inscription is still visible, but the Ogham is barely discernible.	Early Medieval	SH 48210 45529
CN063	SM	Dolbenmaen Castle Mound	A motte built by the side of the Afon Dwyfor, part of which has been destroyed by the farmhouse and buildings which lie on the W side. It stands about 6 m high and is 36 m in diameter at the base. The top measures 8 m N - S and 11 m W - E. A masonry wall 0.75 - 1 m high encircles the top. The area inside this wall has been damaged by trees which have grown and subsequently fallen, creating large holes. The same thing has happened on the sides of the motte. The ditch, visible on the S and W sides, is between 0.75 and 1 m deep, and about 7 m wide.	Medieval	SH 50652 43069
CN117	SM	Capel Gallt-Coed	The monument consists of the remains of a chapel standing in a small enclosure measuring approximately 30m square surrounded by a low bank of earth and boulders. Architecturally the chapel appears to be of the 16th or 17th century, but is thought to be the successor to an earlier building. The chapel is situated south of centre within the enclosure and measures approximately 10m NE to SW by 6m NW to SE, it is constructed of rubble masonry walls with quoins of massive boulders. The NE gable stands to its full height of c.5m and contains a 16th or 17th century window of two round-headed lights in a squared frame with moulded dressings of freestone; to the rear is a segmental arch. The SE wall also stands to full height as far as the position of a doorway; it contains a single-light window of similar form to that in the gable, but without a rear arch. This part of the building has been consolidated and partly restored. The remaining walls are ruinous, preserved best on the south side to a height of 1m. Collapsed stonework lies in the south-west interior.	Post-medieval	SH 47080 40299

Listed Buildings

NPRN No.	Grade	Name	Description	Period	NGR
4278	II*	Parish Church of St Mary	The church originated as a chapelry of St Beuno, Penmorfa, and was built in the C15, from which period the roof survives. It has been considerably altered at later dates. Now combined as the parish of Dolbenmaen with Penmorfa. A small single cell building constructed with uncoursed local rubble stone with long stone quoins, all partially rendered, with a C19 slate roof between raised gable parapets. The S door is near the W end, a pointed arch containing a C19 boarded door with ornamental ironwork. Pointed headed windows both sides, that at the centre of the S side having diamond leaded glazing set in timber transomed 'Y'-tracery, with another further E, and a similar window opposite on the N side. The E window is round headed. The W wall has been rebuilt, and has a square headed high set W window, and corbelled gabled bellcote surmounted by a small stone cross. A slate sundial of the early C19 is set on the S side.	Post-medieval	SH 50670 43150
4213	II	Pont Dolbenmaen	Probably built in the late C18 or early C19 to carry the main Tremadoc to Caernarfon Road over the Afon Dwyfor, doubtlessly replacing an earlier bridge at this point. Built of local stone rubble. A segmental arch constructed with squared rubble voussoirs having a regulating course and flush spandrels, with a slightly cambered projecting string course at the base of the parapet, constructed with smaller stones and capped with slabs. The parapet turns outwards at the ends to terminate in square piers. Span approximately 12 m rising 3.5m above the water, and affording a carriageway width of 4.75m with flush parapets of 0.5m width.	Post-medieval	SH 50748 42982
4279	II	Plas Holland	The front part of the house was built in 1786 as an enlargement of a small earlier rectory, part of which was relegated to being the back wing. It is now a private dwelling house, and recently named after the builder, the Revd Jeffrey Holland, incumbent 1782-1833, 4th son of the high sheriff of the county, who volunteered for naval service and was present at the battle of the Glorious First of June (1794). He was perhaps the most eminent of the rectors, and unusually amongst men of the gentry at the time, spoke fluent Welsh. A large house built of stone and painted white. Slate roof. Two storeys, 3 bays, with central through circulation and reception rooms either side. Four-panelled front door. Sixteen-paned sash windows either side, and on the first floor. At the side, two small Gothic windows to the parlour. Rear single storey and attic wing, probably remaining from the earlier house, with two gabled dormers to the E side, and C20 extensions to the W. On the W wall, a tablet inscribed with an englyn giving the date 1786, referring to 'my cell and costly castle' and signed by Jeffrey Holland (Not seen at the time of inspection).	Post-medieval	SH 50649 43164
4280	II	Plas Dolbenmaen	The house, the site of a princely court and centre of the demesne of Dolbenmaen, was one of only two in the district registered with 2 hearths in the 1662 return. It was probably rebuilt in the late C18 on the same site of long occupation, as indicated by the adjacent fine motte and moat. Built of roughly coursed rubble stonework, with a roof of old small slates, grouted up. The house form is a 4-window bay front with end chimney stacks, a lean-to on the left end (E), and a probable coeval rear wing on the right, also with a gable stack and itself extended by a cat-slide roof to the W. Recessed 12-pane sash windows noted in the former description boarded over at the time of inspection, July 1998, and a small fire window at the left end. Door at the rear, in the angle with the rear wing, has a projecting stone lintel of Caernarfonshire form. Weather coursing to the stacks. The farm buildings lie to the W.	Post-medieval	SH 50684 43052
4281	II	NW Range of Farm Buildings at Plas Dolbenmaen	The house, the site of a princely court and centre of the demesne of Dolbenmaen, was one of only two in the district registered with 2 hearths in the 1662 return. It was probably rebuilt in the early C18 on the same site of long occupation, and the farm buildings were apparently modified in the early - mid C19. Built of roughly coursed local stone, originally with slated roofs, the slates removed at the time of inspection. The group forms the N and W side of the farmyard lying immediately to the NW of the house. The NW range is a 5-bay building with lean-to extensions to the rear. Two stable-type doors and 2 ventilation windows.	Post-medieval	SH 50676 43083
4282	II	Ysgubor Gerrig	Originally a farmhouse of C17 origin, with the 2-unit dwelling and small farm-building - probably a cow-house - built in line. The latter has been converted to form part of the dwelling; the outshut at the rear of the house comprises what may have originally been a small dairy, and more recent extensions. Built of massive local boulders and stone rubble, partly rendered, with a slate roof and pebble-dashed end-wall stacks. 2-storeys, 2-unit plan with offset entrance to dwelling. Lower former cowhouse in line to the right. Dwelling has boarded door flanked by 12-pane sash windows to	Post-medieval	SH 51058 42579

NPRN No.	Grade	Name	Description	Period	NGR
			the ground floor; 3x4-pane sashes above, set in small gabled dormers. Former cowhouse has doorway towards centre (glazed door with external boarded shutter) but appears to have been otherwise windowless originally: large inserted window in gable end.		
4288	II	Ystumcegid	The building is probably of the late C17 or early C18, on the site of an earlier farmhouse, and further refurbished internally in the later C19. It is claimed that the walling material was brought from the medieval house at Cefn-y-fan after its destruction in 1403. A house called Ystum-cegid is mentioned in a poem of c1420. Built of stone rubble, the front elevation rendered, with slate roofs. Two storeys, 'T'-plan comprising a 3-bay front facing SW, and a rear wing on the N side. Two storey and attic. Tall gable end stacks. Gabled porch added c1993, with a boarded door. Four-paned timber sash windows to both main storeys, the centre bay having a gable containing a similar but smaller 4-pane window lighting the attic. The rear wing has an external gable stack, a lean-to on the SE, and an added porch in the N re-entrant angle. Gable ends rendered.	Post-medieval	SH 49719 42396
4367	II	Betws-bach	A gentry house built in the late C17 on land originally held by the Bishop of Bangor up to 1649, by the Vaughan family of Corsedol. Robert Williams [Robert ap Gwilym Ddu] the poet and hymn writer, [1766-1850] lived and farmed here, and here he lost his young daughter in 1834. The house has been altered and modernised in the C20. Built of rubble stonework, with a slate roof and gable stacks, the gable end and chimneys rendered. 2 storey and attics. The original building consists of two main rooms divided by a through corridor to a rear stair in a widened section. The room on the left was probably the main kitchen-living area, with a large open fireplace; the room on the right a parlour. A through passage extended along the rear wall. The building was extended to the N and W by 2 bays, with a gable stack. The main front has the door off-centre, and small 4-pane horned sash windows, 2 on the ground floor, 3 above in the earlier section, the openings having rendered surrounds. At the rear, a central gable, partially covered by the added single storey wing at the S end, which also has a gable stack, its N side altered. The N extension in line has the roof reduced in pitch at the rear. Similar detail to front elevation, and boarded door with overlight and 6-pane sash window. Roof at rear has four rooflights.	Post-medieval	SH 47044 40975
21522	II	Lychgate to the Church of St Mary	The building was, according to a built-in panel, built in 1847 for the Revd G Owen MA, perhaps replacing an earlier one of 1747. Built of local rubble stonework, with a slate roof. The structure is in the form of a broad gable over a narrow passage between two low storerooms, probably originally for a bier and gravedigger's equipment. The outward facing pointed arch contains iron gates. To either side, double boarded timber doors inserted beneath monolithic stone lintels. The facade continues both sides as the churchyard wall.	Post-medieval	SH 50668 43118
21539	II	Milestone	Erected c1802-1808 following the turnpike acts for Caernarfonshire, for the turnpike trust controlling the road in this sector. A square slab of local slate with the upper corners chamfered, set in the verge of the road, and inscribed CARNARVON 15 MILES / PENYGROES 8 5/8 / LLANLLYFNI 8 / TREMADOG 4.	Post-medieval	SH 51607 42474
21543	II	Pont y Felin	Probably built in the early-mid C19. Built of local rubble stone. A single segmental arch formed with shaped rubble voussoirs, sealed by a regulating course, flush spandrels and a low flush parapet, slightly peaked at the centre and curving out at the ends. The SW end is reinforced by a buttressing wall and has a substantial pier. The road continues to the SE on a raised embankment. The bridge spans approximately 9.1m, rising 2.8m at the centre, and carries the carriageway of 4.6m width with parapets 45cm thick.	Post-medieval	SH 48049 43321
21544	II	Garreg lwyd Cottage	The encroachment into the open common mountain land N and E of Garndolbenmaen took place initially in the last decade of the C16, but general squatting increased in the late C18, some 40 or more dwellings had been built by 1810. Each separate dwelling had approximately 1-2 acres (0.405-0.809ha) of land for cultivation and the settlement became an important centre for Methodist and Baptist evangelism. In 1814, to regularise the situation, an auction of squatter tenancies took place, with a second sale in 1819. The settlement was largely established by the Tithe apportionment and map of 1838. Garreg-llwyd dates probably from the C18 and is a largely unaltered example of the traditional smaller dwelling of the encroachment. Built of locally obtained rubble stone, with a slate roof probably replacing heather thatch between stone-coped gables. Single storey, 2-room house with end stone stacks with projecting weather courses. The attached 2-bay cowhouse at the W end, is of one build with the house. Boarded door and 4-pane sash windows. The W section of the house has a widened bay at the rear, probably for a kitchen. An attached outbuilding for farm purposes at the rear of the cowhouse, which has a single door and is otherwise windowless.	Post-medieval	SH 49799 44622
21545	II	Tan-y-braich, with attached farm buildings	The encroachment into the open common mountain land N and E of Garndolbenmaen took place initially in the last decade of the C16, but general squatting increased in the late C18 - some 40 or more dwellings had been built by	Post-medieval	SH 49662 44723

NPRN No.	Grade	Name	Description	Period	NGR
			1810. Each separate delling had approximately 1-2 acres (0.405-0.809ha) of land for cultivation and the settlement became an important centre for Methodist and Baptist evangelism. In 1814, to regularise the situation, an auction of squatter tenancies took place, with a second sale in 1819. The settlement was largely established by the Tithe apportionment and map of 1838. Tan-y-braich is a good example of the later and more substantial type of dwelling of the late C18 or early C19. Built together with its attached farm buildings of locally obtained stone rubble and partially rendered with mortar spread. Slate roof. Two storeys, 2 bays, comprising a general living room, a parlour and back pantry, extended by a lean-to at the rear. The house is extended in line to the W with various farm buildings, partially collapsed, and at right angles to the S front, a 2-bay building forming the E side of the small stone-walled front garden, which has a well and iron pump. Approximately central boarded door, and simple narrow 4-paned sash windows with stone sills to both floors.		
21546	II	Haybarn at Tan-y-braich	Probably built in the late C18 or early C19 as an integral part of the farm group serving the farm. The haybarn is built of rubble stonework gables and piers, and a slate roof. Two bays, two large ventilation and loading openings each side and a pitching door in the W gable end.	Post-medieval	SH 49664 44730
21551	II	NE Range of Farm Buildings at Plas Dolbenmaen	The house, the site of a princely court and centre of the demesne of Dolbenmaen, was one of only two in the district registered with 2 hearths in the 1662 return. It was probably rebuilt in the early C18 on the same site of long occupation, and the farm buildings were apparently modified in the early-mid C19. Built of local stone rubble, and originally with a slate roof. The NE range is end on to the NW range across the entrance driftway to the farmyard on the W side of the house. A 2-bay building with stalling in the SE bay, perhaps originally intended as a stable, with an internal ladder to the grain or hay storage loft over. The building has an external stone stair at the NW gable end.	Post-medieval	SH 50685 43071
21552	II	Washhouse Building at Plas Dolbenmaen	The house, the site of a princely court and centre of the demesne of Dolbenmaen, was one of only two in the district registered with 2 hearths in the 1662 return. It was probably rebuilt in the early C18 on the same site of long occupation, and the farm buildings date to that or a subsequent period. Built of local stone rubble, originally with a slate roof. The washhouse stands close to the house, and forms, with the NW and NE ranges of farm buildings the farmyard against the W side of the farmhouse. It has a door and window facing into the yard.	Post-medieval	SH 50660 43048
21560	II	Piggery at Ystumcegid	The house at Ystum-cegid is probably of the C17 in origin. The adjoining piggery is probably of C19 date. Built of rubble stone with some boulders, and a slate roof. It consists of a low food preparation building of 2 bays facing into the domestic yard, with a door and small paned window, and a gable stack, the rear wall of the SE bay carried on 2 piers providing three openings above the floor, each with sloping boarded bottoms under an extension of the roof, and which can be opened directly above feeding troughs of the sties. The pig accommodation is in a parallel roofed structure, the two buildings joined by cross walls with a central walk-way with gates separating each pen. Thus the feeding trough is at the far end of the run from each of the four pig sties.	Post-medieval	SH 49723 42413
21563	II	Ty-newydd Farmhouse	The front of the building is a late C18 or early C19 remodelling of a C17 farmhouse, parts of which survive at the rear. Built of stone and whitewashed, with a slate roof. Two storeys, 3 bays. The main front, facing SW, is approximately symmetrical though offset to the right, with a central entrance to a stair hall. Part glazed 4-panelled door, set within a C19 boarded pitched-roof open porch. Sixteen paned sash windows on both floors, that to the main parlour on the right larger. Gable stacks.	Post-medieval	SH 50170 43371
21564	II	Outhouse at Ystumcegid	Probably built in the late C18 or early C19 when considerable improvements were being undertaken to the farmhouse. Built of local stone rubble and partly rendered from the jointing. Old slate roof. Two bays. One stable-type door and one boarded door to the front. It probably served to accommodate selected animals.	Post-medieval	SH 49728 42380
21565	II	Farm Building and Granary at Ystumcegid	The building was probably erected at the time of major improvements to the farmhouse in the late C18 or early C19. Built of coursed rubble of local stone, with a later slate roof. Ground floor store, probably originally a cow house, and upper floor granary reached by an external flight of steps at the NE end. Boarded door and 2 small windows to the ground floor, with a further window at the downhill end probably replacing a further doorway. A boarded gable end door to the granary.	Post-medieval	SH 49709 42375
21591	II	Beudy-y-gromlech	The building is probably of the late C18 or early C19, a type of small-holding or labourer's dwelling once typical of Llyn. It may have comprised house and cow-house in line originally, but if so, the cow-house was incorporated into the dwelling at some time, probably in the mid-late C19. The building is constructed with granite boulders, the joints filled and buttered. Slate roof, grouted at the rear with a single rooflight front and rear. It consists of a 2-bay single storey house, with gable end stack and what may have originally been a cowhouse at the E end under the same roof,	Post-medieval	SH 48430 40956

NPRN No.	Grade	Name	Description	Period	NGR
			and a rear wing, apparently service or agricultural rather than domestic in purpose, and perhaps originally a dairy. Central boarded door on the S side, and one small 4-pane sash windows each side. A single small window at the rear, and an external doorway and small window to the rear wing. The cowhouse end has a boarded door against the gable end of the cottage, and a larger and later single window. A gable end stack indicates that it was converted to other purposes at a later date.		
21592	II	Pont Rhyd-y-benllig	Built probably in the late C18 or early C19, as part of the general scheme for the improvement of county roads being undertaken at that time. A wide single arch span built of flush rubble stones, with flush spandrels rising to a string at the base of the parapet, which is rendered externally and is capped with long cut rubble copings. The arch springs from just above the water line, spanning 19.2m and rising to 6.05m above the water. The road is 6m wide between the 50cm parapets, which are slightly peaked at the centre. Large pilaster buttresses at both ends.	Post-medieval	SH 48815 40035
21598	II	Pont Ynys Creua	Built probably in the early-mid C19 as part of the general scheme to improve country roads in the Lleyn. Built of local stone rubble. The bridge is part of a elevated causeway approximately 60m long, and having a single arch of flush rubble voussoirs, spandrels and parapet, spanning c.5m and rising 1.85m, carrying the 4.86m wide carriageway between the 0.5m level parapets coped with boulders.	Post-medieval	SH 45017 42696
4289	II	Lodge, formerly for Brynkir	Built in rubble stonework and painted white, with a low pitched hipped slate roof and wide eaves. Central chimney stack. Two storeys, 3 bays, a central boarded door and flanking casement windows with Gothick style intersecting iron glazing bars 4 lights wide, all recessed on the ground floor behind rubble segmental arches. On the first floor a blind central panel, and flanking 12-paned sash windows, all similarly recessed, their heads directly below the eaves. A service outshut along the full length of the rear.	Post-medieval	SH 51918 43340
21566	II	Lodge Bridge	The bridge carries the road from Cwm Pennant across the Afon Dwyfor to Golan, approximately 40m E of The Lodge.	Post-medieval	SH 51967 43337

Conservation Areas

Inspire ID	Grade	Name	NGR
WAL/SNOW/2	CA	Dolbenmaen	SH 50676 43102
WAL/GWYN/32	CA	Dolbenmaen	SH 50676 43102

Non-Designated Assets

PRNUID	Name	Description	Period	NGR
154	Burnt Mound, East of Afon Dwyfach, South of Bryncir	Burnt mound, E of the Afon Dwyfach. Crescent shaped 40ft N-S by 31ft. Maximum height of 3ft. On either side of the hollow which is 17ft E-W by 8ft, opening to the E.	Bronze Age	SH 4815 4400
17558	Part of Roman Road, Segontium to Pen Llystyn to Tomen y Mur	Short stretches of it are in fact visible on either side of Pen Llystyn fort. A 3.55km long postulated section of Roman Road that is part of the Segontium Pen Llystyn Tomen y Mur Roman Road. This section runs from the Roman Fort site at Penllystyn, Bryncir (PRN 144), along the route of the current A487(T) to the junction with the local road to Garndolbenmaen.	Roman	SH 4832 4359
101053	Bryn-Refail-Isaf, Dolbenmaen	A post medieval farmstead.	Post-medieval	SH 48159 42774
101063	Bryn-yr-efail-uchaf, Dolbenmaen	A post medieval farmstead.	Post-medieval	SH 48840 43499
101386	Gwindy (Gwyndy), Dolbenmaen	A post medieval farmstead.	Post-medieval	SH 47454 43344
101436	Hendy, Llanystumdwy	A post medieval farmstead.	Post-medieval	SH 47280 42292
110516	Hendy-Isaf, Llanystumdwy	A post medieval outfarm.	Post-medieval	SH 47200 42357
101511	Llystyn-isaf, Dolbenmaen	A post medieval farmstead.	Post-medieval	SH 48359 44215
101767	Outfarm, South of Gwyndy, Dolbenmaen	A post medieval outfarm.	Post-medieval	SH 47374 43206
101891	Penardd-Llygag, Llanystumdwy	A post medieval farmstead.	Post-medieval	SH 48101 42223
101994	Plas-Llecheiddior, Dolbenmaen	A post medieval farmstead.	Post-medieval	SH 47564 43678
102256	Tyddyn-y-felin, Llanystumdwy	A post medieval farmstead.	Post-medieval	SH 47525 42676
7878	POW Camp, Site of, Bryncir	None Provided	Modern	SH 48 44
62175	Bank at Tyddyn Felin, E of Afon Dwyfach	About 2m from, and parallel to, the eastern bank of Afon Dwyfach is a low earth bank 1m high and up to 2m wide surmounted by mature hawthorn trees. This bank is not a boundary feature and may have been constructed as a flood defence. (Richards, 1998).	Undated	SH 479 426
62169	Bryn-'refail-ganol, site of, Dolbenmaen	A farm called Bryn-'refail-ganol occurs on the early cartographic sources at this approximate location. The John Evans map of 1795 refers to it as 8rynrevelcannol and the 1839 Dolbenmaen parish tithe map as Brynefail Gannol. The early maps show the old road passing Bryn-' refail-ganol farm although on the 2 inch OS map it is shown as Bryn-yr-efail-uchaf. On the first I inch OS map c. 1841 it is marked as Bryn-r-efail-ganol with three tracks running west, east and south. It would appear to lie to the west of the existing farm building. Possible traces of enclosures are evident on an aerial photograph held by the Countryside Council for Wales but nothing was visible during fieldwork. (Richards, 1998).	Undated	SH 4864 4305
62172	Farm Track, Bryn-'refail-isaf	A 230m long farm track runs west to east from the farm yard of Bryn-'refail-isaf to the north west corner of the field in which the proposed substation is located. This 5.5m wide track has a surface of small stones with an old stone faced bank along the south side and a more recent dry stone wall to the north. Both boundaries are	Undated	SH 4808 4268

PRNUID	Name	Description	Period	NGR
		surmounted by post and wire fences. The track is present on the 1839 Dolbenmaen parish tithe map as well as the earliest OS maps.		
62173	Farm Track, Bryn-'refail-isaf	The 200m long farm track from the 84411 to Bryn-'refail-isaf is present on the 1839 Dolbenmaen parish tithe map as well as the earliest OS maps. It consists of a 7m wide sunken track between high stone faced earth banks surmounted by mature, mainly conifer, trees. It has been surfaced with two concrete tyre tracks in recent years but may retain earlier surfaces below.	Undated	SH 4808 4268
62170	Field Barn, Bryn-'refail-ganol	This could be the building shown on the 2 inch OS map to the east of Bryn-'refail-ganol. The barn consists of coursed and mortared roughly dressed local stone under a slate roof. The roof and the blocking of an old doorway have collapsed at the north end of the barn. The barn stands within a courtyard with a track running to the east which may be a remnant of the eastern track shown on the first edition 2 inch OS map of 183 8. Gateposts around the barn and in adjacent fields consist of large orthostatic boulders which appear to have been reused many times.	Undated	SH 4870 4305
2813	Melin Llecheiddior, Watermill, Pont y Felin	Melin Llecheiddior (MILL) SH 47954345. The Pont y Felin watermill consists of two overshot water wheels in tandem fed by simple individual sluices in the floor of the trough of the wooden launder. Each wheel drives a single pair of stones direct through a pit wheel and wallower; the stones are never out of gear and sluice controls were used to start, stop and regulate the speeds. The front wheel has cast iron hubs and shrouds but is otherwise of timber, while the rear wheel is entirely of timber construction.	Undated	SH 4794 4346
2804	Natural Feature, Tomen Gwindu, W of Pont Y Felin	The remains of a British camp on the farm of Gwindu. This was destroyed by the owner of the property in 1869, but the original form can be distinctly traced. It is now part of a gorse field.	Undated	SH 4770 4331
62174	Old Road, B4411	An old road visible to the north and south of the farm track at Bryn' refail-isaf. The road is visible on early cartographic sources.	Undated	SH 4802 4257
62171	Remnants of Wall, Dolbenmaen	At the southern end of a clearance mound in the north west corner of the field there is evidence of an earlier structure. Several sections of low dry stone walling can be identified which may indicate the existence of a former building.	Undated	SH 4843 4283
62168	Route of old road, Garn Dolbenmaen	An old road running from Garn Dolbenmaen to Dafarn Faig is shown on the 1795 John Evans map and the Ordnance Survey 1st Edition 2" map.	Undated	SH 4863 4304
34375	Sluice, Bryn-yr-efail-uchaf	Labelled on 1st, 2nd and 3rd ed OS maps. Water running to sluice is present on Mastermap and visible on Seamless Aerial Photographs. Water from sluice possibly ran past buildings at Bryn-yr-efail-uchaf.	Undated	SH 48881 43543
34364	Sluice, Hendy	Sluice labelled on the 2nd ed OS map.	Undated	SH 47235 42450
34363	Tyddyn-felin, Llanystumdwy	Labelled 'Tyddyn-felin' on 1st and 2nd ed OS maps and 'Tyddyn-y-felin' on 3rd ed OS map and Mastermap. Most of the buildings appear to be represented on Mastermap, although there have been some alterations and new buildings. Seamless Aerial Photographs - buildings are roofed. Is this the mill itself or the mill house?	Undated	SH 47550 42667

Roman Roads

PRNUID	Name	Description	Period	NGR
17558	Roman Road 4	Documentary evidence of Roman road of unknown condition or survival	Roman	SH 4832 4359

Previous Archaeological Investigations

PRNUID	Name	Description	Organisation	NGR
40458	Proposed Sites for Bryncir Substation	Estell Warren Landscape Architects, on behalf of the National Grid company plc, has been commissioned to carry out an archaeological assessment of five proposed alternative substation sites at Bryncir in Gwynedd, each comprising approximately 0.54 hectares.	Gwynedd Archaeological Trust (GAT)	SH 4834 4541
40459	Magnox CCGT Connection & Infrastructure Works	Richards, A. (1998). Magnox CCGT Connection and Infrastructure Works Bryncir Substation: Archaeological Assessment. Gwynedd Archaeological Trust.	Gwynedd Archaeological Trust (GAT)	N/A
40526	Prehistoric Funerary and Ritual Monument Survey: West Gwynedd/Anglesey	Smith, G. , 2003 , Prehistoric Funerary and Ritual Monument Survey: West Gwynedd and Anglesey (© GAT)	Gwynedd Archaeological Trust (GAT)	N/A
40527	Pan-wales Prehistoric Funerary and Ritual Sites Survey: Trial Data Synthesis	Pan-wales Prehistoric Funerary and Ritual Sites Survey: Trial Data Synthesis	Gwynedd Archaeological Trust (GAT)	N/A
40538	Roman Roads in North-West Wales	Gwynedd Archaeological Trust was grant aided by Cadw to undertake a project concerned with Roman roads in Northwest Wales between 2004-2005. The project was a continuation of the 2002 project in examining the Roman military road network across Northwest Wales.	Gwynedd Archaeological Trust (GAT)	SH 70 46
40542	Roman Roads in North-West Wales (Revision 4)	N/A	Gwynedd Archaeological Trust (GAT)	N/A
40544	Roman Roads in North-west Wales	N/A	Gwynedd Archaeological Trust (GAT)	N/A
44557	Early Celtic Societies in North Wales	Desk based research project undertaken by Waddington, K. in collaboration with Bangor University and Karl, R. as an expansion of the 'Welsh Roundhouse Project". The project assessed evidence for settlement from the Late Bronze Age to the early medieval period (late 2nd millennium BC- early 2nd millennium AD) in north-west Wales and examined the long-term processes of social change and settlement practices. Drew on previous work by Ghey. E, Johnston. R., Edwards. E. and Pope, R. and a number of Gwynedd Archaeological Trust projects, in particular 'G1770 Defended enclosures surveyed and 'G1104 Hut circle settlement surveyed. Funded by the University of Wales Publications and Collaborative Research Committee (the successor to the former Board of Celtic Studies).	Bangor University	N/A
44820	The A487 (T) Ty Cerrig, Garndolbenmaen Improvements: Archaeological Record and Watching Brief	Gwynedd Archaeological Trust was commissioned by Gwynedd Consultancy to undertake an archaeological record in advance of, and a watching brief during, the improvements of a 650m long stretch of the A487 (T) road between Bryncir and Dolbenmaen. The features being impacted upon were predominantly field boundaries but also included a copse of conifers, a barn and a clearance cairn.	Gwynedd Archaeological Trust (GAT)	SH 492 433
44878	Proposed Water Transfer Pipeline, Dolbenmaen to Cwmystradllyn	Archaeological assessment completed by Gwynedd Archaeological Trust (GAT) along the route of a proposed new transfer main between Dolbenmaen Water Treatment Works and Cwmystradllyn Water Treatment Works (WTW), Gwynedd. The transfer main will include a 450mm raw water main that will run between the two treatment works, a 50mm branch pipeline that runs from the Dolbenmaen WTW to Dolbenmaen village and several pipeline cross-connections that will run from the proposed transfer main to existing smaller diameter branch pipes. To accommodate the scheme groundworks a 21.8m wide easement is proposed along the transfer main route along with three site compounds at strategic locations. The compounds will be located just outside the easement corridor. The transfer main will be laid within a trench up to 3.8m in width.	Gwynedd Archaeological Trust (GAT)	SH 2524 3425

PRNUID	Name	Description	Organisation	NGR
44889	First World War Military Sites: Military Landscapes; Part 1 Report and Gazetteer	This report describes the results of a study, funded by Cadw, of First World War sites in north-west Wales coming under the theme of Military Landscapes. It focuses on training camps, practice trenches, rifle and firing ranges and prisoner of war camps. Seventy-five sites were identified and included in the gazetteer (appendix II). These are also included in an Access database to assist inclusion into the HER, and there is an accompanying MapInfo table of polygons defining the limits of those sites where these could be identified. The history and background of these classes of sites is considered and detailed recording work was carried out on a rifle range near Dolgellau and practice trenches near Beaumaris, Anglesey. Issues relating to scheduling these sites are considered and specific sites proposed for scheduling are included in the confidential part 2 of this report.	Gwynedd Archaeological Trust (GAT)	N/A
45048	Medieval and Post-Medieval Mills. Scheduling Enhancement 2011-12. Part 01: Report and Gazetteer.	GAT has been commissioned by CADW to identify the Medieval and Post Medieval sites in Caernarvonshire, to assess their condition and, where appropriate, to recommend sites for scheduling. The project has identified 486 mill or potential mill sites, through archive, cartographic and documentary research. Those sites showing potential as sites suitable for scheduling were visited in the field. These sites vary in date from the Medieval period through to the 19th century, and consist of a variety of site types and technologies. A database was created recording each of the mill sites individually with a unique site number. It is clear from the work carried out on this project that the quantity of data and potential for research on Caernarvonshire mills is cast. There are undoubtedly more mills of interest, and perhaps of Schedulable quality in Caernarvonshire and these can only be assessed after further documentary research and field work.	Gwynedd Archaeological Trust (GAT)	N/A
45965	HER Evidence Data Cleansing Exercise	HER Staff at Gwynedd Archaeological Trust undertook an Evidence Data Cleansing Exercise for all existing Core records, between May and September 2020. The work focused on migrating form terms to evidence terms using agreed Historic Environment Data Standards terminology. 13615 records were assessed on an individual basis using a combination of the form field and descriptive information to create an evidence record.	Gwynedd Archaeological Trust (GAT)	N/A
46779	Recording Traditional Farm Buildings and Historic Farmsteads: Llyn Peninsula	Gwynedd Archaeological Trust were grant aided by Cadw to undertake a project recording historic farmsteads in Llyn Peninsula, as part of a pan-Wales initiative to record surviving traditional farmsteads.	Gwynedd Archaeological Trust (GAT)	SH 35316 36648

3.7.A Bryncir: Initial Conceptual Site Model and Risk Assessment

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1. Initial Conceptual Site Model

1.1 Introduction

1.1.1 The initial Conceptual Site Model (iCSM) has been developed to identify potentially complete contaminant linkages that may require further investigation to assess their existence and/or potential significance. The potential sources of contamination, receptors and pathways on or near the Bryncir site are discussed below.

