6.5.F Wider Works Great Crested Newt Ecology Report

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1. Introduction

1.1 Introduction

- This report 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').
- This report concerns the section of the Project relating to Wider Works (the proposed works) and is a Technical Appendix to the Environmental Statement (ES) **Volume 6**, **Chapter 5**: **Likely Significant Effects** being submitted as part of the Environmental Impact Assessment (EIA), which accompanies the consent applications for the Project.

1.2 Description of the Project

- 1.2.1 This document considers the Wider Works elements comprising:
 - Installation of approximately 23.5 kilometres (km) of fibre optic cable along the existing 4ZC overhead line between Tower 4ZC070 and 4ZC140.
 - Installation and replacement of fittings on the SPEN circuit on the 4ZC overhead line for approximately 8 km between Tower 4ZC044 and 4ZC070 to remove existing 132 kilovolt (kV) conductors and replace with 400 kV conductors and replacement of the earthwire with Optical Ground Wire (OPGW).
 - Installation and replacement of fittings on the SPEN circuit on the on the 4ZC overhead line for approximately 6.5 km between Tower 4ZC005 and 4ZC027 to remove existing 132 kV conductors and replace with 400 kV conductors and replacement of the earthwire with OPGW.

1.3 Introduction to the Great Crested Newt Report

- This report details the approach and findings of great crested newt (*Triturus cristatus*) surveys undertaken for the Wider Works element of the Project and has been prepared for NGET. Baseline data presented in this document has been used to inform the assessment in the ES **Volume 6**, **Chapter 5**: **Likely Significant Effects**.
- 1.3.2 This report is supported by Figure 6.5 F.1: Pond Locations, HSI and eDNA Results.
- 1.3.3 This document refers to the relevant wildlife legislation summarised in **Section 2**.

Study Area and Survey Areas

This document describes the results of habitat suitability assessments (HSIs) and environmental DNA (eDNA) analysis of ponds to determine likely presence or likely absence of great crested newt in the Wider Works site and a buffer 250 metres (m) beyond it.

- The Study Area discussed in this report is defined as the boundary of the Wider Works site and a 2 km buffer. This area was used for the desk-based assessment to collate existing ecological records relating to great crested newt.
- 1.3.6 Terrestrial habitat loss associated with Wider Works is localised and relatively small (typically between 500 and 5,000 square metres (m²) at each tower location), with vegetation temporarily removed to facilitate the proposed works and then replaced or allowed to re-establish. There will also be temporary access routes required for each working area location; however, these will primarily use existing farm tracks and roads wherever available. No ponds are being directly impacted.
- 1.3.7 A 250 m Survey Area was appropriate for Wider Works due to the reasons stated in paragraph 1.3.6. Although great crested newt can travel up to and further than 500 m from breeding ponds, the majority remain in 250 m of ponds, and beyond this distance the likelihood of encountering a great crested newt is considered very low (Ref 1.1).

1.4 Objectives

- The purpose of this assessment is to determine the status of great crested newt within the Survey Area through desk-based and field-based surveys. Additional detail on the methods used are provided in **Section 3** of this report. The great crested newt assessment was undertaken to:
 - Identify and assess water bodies present within the Survey Area (where there may be potential for direct or indirect effects as result of the proposed works) for their potential to support great crested newt.
 - Determine the status of great crested newt within the Survey Area.
 - Evaluate the nature conservation value of the habitats within the Survey Area for great crested newt to provide baseline evidence to support the ecological impact assessment.
 - Identify any mitigation requirements for the proposed works to prevent or reduce negative impacts to great crested newts.

2. Relevant Legislation and Planning Policy

2.1 Introduction

- 2.1.1 This section lists the legislation, planning policy framework and guidance that is relevant to great crested newt.
- 2.1.2 More detailed information can be found in ES **Volume 8**, **Appendix 1.1.A: Legislation**, **Policy and Guidance**.

Statutory Legislation

- Legislation for great crested newt in the UK and Wales relevant to this assessment is:
 - The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 2.1).
 - Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 2.2).
 - Environment (Wales) Act 2016 (as amended) (Ref 2.3).
 - Natural Environment and Rural Communities Act (NERC) Act 2006 (as amended) (Ref 2.4).
- The UK is no longer a member of the European Union (EU). However, EU legislation that 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 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) (Ref 2.1), which translate the Habitats Directive into UK law, so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in the UK. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.
- Great crested newt 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 a great crested newt; deliberately disturb a great crested newt; or to damage or destroy a breeding site or resting place used by a great crested newt.
- 2.1.7 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 that 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.

- 2.1.8 Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural Resources Wales (NRW) can be applied for to facilitate the works that would otherwise be illegal.
- Great crested newt are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (Ref 2.2). 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.
- 2.1.10 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 (as amended) although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.
- 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") of the Environment (Wales) Act 2016 (Ref 2.3) replaces the duty in section 40 of the Natural environment and Rural Communities (NERC) Act 2006 (Ref 2.4). The Welsh Ministers will publish, review and revise lists of living organisms and types of habitats in Wales that they consider are of key significance to sustain and improve biodiversity in relation to Wales.
- Section 6 of the Environment (Wales) Act 2016 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 in relation to Wales and applies to those authorities that fell within the previous duty.
- 2.1.13 The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitats included in any list published under this Section and encourage others to take such steps.
- 2.1.14 Part 1 of the Act, including Sections 6 and 7, came into force on 21 May 2016.

2.2 Natural Resources Wales Licences

- Any operations that may impact on great crested newt or their breeding sites and resting places, may require a NRW European Protected Species (EPS) Mitigation Licence (Ref 2.5). An EPS Mitigation Licence is required where development or construction activity will impact great crested newt through:
 - Maintaining, restoring, or destroying ponds or water bodies.
 - Introducing fish into ponds used by great crested newt.
 - Removal of vegetation, scrub, brash piles used by great crested newt.
 - Excavations and other ground works.
 - Surveys using torches, nets, or traps.
- In the first instance, impacts to great crested newt should be avoided through considerate construction practices, such as the implementation of "buffer zones" from known places of shelter and breeding.

2.2.3 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 that will stipulate how great crested newts will benefit from mitigation measures, habitat creation, habitat management and habitat maintenance.

2.3 Planning Policy

National Policy

- 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.
- In Wales this is implemented through Planning Policy Wales Edition 12 (PPW (12)), February 2024 (Ref 2.6), supplemented by a series of Technical Advice Notes (TANs) (Ref 2.7), which sets out the land use planning polices of the Welsh Government.
- 2.3.3 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 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'. It also states 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.'
- 2.3.4 PPW (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. Additionally, 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

2.3.5 The following local planning policies, set out in the Anglesey and Gwynedd Joint Local Development Plan 2011 – 2026 (Ref 2.8), relate to ecology and nature conservation and, 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 4 relates to coastal protection.
- Policy AMG 5 relates to the protection and enhancement of local biodiversity.
- Policy AMG 6 relates to protecting sites of regional or local significance.
- 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.
- 2.3.7 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.
- 2.3.8 The following local policy is also relevant to Ecology and Nature Conservation;
 - Anglesey and Gwynedd Joint Local Development Plan Review Report (Ref 2.9).
 - Eryri Local Development Plan 2016 2031 (Ref 2.10).
 - Eryri Local Development Plan Review Report 2023 (Ref 2.11).

Local Biodiversity Action Plans (LBAP)

- As a result of devolution, as well as new 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).
- 2.3.10 The national strategy for biodiversity is delivered at local level via Local Biodiversity Action Plans (LBAPs). 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 and Habitat Action Plans).
- The LBAP relevant to Wider Works is the Natur Gwynedd LBAP for Gwynedd, developed by a partnership of organisations and individuals (Ref 2.12).
- 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 (WBSB) and the WBP working groups.

3. Methodology

3.1 Desk Study

- The objectives of the desk study were to review existing information to identify the following:
 - Internationally and nationally designated sites for great crested newt, up to 2 km from the Wider Works site using data provided by North Wales Environmental Information Service (Cofnod), last obtained in November 2024, and the Multi Agency Geographic Information for the Countryside (MAGIC) website (Ref 3.1).
 - Designated sites for great crested newt, up to 2 km from the Wider Works site using data provided by Cofnod, last obtained in November 2024.
 - Existing records for great crested newt from the last 10 years up to 2 km from the Wider Works site using data provided by Cofnod, last obtained in 2024; and,
 - Water bodies in 250 m of the Wider Works site using aerial photographs and Ordnance Survey (OS) maps.
- OS maps help to identify the presence of water bodies within the Survey Area and to help establish if the land within the Survey Area is potentially suitable for great crested newt. They also helped to establish any potential barriers to great crested newt movement between the Wider Works site and the ponds. This species can use suitable terrestrial habitat up to 500 m from a breeding pond, though there is a notable decrease in great crested newt abundance beyond 250 m from a breeding pond.

3.2 Field Surveys

Habitat Suitability

- A total of nine accessible ponds were identified in the desk study in 250 m of the Wider Works site. These were assessed for their suitability to support great crested newt using the Habitat Suitability Index (HSI) (Ref 3.2, Ref 3.3) between May and June 2024. The HSI incorporates 10 suitability indices that affect the suitability of a waterbody to support great crested newt. The suitability indices are:
 - SI1 location (categorisation according to geographic location);
 - SI2 pond area;
 - SI3 pond drying;
 - SI4 water quality (based on abundance and diversity of invertebrate community);
 - SI5 shade (estimated perimeter shading May-September);
 - SI6 presence of waterfowl;
 - SI7 presence of fish;

- SI8 pond count (number of ponds in 1 km of survey pond not separated by major barriers, divided by pi);
- SI9 terrestrial habitat; and,
- SI10 macrophytes (estimated percentage cover).
- Each variable is assessed and scored separately, then scores are combined to provide a numerical index between 0 and 1, using the following equation:
 - HSI = $(SI_1*SI_2*SI_3*SI_4*SI_5*SI_6*SI_7*SI_8*SI_9*SI_{10})^{1/10}$.
- The categorisation of the final HSI score to evaluate pond suitability is outlined in **Table 3-1**.

Table 3-1 – Categorisation of HSI scores

HSI Score	Pond Suitability
<0.5 Poor	<0.5 Poor
0.5-0.59 Below Average	0.5-0.59 Below Average
0.6-0.69 Average	0.6-0.69 Average
0.7-0.79 Good	0.7-0.79 Good
>0.8 Excellent	>0.8 Excellent

Source: Oldham, et. al., 2000 (Ref 3.2)

eDNA Analysis

- Eight water bodies were subject to great crested newt eDNA testing by a surveyor (and assistant) holding or accredited (by a holder) under the NRW great crested newt survey licence between mid-April and the end of June 2024.
- eDNA refers to DNA that can be extracted from environmental samples such as water, soil or faeces without first isolating any target organism. All living organisms leave traces of their DNA in the environment, enabling detection through collection and testing. In relation to great crested newt, this comprises the collection of water samples from water bodies.
- The water bodies were not entered by surveyors during sample collection and new, sterile equipment was used for each waterbody to prevent contamination between samples. Samples were subject to laboratory analysis by SureScreen Scientifics through a process of Polymerase Chain Reaction (PCR), which detect the presence of great crested newt DNA.
- Negative results from eDNA surveys are accepted as evidence of likely absence of great crested newt from the waterbody in question, and further survey is not then required. As all samples were taken in the optimum survey window, a negative result can be relied upon for confirming absence of great crested newt. Positive results

indicate that great crested newt DNA is present in a waterbody, though does not give sufficient information to estimate population size.

Field surveys strictly followed the protocol set out in the WC1067 Technical Advice Note (Ref 3.4).

Assumptions and Limitations

- Information obtained from 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 necessarily mean that those habitats or species do not occur with Study Area. Likewise, the presence of desk study records for habitats and species does not automatically mean that these still occur in or are relevant in the context of the Study Area.
- 3.2.10 Only nine ponds could be subject to HSI assessments due to access restrictions.
- Of the nine ponds that were subject to HSI assessment, only 8 were subject to eDNA analysis due to access restrictions (access was granted for the HSI but was not granted for eDNA sampling).
- The elements of the Wider Works considered here are part of maintenance of the existing overhead line and do not comprise development requiring a new consent (such as planning permission). National Grid and its contractor liaise with owners and occupiers of land on the details of works sites and accesses to be used. These details may be refined as work progresses. Where specific licences may be required because of designations or presence of protected species, these are obtained before work commences in areas where these apply.
- Data has been gathered where possible to provide a baseline assessment of these elements of the Project. Results of surveys conducted may no longer be valid at the time of the works and pre-construction surveys may be required to provide up to date and necessary data to inform any required licence applications and mitigation requirements. These will be secured in compliance with a site-specific Construction and Environmental Management Plan (CEMP). This is not a significant limitation as the route of the existing overhead line is already fixed, with working areas known to be required around each pylon, and most works are required at height. Assessment of the likely effects on great crested newt can be informed by the data gathered to date. Anticipated requirements for mitigation can be stated with acknowledgement that distribution of great crested newt can change prior to construction, and may need to be informed by pre-construction surveys that refer to finalised details of works and access.

4. Results

4.1 Desk Study

- The data search from Cofnod did not return any great crested newt records in 2 km of the Wider Works site.
- There are no statutory or non-statutory sites designated for great crested newt in 2 km of the Wider Works site.
- Thirty-nine ponds were identified on OS and aerial mapping in 250 m of the Wider Works site. Twelve ponds were screened out of HSI and eDNA assessments for the following reasons:
 - P6.41 and P6.44 were screened out due to the presence of the A487 between the ponds and Wider Works, which presents a barrier to great crested newt dispersion;
 - P6.23, P6.26, P6.28, P6.29, P6.35, P6.40 and P6.50 were not present or dry; and
 - P4.15/P6.58, D4.1/D6.60 and P6.65 were in streams or where a flow was present.
 The locations of ponds within 250 m of the Wider Works site are shown on Appendix A, Figure 6.5 F.1: Pond Locations, HSI and eDNA Results.
- Appendix A, Figure 6.5 F.1: Pond Locations, HSI and eDNA Results show additional ponds that are now not in 250 m of the Wider Works site due to changes in the Wider Works site boundary, these additional ponds have been included for information and context and to inform any future changes but are not included in this assessment. The ponds outside of the 250 m buffer of the Wider Works site are P6.1, P6.5, P6.9, P6.10, P6.13, P6.14, P6.16, P6.17, P6.18, P6.19, P6.20, P6.21, P6.22, P6.30, P6.31, P6.36, P6.43, P6.45, P6.46, P6.49, P6.51, P6.52, P6.53, P6.54, P6.55, P6.56, P4.14/P6.59, P6.63, P6.66 and P6.70.
- The ponds have been given numbers as shown in **Appendix A**, **Figure 6.5 F.1**, some of which display two numbers, this is due to crossovers between the Wider Works site and the other elements of the Project in which the pond or drain has been given one number for Wider Works and another in adjacent elements of the Project.

4.2 Field Surveys

Habitat Suitability Index Assessment

A HSI assessment was undertaken on nine ponds between May and June 2024. The HSI assessment identified one pond (P6.24) with Excellent suitability, four ponds (P6.62, P6.64, P6.67 and P6.68) with Good suitability, one pond (P4.2/P6.61) with Average suitability, one pond (P6.32) with Below Average suitability and two ponds (P6.33 and P6.34) with Poor suitability. Summary results of the HSI assessments are presented in **Table 4-1** below. Photographs of surveyed ponds are in **Appendix A**.

eDNA Results

- Two ponds (P6.24 and P6.62) were not subject to eDNA as it was not possible to access these ponds at the time of the survey. The eDNA samples from the seven ponds that were sampled were analysed by SureScreen Scientifics. All samples analysed were negative for great crested newt eDNA, except pond P6.68 which returned a positive result for great crested newt eDNA.
- Laboratory checks for sample degradation and inhibition checks were all passed and the results can therefore be considered conclusive for great crested newt presence or likely absence. The laboratory results can be made available upon request.

Table 4-1: HSI and eDNA Results Summary

Pond ID	Pond description	Distance from Wider Works site	HSI score	HSI suitability	eDNA result	Survey date
P6.67	Open waterbody in felled woodland connected to stream	121 m south	0.76	Good	Negative	17 May 2024
P6.62	Holding pool connected to larger reservoir	30 m east	0.74	Good	N/A Unable to access	N/A
P6.64	Moderately sized pond in grazed field with gently sloping banks	30 m south	0.79	Good	Negative	2 May 2024
P6.68	Large water body between grazed farmland woodland with small island	30 m north-west	0.76	Good	Positive	30 April 2024
P6.33	Large open water body with island	222 m north-east	0.49	Poor	Negative	27 June 2024

Pond ID	Pond description	Distance from Wider Works site	HSI score	HSI suitability	eDNA result	Survey date
	surrounded by grassland					
P6.34	Large open waterbody, surrounded by tall grasses and reeds	221 m north-west	0.50	Poor	Negative	27 June 2024
P6.32	Large open waterbody, surrounded by tall grasses and reeds	221 m north-west	0.56	Below Average	Negative	27 June 2024
P6.24	Large waterbody with submerged and emergent vegetation present dominated by reeds	248 m north- west	0.93	Excellent	N/A Unable to access	N/A
P.4.2/P6.61	Ornamental pond set in concrete - former lily pond	200 m south	0.66	Average	Negative	26 June 2024

5. Discussion

- The desk study returned no recent or historic records of great crested newt in the Study Area. There are no designated sites in the Study Area which are known to support great crested newt.
- Based on the eDNA sampling completed, great crested newt can be considered absent from five ponds: P6.33; P6.34, P4.2/P6.61, P6.64 and P6.67.
- Ponds P6.24 and P6.62 were not subject to eDNA sampling in 2024 and great crested newt presence cannot be ruled out in these ponds at this time.
- Great crested newt should be considered present at pond P6.68, due to a positive eDNA result. However only one of 12 samples from the pond tested positive for great crested newt eDNA. The interpretation of this result could mean that great crested newt are present at low densities, and, based on the precautionary principle, this is the recommended approach in the absence of further information. However, the result could also be the result of contamination, such as great crested newt DNA being introduced to the pond by other animals. It is recommended that eDNA sampling is repeated at pond P6.68, or manual surveys (e.g. bottle trapping, torch and egg searches) are undertaken to corroborate this result or prove likely absence of great crested newt.

Further Surveys

- As the Wider Works design progresses, HSI and eDNA surveys should be completed on any ponds screened in (when detailed design and working methods are finalised), prior to construction, and in time to ensure necessary NRW licence applications can be obtained and appropriate mitigation put in place.
- It is also recommended that the positive result at pond P6.68 is confirmed by a repeat eDNA test, or through manual surveying.
- Water bodies should be avoided wherever possible throughout the proposed works, with an appropriate 10 m buffer, and a 50 m buffer for confirmed great crested newt ponds. Appropriate mitigation measures will need to be considered to avoid adverse implications to great crested newt and other amphibians.

6. Conclusion

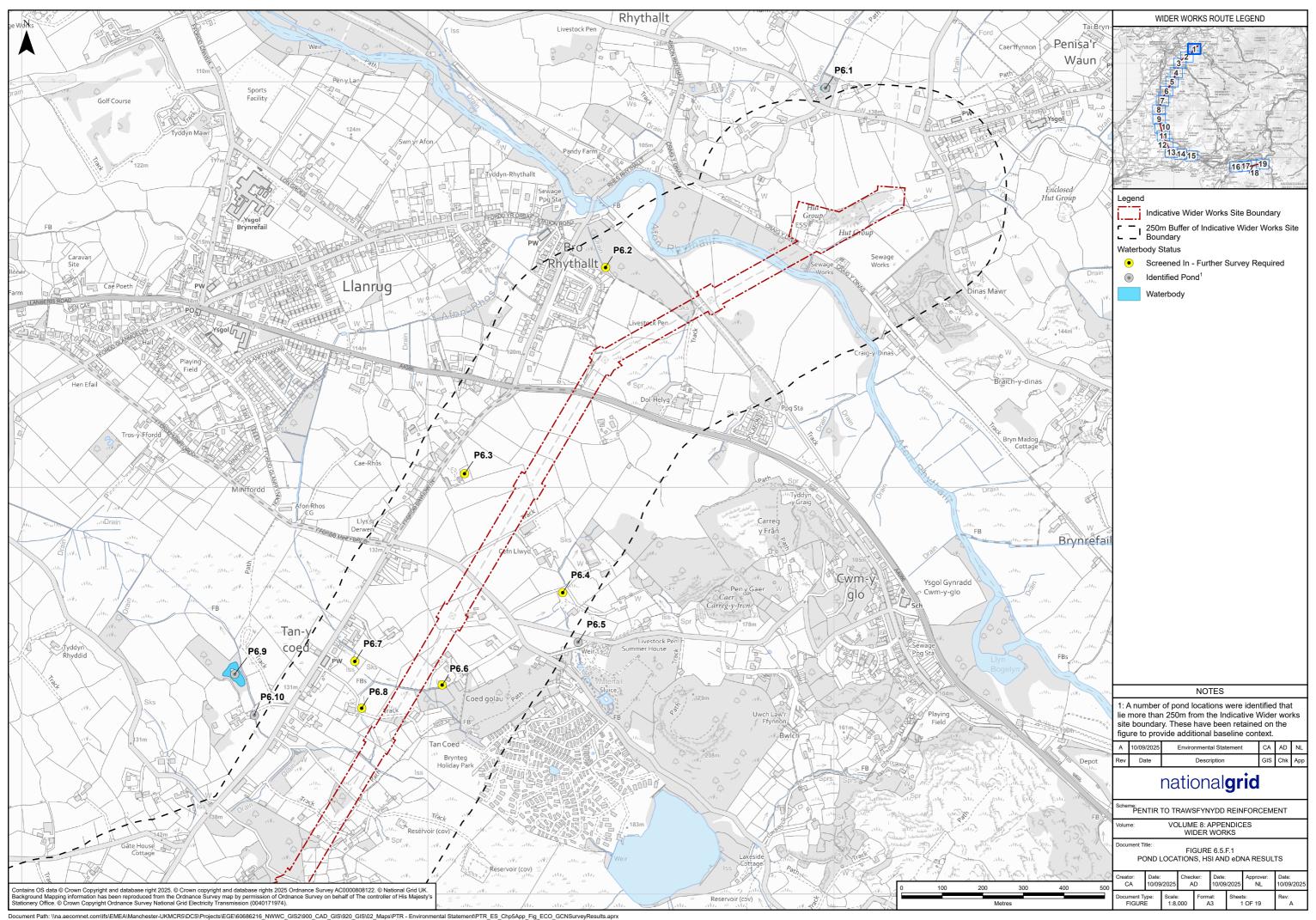
- The primary purpose of this report is to provide an assessment of the presence or likely absence of great crested newt and their biodiversity importance within the Survey Area to ES **Volume 6, Chapter 5: Likely Significant Effects**. An assessment of potential impacts (considering embedded mitigation), any additional mitigation and residual effects has been undertaken and included within ES **Volume 6, Chapter 5: Likely Significant Effects**.
- The surveys carried out in 2024 indicate an absence of great crested newt in sections of the Survey Area, and potential presence in at least one location. Further surveys conducted pre-construction may be required to inform licence and mitigation requirements for the whole of the Wider Works site.
- It is assumed at this stage that all water bodies will be avoided as part of the proposed works and appropriate buffer zones will be implemented. Pollution prevention measures will be required, specifically those required for works within sensitive habitats and near water bodies and watercourses.