1.1.2 Past and current potentially contaminative land uses have been considered. The iCSM is based on the proposed Bryncir works in the Environmental Statement (ES) **Volume 3, Chapter 2: Bryncir Works**.

1.2 Assessment Framework

1.2.1 The Bryncir works site, in terms of potential land contamination, will be regulated by the Gwynedd Council under the Town and Country Planning Act 1990 (as amended) (Ref 1.1), taking account of Planning Policy Wales (Ref 1.2), with Natural Resources Wales (NRW) acting as statutory consultee.

1.2.2 Environmental liabilities can arise through provisions contained within statutory legislation including Part 2A of the Environmental Protection Act (EPA) 1990 (Ref 1.3), the Environmental Damage (Prevention and Remediation) Regulations 2015 (Ref 1.4), the Water Resources Act 1991 (Ref 1.5), the Groundwater (England and Wales) Regulations 2009 (Ref 1.6) and the Water Act 2003 (Ref 1.7).

1.2.3 Current best practice recommends that the determination of health hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Statutory Guidance to Part 2A (2012) and Land Contamination Risk Management (LCRM) (2023) (Ref 1.8) and the NRW Advice for Developers – Land Contamination (Ref 1.9).

1.2.4 The "*suitable for use*" approach is adopted for the assessment of contaminated land where remedial measures are undertaken where unacceptable risks to human health or the environment are realised taking into account the use (or proposed use) of the land in question and the environmental setting. The proposed end-use for the Bryncir works site is an electricity substation.

1.2.5 The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source:** hazardous substance that has the potential to cause adverse impacts;
- **Pathway:** route whereby a hazardous substance may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses; and

- **Receptor:** target that may be affected by contamination: examples include human occupants and/or users of site, water resources (surface waters or groundwater), or structures.

1.2.6 For a risk to be present, there must be a relevant or viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

1.2.7 The following sections detail the iCSM which has been developed for the Bryncir works site with a view to assessing the potential risks and liabilities and constraints associated with the site in its current condition prior to any proposed redevelopment. Risks associated with the proposed works at the Bryncir works site have also been assessed based on a *commercial/industrial* category future land use scenario, including any potential sources of contamination, potential receptors and potential contaminant pathways identified during this desk-based assessment.

Sources of Potential Contamination

1.2.8 Based on the information obtained as part of the baseline for the ES **Volume 3, Chapter 7 Geology, Soils, Hydrogeology Land Use and Agriculture (Soils), Table 1-1** indicates the contaminants of potential concern (CoPC) that may be associated with the current and previous land use.

1.2.9 CoPC have been identified using National House Building Council, Environment Agency and the Chartered Institute of Environmental Health publication R&D 66 (NHBC/EA/CIEH, 2008), – 'Guidance for the safe development of housing on land affected by contamination', Volume 2 (Ref. 1.10) and professional judgment.

1.2.10 A historical smithy and corn mill were identified approximately 150 metres (m) and 20 m from the western spur. However, these have been discounted based on the time since present (1888 and 1949).

Table 1-1 – Potential Sources of Contamination

Potential sources	Description	CoPC
Agricultural Land	The Bryncir works site and surrounding area is agricultural land. With agricultural land, there is a potential for pesticides and herbicides to be used on the land, a potential for spills and leaks from machinery used, and potential burial of animal remains.	Metals and metalloids, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAH), pesticides and herbicides, sulphate, sulphide, ammoniacal nitrogen, pathogens.
Peat Deposits and Alluvium	Across the west of the Bryncir works site and within the surrounding area.	Potential low levels of ground gas – methane (CH_4) and carbon dioxide (CO_2).
Made Ground (on-site)	Associated with the B4411 road (traversing the Bryncir works site from north to south in the west)	Metals and metalloids, cyanides (total, free), SVOCs, VOCs, petroleum

Potential sources	Description	CoPC
	and pylons (in the northern-most extent of the northern spur, in the south-east of the site and off-site)	hydrocarbons (TPH), PAH, polychlorinated biphenyls (PCBs), pH and asbestos containing material (ACM) or asbestos. Potential low levels of ground gas – CH_4 and carbon dioxide CO_2.
Infilled Ground (Artificial Deposit) (mapped) and surface ground workings (off-site)	From 15 m to the west. Includes gravel pits, brit pits (detailed as ceased gravel pits), refuse heaps and a disused tip	Potential for metals and semi-metals; inorganics (sulphate, sulphide, asbestos, pH); organics (oil or fuel hydrocarbons), PAH, volatile and semi volatile organic compounds (VOC and SVOC). Potential ground gas – CH_4 and carbon dioxide CO_2.
Light industrial use associated with W H Evans (agricultural machinery and goods products)	Approximately 80 m west of the western spur of the site	Potential for metals and semi-metals; inorganics (sulphates, asbestos); organics (oil or fuel hydrocarbons, PAH).
Historical railway	85 m west at its closest point. Ran in a north-northeast to south-west direction	Potential for metals and semi-metals; inorganics (sulphate, asbestos); organics (PAH, chlorinated aliphatic hydrocarbons, PCB).

Potential Receptors

1.2.11 Potential receptors associated with the site are shown on Table 1-2.

Table 1-2 – Potential Receptors

Receptor group	Receptor	Description
Human Health	Construction Workers	Exposures experienced by construction workers are of short duration due to the limited period of exposure, although construction workers are more likely to encounter potential contaminants during the construction works when compared with personnel visiting the Bryncir works site after completion of the development.

Receptor group	Receptor	Description
	Site Workers (Maintenance Workers)	As the substation will typically be unmanned, future site users will bemaintenance workers undertaking routine maintenance works at and around the substation.
	Adjacent Site Users	Adjacent users include persons on agricultural land and agricultural buildings including farms (within 250 m from the Bryncir works site).
Controlled Waters	Superficial Aquifers	Secondary A aquifers associated with the Alluvium and Glaciofluvial Sheet Deposits; Secondary Undifferentiated aquifer associated with the Till; and Unproductive strata associated with Peat. All potentially present on-site.
	Bedrock Aquifers	Secondary B aquifers associated with the Llanbedrog Volcanic Group -Tuff and Sandstone (on-site) and Dwyfach Formation – Sandstone (on-site).
	Surface Waterbodies	The Afon Dwyfach river traverses the western area of the Bryncir works site from north to south. Numerous tributaries of this river are in the site and 250 m study area.
Property	Buildings & Infrastructure: Structures with enclosed spaces	Proposed buildings on-site. Drinking water pipes. Agricultural buildings (within 250 m from the Bryncir works site).
Ecology	Flora and Fauna	Flora and fauna in and surrounding the site could be affected by elevated concentrations of certain contaminants. There are wildlife sites and priority habitats in the works site and 250 m study area.
Livestock	Animals within nearby farms	Livestock in the area surrounding due to migration of contaminants.

Potential Pathways

1.2.12 Potential pathways associated with the proposed works are shown in **Table 1-3**.

Table 1-3 – Potential Pathways

Pathway group	Pathway	Description
Human Health	Ingestion of soil and soil-derived dust	Direct or indirect ingestion of soil and soil derived dust from on-site activities.

	Inhalation of dust - indoor and outdoor	Inhalation of soil derived dust, organic vapours or ground generated gas by indoor and outdoor receptors.
	Dermal contact - indoor and outdoor	Dermal contact with contaminated soils, soil derived dust by indoor and outdoor receptors.
	Vapour intrusion and inhalation – indoors and outdoors	Soil vapour migrating from the source to indoor and outdoor receptors through the underlying soils.
	Gas Ingress	Ground gas migrating from the source to indoor and outdoor receptors through the underlying soils.
Controlled Waters	Leaching and vertical migration through unsaturated zone	Rainfall infiltration can generate and mobilise soil derived leachate impacting on surface water and groundwater. If perched groundwater is present, there may also be vertical migration into deeper pathways.
	Lateral and vertical migration in groundwater	As well as being a receptor, aquifers allow transportation of contaminants through the permeable strata.
	Baseflow from groundwater to surface water	Surface waterbodies are in the Bryncir works site. Due to the proximity of these waterbodies, connectivity through baseflow on-site is likely.
	Direct run-off	Surface spills could migrate via surface run-off to on-site surface water bodies and drainage on-site and off-site.
Property	Gas intrusion – explosion.	Ground gas migrating from the source to off-site property receptors.
	Corrosion of concrete or permeation of water pipes	Direct contact with aggressive ground conditions.
Ecology: Flora and Fauna	Direct contact with contaminants in soil or water or indirect contact due to dust	Direct or indirect contact with contaminants on-site or migration of contaminants off-site.
Agricultural: Livestock	Direct contact with contaminants in soil or water or indirect contact due to dust.	Direct or indirect contact with contaminants due to migration off-site.

2. Risk Assessment Principles

2.1.1 Current best practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance 'LCRM' (Ref 1.8) and the Welsh Government's Contaminated Land Statutory Guideline (Ref 2.1).

2.1.2 For a risk to be present, there must be a viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

2.1.3 Assessments of risks associated with each of these contaminant linkages are discussed in the following sections.

2.1.4 Using criteria broadly based on those presented in the CIRIA C552 (Ref 2.2), the magnitude of the risk associated with potential contamination at the Bryncir works site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity); and
- The magnitude of probability (i.e. likelihood).

2.1.5 The severity of the risk is classified according to the criteria in **Table 2-1**

Table 2-1– Description of Consequence

Consequence	Definition	Examples (as defined by C552)
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by Environmental Protection Act 1990, Part IIA. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings \ property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definitions of ecological systems Within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR 2000). Pollution of sensitive water resources (note: Water Resources Act contains no for considering significance of pollution). A significant change in a particular ecosystem, or	Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria.

Consequence	Definition	Examples (as defined by C552)
	organism forming part of such ecosystem. (note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings, structures, /services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, Structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

2.1.6 The probability of the risk occurring is classified according to the criteria in **Table 2-2**.

Table 2-2 – Probability of Risk Occurrence

Probability	Definition	Examples
High	There is a pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.	The contaminant linkage exists or is very likely to exist in the short term, and/or may also be linked to visual and/or olfactory evidence of that linkage being present and active in some cases. The conditions are such that there is no foreseeable reason to suggest that a source-pathway-receptor linkage is not occurring and required mediums for a contamination source to pass through and/or within to reach a receptor are all present.
Likely	There is a pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur.	The conditions are such that there are very few foreseeable reasons to suggest that a source-pathway-receptor linkage is not occurring, and that all or most of the required

	Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	mediums for a contamination source to pass through and/or within to each a receptor are present.
Low	There is a pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.	The source, pathway and receptor linkage may exist and it is possible that contamination could reach a receptor in certain circumstances. The site conditions indicate that there are limiting factors in the pathway mediums/generation potential of the source or presence of the receptor.
Unlikely	There is a pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.	The source, pathway and receptor may exist in certain circumstances, but the contaminant linkage is improbable in the short term and in the long term.

2.1.7 An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in **Table 2-3**.

Table 2-3 – Risk based on Comparison of Probability and Consequence

		Consequence			
		SEVERE	**MEDIUM**	**MILD**	**MINOR**
Probability	**HIGH**	Very High	High	Moderate	Low
	LIKELY	High	Moderate	Moderate/Low	Low
	LOW	Moderate	Moderate/Low	Low	Very Low
	UNLIKELY	Moderate/Low	Low	Very Low	Very Low

2.2 Preliminary Risk Assessment

2.2.1 An evaluation of the potential risks associated with the identified sources at the Bryncir works site to the various receptors is presented in **Table 2-4** and discussed in **Table 2-5**. The level of risk is determined based on the current condition of the Bryncir works site, i.e., the effects of mitigation measures such as soil or groundwater treatment are not included but the level of risk takes into account the nature of the proposed works at the Bryncir works site.

Table 2-4. Contaminant Linkage Preliminary Risk Assessment

Source	Receptor		Pathway	Probability	Consequence	Risk
On-Site Contamination Sources: Made Ground Agricultural Land Alluvium and Peat	Human Health – on-site	Site Workers and Visitors (including Maintenance Workers)	Ingestion of soil and soil-derived dust, Dermal contact - indoor and outdoor	Unlikely	Medium	Low
			Inhalation of dust - indoor and outdoor	Unlikely	Medium	Low
			Vapour intrusion and inhalation – indoors and outdoors	Unlikely	Medium	Low
			Gas ingress	Unlikely	Medium	Low
		Construction Workers	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water. Inhalation of ground gas and contaminants in soil-derived dust	Low	Medium	Moderate/ Low
	Human Health – off-site	Adjacent Site Users	Inhalation of contaminants in soil, soil-derived dust, fibres and volatile vapours.	Unlikely	Medium	Low
	Controlled Waters	Secondary Undifferentiated Aquifer, Secondary A Aquifer, Secondary B Aquifer	Leaching and vertical migration through unsaturated zone	Low	Medium	Moderate/Low
			Vertical migration in groundwater	Unlikely	Medium	Low
		Secondary Undifferentiated	Lateral migration in groundwater	Low	Medium	Moderate/Low

Source	Receptor		Pathway	Probability	Consequence	Risk
		Aquifer, Secondary A Aquifer, Secondary B Aquifer				
		Surface Waterbodies	Baseflow from groundwater to surface water	Low	Medium	Moderate/Low
			Direct run-off	Low	Medium	Moderate/Low
	Built Environment	Property: Buildings & Infrastructure: Structures with enclosed spaces	Gas intrusion – explosion	Low	Mild	Low
		Existing and future structures, Public Water Supply	Direct contact of contaminants in soil and/or groundwater	Low	Medium	Moderate/Low
	Ecology	Flora and Fauna	Direct or indirect contact of contaminants in soil and/or groundwater	Low	Mild	Low
	Livestock	Animals within nearby farms	Direct or indirect contact with contaminants	Low	Minor	Very Low
Off-site Contamination Sources	Human Health – on-site	Site Workers and Visitors (including Maintenance Workers)	Human Health – On-site	Unlikely	Medium	Low

Source	Receptor		Pathway	Probability	Consequence	Risk
		Construction Workers	Dermal contact with and ingestion of contaminants in soil, soil-derived dust and water. Inhalation of ground gas and contaminants in soil-derived dust	Low	Medium	Moderate/Low
	Controlled Waters	Secondary Undifferentiated Aquifer, Secondary A Aquifer, Secondary B Aquifer	Leaching, vertical and lateral migration in groundwater	Low	Medium	Moderate/Low
	Built Environment	Property: Buildings & Infrastructure: Structures with enclosed spaces	Gas intrusion – explosion	Low	Mild	Low
		Existing and future structures, Public Water Supply	Direct contact of contaminants in soil and/or groundwater	Unlikely	Medium	Low

Table 2-5. Identified Risk to Receptors

Receptor	Discussion
Human Health: Site Workers and Visitors (including Maintenance Workers)	Limited potential sources of contamination have been identified associated with potential Made Ground and agricultural land use. The risk to future site users such is low as site workers undertaking maintenance are not likely to come into contact with soil contaminants. No potentially significant sources of ground gases or vapours have been identified on-site, although there is an area of surface ground workings or former underground mining west of the Bryncir works site: these are approximately 700 m west of the main area of the proposed Bryncir substation. Site visitors would make infrequent visits of short duration. If maintenance works involving excavations are required, risks will be similar to construction workers.
Human Health: Adjacent Site Users	There are limited adjacent site users due to the rural location of the Bryncir works site. The adjacent land uses include occasional residential houses (including farms) and farmland where farmers could be working outdoors. It is unlikely that adjacent site users would be impacted by contaminants at the Bryncir works site. The construction works will be managed in accordance with Construction Design and Management (CDM) 2015 regulations (Ref 2.3) and mitigation measures would be implemented if required to mitigate dust and/or run-off for example, 'Environmental Good Practice on Site Guide', CIRIA Publication C811 (Ref 2.4) to reduce this risk.
Human Health: Construction Workers	There is a potential risk to workers of exposure to contaminants in soil or shallow groundwater during ground-based works such as excavations and stockpiling based on the limited historical and current land uses identified at the Bryncir works site. The proposed development works will be undertaken in compliance with CDM 2015 regulations (Ref 2.3). Prior to work commencing, a health and safety risk assessment will need to be carried out by the appointed Principal Contractor/developed in accordance with current health and safety regulations. This assessment should cover potential risks to construction and maintenance staff. Based on the findings of this risk assessment, appropriate mitigation measures would be implemented during construction and maintenance works, including following general best practice, for example 'Environmental Good Practice on Site Guide', CIRIA Publication C811 (Ref 2.4) to mitigate dust or run-off. Potential risk from ground gas in confined spaces, including excavations. Should gross or unexpected contamination be identified during excavations, it should be possible to effectively manage this through good health and safety practices and protocols such as a provision of a discovery strategy.
Controlled Waters: Secondary	The Alluvium and Glaciofluvial Sheet Deposits are classified as Secondary A aquifers and are present across the majority of the

Receptor	Discussion
Undifferentiated Aquifer	Bryncir works site. Till is potentially present beneath (Secondary undifferentiated aquifer).
Secondary A Aquifer Secondary B Aquifer	The Llanbedrog Volcanic Group - Tuff and Sandstone and Dwyfach Formation – Sandstone bedrock formations underly the Bryncir works site and surrounding area. This comprises sandstone and tuff and are classified as Secondary B aquifers. The presence of Till is likely to limit the potential for vertical migration of contaminants towards the bedrock. Private Water Supply (PWS) abstractions including residential and commercial or industrial have been identified within 1 km of the Bryncir works site but the stratum from which water is being abstracted is unknown. The potential for contaminants arising from the Bryncir works site impacting water quality at these abstractions is considered low.
Controlled Waters: Surface Water	The risk from potential contaminants in Made Ground, natural soils, groundwater and leachate at the site to the Afon Dwyfach river and associated tributaries is moderate or low. Mitigation should be implemented during construction works to ensure run-off during excavations and stockpiling does not impact water quality.
Property: Buildings & Infrastructure: Buried concrete, drinking water pipes, structures	Potential for aggressive ground conditions to be present associated with Made Ground or superficial deposits at the Bryncir works site which could require mitigation for buried concrete. Potential for contamination associated with the Made Ground could impact buried drinking water pipes. No potentially significant sources of ground gas have been identified within 250 m of the Bryncir works site other than the area of surface ground workings/former underground mining west of the Bryncir works site: these are approximately 700 m west of the main area of the proposed Bryncir substation.
Ecology: Flora and Fauna, Livestock	The surrounding area comprises predominantly agricultural uses. There are wildlife sites and priority habitats in the Bryncir works site and 250 m study area. The potential for contamination to impact on flora and fauna on the Bryncir works site or surrounding area is low. There is also a low potential for contaminants at the Bryncir works site impacting on nearby livestock.

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3.8.A. Bryncir Flood Consequence Assessment

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1. Introduction

1.1 Commission

1.1.1 WSP UK Ltd (WSP) has been commissioned by National Grid Electricity Transmission (NGET), the Client to undertake a Flood Consequences Assessment (FCA) in support of the planning application for the Bryncir substation as part of the Pentir to Trawsfynydd Reinforcement Project.

1.1.2 The proposed works includes the construction of a substation and associated landscaping and drainage. Bryncir substation retains an extant consent for development for a different design which was secured under a previous application.

1.1.3 This FCA focuses on the flood risk at the proposed development and includes the following:

- Assessment of the consequences of flooding at the site and to the proposed development and the potential impact of the development proposals on flooding elsewhere;
- Identification of all the potential sources of flooding at the sites (i.e. fluvial, tidal, highways, groundwater, reservoir, sewers, canal and surface water); and
- Consideration of the flood consequence implications, taking into account an allowance for climate change over the lifetime of the development and the identification of the areas requiring flood risk mitigation measures, where applicable.

1.2 Policy Content

1.2.1 This FCA has been prepared in accordance with the relevant national, regional and local requirements and guidance of the following publications and organisations, where applicable:

- Planning Policy Wales (PPW - Edition 12, February 2024) issued by Welsh Government (Ref 8.1)
- Technical Advisory Note (TAN) 15: Development and Flood Risk dated March 2025 issued by The Welsh Government (Ref 8.2)
- Flood map for planning, issued by Natural Resources Wales (Ref 8.3).
- Climate Change Allowance Guidance issued by the Welsh Government (Ref 8.4)
- Gwynedd Council.
- Building Regulations 2010 (Part H3) (Ref 8.5)
- Sewers for Adoption 7th Edition (Ref 8.6)

1.2.2 To further inform this FCA, the following stakeholders have been consulted:

- Natural Resources Wales (NRW).

1.2.3 PPW (Ref 8.1) and TAN15 (Ref 8.2) set out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

1.2.4 For this site, the key aspects that require the assessment are:

- The construction of Bryncir Substation,

1.2.5 The NRW Flood Map for Planning shows that the site lies outside fluvial Flood Zones 2 and 3, tidal Flood Zone 2 and 3 but lies within areas of Flood Zones 2 and 3 associated with Surface Water and Small Watercourses.

1.2.6 Flood risk attributed to the site in this FCA will be informed by the Flood Map for Planning (FMFP) (Ref 8.3) as per TAN15 (2025) (Ref 8.2).

1.3 Assumptions and Limitations

1.3.1 The conclusions of this FCA are based on current flood risk and available site information accessed at the time of drafting for the current design proposals.

1.3.2 This assessment has been undertaken under the guidance of TAN15 (2025).

1.3.3 The surface water management and drainage proposals from the proposed development are outside of the scope of this FCA report.

1.3.4 The conclusions of this report are based on the data gathered for the purposes of the report and are therefore limited in their accuracy in proportion to the validity of the dataset. The data gathered has been based on an agreed scope of works. WSP cannot guarantee that the data used is the best available at the time of the report, but it is the best available data that could be gathered on the agreed scope of works.

2. Background

2.1 Site Location

2.1.1 The proposed development is in two rural fields approximately 1 kilometre (km) south of the settlement of Bryncir, adjacent to the existing 400 kilovolt (kV) and 132 kV overhead lines at approximate Grid Reference SH 48601 42961 (E: 248601, N: 342961). Bryncir Substation will be accessed by the highway, A487, to the north of the site.

2.2 Proposed Development

2.2.1 The proposals include the construction of a new substation totalling approximately 27,500 square metres (m^2) and associated access and landtake. A different design of the substation has an extant consent at the location.

2.2.2 The proposed Finished Flood Levels (FFLs) are to be raised above the pluvial flood levels.

2.2.3 A drawing of the proposed works is in ES **Volume 3: Bryncir, Figure 3.2.2**.

2.3 Site Setting

2.3.1 The Proposed Development is bordered to the south by the village of Glan-Dwyfach and Garndolbenmaen and north by the village of Rhoslan.

2.3.2 The overall site is bordered by the following:

- North: The A487 and village of Glan-Dwyfach and Garndolbenmaen;
- East: Existing farms, the Afon Dwyfar;
- South: Existing farms, hotels and the village of Rhoslan and the Afon Dwyfach; and
- West: The B4411, Afon Dwyfach and existing farms.

2.3.3 **Figure 2-1** offers a visualisation of the Site:

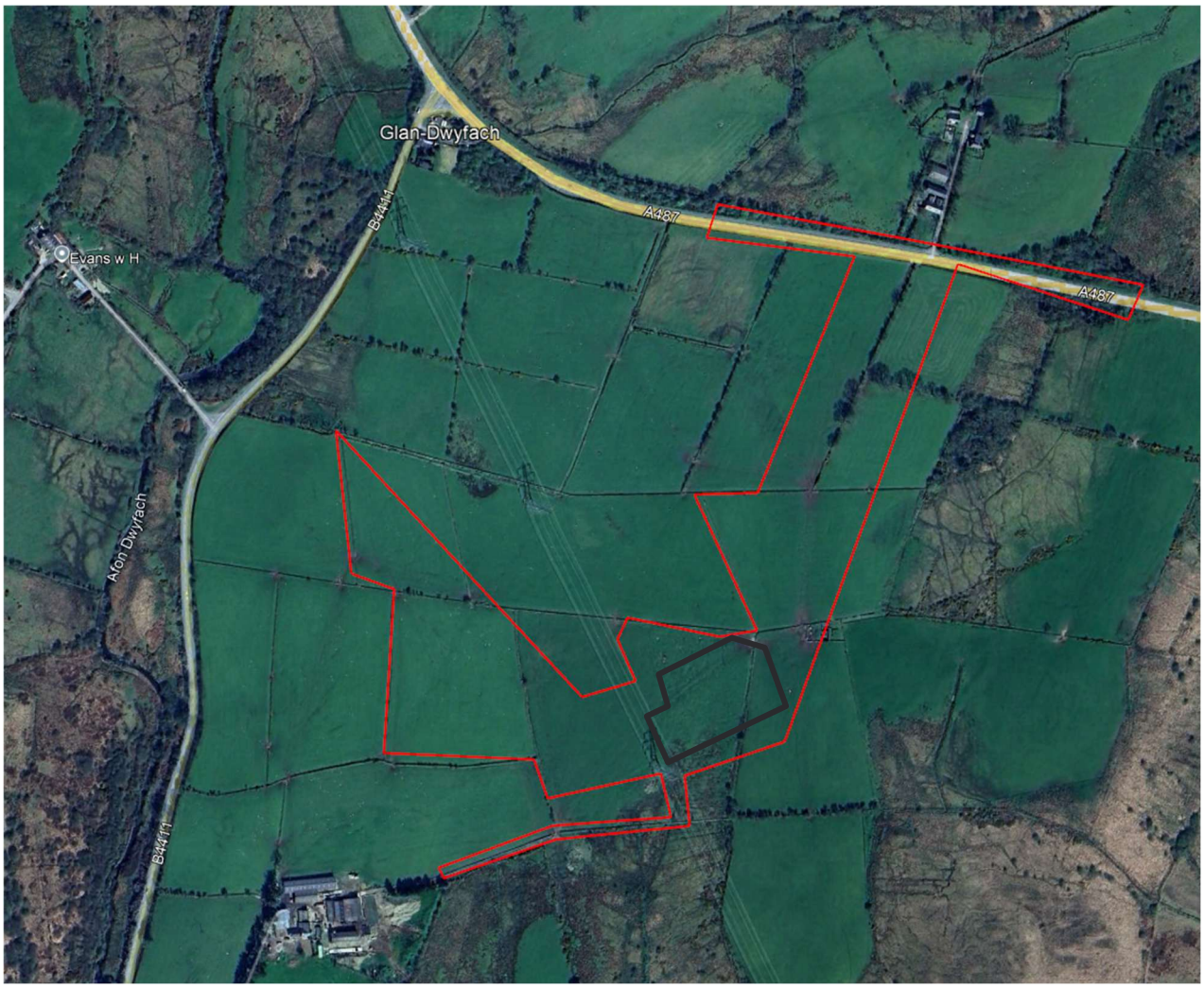


Figure 2-1 - Bryncir Substation Red Line Boundary and Substation Location Plan (black line)

2.4 Topography

2.4.1 A topographical survey was not available. LiDAR data was used to determine the elevation of the site and highlights the following:

- Ground levels are generally flat with a gentle slope across the site falling across the site from a high point north of the proposed development in a westerly, easterly and southerly direction;
- The ground levels at the high point of the site are shown as approximately 94 metres (m) above ordnance datum (AOD);
- Levels fall in a southerly direction from the high point to ca. 93 m AOD throughout the site.
- The topographic survey highlights minimal level changes in the vicinity of the proposed development.
- **Figure 2-2** shows the LiDAR elevation dataset for the site and the immediate surrounding areas.
- Levels in the wider area typically fall to the east, west and south from higher ground to the north.

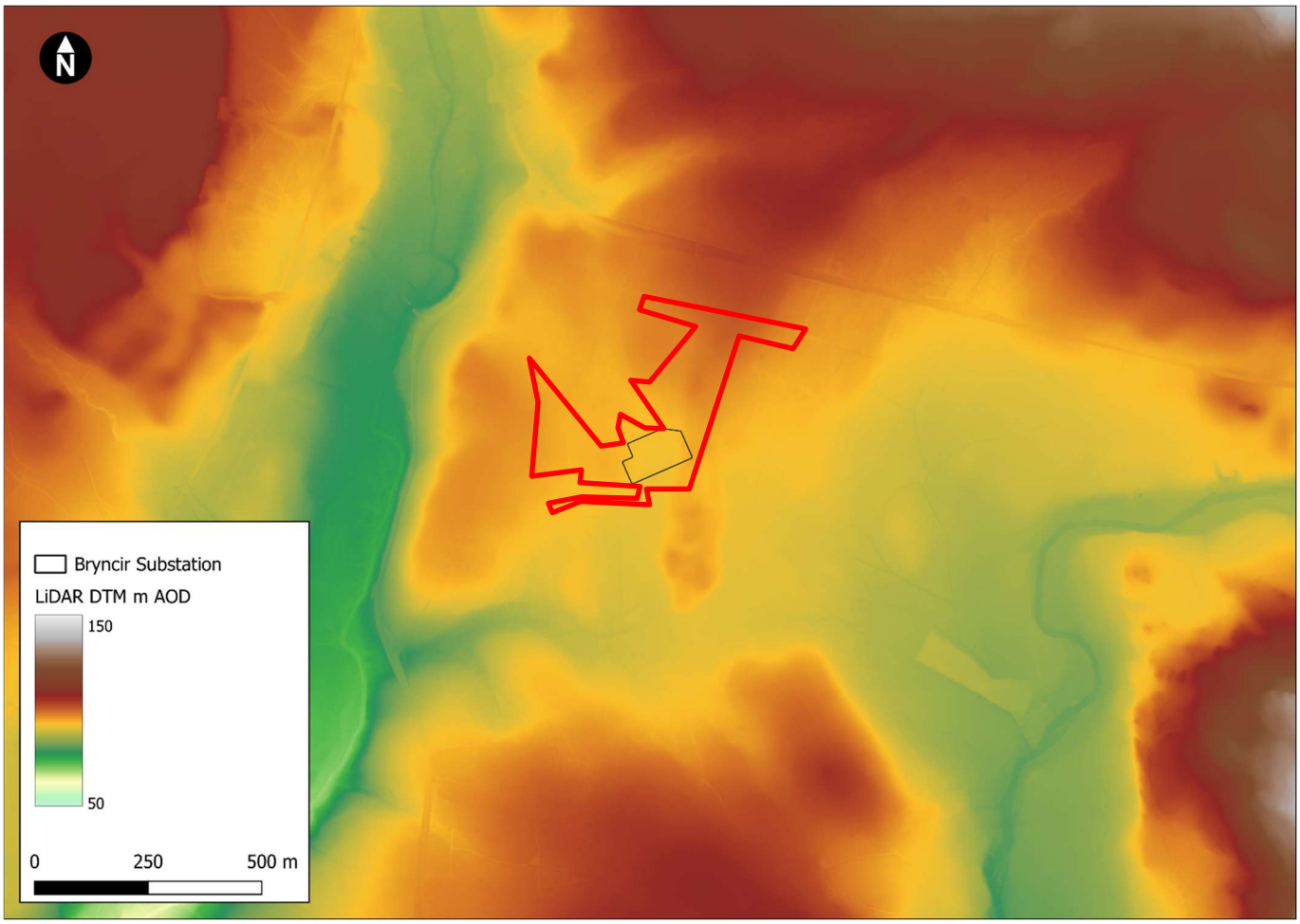


Figure 2-2 - Natural Resource Wales 1 m LiDAR DTM Topography

2.5 Hydrology

2.5.1 There are several mapped or surveyed watercourses or culverts present in the proposed development boundary.

2.5.2 The Afon Dwyfach is an NRW Main River and in the Bryncir Works Site area. The watercourse will be crossed via overhead lines (information included in the supporting ES chapter (**Volume 3: Bryncir**)), with new trident poles approximately 65 m to 70 m from the right and left banktops. There are a number of other watercourses that run through the proposed development boundary and to the south of the site which discharge into the Afon Dwyfach on its eastern bank.

2.5.3 The Afon Dwyfar, an NRW Main River, and is approximately 800 m south-east of the Bryncir Works Site. There is no proposed works crossing in or near the watercourse. The Afon Dwyfach flows in a general southern alignment. The Afon Dwyfach converges with the Afon Dwyfar approximately 5 km south-west of the site. The Afon Dwyfar eventually discharges into the Irish Sea.

2.5.4 There are no notable ponds, lakes, canals or other surface waterbodies in the Study Area. The closest watercourse to the site is the Afon Dwyfach, which is designated a 'Main River' by NRW and is approximately 450 m to the west of the proposed substation development.

2.5.5 There are also a number of other watercourses to the east of the site which discharge into the Afon Dwyfar on its western bank.

2.5.6 Ordnance Survey (OS) mapping shows no presence wells or springs in or near the site.

2.6 Geology and Hydrogeology

2.6.1 A review of the available geological and hydrogeological data from the British Geological Survey (BGS, 2025) is summarised in **Table 2-1** below:

Table 2-1 - Available geological and hydrogeological data (BGS)

Geology	Geological Description	Source
Bedrock Geology	Dwyfach Formation - Mudstone, siltstone and sandstone; Llanbedrog Volcanic Group - Tuff and sandstone; Nod Glas Formation - Mudstone.	BGS (2025)
Superficial Geology	Glaciofluvial sheet deposits, Devensian.	BGS (2025)
Aquifer vulnerability	Secondary aquifer with low vulnerability.	BGS (2025)
Borehole Records	Borehole SH33SE6 and SH44SE19 are mapped in the substation boundary at depths of over 10 m however the existing ground level is not referenced.	BGS (2025)
Soil Type	Freely draining slightly acid loamy soils.	Cranfield University Soilscapes (2025)

2.7 Existing Drainage Infrastructure

2.7.1 No private drainage plans have currently been received for the site. Further information on the existing drainage would support the assessment of the local flood risk however this is not considered to the be the overriding flood risk in the area. The production of a suitable drainage strategy (outside the scope of this report) is being provided with the application

3. Definition of Flood Hazard

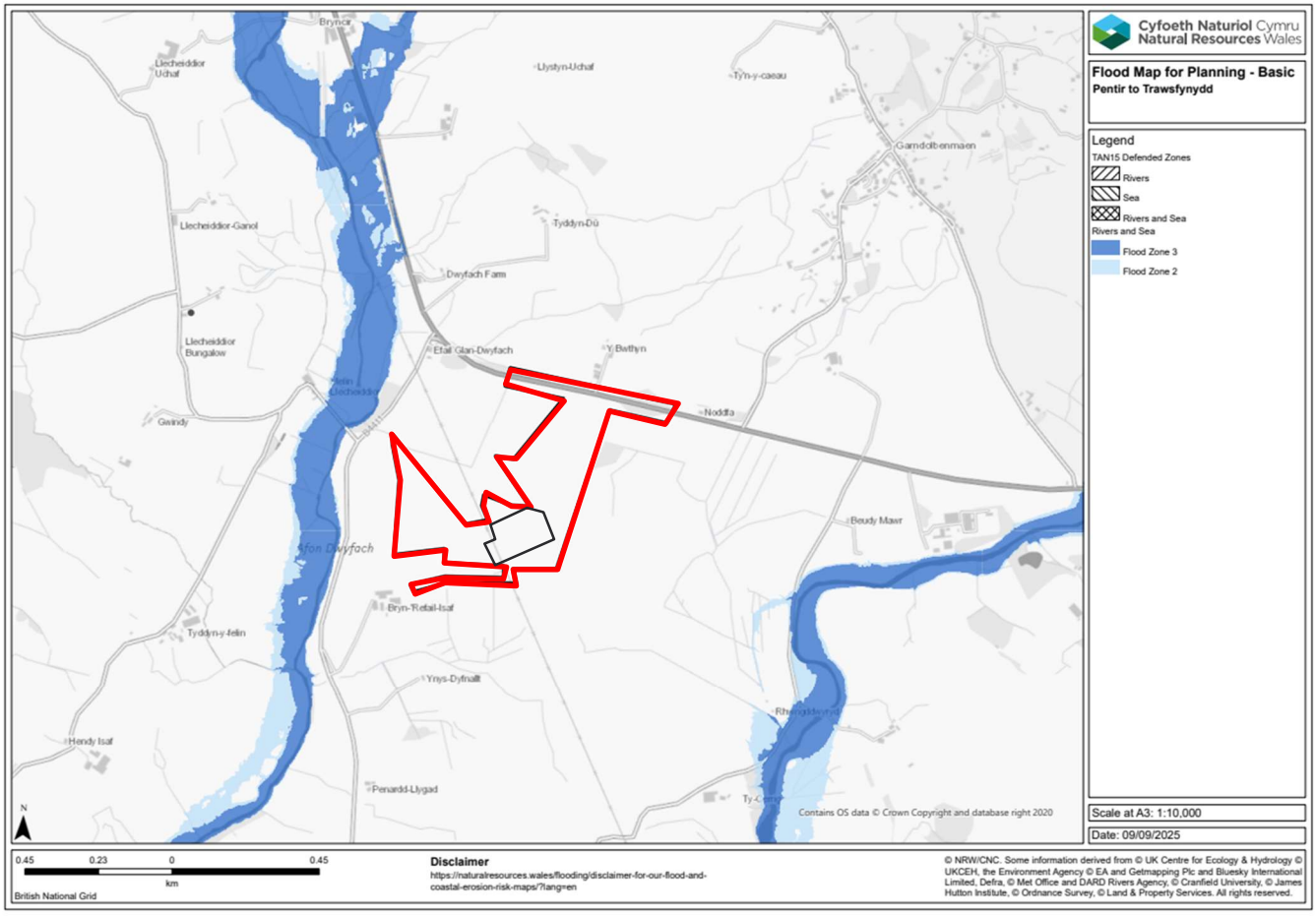
3.1 Overview

3.1.1 This section provides an overview of the present-day baseline flood risk at the site and surrounding areas including climate change allowances.

3.1.2 This assessment considers flood risk profile, sources and mechanisms of flooding during the current day scenario and taking into account climate change information where available.

3.1.3 According to the Flood Map for Planning (**Figure 3-1**), the proposed development is in fluvial Flood Zone 1.

Figure 3-1 - Flood Map for Planning (accessed July 2025)



3.2 Flooding History

3.2.1 NRW mapping shows that no records of flooding in the proposed works site or nearby.

3.3 Flood Defences

3.3.1 There are no mapped flood defences benefitting the site. There are mapped flood defences (noted on the Flood Map for Planning) approximately 7 km to the south-east of the site offering protection to Porthmadog.

3.4 Fluvial Flooding

3.4.1 Fluvial flooding occurs when flows exceed the capacity of the watercourse, such as rivers, causing out of bank flows.

3.4.2 The Flood Map for Planning contains the best available information with respect to flooding. The Flood Map for Planning categorises fluvial flood risk as follows and includes an allowance for climate change:

- Flood Zone 1 (FZ1) (Low Probability) – Land assessed as having less than a 1 in 1,000 (plus climate change) annual probability of flooding from rivers or the sea (<0.1%);
- Flood Zone 2 (FZ2) (Medium Probability) – Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% - 0.1%), or between a 1 in 200 and 1 in 1,000 annual probabilities of coastal flooding (0.5% - 0.1%);
- Flood Zone 3 (FZ3) (High Probability) – Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%); and

3.4.3 As shown in **Figure 3-1**, the site of the proposed development is in fluvial Flood Zone 1.

3.5 Tidal Flooding

3.5.1 The Flood Map for Planning shows that the site is not mapped to be at risk from this source. Based on the mapped tidal extents and the site topography, the risk from this source is low.

3.6 Surface Water and Small Watercourses Flood Risk

3.6.1 Surface water flooding occurs because rainwater is unable to drain away through the normal drainage systems or infiltrate into the ground. It lies on or flows over the ground instead. NRW define “High”, “Medium”, and “Low” surface water flood risk as:

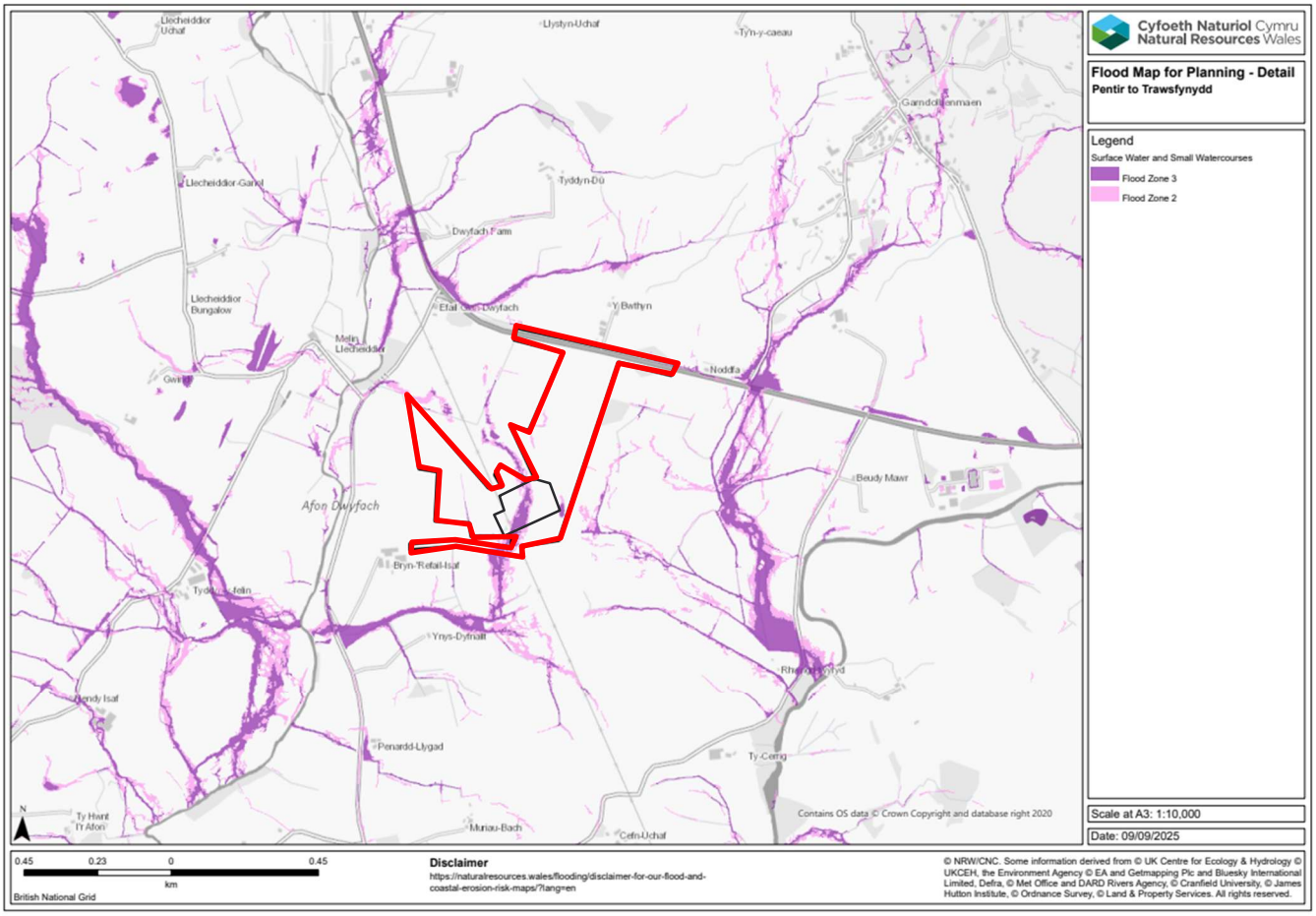
- “Low” risk means that each year, the area has a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%);
- “Medium” risk means that each year, the area has a chance of flooding between 1 in 100 (1%) and 1 in 30 (3.3%); and
- “High” risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%).

3.6.2 According to NRW’s Flood Map for Planning (Surface Water & Small Watercourses) (Error! Reference source not found.), the proposed development is in an area predicted to be at risk from this source. There are mapped flow paths (pluvial Flood Zone 2 and 3) through the centre of the boundary and these flow paths interact with the area outlined

for the development. The flow paths flow from the areas of high ground to the north, with the flow path in the vicinity of the A487, B4411, ultimately converging with the Afon Dwyfach tributary.

3.6.3 The risk of flooding from surface water and small watercourses to the proposed development ranges from low to high.

Figure 3-2 NRW's Surface Water and Small Watercourses Mapping



3.7 Groundwater Flood Risk

3.7.1 A review of the BGS (2025) mapping shows that the bedrock geology beneath the site is underlain by a superficial deposit layer of Glaciofluvial sheet deposits, Devensian., which typically are highly permeable. Glaciofluvial deposits may support groundwater movement to the surface. Secondary aquifers hold moderate amounts of groundwater and low vulnerability indicates that the movement of water is impeded.

3.7.2 No water strikes or groundwater seepage was referenced in the borehole mapped on site, and there are no wells or springs in the local vicinity suggesting no areas of groundwater in the local area.

3.7.3 Groundwater flooding tends to occur in low-lying areas and as a result, basements of residential housing are usually impacted. Based on the available data and development proposals (raised FFLs) it is unlikely that groundwater flooding would impact the site.

The assessment of Groundwater Risk should be revisited should site investigation provide further information on groundwater levels/emergence.

3.7.4 Based on the location, design and the existing nature of the site the risk of groundwater flooding has been preliminary assessed as medium and further information should be considered with respect to onsite investigation.

3.8 Sewer Flooding

3.8.1 No sewer plans have been received for the area. Based on the intended nature of the scheme it has been assumed that the risk of sewer flooding to the site is “Low” until such a time when the data is available. The risk of sewer flooding to the proposed development has been assessed to be low.

3.9 Highway Flooding

3.9.1 The B4411 to the west of the site runs at a lower elevation, so does not pose a risk to the site.

3.9.2 The A487 to the north of the site runs at a higher elevation, falling from the east. No plans of the highway drainage system have been obtained, and the maintenance programme is unknown. Based on the gradient of the highway falling to the north-west, any exceedance of the highway drainage system would likely be retained in the carriageway.

3.9.3 From the above, the risk of flooding to the site from highways has been assessed to be low.

3.10 Artificial Sources of Flooding

Reservoirs

3.10.1 Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures.

3.10.2 Reservoir flooding is also extremely unlikely, with reservoirs managed under the Reservoirs Act 1975.

3.10.3 The NRW’s reservoir flood risk maps indicate the reservoir flood risk in the area is confined to the Afon Dwyfar corridor connecting to the Cwmystradllyn reservoir approximately 1 km to the east of the site and does not impact the area in the immediate vicinity of the proposed development. As there are no direct flow paths or overland flooding in the immediate area, the flood risk from reservoirs is assessed to be low.

Canals

3.10.4 The site is not within the proximity of any canals and the risk of canal flooding to the proposed development is negligible.

3.11 Summary

3.11.1 **Table 3-1** summarises the findings of the assessment. It should be noted that the designation of risk outlined below is prior to the inclusion of any mitigation measures, which may subsequently act to reduce the risk.

Table 3-1 - Summary of flood risk to the Site resulting from various sources prior to mitigation measures

Source		Risk
Fluvial		Low
Tidal		Low
Surface Water		Low - High
Groundwater		Medium
Sewer		Low
Highways		Low
Artificial Sources	Reservoir	Low
	Canal	Negligible

4. Requirements of Technical Advice Note 15 (2025)

4.1 Overview

4.1.1 This report assesses the suitability of the proposed development against the requirements of the 2025 edition of Technical Advice Note 15 (TAN15), more detail on the revised TAN15 is included in **Appendix A**. This section outlines the risks identified in the report and explains the steps required for the development to comply with current legislation.

4.1.2 According to the Flood Map for Planning the site is in fluvial Flood Zone 1 and in pluvial Flood Zone 2 and 3.

4.1.3 The proposed development being utilities infrastructure is classified as 'Less Vulnerable' under TAN 15. According to Section 10 of TAN15, Less Vulnerable developments are conditionally acceptable in or on greenfield sites in Zone 3 whereas all developments are generally permissible in fluvial Flood Zone 1/2. The proposed development is entirely in fluvial Flood Zone 1 which is therefore deemed acceptable.

4.2 Fluvial Flooding

4.2.1 The site lies outside of the mapped fluvial flood zones for the 1%, 1% +30%CC AEP events and predominantly outside the mapped 0.1% AEP events.

4.3 Tidal Flooding

4.3.1 The site is not shown to be impacted by the tidal flood extents.

4.4 Surface Water and Small Watercourses Flood Risk

4.4.1 As identified in **Section 3.6**, the proposed development is outlined to be at risk from surface water and small watercourses.

4.4.2 Details on any drainage network have not been provided, though any new/updated drainage network should be designed in line with the latest guidance and regulations to prevent any surface water flood risk on site or elsewhere.

4.5 Access, Egress and Evacuation

4.5.1 The substation (once operational) will primarily be an unmanned substation. Due to the location of the development, safe access and egress will be available to the west and east of the substation.

4.6 Flood Compensation

4.6.1 The site lies outside of the fluvial and tidal (1% AEP and 0.5% AEP) flood extents. There is unlikely to be a loss of floodplain following the proposed development and the displacement of flood water is also unlikely; it is not expected to pose a detriment to the current situation, nor require compensation.

4.7 Awareness of Flood Risk

4.7.1 The site is less than 1 km from two areas for which NRW issue flood alerts and flood warnings (River Dwyfach and River Dwyfar at North Gwynedd). The exact period of advance warning notwithstanding, notice should be available prior to an extreme event and a Flood Action Plan can be developed to manage safe refuge/evacuation and reoccupation. Awareness of flood risk can be addressed in the Flood Action Plan and can include emergency notices posted next to fire notices to be accessible to all site users, inducting new employees and practice drills. Those responsible for the site and all site users should be encouraged to sign up to NRW's flood line service (0345 988 1188).

4.8 Groundwater

4.8.1 Based on the location, design and the existing nature of the site the risk of groundwater flooding has been preliminary assessed as medium. The development platform will be raised above the existing ground levels to accommodate for the overland flow in the area and groundwater is unlikely to impact on the development.

4.9 Reservoir, Sewer, Highways and Artificial Sources Flood Risk

4.9.1 As noted in **Sections 3.7 - 3.9**, the risk of flooding from these sources is low - negligible.

4.10 Tan 15 Acceptability & Development Advice

4.10.1 The development will be in fluvial Flood Zone 1. This section of the report has been included for completeness based on the pluvial Flood Zone 2 and 3 in the centre of the development and outlines and discusses the Acceptability of Consequences and Development Advice as set out in TAN15.

4.10.2 Section 11 of TAN15 outlines the acceptability of consequences particularly within sections 11.4 and 11.5:

4.10.3 Under Section 11.4 of TAN15 the following points are noted:

- No increase in flooding elsewhere
- Occupiers aware of flood risk
- Escape/evacuation routes present
- Flood emergency plans and procedures agreed and in place
- Flood resistant and resilient design

- Acceptable consequences for type of use.

4.10.4 This report provides sufficient information on access and flood warnings for these acceptability criteria to be understood.

4.10.5 Section 11.5 of TAN15 notes that if required, mitigation measures should be incorporated into the design to make it as safe as possible and that there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the Proposed Development on flood risk generally; and
- Minimal disruption to natural heritage.

4.10.6 This report sets out the risks as currently understood and makes a clear number of recommendations in **Section 5** below to further mitigate this residual risk.

4.10.7 This report provides sufficient information for these acceptability criteria to be addressed.

5. Mitigation Measures

5.1.1 This section of the report outlines the mitigation measures, noting that some are for consideration to further reduce flood risk and consequences whilst others should be undertaken to ensure compliance.

- Finished floor levels should be raised such that they remain dry in the design event (1% AEP) and such that the maximum predicted depths in the extreme (0.1%AEP) event are less than 600 mm.
- A drainage strategy is to be provided. This may involve site design and landscaping features to redirect surface water flows away from key electrical infrastructure. This would also include the implementation of site drainage in the form of SuDS to facilitate the removal of surface water.
- NGET TS 2.10.13 sets out the approach to Flood Risk Assessment and resilience which is highly conservative with our design standard being the 1 in 1000 plus an allowance for the predicted impacts of climate change.
- The infrastructure is typically unstaffed and any risks to people or the water environment can be appropriately managed.
- Waterproof seals, and cable entry protections can reduce the risk of water ingress into electrical equipment. Electrical equipment can also be stored in elevated enclosures that are waterproofed.

6. Conclusions

6.1 Summary of Flood Risk

6.1.1 According to the NRW mapping and model outputs, the proposed development area lies outside the fluvial/coastal 0.1% AEP, 1% AEP and 1% AEP + 30% climate change event extents.

6.1.2 The risk of surface water flooding has been assessed as low to high.

6.1.3 The risk of groundwater flooding has currently been assessed as medium (based on available data).

6.1.4 The risk of flooding to the site from reservoirs, canals, sewers and highways is negligible to low.

6.2 Compliance with TAN15

6.2.1 The following section summarises the key requirements of TAN15 and how the proposed development complies with them for its intended use, vulnerability class and design life:

- **Flood resistant/resilient design**: As noted, finished floor levels should be raised such that they remain dry in the design event (0.1% AEP, 2% AEP and 1% AEP climate change). FFLs should be set above the pluvial flood levels.
- **Loss of floodplain**: As the site and the proposals lie outside of the mapped fluvial 0.1% AEP, 1% AEP and 1% AEP + climate change flood extents, there will be no additional loss of floodplain as a result of the site location.
- **No increase in flood risk elsewhere**: Given that there will be no loss of floodplain and the implementation of new surface water drainage systems in compliance with the relevant SAB requirements, there is unlikely to be an increase in flood risk elsewhere.
- **Acceptable consequences for type of use**: The development category for the site is 'Less Vulnerable' as it is classed as utilities infrastructure. In accordance with TAN 15, this would be suitable in fluvial Flood Zone 1. **Table 3-1** highlights that the site has a 'high' risk of pluvial flooding, 'medium' risk of groundwater flooding and a 'low' or 'negligible' risk of fluvial flooding. This in conjunction with safe access and egress results in the consequences therefore acceptable for the nature of use.
- **Flood emergency plans in place**: As noted, a site-specific Flood Action Plan should be developed. This should include clear responsibilities and chain of command including procedures for confirming actions and coping with absences. It should give due consideration to evacuation and safe reoccupation. It is suggested that warning notices should describe the flood risk and any access constraints. The client should sign up to local flood alerts (if they haven't already).
- **Escape/evacuation route present**: There is continuous safe and dry access and egress to the north, west, east and south of the site with finished flood levels proposed to be raised above the pluvial flood levels.

- **Justifiable/acceptable development**: the risk of flooding consequences to the development is acceptable based on the provided information so long as the development is raised above the finished floor levels.

6.2.2 Overall, the substation would be compliant with the requirements of TAN15 (2025) over the proposed design life.

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Ref. 8.3 – Natural Resources Wales (2025). Flood map for planning. (Online). Available at: https://naturalresources.wales/flooding/flood-map-for-planning/?lang=en. Accessed August 2025.

Ref. 8.4 - Welsh Government (2021). Climate change allowances and flood consequence assessments. (Online). Available at: https://www.gov.wales/climate-change-allowances-and-flood-consequence-assessments. Accessed August 2025.

Ref. 8.5 – UK Government (2010). Drainage and waste disposal: Approved Document H. (Online). Available at: https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h. Accessed August 2025.

Ref. 8.6 – WaterUK (2013). Sewer for Adoption. (Online). Available at file:///C:/Users/UKHMS775/Downloads/SFA7smalldev%20sep2013%20(1).pdf. Accessed August 2025.

Appendix A Planning Policy Wales Vulnerability Testing and Technical Advice Note 15 (2025)

Technical Advice Note 15 (2025)

The general approach of the Planning Policy Wales (PPW), now supported by the Technical Advice Note 15 (TAN15) 2025, is to follow a precautionary framework approach when determining the suitability of land for development in flood risk areas, with the intention of steering development away from areas of high risk of flooding to the lowest flood risk areas.

In Flood Zone 2 - Planning applications in Zone 2 require careful consideration and must be consistent with the acceptability considerations set out in section 11 (TAN 15). They must also be accompanied by a FCA which clearly describes the flood risk and the risks must be acceptable. Applications for new highly vulnerable development on greenfield land are only appropriate where the site has been allocated in adopted Development Plans.

In Flood Zone 3 - Planning applications in Zone 3 require the strongest justification. No new highly vulnerable development on greenfield land should be permitted in zone 3 regardless of the conclusion of any Flood Consequences Assessments and NRW will not consider these conclusions. Welsh Ministers must be notified of any such proposal a planning authority intends to approve.

Where development has to be considered in high-risk areas (Flood Zone 3) only those developments which can be justified on the basis on the tests outlined in Section 6 and Section 7 of the TAN15 guidance are to be located within such areas.

Table 2 of TAN15 guidance confirms the ‘Flood risk vulnerability classification’ of a site, depending on the proposed usage. This classification is subsequently applied to Flood Map for Planning containing three fluvial flood zones (1, 2 and 3 with additional information on Defended Zones) to determine whether:

- The proposed development is suitable for the zone in which it is located; and
- The appropriate planning tests have been demonstrated in relation to the proposed development.

In line with TAN15 (2025), the development category for the works is Less Vulnerable Development, which includes utilities infrastructure. In line with Section 10 of TAN15, highly vulnerable development is acceptable in Flood Zones 2 subject to the application of the acceptability of consequences. Proposals which are essential to the Development Plan Strategy to regenerate an existing settlement or achieve key economic or environmental objectives and located in Flood Zone 3 may be considered appropriate if the potential consequences from flooding have been considered and found to be acceptable.

No new highly vulnerable development on greenfield land should be permitted in Zone 3.

Table B-1 - Extract of TAN15 Figure 4 Development Vulnerability Categories (Source: TAN15 2025, accessed May 2025)

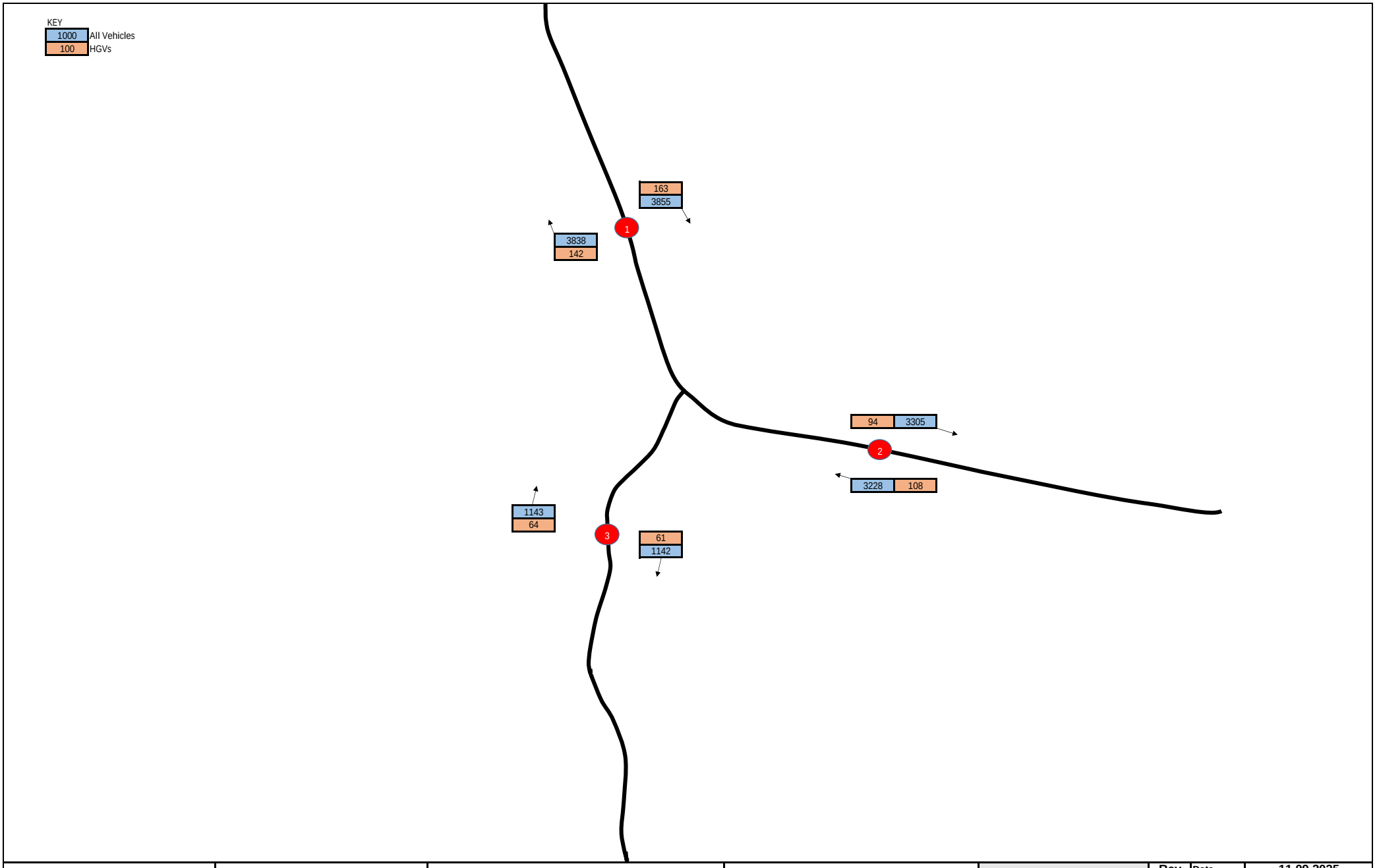
Vulnerability category	Types
Highly vulnerable development	All residential premises (including hotels, Gypsy and Traveller sites, caravan parks and camping sites). Schools and childcare establishments, colleges and universities. Hospitals and GP surgeries. Especially vulnerable industrial development (e.g. power generating and distribution elements of power stations, transformers, chemical plants, incinerators), and waste disposal sites. Emergency services, including: ambulance stations, fire stations, police stations, command centres, emergency depots. Buildings used to provide emergency shelter in time of flood.
Less vulnerable development	General industrial, employment, commercial and retail development. Transport and utilities infrastructure. Car parks. Mineral extraction sites and associated processing facilities (excluding waste disposal sites). Public buildings including libraries, community centres and leisure centres (excluding those identified as in Highly
	Vulnerable category and emergency shelters). Places of worship. Cemeteries. Equipped play areas. Renewable energy generation facilities (excluding hydro generation).
Water compatible development	Boatyards, marinas and essential works required at mooring basins. Development associated with canals. Flood defences and management infrastructure. Open spaces (excluding equipped play areas). Hydro renewable energy generation.