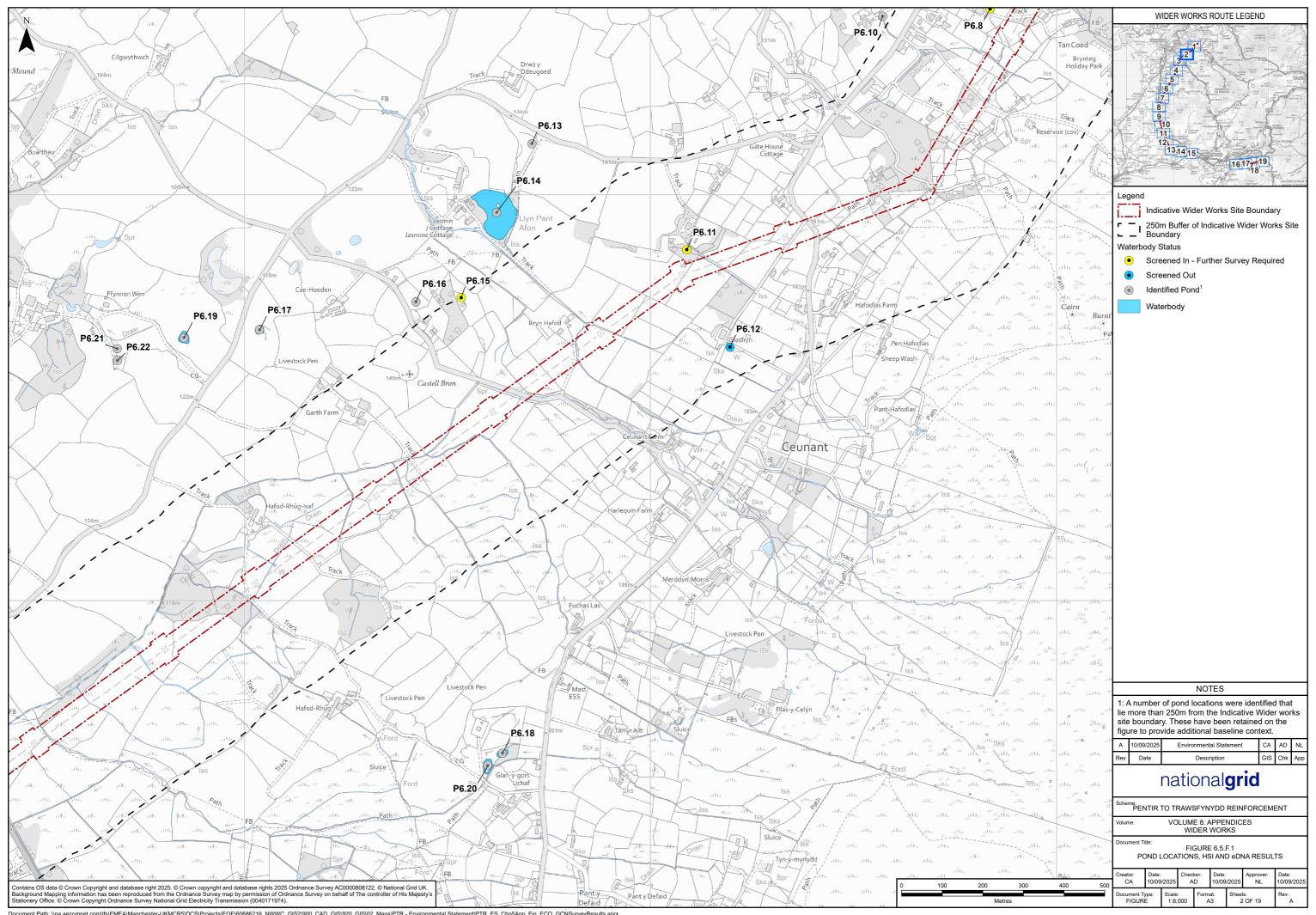
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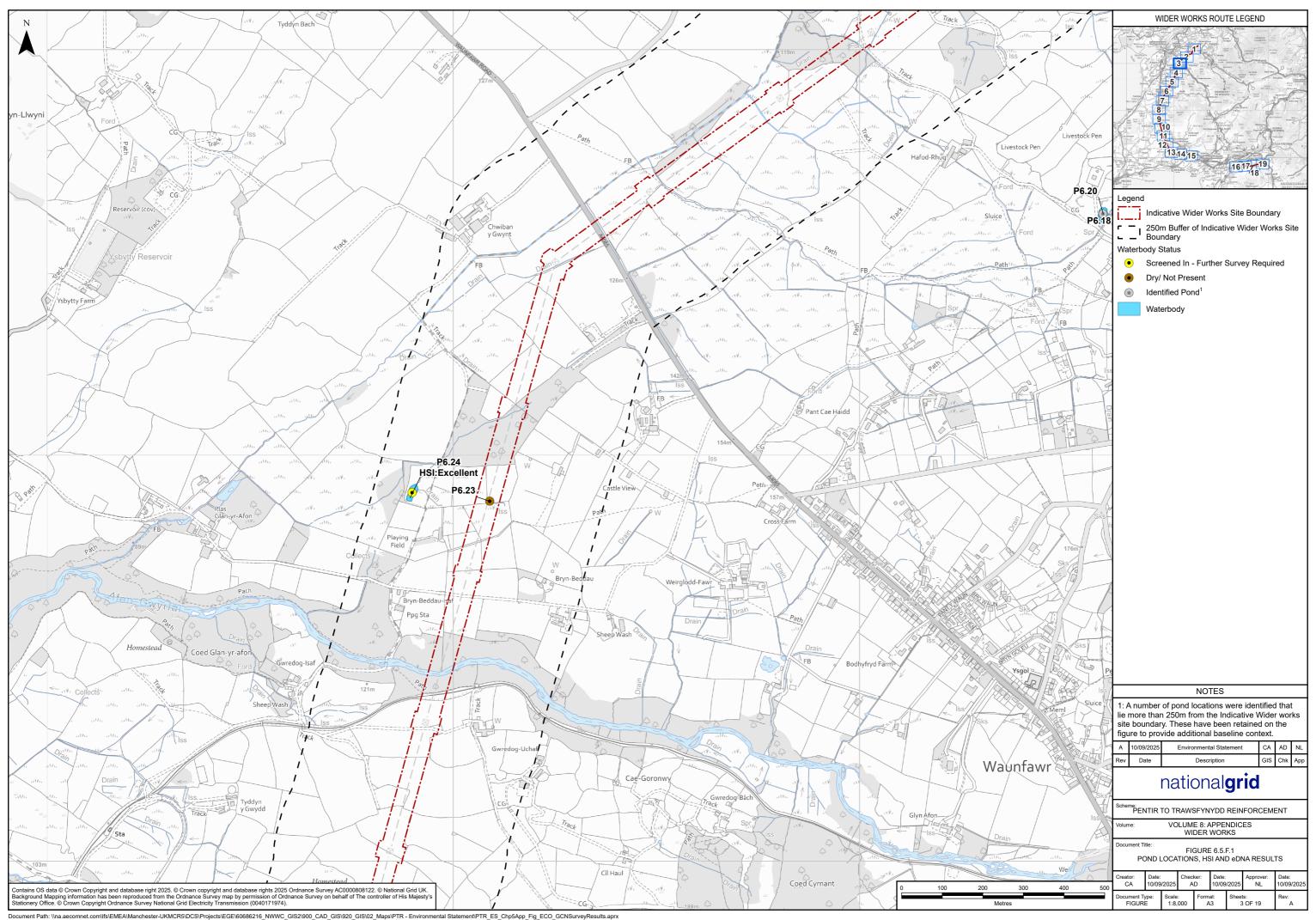
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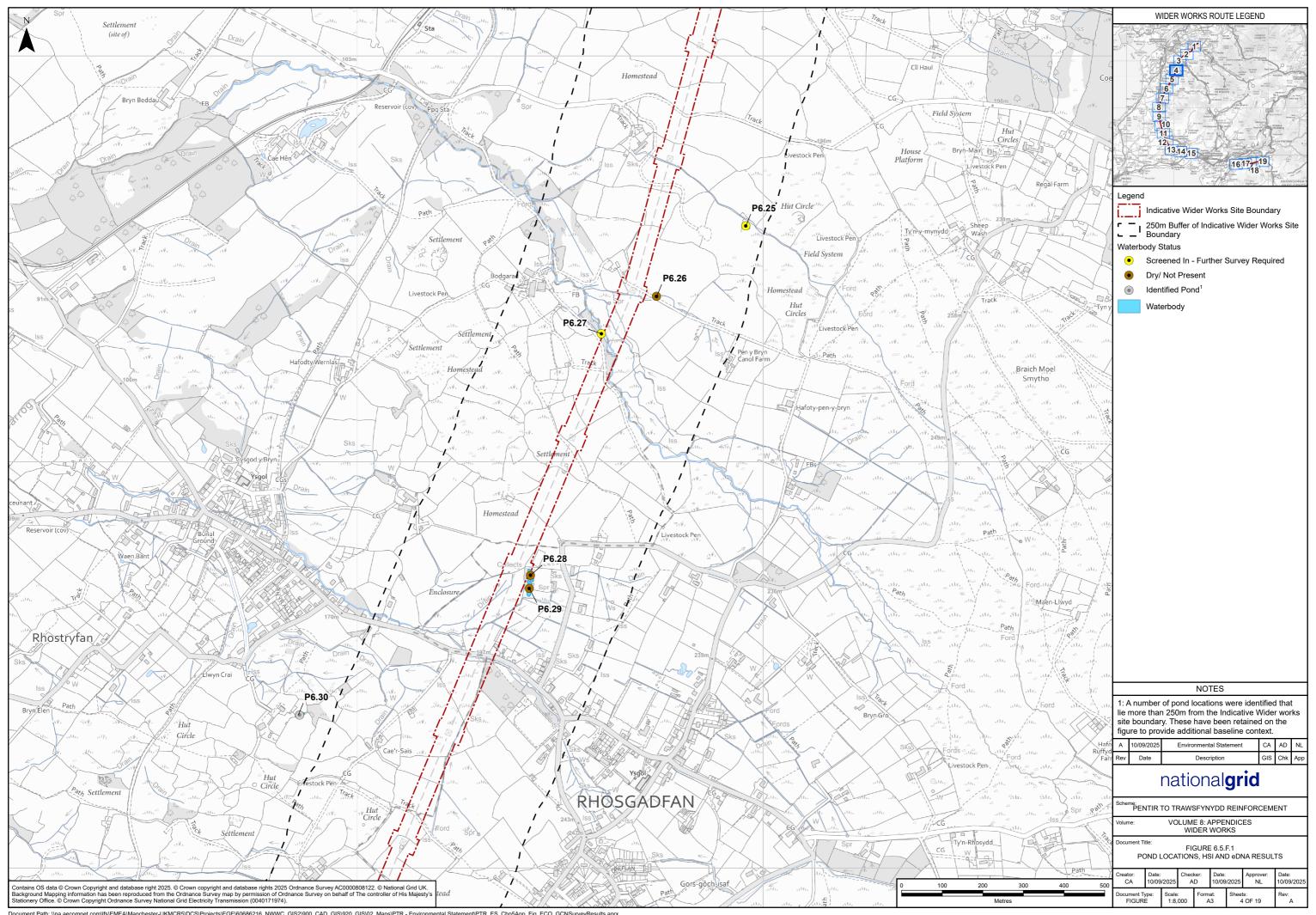
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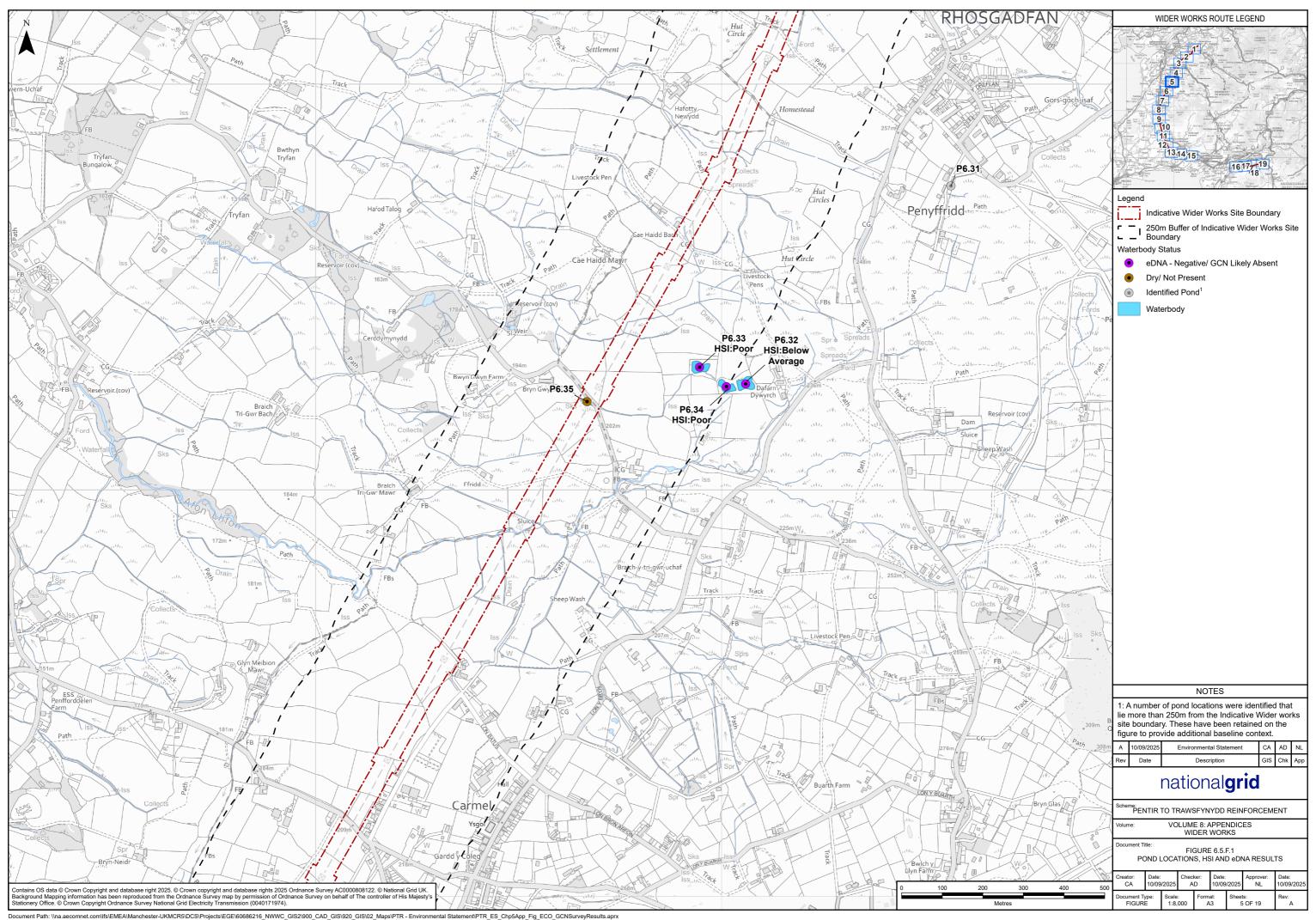
Appendix A Figures