Acceptability Criteria

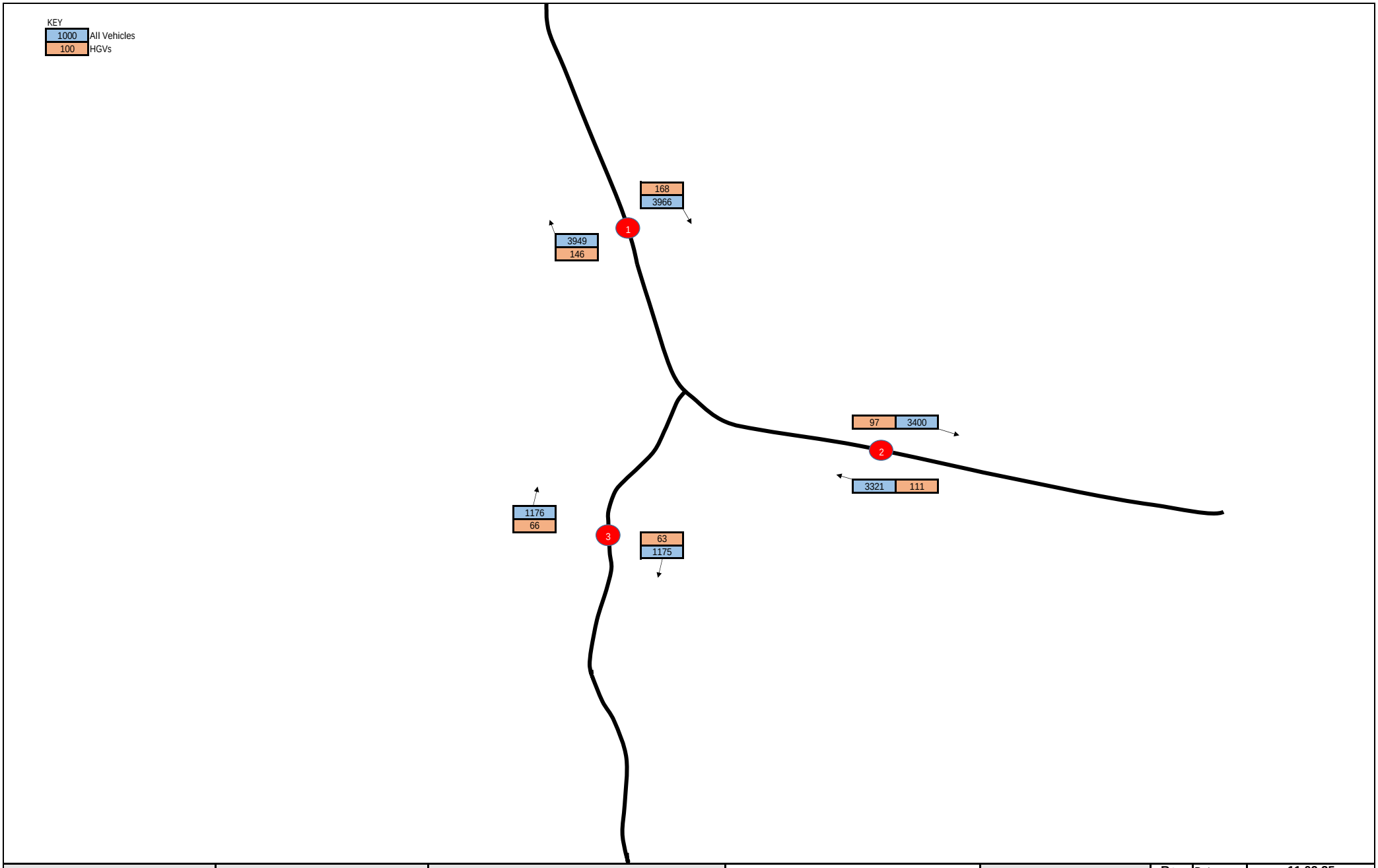
To satisfy the acceptability criteria of the assessment of flood consequences, the following conditions should be satisfied:

- No increase in flooding elsewhere
- Occupiers aware of flood risk
- Escape/evacuation routes present
- Flood emergency plans and procedures agreed and in place
- Flood resistant and resilient design
- Acceptable consequences for type of use
- Minimal risk to life

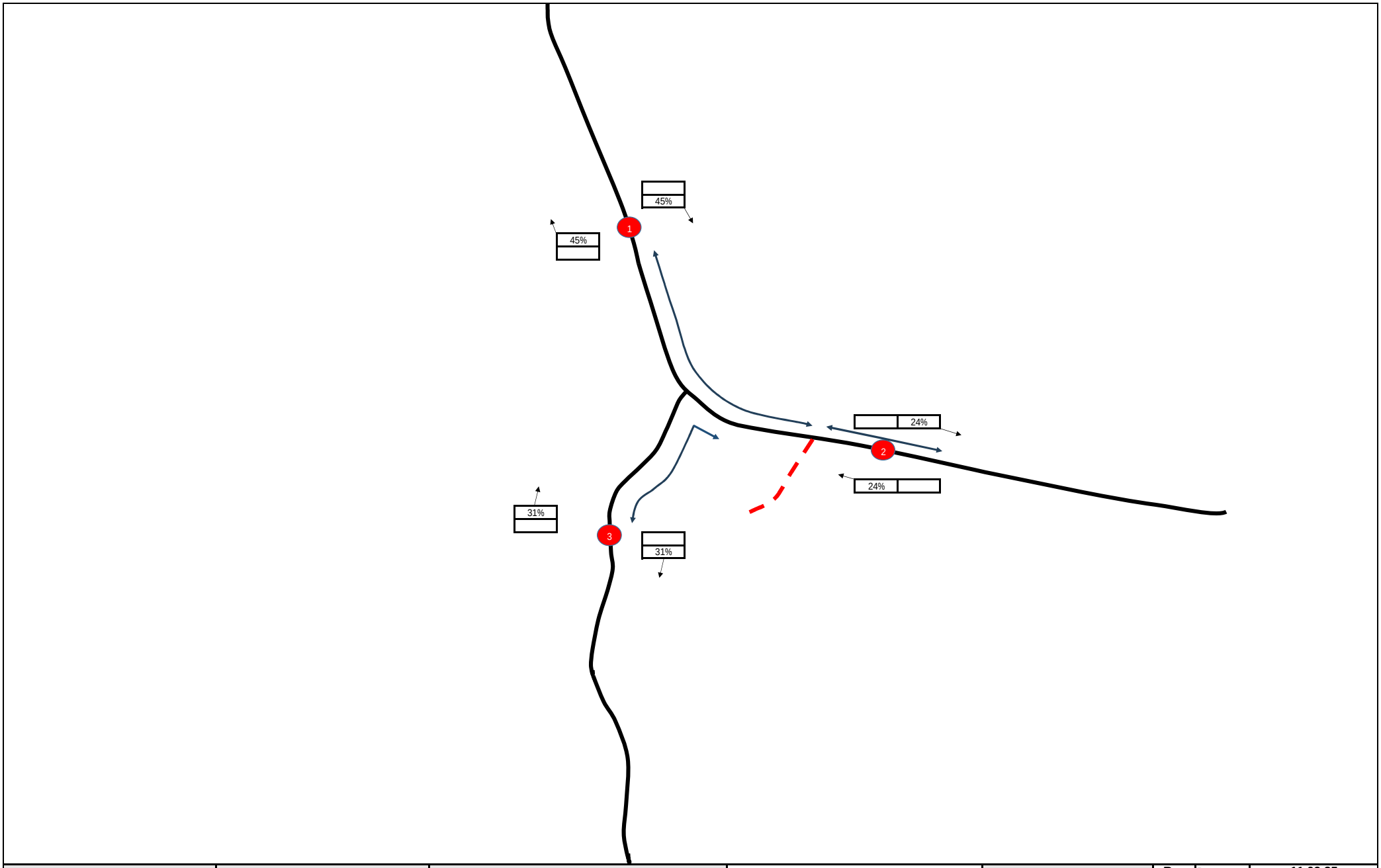
- Minimal disruption to people living and working in the area
- Minimal potential damage to property
- Minimal impact of the proposed development on flood risk generally
- Minimal disruption to the sustainable management of natural resources



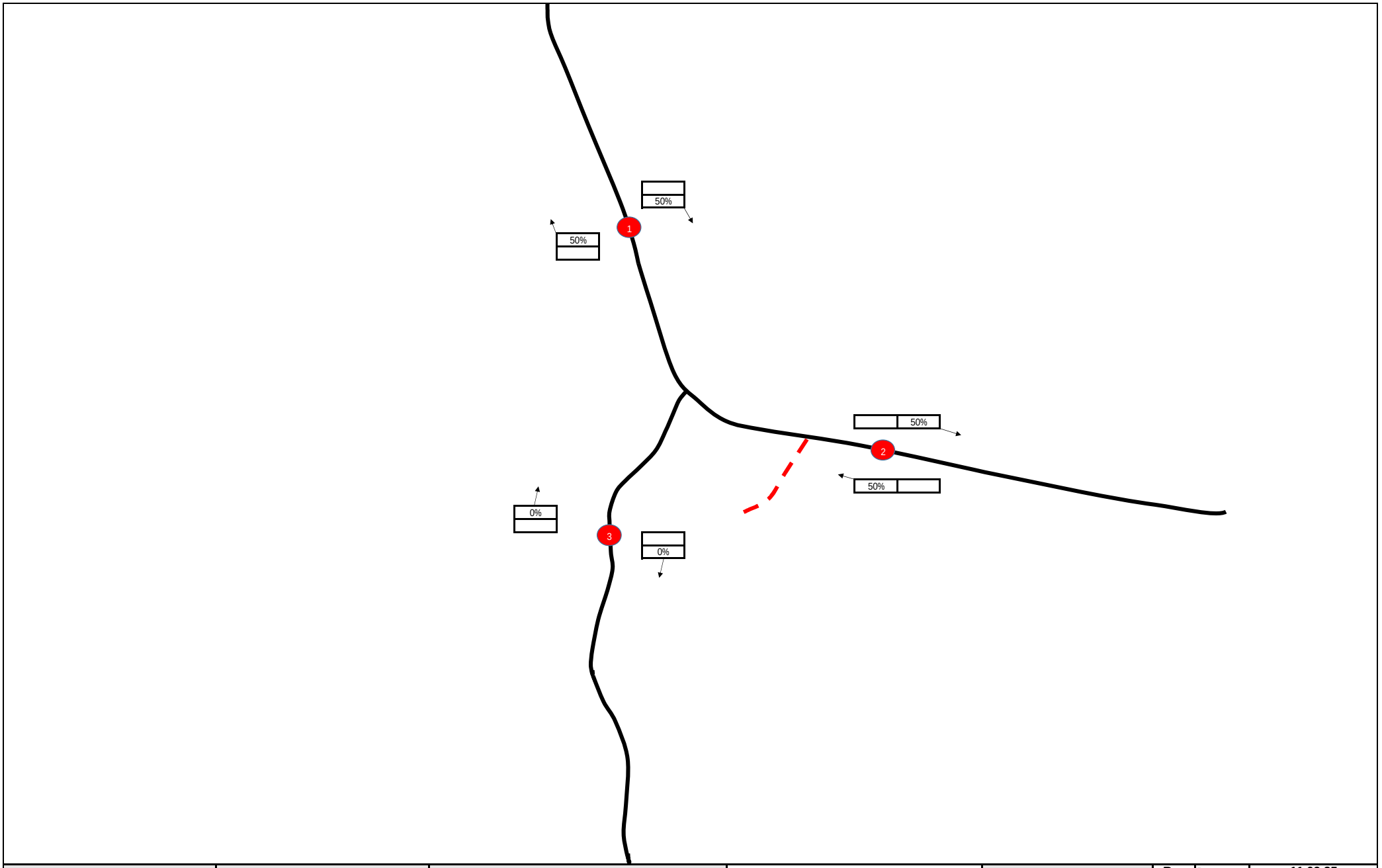
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National Grid	PTR - Bryncir	Base Year 2024 - AADT	AECOM	60686216	A	Design	FM
						Checked	AS
						Approved	MR



Client:	Project:	Title:		Project Number:	Rev		
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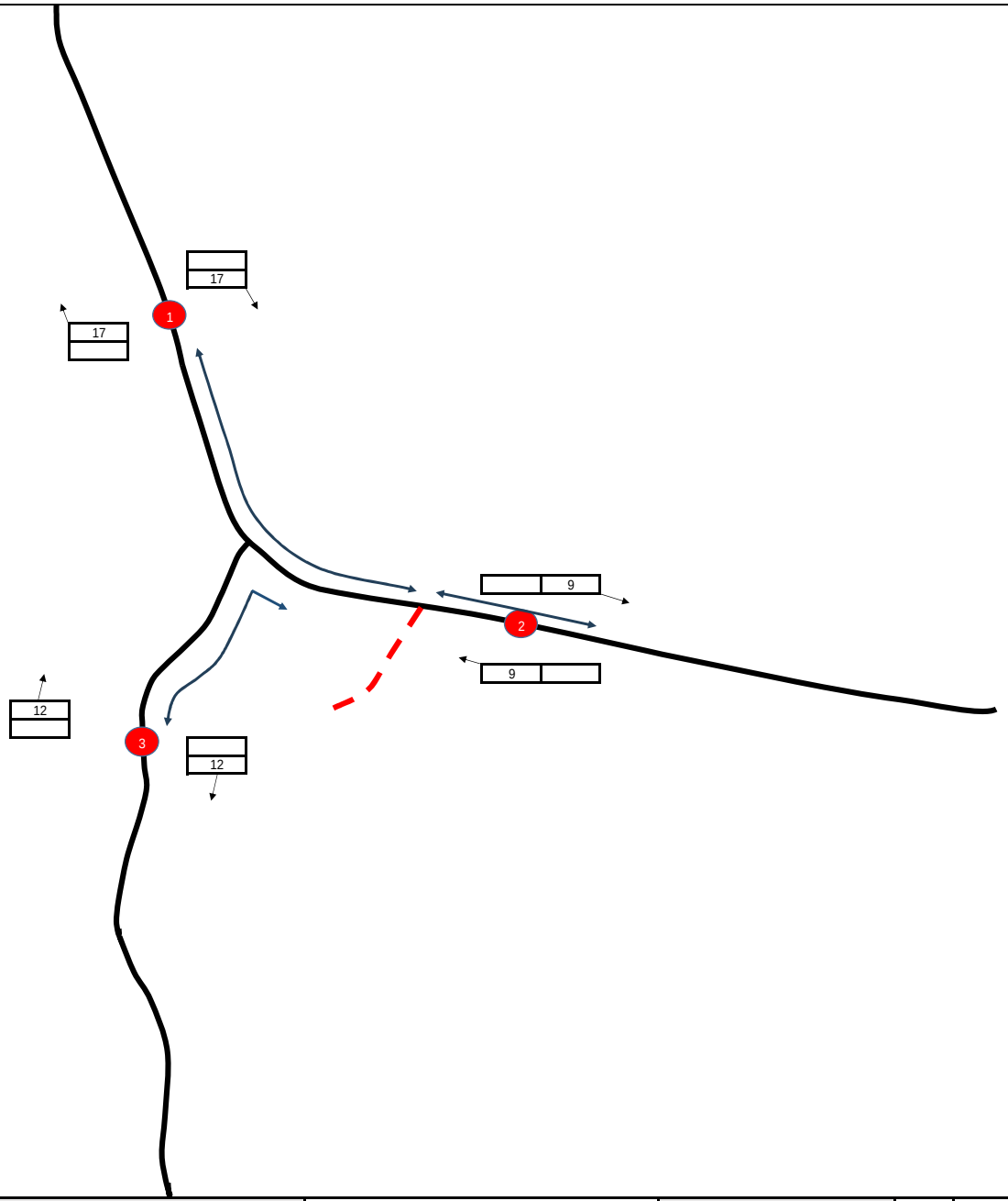


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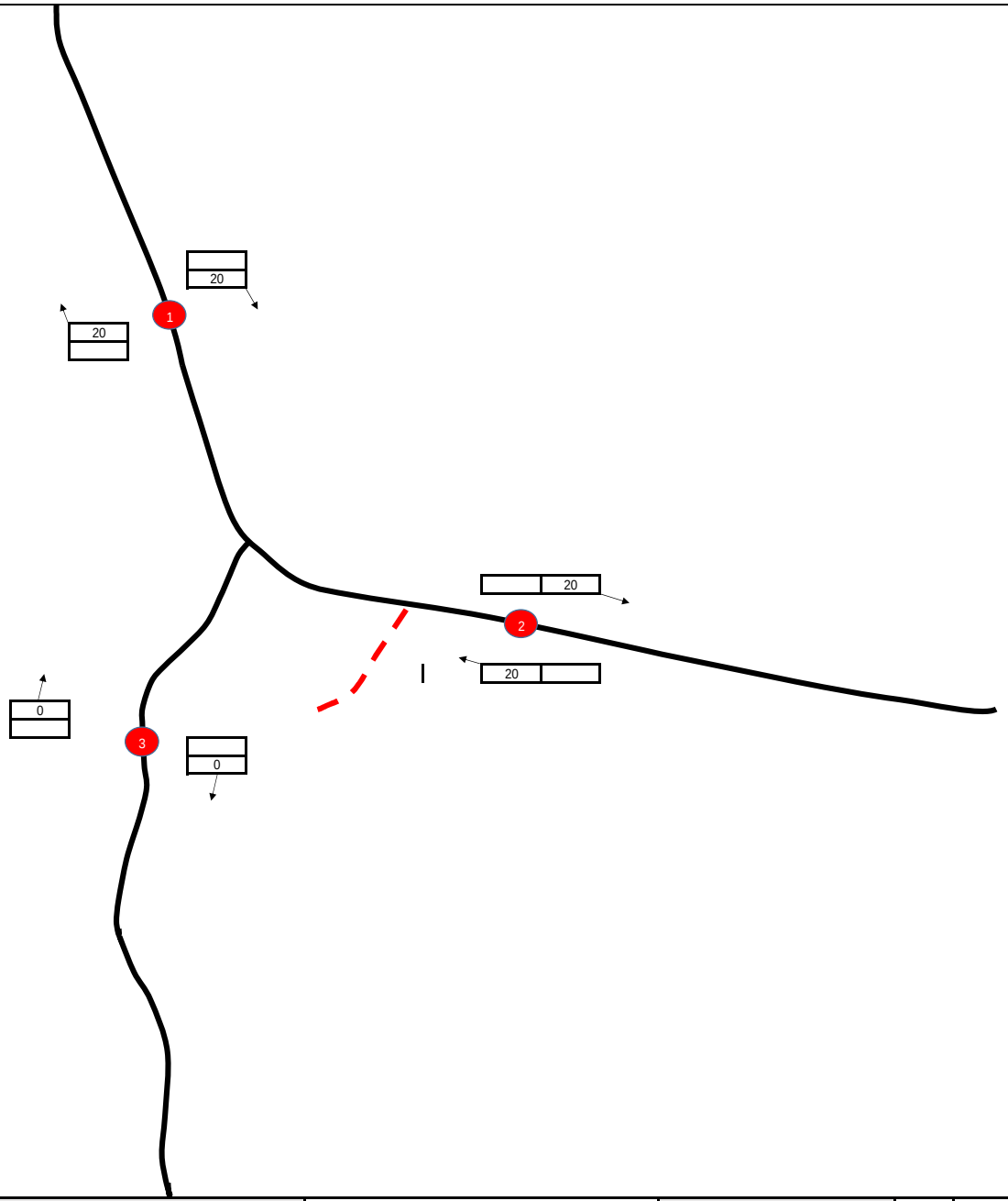
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						Approved	MR

Worker Number of Vehicles
38



Client:	Project:	Title:		Project Number:	Rev		
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HGV Number of Vehicles ONE-WAY
40



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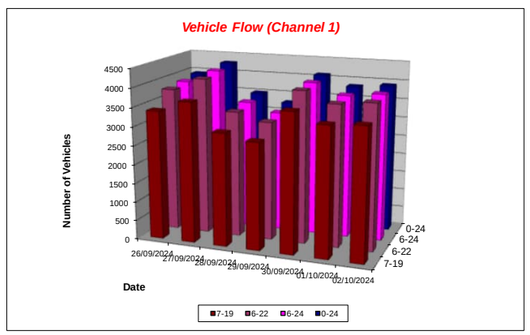
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Bryncir ATC 1, A487

Produced by Road Data Services Ltd.

Channel 1 - Northbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	23	11	18	24	7	8	13	12	15
2	3	12	14	18	4	11	4	7	9
3	5	1	4	7	3	11	5	5	5
4	7	7	11	14	3	8	6	6	8
5	13	19	21	17	15	6	11	13	15
6	29	29	16	17	21	33	22	27	24
7	84	101	59	37	91	90	102	94	81
8	217	196	87	57	205	248	224	218	176
9	305	257	136	97	332	332	337	313	257
10	245	313	233	165	303	246	290	279	256
11	267	407	302	261	370	273	272	318	307
12	275	311	304	280	316	221	269	278	282
13	260	296	318	306	289	252	252	270	282
14	296	273	304	302	258	248	269	269	279
15	257	283	257	287	308	255	279	276	275
16	347	339	269	360	297	316	283	316	316
17	364	422	276	315	360	373	349	374	351
18	346	361	292	233	412	432	381	386	351
19	222	236	195	155	205	193	240	219	207
20	162	163	145	142	135	134	138	146	146
21	75	99	82	76	73	53	69	74	75
22	75	70	66	50	44	51	55	59	59
23	49	49	56	42	35	35	39	41	44
24	15	29	32	22	13	15	11	17	20
7-19	3401	3694	2973	2818	3655	3389	3445	3517	3339
6-22	3797	4127	3325	3123	3998	3717	3809	3890	3699
6-24	3981	4295	3413	3197	4096	3767	3859	3948	3763
0-24	3941	4284	3497	3284	4099	3844	3920	4018	3838



Channel 1 - Northbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	47.1	43.9	51.6	52.9	47.7	49.5	49.8
2	47.3	50.1	53.9	53.4	48.0	46.0	48.9
3	55.0	48.5	55.2	52.0	56.6	48.3	45.7
4	44.8	48.4	47.7	59.7	45.6	50.4	45.6
5	50.2	55.8	50.1	55.4	56.1	44.7	48.4
6	54.4	52.8	51.5	51.5	48.9	48.6	51.6
7	50.9	49.9	50.1	53.2	51.7	49.3	50.5
8	50.2	49.1	52.6	50.7	48.9	49.6	47.3
9	48.3	48.2	48.8	50.4	46.4	48.7	48.1
10	45.3	45.9	48.1	49.0	46.3	46.8	46.2
11	46.2	44.3	45.6	46.9	43.2	43.7	45.0
12	45.1	45.2	47.5	47.6	44.5	46.8	44.9
13	46.4	46.0	46.9	47.8	44.8	47.1	46.3
14	45.4	46.6	46.9	46.4	46.1	47.2	45.5
15	47.7	45.4	47.9	46.8	43.5	45.1	45.1
16	46.2	45.1	48.2	45.5	43.5	45.4	45.7
17	47.8	47.0	46.9	46.1	44.3	45.1	46.8
18	46.4	48.4	48.8	49.0	43.8	49.2	46.6
19	48.7	49.5	50.5	51.1	48.7	50.3	48.0
20	47.2	47.3	51.8	47.7	47.3	49.2	50.1
21	47.2	46.0	48.5	50.9	49.6	47.8	48.5
22	48.0	50.0	51.0	50.0	49.3	51.1	49.9
23	50.7	52.1	51.1	49.4	49.8	54.1	53.2
24	53.3	54.1	50.9	52.1	48.8	53.6	52.9
10-12	45.7	44.7	46.6	47.2	43.8	45.1	45.0
14-16	46.8	46.2	48.1	46.1	43.5	45.8	45.4
0-24	47.2	46.9	48.3	47.9	45.5	47.4	47.1

Mean (ALL): 47.1
Weekday Inter-Peak: 45.0

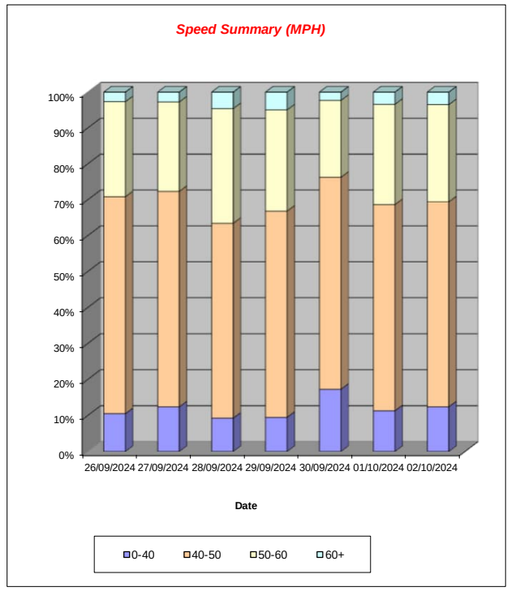
Channel 1 - Northbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	55.2	53.2	60.3	62.7	54.8	58.1	56.4
2	52.2	59.0	62.9	64.8	55.5	52.1	64.8
3	66.9	-	63.4	59.7	69.2	56.4	51.0
4	52.7	58.6	53.7	68.9	53.7	58.6	48.4
5	59.2	66.5	58.4	65.7	66.6	56.3	54.9
6	62.5	64.4	59.2	63.0	56.4	57.9	61.1
7	57.9	57.7	58.3	61.0	58.8	57.0	58.4
8	57.1	55.6	61.2	59.3	57.2	56.6	56.6
9	55.7	54.5	57.4	58.6	53.9	55.6	54.7
10	53.2	51.4	55.7	57.0	52.7	54.7	53.6
11	51.9	50.5	54.4	53.7	49.2	51.4	51.2
12	51.3	51.7	53.5	54.5	52.1	52.1	52.3
13	52.5	52.6	54.5	54.3	51.8	53.4	53.1
14	52.8	52.8	54.0	53.8	52.5	54.2	52.5
15	53.2	51.7	54.8	54.7	50.3	52.4	52.2
16	53.2	52.5	54.8	52.9	51.3	52.7	54.1
17	54.1	54.3	53.8	53.8	53.0	53.8	53.5
18	53.2	54.9	55.5	55.9	53.4	56.1	56.5
19	57.3	56.6	57.7	58.0	55.9	57.1	57.9
20	54.2	54.6	60.6	56.6	55.6	57.3	59.0
21	54.5	53.7	57.7	59.3	58.6	55.0	56.1
22	56.2	56.5	58.3	58.0	57.9	56.8	57.4
23	58.4	61.4	58.8	56.1	60.6	63.5	65.2
24	60.7	65.2	58.2	60.3	54.1	63.1	61.1
10-12	51.7	51.0	54.2	54.1	50.6	52.0	51.8
14-16	53.2	52.7	54.8	53.8	52.8	52.8	53.2
0-24	54.3	54.0	56.0	55.8	53.5	55.0	54.9

85th %ile (ALL): 54.8
Weekday Inter-Peak: 51.9

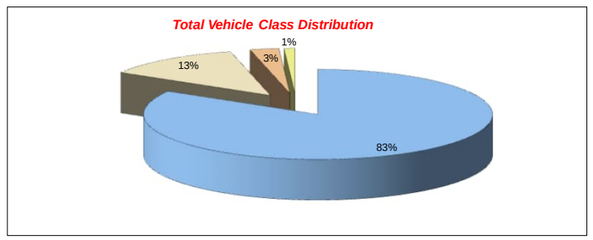
Channel 1 - Northbound — Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	414	531	324	312	709	435	487
40-50	2378	2568	1895	1883	2418	2204	2235
50-60	1044	1067	1117	926	878	1074	1062
60+	105	118	161	163	94	131	136
TOTAL	3941	4284	3497	3284	4099	3844	3920



Channel 1 - Northbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	2778	496	100	27	3401
6-22	3104	552	114	27	3797
6-24	3162	555	115	28	3861
0-24	3221	563	122	35	3941
27/09/2024					
7-19	3086	482	93	33	3694
6-22	3432	549	107	39	4127
6-24	3488	556	110	41	4205
0-24	3548	576	116	44	4284
28/09/2024					
7-19	2675	243	39	16	2973
6-22	2973	280	51	21	3325
6-24	3053	286	52	22	3413
0-24	3118	298	55	26	3497
29/09/2024					
7-19	2504	246	55	13	2818
6-22	2773	273	61	16	3123
6-24	2833	278	62	16	3187
0-24	2910	289	65	20	3284
30/09/2024					
7-19	2993	516	106	40	3655
6-22	3267	565	118	48	3998
6-24	3338	577	120	49	4046
0-24	3340	581	124	54	4099
01/10/2024					
7-19	2765	503	96	25	3389
6-22	3026	550	112	29	3717
6-24	3071	554	113	29	3767
0-24	3122	564	121	37	3844
02/10/2024					
7-19	2812	494	95	44	3445
6-22	3103	545	112	49	3809
6-24	3147	550	113	49	3859
0-24	3184	563	118	55	3920
Average					
7-19	2802	426	83	28	3339
6-22	3097	473	96	33	3699
6-24	3153	479	98	33	3763
0-24	3206	491	103	39	3838

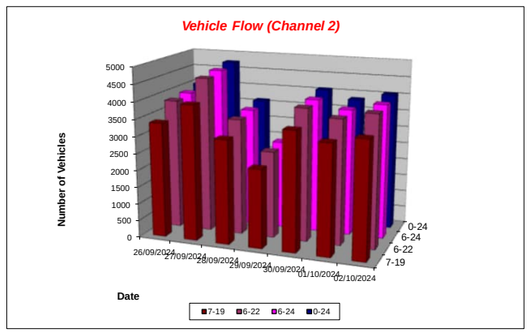


Bryncir ATC 1, A487

Produced by Road Data Services Ltd.

Channel 2 - Southbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	16	13	19	13	4	7	7	9	11
2	10	8	12	10	8	5	5	7	8
3	19	6	10	8	16	4	9	11	10
4	9	4	8	8	2	8	9	6	7
5	12	18	15	9	17	14	18	16	15
6	50	48	29	20	61	61	43	53	45
7	130	128	62	43	155	149	164	145	119
8	281	236	78	59	266	269	265	263	208
9	353	334	227	108	372	369	369	359	305
10	274	312	262	174	301	282	281	290	269
11	254	291	276	209	234	246	269	259	254
12	237	283	301	259	248	210	259	247	257
13	282	287	316	287	260	217	269	263	274
14	224	356	313	225	294	270	233	275	274
15	312	401	269	235	332	273	279	319	300
16	282	371	286	246	346	271	301	314	300
17	372	441	306	211	344	353	357	373	341
18	312	383	260	190	324	305	358	338	305
19	204	289	180	118	182	174	192	208	191
20	149	225	130	91	110	125	130	148	137
21	102	132	103	67	90	110	93	105	100
22	74	93	62	43	53	59	81	72	66
23	35	42	56	28	35	24	34	34	36
24	23	36	25	17	14	29	20	24	23
7-19	3387	3984	3074	2321	3503	3239	3432	3505	3277
6-22	3842	4562	3431	2565	3911	3682	3900	3979	3699
6-24	3920	4640	3512	2618	3965	3735	3954	4038	3759
0-24	4016	4737	3605	2678	4068	3834	4045	4140	3855



Channel 2 - Southbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	52.1	56.8	57.2	55.8	61.2	61.5	68.1
2	56.2	55.9	54.8	59.2	62.4	52.8	61.7
3	53.1	61.8	60.3	57.4	55.6	51.1	59.7
4	54.5	53.5	62.0	61.8	61.3	55.9	57.1
5	55.8	58.7	58.5	55.6	55.1	57.0	57.5
6	57.7	57.0	57.3	58.9	56.3	56.0	58.3
7	54.6	55.4	58.6	55.9	54.7	54.9	55.7
8	51.1	53.7	53.9	52.5	48.6	51.5	52.8
9	50.4	50.1	53.3	52.6	48.2	50.4	49.5
10	48.5	49.0	51.2	49.8	47.1	49.1	48.7
11	48.5	48.8	50.5	51.6	48.7	47.3	48.6
12	47.6	48.1	49.2	48.4	45.8	49.5	47.4
13	47.7	50.9	49.8	50.1	48.1	50.9	49.1
14	50.0	48.7	50.3	50.6	48.9	50.6	49.8
15	48.2	49.0	48.7	49.7	46.6	50.7	49.1
16	49.8	50.6	50.6	47.5	47.7	50.3	51.8
17	45.7	51.7	51.3	51.4	48.5	50.9	48.8
18	49.0	50.4	51.1	50.3	47.8	52.2	51.7
19	51.6	52.0	52.0	51.7	51.1	52.7	51.8
20	49.7	49.1	51.4	48.3	48.9	54.6	50.9
21	51.2	52.3	51.2	51.1	53.8	56.0	53.3
22	54.0	53.0	55.1	52.5	55.9	57.3	56.3
23	54.2	54.6	55.5	54.2	55.6	53.4	57.3
24	56.0	58.4	53.1	61.5	52.5	58.7	56.1
10-12	48.1	48.5	49.8	49.8	47.2	48.3	48.0
14-16	48.9	49.7	49.7	48.8	47.3	50.5	50.5
0-24	49.5	50.6	51.2	50.6	48.8	51.3	50.7

Average (ALL): 50.4
Weekday Inter-Peak: 48.7

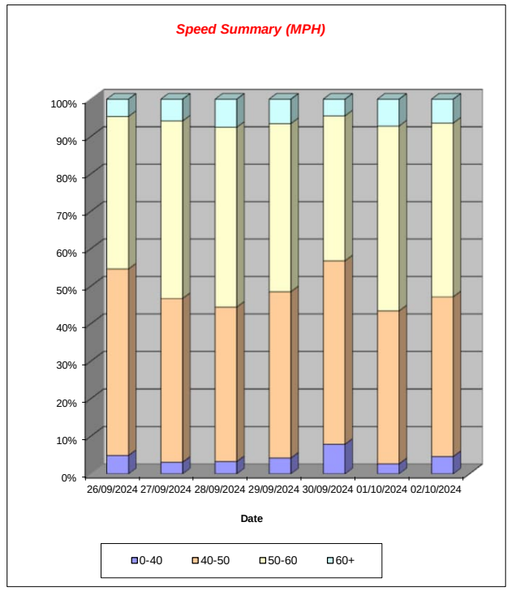
Channel 2 - Southbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	63.3	67.6	66.6	66.0	73.4	75.2	78.7
2	60.5	61.0	60.3	67.5	68.8	60.6	71.9
3	59.2	73.4	71.2	66.2	61.4	56.7	64.3
4	64.0	57.7	69.3	71.5	64.7	65.9	65.3
5	66.9	68.4	69.3	62.0	63.7	64.0	69.0
6	65.0	66.3	66.6	67.8	64.1	63.9	66.5
7	62.9	62.7	67.1	65.7	63.1	62.9	63.7
8	57.1	61.0	60.5	60.4	56.4	57.7	59.4
9	55.8	57.4	60.1	59.6	57.8	55.8	55.8
10	54.7	55.3	58.4	58.0	55.2	56.0	54.7
11	54.4	55.1	59.2	58.5	54.1	52.9	55.6
12	55.5	54.3	56.1	54.2	54.3	55.3	54.6
13	53.5	57.8	55.6	57.4	53.2	57.8	55.6
14	55.4	57.1	57.1	57.0	53.9	57.3	55.8
15	54.0	55.5	55.5	57.3	52.7	55.8	58.3
16	56.0	56.3	57.6	53.8	53.0	56.5	57.9
17	56.6	57.3	57.6	58.3	56.4	57.5	56.1
18	55.4	55.8	56.9	57.6	55.4	59.5	58.0
19	57.5	58.8	59.4	57.4	59.2	59.8	58.0
20	56.9	54.6	60.6	56.0	57.7	61.4	57.7
21	58.5	59.5	59.6	57.8	61.1	62.8	60.4
22	61.0	60.2	64.1	60.6	62.1	66.9	64.1
23	61.4	61.5	64.5	63.0	63.6	60.1	65.5
24	61.8	69.0	61.5	72.0	60.7	67.0	66.4
10-12	55.1	54.7	57.6	56.3	54.8	54.1	55.1
14-16	54.9	55.8	56.7	55.7	52.8	56.2	58.3
0-24	56.8	57.6	58.7	58.1	56.6	58.3	58.2

85th %ile (ALL): 57.8
Weekday Inter-Peak: 55.3

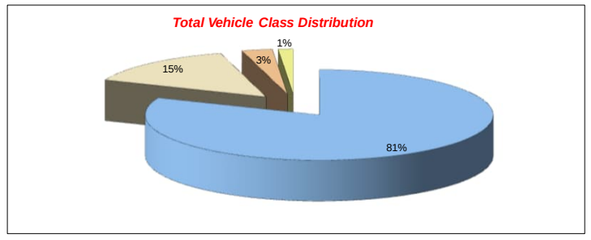
Channel 2 - Southbound — Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	197	147	118	113	321	102	186
40-50	1996	2067	1484	1187	1989	1563	1722
50-60	1637	2246	1732	1203	1576	1893	1878
60+	186	277	271	175	182	276	259
TOTAL	4016	4737	3605	2678	4068	3834	4045



Channel 2 - Southbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	2678	552	115	42	3387
6-22	3097	610	126	49	3842
6-24	3169	613	128	50	3900
0-24	3200	628	130	58	4016
27/09/2024					
7-19	3258	574	127	25	3984
6-22	3754	641	135	32	4562
6-24	3822	647	136	33	4640
0-24	3892	665	139	41	4737
28/09/2024					
7-19	2700	300	49	25	3074
6-22	3014	329	56	32	3431
6-24	3088	335	57	33	3512
0-24	3162	349	59	35	3605
29/09/2024					
7-19	2000	268	36	17	2321
6-22	2201	297	43	24	2565
6-24	2241	300	45	24	2610
0-24	2297	310	45	26	2678
30/09/2024					
7-19	2716	595	136	56	3503
6-22	3046	650	145	70	3911
6-24	3086	654	146	71	3960
0-24	3163	674	153	78	4068
01/10/2024					
7-19	2523	584	93	39	3239
6-22	2884	643	105	50	3682
6-24	2938	644	108	51	3735
0-24	3008	658	107	61	3834
02/10/2024					
7-19	2669	583	121	59	3432
6-22	3060	639	131	70	3900
6-24	3109	641	132	70	3954
0-24	3174	662	133	76	4045
Average					
7-19	2649	494	97	38	3277
6-22	3002	544	106	47	3699
6-24	3058	548	107	47	3759
0-24	3128	564	109	54	3855



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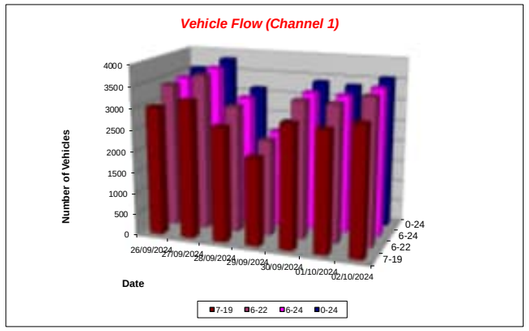
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Bryncir ATC 2, A487

Produced by Road Data Services Ltd.

Channel 1 - Eastbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	11	11	16	9	3	4	9	8	9
2	9	6	11	9	8	4	3	6	7
3	21	6	7	5	15	4	6	10	9
4	10	4	8	6	3	6	8	6	6
5	11	19	14	11	18	15	17	16	15
6	45	48	25	16	64	49	44	50	42
7	127	115	48	41	147	157	170	143	115
8	264	219	72	56	214	240	234	234	186
9	327	279	198	86	346	299	316	313	264
10	268	295	252	160	248	287	261	272	253
11	243	281	271	198	206	200	253	237	236
12	236	268	262	224	206	201	238	230	234
13	235	255	273	282	198	181	226	219	236
14	212	261	261	188	236	236	229	235	232
15	267	293	230	213	271	236	245	262	251
16	240	298	219	211	268	238	237	256	244
17	298	295	261	184	289	292	296	294	274
18	258	269	230	150	263	268	297	271	248
19	174	203	149	100	145	145	181	170	157
20	107	162	111	72	87	99	106	112	106
21	92	104	93	59	73	86	86	88	85
22	51	68	60	36	39	51	62	54	52
23	27	32	44	22	28	20	25	26	28
24	14	21	18	12	10	22	16	17	16
7-19	3022	3216	2678	2052	2890	2823	3013	2993	2813
6-22	3399	3665	2990	2260	3236	3216	3437	3391	3172
6-24	3440	3718	3052	2294	3274	3258	3478	3434	3216
0-24	3547	3812	3133	2350	3385	3340	3565	3530	3305



Channel 1 - Eastbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	61.2	55.8	58.4	56.7	54.7	55.7	65.4
2	61.4	58.1	56.7	60.8	61.3	51.3	66.9
3	52.6	53.6	59.5	59.1	54.3	49.2	54.7
4	52.5	54.4	60.1	63.8	56.1	57.9	52.6
5	57.6	58.5	59.9	55.0	53.4	58.5	58.0
6	57.9	55.9	59.0	62.3	57.5	58.0	58.8
7	55.0	57.7	61.7	58.8	54.7	54.7	56.5
8	52.1	53.8	52.7	55.2	51.9	51.4	53.1
9	51.1	51.7	53.5	53.6	51.0	51.7	51.1
10	48.3	49.8	52.3	52.5	49.4	50.9	50.8
11	48.4	49.4	50.2	51.3	50.4	48.1	49.0
12	49.1	50.0	49.2	50.6	49.5	49.0	50.4
13	50.1	51.4	51.7	49.1	50.0	51.6	50.2
14	50.3	49.3	52.4	50.5	50.1	49.6	51.0
15	51.8	50.1	52.2	48.8	49.1	50.6	50.2
16	50.5	51.0	52.5	50.1	49.2	50.8	51.3
17	49.6	53.2	52.4	53.0	50.8	51.2	50.5
18	52.3	52.4	53.6	50.5	51.4	53.6	53.2
19	52.3	54.2	55.1	53.1	51.8	53.5	50.2
20	51.6	51.6	54.2	49.8	51.7	54.7	55.0
21	50.7	52.9	52.3	51.7	53.8	57.4	52.5
22	54.1	52.3	53.9	55.8	56.8	55.4	57.9
23	56.5	55.6	58.1	52.5	55.1	54.9	59.5
24	55.0	61.0	54.7	61.4	55.6	57.7	54.0
10-12	48.7	49.7	49.7	50.5	49.5	48.5	49.7
14-16	51.5	50.6	52.8	49.1	49.7	50.7	50.9
0-24	51.0	51.7	52.7	51.4	51.0	51.7	51.8

Mean (ALL): 51.6
Weekday Inter-Peak: 49.9

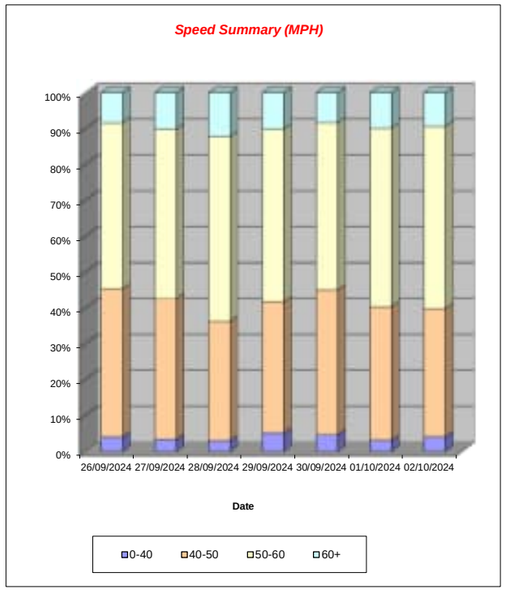
Channel 1 - Eastbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	67.6	66.3	68.3	68.6	72.0	64.7	78.6
2	72.0	64.4	63.9	65.2	66.5	62.3	74.7
3	57.3	61.4	69.4	66.2	61.9	53.1	58.2
4	54.1	59.6	67.3	75.9	61.1	66.8	62.4
5	68.7	69.3	68.4	60.8	61.3	67.1	66.9
6	67.2	65.4	67.8	71.2	65.2	67.1	67.2
7	62.6	66.1	72.7	70.0	63.2	62.7	64.8
8	59.6	61.9	61.1	64.2	61.1	61.6	61.0
9	57.1	58.4	60.1	61.9	57.7	57.9	58.4
10	55.9	57.1	59.2	59.2	55.9	57.6	57.3
11	56.3	56.5	58.3	58.8	56.5	54.2	56.2
12	55.1	56.5	57.5	57.8	57.1	55.6	58.5
13	57.7	58.2	59.0	57.2	56.8	58.1	57.4
14	57.8	58.6	60.1	58.3	56.8	56.7	57.8
15	59.0	56.1	58.7	58.3	56.7	57.8	57.4
16	57.8	57.8	59.4	57.3	57.3	57.9	58.7
17	57.2	59.6	60.1	60.5	57.8	57.8	58.3
18	59.9	59.6	61.5	58.6	58.6	60.3	59.6
19	60.6	62.1	62.7	61.2	59.2	60.2	60.0
20	59.2	60.6	63.4	56.4	59.9	62.5	63.3
21	59.0	59.8	61.9	59.0	62.8	65.0	60.8
22	61.5	61.8	64.5	63.4	64.7	64.9	66.9
23	64.4	65.1	69.0	58.2	63.2	63.0	66.2
24	64.8	70.0	64.6	68.6	64.9	66.6	64.6
10-12	55.8	56.5	57.9	58.3	56.8	54.8	57.4
14-16	58.0	57.1	59.7	57.9	56.9	57.5	58.0
0-24	58.7	59.5	60.9	59.7	58.7	59.3	59.8

85th %ile (ALL): 59.5
Weekday Inter-Peak: 57.1

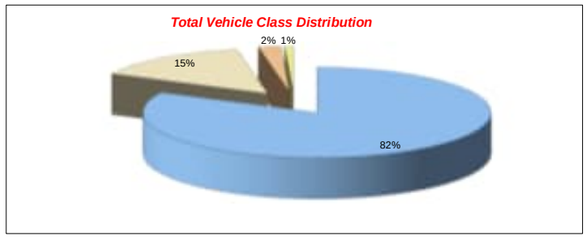
Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	143	127	94	121	158	103	146
40-50	1467	1499	1045	862	1370	1247	1276
50-60	1641	1799	1612	1128	1576	1660	1809
60+	296	387	382	239	281	330	334
TOTAL	3547	3812	3133	2350	3385	3340	3565



Channel 1 - Eastbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	2438	491	79	14	3022
6-22	2754	540	88	17	3399
6-24	2791	541	88	17	3440
0-24	2885	501	90	21	3547
27/09/2024					
7-19	2222	577	77	18	3216
6-22	3008	557	80	20	3665
6-24	3052	561	81	20	3718
0-24	3129	577	93	26	3812
28/09/2024					
7-19	2351	276	40	11	2678
6-22	2633	296	43	14	2990
6-24	2688	303	43	14	3052
0-24	2755	314	48	16	3133
29/09/2024					
7-19	1769	249	21	13	2052
6-22	1941	273	29	17	2260
6-24	1971	276	29	18	2294
0-24	2024	282	29	18	2350
30/09/2024					
7-19	2267	518	80	27	2890
6-22	2658	564	88	32	3236
6-24	2698	567	88	32	3274
0-24	2783	575	93	31	3385
01/10/2024					
7-19	2260	480	58	22	2823
6-22	2598	532	59	27	3216
6-24	2650	534	60	30	3258
0-24	2706	543	60	31	3340
02/10/2024					
7-19	2399	513	75	26	3013
6-22	2763	560	84	30	3437
6-24	2798	568	85	30	3478
0-24	2865	583	85	32	3565
Average					
7-19	2304	431	60	19	2813
6-22	2605	475	68	22	3172
6-24	2649	479	69	23	3216
0-24	2719	491	69	26	3305

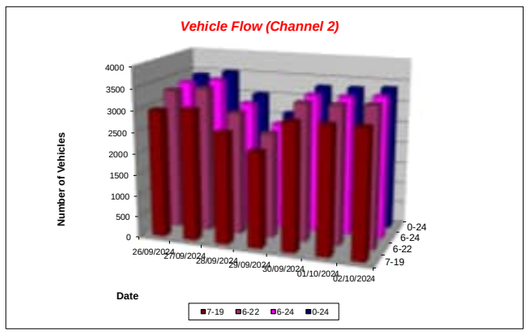


Bryncir ATC 2, A487

Produced by Road Data Services Ltd.

Channel 2 - Westbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	22	11	18	16	4	8	12	11	13
2	4	9	8	17	3	10	1	5	7
3	1	5	4	2	8	5	4	4	4
4	7	5	8	11	5	5	3	5	6
5	7	15	20	18	10	5	10	9	12
6	20	24	20	26	23	22	19	22	22
7	66	66	48	29	64	63	77	67	59
8	172	153	67	46	171	220	195	182	146
9	263	228	98	68	251	260	273	255	206
10	231	235	220	119	252	209	263	238	218
11	220	283	245	207	261	220	241	245	240
12	220	250	283	235	254	206	215	229	238
13	237	257	292	253	249	228	217	238	248
14	271	225	249	243	215	210	221	228	233
15	208	245	227	225	242	217	233	229	229
16	315	312	227	283	266	290	259	288	279
17	320	344	257	259	279	335	318	319	302
18	324	318	265	187	359	387	336	345	311
19	210	206	163	107	175	183	202	195	178
20	132	151	129	111	102	114	128	125	124
21	64	77	64	56	49	45	60	59	59
22	58	52	48	35	35	44	48	47	46
23	35	42	37	29	28	25	29	32	32
24	16	27	28	19	7	10	8	14	16
7-19	2991	3056	2593	2232	2974	2965	2973	2992	2826
6-22	3311	3402	2882	2463	3224	3231	3288	3291	3114
6-24	3385	3471	2947	2511	3298	3298	3357	3336	3163
0-24	3425	3536	3026	2603	3306	3324	3373	3393	3228



Channel 2 - Westbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	55.1	48.3	57.9	66.3	59.0	55.2	55.4
2	56.9	54.5	61.4	60.5	52.3	51.8	56.7
3	63.2	47.4	60.4	62.7	70.3	60.7	53.9
4	50.6	59.2	57.7	70.5	56.7	57.9	58.1
5	51.2	60.0	57.8	65.1	65.2	46.5	59.6
6	58.1	58.3	58.9	60.7	57.1	56.8	61.8
7	57.4	56.7	56.8	61.9	58.9	55.6	59.4
8	55.5	55.7	57.1	58.8	55.1	56.5	54.6
9	52.9	53.9	56.3	58.4	54.1	55.2	51.8
10	50.2	52.3	53.1	56.3	49.7	51.5	52.2
11	50.1	51.5	52.7	54.2	49.8	50.8	51.1
12	50.6	51.2	52.7	54.3	50.7	51.9	51.8
13	51.8	50.6	54.2	54.5	52.0	50.9	53.2
14	52.1	52.0	53.9	52.7	53.4	53.9	53.8
15	51.9	53.8	53.0	53.7	50.2	54.1	53.4
16	51.7	52.0	55.1	52.5	51.6	51.0	51.9
17	54.7	54.9	53.8	54.2	50.9	52.0	53.9
18	53.3	54.8	54.9	56.8	51.8	56.3	54.4
19	55.6	57.0	57.4	58.1	55.3	56.5	54.4
20	56.0	53.9	57.5	55.1	54.9	56.6	58.0
21	54.4	53.8	57.0	57.9	55.9	52.5	56.9
22	56.4	56.3	56.1	57.7	57.9	57.0	55.2
23	59.5	60.6	58.1	58.0	59.2	60.5	57.9
24	58.6	60.6	57.3	61.5	57.0	62.4	60.2
10-12	50.4	51.4	52.7	54.3	50.3	51.3	51.5
14-16	51.8	52.8	54.0	53.1	52.3	52.1	52.6
0-24	53.0	53.6	54.6	55.2	52.4	53.7	53.6

Average (ALL): 53.7
Weekday Inter-Peak: 51.6

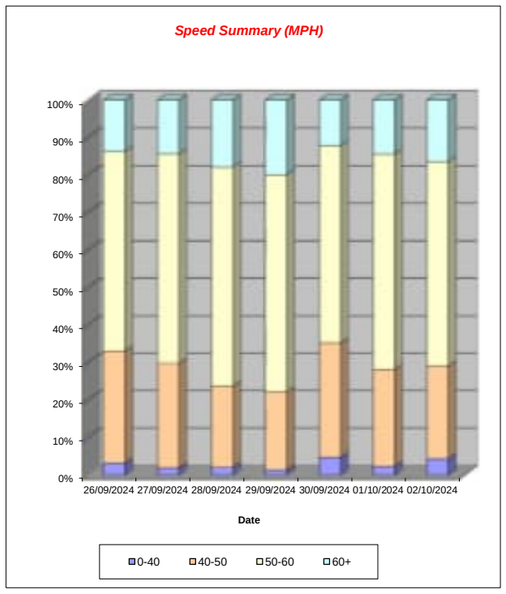
Channel 2 - Westbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	62.2	57.2	66.8	76.3	65.7	66.2	62.8
2	67.4	65.6	72.5	69.8	62.4	59.8	
3	65.6	-	71.7	74.1	72.7	68.1	63.5
4	56.9	69.8	62.7	79.8	59.0	60.7	61.4
5	63.6	69.2	66.4	75.4	77.1	54.2	66.9
6	66.9	64.6	67.0	69.2	65.1	65.1	70.4
7	66.0	65.4	63.5	71.2	68.1	64.4	69.3
8	63.8	63.6	65.0	68.0	62.5	62.9	63.0
9	60.1	61.3	65.1	67.8	61.8	62.3	61.9
10	58.6	59.1	62.4	64.3	60.1	60.8	59.2
11	56.6	57.6	61.3	61.8	56.4	58.3	58.8
12	57.4	58.4	61.0	61.8	58.0	58.8	59.5
13	60.9	58.0	61.3	60.5	59.8	57.3	62.2
14	59.2	58.4	61.0	60.6	59.5	61.4	61.1
15	59.8	60.5	60.3	60.6	59.5	60.7	61.9
16	60.1	58.1	62.5	59.2	60.0	57.8	60.6
17	62.0	63.1	61.8	61.8	59.0	60.1	60.8
18	61.4	62.5	62.2	63.8	62.4	63.2	64.1
19	64.7	64.4	65.2	65.6	62.5	65.9	64.8
20	65.0	61.3	66.7	65.2	64.5	65.8	67.0
21	62.5	62.0	67.5	67.5	64.7	59.0	65.3
22	63.3	64.2	64.1	63.6	69.7	66.2	64.4
23	67.9	69.2	68.8	66.2	67.5	70.2	69.3
24	66.8	71.5	66.3	71.2	61.6	71.2	68.7
10-12	57.1	58.1	61.3	61.8	57.3	58.5	59.2
14-16	60.0	59.2	61.8	63.0	59.7	60.3	61.9
0-24	61.3	61.2	62.8	63.3	61.2	61.7	62.5

85th %ile (ALL): 62.0
Weekday Inter-Peak: 59.1

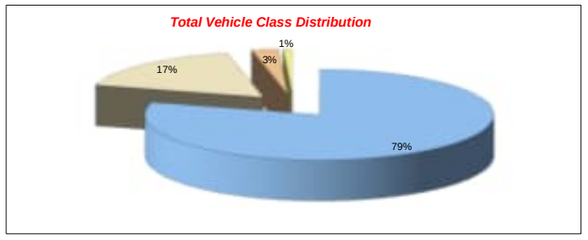
Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	108	67	63	35	156	76	147
40-50	1026	989	656	543	1010	862	833
50-60	1823	1974	1769	1508	1737	1910	1840
60+	468	506	538	517	403	476	553
TOTAL	3425	3536	3026	2603	3306	3324	3373



Channel 2 - Westbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	2310	557	87	27	2981
6-22	2573	609	104	27	3311
6-24	2615	614	109	24	3362
0-24	2652	626	109	32	3429
27/09/2024					
7-19	2380	543	81	33	3056
6-22	2671	604	93	36	3402
6-24	2729	612	94	36	3471
0-24	2773	630	96	39	3536
28/09/2024					
7-19	2227	323	34	9	2593
6-22	2473	360	40	9	2882
6-24	2534	368	40	10	2947
0-24	2590	381	43	12	3026
29/09/2024					
7-19	1872	323	29	8	2232
6-22	2077	349	31	11	2463
6-24	2113	358	31	11	2511
0-24	2191	368	32	11	2603
30/09/2024					
7-19	2281	581	87	25	2974
6-22	2480	626	93	25	3224
6-24	2507	631	94	26	3259
0-24	2624	641	95	26	3386
01/10/2024					
7-19	2289	566	83	27	2965
6-22	2505	606	92	28	3231
6-24	2538	612	92	31	3266
0-24	2578	622	95	31	3324
02/10/2024					
7-19	2290	566	84	33	2973
6-22	2531	620	92	30	3286
6-24	2564	627	93	31	3323
0-24	2601	639	92	41	3373
Average					
7-19	2238	494	71	23	2826
6-22	2471	539	79	25	3114
6-24	2513	549	79	26	3163
0-24	2562	558	80	27	3229



B4411

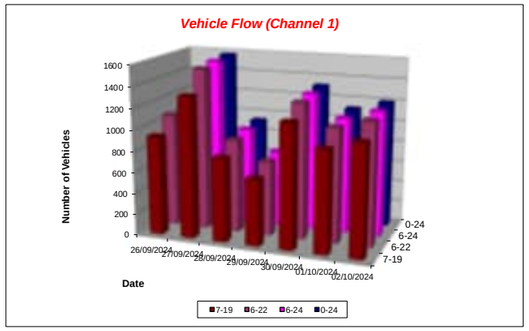
ices Ltd.

Bryncir ATC 3, B4411

Produced by Road Data Services Ltd.