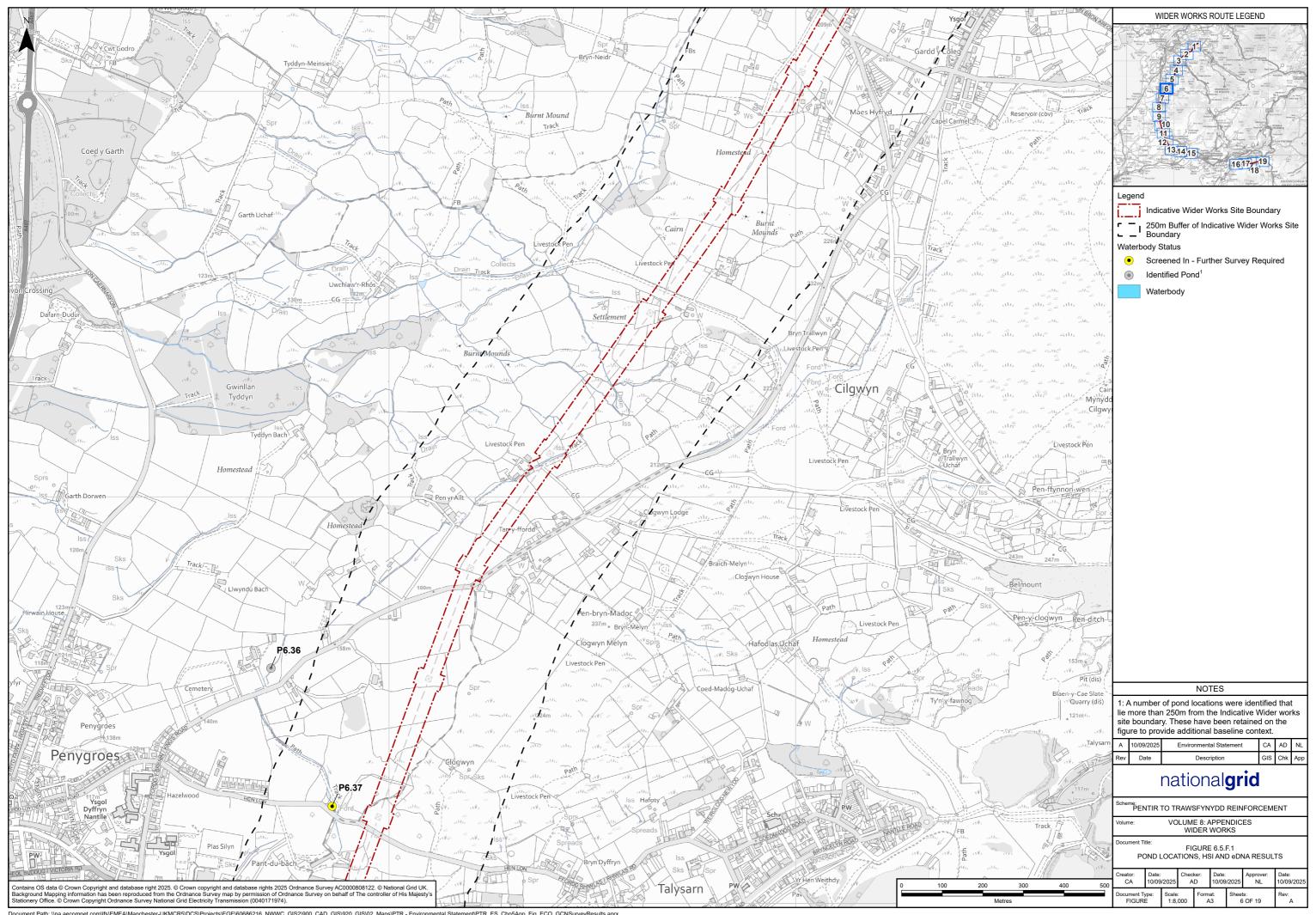


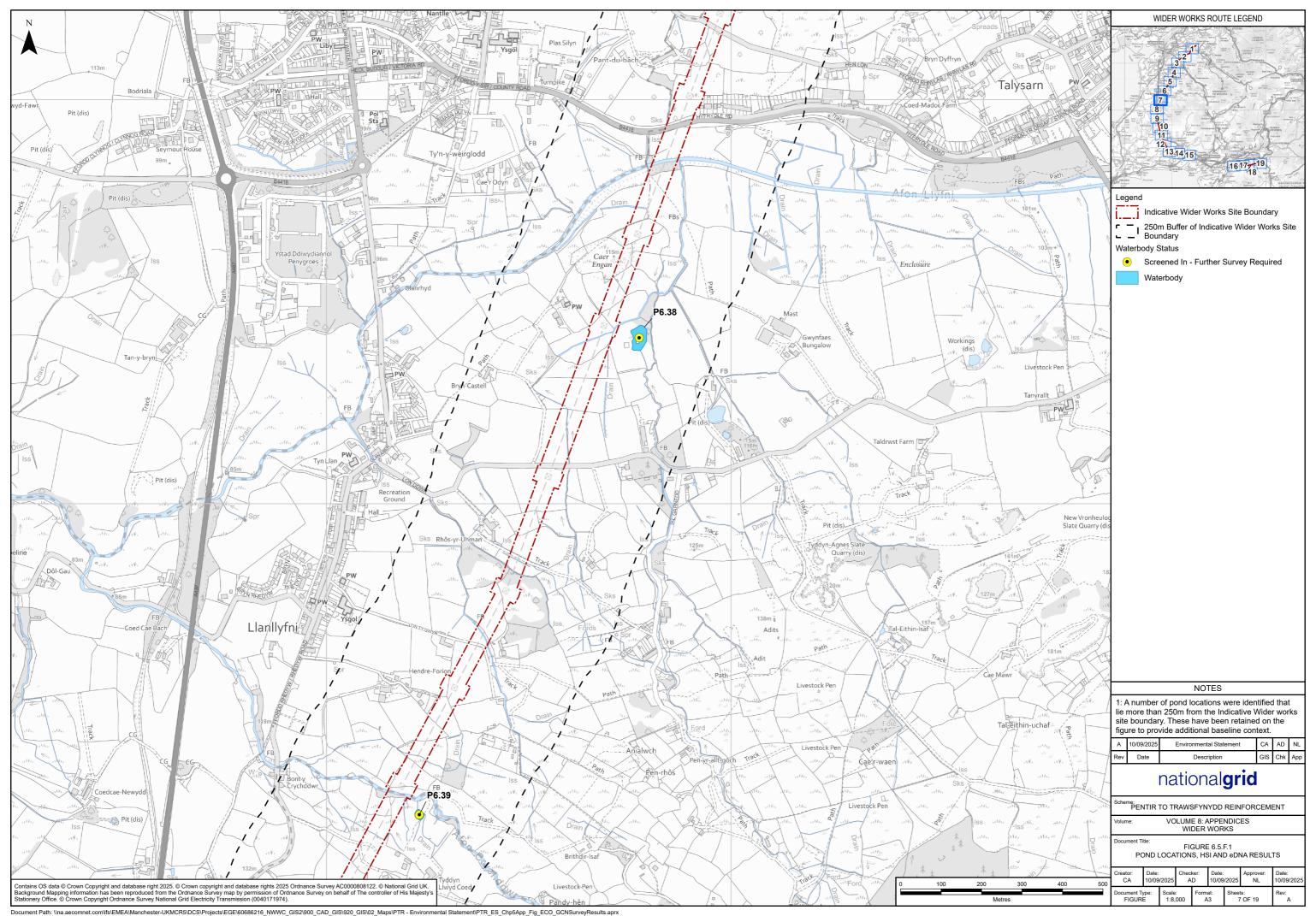


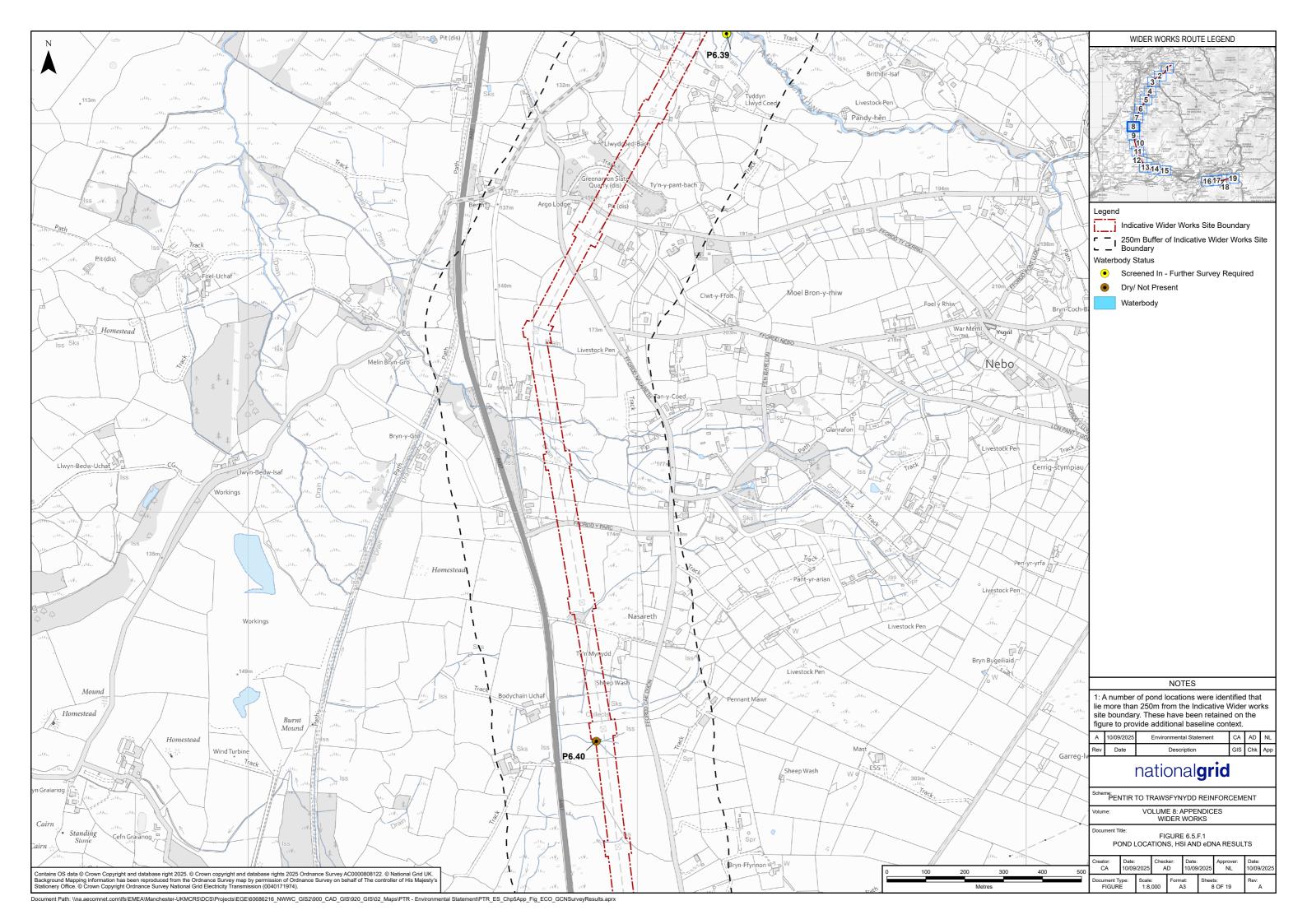


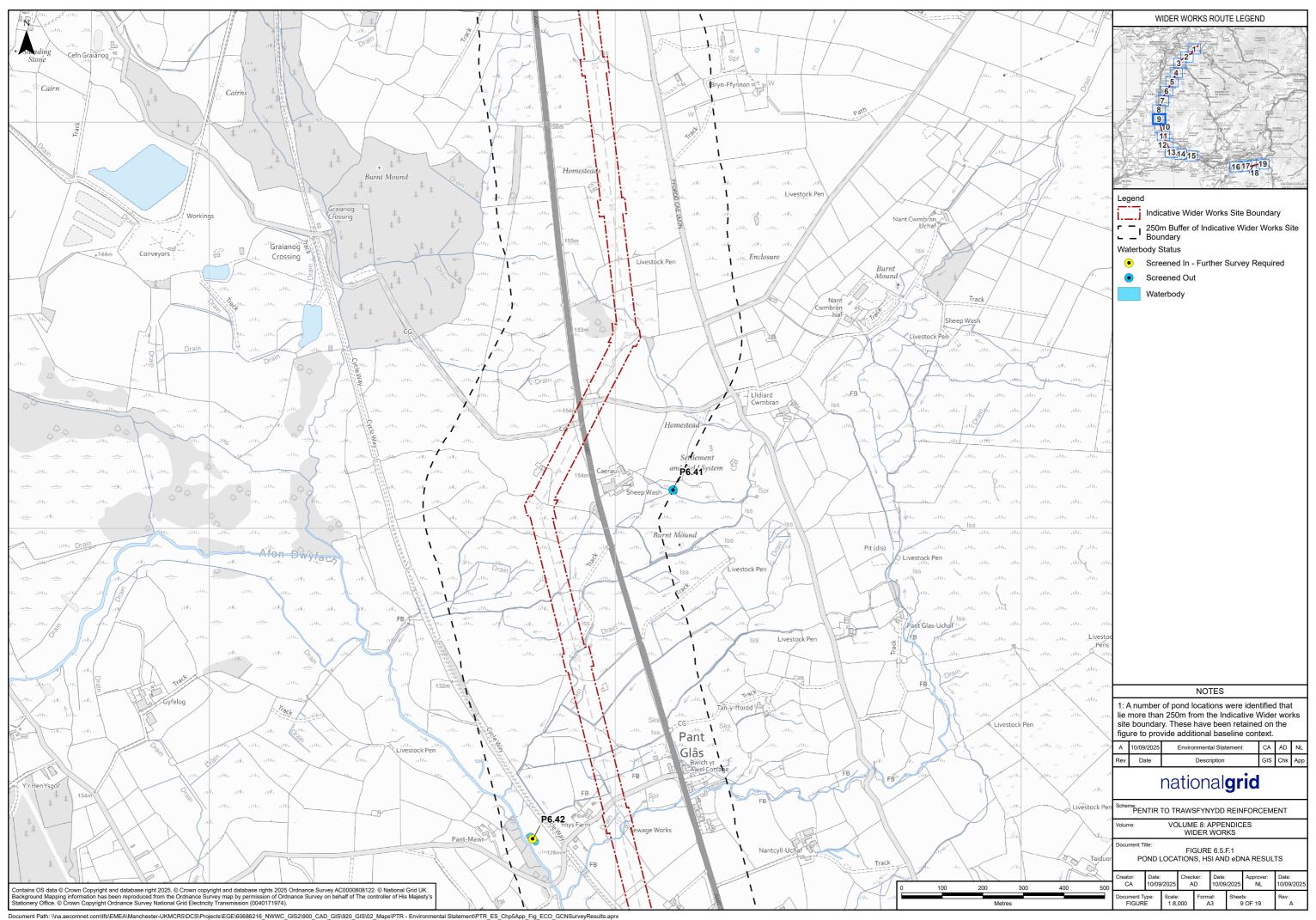


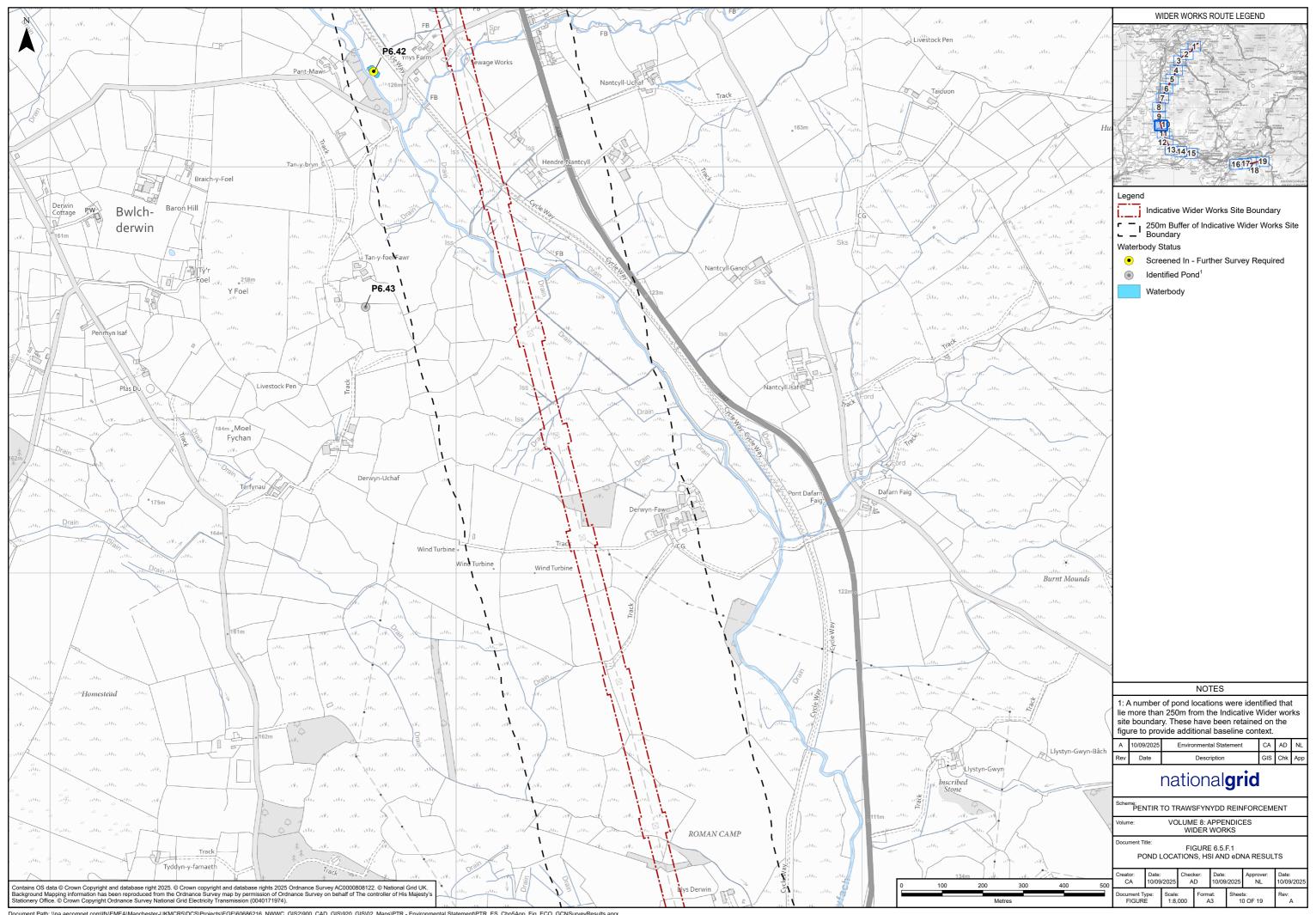


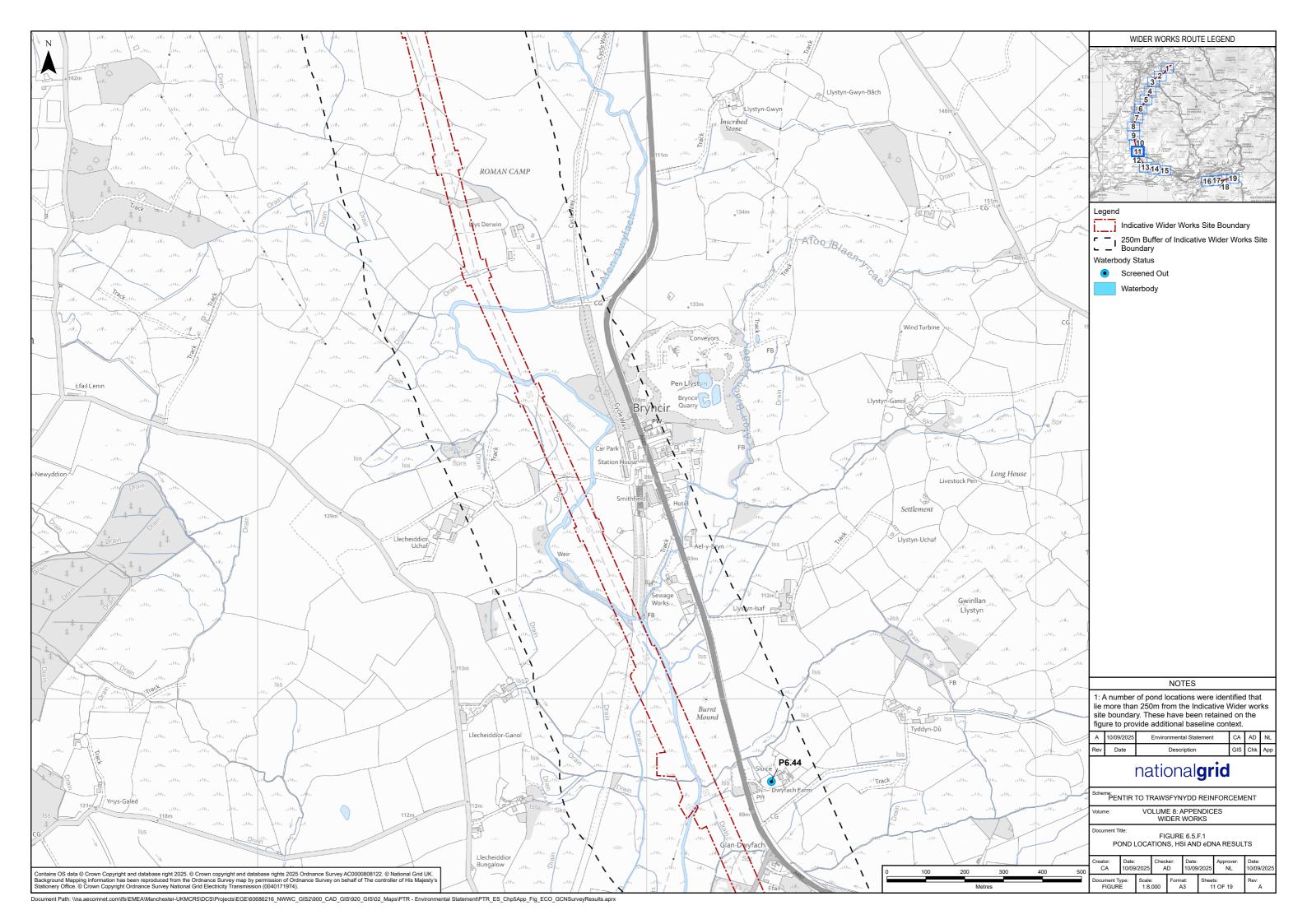


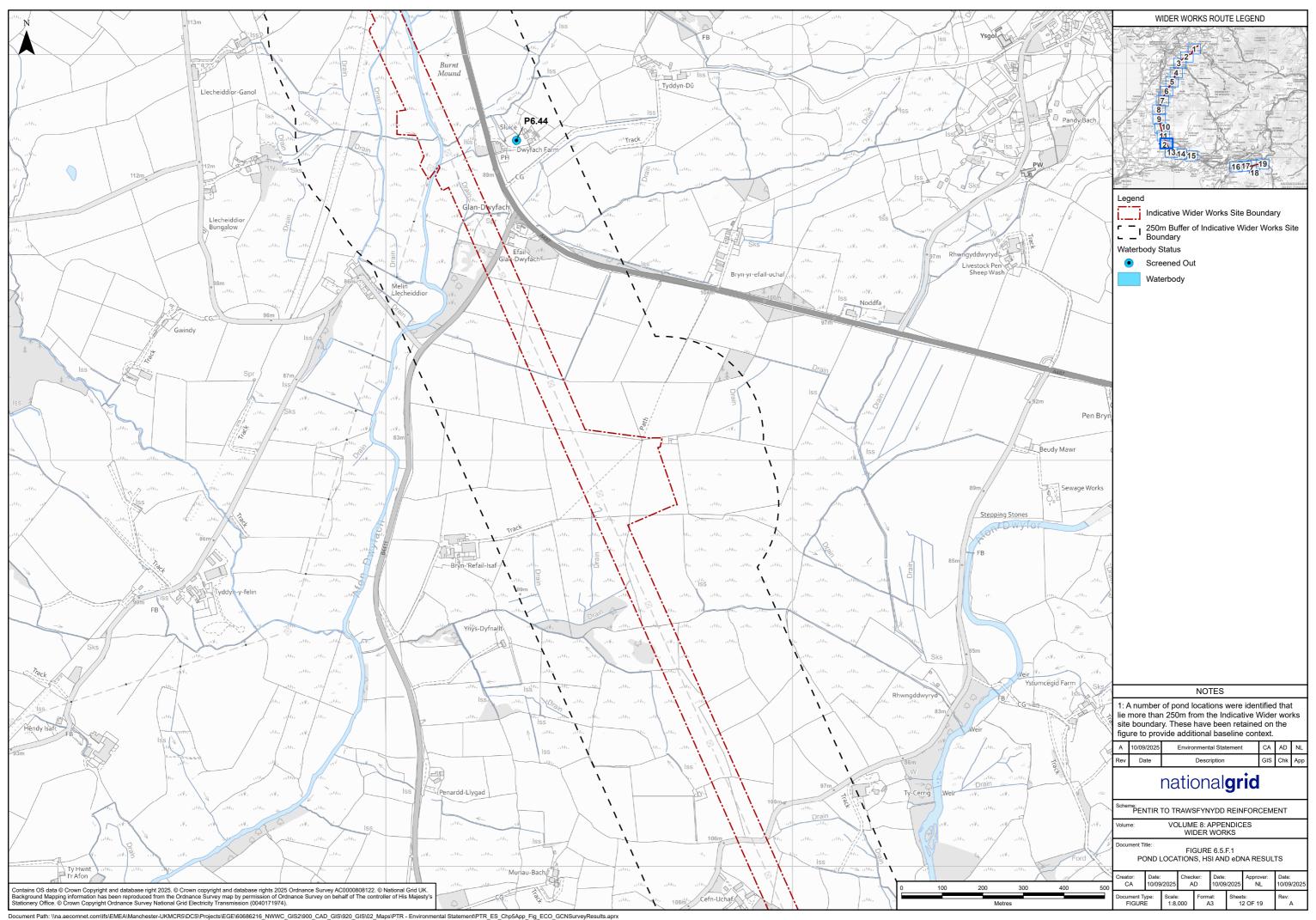


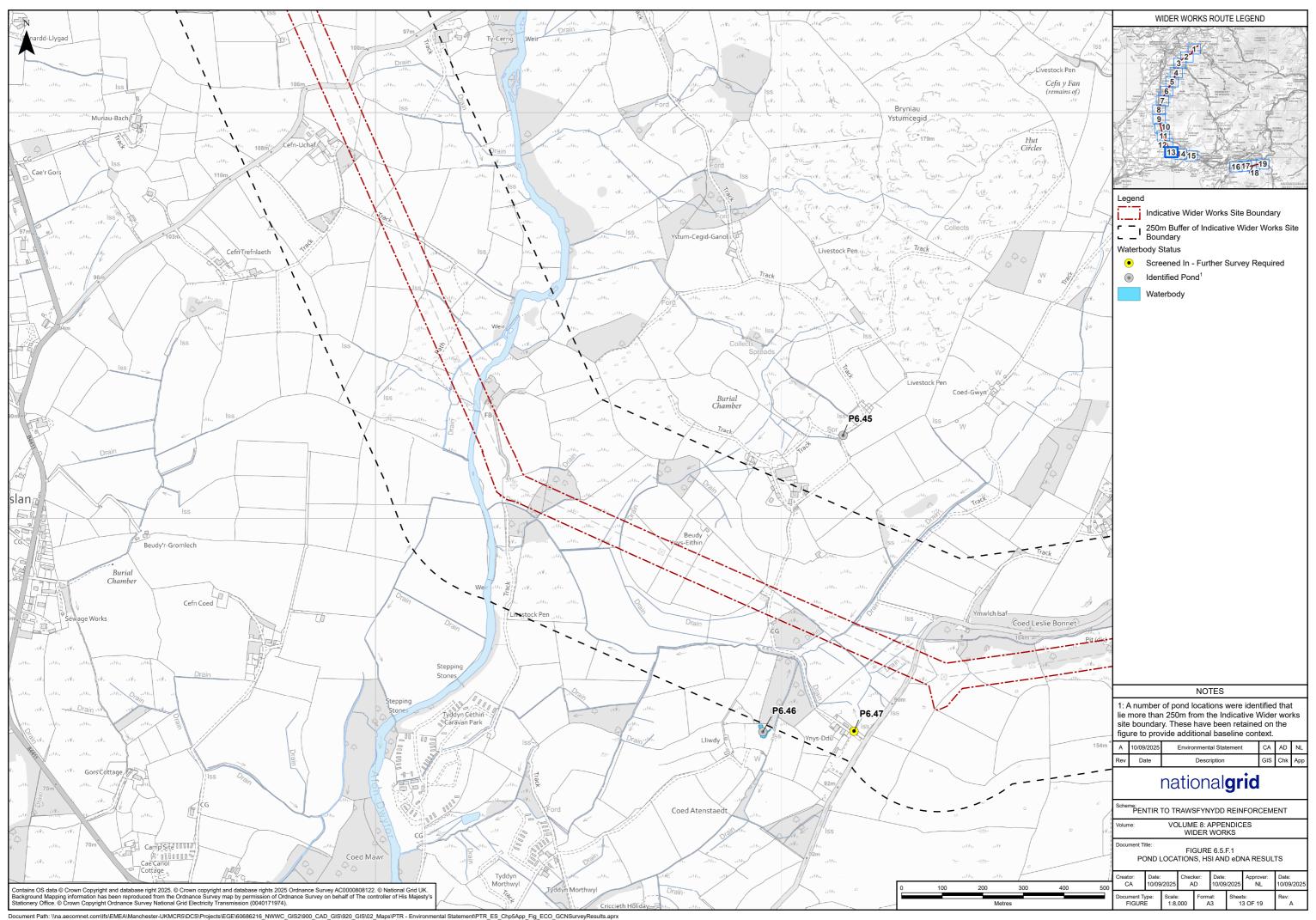


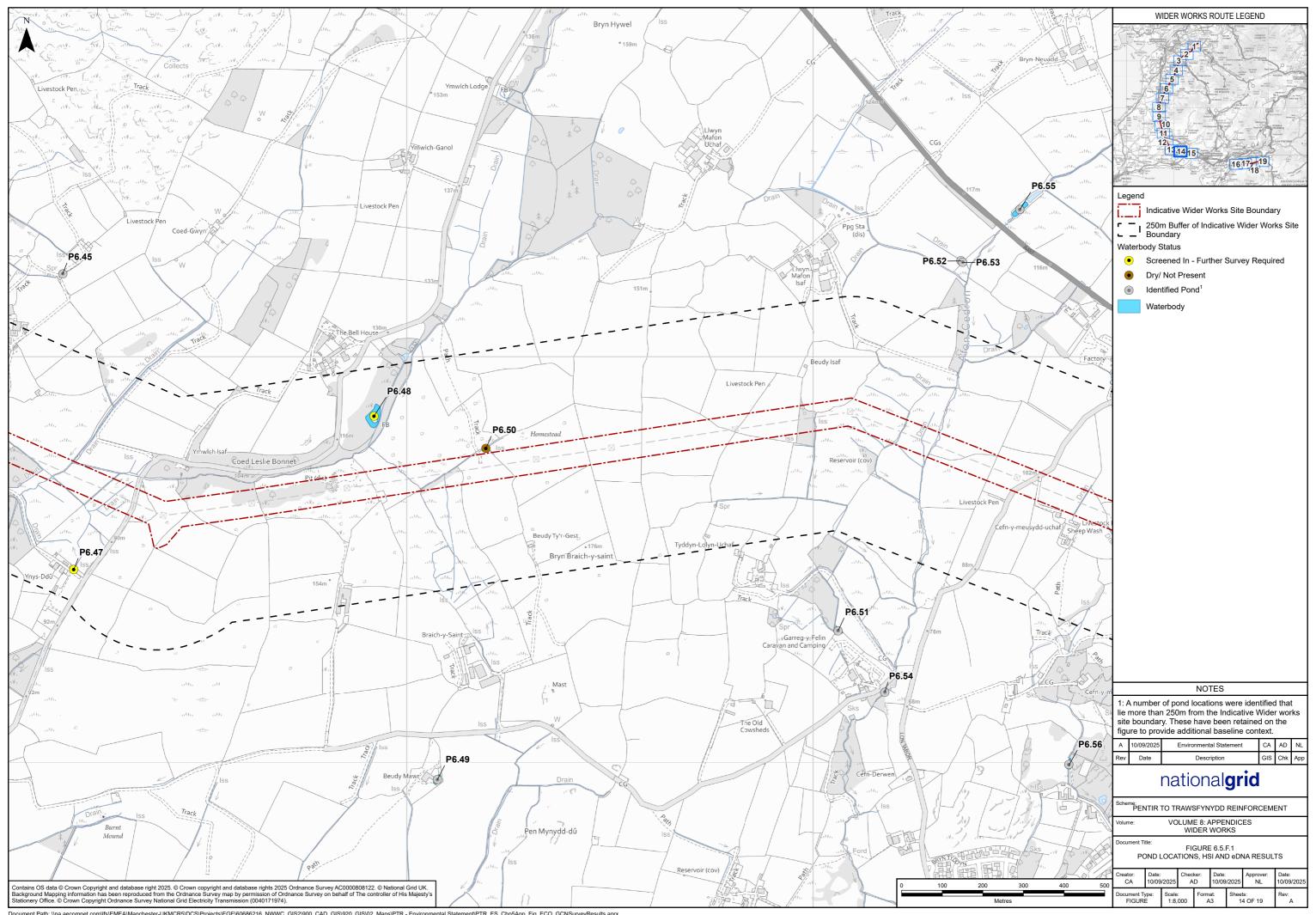


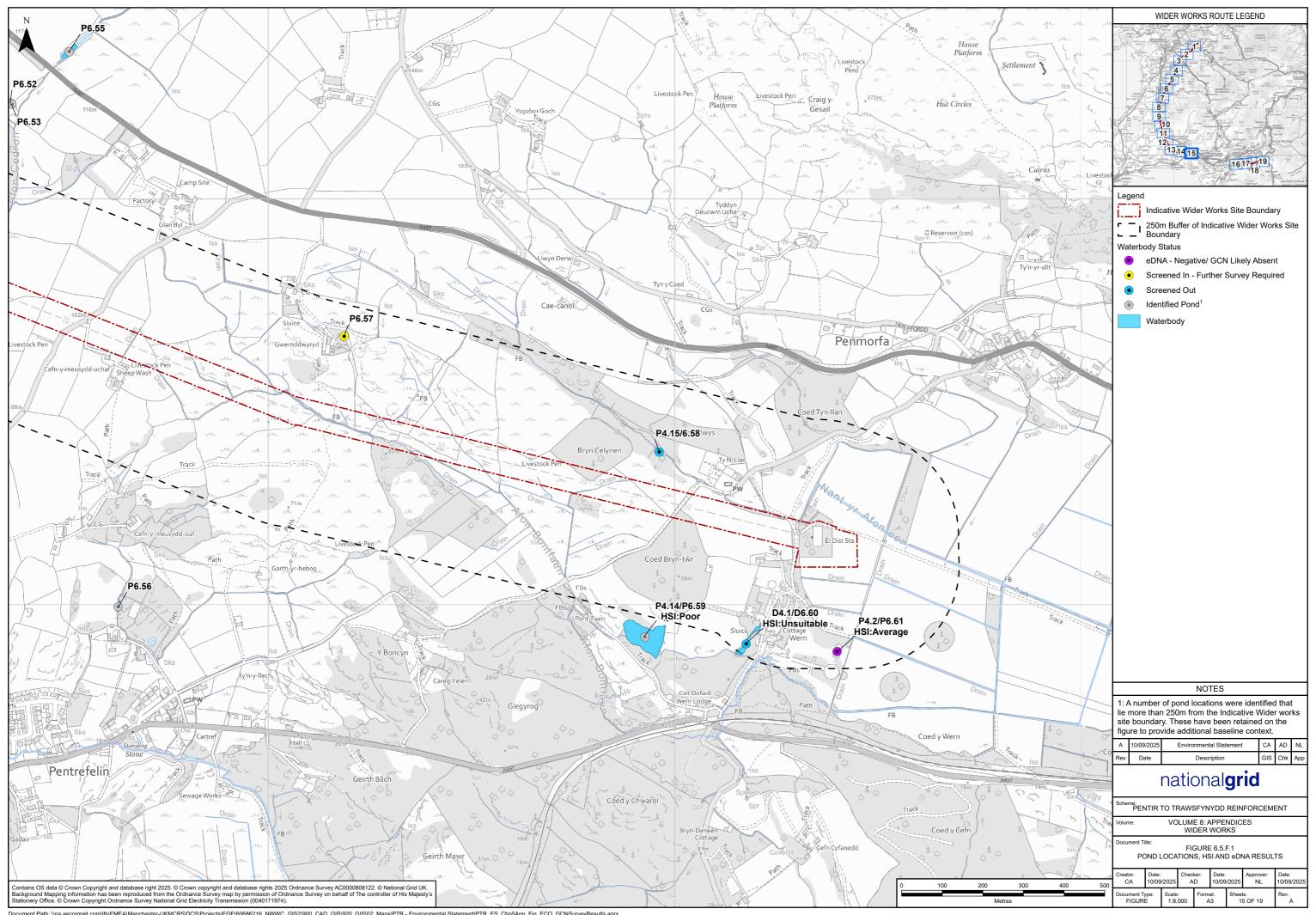


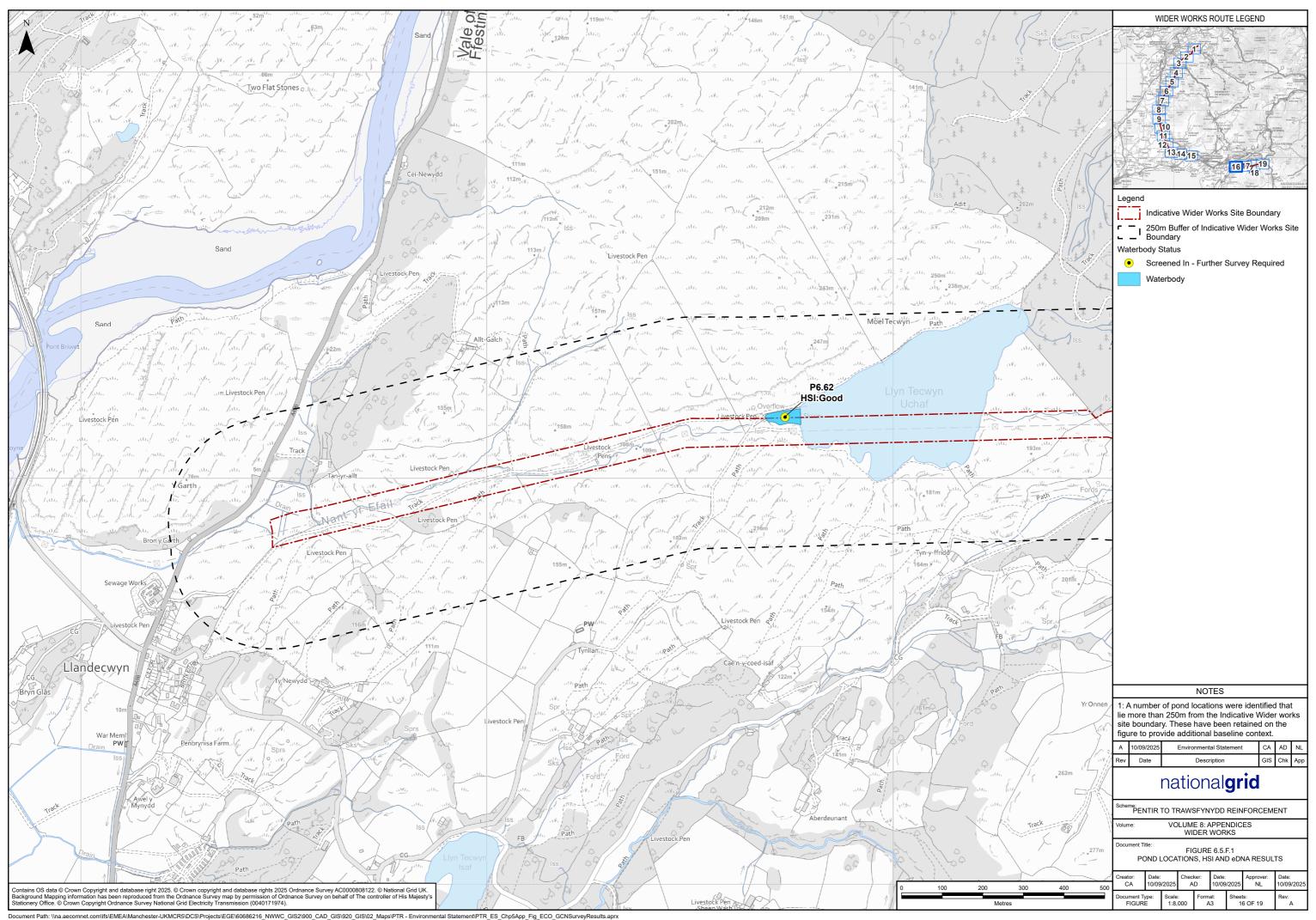


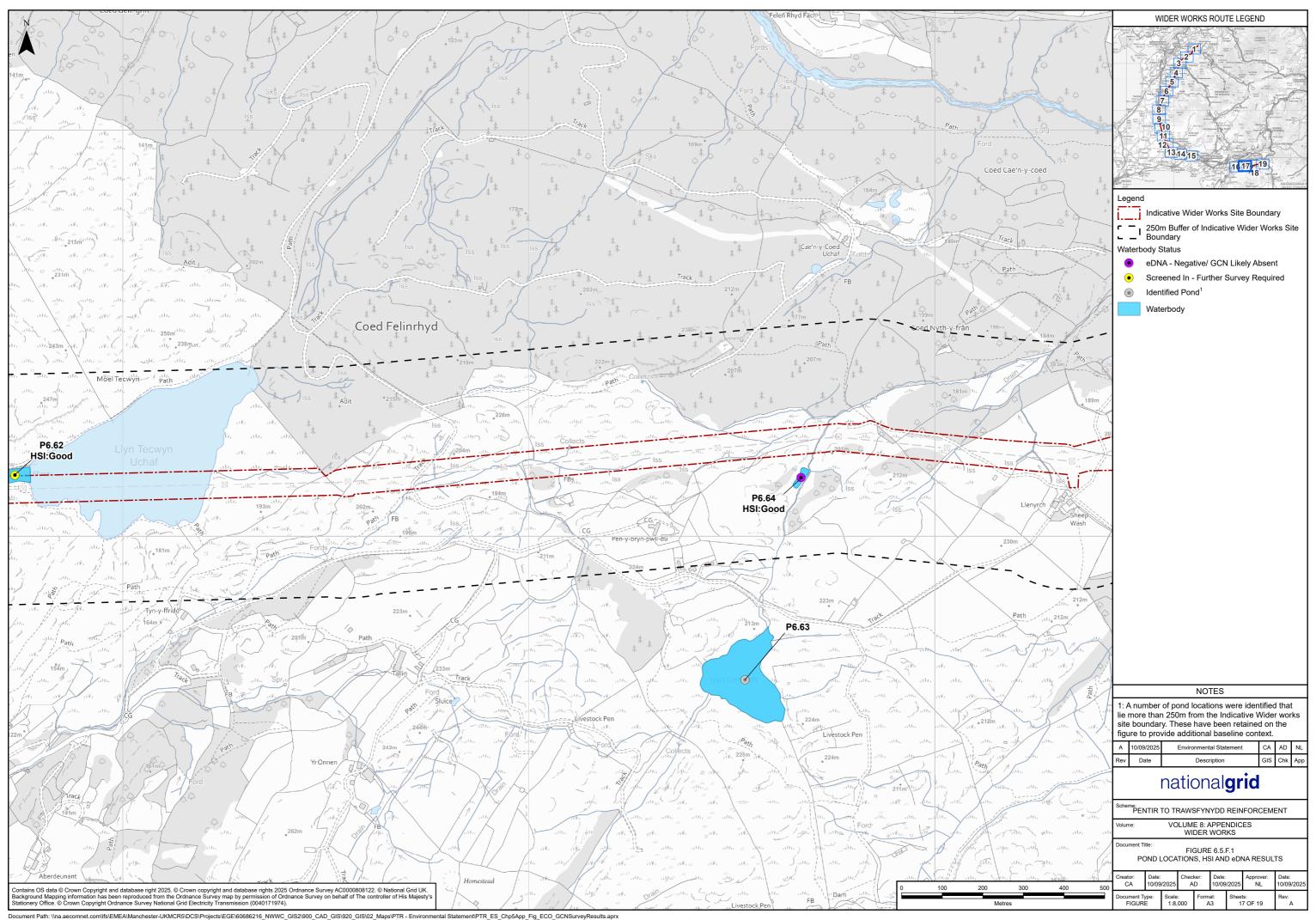


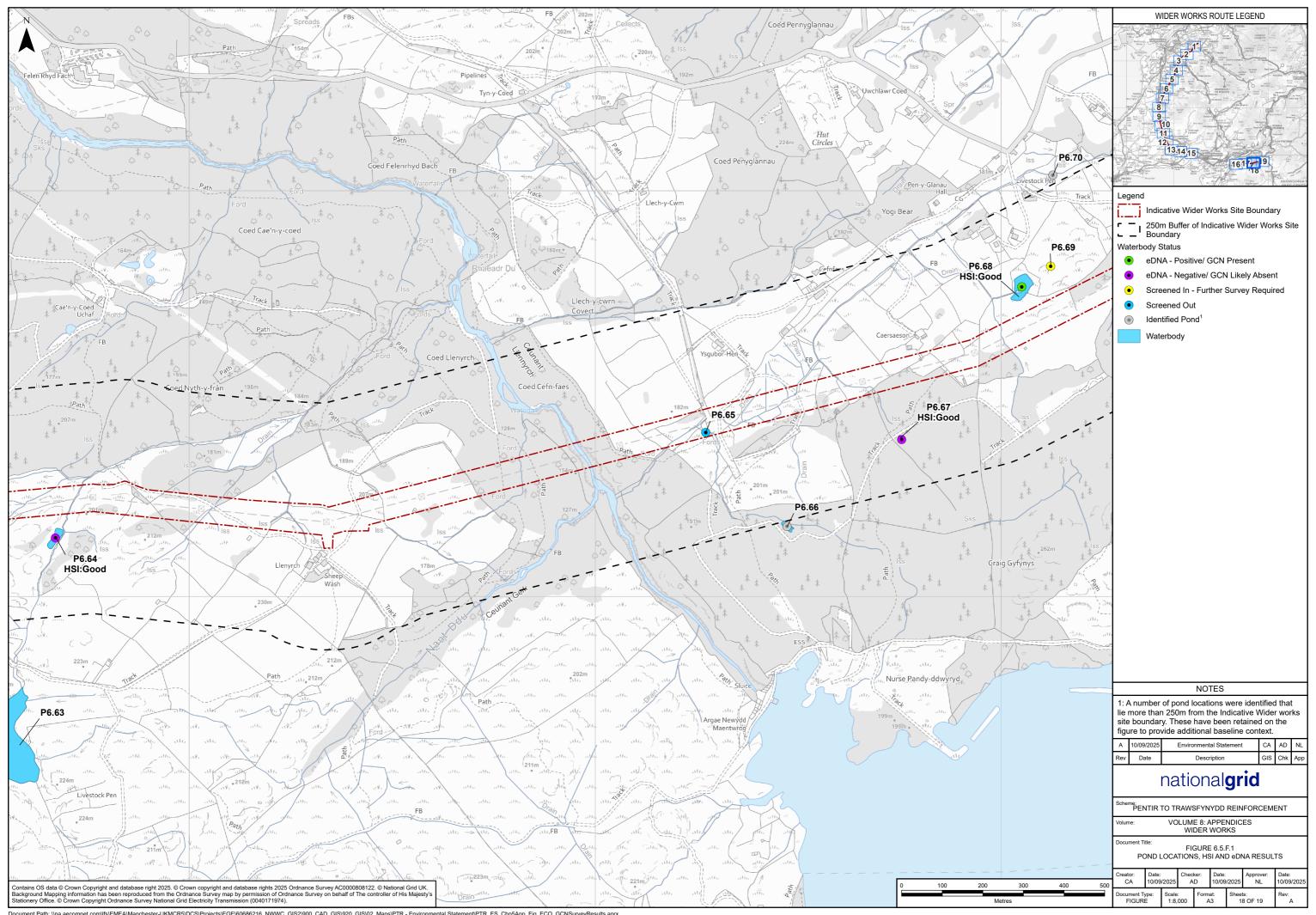


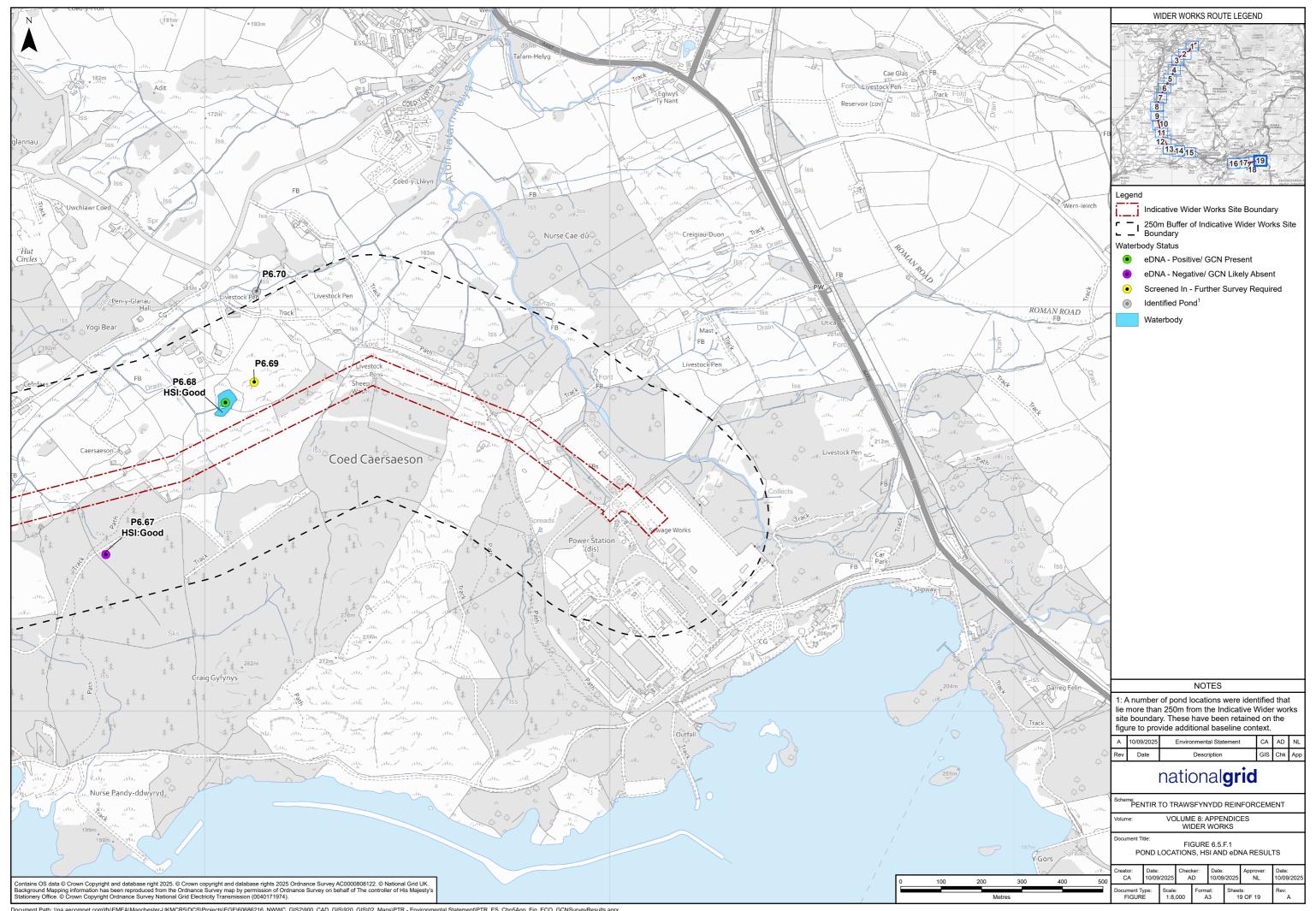












Appendix B Photographs

Table A-1: Photographs

Pond ID

Photograph

P6.67

Open water body in felled woodland connected to stream.



P6.62 Holding pool connected to larger reservoir.



Photograph

P6.64

Moderately sized pond in grazed field with gently sloping banks.



P6.68
Large water body between grazed farmland and woodland with small island.



Photograph

P6.33

Large open water body with island surrounded by grassland.



P6.34 Large open waterbody, surrounded by tall grasses and reeds.



Photograph

P6.32 Large open waterbody, surrounded by tall grasses and reeds.



P6.24
Large waterbody with submerged and emergent vegetation present dominated by reeds.



Photograph

P4.2/6.61

Ornamental pond set in concrete - former lily pond.



6.5.G Wider Works Statutory and Non-Statutory Designated Sites Citations



1. Statutory and non-statutory sites designated for nature conservation

- This document concerns the section of the Pentir to Trawsfynydd Reinforcement Project relating to the Wider Works (the proposed works) and is a Technical Appendix to the Environmental Statement (ES) **Volume 6, Chapter 5: Likely Significant Effects.**
- 1.1.2 This Appendix provides details of the designated sites described in **Section 5.1** of **Volume 6, Chapter 5: Likely Significant Effects.**
- 1.1.3 Table 1.1 presents the following:
 - Statutory designated sites of international nature conservation value (Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites) in 10 km of the Wider works site (extended to 30 km for SAC designated for bats), and the reason for their designation. The locations of these sites are shown in **Figures 6.5.1** and **6.5.2**.
 - Statutory designated sites of national nature conservation value (Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR)) in 5 km of the Wider Works site, and the reason for their designation. The locations of these sites are shown in Figure 6.5.2.
 - Non-statutory designed sites of nature conservation value (Wildlife Sites (WS) and candidate Wildlife Sites (cWS)) in 2 km of the Wider Works site. The location of these sites is shown in Figure 6.5.3.

Table 1.1 – Statutory sites designated for Nature Conservation in 10 km (international) and 5 km (national) of the Wider Works site (extended to 30 km for international sites designated for bats). Non-statutory sites designated for Nature Conservation in 2 km of the Wider Works site.

Site name	Description	Approximate distance (km) from Wider Works site
Afon Gwyrfai a Llyn Cwellyn SAC	Annex I habitats that are a primary reason for selection of this site: • Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae or of the Isoëto-Nanojuncetea.	In
	• Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation.	
	Annex II species that are a primary reason for selection of this site: • Atlantic salmon (Salmo salar).	
	Floating water-plantain (Luronium natans).	
	Annex II species present as a qualifying feature, but not a primary reason for site selection:	
	Otter (Lutra lutra).	
Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC	Annex I habitats that are a primary reason for selection of this site: Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles.	In
	 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:	
	 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation. 	

Site name	Description	Approximate distance (km) from Wider Works site
	Northern Atlantic wet heaths with <i>Erica tetralix</i> .	
	 European dry heaths. Tilio-Acerion forests of slopes, screes and ravines (priority feature). 	
	Bog woodland (priority feature).	
	Annex II species lesser horseshoe bat (<i>Rhinolophus hipposideros</i>) is a primary reason for selection of this site.	
Corsydd Eifionydd/Eifionydd Fens SAC	Annex I habitat that is a primary reason for selection of this site: • Transition mires and quaking bogs.	In
	Annex II species that are a primary reason for selection of this site: • Marsh fritillary butterfly (Euphydryas (Eurodryas, Hypodryas) aurinia).	
	Slender green feather-moss (<i>Drepanocladus</i> (<i>Hamatocaulis</i>) <i>vernicosus</i>).	
Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC	 Annex I habitats that are a primary reason for selection of this site: Sandbanks which are slightly covered by sea water all the time. 	0.33 km north
	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:	
	 Mudflats and sandflats not covered by seawater at low tide. 	
	 Salicornia and other annuals colonizing mud and sand. 	

Site name	Description	Approximate distance (km) from Wider Works site
	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:	
	 Bottlenose dolphin (Tursiops truncates). 	
	Otter.	
	Grey seal (Halichoerus grypus).	
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.	0.90 north-west
Migneint-Arenig-Dduallt SAC	Annex I habitats that are a primary reason for selection of this site: • European dry heaths.	1.68 km north-west
	Blanket bogs (if active bog, is a priority feature).	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	
	 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae or of the Isoëto-Nanojuncetea. 	
	Natural dystrophic lakes and ponds.	
	Northern Atlantic wet heaths with <i>Erica tetralix</i> .	
	Old sessile oak woods with <i>llex</i> and <i>Blechnum</i> in the British Isles.	

Site name	Description	Approximate distance (km) from Wider Works site
Migneint-Arenig-Dduallt SPA	The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed on Annex 1, in any season (5-year peak mean for 1993/94 – 1997/98): • Hen harrier (<i>Circus cyaneus</i>) (10-12 pairs = 2% of GB population). • Merlin (<i>Falco columbarius</i>) (9-12 pairs = 0.7-09% of GB population). • Peregrine (<i>Falco peregrinus</i>) (12 pairs = 1% of GB population).	1.69 km east
Northern Cardigan Bay/Gogledd Bae Ceredigion SPA	The site qualifies under article 4.1 Qualification (79/409/EEC) as over winter the area regularly supports red-throated diver (<i>Gavia stellata</i>); 1,186 individuals representing 7% of the wintering population in Great Britain (2001/02 –2003/04).	2.54 km south
Eryri/Snowdonia SAC	 Annex I habitats that are a primary reason for selection of this site: Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae or of the Isoëto-Nanojuncetea. 	2.30 km east
	Siliceous alpine and boreal grasslands.	
	 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels. 	
	 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani). 	
	Calcareous rocky slopes with chasmophytic vegetation.	
	Siliceous rocky slopes with chasmophytic vegetation.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	
	 Northern Atlantic wet heaths with Erica tetralix. 	

Site name	Description	Approximate distance (km) from Wider Works site
	European dry heaths.	
	Alpine and Boreal heaths.	
	Alpine and subalpine calcareous grasslands.	
	 Species-rich Nardus grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe) (priority feature). 	
	 Blanket bogs (if active bog, is a priority feature). 	
	Depressions on peat substrates of the Rhynchosporion.	
	• Petrifying springs with tufa formation (<i>Cratoneurion</i>) (priority feature).	
	Alkaline fens.	
	 Alpine pioneer formations of the Caricion bicoloris-atrofuscae (priority feature). 	
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles.	
	Annex II species that are a primary reason for selection of this site:Slender green feather-moss.	
	Floating water-plantain.	
Rhinog SAC	Annex I habitats that are a primary reason for selection of this site: • European dry heaths.	3.3 km south
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles.	
	Annex I habitats present as a qualifying feature, but not a primary reason for	

• Oligotrophic to mesotrophic standing waters with vegetation of the

Littorelletea uniflorae or of the Isoëto-Nanojuncetea.

selection of this site:

Site name	Description	Approximate distance (km) from Wider Works site
	Northern Atlantic wet heaths with <i>Erica tetralix</i> .	
	Alpine and Boreal heaths.	
	Blanket bogs (if active bog, is apriority feature).	
	Depressions on peat substrates of the Rhynchosporion.	
	Annex II species floating water-plantain is as a qualifying feature, but not a primary reason for site selection.	
Afon Eden - Cors Goch Trawsfynydd SAC	Annex I habitat active raised bogs (priority feature) is present as a qualifying feature, but not a primary reason for selection of this site. Annex II species that are a primary reason for selection of this site: • Freshwater pearl mussel (Margaritifera margaritifera).	3.64 km south
	Floating water-plantain.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection are:	
	Atlantic salmon.	
	Otter.	
Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC	Annex I habitats that are a primary reason for selection of this site: • Sandbanks which are slightly covered by sea water all the time.	4.15 km north-west
	Mudflats and sandflats not covered by seawater at low tide.	
	Reefs.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Large shallow inlets and bays.	

Site name	Description	Approximate distance (km) from Wider Works site
	Submerged or partially submerged sea caves.	
Morfa Harlech a Morfa Dyffryn SAC	Annex I habitats that are a primary reason for selection of this site: • Embryonic shifting dunes.	4.67 km south-east
	 Shifting dunes along the shoreline with Ammophila arenaria (white dunes). 	
	 Fixed coastal dunes with herbaceous vegetation (grey dunes) (priority feature). 	
	Dunes with Salix repens ssp. argentea (Salicion arenariae).	
	Humid dune slacks.	
	Annex II species that are a primary reason for selection of this site:	
	Petalwort (<i>Petalophyllum ralfsii</i>).	
Y Twyni o Abermenai i Aberffraw/Abermenai to Aberffraw Dunes SAC	Annex I habitats that are a primary reason for selection of this site: • Embryonic shifting dunes.	6.10 km west
	 Shifting dunes along the shoreline with Ammophila arenaria (white dunes). 	
	 Fixed coastal dunes with herbaceous vegetation (grey dunes) (priority feature). 	
	Dunes with Salix repens ssp. argentea (Salicion arenariae).	
	Humid dune slacks.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	

Site name	Description	Approximate distance (km) from Wider Works site
	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharitio</i> n - type vegetation.	
	Annex II species that are a primary reason for selection of this site:	
	Petalwort.	
	Shore dock (Rumex rupestris).	
Glannau Mon: Cors heli/Anglesey Coast: Saltmarsh SAC	Annex I habitats that are a primary reason for selection of this site: • Salicornia and other annuals colonizing mud and sand	6.67 km north-west
Saltifiaisii SAC	Atlantic salt meadows (Glauco-Puccinellietalia maritimae).	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	
	Estuaries.	
	 Mudflats and sandflats not covered by seawater at low tide. 	
Traeth Lafan/Lavan Sands Conway Bay SPA	The site qualifies under article 4.1 Qualification (79/409/EEC) as over winter the area regularly supports:	9.90 km north-east
	 Eurasian oystercatcher (Haematopus ostralegus): 1.4% of the population in Great Britain five-year peak mean. 	
	 Eurasian curlew (Numenius arquata) (Europe breeding): 1.1% of the population in Great Britain five-year peak mean. 	
	On passage the area regularly supports:	
	Great crested grebe (<i>Podiceps cristatus</i>). No count period specified.	
Llyn Idwal Ramsar	Llyn Idwal is included on the RAMSAR list of sites as a good example of an oligotrophic upland lake that contains at least one internationally rare plant species.	9.98 km south-east

Site name	Description	Approximate distance (km) from Wider Works site
Mwyngloddiau Fforest Gwydir/Gwydyr Forest Mines SAC	Annex I habitat Calaminarian grasslands of the <i>Violetalia calaminariae</i> is present as a primary reason for selection of this site. Annex II species lesser horseshoe bat is a qualifying feature, but not a primary reason for site selection.	19.87 km north
Coedydd De Dyffryn Maentwrog SSSI	The site is of special interest for its biological interest, including semi-natural broadleaved woodland, a nationally rare moss (<i>Sematophyllum demissum</i>), liverworts, lichens (including 12 nationally rare species), slime moulds (including a species of national importance) and a population of lesser horseshoe bat.	In
Ceunant Llennyrch NNR	The site is an example of remnant Celtic (Atlantic) rainforest and comprises oak woodland with over 230 species of mosses and liverworts recorded. It is considered one of the richest woodland lichen sites in Wales. It encompasses the same area as Coedydd De Dyffryn Maentwrog SSSI and parts of the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC.	In
Afon Gwyrfai a Llyn Cwellyn SSSI	Afon Gwyrfai a Llyn Cwellyn is of special scientific interest for its running and standing water, aquatic plant assemblage (including nationally scarce species), floating water-plantain, Arctic charr (<i>Salvelinus alpinus</i>), Atlantic salmon and otter. Small populations of river lamprey (<i>Lampetra fluviatilis</i>) and brook lamprey (<i>Lampetra planeri</i>) are present in the river.	In