Channel 1 - Southbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	8	3	7	4	2	6	2	4	5
2	2	2	0	4	0	1	2	1	2
3	2	1	3	4	2	1	2	2	2
4	5	2	2	2	0	3	2	2	2
5	0	0	2	1	3	1	2	1	1
6	7	7	5	4	11	12	5	8	7
7	9	14	12	4	8	6	11	10	9
8	59	53	17	12	59	54	60	57	45
9	73	87	43	37	94	103	105	92	77
10	64	74	45	48	82	78	81	76	67
11	62	81	63	40	71	76	77	73	67
12	45	73	84	53	73	72	63	65	66
13	75	96	80	53	77	65	81	79	75
14	64	117	100	74	121	85	93	96	93
15	89	145	82	79	156	81	95	113	104
16	110	150	87	77	144	85	89	116	106
17	114	187	76	61	126	111	123	132	114
18	110	157	58	57	102	92	116	115	99
19	72	112	53	36	66	56	63	74	65
20	54	91	45	32	47	48	53	59	53
21	35	51	20	25	32	43	27	38	33
22	36	37	19	18	22	23	22	28	25
23	12	16	15	9	14	9	17	14	13
24	11	14	14	5	7	7	6	9	9
7-19	937	1332	788	627	1171	958	1046	1089	980
6-22	1071	1525	884	706	1280	1078	1159	1223	1100
6-24	1094	1568	913	726	1301	1094	1182	1245	1123
0-24	1118	1570	932	738	1318	1117	1199	1264	1142



Channel 1 - Southbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	42.1	48.1	43.5	57.0	40.8	50.2	51.2
2	46.8	43.2	-	40.8	-	40.7	47.2
3	45.7	46.8	47.4	49.7	48.9	-	50.0
4	45.5	39.9	48.2	50.0	-	39.2	39.4
5	-	-	46.8	50.5	40.0	52.3	47.2
6	47.2	41.7	44.1	41.8	46.9	43.9	46.4
7	40.0	39.4	45.3	41.7	42.0	43.5	45.1
8	43.6	44.7	39.9	43.3	42.6	44.4	44.7
9	44.2	41.3	43.2	42.2	43.9	42.9	41.8
10	39.7	43.3	42.2	42.8	38.6	41.5	38.7
11	41.3	41.3	43.6	41.9	42.2	38.3	39.5
12	40.1	40.5	40.8	42.8	40.4	40.7	40.1
13	41.0	39.0	43.5	42.0	40.2	40.1	40.0
14	40.9	41.4	41.3	43.8	38.9	42.5	40.4
15	40.7	39.9	42.2	41.6	38.3	41.3	38.9
16	41.3	40.5	41.0	38.5	40.3	41.5	41.9
17	40.6	41.0	41.7	42.8	38.2	42.7	41.8
18	41.8	42.6	41.1	42.9	40.0	42.2	43.3
19	41.6	42.2	42.9	40.5	41.7	42.4	41.0
20	41.5	39.2	42.4	40.9	39.6	45.1	41.6
21	41.3	40.4	42.6	40.5	42.5	45.1	43.6
22	41.3	39.9	44.9	42.5	44.3	45.0	45.0
23	42.8	44.5	44.9	44.7	45.9	43.0	45.7
24	43.8	46.1	41.1	50.3	41.2	48.0	51.0
10-12	40.8	40.9	42.0	42.5	41.3	39.5	39.8
14-16	41.0	40.2	43.0	40.0	39.3	41.4	40.3
0-24	41.5	41.2	42.2	42.1	40.4	42.2	41.4

Mean (ALL): 41.5
Weekday Inter-Peak: 40.3

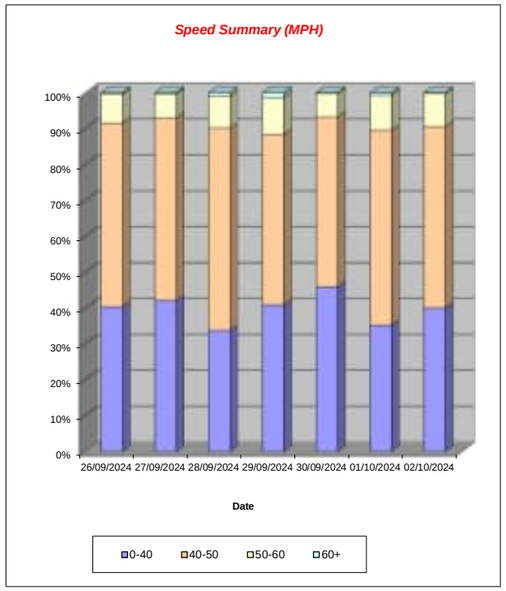
Channel 1 - Southbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	48.2	49.0	48.7	68.1	42.5	59.4	53.0
2	48.9	49.5	-	45.2	-	-	48.2
3	50.3	-	52.5	53.5	-	-	52.7
4	53.3	48.3	49.3	54.9	-	41.9	45.5
5	-	-	53.7	-	44.7	-	51.0
6	52.6	49.4	48.4	47.0	50.7	52.5	53.8
7	52.3	48.5	50.9	46.6	47.9	50.6	52.4
8	49.4	50.2	44.8	50.1	48.7	49.6	50.3
9	50.1	48.5	49.3	49.8	49.8	49.2	49.2
10	46.1	49.8	50.4	51.1	45.1	47.9	46.3
11	48.1	47.5	50.3	48.4	48.7	47.0	45.6
12	46.0	48.0	47.2	50.8	47.6	47.6	46.8
13	47.7	47.6	50.8	48.2	46.9	47.1	46.8
14	47.7	47.0	47.9	50.6	45.6	49.5	46.8
15	48.1	46.4	50.1	50.0	45.5	49.0	48.0
16	48.1	46.3	48.6	45.8	47.2	48.5	48.9
17	49.6	48.2	47.9	48.9	46.0	48.7	48.0
18	48.8	48.6	49.5	50.1	47.1	49.5	50.3
19	48.3	48.3	49.8	46.6	50.4	51.4	48.1
20	47.2	45.7	48.6	47.6	46.0	51.8	48.3
21	49.1	47.7	47.6	47.9	51.0	53.5	50.9
22	48.3	47.2	50.8	49.2	51.2	51.4	52.3
23	48.4	52.3	51.6	50.8	51.7	48.7	52.3
24	48.7	53.9	47.3	60.0	49.2	54.0	60.5
10-12	47.2	47.8	48.6	49.5	45.2	47.5	46.2
14-16	48.1	46.4	49.5	48.0	46.3	48.9	48.6
0-24	48.6	48.1	49.2	49.6	47.7	49.5	48.7

85th %ile (ALL): 48.7
Weekday Inter-Peak: 47.4

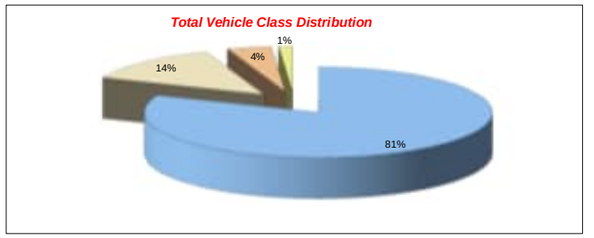
Channel 1 - Southbound — Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	452	662	315	302	606	394	480
40-50	572	798	525	350	623	607	606
50-60	90	106	83	76	87	108	111
60+	4	4	9	10	2	8	2
TOTAL	1118	1570	932	738	1318	1117	1199



Channel 1 - Southbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	743	139	41	14	937
6-22	860	152	43	14	1071
6-24	886	153	48	14	1094
0-24	909	155	48	14	1116
27/09/2024					
7-19	930	163	48	8	1132
6-22	1285	177	54	9	1525
6-24	1311	178	54	9	1555
0-24	1323	183	55	9	1570
28/09/2024					
7-19	685	79	20	4	788
6-22	760	94	23	7	884
6-24	786	98	24	7	913
0-24	803	98	24	7	932
29/09/2024					
7-19	538	64	21	4	627
6-22	603	68	24	4	706
6-24	621	70	24	4	720
0-24	635	75	24	4	738
30/09/2024					
7-19	881	193	61	26	1171
6-22	978	210	62	30	1280
6-24	995	214	64	32	1301
0-24	1003	216	65	32	1316
01/10/2024					
7-19	743	168	34	13	958
6-22	846	180	38	14	1078
6-24	865	183	39	15	1094
0-24	880	183	39	15	1117
02/10/2024					
7-19	800	154	65	27	1046
6-22	897	166	69	27	1159
6-24	919	169	70	27	1182
0-24	933	169	70	27	1199
Average					
7-19	788	137	41	14	980
6-22	893	150	48	14	1100
6-24	919	151	47	15	1123
0-24	926	154	47	15	1142

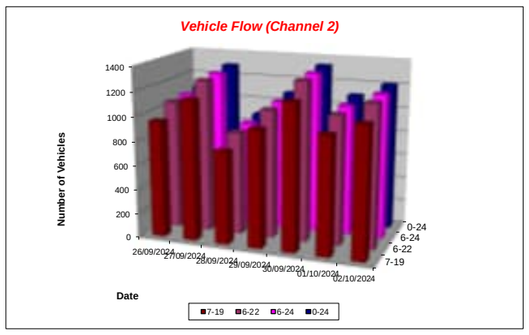


Bryncir ATC 3, B4411

Produced by Road Data Services Ltd.

Channel 2 - Northbound — Vehicle Flow — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday	Weekday Average	Average
1	1	1	2	9	2	3	4	2	3
2	1	3	4	2	1	1	2	2	2
3	2	0	0	3	1	3	2	2	2
4	5	4	4	3	2	4	2	3	3
5	4	3	4	0	7	4	2	4	3
6	9	15	3	2	5	17	12	12	9
7	32	39	15	9	42	36	41	38	31
8	59	69	26	20	72	69	55	65	53
9	100	93	45	49	143	100	123	112	93
10	72	129	81	85	115	87	97	100	95
11	94	168	88	91	167	93	88	122	113
12	87	101	72	101	133	75	95	98	95
13	65	75	62	113	100	69	78	77	80
14	84	83	80	105	61	74	98	80	84
15	81	79	74	89	77	77	87	80	81
16	93	100	66	101	80	76	69	84	84
17	98	104	71	74	113	99	107	104	95
18	72	91	53	65	81	86	96	85	78
19	52	55	40	64	48	56	72	57	55
20	36	31	36	41	39	30	30	33	35
21	14	19	22	23	20	15	17	17	19
22	20	19	18	24	11	13	14	15	17
23	12	10	13	11	10	10	12	11	11
24	0	4	6	2	4	5	4	3	4
7-19	957	1147	758	957	1190	961	1065	1064	1005
6-22	1059	1255	849	1054	1302	1055	1167	1168	1106
6-24	1079	1286	885	1067	1318	1070	1181	1182	1121
0-24	1093	1295	885	1086	1334	1102	1207	1206	1143



Channel 2 - Northbound — Average Speed — Week 1

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	25.0	35.9	48.3	44.4	40.8	41.7	40.5
2	37.8	44.1	49.9	51.0	47.1	37.2	47.0
3	46.9	-	-	47.0	37.9	39.7	39.7
4	44.7	45.6	41.6	43.5	48.4	47.1	47.6
5	44.6	50.0	41.7	-	45.0	42.0	46.6
6	47.1	49.2	38.0	50.5	47.6	42.5	46.3
7	43.3	43.1	46.3	46.6	44.9	44.3	46.0
8	45.8	43.3	45.9	43.0	44.1	45.2	45.4
9	43.2	41.3	44.2	40.7	38.1	43.7	43.2
10	40.3	40.0	40.6	42.6	33.1	42.6	37.9
11	39.5	39.2	40.1	40.7	39.0	39.4	37.1
12	41.4	39.8	37.0	42.0	39.4	41.3	39.9
13	41.0	42.4	43.3	41.1	41.3	42.3	40.7
14	40.9	42.9	42.9	42.2	40.9	41.1	41.2
15	42.6	40.5	43.3	40.4	40.2	40.9	39.4
16	41.8	42.5	44.4	41.4	43.4	43.1	40.9
17	41.4	42.8	42.5	42.3	41.4	43.6	43.6
18	42.7	43.2	43.0	41.4	43.3	42.4	43.5
19	39.7	44.7	43.5	41.8	42.7	46.1	43.7
20	43.7	43.1	44.0	41.7	40.4	43.4	44.9
21	43.3	41.6	43.5	39.9	42.3	41.0	41.0
22	39.6	44.5	43.8	40.3	46.4	46.0	44.0
23	45.1	41.8	46.6	44.9	43.7	50.2	49.8
24	-	48.0	43.1	39.6	51.9	47.1	49.7
10-12	40.4	39.4	38.7	41.4	39.2	40.2	38.5
14-16	42.2	41.6	43.8	41.8	41.8	42.0	40.9
0-24	41.9	41.8	42.5	41.6	40.4	42.7	41.8

Average (ALL): 41.7
Weekday Inter-Peak: 40.4

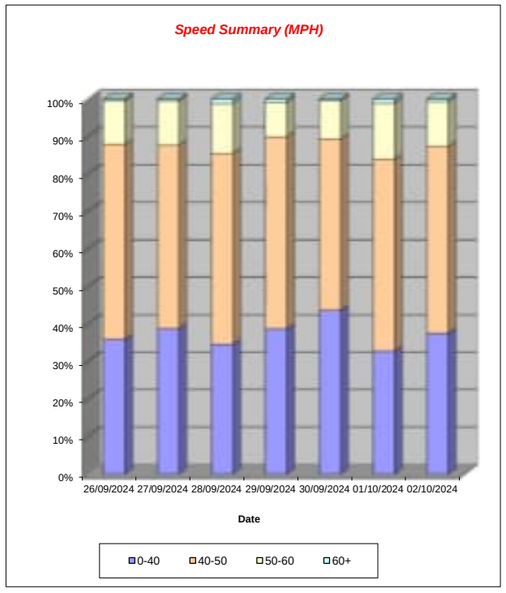
Channel 2 - Northbound — 85th Percentile

Hr Ending	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
1	-	-	48.8	51.2	40.8	55.5	44.3
2	-	46.5	51.8	56.5	-	-	53.0
3	51.0	-	-	52.5	-	44.9	44.5
4	49.1	52.3	43.2	48.0	49.2	53.2	48.6
5	49.9	54.9	49.9	-	49.2	47.7	52.1
6	53.2	59.1	45.9	59.0	55.3	52.5	55.7
7	49.7	51.0	57.2	57.1	51.1	52.5	54.4
8	52.4	52.0	52.6	50.5	51.5	52.6	53.3
9	51.0	49.3	50.5	49.1	49.0	51.7	50.8
10	49.7	47.2	48.3	50.0	44.9	50.3	48.2
11	46.6	44.6	48.3	46.9	45.5	46.5	45.2
12	47.9	47.3	45.5	49.4	46.9	49.3	48.0
13	47.6	49.1	51.1	48.4	49.4	49.6	49.6
14	50.1	50.5	49.4	49.6	48.0	49.8	49.8
15	50.8	49.6	51.8	47.9	46.5	49.5	48.5
16	49.5	49.8	51.9	48.4	50.3	50.0	48.8
17	49.5	50.2	50.4	48.8	49.5	51.2	51.3
18	50.6	53.5	50.9	49.0	52.2	51.9	51.2
19	47.3	51.7	51.8	49.2	52.3	53.1	51.3
20	50.6	50.9	51.7	48.1	49.6	53.0	52.6
21	53.3	50.1	53.8	47.6	48.6	49.9	46.6
22	50.7	51.9	51.5	47.3	56.1	53.7	53.0
23	53.3	48.7	54.8	54.2	53.1	58.0	64.8
24	-	56.4	51.7	41.0	60.5	59.4	55.3
10-12	47.2	45.7	47.2	48.3	46.2	47.8	46.7
14-16	50.2	49.8	51.3	48.1	48.8	49.8	48.7
0-24	49.9	49.7	50.7	49.0	49.4	51.0	50.6

85th %ile (ALL): 50.0
Weekday Inter-Peak: 48.0

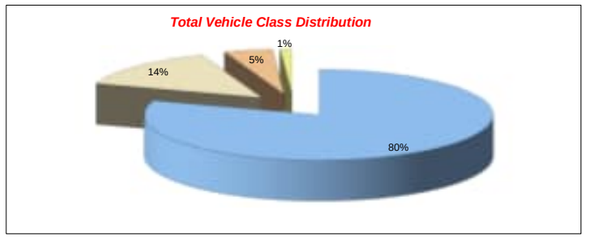
Channel 2 - Northbound — Speed Summary — Week 1

Speed (MPH)	26/09/2024 Thursday	27/09/2024 Friday	28/09/2024 Saturday	29/09/2024 Sunday	30/09/2024 Monday	01/10/2024 Tuesday	02/10/2024 Wednesday
0-40	393	503	307	421	583	362	454
40-50	569	633	450	556	610	564	601
50-60	126	152	118	100	135	164	144
60+	5	7	10	9	6	12	8
TOTAL	1093	1295	885	1086	1334	1102	1207



Channel 2 - Northbound — Vehicle Class — Week 1

Classes / Day / Time	Car / LGV / Caravan - 1	MGV - 2	OGV1 / Bus - 3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
26/09/2024					
7-19	779	143	31	4	957
6-22	857	159	39	4	1059
6-24	882	164	40	4	1071
0-24	882	163	39	8	1093
27/09/2024					
7-19	930	163	48	8	1132
6-22	1011	187	48	7	1255
6-24	1054	192	48	8	1269
0-24	1040	196	48	8	1295
28/09/2024					
7-19	656	81	18	3	758
6-22	733	91	22	3	849
6-24	754	91	22	3	868
0-24	766	91	23	5	885
29/09/2024					
7-19	811	102	40	4	957
6-22	894	117	40	5	1054
6-24	902	119	40	6	1067
0-24	922	116	39	5	1086
30/09/2024					
7-19	918	181	71	24	1190
6-22	999	208	78	24	1302
6-24	1009	212	78	24	1316
0-24	1023	212	77	20	1334
01/10/2024					
7-19	797	166	33	5	961
6-22	828	182	40	5	1055
6-24	844	184	42	6	1076
0-24	862	190	42	8	1102
02/10/2024					
7-19	803	163	73	26	1065
6-22	881	175	82	26	1182
6-24	884	178	82	26	1192
0-24	912	179	88	28	1207
Average					
7-19	808	142	43	10	1005
6-22	887	159	49	11	1106
6-24	907	162	50	11	1121
0-24	915	164	51	12	1143



3.11.A Bryncir and Glaslyn Cables Noise Baseline Monitoring

nationalgrid

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1. Introduction

1.1.1 This report provides details of the noise baseline monitoring conducted as part of the environmental impact assessment for the Bryncir and Glaslyn Cables Works of the Project.

1.1.2 The data collected serve as reference points for evaluating future noise impacts and ensuring compliance with relevant environmental regulations and standards.

1.1.3 The following sections detail the monitoring methodology, equipment used, locations of measurement and noise monitoring results for each of the noise monitoring locations.

2. Methodology

2.1.1 The monitoring procedures followed guidance from British Standard (BS) 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures (BS 7445) (Ref 2.1). Field calibration was applied to each instrument at the start and end of each measurement. Appropriate outdoor all-weather kits were used on all microphones.

2.1.2 Unattended sound monitoring equipment was set up for a period of 24-hours at four locations nearby or within the red line boundary of the development. Continuous measurements were undertaken to establish ambient sound levels during daytime (07:00 – 23:00), and night-time (23:00 – 07:00) periods. The unattended sound monitoring instruments were housed in a weatherproof box with sufficient batteries to power the instrument for the full measurement duration. Unattended sound measurements include $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$ and L_{AFmax} sound level indicators recorded over 15-minute sample periods.

2.1.3 Further attended sound monitoring was carried out at two locations for a period of 2-hours, 1-hour in the morning between 07:00 – 11:00 and 1-hour in the afternoon between 12:00 – 18:00.

2.1.4 Observations of the weather conditions and dominant sound sources were made during attended measurements and at the start and end of unattended measurements. Photographs were taken to show the location of the equipment and any nearby major sound sources visible from the measurement location.

2.1.5 Noise monitoring locations are described in Table **2-1** below.

Table 2-1 – Noise monitoring locations

Monitoring locations	Measurement duration	Description	GPS coordinates
LT3.1	24 Hours	South of Glan-Dwyfach, approximately 60 m east of the B4411.	52.9603319, - 4.2608754
LT3.2	24 Hours	South of Glan-Dwyfach, approximately 4 m east of the B4411 and 80 m south of the A487.	52.9676805, - 4.2604579
LT3.3	24 Hours	East of Glan-Dwyfach, directly adjacent to the A487.	52.9667365, - 4.2527805
LT4.1	24 Hours	South of Tremadog, approximately 70 m north of the A487.	52.936750, - 4.1385083
LT4.2	24 Hours	North-west of Porthmadog, approximately 360 m north of the A487.	52.934672, - 4.1207306
LT4.3	24 Hours	North of Minffordd, approximately 200 m south of the Porthmadog Bypass.	52.927172,

Monitoring locations	Measurement duration	Description	GPS coordinates
			- 4.0907944
ST4.1	2 x 1 Hours	South of Wern Manor, approximately 190 m north of the A497.	52.936433, - 4.1708139
ST4.2	2 x 1 Hours	To the north-east of Porthmadog, adjacent to Madog Street.	52.929497, - 4.1306500

2.1.6 All meters were set to measure L_{Aeq}, L_{A10}, L_{A90}, and L_{AFmax} sound level indicators over 15-minute continuous periods. The calibrator and sound level meters used for the noise monitoring are listed in Table **2-2**. The sound level meters were issued with a valid laboratory calibration certificate within the last two years, and the calibrator within the last year, in line with BS 7445 (Ref 2.1).

Table 2-2 – Noise monitoring equipment

Description	Manufacturer	Model	Serial number
Type 1 Sound Level Meter – LT3.1, LT3.2, LT4.1	Rion	NL-52	1021278
Type 1 Sound Level Meter – LT4.2, LT4.3	Rion	NL-52	1021280
Type 1 Sound Level Meter – LT3.3	Rion	NL-52	0386765
Type 1 Sound Level Meter – ST4.1, ST4.2	Rion	NL-52	1021279
Calibrator – All	Rion	NC-74	34425537

3. Results

3.1 LT3.1 Noise Monitoring Results

3.1.1 Unattended noise measurements on a farm south of Glan-Dwyfach were captured at LT3.1 from the 16 October 2024 to the 17 October 2024. The sound level meter was placed in the farmyard and the microphone was positioned approximately 1.3 metres (m) above ground level.

3.1.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Farm noise, cows grunting, etc.
- Birdsong.
- Trees rustling.

3.1.3 Noise monitoring results are presented in Table **3-1** below.

Table 3-1 – Noise monitoring results LT3.1

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m}$ in dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m}$ in dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m}$ in dB	L_{AFmax} dB
16/10/2024 – 17/10/2024	45	37	67	41	36	68	38	34	61

3.2 LT3.2 Noise Monitoring Results

3.2.1 Unattended noise measurements at LT3.2 were captured between the 10 April 2025 and 11 April 2025 on farmland to the south of Glan-Dwyfach. The sound level meter was secured to fencing adjacent to the B4411 and the microphone was positioned approximately 1.3 m above ground level.

3.2.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Road traffic noise from the B4411 and A487.
- Sheep bleating in adjacent field.
- Foliage moving in the breeze.

3.2.3 Noise monitoring results are presented in Table **3-2** below.

Table 3-2 – Noise monitoring results LT3.2

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB
10/04/2025 – 11/04/2025	67	46	91	64	40	92	59	35	87

3.3 LT3.3 Noise Monitoring Results

3.3.1 Unattended noise measurements at LT3.3 were captured between the 10 April 2025 and 11 April 2025 on farmland located to the east of Glan-Dwyfach. The sound level meter was secured to fencing adjacent to the A487 and the microphone was positioned approximately 1.3 m above ground level.

3.3.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Road traffic noise from the A487.
- Sheep bleating in adjacent field.
- Foliage moving in the breeze.

3.3.3 Noise monitoring results are presented in Table **3-3** below. As the monitoring location was close to the A487 in comparison to the nearest receptor location, a correction has been applied to L_{Aeq} and L_{AFmax} sound level indicators. The L_{Aeq} and L_{AFmax} levels at this location are dominated by intermittent events from passing vehicles and distance corrections have been applied so that the measured data is representative of nearby sensitive receptors. The L_{A90} is not influenced by intermittent events at this location, therefore no distance correction has been applied.

3.3.4 The distance correction of -12 dB has been applied to L_{Aeq} measurements and -24 dB to L_{AFmax} measurements in Table **3-3**. These account for the distance of approximately 8 m from measurement location LT3.3 to the A487 and the relative position of the nearby sensitive receptors to the A488, which is approximately 120 m. The corrections assume that A487 L_{Aeq} noise acts as a line source and L_{AFmax} noise acts as a point source.

Table 3-3 – Noise monitoring results LT3.3

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB
10/04/2025 – 11/04/2025	61*	44	68*	57*	39	67*	53*	29	66*

*-12 dB distance correction applied

3.4 LT4.1 Noise Monitoring Results

3.4.1 Unattended noise measurements on the side of Church Street south of Tremadog were captured at LT4.1 from the 15 October 2024 to the 16 October 2024. The sound level meter was located in the farmyard and the microphone was positioned approximately 1.3 m above ground level.

3.4.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Road traffic noise.
- Occasional walker passing by.

3.4.3 Noise monitoring results are presented in Table **3-4** below.

Table 3-4 – Noise monitoring results LT4.1

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB
15/10/2024 – 16/10/2024	63	48	81	60	40	81	54	42	76

3.5 LT4.2 Noise Monitoring Results

3.5.1 Unattended noise measurements in a field north-west of Porthmadog were captured at LT4.2 from the 15 October 2024 to the 16 October 2024. The sound level meter was located in the farmyard and the microphone was positioned approximately 1.3 m above ground level.

3.5.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Occasional train pass by.
- Distant road traffic.

3.5.3 Noise monitoring results are presented in Table **3-5** below.

Table 3-5 – Noise monitoring results LT4.2

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB
15/10/2024 – 16/10/2024	53	46	71	46	37	66	46	36	66

3.6 LT4.3 Noise Monitoring Results

3.6.1 Unattended noise measurements in a field north-west of Porthmadog were captured at LT4.3 from the 16 October 2024 to the 17 October 2024. The sound level meter was located in the farmyard and the microphone was positioned approximately 1.3 m above ground level.

3.6.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Plant noise from nearby worksite.
- Road traffic.

3.6.3 Noise monitoring results are presented in Table **3-6** below.

Table 3-6 – Noise monitoring results LT4.3

Date	Daytime			Evening			Night-Time		
	$L_{Aeq,12h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,4h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB	$L_{Aeq,8h}$ dB	$L_{A90,15m\ in}$ dB	L_{AFmax} dB
16/10/2024 – 17/10/2024	50	47	72	48	45	61	41	38	55

3.7 ST4.1 Noise Monitoring Results

3.7.1 Short term attended noise measurements just south of Wern Manor were captured at ST4.1 with the morning levels being taken on the 17 October 2024 and the afternoon levels being recorded on the 15 October 2024. The sound level meter was in the farmyard and the microphone was positioned approximately 1.3 m above ground level.

3.7.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- The stream running by Wern Manor.
- Farm equipment.
- Distant road traffic.

3.7.3 Noise monitoring results are presented in Table **3-7** below.

Table 3-7 – Noise monitoring results ST4.1

Date and time period	$L_{Aeq,1h}$ dB	$L_{A10,1h}$ dB	$L_{A90,1h}$ dB	L_{AFmax} dB	$L_{Aeq,1h}$ dB
17/10/2024 – Morning	59	60	59	68	59
15/10/2024 – Afternoon	57	57	55	78	57
Average	58	58	57	73	58

3.8 ST4.2 Noise Monitoring Results

3.8.1 Short term attended noise measurements adjacent to Madog Street to the north-east of Porthmadog were captured at ST4.2 with the morning and afternoon levels both being recorded on the 15 October 2024. The sound level meter was placed in the farmyard and the microphone was positioned approximately 1.3 m above ground level.

3.8.2 During the installation and collection of the noise monitoring equipment, the noise environment at this location was characterised by (from the most dominant noise source to the least dominant noise source):

- Road traffic noise.
- Birdsong.
- Distant plant noise.

3.8.3 Noise monitoring results are presented in Table **3-8** below.

Table 3-8 – Noise monitoring results ST4.2

Date and time period	$L_{Aeq,1h}$ dB	$L_{A10,1h}$ dB	$L_{A90,1h}$ dB	L_{AFmax} dB	$L_{Aeq,1h}$ dB
15/10/2024 – Morning	58	60	46	77	58
15/10/2024 – Afternoon	59	60	42	88	59
Average	58	60	44	83	58

Bibliography

Ref 2.1 BSI (2003). *BS 7745-1:2003, Description and measurement of environmental noise – Guide to quantities and procedures.*

Uwchraddio'r Grid
Pentir i Drawsfynydd

Pentir to Trawsfynydd Reinforcement Project

Bryncir Operational Noise Impact Assessment
September 2025

nationalgrid

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1. Introduction

1.1 Overview

1.1.1 WSP has been appointed by National Grid Electricity Transmission plc (NGET) to undertake a noise assessment to accompany the planning application for the Bryncir works as a component of the Pentir to Trawsfynydd Reinforcement Project (the 'Project'). This report presents the findings of the operational noise assessment for the proposed substation at Bryncir, Gwynedd.

1.1.2 The purpose of this assessment is to quantify the impact of operational noise associated with the proposed substation on the nearest noise sensitive receptors.

1.1.3 An environmental noise survey has been undertaken to establish the existing background sound levels in which noise associated with the development are assessed against. Predicted noise levels for this development have then been calculated and assessed in accordance with British Standard (BS) 4142:2014+A1:2019.

1.1.4 A summary of technical terminology used in this report is in Appendix B.

1.1.5 Limitations to this assessment are set out in Appendix C.

1.2 Site Location

1.2.1 The site is south of the A487 and east of the B4411, south of the village of Bryncir in Gwynedd, in a predominantly rural setting. The land is currently agricultural and surrounded by other agricultural lands. The nearest noise-sensitive receptors identified are approximately 105 metres (m) to the north of the site and 175 m to the south of the site. The site location is shown in **Figure 1.1** below and a summary of the receptor locations is presented in **Table 1.1**.