Llystyn Isaf SSSI	The site is of botanical interest and supports a range of acidic and neutral grassland vegetation types. Wood bitter-vetch (<i>Vicia orobus</i>) 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.	In

Site name	Description	Approximate distance (km) from Wider Works site
Pant Cae Haidd SSSI	The site supports the last remaining examples of a scarce fen meadow vegetation type in lowland Gwynedd, typified by purple moor- grass (<i>Molinia caerulea</i>) and meadow thistle (<i>Cirsium dissectum</i>).	0.1 km south-east
Cors Gyfelog SSSI and 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 (<i>Salix cinerea</i>) 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 <i>Scarpania paludicola</i> and for the marsh fritillary butterfly.	0.12 km south-west and 0.13 km west
Morfa Harlech SSSI and NNR	The SSSI lies within the boundary of Pen Llŷn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC and is of both geomorphological and biological interest. The marine biological interest comprises the exposed sandy shore of Morfa Harlech beach and the Glaslyn and Dwyryd estuary. The hard cliffs of the Portmeirion peninsula and Ynys Giftan support maritime lichen communities. The sand dunes at Morfa Harlech are one of the largest moderately calcareous systems in Britain. The mobile dune communities and the humid dune slack communities (in seasonally wet hollows) are of European importance supporting nationally scarce flora. Morfa Harlech is a nationally important site for Aculeata (wasps and bees) and is of regional importance for breeding waders. During September to March nationally important numbers of pintail (<i>Anas acuta</i>) feed and roost on the extensive areas of mud and saltmarsh in the Glaslyn/Dwyryd estuary. The sand lizard (<i>Lacerta agilis</i>) has been introduced into two areas of sand dune at Morfa Harlech. Glaslyn/Dwyryd Estuary is considered an important breeding and feeding habitat for otter and the ditches associated with embankments and adjacent farmland provide suitable bankside habitat for the water vole (<i>Arvicola</i>	

Site name	Description	Approximate distance (km) from Wider Works site
Tiroedd a Glannau Rhwng Cricieth ac Afon Glaslyn SSSI	This site is of special interest for its geological, botanical and marine biological features. Within the site, Llyn Ystumllyn is of special interest for its reedswamp, grazing marsh, fen meadow and fen woodland. Dune habitats at Morfa Bychan are of special interest because of their botanical communities. Species present include the nationally scarce dune fescue (<i>Vulpia fasciculata</i>), variegated horsetail (<i>Equisetum variegatum</i>) and sharp rush (<i>Juncus acutus</i>) and the scarce fern lanceolate spleenwort (<i>Asplenium obovatum</i> subsp. <i>lanceolatum</i>). The shore is of special interest for the presence of diverse rockpool and seagrass communities and extensive sandy-shore community zonation patterns. Reefs of the honeycomb worm (<i>Sabellaria alveolate</i>) and the cave community with <i>Rhodothamniella</i> seaweed are recorded here, both of which are restricted nationally.	0.86 km south
Cors Llanllyfni SSSI	This site is a part of Corsydd Eifionydd SAC and is selected for its biological interest including a population of the internationally important slender green feather-moss. Most of the site consists of wet heath and marshy grassland; other communities include dry heath, improved and semi-improved grassland and acidophilous spring-fed flushes.	0.89 km north-west
Glynllifon SSSI	Glynllifon SSSI is selected for its population of lesser horseshoe bat. The site includes three summer roost sites and two hibernation sites. It also contains areas of woodland which is used by the bats as foraging areas as well as hedgerows and other linear features used as flight routes. A number of other bat species are found within the Glynllifon Estate. These include whiskered bat (Myotis mystacinus), Natterer's bat (Myotis nattereri), Daubenton's bat (Myotis daubentonii), common pipistrelle (Pipistrellus pipistrellus), soprano (Pipistrellus pygmaeus), noctule bat (Nyctalus noctula) and the brown long eared bat (Plecotus auritus).	0.90 km north-west
Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI	The site is of special interest for its biological features comprising semi-natural broadleaved woodland, woodland bird assemblage, moss, liverwort, lichen and slime mould assemblages and lesser horseshoe bats. Nine nationally scarce	0.92 km north-west

Site name	Description	Approximate distance (km) from Wider Works site
	mosses, seven nationally scarce liverworts and three nationally rare lichens have been recorded here. The slime mould flora that is found on moss covered boulders in the damp, humid conditions of the stream cut gorges, is of national importance. There are several species that have restricted worldwide distributions or are only found in a few places within Wales.	
Dudley Quarry LNR	A mixed woodland on the lower sheltered slopes of Moel Smytho.	1.33 km south-east
Coed Camlyn NNR	Coed Camlyn NNR is an oakwood nature reserve. It encompasses part of the same area as the Coedydd De Dyffryn Maentwrog SSSI and the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC.	1.02 km north
Coed y Rhygen SSSI and NNR	Coed y Rhygen SSSI has been selected for its biological interest as a woodland containing Atlantic bryophytes, of special interest. The wood is of invertebrate interest; species of note include two cranefly, the nationally rare <i>Triogama trisulcata</i> and the nationally scarce <i>Pedicia unicolor</i> .	1.10 km south
Llyn Padarn SSSI	This site is notified for its biological and geological interest. It is one of only three remaining natural localities in Wales for the Arctic charr (<i>Salvelinus alpinus</i>), a glacial relict fish species. Llyn Padarn also has some aquatic plant interest, notably floating water-plantain and small quillwort (<i>Isoetes echinospora</i>). The lake outflow, Afon Rhythallt, is one of the most important spawning sites for salmon and sea-trout in north Gwynedd.	1.39 km south-east
Llwyn y Coed SSSI	A small grazed sessile oakwood of the Teucrium scorodonia – Quercus/Betula (wood sage-oak/birch) type situated on a steep rocky north-east facing slope. The principal interest of the wood is its Atlantic flora which includes both British species of filmy ferns (<i>Hymenophyllum wilsonii</i> and <i>Hymenophyllum tunbrigense</i>) and an abundance of oceanic mosses, liverworts and lichens. It is one of the most important woodland sites in north Gwynedd for its woodland Atlantic bryophyte flora which includes the mosses, <i>Grimmia hartmanii</i> and	

Site name	Description	Approximate distance (km) from Wider Works site
	Hyphen callichroun, and the liverworts, Adelanthus decipiens, Aphanolejeunea microscopica, Dreopanolejeunea hamatifolia and Jubula hutchinsiae. The continuity of a broadleaved tree cover on this ancient woodland site has helped this flora to survive.	
Coed Tremadog SSSI and NNR	Coed Tremadog is selected for its biological interest as an example of Woodsage/Oak/Birch (<i>Teucrium scorodonia/Quercus/Betula</i>) woodland type, for its vascular plant species richness and sub-habitat diversity. The woodland is of entomological interest for its dipteran fauna and is the only extensive example of a cliff/scree woodland in the sub-region.	1.58 km 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.	1.67 km east
Migneint-Arenig-Dduallt SSSI	The site is of interest for its biological and geological features. The habitats of special interest are blanket bog, dry heath, montane heath, wet heath, flushes, lakes, woodland as well as a mixture of habitats comprising acid, neutral and calcareous grassland, rush pasture, bracken, ledge communities, swamp, running water and cliff and scree vegetation. Nationally scarce plants are recorded here, including marsh clubmoss (Lycopodiella inundata), tall bog-sedge (Carex magellanica) and rock stonecrop (Sedum forsterianum). Regionally rare or threatened flowering plants include mountain everlasting (Antennaria dioica), northern bedstraw (Galium boreale), dwarf willow (Salix herbacea), few-flowered sedge (Carex pauciflora), water sedge (Carex aquatilis) and stiff sedge (Carex bigelowii). The nationally rare liverwort, Welsh notchwort (Gynocolea acutiloba) is also found here. In terms of fauna, the site is of special interest for its upland breeding bird assemblage (hen harrier, merlin and peregrine) and for its upland invertebrate assemblage which includes the locally uncommon large heath butterfly	1.69 km east

Site name	Description	Approximate distance (km) from Wider Works site
	(Coenympha tullia), nationally rare ground beetle Trechus rivularis, nationally scarce weevil Anthonomus conspersus and nationally rare fungus gnat Brevicornu kingi.	
Afon Ddu SSSI	The Afon Ddu is of special interest for its population of the freshwater pearl mussel 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 (<i>Salmo trutta trutta</i>) spawn in the river and native brown trout (<i>Salmo trutta fario</i>) 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 within.	1.71 km north
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.	2.01 km north-east
Dolorgan Barn SSSI	Dolorgan Barn is of special interest as a breeding roost of the lesser horseshoe bat; the adjoining area of mixed woodland is used by the bats as a feeding area and as commuting to other feeding habitats in the valley. The building is also used as a roost site by small numbers of brown long-eared bats and by unidentified bat species of the genus <i>Myotis</i> .	2.12 km south
Mwyngloddiau Llanfrothen SSSI	The site consists of a series of mine shafts, adits and other disused mine workings and is of special interest for hibernating bats, particularly lesser horseshoe bats. The mines are also used by other bat species, including Daubenton's bat.	2.21 km north
Ysbyty Bron y Garth SSSI	This site is of special interest for its population of breeding lesser horseshoe bats which make use of a detached building, part of a former hospital, to give	2.22 km north-west

Description	Approximate distance (km) from Wider Works site
birth and raise their young between spring and autumn. An area beyond the building consists of agricultural land with scrub, hedgerows and deciduous trees which provide important feeding and commuting habitat.	
This site is of special interest for its upland habitats including lichen and bryophyte heath, montane heath, dry heath, wet heath, blanket bog, flush and spring, calcareous grassland, tall herb and fern ledges, vegetated scree and broadleaved woodland communities and for its inland rock exposures with crevice vegetation and low nutrient lakes, with a mixture of other habitats including acid and neutral grasslands, fen, rush pasture and marshy grassland, swamp, bracken and scrub along with a large number of streams and rivers.	2.30 km east
The site is of special interest for its species-rich grasslands and their associations with a range of other habitats including wet pasture, flush and swamp. Such vegetation is now increasingly scarce in the Welsh lowlands; most having been lost to agricultural improvement.	2.35 km south
The Afon Glaslyn is a significant oligotrophic, low-altitude, low-gradient river, known for supporting the nationally rare floating water plantain. Its muddy margins provide habitat for another national rarity, the Welsh mudwort (<i>Limosella australis</i>), while the adjoining wetland habitats support the only known population of the boreal relict snail (<i>Vertigo lilljeborgi</i>) in east Gwynedd. The nationally scarce sharp rush also grows within the coastal grazing marshes. This site encompasses one of the most extensive areas of alluvial wet woodland in Wales and hosts two separate nursery roosts of lesser horseshoe bats. The Glaslyn floodplain offers valuable breeding habitat for an assemblage of lowland damp grassland birds. The surrounding marshes attract overwintering wildfowl and waders, as well as a variety of migratory	2.44 km north-west
	birth and raise their young between spring and autumn. An area beyond the building consists of agricultural land with scrub, hedgerows and deciduous trees which provide important feeding and commuting habitat. This site is of special interest for its upland habitats including lichen and bryophyte heath, montane heath, dry heath, wet heath, blanket bog, flush and spring, calcareous grassland, tall herb and fern ledges, vegetated scree and broadleaved woodland communities and for its inland rock exposures with crevice vegetation and low nutrient lakes, with a mixture of other habitats including acid and neutral grasslands, fen, rush pasture and marshy grassland, swamp, bracken and scrub along with a large number of streams and rivers. The site is of special interest for its species-rich grasslands and their associations with a range of other habitats including wet pasture, flush and swamp. Such vegetation is now increasingly scarce in the Welsh lowlands; most having been lost to agricultural improvement. The Afon Glaslyn is a significant oligotrophic, low-altitude, low-gradient river, known for supporting the nationally rare floating water plantain. Its muddy margins provide habitat for another national rarity, the Welsh mudwort (Limosella australis), while the adjoining wetland habitats support the only known population of the boreal relict snail (Vertigo lilijeborgi) in east Gwynedd. The nationally scarce sharp rush also grows within the coastal grazing marshes. This site encompasses one of the most extensive areas of alluvial wet woodland in Wales and hosts two separate nursery roosts of lesser horseshoe bats. The Glaslyn floodplain offers valuable breeding habitat for an assemblage of lowland damp grassland birds. The surrounding marshes

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	Otters and water voles are also present, and both Atlantic salmon and sea trout migrate through the river as they travel upstream to their spawning grounds higher in the catchment.	
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 hawkmoth (<i>Hemaris tityus</i>) also occurs on the site.	2.51 km west
Ceunant Cynfal SSSI and NNR	The site is a wooded ravine with an outstanding assemblage of mosses and liverworts and a range of lichens, many growing epiphytically, especially on the larger oaks. The woodland has an excellent breeding bird population typical of western oakwoods.	2.64 km north and 2.95 km north-east
Coedydd Maentwrog NNR	The site is an example of remnant Celtic rainforest and comprises oak woodland with mosses, liverworts and lichens, some of which are of international importance. The woodland provides roosting, breeding and foraging habitat for lesser horseshoe bats. The site encompasses part of the same area as the Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI and the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC.	2.60 km north
Parc y Borth LNR	Parc y Borth LNR contains both oak woodland and wildflower meadows.	2.66 km south-east
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 (<i>Dryopteris aemula</i>), globeflower (<i>Trollius europaeus</i>) and the bryophytes <i>Isoethecium holtii</i> and <i>Porella pinnata</i> . The diverse epiphytic flora of this site includes over 100 corticolous species. A range of rare and uncommon lichen species are present, including <i>Catinaria grossa</i> and <i>Arthothelium ilicinum</i> .	
Glanllynnau a Glannau Pen- ychain i Gricieth	This site is of special interest for its geological and marine biological features consisting of an 8 km length of shoreline with nationally and regionally	2.86 km south

Site name	Description	Approximate distance (km) from Wider Works site
SSSI	important intertidal communities. The nationally important Sabellaria alveolata reef biotope, is found in extensive reaches with outcrops of the nationally important 'clay with Piddocks' (mollusc) biotope also present.	
Pen y Banc LNR	Pen y Banc LNR includes coastal rocks, secluded sandy coves and mixed woodland. The estuary supports several birds during the winter, including curlew, redshank (<i>Tringa totanus</i>) and black-necked grebe (<i>Podiceps nigricollis</i>). Large flocks of sandwich terns (<i>Sterna sandvicensis</i>) can be seen in summer. Flora around the site includes coastal heath species.	3.08 south east
Coed Cymerau NNR	The site is an example of remnant Celtic rainforest and comprises oak woodland with mosses, liverworts and lichens, some of which are of international importance. The woodland provides roosting, breeding and foraging habitat for lesser horseshoe bats. The site encompasses part of the same area as the Coedydd Dyffryn Ffestiniog (Gogleddol) SSSI and the Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC.	3.45 km north
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 (<i>Vaccinium oxycoccus</i>).	3.23 km south-west
Rhinog SSSI	This site features heather-dominated slopes, cliffs, and rock outcrops, with rich carpets of bryophyte. Blanket mires, valley mires, and small upland lakes add habitat diversity. Hillside oakwoods on the lower slopes host notable lichen, moss, liverwort, and fern communities. With minimal grazing and disturbance, Rhinog SSSI offers a rare example of relatively intact upland vegetation in Britain.	3.33 km south
Caeau Tan y Bwlch SSSI	This site is selected for its biological interest as a habitat example. Caeau Tan y Bwlch, a series of small fields lying on the north-east slopes of Bwlch Mawr between 170 m and 220 m altitude, encompasses an area of <i>Centaurea nigra - Cynosurus cristatus</i> (common knapweed - crested dog's-tail) neutral pasture. It	

Site name	Description	Approximate distance (km) from Wider Works site
	is one of the few remaining examples of traditionally managed enclosed pastures on the Lleyn which have not been agriculturally "improved" by artificial fertiliser or reseeding in recent times.	
Afon Eden - Cors Goch Trawsfynydd SSSI	The site is of special interest for its biological features including mesotrophic river types, raised bog and associated peatland habitats, neutral and acid grasslands, broadleaved woodland, as well as a mixture of marshy grassland, flush and wet heath. The site supports several species of special interest including the freshwater pearl mussel, floating water-plantain, Atlantic salmon, otter and a lichen assemblage (including four that are nationally rare and two that are nationally scarce).	3.64 km south
Coed Dinorwig SSSI and LNR	Coed Dinorwig is a large representative example of a wood sage - oak/birch <i>Teucrium scorodonia</i> - <i>Quercus/Betula</i> type woodland. It is situated on a dry, south-west facing hillslope on an ancient woodland site and is dominated by sessile oak (<i>Quercus petraea</i>). The understorey, which is sometimes patchy, is characterised by mountain ash (<i>Sorbus aucuparia</i>), holly (<i>Ilex aquifolium</i>) and hazel (<i>Corylus avellana</i>). The field communities of heath (notably bell-heather (<i>Erica cinerea</i>)) and bilberry (<i>Vaccinium myrtillus</i>), greater woodrush (<i>Luzula sylvatica</i>) and bramble (<i>Rubus fruticosus</i> agg.) are characteristic of ungrazed hill woods on generally acidic soils and are relatively scarce in Wales.	3.70 south-east and 3.62 south-east
Aberdunant SSSI	The site lies within the boundary of Coedydd Derw a Safleoedd Ystlumod Meirion/Meirionnydd Oakwoods and Bat Sites SAC and consists of two disused mine levels and a lodge that support hibernating lesser horseshoe bats, together with a nursery roost within a nearby barn. The site also supports broadleaved woodland which is used by foraging and commuting bats.	3.84 km north-east
Glyn Cywarch SSSI	The site is of special interest as a breeding roost of the lesser horseshoe bat. It comprises a potting shed which supports the breeding roost, and an adjacent wall which is used by bats as a flight route to gain access to feeding habitat in	3.92 km south-west

Site name	Description	Approximate distance (km) from Wider Works site
	the nearby woodland of Coed y Glyn. Small numbers of pipistrelle bats and brown long-eared bats also roost in the building.	
Y Foryd SSSI and LNR	Y Foryd is a shallow estuary, notable for its nationally rare dwarf eelgrass (<i>Zostera noltei</i>) beds and a nationally important over-wintering population of wigeon (<i>Anas penelope</i>). Habitats include mudflats, sandflats, saltmarsh, and reedbeds.	4.83 km north-west and 4.94 km north-west
Afon Dwyfach Candidate (c) WS	Running water.	In
Afon Dwyfor cWS	Running water.	In
Afon Rhythallt cWS	Running water.	In
Afon Rhythallt Mosaic cWS	Broadleaved woodland, coniferous woodland and neutral grassland.	In
Afon Rhythallt (North bank) cWS	Semi-improved neutral grassland and marshy grassland.	In
Below Bron Haul cWS	Marshy grassland.	In
Bont y Chrychddwr WS	Semi-improved neutral grassland.	In
Braich-y-saint cWS	Acid grassland.	In
Brithdir-isaf cWS	Semi-improved neutral grassland and marshy grassland.	In
Bryncir cWS	Marshy grassland.	In
Bryn-ychain cWS	Acid grassland.	In
Cae Haidd cWS	Semi-improved neutral grassland, marshy grassland and acid grassland.	In
Carmel cWS	Semi-improved neutral grassland.	In

Site name	Description	Approximate distance (km) from Wider Works site
Clogwyn Melyn cWS	Acid grassland, dry heath and acid grassland mosaic and bracken.	In
Coed Bryn-twr / Wern cWS	Broadleaved woodland, acid grassland and standing water.	In
Coed yr Eglwys cWS	Broadleaved woodland and neutral grassland.	In
Derwin cWS	Marshy grassland and wet heath with acid grassland mosaic.	In
Derwyn-fawr cWS	Marshy grassland and acid grassland.	In
Dolwar Heath cWS	Marshy grassland.	In
Dol-wenith cWS	Marshy grassland and neutral grassland.	In
East of Cors Gyfelog cWS	Wet heath and acid grassland mosaic.	In
Ffynnon Beuno cWS	Acid grassland, acid and neutral flush, marshy grassland and broadleaved woodland.	In
Gaerwen cWS	Acid grassland, dry dwarf shrub heath and bracken.	In
Garnedd cWS	Marshy grassland and dry dwarf shrub heath.	In
Glan Dwr cWS	Dry heath and acid grassland mosaic and neutral grassland.	In
Glanrafon Bach cWS	Marshy grassland.	In
Glan-yr-afon cWS	Semi-improved neutral grassland.	In
Gwernddwyryd WS	Acid grassland, broadleaved woodland and marshy grassland. Lowland acid grassland, valley mire with bog or acid fen vegetation.	In
Hafod Las cWS	Dry dwarf shrub heath.	In
Hafod Owen cWS	Semi-improved neutral grassland.	In
Hafod-rhug isaf cWS	Broadleaved woodland, acid grassland, acid flush and marshy grassland.	ln

Site name	Description	Approximate distance (km) from Wider Works site
Llecheiddior Ganol cWS	Marshy grassland, acid and neutral flush and acid grassland.	In
Llystyn Isaf cWS	Marshy grassland and wet heath with acid grassland mosaic.	In
Moel Bron-y-rhiw (West) cWS	Semi-improved neutral grassland.	In
North of Caerau cWS	Acid grassland	In
Parc y Gleision cWS	No citation available	In
Tan y Coed Terrace cWS	Broadleaved woodland, semi-natural neutral grassland and marshy grassland.	In
Ty'n-pant-bach Quarry cWS	Semi-improved neutral grassland and bracken.	In
West bank of Afon Dwyfor cWS	Broadleaved woodland, marshy grassland and acid flush.	In
Ymwlch Fawr cWS	Dry dwarf shrub heath.	In
Ynys-ddu cWS	Acid grassland	In
Ystumcegid-isaf cWS	Marshy grassland, wet heath with acid grassland mosaic, broadleaved woodland and acid flush.	In
Bodychain cWS	Marshy grassland and acid grassland.	0.05 km north-west
Bryn Maen cWS	Semi-improved neutral grassland.	0.06 km north
Ty'n-y-berllan cWS	Broadleaved woodland and neutral grassland.	0.07 km east
Bryn-yr-efail-uchaf cWS	Marshy grassland.	0.07 km east
Gwinllan Llystan cWS	Dry heath with acid grassland mosaic, acid grassland and acid neutral flush.	0.08 km north-east
Trevor Terrace cWS	Semi-improved neutral grassland	0.10 km north-west

Site name	Description	Approximate distance (km) from Wider Works site
Ty'n-y-weirglodd cWS	Semi-improved neutral grassland, acid grassland and marshy grassland.	0.11 km north-west
Bryn Gors cWS	Semi-improved neutral grassland and marshy grassland.	0.11 km west
Ystumcegid-ganol cWS	Fen and broadleaved woodland.	0.11 km north-east
Plas Lleicheiddior cWS	Marshy grassland.	0.12 km west
Bryn-ffynnon cWS	Acid grassland.	0.13 km east
Caerau cWS	Marshy grassland, acid grassland and neutral grassland.	0.13 km east
Below Derwin Bach cWS	Acid grassland with wet heath and acid grassland mosaic.	0.13 km north-east
Moel Bron-y-rhiw cWS	Semi-improved neutral grassland.	0.14 km south-east
Below Talysarn WS	Marshy grassland, acid grassland and broadleaved woodland.	0.15 km south-east
Llystyn Ganol cWS	Acid grassland, marshy grassland and dry heath with acid grassland mosaic.	0.15 km north-east
Bryn Mair cWS	Bracken, acid grassland and neutral grassland.	0.15 km east
Ty'n-pant-bach cWS	Semi-improved neutral grassland	0.15 km south-east
Ymwlch Bach WS	Marshy grassland.	0.16 km north-east
Hafotty Newydd cWS	Acid grassland.	0.18 km north
Nasaret (North) cWS	Semi-improved neutral grassland and marshy grassland.	0.18 km south-east
Glan Cedron cWS	Acid grassland, neutral grassland, marshy grassland and coniferous woodland.	0.19 km north-east
Y Parc WS	Lowland heath and lowland acid grassland mosaic.	0.19 km south-east
Tan-y-coed WS	Dry heath and acid grassland mosaic and neutral grassland.	0.19 km north-west
Muriau Bach cWS	Marshy grassland with wet heath and acid grassland mosaic.	0.19 km south-west

Site name	Description	Approximate distance (km) from Wider Works site
Cyrnant cWS	Semi-improved neutral grassland, broadleaved woodland and bracken.	0.20 km east
Below Cae'r Nant cWS	Acid grassland	0.20 km east
Gelliod Farm cWS	Semi-improved neutral grassland and marshy grassland.	0.21 km north-west
Nr. Bryngwyn cWS	Dry heath and acid grassland mosaic	0.21 km south-east
Nasaret (South) cWS	Semi-improved neutral grassland.	0.22 km east
Baron Hill WS	Marshy grassland.	0.23 km north
Rhos ddu WS	Semi-improved neutral grassland and marshy grassland.	0.23 km north-west
Tyddyn y Felin cWS	Marshy grassland.	0.24 km south-west
Cefn Du WS	Acid grassland, dry dwarf shrub heath, dry heath and acid grassland mosaic, acid or neutral flush.	0.24 km south-east
Nr.Talysarn WS	Marshy grassland, acid or neutral flush, quarry and spoil.	0.24 km south-east
Glegyrog cWS	Broadleaved woodland.	0.24 km south
Pont Dafarn Faig cWS	Marshy grassland, acid grassland and scrub.	0.25 km east
Nasaret cWS	Semi-improved neutral grassland.	0.25 km east
Gors cWS	Marshy grassland and acid grassland.	0.25 km east
Nant-noddfa WS	Marshy grassland, acid grassland and bracken.	0.27 km south-east
Cefn Graianiog cWS	Coniferous woodland.	0.27 west
Llyn Pant Afon WS	Standing water.	0.28 km north-west
Pen y Gaer cWS	Coniferous woodland, broadleaved woodland, bracken and neutral grassland.	0.29 km south-east

Site name	Description	Approximate distance (km) from Wider Works site
Cae Canol cWS	Marshy grassland, neutral grassland and acid grassland.	0.29 km north
Ceunant cWS	Acid grassland and acid or neutral flush,	0.31 km south
Bwlch cWS	Broadleaved woodland and dry dwarf shrub heath.	0.32 km south-east
Cae-newydd cWS	Marshy grassland, acid and neutral flush.	0.32 km north-west
Ymwlch 1 cWS	Marshy grassland, fen, coniferous woodland and acid or neutral flush.	0.33 km north
Y Foel cWS	Dry heath and acid grassland mosaic.	0.33 km west
West of Warmlea cWS	Semi-improved neutral grassland.	0.33 km south-east
Pont Rhythallt cWS	Broadleaved woodland, semi-improved neutral grassland and marshy grassland.	0.34 km north-west
Gwinllan Tyddyn cWS	Coniferous woodland, marshy grassland and broadleaved woodland.	0.35 km north-west
Bryn Eifion cWS	Acid grassland, marshy grassland and wet heath with acid grassland mosaic.	0.35 km north-east
South of Rhosgadfan cWS	Dry heath and acid grassland mosaic.	0.36 km south-east
Gwredog WS	Acid grassland, neutral grassland and bracken.	0.35 km west
Hendre Wen cWS	Semi-improved neutral grassland and marshy grassland.	0.37 km east
TV Mast cWS	Dry heath and acid grassland mosaic	0.38 km east
Cilgwyn Tip cWS	Quarry and spoil.	0.39 km south-east
Caemabynyr cWS	Semi-improved neutral grassland, marshy grassland and broadleaved woodland.	0.40 km east
Braich Moel Smytho cWS	Dry heath and acid grassland mosaic.	0.40 km east

Site name	Description	Approximate distance (km) from Wider Works site
Ystumcegid cWS	Marshy grassland, basin mire, acid flush, acid grassland and broadleaved woodland.	0.40 km north-east
Rhwnddwyryd cWS	Marshy grassland, with wet heath and acid grassland mosaic and acid grassland.	0.43 km south-east
Afon Llyfni (East) WS	Running water	0.43 km west
Coed y Cefn cWS	Coniferous woodland.	0.44 km south
Coed y Chwarel WS	Broadleaved woodland.	0.44 km south-west
Warmlea cWS	Dry heath and acid grassland mosaic and semi-improved neutral grassland.	0.45 km south-east
Glanffynnon WS	Semi-improved neutral grassland.	0.46 km north-west
Cerddymynydd cWS	Marshy grassland, acid flush and broadleaved woodland.	0.42 km north-west
Nasaret (East) cWS	Semi-improved neutral grassland, marshy grassland and acid or neutral flush.	0.47 km east
Llystyn Gwyn cWS	Acid grassland and bracken.	0.48 km north-east
East of Prysgol WS	Marginal vegetation, standing water, bracken and marshy grassland	0.48 km north-west
South of Cors Cyfelog cWS	Marshy grassland, wet heath and acid grassland mosaic.	0.48 km west
Ty Newydd cWS	Semi-improved neutral grassland.	0.49 km south-east
Hafoty-pen-y-bryn cWS	Acid grassland.	0.51 km east
Rhostryfan Railway (disused) cWS	No citation.	0.53 km west
Coed Mawr cWS	Broadleaved woodland, standing water and marshy grassland.	0.53 km south-west
Glan-y-gors cWS	Semi-improved neutral grassland, acid grassland and dry dwarf shrub heath.	0.55 km south-east

Site name	Description	Approximate distance (km) from Wider Works site
Tal-eithin Quarry cWS	Quarry and spoil	0.55 km south-east
Wernlasddu cWS	Semi-improved neutral grassland, marshy grassland and broadleaved woodland.	0.56 km north-west
Pen y Gaer mosaic cWS	Neutral grassland, acid grassland, broadleaved woodland and dry dwarf shrub heath.	0.58 km south-east
Pen y Buarth WS	Semi-improved neutral grassland and bracken.	0.58 km north-west
Buarth Farm cWS	Acid grassland.	0.60 km south-east
Pentrefelin cWS	Semi-improved neutral grassland.	0.60 km south
Cefnen cWS	Acid or neutral flush.	0.61 km north-west
Afon Cedron cWS	Acid grassland.	0.61 km north-east
Tan-yr-allt cWS	Acid grassland, semi-improved neutral grassland and marshy grassland.	0.61 km south-east
Geirth Mawr cWS	Broadleaved woodland and neutral grassland.	0.62 km south
Bryniau Ystumcegid cWS	Acid grassland, dry heath with acid grassland mosaic and broadleaved woodland.	0.62 km north-east
Deiniol House WS	Semi-improved neutral grassland.	0.64 km north-east
Penamser cWS	Scattered trees, bracken and acid grassland.	0.65 km south-east
Moel Tryfan cWS	Dry heath and acid grassland mosaic.	0.66 km south-east
Fron-oleu cWS	Marshy grassland.	0.66 km south-west
Graianog (South) cWS	Acid grassland and fen.	0.68 km west
Glascoed cWS	Semi-improved neutral grassland.	0.68 km north-west

Site name	Description	Approximate distance (km) from Wider Works site
Hendy East cWS	Marshy grassland and wet heath with acid grassland mosaic.	0.69 km south-west
Lletty WS	Marshy grassland and semi-improved neutral grassland.	0.69 km north-west
Bryntwrog cWS	Quarry and spoil.	0.70 km south-east
Bryn Neuadd WS	Acid grassland, wet heath and acid grassland mosaic and marshy grassland. Bog, heathland, rush and rhos pasture, wet woodland.	0.70 km north
Moel Smytho WS	Dry dwarf shrub heath.	0.70 km south-east
East of Warmlea cWS	Semi-improved neutral grassland and acid grassland.	0.70 km south-east
Blaen-y-cae cWS	Acid grassland.	0.71 km east
Bodwyn WS	Semi-improved neutral grassland and marshy grassland.	0.72 km north-west
Nr. Bron Rhiw cWS	Acid grassland	0.72 km south-east
Bryn Llys cWS	Semi-improved neutral grassland.	0.73 km north-west
Afon Llyfni (South 1) WS	Marshy grassland, acid or neutral flush and broadleaved woodland.	0.73 km north-west
Moel Fychan cWS	Acid grassland and marshy grassland.	0.74 km west
Gwaith Powdwr cWS	Dry dwarf shrub heath and bracken.	0.75 km north
Bryn Gwyrfai cWS	Acid grassland, broadleaved woodland and bracken.	0.76 km east
Afon Llyfni (North 1) cWS	Broadleaved woodland, coniferous woodland and acid or neutral flush.	0.77 km north-west
Ynys Galed cWS	Acid grassland and marshy grassland.	0.77 km south-west
Afon Llyfni (West) cWS	Running water.	0.77 km north-west
Tyddyn Whisgin cWS	Marshy grassland and broadleaved woodland.	0.78 km north-west

Site name	Description	Approximate distance (km) from Wider Works site
Dyffryn Nantlle Slate Quarries (West) WS	Acid grassland, quarry and spoil, broadleaved woodland and bracken.	0.81 km east
Glanrafon cWS	Bracken, acid and neutral flush.	0.81 km east
Bwlch-y-llyn 2 cWS	Semi-improved neutral grassland.	0.82 km south-east
Bwlch y Ffordd cWS	Semi-improved neutral grassland.	0.84 km south-east
Ymwlch 2 cWS	Acid grassland, fen, marshy grassland and wet heath and acid grassland mosaic.	0.85 km north
Dafarn Dudur cWS	Marshy grassland; scrub; neutral grassland	0.85 km north-west
Moel Tryfan Quarry (West) cWS	Quarry and spoil and acid grassland.	0.86 km south-east
Pen-y-llyn cWS	Broadleaved woodland and marshy grassland.	0.88 km south-east
Mynydd y Cilgwyn WS	Dry heath and acid grassland mosaic, quarry.	0.88 km south-east
Coed Tyddyn-hendre cWS	Coniferous woodland	0.88 km north
Nant Mawr Graianog cWS	Acid grassland, bracken and broadleaved woodland.	0.89 km west
Moel-y-Gest WS	Acid grassland, dry dwarf shrub heath, bracken and broadleaved woodland or scrub.	0.89 km south
East Talysarn Quarry cWS	Quarry and spoil.	0.89 km east
Buarthau cWS	Broadleaved woodland and semi-improved neutral grassland.	0.90 km north-west
Coed Hendre Cennin cWS	Wet heath with acid grassland mosaic and marshy grassland.	0.90 km south-west
South of Moel Tryfan cWS	Semi-improved neutral grassland, dry heath and acid grassland mosaic, wet heath and acid grassland mosaic.	0.90 km south-east

Site name	Description	Approximate distance (km) from Wider Works site
Ty'n-rhos cWS	Marshy grassland, broadleaved woodland and standing water.	0.91 km south-west
Cefn-isaf cWS	Marshy grassland.	0.91 km south-west
Llwyn Coed Heath cWS	Dry dwarf shrub heath, wet dwarf shrub heath, bracken and acid grassland.	0.92 km south-east
Garth Darwen (East) cWS	Semi-improved neutral grassland and marshy grassland.	0.92 km west
Foel cLWS	Acid grassland and broadleaved woodland.	0.92 km west
Bryn Ffynnon & Ynys Galed cWS	Marshy grassland.	0.93 km west
Llwyn Bedw Ucahf cWS	Acid grassland.	0.94 km west
Graianiog (North) cWS	Coniferous woodland.	0.94 km west
Coed Blaen-y-cae WS	Coniferous woodland.	0.96 km north-east
Tyddyn-bach cWS	Broadleaved woodland and semi-improved neutral grassland.	0.96 km north-west
Cerrigdruidion cWS	No citation available.	0.98 km south-east
Tir Bach cWS	Semi-improved neutral grassland.	0.99 km east
Dolau Gwyn WS	Marshy grassland and broadleaved woodland.	0.99 km north-west
Bryn Beddau WS	Semi-improved neutral grassland.	1.00 km west
Abergafren WS	Semi-improved neutral grassland and broadleaved woodland. Upland oakwood, lowland acid grassland.	>1 km west
Afon Beuno WS	Broadleaved woodland, semi-improved neutral grassland and marshy grassland.	>1 km north-west
Afon Beuno cWS	Broadleaved woodland; semi-improved neutral grassland; marshy grassland	>1 km north-west

Site name	Description	Approximate distance (km) from Wider Works site
Afon Dwyfach at Bettws Bach cWS	Marshy grassland, broadleaved woodland and standing water.	>1 km south-west
Afon Llyfni (North 2) cWS	Semi-improved neutral grassland, bracken and broadleaved woodland.	>1 km north-west
Afon Llyfni (South 2) cWS	Broadleaved woodland.	>1 km north-west
Afon Seiont & Glan Gwna cWS	Broadleaved woodland.	>1 km north-west
Afon Seiont (Middle) cWS	Running water	>1 km north-west
Afon Seiont (Upper) cWS	Running water and broadleaved woodland.	>1 km north-west
Afon Seiont Mosaic (East) & Caer Glyddyn cWS	Broadleaved woodland.	>1 km north-west
Below Hendre Cennin cWS	Wet heath with acid grassland mosaic and marshy grassland.	>1 km south-west
Broneifion Farm ponds and woods cWS	Broadleaved woodland and coniferous woodland.	>1 km south-west
Bron-y-foel cWS	Acid grassland, dry dwarf shrub heath and broadleaved woodland.	>1 km south
Bron-y-gaer cWS	Semi-improved neutral grassland, marshy grassland and acid and neutral flush.	>1 km north-west
Bryn Coch cWS	No citation available.	>1 km west
Bryn Glas / Ty Cerrig cWS	Acid grassland, wet heath and acid grassland mosaic.	>1 km south-east
Bryn Goleu cWS	Semi-improved neutral grassland and marshy grassland.	>1 km north-west
Bryn Menai cWS	Semi-improved neutral grassland.	>1 km north-west
Bryn yr Eithen cWS	Semi-improved neutral grassland	>1 km south-east

Site name	Description	Approximate distance (km) from Wider Works site
Bryniau'r Tyddyn cWS	Acid grassland, dry heath with acid grassland mosaic and fen.	>1 km north-east
Bryntwrog cWS	Dry heath and acid grassland mosaic and acid grassland.	>1 km south-east
Bwlch Derwin (West) cWS	Wet dwarf shrub heath	>1 km north-west
Bwlch Derwin cWS	Wet heath and acid grassland mosaic.	>1 km west
Bwlch-y-llyn 1 cWS	Semi-improved neutral grassland	>1 km south-east
Caeathro cWS	Broadleaved woodland, semi-improved neutral grassland and marshy grassland.	>1 km north-west
Cae-rhydau cWS	Broadleaved woodland, marshy grassland, acid grassland and acid flush.	>1 km north-west
Cei Llydan WS	Broadleaved woodland, scrub, acid grassland and bracken.	>1 km south-east
Clwt y Bont (West) WS	Acid grassland.	>1 km south-east
Clwt y Bont massif WS	Wet dwarf shrub heath and acid grassland.	>1 km south-east
Coed Allt-wen cWS	Broadleaved woodland.	>1 km east
Coed Bolyn Mawr/Wern Fawr cWS	Marshy grassland and coniferous woodland.	>1 km north-west
Coed Bwlch-derwin cWS	Coniferous woodland	>1 km west
Coed Glasgoed cWS	Broadleaved woodland and marshy grassland.	>1 km north-west
Coed Llain Ffynnon cWS	Semi-improved neutral grassland and acid grassland.	>1 km north-west
Coed Plas Tirion cWS	Broadleaved woodland.	>1 km north-west
Coed Rhydau cWS	Coniferous and broadleaved woodland.	>1 km north-east
Coed Tandinas cWS	Broadleaved woodland.	>1 km north

Site name	Description	Approximate distance (km) from Wider Works site
Coed Trefan (North) cWS	Broadleaved woodland and standing water.	>1 km south-west
Coed Trefan (South) cWS	Broadleaved woodland.	>1 km south-west
Coed Tu hwnt I'r Bwlch cWS	Broadleaved woodland.	>1 km south-east
Cors-y-wlad cWS	Acid grassland.	>1 km west
Croesywaen WS	Semi-improved neutral grassland.	>1 km south-east
Dolgynfydd-uchaf cWS	Semi-improved neutral grassland, marshy grassland and broadleaved woodland.	>1 km north-west
Dyffryn Nantlle cWS	Neutral grassland, broadleaved woodland and running water.	>1 km south-east
Dyffryn Nantlle Slate Quarries (East) WS	Quarry and spoil.	>1 km south-east
Gaerwen cWS	Acid grassland, dry dwarf shrub heath and bracken.	>1 km south-west
Gallt y Celyn cWS	Dry heath and cid grassland mosaic, bracken and acid grassland.	>1 km south-east
Garregwen WS	Rush pastures.	>1 km north-west
Garth Darwen (West) WS	Semi-improved neutral grassland and marshy grassland.	>1 km north-west
Gell Farm WS	Broadleaved woodland and marshy grassland	>1 km south-west
Glan y Gors WS	Acid grassland and marshy grassland.	>1 km north-east
Glangors cWS	Wet heath and acid grassland mosaic.	>1 km south-east
Golan 1 cWS	Acid grassland and marshy grassland.	>1 km north
Golan 2 cLWS	Acid grassland and marshy grassland.	>1 km north
Gors Y Llyn Nebo cWS	Wet dwarf shrub heath.	>1 km east