Figure 1.1: Plan showing the site location and nearest noise-sensitive receptors

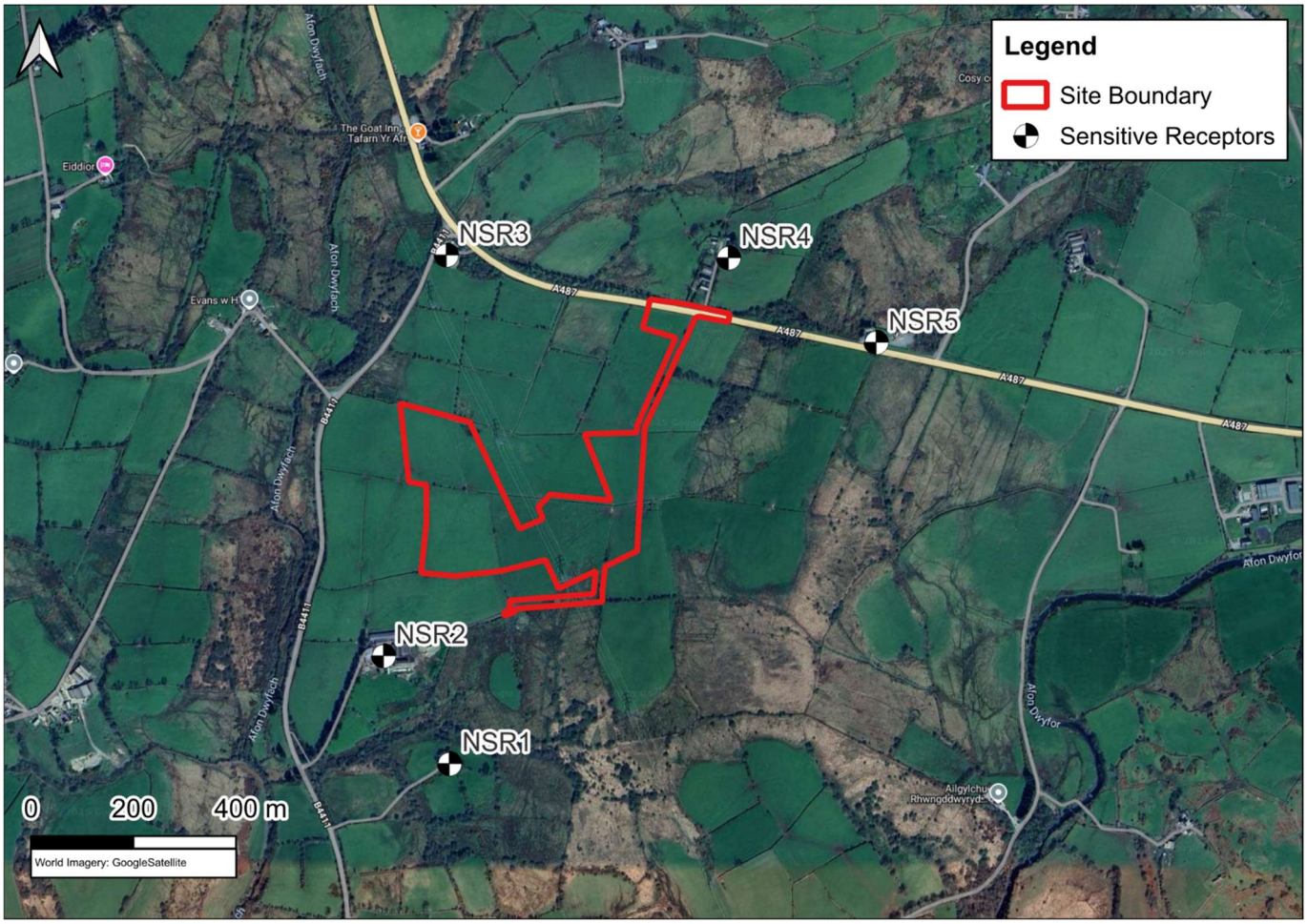


Table 1.1: Summary of sensitive receptor locations

Receptor	Description	Coordinates (British National Grid)		Approximate distance from site boundary (m)
		X	Y	
NSR1	Ynys-dyfnallt (Residential)	248292	342556	400
NSR2	Bryn-'refail-isaf (Residential)	248169	342780	175
NSR3	Glan Dwyfach (Residential)	248306	343553	300
NSR4	Bryn-efail-uchaf (Residential)	248863	343531	105
NSR5	Noddfa (Residential)	249150	343356	285

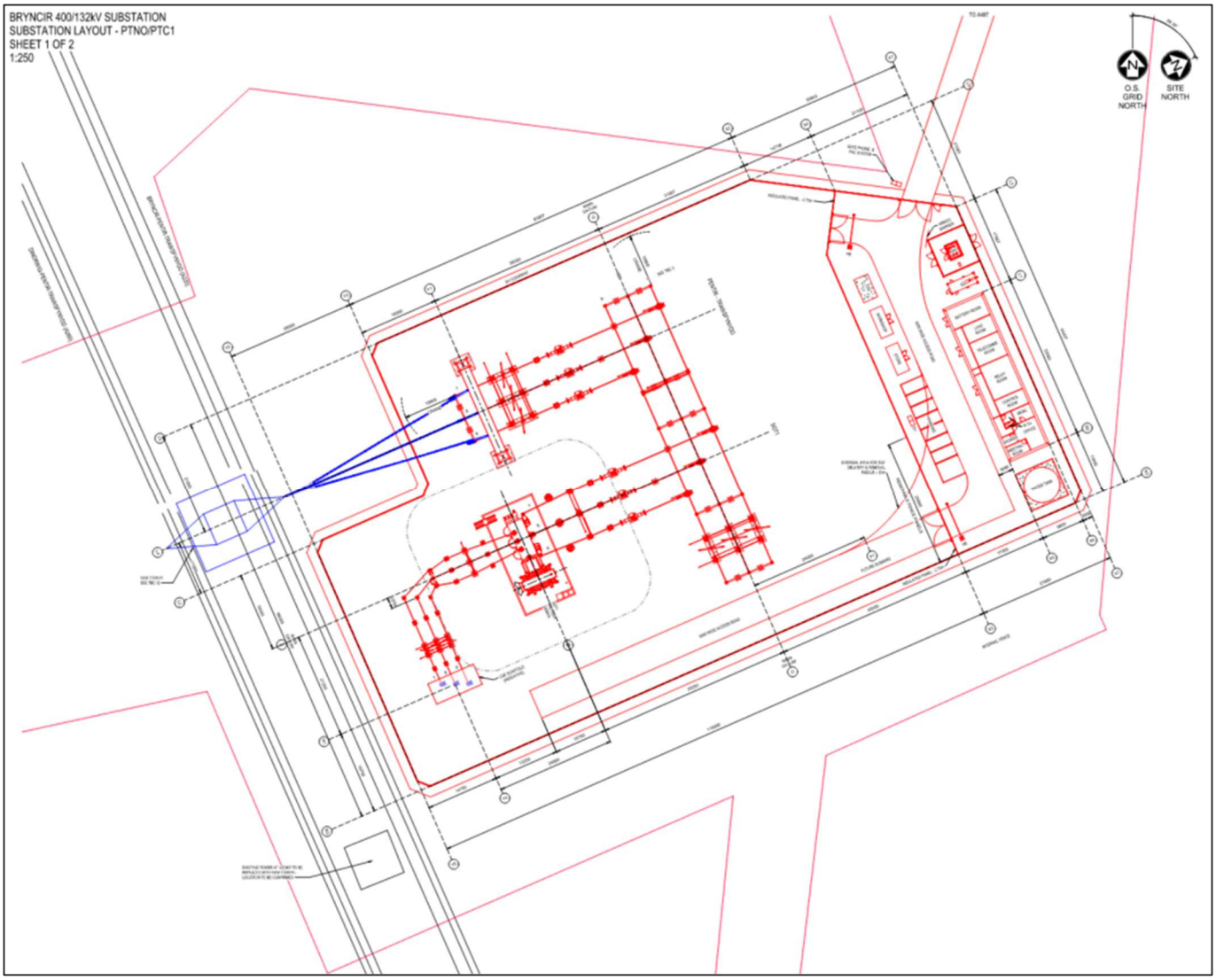
1.3 Proposed Works

1.3.1 The proposed works consists of a 400 kilovolt (kV) Substation Compound. The single electrical transformer would 'step down' the 400 kV voltage of the Pentir –Trawsfynydd circuit to a voltage of 132 kV, ready for connection to the existing SPEN DB route.

1.3.2 The proposed Super Grid Transformer (SGT) (1no. 400/132 kV) required to change and regulate voltage is anticipated to be the dominant source of operational noise in the proposed works.

1.3.3 **Figure 1.2** below shows the proposed layout of Bryncir substation.

Figure 1.2: Proposed layout of Bryncir substation (drawing PDD-102185-LAY-102 Rev P0 11/06/2025)



2. Policy, Guidance and Criteria

2.1 National Policies

2.1.1 Future Wales: The National Plan 2040 (Ref. 1-1) and Planning Policy Wales (PPW) (Ref. 1-2) set out the land use planning policies of the Welsh Government. They are supplemented by a series of Technical Advice Notes (TANs), including Technical Advice Note 11 (Ref. 1-3) which relates to Noise, Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

2.1.2 Paragraph 6.7.4 of PPW states:

"The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure[161] to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

Footnote 161 – The number of people exposed to the pollutant as well as the levels to which they are exposed."

2.1.3 TAN 11 provides advice on how the planning system can be used to minimise the adverse impacts of noise without placing unreasonable restrictions on development or adding undue costs and administrative burdens on businesses. In relation to noise from industrial and commercial developments TAN 11 states:

"B17. The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987."

2.1.4 TAN 11 refers to a superseded version of BS 4142 (Ref. 1-4 and Ref. 1-7) and BS 8233 (Ref. 1-5 and Ref. 1-12), and it is appropriate to adopt the most recent editions of the guidance.

2.2 Local Policies

Cyngor Gwynedd

2.2.1 Gwynedd Council adopted the Joint Anglesey and Gwynedd Local Development Plan (LDP) 2011 – 2026 with the Isle of Anglesey County Council in 2017. Although a new LDP for the Gwynedd Local Planning Authority area is currently being prepared which will cover a period between 2024 and 2039, until this has been adopted, the joint LDP will continue to set the policy framework for the Gwynedd Planning Area.

2.2.2 Policy PCYFF2 of the LDP states that planning permission will be refused where the proposed development would have an unacceptable adverse impact on the health, safety or amenity of occupiers of local residences, other land and property uses or characteristics of the locality due to increased activity, disturbance, vibration, noise, dust, fumes, litter, drainage, light pollution, or other forms of pollution or nuisance.

2.3 Consultation with the Local Planning Authority

2.3.1 WSP engaged with the Public Protection team at the Gwynedd Council to seek confirmation and agreement on the noise survey and assessment methodologies. This was undertaken via email on 17 July 2025.

2.3.2 The noise survey was undertaken in accordance with BS 7445-1:2003 (Ref. 1-6Ref. 1-4) and BS 4142:2014+A1:2019 (Ref. 1-7) at locations representative of the nearest noise-sensitive receptors to establish the existing noise climate. The baseline noise survey data is used to assess the likely noise impact arising from the operation of the proposed development in accordance with guidance in BS 4142.

2.3.3 Consultation with the Public Protection team at the Gwynedd Council on the noise survey methodology is ongoing.

2.4 BS 4142:2014+A1:2019

2.4.1 BS 4142:2014+A1:2019 provides methods for rating and assessing sound arising from commercial sources, including external plant and on-site vehicle movements, and unloading, at residential receptors. It uses a relative assessment approach whereby the predicted commercial sound level (suitably penalised for annoyance character if appropriate) is compared with the prevailing background sound level.

2.4.2 Where the source under assessment includes acoustic characteristics, then a series of corrections are added to the specific sound level ($L_{Aeq,T}$) in the determination of the rating level ($L_{Ar,Tr}$). The specific sound level is rated using the following penalties:

- Tonality up to 6 Decibels (dB)
- Impulsivity up to 9 dB
- Other sound characteristics up to 3 dB
- Intermittency 3 dB

2.4.3 Where the source does not include any acoustic features, such as tonality, impulsivity or intermittency etc., the rating level equals the specific sound level.

2.4.4 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level as described in Clause 11 of BS 4142.

2.4.5 Comparing the rating level with the background sound level, the Standard states:

"Typically, the greater this difference, the greater the magnitude of impact.

A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

2.4.6 The final impact is determined using the context of the existing noise climate measured during the baseline noise survey. The change in the ambient noise levels due to the proposed development is assessed.

2.4.7 The Institute of Environmental Management & Assessment (IEMA) stated in the 2014 Guidelines for Environmental Noise Impact Assessment (Ref. 1-8):

"For broad band sounds which are very similar in all but magnitude, a change or difference in noise level of 1 dB is just perceptible under laboratory conditions, 3 dB is perceptible under most normal conditions, and a 10 dB increase generally appears to be twice as loud."

2.4.8 A change of 3 dB(A) corresponds to a doubling of the sound power or intensity.

2.4.9 The noise survey included assessment of the sound level in the 1/3 octave frequency band, particularly within the 100 Hertz (Hz) band. A limit of 30 dB at this frequency band typically has been used as a criterion by some Local Planning Authorities across the UK in relation to similar development types. However, this criterion is not derived from any specific guidance.

2.4.10 BS 4142 states that where the initial estimate of the impact needs to be modified due to the context, there are pertinent factors which will need to be considered such as:

"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse."

2.4.11 The Association of Noise Consultants (ANC) published a technical note in 2020 for the current version of the BS 4142 guidance (Ref. 1-9). In this technical note, it is emphasised that BS 4142 does not define what 'low' background and rating sound levels may be. However, the note to the Scope of the 1997 (Ref. 1-10) version of BS

4142 defined very low background sound levels as being less than about 30 dB L_{A90}, and low rating levels as being less than about 35 dB $L_{Ar,Tr}$.

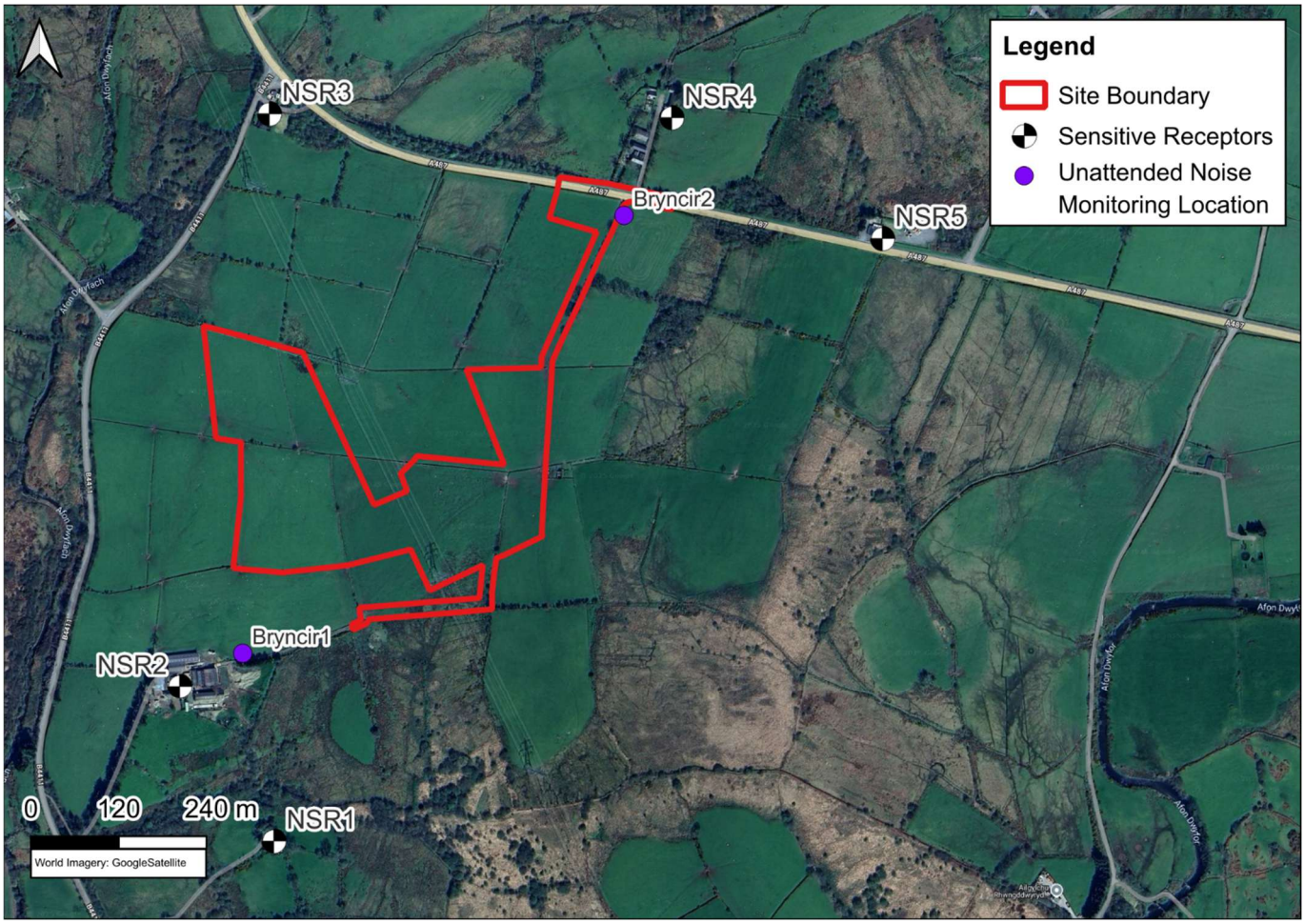
2.4.12 The Good Practice Working Group of the ANC suggested that similar values would not be unreasonable in the context of BS 4142, but that the assessor should make a professional judgement and justify it where appropriate.

3. Baseline Noise Survey

3.1 Survey Methodology

3.1.1 An environmental noise survey was undertaken between 18 June 2025 and 25 June 2025. Unattended noise monitoring was carried out at two locations representative of the nearest residential receptors. These locations are shown in **Figure 3.1**.

Figure 3.1: Noise monitoring locations and sensitive receptor locations



3.1.2 Both measurements were taken at a height of 1.3 m above ground and in free-field measurement conditions using Class 1 sound level meters.

3.1.3 A summary of the equipment used is presented in **Table 3.1**.

Table 3.1: Noise monitoring equipment

Measurement position	Equipment description	Manufacturer & Type No.	Serial No.
Bryncir1 (BNG: 248246, 342817)	Sound level meter	Rion NL-53	1130788
	Pre-amplifier	Rion NH-25	33679
	Microphone	Rion UC-59	25169
	Calibrator	Rion NC-75	35292145
Bryncir2 (BNG: 248794, 343400)	Sound level meter	Rion NL-53	1130789
	Pre-amplifier	Rion NH-25	33680
	Microphone	Rion UC-59	25170
	Calibrator	Rion NC-75	35292145

3.1.4 All sound level meters had been calibrated to traceable standards within the previous 24 months, and the calibrator within the previous 12 months. A field calibration was performed for sound level meters on site at the beginning and end of the monitoring periods. Any drifts in calibration level were within acceptable tolerances (±0.1 dB).

3.1.5 A record of the meteorological conditions such as wind speed, rainfall and temperature has been taken from nearby weather stations. Any sound levels measured during periods of adverse weather conditions such as rain, or wind speeds greater than 5 metres per second (m/s), have been excluded from the study. These exclusion periods are indicated on the time history plots provided in Appendix D by gaps in the graphs. In summary, up to 86.5 hours of data from each location were omitted from analysis due to adverse weather conditions of which up to 26.8 hours were night-time period and up to 59.8 hours were daytime period. The data omitted were largely in the period between 21 June 2025 and 24 June 2025.

3.1.6 Existing noise sources observed at location Bryncir1 consisted of wind rustling through foliage, bird song and farm animals whilst at Bryncir2, the dominant noise source is road traffic noise along A487.

3.2 Survey Results

3.2.1 BS 4142 states that the background sound level is measured in $L_{A90,T}$, the A-weighted sound pressure level exceeded 90% of the time over reference period T.

3.2.2 BS 4142 requires the reference period to be 1 hour during the daytime (07:00 – 23:00) and 15 minutes during the night-time (23:00 – 07:00). As the night-time levels are lower than the daytime, they will inform the worst-case scenario in terms of noise impact.

3.2.3 To establish the representative background sound levels at the assessment locations, the cumulative frequency histograms of the measured night-time $L_{A90,15mins}$, rounded to the nearest whole numbers for both measurement locations are presented in **Figure 3.2** and **Figure 3.3**. The daytime cumulative frequency histograms are included in Appendix D of this report.

Figure 3.2: Bryncir1 – Range of background sound levels measured over night-time periods

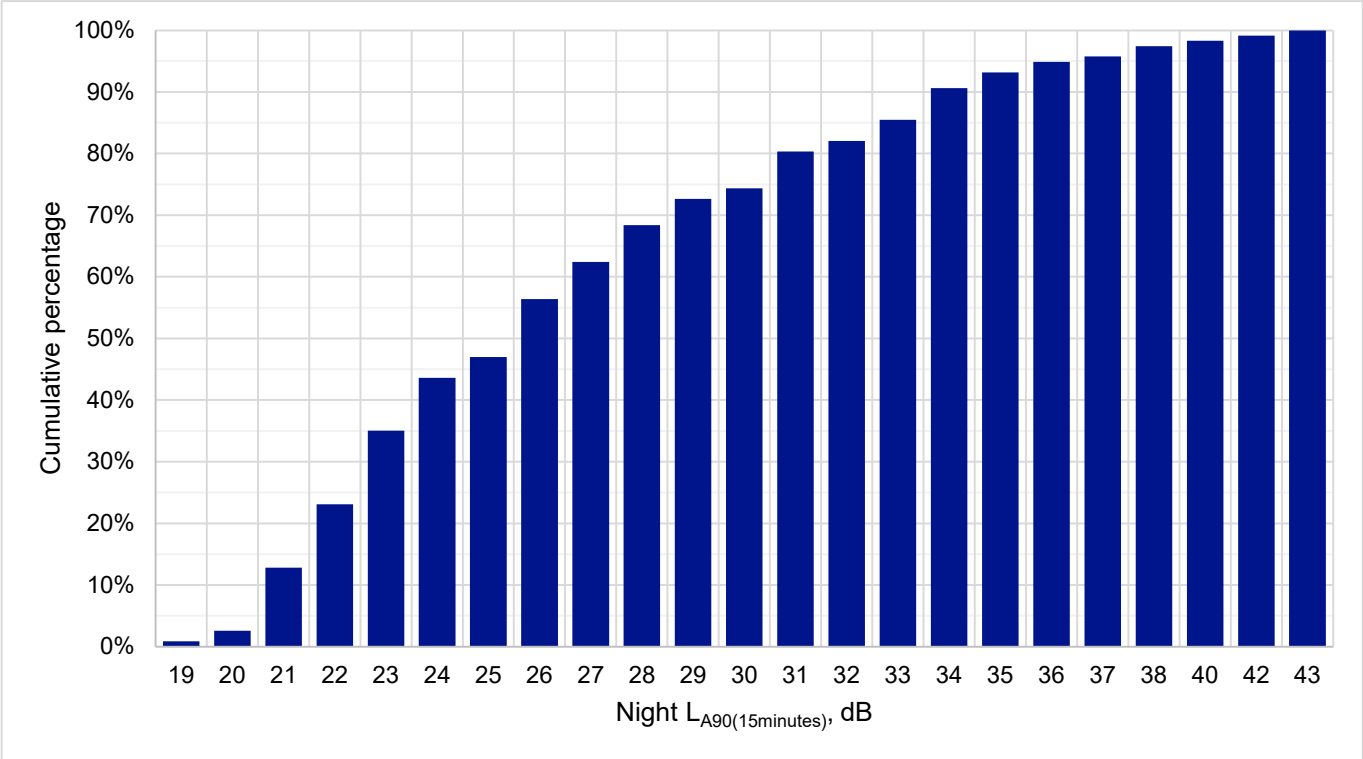
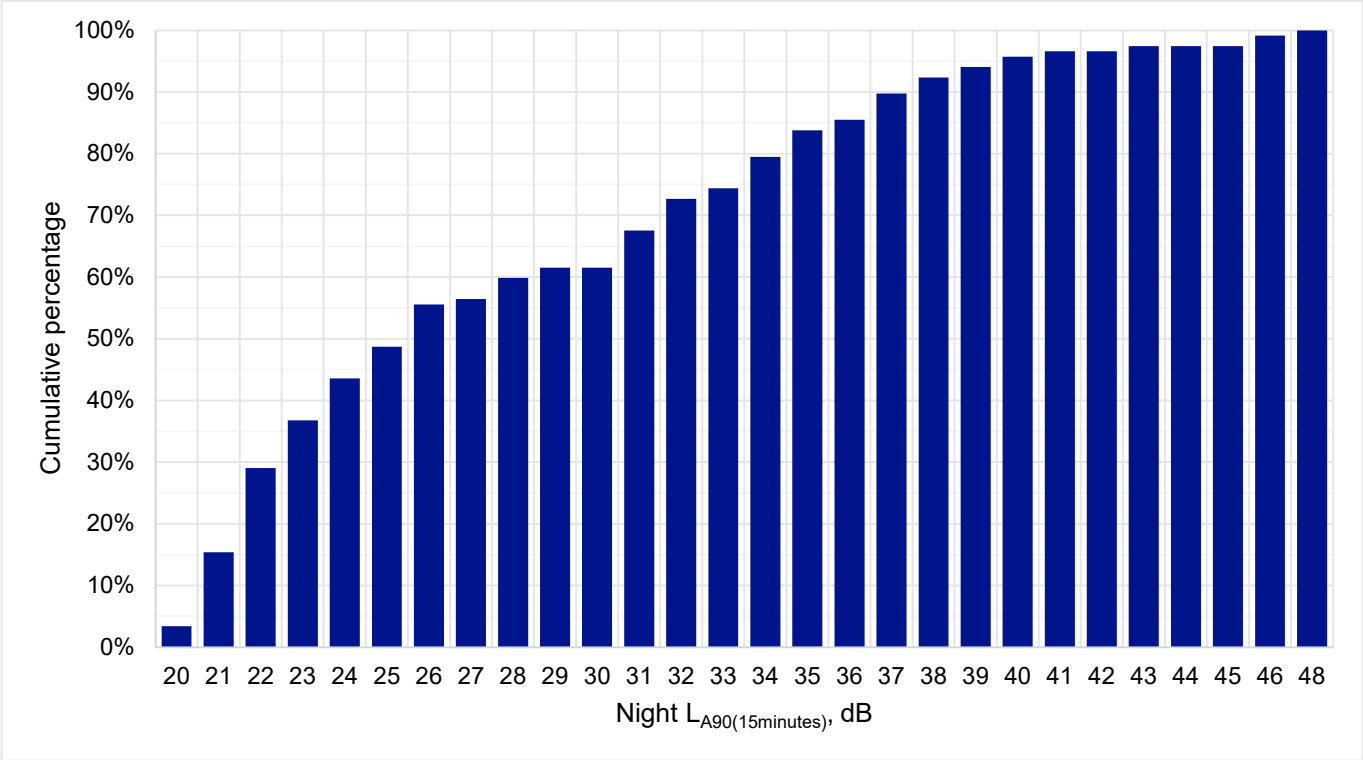


Figure 3.3: Bryncir2 – Range of background sound levels measured over night-time periods



3.2.4 **Table 3.2** presents the $L_{A90,15minutes}$ which is the representative background sound levels and the average L_{Aeq} for the monitoring duration which represents the ambient sound.

3.2.5 The representative background sound levels are chosen based on the $L_{A90,15minutes}$ that is exceeded by 70% of the time as shown in the cumulative frequency histograms.

Table 3.2: Representative background and ambient sound levels

Receptor location	Representative measurement position	Representative background sound level, $L_{A90,15mins}$ (dB)		Ambient sound level, L_{Aeq} (dB)	
		Daytime	Night-time	Daytime	Night-time
NSR1 – NSR2	Bryncir1	29	23	48	46
NSR3 – NSR5	Bryncir2	37	23	58	52

4. Operational Noise Impact Assessment

4.1 Overview

4.1.1 A computerised noise model of the site and the surrounding area was created using the CadnaA noise prediction software (version 2025 MR 1), which implements calculations to predict the effects on noise propagation of geometric spreading, topography, screening, meteorological conditions, based on information provided by the user regarding the sources of noise. Calculations were carried out in accordance with International Organization for Standardization (ISO) 9613-2:2024 (Ref. 1-11) which assumes a moderate downwind condition in all calculations, as recommended in Section 5 of the same standard.

4.2 Modelling Settings

4.2.1 The following modelling settings and source data were incorporated:

- Default ground absorption: G=0.8 (representing acoustically absorbent agricultural land);
- Two orders of reflection;
- ISO 9613-2:2024 propagation model;
- Ground topography based on Ordnance Survey (OS) Terrain® 50;
- Residential receptors located at first floor (4.0 m) of each façade facing the site, unless they are single-storey buildings in which case 1.5 m height has been used instead;
- Predicted levels are free-field;
- On-site structures are based on the proposed layout shown in **Figure 1.2**;
- Off-site building locations are derived from OS OpenMap; and
- Heights of dwellings are assumed to be 4.0 m for single-storey and 7.0 m for two-storeys.

4.3 Source Data

4.3.1 The noise assessment is undertaken based on the sound level data provided by NGET for indicative equipment to be installed at the site. The modelled equipment at the site is as follows.

Table 4.1: Modelled proposed equipment

Item	Number of items	Sound power level per unit, dB L_{wA}
SGT – main tank	1	95*
SGT – cooling plant	1	87**

*As taken from National Grid TS 2.03 Technical Specification – maximum sound power level of main unit at 50% load and 102.5% excitation voltage for a transformer with equivalent double wound rated power between 200 to 350 MVA.

**As taken from National Grid TS 2.03 Technical Specification – maximum sound power level of a cooler for the corresponding transformer.

Note:

1. The sound power level data provided do not include octave band levels. The levels are modelled at 125 Hz octave band frequency for the main tank as this is likely to be the dominant audible frequency and a typical fan spectrum is used for the cooling plant.
2. The sources are modelled as point sources at 4.7 m above ground.

4.3.2 The SGT main tank is modelled with an acoustic enclosure which provides a minimum sound attenuation of 20 dB at 125 Hz octave band frequency. This sound attenuation has been included in the assessment as a means of noise mitigation embedded in the design.

4.4 Rating Corrections

4.4.1 In the absence of frequency-based source noise data, it is not possible to determine the presence or absence of tonality using the objective method for assessing the audibility of tones.

4.4.2 In accordance with the subjective method of establishing the rating penalty in BS 4142, where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

4.4.3 As a conservative measure, it has been assumed that the specific sound from the sound sources features characteristics (including tonality) which may be perceptible during the very quietest periods of the night. Therefore, an acoustic feature correction of 3 dB has been applied.

4.4.4 If when the equipment is selected, it can be demonstrated through frequency-based source data that the equipment does not necessitate an acoustic feature correction for tonality using the guidance of BS 4142, this correction may be removed.

4.5 BS 4142 Initial Impact Assessment

4.5.1 Based on the background sound levels adopted and the specific sound levels predicted in the noise model, the initial impact estimations are presented in **Table 4.2**.

Table 4.2: Summary of BS 4142 assessment

Calculation step	NSR1	NSR2	NSR3	NSR4	NSR5
Predicted specific level, dB L_{Aeq}	21	21	18	18	17
Acoustic feature correction, dB	3	3	3	3	3
Rating level, dB $L_{Ar,Tr}$	24	24	21	21	20
BS 4142 assessment against the representative background level					
Representative background sound level, dB L_{A90}	23	23	23	23	23
Rating level minus background sound level, dB	+1	+1	-2	-2	-3
Impact indication	Potential Adverse	Potential Adverse	Low	Low	Low

4.6 Change in Ambient Noise Level

4.6.1 To provide further context to the initial BS 4142 impact assessment above, the change in ambient noise level assessment is also undertaken and presented in **Table 4.3** below.