Site name	Description	Approximate distance (km) from Wider Works site
Groeslon South WS	Semi-improved neutral grassland and acid grassland.	>1 km north-west
Gwinllan Rhos-ddu cWS	Coniferous woodland.	>1 km south-west
Hafod Oleu (East) cWS	Acid grassland.	>1 km south-east
Hafod Oleu (West) cWS	Acid grassland	>1 km south-east
Hendy (South) cWS	Marshy grassland with wet heath and acid grassland mosaic.	>1 km south-west
Maes-y-coed woods WS	Broadleaved woodland and acid grassland.	>1 km north-west
Minffordd (North) cWS	Marshy grassland and neutral grassland.	>1 km north-west
Minffordd (South) cWS	Marshy grassland and neutral grassland.	>1 km west
Moel Tryfan Quarry (East) cWS	Quarry and spoil.	>1 km south-east
Mynydd Cennin cWS	Dry heath and acid grassland mosaic, acid grassland, wet heath and acid grassland mosaic.	>1 km west
Mynydd Ednyfed Fawr cLWS	Marshy grassland and neutral grassland.	>1 km south
Nant Graianog cWS	Quarry and spoil and broadleaved woodland.	>1 km west
Near Eithinog-uchaf cWS	Marshy grassland.	>1 km north-west
North of Foel Uchaf cWS	Acid grassland.	>1 km north-west
North of Gwinllan Rhos-ddu plantation cWS	Wet heath with acid grassland mosaic and marshy grassland.	>1 km south-west
Nursery Wood cWS	Broadleaved woodland and semi-improved neutral grassland.	>1 km east

Site name	Description	Approximate distance (km) from Wider Works site
Penrhyn Stud WS	Semi-improved neutral grassland, marshy grassland and broadleaved woodland.	>1 km north-west
Pen-y-bryn quarries WS	Acid grassland, open water, broadleaved woodland, revegetating quarry and standing water.	>1 km south-east
Pen-y-Bwlch WS	Marshy grassland.	>1 km north-west
Plas y Braich cWS	Acid grassland and neutral grassland.	>1 km south-east
Rhiwen cWS	Acid grassland.	>1 km east
Rhos Broneifion WS	Acid grassland and acid or neutral flush.	>1 km south-west
Rhos Isaf cWS	Semi-improved neutral grassland.	>1 km north-west
S.W. of Nant Graianog cWS	Semi-improved neutral grassland.	>1 km west
South of Coch y Rhwd WS	Semi-improved neutral grassland; marshy grassland	>1 km north-west
South of Llenar Fawr WS	Basin mire.	>1 km north-west
South Talysarn Quarry cWs	Quarry or spoil.	>1 km south-east
Standing Stone Marsh WS	No citation available.	>1 km west
Syntur cWS	Marshy grassland.	>1 km south-west
Ty Gwyn cWS	Broadleaved woodland.	>1 km north-west
Tyddyn Du cWS	Wet dwarf shrub heath and marshy grassland.	>1 km south-west
Tyddyn Madyn cWS	Acid grassland.	>1 km north
Ty-glas cWs	Wet heath and acid grassland mosaic.	>1 km west
Ty'n-y-coed WS	Broadleaved woodland and marshy grassland.	>1 km west

Site name	Description	Approximate distance (km) from Wider Works site
Ty'n-y-mynydd WS	Acid grassland, dry dwarf shrub heath and neutral grassland.	>1 km south-east
Upper Clynnog cWS	Running water.	>1 km west
Uwchgwyrfai Common cWS	Dry dwarf shrub heath, dry heath and acid grassland mosaic and quarry.	>1 km south-east
Uwchgwyrfai Quarry cWS	Quarry and spoil.	>1 km south-east
Waenfawr Road WS	Semi-improved neutral grassland.	>1 km north-west
Wernlasowen cWS	Semi-improved neutral grassland	>1 km north-west
Y Fron Quarry cWS	Quarry and spoil.	>1 km south-east
Y Fron Slate Quarries cWS	Quarry and spoil.	>1 km south-east
Ynys Graianog/Gaerwen cWS	Wet heath with acid grassland mosaic and fen.	>1 km south-west
Ynysllecharian-bach cWS	Broadleaved woodland, acid grassland, semi-improved neutral grassland and marshy grassland.	>1 km north

6.5.H Wider Works High Level Arboricultural Impact Assessment

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1. Introduction

1.1 Background

- 1.1.1 AECOM has been instructed by National Grid Electricity Transmission plc to carry out a high level arboricultural impact assessment of the Wider Works component of the Pentir to Trawsfynydd Reinforcement Project (the 'Project').
- 1.1.2 Available site survey data is included in this high level report.
- This report identifies the likely direct and indirect impacts of the proposed works with suitable mitigation measures. The High Level Tree Protection Plan (HLTPP) (included within **Appendix C**) shows the area of operations ('the wider works site'). The report identifies areas of vegetation clearance and how retained trees are to be successfully protected.

1.2 Trees and the Planning Process

Planning Policy Wales

- 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. The Wider Works are not new development but the principle of protecting green infrastructure is relevant.
- PPW (Ref 1.1) contains specific policies in relation the importance and protection of trees, woodlands and hedgerows and tree replacement requirements. These are set out in **Appendix D.1.**

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 Tree
 Preservation Order (TPO) or other statutory designation) is a material consideration. Most of the wider works site is in Gwynedd and part is in Eryri National Park, although the wider works are not development and do not require planning permission.il.
- The Anglesey and Gwynedd Joint Local Development Plan 2011 2026, (Ref 1.2) adopted 31 July 2017, illustrates how important trees, woodland and hedgerows are to the character of the area and outlines the policies of the two local authorities (outside of Eryri) with regards to the protection of trees.
- The Eryri Local Development Plan 2016 2031 contains the Local Authority's policies and approach to determining Development Proposals that have the potential to impact on trees and woodland (Ref 1.3).

- 1.2.6 Extracts from both Local Authority Local Development Plans are in **Appendix D.2**.
- 1.2.7 As the Wider Works are not development and do not require planning permission; the planning policies are informative.

British Standard

- 1.2.8 Available survey data has been collected and presented in line with the recommendations in 'BS5837:2012 Trees in relation to design demolition and construction Recommendations (BS5837) (Ref 1.4)'. BS5837 (Ref 1.4) provides a framework that sets out how trees should be considered in the planning of new development.
- 1.2.9 BS5837 (Ref 1.4) 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 Tree Constraints Plan (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.
- An arboricultural impact assessment is developed to identify the likely direct and indirect impacts of a proposed development (or in this case programme of works), and a Tree Protection Plan (TPP) is prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected.
- 1.2.11 Where data has not been collected on site, aerial lidar data from the National Tree Map service has been used. The methodology for the use of this data and its application is provided below.

1.3 Methodology

High Level Assessment

- The high-level Arboricultural Impact Assessment is a desktop study, which has been based on Ordnance Survey base mapping and National Tree Map (NTM) (Ref 1.5), a proprietary dataset from Bluesky International Ltd that is based on LiDAR and aerial imagery and gives information on tree canopy spread and height.
- Approximate tree height and canopy spread information has been taken from the NTM data (Ref 1.5) set to allow an assessment of the typical approximate spatial constraints associated with trees. A notional buffer zone has been added around each tree to illustrate the maximum likely area of significant constraint associated with above ground (tree canopies) and below ground (tree roots) parts of trees.
- 1.3.3 The buffer is based on a large data set of trees surveyed in detail by AECOM which cross references recorded tree heights against stem diameter ranges. Stem diameter is the key metric used to determine the Root Protection Area (RPA the notional key area of tree root development important for tree health and stability) and this approach allows for the calculation of an estimated stem diameter for each tree or group, derived from tree height information recorded in the NTM data set. This buffer zone is intended as high-level guidance only based on our experience surveying trees and attempts to illustrate and account for the potential approximate area of constraint around each tree (which may be greater than the canopy spread shown in the NTM data (Ref 1.5)).

- Section 4.6.1 of BS5837 (Ref 1.4) recommends that RPAs are capped at 707 meters squared (m²) and this is equivalent to a circle with a radius capped at 15 metres (m) for each individual tree and the buffer zone is capped at this radius around the largest trees within the wider works site.
- The assessment results and information in relation to statutory and non-statutory designations such as Conservation Areas, Tree Preservation Orders (TPOs) and designated Ancient Semi Natural Woodland have been incorporated into the High-Level Tree Constraint Plans, included as **Appendix A**.
- The high level NTM data (Ref 1.5) does not include any vegetation below 3 m. This will likely impact on the inclusion of some lower growing trees, hedges and woody shrubs, which are omitted from this assessment.
- 1.3.7 This approach is appropriate due to the scale of the Study Area, the fact that the infrastructure already exists and the relatively low level of impacts anticipated.

On Site Survey

- The tree survey for Glaslyn Cables (an adjacent component of the Project) has captured details of trees along access roads and tracks to the north-west and south-west of Wern Manor and within fields to the west. Although many of these trees are outside the wider works site they have been included within this report and included in a schedule in **Appendix B** to provide wider context of the tree cover in this area of the Wider Works. This data supersedes the high-level tree constraints data in this location.
- 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 to be indicative only and the relative distances of features must be measured out on the wider works site.
- The fieldwork which captured the tree data around Wern Manor was undertaken in November 2023. A further survey of new areas was undertaken in February 2024. During the fieldwork dimensional data and observational information were collected. A diameter tape measure was used to measure stem diameters where feasible.
- The collected data from 2023 and 2024 have been combined and included within the assessment in this report. The trees have been renumbered to include the newly collected data and to present the tree numbers sequentially.
- The survey was otherwise conducted in accordance with the requirements of BS5837:2012 Trees in relation to design, demolition and construction Recommendations (BS5837) (Ref 1.4).
- The fieldwork informing sections of this report has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Site.
- 1.3.14 Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified within the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.
- The Root Protection Area (RPA) is the notional extent of what is considered to be 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 1.4) where the RPA is likely to have developed asymmetrically. The RPA of all surveyed trees is depicted as a circle and no RPA shapes have been amended. The RPA of veteran or ancient trees has been amended to increase the buffer zone in accordance with standing advice from Natural England and the Forestry Commission (Ref 1.6) 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 greater).

- The High-Level Tree Constraints Plan (HLTCP) 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**.
- The tree categorisation process recommended by BS5837:2012 (Ref 1.4) is summarised in **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 (Ref 1.4) tree categorisation process

Category	Definition
А	High quality, minimum of 40+ years remaining contribution
В	Moderate quality, minimum of 20+ years remaining contribution
С	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

- Trees are dynamic living organisms that provide essential benefits to society and the wider environment. Any project with the potential to impact on trees must take into consideration the value of trees, 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.
- 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 within a site.

2.2 Below Ground Constraints

- 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.
- 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.
- 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. It should be noted that older trees are particularly sensitive to damage and changes in conditions.
- The RPA is a notional area considered to be 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 RPAs are calculated as per BS5837:2012 Annexe C, D and Section 4.6 in the BS5837:2012 Document (Ref 1.4).
- 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 are shown on the HLTCP (**Appendix A**).

- 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.
- 2.2.8 Further steps to improve or increase the useable rooting area available to the tree may also be required.

2.3 Above Ground Constraints

Tree stems and branches can restrict available space on a 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 development and future land use. Annual tree growth can lead to direct damage if stems/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

- 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).
- The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of trees on the Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.
- 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 could seek to prosecute those responsible along with the potential for claims for damages.

2.5 Trees and Wildlife

Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act 1981 - as amended (Ref 2.3), the Countryside 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

- Any pruning required for the wider works over and above those required for standard highway clearances will be reviewed by the Works Arboriculturist including a site walkover where required. This will take into account the height and turning requirements of machinery and vehicles accessing the Site.
- 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

Sites of Special Scientific Interest

- AECOM checked Datamap Wales (Ref 3.1) in May 2025. Two Sites of Special Scientific Interest (SSSI) are traversed by the wider works site. The SSSI and the point of transection by the wider works site are shown in the HLTCP on sheets 7, 28 and 29. There are restrictions on certain types of management activities on SSSI land without consent from Natural Resources Wales (NRW). Each SSSI has a list of activities, known as 'operations', which need NRW consent.
- A further nine SSSI sites are near the wider works site. These SSSIs are shown on sheets 6,16, 17, 19, 24, 25 and 26 of the HLTCP. These areas outside the wider works site will not be directly impacted by the Wider Works.

Tree Preservation Orders (TPOs)

- 3.1.3 AECOM contacted Gwynedd County Council in March 2024 and checked the LPA website. No Conservation Areas are present across these sections of the wider works site.
- Trees adjacent to the overhead cables at Pant Du (Penygroes) Vineyard (sheet 12 of HLTCP) and Ysbyty Bron y Garth in Penrhyndeudraeth (sheet 25 of the HLTCP) are protected by Gwynedd Council TPOs.
- AECOM contacted Eryri (Snowdonia) National Park Authority on 29th April 2024 regarding Conservation Areas and TPOs in or close to the wider works site. No Conservation Areas or TPOs are present in the wider works site the route or directly next to it.
- The nearest Eryri National Park TPO is a group TPO close to an existing access road at Tyn-y-ffridd (sheet 27 of the HLTCP).
- 3.1.7 These TPOs are plotted on the HLTCP (**Appendix A**) and HLTPP (**Appendix C**).
- It is an offence to cause or permit the cutting down, topping, lopping, uprooting, wilful damage or wilful destruction of trees subject to a TPO without the local planning authority's written consent. If consent is given, it can be subject to conditions which have to be followed. The Local Planning Authority can create a new TPO at any time. Tree works within a Conservation Area require at least six weeks' notice to be given to the local planning authority.

The Hedgerow Regulations

The Hedgerow Regulations 1997 (Ref 3.2) 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.
- 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 which could impact established hedgerows on or bordering agricultural or countryside land.
- 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.

Felling Licence

National Grid as a licence holder for transmission under The Electricity Act 1989 (Ref 3.3) is a statutory undertaker and is exempt from requiring a felling licence to clear around existing infrastructure. Where tree clearance is required for the installation of new infrastructure a felling licence may be required by the Natural Resources Wales to fell more than 5 cubic metres (m³) 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).

Planning Consent

Full planning consent is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order, the need to give notice of the intention to undertake works within a Conservation Area and the need to apply for a Felling Licence with NRW (to fell more than 5 m³ per calendar quarter). Prior to any tree works the status of trees to be removed or pruned must be verified with the LPA and NRW as appropriate.

3.2 Non-Statutory Designations

- The Welsh Government's DataMapWales (Ref 3.1) contains the Ancient Woodland Inventory 2021 layer which details numerous areas of designated ancient woodland that are recorded within or in proximity to the wider work site. These are included on the HLTCP included as **Appendix A** (sheets 1, 2, 4, 5, 6, 7, 21, 22, 23, 24, 25, 27, 28, 29 & 30). Ancient woodland is considered to provide irreplaceable habitat.
- In accordance with the PPW (Ref 1.1) Step Wise Approach, which suggests the use of "appropriate buffers to protect these from construction and operational impacts" a 15 m buffer has been introduced around any Ancient Woodland features which may be potentially damaged.
- NRW advice to planning authorities in relation to ancient woodland states (Ref 3.4) "The BS 5837 Tree Survey, PEA and/or EcIA assessments should be used to inform the stand-off or protection zone for each individual woodland and veteran and ancient trees. Some zones may only require a root protection area to prevent negative impacts on individual trees or groups of trees, and others are likely to extend further."
- NRW does not provide guidance on the extent of a buffer to be provided between works and ancient woodland. The 15 m buffer is based on the Forestry Commission and Natural England standing advice for ancient woodland in England which states that the proposal should have a minimum buffer zone of at least 15 m from the boundary of the

woodland to avoid root damage. Ancient woodland buffers are included on the HLTCP (included as **Appendix A**). The default should be that no works should be undertaken within or near this buffer and beyond the buffer zone works, which could influence factors such as soils, water and air quality within the buffer must also be carefully considered, with the objective to maintain existing conditions (e.g. no changes to local drainage patterns where this could impact on the buffer zone).

- The Woodland Trust Ancient Tree Inventory (Ref 3.5) contains a database of recorded ancient, notable or veteran trees. These features are set well back from the site boundary with the exception of a cluster of ancient, veteran and notable trees to the south of Tower 14 (HLTCP sheet 29) which are adjacent to an existing access track to be utilised for tower access.
- According to the Ancient Tree Forum (ATF) book Ancient and Other Veteran Trees (Ref 3.6), 'the term veteran is used to describe all trees that have markedly ancient characteristics, irrespective of chronological age'. Ancient characteristics, termed veteran features, include attributes such as crown retrenchment, signs of extensive decay in the trunk, branches or roots, exposed extensive deadwood and fungal fruiting bodies.
- There is no agreed definition of veteran trees across national and devolved governments, national planning policies and non-government organisations. For the purpose of this survey AECOM has considered trees for veteran potential where they are at least mature for the species and where extensive decayed or dead wood habitat and specialist wood decay fungi are present. Veteran trees are also generally considered to be survivors and would be expected to have a reasonable degree of anticipated longevity.
- The surveyed area includes nine veteran trees adjacent to or within the vicinity of the Wern Manor (these features are identified with a star symbol on the HLTCP in **Appendix A**. Veteran and ancient trees are considered to provide irreplaceable habitat.
- Where identified veteran trees have been assigned a buffer zone in accordance with standing advice from Natural England and Forestry Commission (2022) (Ref 1.6) (15 x stem diameter or canopy spread + 5 m, whichever is greater) which complies with wider best practice on veteran tree protection.
- The wider works site includes several areas of habitat types defined in the list of the habitats of principal importance included under section 7 Environmental Wales Act 2016, such as deciduous woodland and traditional orchards and these are shown within sheets 5, 12, 24 and 25 of the HLTPP in **Appendix C**. These areas will be retained and protected where possible.

4. Site Description

4.1 The Site

- The wider works site boundary is shown on the HLTCP included within **Appendix A** and in the HLTPP included in **Appendix C** of this report. The survey area consists of the land within the works site boundary. The works will take place in places between Pentir Substation (SH 559675), approximately 4.5 km south-west of Bangor and Trawsfynydd Substation (SH 691385), approximately 1.2 km south of Gellilydan. The works are in the local planning authority boundaries of Gwynedd Council and Eryri National Park Authority.
- The wider work site is characterised by predominantly rural land uses with scattered woodland amongst agricultural land.

5. Field Work Observations

5.1 The Trees

- In the area around the existing Wern Cable Sealing End Compound (CSEC), where the Wider Works overlaps and abuts the red line boundary of the Glaslyn Cables, 153 tree features have been recorded during on site surveys.
- Of these surveyed tree features, 50 features are of high quality (category A); 42 of moderate quality (category B); 47 of low quality (category C); and 14 identified as unsuitable for retention as living trees for more than ten years in the context of the current land use (category U).
- The most significant trees for which there is survey data are the veteran trees along the track to the north of Wern which are afforded a higher level of protection due to their irreplaceable conservation and habitat value. Nine of those features were recorded as veteran.
- 5.1.4 Within or immediately adjacent the works site the most significant trees are two veteran trees:
 - T40 a sessile oak (Quercus petraea) with a stem diameter of 1480 mm.
 - T48 a sycamore (Acer pseudoplatanus) with a stem diameter of 940 mm.
- The details above relate only to the trees where survey data is available. The surrounding landscape covered by the wider works site is interwoven with agricultural fields and lines of hedgerows and mature trees forming field boundaries and stream edges lined with riparian tree species and small pockets of woodland. The trees and woodland are an important part of the natural character of this part of North Wales.
- The most significant group and woodland features across the wider works site (as identified via the desk study) are the ancient woodlands which are afforded a high level of protection by Welsh planning policy. Across the wider works site woodlands in sheets 1, 2, 4, 5, 6, 7, 21, 22, 23, 24, 25, 27, 28, 29 & 30 of the HLTCP (**Appendix A**) are regarded as being ancient.

6. The Wider Works

6.1 Wider Works Description

- The below description of the wider works is summarised from the Environmental Statement **Volume 6, Chapter 2**. The Works will consist of the following:
 - Installation of approximately 23.5 km of fibre optic cable along the existing earth wire
 of the 4ZC overhead line between towers 4ZC070 and 4ZC140. This will involve
 visiting each tower with a vehicle and pulling the fibre optic cable between towers so
 that it wraps around the existing earth wire.
 - Installation and replacement of fittings on the SPEN circuit on the 4ZC overhead line for approximately 8 km between Towers 4ZC044 and 4ZC070 to remove existing 132 kV conductors (wires) and replace with 400 kV conductors. Reconductoring involves transporting replacement 400 kV conductors to towers at intervals along the existing overhead line, removing the existing 132 kV conductors and pulling through replacement 400 kV conductors. A winch is required at one end of the length to be pulled and a brake at the other end to maintain appropriate tension. An earthing zone is required in the area of works and some temporary storage and working areas are also necessary. Fittings may need replacement on some towers. Works to gain access may require temporary roads or matting or the use of tracked vehicles. Replacement of the earthwire with optical ground wire (OPGW) is also required.
 - Reconducting and replacement of fittings on the SPEN circuit on the 4ZC overhead line for approximately 6.5 km between Towers 04ZC005 and 4ZC027 to remove existing 132 kV conductors and replace with 400 kV conductors. Replacement of the earthwire with OPGW.

7. High Level Arboricultural Impact Assessment

7.1 Purpose

- This high level arboricultural impact assessment sets out the likely principal direct and indirect impacts of the wider works on the trees on or adjacent to the wider works Site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate.
- A brief summary of vegetation clearance, tree works and incursions related to the wider works is in **Table 7–1**.

7.2 Trees to be Removed

- Vegetation management areas (identified by the contractor) are shown on sheets 19, 24, 26, 27, 28 and 29 of the HLTPP. Trees will be retained and pruned (rather than removed) where possible.
- Part of W43 may need to be removed as a worst case (sheet 24 of the HLTPP). No other surveyed tree features have been identified for removal at this stage. All other potential tree removal identified at this stage relates to trees assessed via desk study only.
- Prior to any tree removals or pruning works the ownership of the trees must be established and the consent of the tree owner obtained in writing. All areas for tree removal will be assessed on site by an arboriculturist in advance of any works. The arboriculturist will confirm the extent of removals and will consider the suitability and stability of adjacent trees as appropriate.
- 7.2.4 Where tree removals are deemed to be required, consideration will be given to mitigation through compensatory planting.

7.3 Tree Works

- Tree pruning works will be undertaken where access or clearance is required to enable wider works and to clear vegetation from EPZs (Equipotential Zones) for safe access.
- 7.3.2 **Table 7-1** outlines the anticipated vegetation clearance/pruning in the different areas within the wider works site.

Table 7-1:Summary of tree works to facilitate the Wider Works

Area/Activity	Vegetation impact / notes
EPZ (Equipotential Zone)	100% removal of vegetation within these areas to enable safe working.
Tower Working	60%; strim low vegetation to below ankle height.
Areas	Trees avoided wherever possible and outline tree protection measures (Appendix F) utilised for tree protection.
Scaffold Areas	Low height vegetation: 60% removal of vegetation by strimming to below ankle height.
	High elevation vegetation (tree stems, branches and canopies): 80% removal of vegetation to provide clearance of up to 2 metres between the scaffolding and the nearest foliage.
Levelling / Topsoil	No removal of topsoil.

- Should the requirement for additional tree works be identified, this will be discussed with the Works Arboriculturist.
- Several trees are protected by TPO; those at Pant Du (Penygroes) Vineyard (sheet 12 of the HLTCP) and trees in a group TPO at Tyn-y-ffridd (sheet 27 of the HLTCP) are growing adjacent to access roads and haul roads. Should there be a requirement to undertake any pruning for access, this will be agreed in advance with the relevant Local Planning Authority Tree Officer.

7.4 Incursions within the RPA or Canopy Spread

- In EPZs, tower working areas and scaffold areas some degree of incursions will be unavoidable as outlined in **Table 7-1**. In these circumstances limited pruning will be used to provide adequate clearance for access and storage if required. Where RPAs cannot be avoided entirely ground protection and tree protection fencing will be used within the areas marked as Construction Working Zone (CWZ) on the HLTPP in **Appendix C**.
- Ancient woodland or its buffer zone will require a theoretical incursion as shown on sheet 7, 22, 24, 28, 29 and 30 of the HLTPP. In these locations access for tower working areas will be utilised which run through ancient woodland or its buffer. The implementation of the wider works will avoid these locations where possible. Where avoidance is not possible ground protection measures which adhere to the specification in BS5837 (Ref 1.4) as outlined in **Appendix F** will be utilised to protect rooting zones and ancient woodland soils from damage through compaction.
- 7.4.3 **Table 7-2** provides a summary of the nature of the incursions in RPAs and below canopies of veteran trees on Site. In practice there will be no change in use and no impact associated with the use of existing access routes adjacent to these trees.

Table 7-2: Veteran and ancient trees with incursions

Tree No	Location	Cause of incursion	Mitigation measures
T40	Adjacent to an existing track	Use of existing	No change in use. Access as per CWZ working procedures
T48	Adjacent to an existing track	Use of existing	No change in use. Access as per CWZ working procedures

7.5 Construction Working Zone (CWZ) Working Procedures

All incursions within the RPA of retained trees are not anticipated to result in a significant decline in tree health or structural stability. The implementation of specialist working methodologies, including temporary fencing and ground protection, and arboriculturist supervision will protect retained trees from damage associated with the wider works

Temporary hard surfacing within RPAs

- 7.5.2 Where temporary access is required in RPAs this will be achieved using existing hard surfacing. Where no hard surface is present or where it is insufficient to protect soil structure from the highest anticipated load, temporary ground protection will be required. This must meet the requirements set out in **Appendix F** and must be installed in advance of any works or access on site.
- These works are not anticipated to result in a significant decline in tree health or negatively impact the structural integrity of the trees as tree roots and soil structure will be protected.

Excavation Within RPAs

- 7.5.4 Excavation in RPAs of retained trees will be avoided wherever possible.
- Where minor excavation or soil scraping is unavoidable, it will be kept to the minimum and undertaken using air spades or hand tools to minimise soil disturbance and root damage. Excavation in the RPA of retained trees should not be undertaken without the approval of the Project Works Arboriculturist or the Local Authority Tree Officer.
- Structural Roots: If significant woody roots are discovered during excavation, they must be retained undamaged. The Works Arboriculturist must approve the removal of any root larger than 2.5 centimetre (cm) in diameter, as stipulated by BS5837, Section 7.2 (Ref 1.4). Roots smaller than this can be cut cleanly without prior permission.

Supervision and Tree Protection Measures

All sensitive works in RPAs must be supervised by the Works Arboriculturist, as outlined in BS5837, Section 6.3 (Ref 1.4). The mitigation measures detailed in **Appendix F** and in the locations in the HLTPP (**Appendix C**), including tree protection fencing and temporary ground protection, will ensure retained trees are adequately safeguarded.

7.6 The Future Impact of Retained Trees

- Retained trees in the wider works Site and beyond its boundary will not have a significant future impact on the future use of the Site. Where retained trees are close to permanent above-ground infrastructure, they will be subject to regular inspection to assess their structural condition and safety as occurs for every National Grid overhead line.
- Occasional removal of dead wood or other remedial works to address significant defects may be required in areas of frequent access. This is unlikely to be overly onerous and will not represent a significant change from the current situation on the Site.
- Trees beneath high voltage cables will be maintained at a safe distance clearance. This management is already undertaken cyclically across the wider works area and will not constitute additional impacts on the trees.
- The wider works site contains a significant population tree which will require ongoing maintenance and assessment by a competent person to ensure that any risks from tree failure are managed in accordance with best practice. Where tree works are recommended as a result of the tree survey for this report (preliminary management recommendations in the Tree Schedule in **Appendix B**) they should be actioned in the recommended timescales.

7.7 Tree Protection

- 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.
- Outline tree protection measures are considered in **Appendix F** of this report. An Arboricultural Method Statement may be required 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 near retained trees. Issues to be addressed by the Method Statement are listed in the Conclusion of this report.

7.8 Site Organisation, Storage and Use of Materials, Plant and Machinery.

- All construction site facilities including site huts, staff and contractor parking and areas for storage will be outside 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 be carefully considered. The Construction Exclusion Zones identified on the HLTPP must be fully respected and their location and significance will be highlighted to all site staff and contractors during the formal site briefing.
- 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, builder's 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.
- 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.
- 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.
- 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.
- Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with near retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5 m of any part of a retained tree to ensure no damage is sustained.

8. Conclusion

- Much of the wider works site has not been subject to a detailed tree survey and has been assessed via desk study only. A small area included in the HLTCP and HLTPP (sheet 24) contains data for 153 tree features which were surveyed in detail as part of the Glaslyn Cables surveys.
- Two SSSIs are traversed by the wider works site. The sites and the point of transection by the wider works site are shown in the HLTCP on sheets 7, 28 and 29.
- Trees adjacent to the overhead cables at Pant Du (Penygroes) Vineyard (sheet 12 of TCP) and a group TPO at Tyn-y-ffridd (sheet 27 of the HLTCP) next to an access road were confirmed as being subject to a TPO.
- The wider works site includes several areas of habitat defined within the list of the habitats of principal importance included in section 7 Environmental Wales Act 2016 such as deciduous woodland and traditional orchards and shown within the HLTPP in **Appendix C.** These areas will be retained and protected where possible.
- The Site includes veteran trees and ancient woodland which are irreplaceable habitats, given a very high priority in the planning policy. No veteran trees or areas of ancient woodland will be removed to facilitate the development.
- The areas of recorded ancient woodland are included on the HLTCP included as **Appendix A** (sheets 1, 2, 4, 5, 6, 7, 21, 22, 23, 24, 25, 27, 28, 29 & 30).
- 8.1.7 A 15 m buffer has been introduced around any ancient woodland features.
- Nine veteran trees have been identified by the tree survey, and these are shown on sheet 24 of the HLTCP. Two of those trees are within the works site and should be protected from the wider works. A number of trees recorded as ancient or veteran by the Ancient Tree Inventory are in proximity to the site, those with the potential to be impacted by the wider works are limited to a single location to the south of Tower 14 (sheet 29).
- Where identified, surveyed veteran trees have been assigned a buffer zone in accordance with standing advice from Natural England and Forestry Commission (2022) (Ref 1.6) (15 x stem diameter or canopy spread + 5 m, whichever is greater) which complies with wider best practice on veteran tree protection.
- 8.1.10 Across the site the trees and woodland contribute significantly to the character of the semi-rural landscape and although variable in their visibility from public vantages, together the tree population can be considered to have substantial amenity value.
- Part of one surveyed woodland group (W43) and a small number of unsurveyed tree features may need to be removed to facilitate the wider works (as shown on the HLTPP). Trees at risk of removal will be reviewed by the Works Arboriculturist in advance of any works on site to determine the final impact and extent of any loss.
- Prior to any tree removals or pruning works the ownership of the trees must be established and the consent of the tree owner obtained in writing.
- 8.1.13 Tree removals are required to enable safe operations within the proposed Wider Works.

- The wider works will result in theoretical incursions into the RPAs of two surveyed veteran trees (T40 & T48). In addition, the existing access track to the south of Tower 14 (sheet 29) is positioned close to ancient and veteran trees identified on the Ancient Tree Inventory. The incursions occur on existing hard surfacing or established and well used tracks and are considered to represent no change of use and damage to roots, soil compaction or damage to above ground parts of the trees is not anticipated.
- The wider works site will incur within recorded ancient woodlands and/or the associated buffer zone in areas shown on sheets 7, 22, 24, , 28, 29 and 30 of the HLTPP. Access will be avoided where possible and where unavoidable will utilise existing hard surfacing and established access routes. If any access is required on areas not currently subject to hard surfacing this will be achieved via ground protection to protect soil structure and roots.
- 8.1.16 Where it is not possible to completely avoid the area of constraint associated with significant trees this will be managed using special measures to facilitate the works (such as ground protection). Further information is provided in **Appendix F**.
- Where tree removals are deemed to be required, consideration will be given to mitigation through compensatory planting in consultation with the landowner.
- 8.1.18 Issues to be addressed by an Arboricultural Method Statement:
 - Conditions of planning consent.
 - Pre commencement meeting and site briefing.
 - Order and phasing of operations.
 - Movement of people, plant and materials.
 - Site walk over.
 - Tree works.
 - Tree protection fencing.
 - Ground protection.
 - Site storage and facilities.
 - Reconductoring operations.
 - Enabling works.
 - Installation of temporary scaffolding structures.
 - Removal of tree protection measures.

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Appendix A High Level Tree Constraints Plan

PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

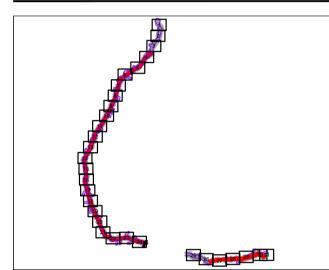
CONSULTANT

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GENERAL NOTES

- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
- ARBORICULTURAL REPORT. 3. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
- 4. DRAWING REFERENCES:
- LPA Searches.dwg
 OSMapping_FreeLocal.dwg
 20290124 Glaslyn 4ZC NTM.dwg
 National Forest Inventory.dwg
- TPO.dwg 20241028_ACM_4ZC DesignLayers.dwg

KEY PLAN





ISSUE/REVISION

It may not be used,			
	P02	27.08.25	RLB UPDATE
	P01	30.05.25	FIRST ISSUE
	I/R	DATE	DESCRIPTION
		P02 P01	P02 27.08.25 P01 30.05.25

DRAWING STATUS

PROJECT NUMBER

60686216

SHEET TITLE

HIGH LEVEL TREE CONSTRAINTS PLAN

(SHEET 00) SHEET NUMBER

60686216-ACM-XX-XX-AB-HLTCP-000 P02

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AECOM

PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

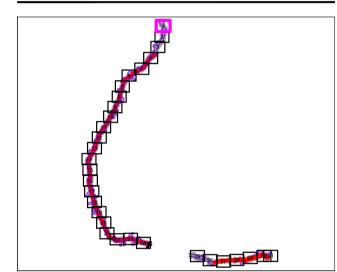
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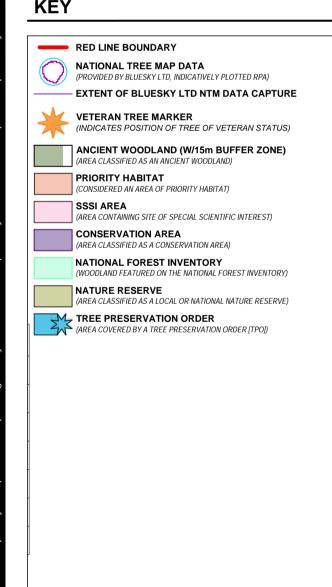
Mid Point, Alencon Link, Basingstoke, Hants, RG21 7PP Tel +44 (0) 1256 310 200 www.aecom.com

GENERAL NOTES

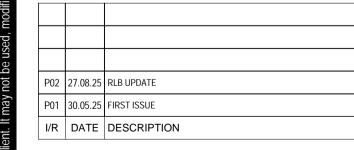
- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
- ARBORICULTURAL REPORT. 3. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON. 4. DRAWING REFERENCES:
- LPA Searches.dwg
 OSMapping_FreeLocal.dwg
 20290124 Glaslyn 4ZC NTM.dwg
 National Forest Inventory.dwg
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KEY PLAN





ISSUE/REVISION



DRAWING STATUS

PROJECT NUMBER

60686216

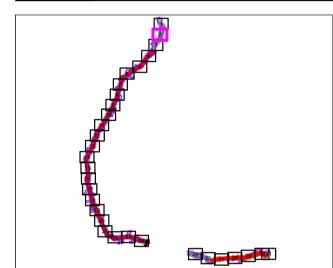
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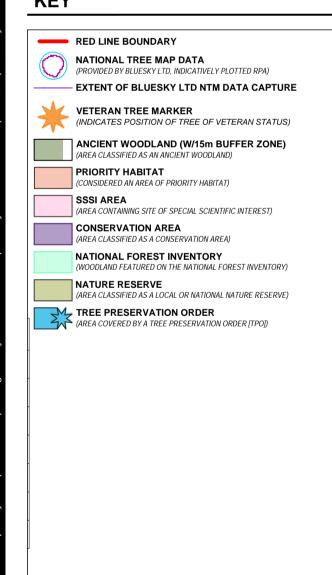
HIGH LEVEL TREE CONSTRAINTS PLAN (SHEET 01)

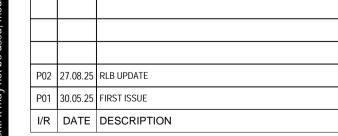
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60686216-ACM-XX-XX-AB-HLTCP-001 P02

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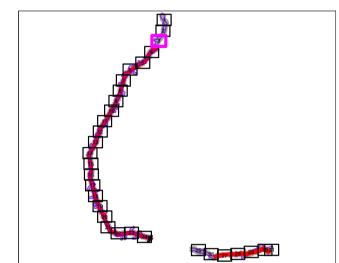


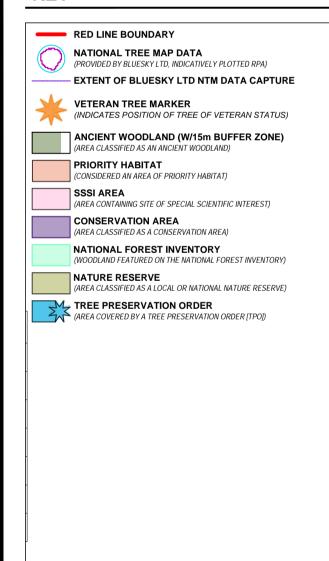


60686216-ACM-XX-XX-AB-HLTCP-002 P02

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- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
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- TPO.dwg 20241028_ACM_4ZC DesignLayers.dwg





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P01	30.05.25	FIRST ISSUE
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PROJECT NUMBER

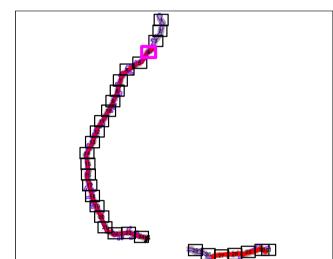
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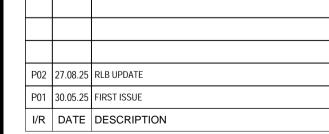
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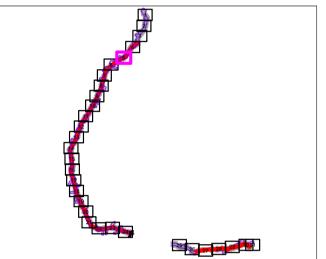


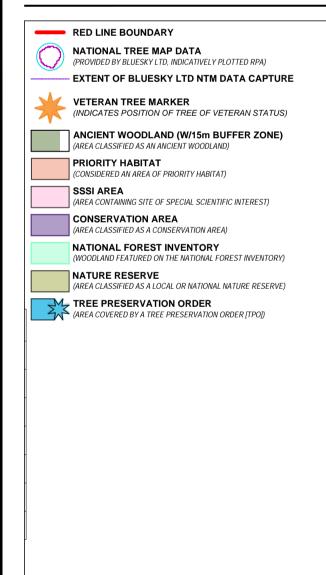
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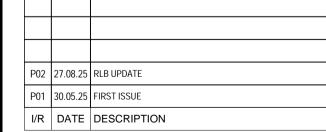
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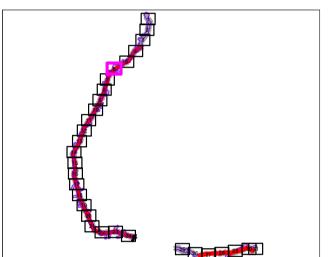
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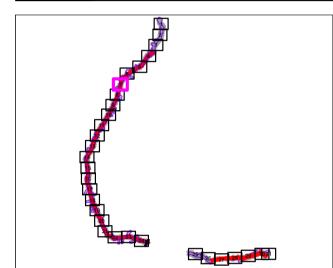




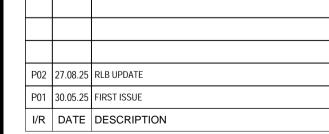
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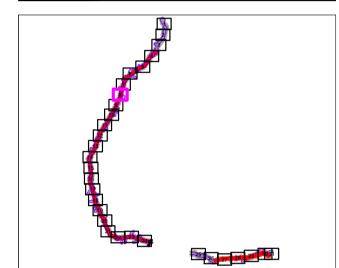
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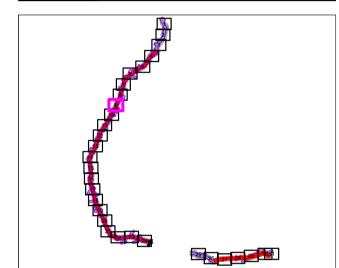


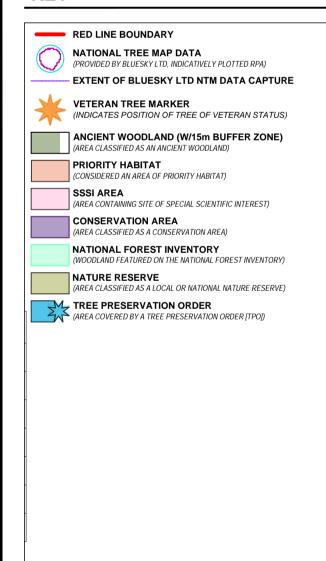
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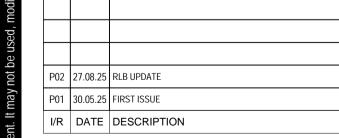
HIGH LEVEL TREE

60686216-ACM-XX-XX-AB-HLTCP-008 P02

- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
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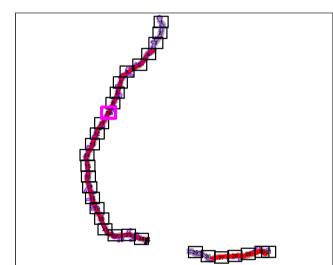


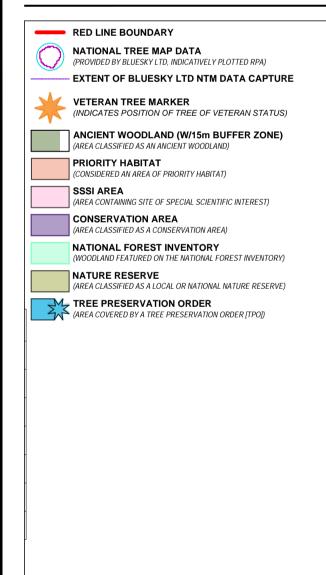


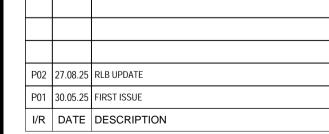


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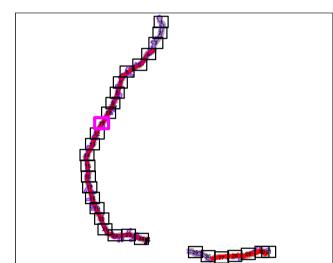


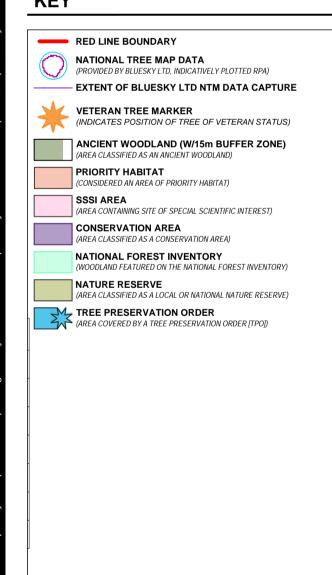


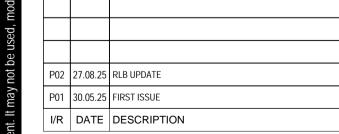


60686216-ACM-XX-XX-AB-HLTCP-010 P02

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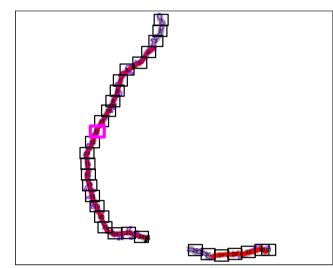


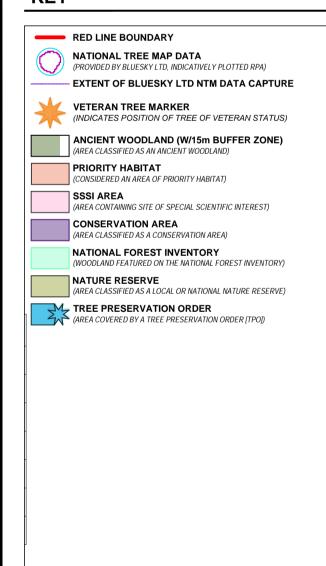


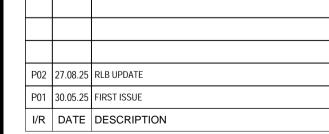
HIGH LEVEL TREE CONSTRAINTS PLAN

60686216-ACM-XX-XX-AB-HLTCP-011 P02

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PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

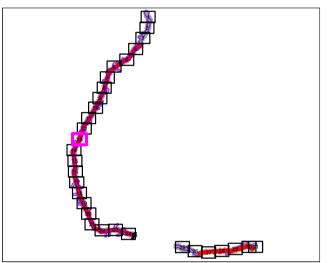
CONSULTANT

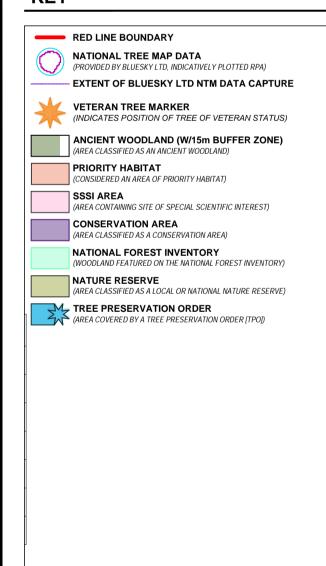
Mid Point, Alencon Link, Basingstoke, Hants, RG21 7PP Tel +44 (0) 1256 310 200

GENERAL NOTES

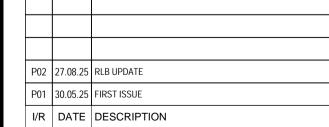
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 OSMapping_FreeLocal.dwg
 20290124 Glaslyn 4ZC NTM.dwg
 National Forest Inventory.dwg
- TPO.dwg 20241028_ACM_4ZC DesignLayers.dwg

KEY PLAN





ISSUE/REVISION



DRAWING STATUS

PROJECT NUMBER

60686216

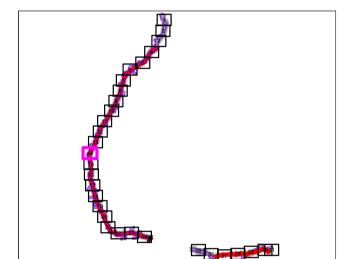
SHEET TITLE HIGH LEVEL TREE CONSTRAINTS PLAN

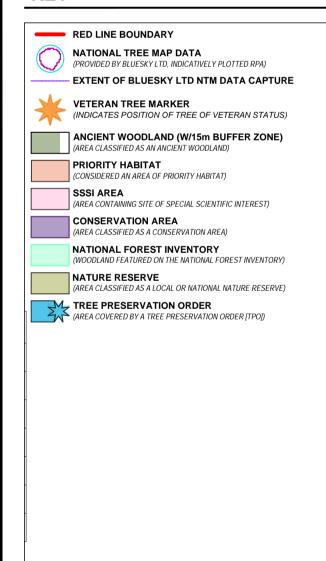
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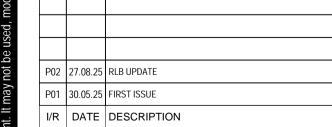
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HIGH LEVEL TREE CONSTRAINTS PLAN

60686216-ACM-XX-XX-AB-HLTCP-014 P02

PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

CONSULTANT

AECOM
Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
www.aecom.com

GENERAL NOTES

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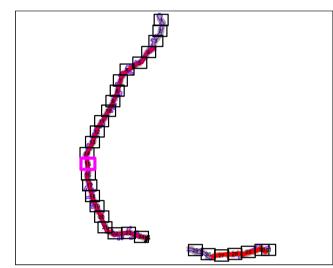
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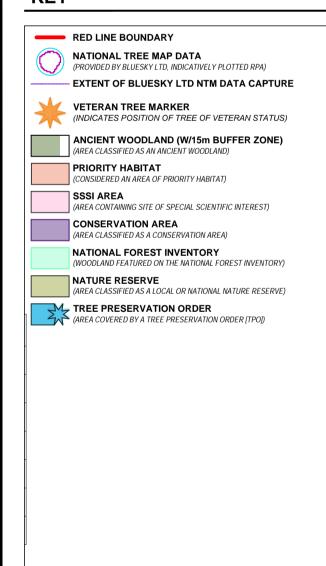
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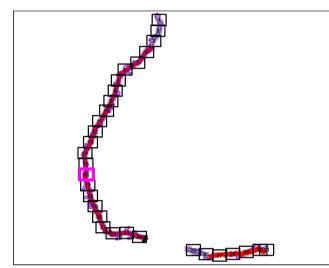
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HIGH LEVEL TREE CONSTRAINTS PLAN (SHEET 15)

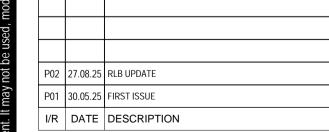
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60686216-ACM-XX-XX-AB-HLTCP-015 P02

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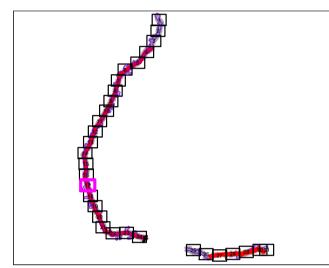


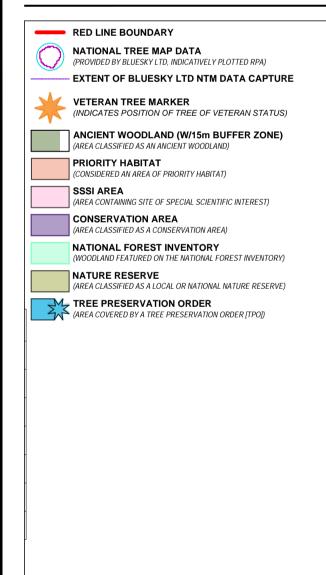


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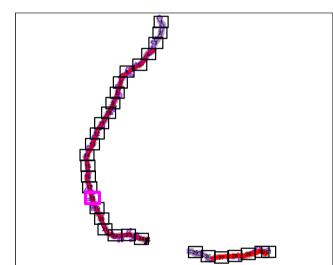




P02	27.08.25	RLB UPDATE
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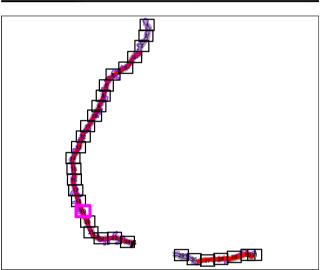


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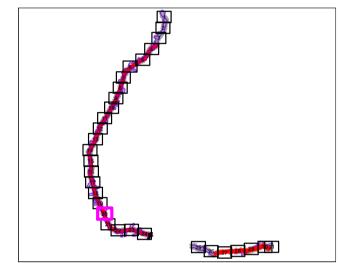
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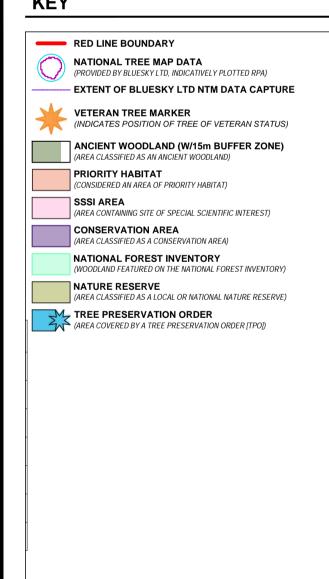




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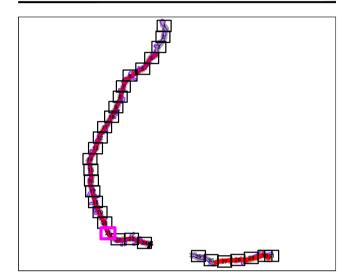
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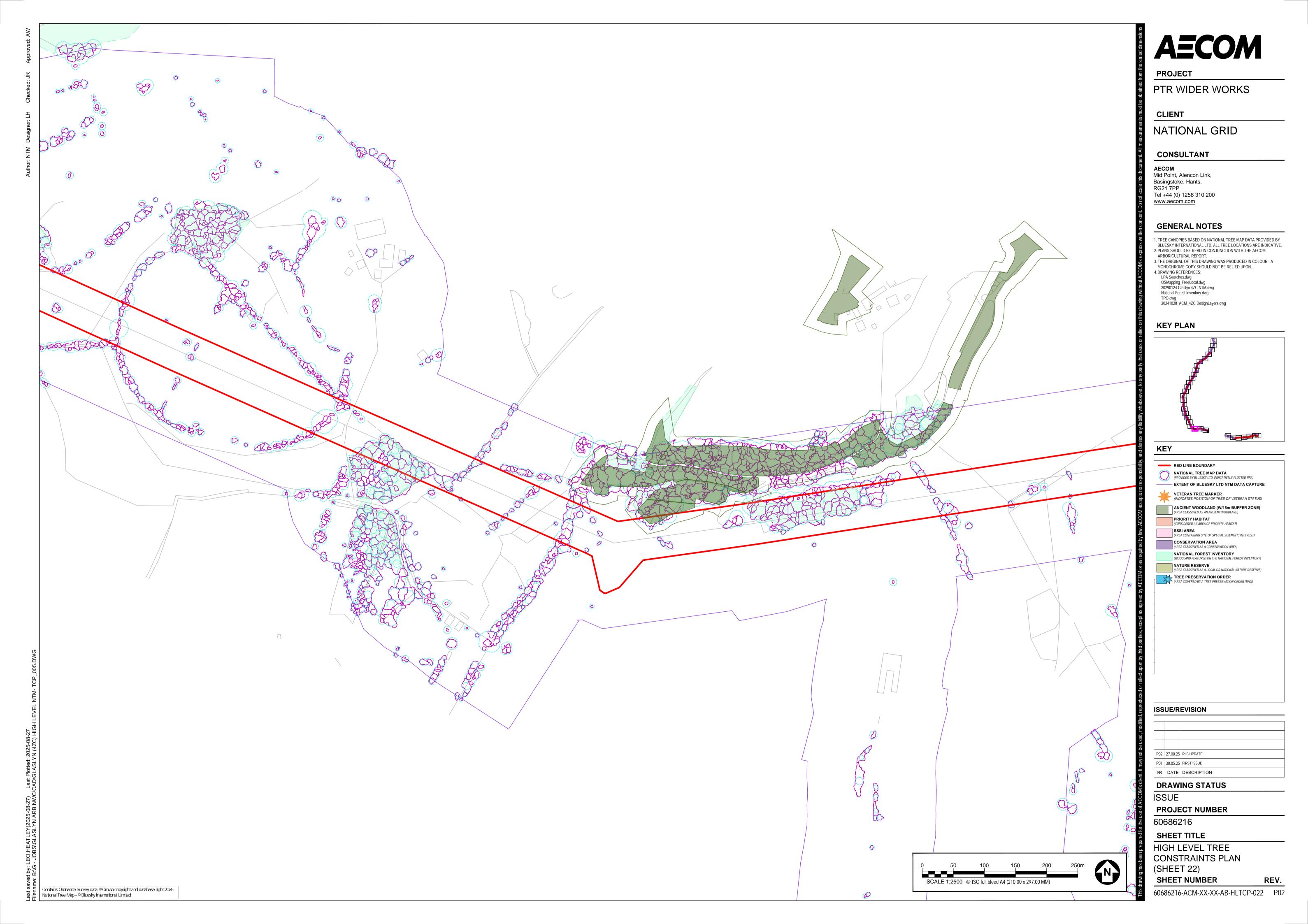