4.6.2 Only the night-time assessment has been presented as this is the worst-case period.

Table 4.3: Summary of change in ambient noise level assessment

Receptor	Specific sound level, dB L_{Aeq}	Measured Existing ambient sound level, dB L_{Aeq} Night-time	Predicted ambient sound level*, dB L_{Aeq} Night-time	Change in ambient sound level, dB Night-time
NSR1	21	46	46	0
NSR2	21	46	46	0
NSR3	18	52	52	0
NSR4	18	52	52	0
NSR5	17	52	52	0

* The predicted ambient sound level is the logarithmic sum of the existing ambient and the predicted specific level as presented in Table 4.2. [=10 log ($10^{Lp1/10}$ + $10^{Lp2/10}$)]

4.7 Third-octave Band Noise Levels

4.7.1 The predicted external noise levels at the receptors from the proposed works at the following third-octave band frequencies are shown in **Table 4.4**.

Table 4.4: Summary of third-octave band assessment

Receptor	Third-octave band sound pressure level, dB (external levels)		
	100 Hz	125 Hz	160 Hz
NSR1	13	13	13
NSR2	14	13	13
NSR3	11	11	11
NSR4	11	10	10
NSR5	10	10	9

4.8 Discussion

4.8.1 The initial BS 4142 impact assessment shows that the estimated impact is predicted to be low at all identified receptors except for NSR1 and NSR2 where it is predicted that it is slightly over the existing representative background sound levels.

4.8.2 However, in accordance with the BS 4142 technical note published by the ANC as well as the superseded 1997 version of BS 4142, the representative background sound levels and the rating levels are very low. As stated in the current version of BS 4142, where background sound levels and rating levels are low, the absolute levels might be as or more relevant than the margin by which the rating level exceeds the background.

4.8.3 The results of the change in ambient noise levels assessment predicted that the proposed works would not change the existing ambient noise levels.

4.8.4 Furthermore, the predicted external noise levels at the receptors from the proposed works at the 100 Hz third-octave band frequency are below 30 dB.

4.8.5 Considering the above, the noise impact from the proposed works on the nearby sensitive receptors is expected to be low.

5. Conclusion

5.1.1 WSP has been appointed by NGET to undertake a noise assessment to accompany the application for the Bryncir works as a component of the Pentir to Trawsfynydd Reinforcement Project. This report presents the findings of the operational noise assessment for the proposed substation at Bryncir, Gwynedd.

5.1.2 The purpose of this assessment is to quantify the impact of operational noise associated with the proposed works on the nearest noise sensitive receptors.

5.1.3 A baseline noise survey was undertaken between 18 June 2025 to 25 June 2025 at two unattended noise monitoring locations representative of the existing nearby sensitive receptors.

5.1.4 The proposed electrical equipment which has the potential to produce environmental noise and would be the dominant source of noise within the proposed works is the Super Grid Transformer (SGT) which consists of the main tank and a cooling plant.

5.1.5 Noise levels from the proposed works have been calculated at the nearest noise sensitive receptors using a computerised 3D noise model of the site and the surrounding area.

5.1.6 An acoustic enclosure with a minimum sound attenuation of 20 dB for the main tank is included within the calculations, as a means of noise mitigation embedded in the design.

5.1.7 The results of the initial BS 4142 impact assessment demonstrates that the proposed works would have a low impact with regards to noise except at two receptors where predicted rating levels are slightly over the existing representative background sound levels.

5.1.8 Further assessments show that there would be a negligible impact on the existing ambient noise levels from the proposed works and the predicted external noise levels at the receptors from the proposed works at the 100 Hz third-octave band frequency are below 30 dB.

5.1.9 The proposed works is not expected to result in any significant adverse noise impact at the nearby sensitive receptors.

Appendix A

References

Ref. 1-1 Welsh Government. (2021). Future Wales: The National Plan 2040. United Kingdom.

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Ref. 1-3 Welsh Government. (1997). Technical Advice Note (TAN) 11: Noise. United Kingdom.

Ref. 1-4 British Standards Institute (BSI). (1990). BS 4142:1990 Method for rating industrial noise affecting mixed residential and industrial areas (Withdrawn). United Kingdom.

Ref. 1-5 British Standards Institute (BSI). (1987). BS 8233:1987 Code of practice for sound insulation and noise reduction of buildings (Withdrawn). United Kingdom.

Ref. 1-6 British Standards Institute (BSI). (2003). BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures. United Kingdom.

Ref. 1-7 British Standards Institute (BSI). (2014). BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. United Kingdom.

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Ref. 1-9 Association of Noise Consultants (ANC). (2020). BS 4142:2014+A1:2019 Technical Note Version 1.0. United Kingdom.

Ref. 1-10 British Standards Institute (BSI). (1997). BS 4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas (Withdrawn). United Kingdom.

Ref. 1-11 International Organization for Standardization (ISO). (2024). ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors. Switzerland.

Ref. 1-12 British Standards Institute (BSI). (2014). BS 8233:2014 Guidance on sound insulation and noise reduction for buildings. United Kingdom.

Appendix B

Glossary of Acoustics Terminology

Ambient Sound	The totally encompassing sound in a given situation, at a given time, including sound from any source in any direction.
A-Weighting	The human ear can detect a wide range of frequencies, from 20Hz to 20kHz, but it is more sensitive to some frequencies than others. Generally, the ear is most sensitive to frequencies in the range 1 to 4 kHz. The A-weighting is a filter that can be applied to measured results at varying frequencies, to mimic the frequency response of the human ear, and therefore better represent the likely perceived loudness of the sound. Sound pressure level (SPL) readings with the A-weighting applied are represented in dB(A).
Background sound	A component of the ambient and residual sound, comprising the steady sounds underlying sources that fluctuate in level within a period of consideration. This can be evaluated using the L_{A90} metric.
Decibel (dB)	The decibel scale is used in relation to sound because it is a logarithmic rather than a linear scale. The decibel scale compares the level of a sound relative to another. The human ear can detect a wide range of sound pressures, typically between $2x10^{-5}$ and 200 Pa, so the logarithmic scale is used to quantify these levels using a more manageable range of values.
Equivalent Continuous Level ($L_{eq,T}$)	The Equivalent Continuous Level represents a theoretical continuous sound, over a stated time period, T, which contains the same amount of energy as a number of sound events occurring within that time, or a source that fluctuates in level.
L_{10}, L_{90} and other L_n percentile-based measures	Percentile measures express statistical measures of noise: L_{10} represents the SPL exceeded for 10% of the time period considered; L10 is often used to describe typical noise levels of road traffic. L_{90} represents the SPL which is exceeded for 90% of the time, expressed in dB or dB(A); L_{A90} is used to quantify underlying 'background sound' levels. Other percentile-based measures are sometimes used for various types of noise assessment. These include L_{01}, L_{50}, L_{99}.
Maximum Sound Level (L_{max})	The maximum sound level, L_{max} (or L_{Amax} if A-weighted) is the highest SPL that occurs during a given event or time period.
Noise	A noise can be described as an unwanted sound. Noise can cause nuisance.
Noise Sensitive Receptors (NSRs)	Any identified receptor likely to be affected by noise. These are generally human receptors, and may include residential dwellings, work places, schools, hospitals, community facilities, places of worship and recreational spaces.

Octave Band / Third Octave Bands	A sound made up of more than one frequency can be described using a frequency spectrum, which shows the relative magnitude of the different frequencies within it. The possible range of frequencies is continuous, but can be split up into discrete bands, often an octave or third-octave in width. Each octave band is referred to by its centre frequency, generally 63Hz, 125Hz, 250Hz, 500Hz, 1kHz etc.
Sound Power Level (SWL)	The Sound Power Level defines the rate at which sound energy is emitted by a source, and is also expressed in dB.
Sound Pressure Level (SPL)	The Sound Pressure Level has units of decibels and compares the level of a sound to the smallest sound pressure generally perceptible by the human ear, or the reference pressure.
Specific Sound	A component of the ambient sound, associated with a specific source/s under consideration.
Residual Sound Level	The Ambient Sound Level in the absence of the industrial source noise under consideration, measured in $L_{Aeq,T}$.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.

Appendix C

Limitations

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of WSP UK Limited. WSP UK Limited accept no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/or WSP UK Limited and agree to indemnify WSP UK Limited for any and all loss or damage resulting therefrom. WSP UK Limited accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations WSP UK Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

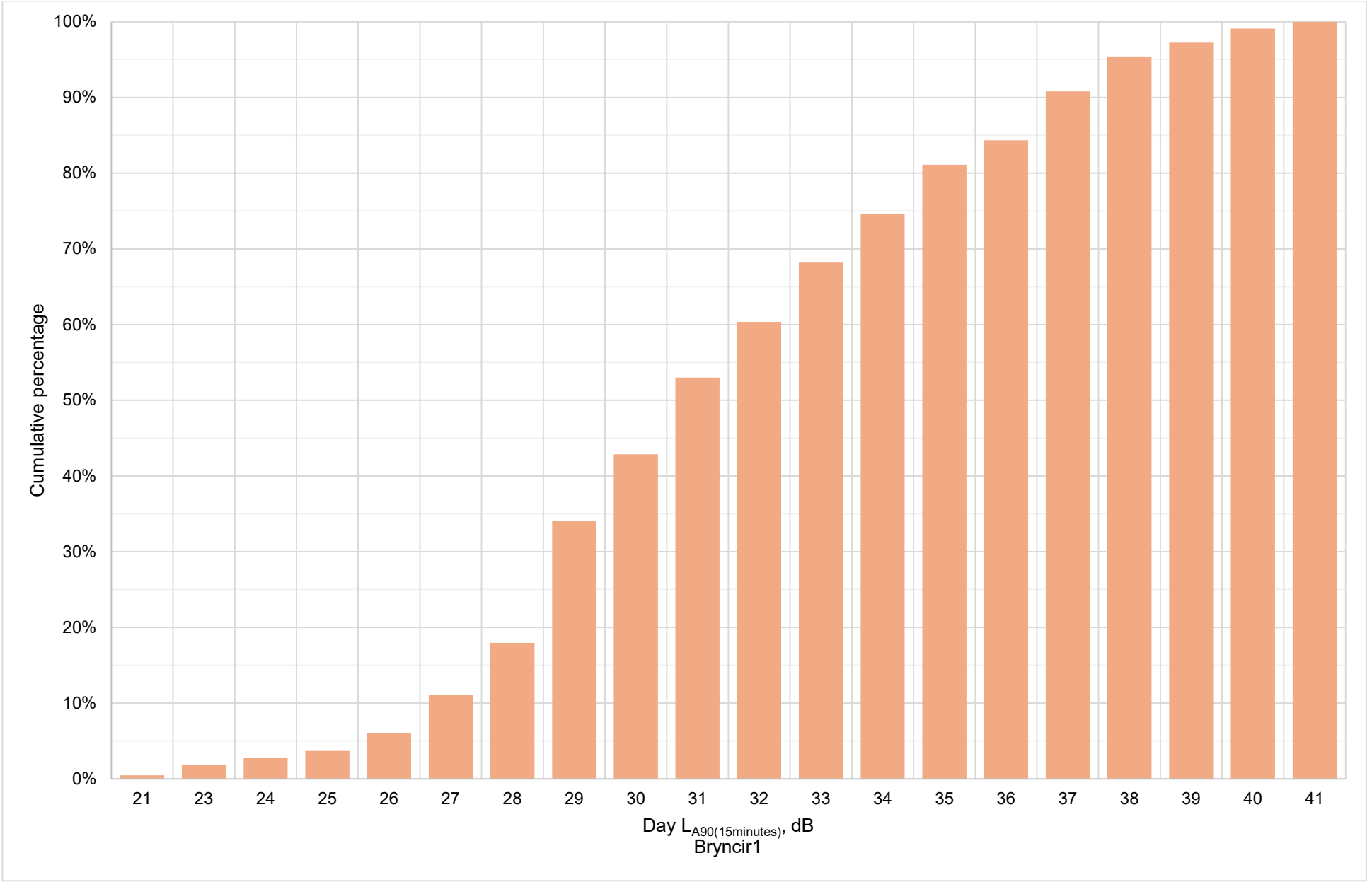
Appendix D

Noise Survey Results

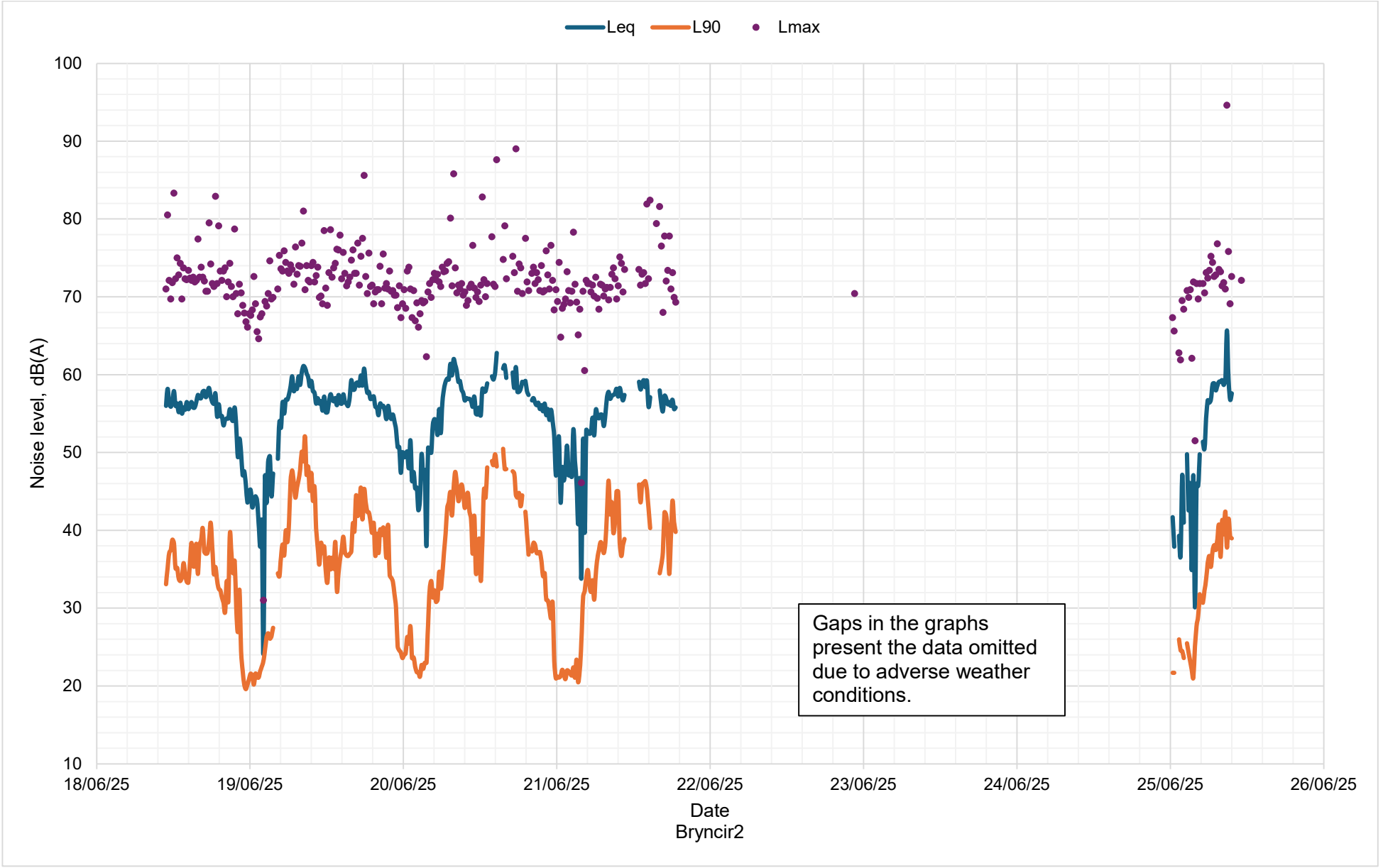
Bryncir1 – Time history plot



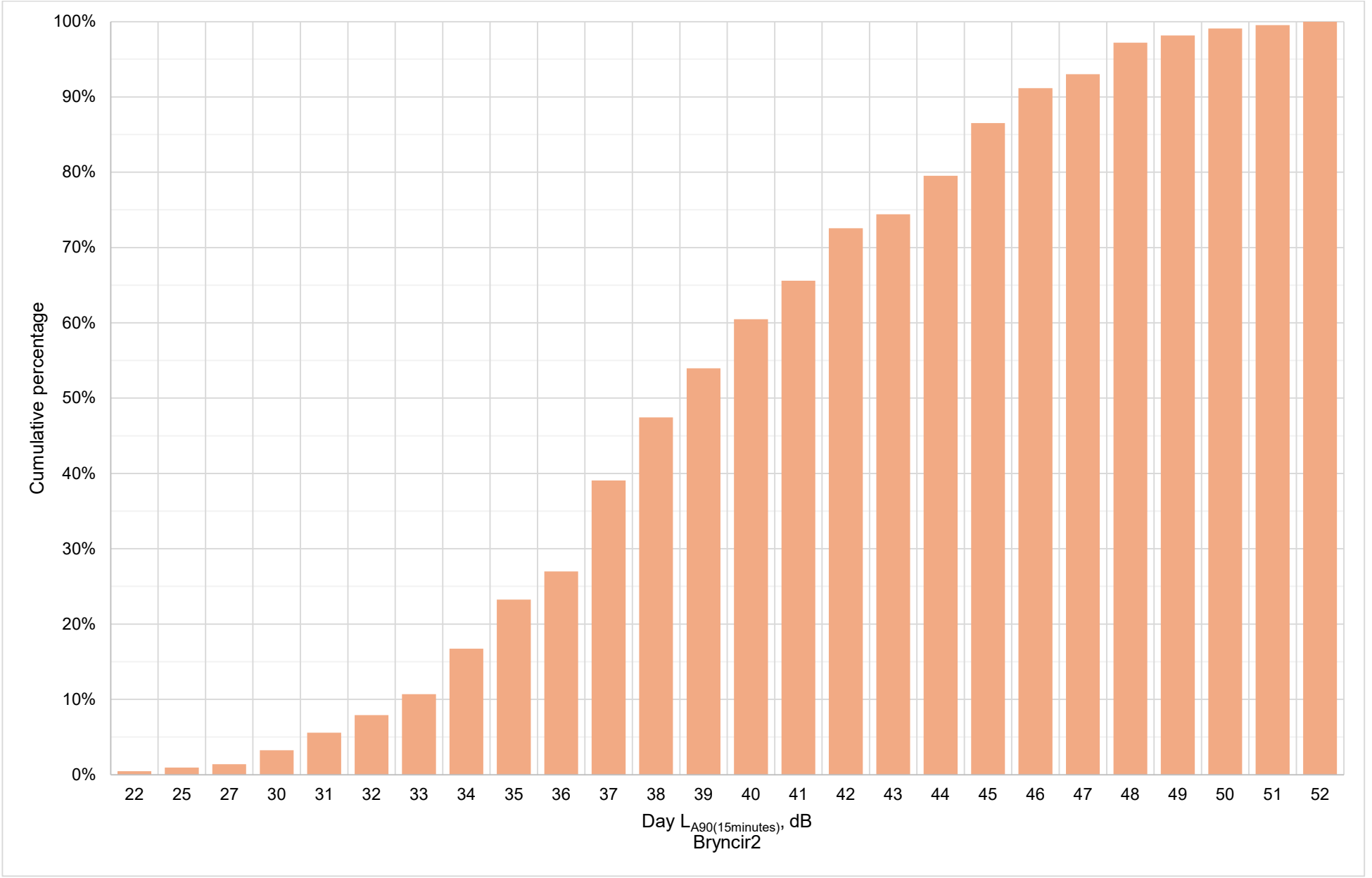
Bryncir1 – Range of background sound levels measured over daytime periods



Bryncir2 – Time history plot



Bryncir2 – Range of background sound levels measured over daytime periods



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3.13.A Bryncir Works Climate Change Risk Assessment

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1. Bryncir Climate Change Risk Assessment (CCRA)

1.1.1 The Climate Change Risk Assessment (CCRA) Risk Register identifies and assesses the likelihood and consequences of climate-related impacts on the Bryncir Works. The methodology and criteria used to inform the CCRA are detailed in the **Environmental Statement (ES) Volume 8: Appendix 1.4.A Topic Methodology** and supplement the potential effects and mitigation measures presented in the ES **Volume 3, Chapter 13 Climate Change** chapter.

Table 1-1: Climate Change Risk Assessment Risk Register for the Bryncir Works

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
Construction						
Extreme Heat	Extreme heat days can result in ambient temperatures rising above optimal design temperatures of construction equipment. This can cause the overheating of construction equipment, resulting in delay to construction programme, repairs, additional project	Construction equipment & site.	A Construction Environmental Management Plan (CEMP) will be prepared by the contractor and will outline measures for managing environmental impacts during construction. To inform specific mitigation measures, the contractor will prepare a high-level risk assessment of severe weather impacts on the construction process. This assessment will consider any receptors and/or construction-related operations and activities that may be sensitive to heatwaves. The contractor will monitor weather forecasts to support short- to medium-term programme management, enabling the	Unlikely	Insignificant	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
	costs and/or safety risks.		planning of works and timely implementation of mitigation measures to protect workers and resources from extreme weather conditions. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. The contractor should also consider the use of construction materials and equipment with enhanced durability and resilience to climate extremes.			
Extreme Heat	Extreme heat events cause health and safety risks to the construction workforce, which could lead to sun stoke and dehydration.	Human health and safety (staff and visitors)	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. The contractor will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources from extreme weather conditions. Supportive measures for working in high temperatures may include the provision of sunblock, sun hats, lightweight clothing, scheduled refreshment breaks, and access to a cooled water supply. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. Adequate cooling and ventilation systems are essential in the design of temporary	Unlikely	Minor	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
			office buildings and worker welfare facilities, to make them suitable for hotter and more extreme temperatures.			
Changes in precipitation (Extreme rainfall)	Extreme rainfall events can result in damage to construction equipment and/or unsafe working conditions resulting in a delay in the construction programme.	Construction equipment & site.	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. The contractor will monitor weather forecasts and subscribe to flood alerts issued by Natural Resources Wales. Construction activities will be planned accordingly, using internal procedures to manage workers and resources during extreme weather events, such as extreme rainfall. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities.	Moderate	Minor	Medium (Not Significant)
Changes in precipitation (Extreme rainfall)	Extreme rainfall events can cause surface water flooding at the construction site which can cause disruption and damage to the site and sources of power supply. Flooding on the site can damage critical infrastructure, which can increase costs	Construction equipment & site.	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. The contractor will monitor weather forecasts and subscribe to flood alerts issued by Natural Resources Wales. Construction activities will be planned accordingly, using internal procedures to manage workers and resources during extreme weather events, such as extreme rainfall.	Moderate	Minor	Medium (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
	and lead to delays in the construction programme.		A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities.			
Wildfire Event	Increased heatwaves and dry periods heighten the risk of wildfires, which could damage construction equipment and disrupt site activities. This may lead to asset damage, plant downtime, and the need for machinery repair or replacement. The risk could be further exacerbated by combustible materials present on-site, such as generator fuel.	Construction equipment & site.	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. Weather forecasts should be monitored so that periods of elevated wildfire risk, such as those associated with extreme heat and dry conditions, can be anticipated in advance. This allows contingency measures to be implemented to minimise disruption to construction activities and reduce fire risk. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. Where feasible, construction materials and equipment with enhanced fire resistance or reduced flammability should be used, and flammable materials should be stored appropriately to reduce potential fuel sources.	Rare	Minor	Low (Not Significant)
Wildfire Event	Increased heatwaves and dry periods raise the risk of wildfires, which could result in injury or fatality to personnel. The presence of combustible	Human health and safety (staff and visitors).	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. Weather forecasts should be monitored so that periods of elevated wildfire risk, such as those associated with extreme heat and dry conditions, can be anticipated in advance. This allows contingency	Rare	Minor	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
	materials on-site, such as generator fuel, could further exacerbate this risk.		measures to be implemented to minimise disruption to construction activities and reduce fire risk. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. Where feasible, construction materials and equipment with enhanced fire resistance or reduced flammability should be used, and flammable materials should be stored appropriately to reduce potential fuel sources.			
Temperature-related (Extreme cold)	Construction workers are at risk of hypothermia due to low temperatures.	Human health and safety (staff and visitors).	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. The contractor will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources during periods of extreme cold. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. All outdoor construction workers should have access to indoor facilities with adequate heating and opportunities to take regular warm breaks.	Moderate	Minor	Medium (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
Temperature-related (Extreme cold)	Low temperatures can lead to ground areas becoming frozen. This can lead to delays and disruption to construction activities, as the areas will need to be de-iced.	Construction equipment & site.	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. The contractor will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources during periods of extreme cold. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. All outdoor construction workers should have access to indoor facilities with adequate heating and opportunities to take regular warm breaks.	Moderate	Minor	Medium (Not Significant)
Storm Events	Storm events create an unsafe environment for construction workers. Workers in outdoor or unstable environments face increased physical risks during storms, including injuries from falling debris, flooding, or high winds.	Human health and safety (staff and visitors).	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. The contractor will implement stop-work protocols and change management procedures. Work will pause during unsafe conditions (e.g. strong winds) and resume once appropriate controls are in place.	Moderate	Minor	Medium (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
Storm Events	Storms and severe weather can disrupt the construction of the proposed development and access to the site. Impacts include delays, damage to construction materials, and machinery. Flooding and blocked roads can also affect material delivery and personnel movement.	Construction equipment & site.	A CEMP will be prepared by the contractor and will outline measures for managing environmental impacts during construction. A Health and Safety Plan will be developed to protect workers and minimise disruption to construction activities. The contractor will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to safeguard workers and resources from extreme weather conditions. Where feasible, the contractor should consider the use of construction materials and equipment with enhanced durability and resilience to climate extremes.	Moderate	Minor	Medium (Not Significant)
Operation						
Extreme temperatures (heat)	Heatwaves result in heat stress for building occupants and outdoor workers, causing health and safety incidents e.g. sunstroke & dehydration.	Human health and safety (staff and visitors).	An Operational Environmental Management Plan (OEMP) will be developed, setting out mitigation and emergency response measures to minimise heatwave impacts during operation The Operator will monitor weather forecasts and plan operations accordingly to protect workers and resources from extreme weather conditions. The Operator should provide all outdoor workers with access to indoor facilities, air	Unlikely	Minor	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
			conditioning, and regular water breaks in shaded areas. Buildings should be equipped with adequate cooling and ventilation systems (HVAC) capable of responding to high temperatures, to prevent discomfort for occupants and maintain safe working conditions.			
Changes in Precipitation (Flooding)	Extreme rainfall events could lead to flooding. The proposed Bryncir Substation is partially located within Flood Zone 2 and is also within Flood Zones 2 and 3 for flood risk from surface water and small watercourses. Additionally, areas west of the Afon Dwyfach fall within Flood Zone 3 for river flood risk. As a result, there is an elevated risk of damage to substation equipment, on-site electrical systems, and overhead line	Substation Equipment Overhead Line Equipment Electrical Equipment.	An OEMP will be developed, setting out mitigation and emergency response measures to minimise flood impacts during operation. The proposed works design incorporates a diversion channel to redirect the surface water flow path around the site, along with a sustainable drainage system (SuDS) to prevent any increase in flood risk.	Moderate	Minor	Medium (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
	infrastructure, which could potentially cause power outages and system failures.					
Wildfire Event	Increased heatwaves and prolonged dry periods heighten the risk of wildfires, which could cause considerable damage to overhead lines, underground cables, and substation equipment. This may lead to asset damage, plant downtime, and the need for machinery repair or replacement. The presence of combustible materials on-site, such as fuel or packaging, could further exacerbate this risk.	Substation Equipment Underground Cables Overhead Line Equipment	An OEMP will be prepared, setting out mitigation and emergency response measures for wildfire events. Monitoring weather forecasts and emergency response planning should be integrated into health and safety plans to support preparedness for potential fire incidents. Vegetation around key assets will be regularly monitored, pruned, and maintained to reduce the risk of fire, damage, and operational disruption.	Rare	Minor	Low (Not Significant)
Wildfire Event	Increased heatwaves and prolonged dry periods elevate the risk of wildfires. If a	Human health and safety (staff and visitors).	An OEMP will be prepared, setting out mitigation and emergency response measures for wildfire events.	Rare	Minor	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
	wildfire reaches the site, it could pose a serious risk of injury or fatality to workers and others nearby.		Monitoring weather forecasts and emergency response planning should be integrated into health and safety plans to support preparedness for potential fire incidents. Vegetation around key assets will be regularly monitored, pruned, and maintained to reduce the risk of fire, damage, and operational disruption.			
Temperature-related (Extreme cold)	Ice accumulation on overhead line equipment can add weight to these structures, potentially leading to damage.	Overhead Line Equipment	An OEMP will be prepared, setting out mitigation and emergency response measures for periods of cold weather. The Proposed Works will either be designed to accommodate the climatic conditions projected for the end of its design life, using appropriate design guidance where available, or adaptive capacity will be incorporated into the design.	Rare	Insignificant	Low (Not Significant)
Temperature-related (Extreme cold)	Low temperatures can cause ground surfaces to freeze, creating potential health and safety risks for workers. Prolonged exposure to freezing conditions may also lead to hypothermia.	Human health and safety (staff and visitors).	An OEMP will be prepared, setting out mitigation and emergency response measures for periods of cold weather. The Operator will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources from cold weather. Buildings should be equipped with HVAC systems capable of responding to cold	Rare	Insignificant	Low (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
			temperatures, providing adequate heating and preventing occupant discomfort.			
Storm Events	Storm events can create unsafe conditions for on-site operational workers and contractors. Those working in outdoor or exposed environments face increased physical risks during storms, including injury from falling debris, flooding, and high winds.	Human health and safety (staff and visitors).	An OEMP will be prepared, setting out mitigation and emergency response measures for storm events. The Operator will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources from extreme weather conditions. The Proposed Works will either be designed to accommodate the climatic conditions projected for the end of its design life—using appropriate design guidance where available—or adaptive capacity will be incorporated into the design.	Moderate	Minor	Medium (Not Significant)

Climate variable	Description of impacts	Receptor(s)	Planned Controls & Adaptation measures	Likelihood	Consequence	Risk Rating
Storm Events	Storms and severe weather can disrupt the operation of the Proposed Works by damaging substation infrastructure, electrical systems, and overhead lines, potentially resulting in power outages. Flooding and blocked roads may also hinder site access for operational workers and contractors, delaying necessary maintenance and repairs.	Substation Equipment Overhead Line Equipment Electrical Equipment Access Roads	An OEMP will be prepared, setting out mitigation and emergency response measures for storm events. The Operator will monitor weather forecasts to support short- to medium-term programme management, enabling the planning of works and the timely implementation of mitigation measures to protect workers and resources from extreme weather conditions. The Proposed Works will either be designed to accommodate the climatic conditions projected for the end of its design life—using appropriate design guidance where available—or adaptive capacity will be incorporated into the design.	Moderate	Minor	Medium (Not Significant)