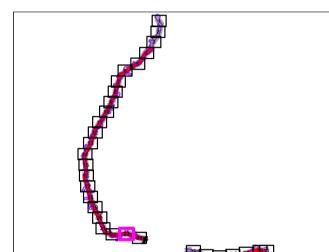


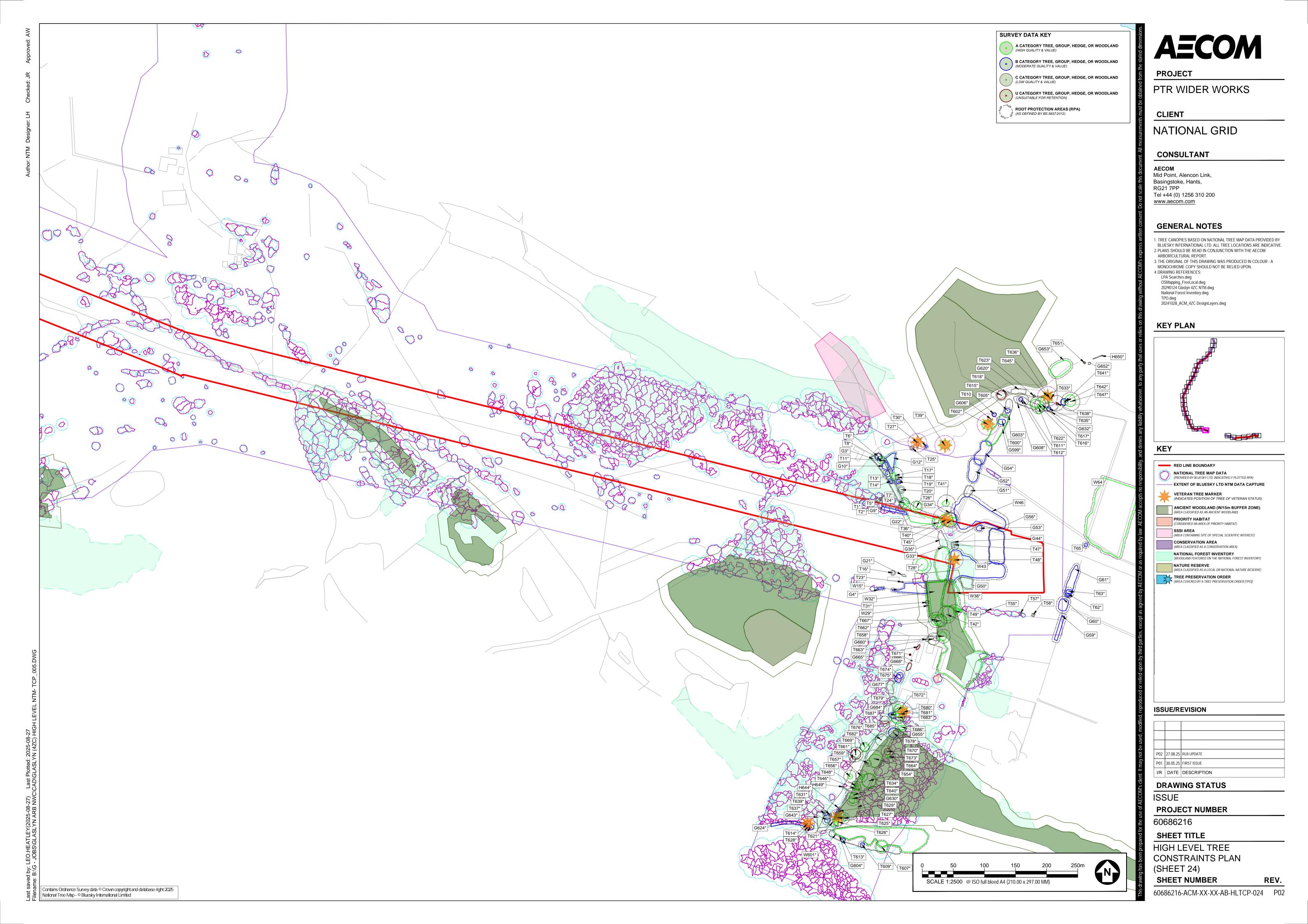
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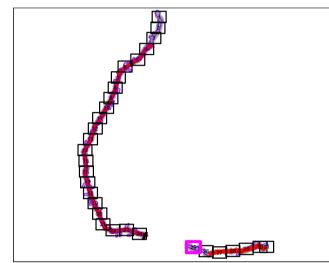
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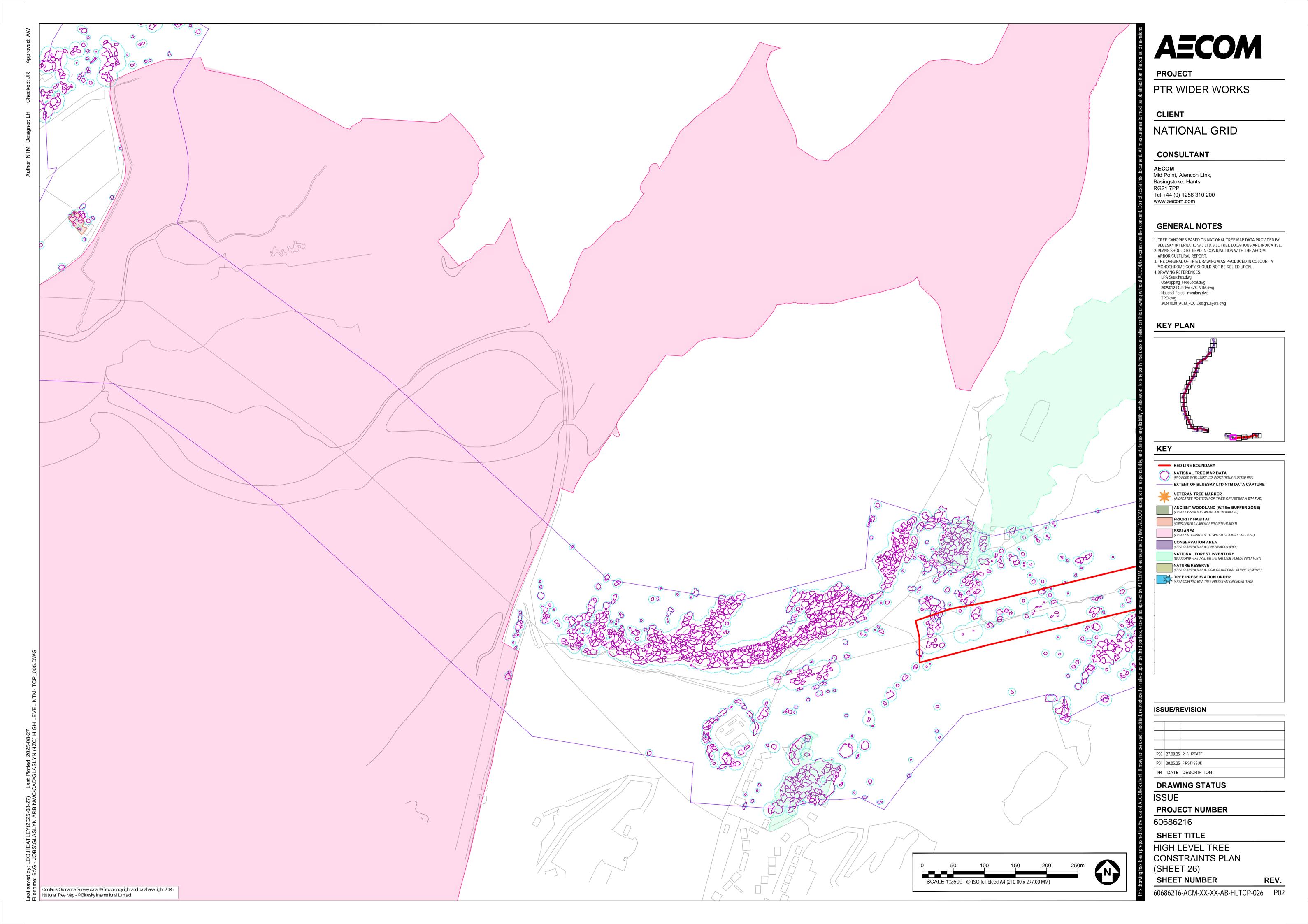




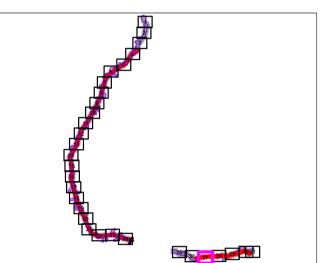






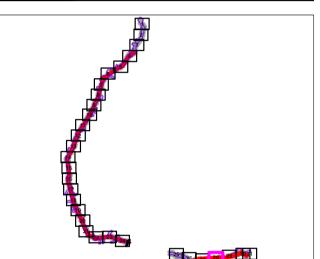


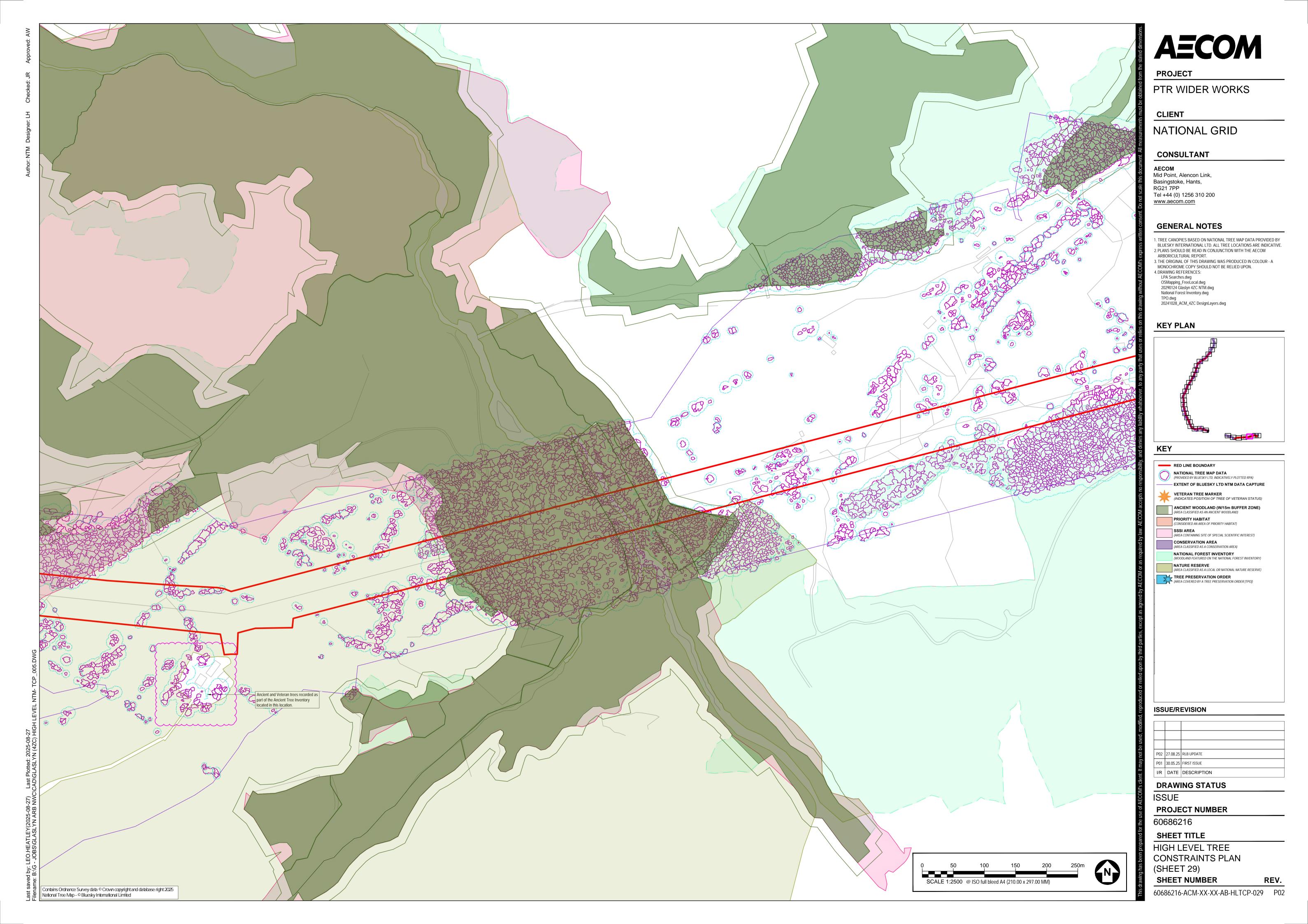
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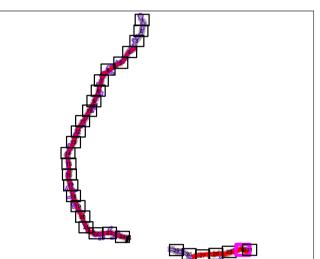




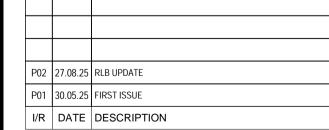
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PROJECT

PTR WIDER WORKS

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NATIONAL GRID

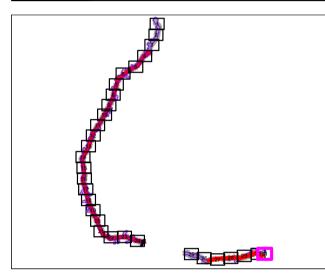
CONSULTANT

Mid Point, Alencon Link, Basingstoke, Hants, RG21 7PP Tel +44 (0) 1256 310 200 www.aecom.com

GENERAL NOTES

- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
- ARBORICULTURAL REPORT. 3. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
- 4. DRAWING REFERENCES:
 LPA Searches.dwg
 OSMapping_FreeLocal.dwg
 20290124 Glaslyn 4ZC NTM.dwg
 National Forest Inventory.dwg
- TPO.dwg 20241028_ACM_4ZC DesignLayers.dwg

KEY PLAN





ISSUE/REVISION

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	·	·	
	P02	27.08.25	RLB UPDATE
·	P01	30.05.25	FIRST ISSUE
	I/R	DATE	DESCRIPTION

DRAWING STATUS

PROJECT NUMBER

60686216

SHEET TITLE

HIGH LEVEL TREE CONSTRAINTS PLAN

(SHEET 31) SHEET NUMBER

60686216-ACM-XX-XX-AB-HLTCP-031 P02

SCALE 1:2500 @ ISO full bleed A4 (210.00 x 297.00 MM)

Appendix B Tree Survey Schedule

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T1	Sycamore (Acer pseudoplatanus)	12	600,40 0	4	4	4	4	2.0/N	2	Good	M	Fair		Sever ivy (< 12 months)		20+	- B1
T2	Elder (Sambucus nigra)	4	150#	1	1	1	1	2.0/N	2	Poor	EM	Fair				10+	- C1
G3	Elm (<i>Ulmus sp</i>), Hawthorn (<i>Crataegus monogyna</i>), Hazel (<i>Corylus avellana</i>), Beech (Fagus sylvatica), Cherry Laurel (Prunus laurocerasus)	8	250	2	2	2	2	n/a	0	Good - Poor	Y-SM	Good - Poor				10+	- C2
G4	Sycamore (Acer pseudoplatanus)	10	400	3	3	3	3	n/a		Good	M	Fair				20+	- B2
T5	Sycamore (<i>Acer</i> pseudoplatanus)	6	350	3	3	3	3	3.0/N	2	Fair	SM	Fair				10+	- C1
																20+	
T6	Elm (<i>Ulmus sp</i>)	10	490	5	5	6	5	1.0/S	2	Good	SM	Good	Dominant in thicket.				B1,2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
Т7	Common Oak (Quercus robur)	4	200	2	2	2	2	3.0/N		Fair	SM	Fair		<u> </u>	Δ		C1
Т8	Sycamore (Acer pseudoplatanus)	20	550#	5	5	5	2	2.0/N	5	Good	EM	Good	No access to base. Good amenity value to residential area north.			40+	A2
G9	Sycamore (Acer pseudoplatanus), Beech (Fagus sylvatica), Hazel (Corylus avellana)	12	400	3	3	3	3	n/a	1	Good - Fair	Y-EM	Good - Fair	Bamboo as understory.			20+	B1,2
G10	Sycamore (Acer pseudoplatanus)	14	<500#	4	4	4	4	n/a	4	Good	EM	Good	Two trees in immediate proximity.			20+	B1,2
T11	Sycamore (Acer pseudoplatanus)	4	100#	1	1	1	1	2.0/N	2	Fair	SM	Fair				10+	C1
G12	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Hazel (Corylus avellana)	14	350	2	2	2	2	n/a	0	Good - Fair	EM- M	Good - Fair				20+	B2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T13	Sycamore (<i>Acer</i> pseudoplatanus)	15	650#	6	4	4	4	2.0/N	4	Fair	М	Fair	No access to base. Dieback of central crown apices, scaffold limb with potential bark stripping visible, if confirmed likely grey squirrels. Minor to moderate crown sparsity.			20-	- B1
T14	Sycamore (<i>Acer</i> pseudoplatanus)	12	400	2	4	2	4	2.0/S	4	Fair	EM	Good	No access. Moderate basal epicormic development. Dense ivy beginning to shroud crown.	Sever ivy (< 12 months)		20-	- B1
W15	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior)	15	500	4	4	4	4	n/a		Good - Fair	EM- M	Good - Fair				20-	- В2,3
T16	Ash (Fraxinus excelsior)	3	350#	3	3	3	3	3.0/N	2	Fair	EM	Fair	Topped at circa 2m.			10-	- C1
T17	Sessile Oak (Quercus petraea)	20	1100#	4	8	1	8	2.0/S	4	Good	M	Fair	No access to base due to brambles, slope and barbed wire. Dense ivy across stem limiting visibility. Previous failure of second order stem south at circa 6m, vigorous regrowth, highly limited visibility. Similar failure likely at circa 3m north.			40-	- A1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T18	Ash (Fraxinus excelsior)	9	300	2	3	2	2	2.0/E	4	Fair	SM	Good				10+	C1
T19	Ash (Fraxinus excelsior)	8	400	3	3	6	3	2.0/E	4	Fair	M	Fair				20+	B1
T20	Common Oak (Quercus robur)	6	500	4	4	4	4	2.0/E	4	Fair	M	Fair	Storm damage lost leader.			10+	C1
G21	Leyland Cypress (X Cupressocyparis leylandii)	5	150	2	2	2	2	n/a		Fair	EM	Fair				10+	C1
G22	Sycamore (Acer pseudoplatanus), Sweet Chestnut (Castanea sativa), Hazel (Corylus avellana), Holly (Ilex aquifolium), Ash (Fraxinus excelsior), Lime (Tilia sp)	20	1000	5	5	5	5	n/a	0	Good	Y-M	Good - Fair				40+	A2
T23	Sycamore (Acer pseudoplatanus)	4	100#	1	1	1	1	1.0/N	2	Fair	SM	Fair				10+	C1
T24	Common Oak (<i>Quercus robur</i>)	10	330,62	8	2	8	5	1.0/SE	4	Good	M	Good				40+	A2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T25	Sycamore (<i>Acer</i> pseudoplatanus)	7	280	2	2	2	2	2.0/N	2	Fair	SM	Fair				10+	C1
T26	Sessile Oak (Quercus petraea)	13	820	10	4	8	5	3.0/E	2	Good	M	Good	Ivy beginning to shroud crown.	Sever ivy (< 12 months)		40+	A1
T27	Sessile Oak (Quercus petraea)	4	1000#	2	8	2	2		0	Good	V	Good - Poor	Windthrown oak on ground. Phoenix growth throughout appears healthy. Large amount of deadwood and cavities throughout stem and major branches.			20+	B2,3
T28	Sessile Oak (Quercus petraea)	13	1410#	10	10	10	10	2.0/S	2	Fair	M	Good	Significant for species. Crown with significant gaps, retained limbs in upper crown with moderate to high bud density. Minor to moderate deadwood. Moderate lower crown development, potential crown retrenchment due to symptoms of lower stem and dysphotic zone epicormic development.			40+	A1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
W29	Willow (Salix sp), Ash (Fraxinus sp), Sessile Oak (Quercus petraea), Beech (Fagus sylvatica)	16	400	3	3	3	3	n/a	0	Good - Fair	Y-M	Good - Fair				20+	B2,3
T30	Hawthorn (<i>Crataegus</i> <i>monogyna</i>)	5	230,22 0#	2	2	2	2	2.0/N	2	Good	М	Good				20+	B1
T31	English Elm (<i>Ulmus procera</i>)	8	250	3	3	3	3	2.0/S	2	Fair	EM	Fair				10+	C1
W32	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Elm (Ulmus sp), Sessile Oak (Quercus petraea), Holly (Ilex aquifolium)	20	750	6	6	6	6	n/a	0	Good - Fair	SM- M	Good - Fair	Laurel understory and low over track with preliminary management to crown lift. Some trees in group with cavities, low retaining wall of circa 600mm especially to south (meeting ground level as it extends north).	Crown lift to desired clearance over track (when funds allow).		40+	A2
G33	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Corsican Pine (Pinus nigra 'maritima'), Scots Pine (Pinus sylvestris), Holly (Ilex aquifolium), Yew (Taxus baccata), Douglas Fir (Pseudotsuga menziesii), Box (Buxus sempervirens)	20	500	4	4	4	4	n/a	0	Good - Fair	Y-M	Good - Fair	Pine dominant overstory. Rhododendron understory.			40+	A2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
G34	Holly (Ilex aquifolium), Beech (Fagus sylvatica), Hazel (Corylus avellana), Yew (Taxus baccata)	10	250	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good - Fair		Fell beech succeeding oak in mid canopy (when funds allow).		10+	C2
G35	Sycamore (Acer pseudoplatanus), Silver Birch (Betula pendula), Hawthorn (Crataegus monogyna), Sessile Oak (Quercus petraea), Holly (Ilex aquifolium), Ash (Fraxinus excelsior)	5	150	2	2	2	2	n/a	0	Good - Fair	Y-SM	Good - Fair				10+	C2
T36	Sycamore (Acer pseudoplatanus)	10	670,48 0,220	7	7	5	7	1.0/N	2	Good	M	Good				40+	A2
W38	Sycamore (Acer pseudoplatanus), Ash (Fraxinus excelsior), Crack Willow (Salix fragilis), Norway Maple (Acer platanoides), Beech (Fagus sylvatica), Elm (Ulmus sp), Hazel (Corylus avellana)	8	350	2	2	2	2	n/a	0	Good - Fair	Y-EM	Good - Fair				40+	A2
Т39	Common Oak (Quercus robur)	17	1080#	8	5	8	8	2.0/N	2	Good	V	Fair	Large volume of deadwood from collapsed branches scattered around base. Large tear out			40+	A1,3

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													side at ca. 4 meters. Hollowing visible. Old wound almost entirely occluded at ca. 6m on central stem. Large buttressing roots suggests internal decay. Large amount of dead branch ends from apparent retrenchment.				
T40	Sessile Oak (Quercus petraea)	17	1480	10	10	10	10	3.0/S	5	Fair	V	Good	Significant for species. Dieback of upper crown - significant deviation in branching pattern with poor bud density. Extensive epicormic regeneration across entire branching structure, likely previous dysphotic zone now with increased light levels. Ferns across branching structure. Major deadwood extensive throughout crown. Numerous branch collars with cavities and significant adaptive swelling and woundwood. Unidentified fungal brackets observed in lower dead branches southwest.	Further inspection to ascertain the species of the unidentified fungus. Fruiting occurs in July / August.		40+	A3

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													Possible beefsteak fungus (Fistulina hepatica) or oak polypore (Piptoporus quercinus) which is listed on Schedule 8 of the Wildlife and Countryside Act 1981.				
T41	Sessile Oak (Quercus petraea)	18	1200	5	4	4	7	5.0/N	3	Good	M	Good	Lean north. Normal amount of deadwood for species and age.			40	+ A2,3
T42	Beech (Fagus sylvatica)	20	1180	13	10	12	8	5.0/S	5	Good	M	Good	Dominant in canopy, significant for species.			40	+ A1
W43	Hybrid black poplar (<i>Populus x canadensis</i>), Leyland Cypress (<i>X Cupressocyparis leylandii</i>), Crack Willow (<i>Salix fragilis</i>), Cherry Laurel (<i>Prunus laurocerasus</i>)	20	600	4	4	4	4	n/a	0	Good - Fair	SM- M	Good - Fair			Fell in part as per HLTPP (if required).	20	+ B2,3
G44	Cherry Laurel (<i>Prunus</i> laurocerasus)	4	200	3	3	3	3	n/a		Fair	M	Fair				10	+ C2
T45	Sessile Oak (Quercus petraea)	15	1000#	5	6	10	2	2.0/N	1	Good	M	Good	Limited access to base. Subdominant with oak west. Major deadwood and bark scars/bark loss throughout crown. Central stem with dieback. Surrounding crown with normal vitality.			40	+ A1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
W46	Goat Willow (Salix caprea), Hybrid black poplar (Populus x canadensis), Hawthorn (Crataegus monogyna), Common Alder (Alnus glutinosa), Sitka Spruce (Picea sitchensis), Sycamore (Acer pseudoplatanus), Grey willow (Salix cinerea), Western Red Cedar (Thuja plicata), Norway Maple (Acer platanoides), Elder (Sambucus nigra)	20	750	4	4	4	4	n/a	0	Good - Poor	Y-M	Good - Poor				20+	B1,2
T47	Goat Willow (Salix caprea)	8	330#	2	2	2	2	2.0/W	3	Fair	M	Fair				10+	C1
T48	Sycamore (Acer pseudoplatanus)	7	940	3	2	2	3	2.0/W	3	Fair	V	Poor	Stem previously topped/failed at circa 3m, hollow cavity with multiple openings to ground level, stem almost entirely hollow, functional units likely west and north. Kretzschmaria deusta at base west.	Halo thin laurel around crown and sever ivy. (< 3 months)		40+	A3
T49	Sycamore (Acer pseudoplatanus)	15	850#	5	6	8	2	2.0/SE	5	Good	М	Good	No access. Dominant in canopy. Failed tree			40+	A1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	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
													hung up in mid crown north.				
G50	Goat Willow (Salix caprea)	8	400	3	3	3	3	n/a		Fair	M	Fair - Poor				10+	C2
G51	Goat Willow (Salix caprea)	5	220	2	2	2	2	n/a		Fair	EM- M	Fair				10+	C2
G52	Common Oak (Quercus robur), Silver Birch (Betula pendula), Western Red Cedar (Thuja plicata)	15	600	5	5	5	5	n/a	0	Good - Fair	SM- M	Good - Fair				20+	B2,3
G53	Silver Birch (Betula pendula), Grey willow (Salix cinerea)	10	350	2	2	2	2	n/a	2	Good	SM- EM	Fair				20+	B2
G54	Silver Birch (Betula pendula), Common Alder (Alnus glutinosa)	9	400	3	3	3	3	n/a	1	Good - Fair	SM- M	Good - Fair				20+	B2
T55	Sycamore (Acer pseudoplatanus)	6	140	1	1	1	1	1.0/S	1	Fair	SM	Fair				10+	C1
G56	Goat Willow (Salix caprea), Ash (Fraxinus excelsior)	7	350	3	3	3	3	n/a	0	Good - Fair		Good - Fair	Mostly young to mature willows with one ash.			20+	B2
T57	Sycamore (Acer pseudoplatanus)	6	240	2	2	2	2	1.0/S	1	Fair	EM	Fair				10+	C1
T58	Sycamore (Acer pseudoplatanus)	6	240	2	2	2	2	1.0/S	1	Fair	EM	Fair				10+	C1

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
G59	Sycamore (Acer pseudoplatanus)	10	550	3	3	3	3	n/a		Good - Fair	M	Good - Fair				20+	B2
G60	Sycamore (Acer pseudoplatanus)	10	550	3	3	3	3	n/a		Good - Fair	M	Good - Fair				20+	B2
G61	Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna), Common Alder (Alnus glutinosa)	10	500	3	3	3	3	n/a	3	Good - Dead	М	Good - Dead	One dead and one severely declining sycamore in the center of group.			20+	B2
T62	Sycamore (Acer pseudoplatanus)	6	500#	1	5	4	4	2.0/E	2	Fair	EM	Fair - Poor	No access to base due to flooded ground. Basal cavity visible north, Eiffel Tower buttressing. Cavity with throughline east to west. Visually extensive although unknown total extent. Co to subdominant in canopy north. Two dead third order limbs south at circa 4m.			20+	В3
T63	Sycamore (Acer pseudoplatanus)	10	550#	3	4	5	4	n/a	2	Good	EM	Fair	No access due to flooded ground. Cavity visible southeast, circa 150mmx150mm. Visual depth of around 200mm. Unlikely to be extensive.			20+	В3
W64	Sycamore (Acer pseudoplatanus), Silver Birch (Betula pendula),	15	<500#	3	3	3	3	n/a	0	Good - Dead	Y-M	Good - Poor	Beech and birch high forest, two snags within.			40+	A2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
	Beech (Fagus sylvatica), Common Oak (Quercus robur), Wild Cherry (Prunus avium)												Rhododendron understory.				
T65	Sycamore (Acer pseudoplatanus)	7	450	3	3	3	3	1.0/W	1	Fair	SM	Fair				20+	B1
G599	Common Oak (Quercus robur), Downy Birch (Betula pubescens), Common Alder (Alnus glutinosa), Holly (Ilex aquifolium)	13	<600#	6	6	6	6	n/a	0	Good	SM- M	Good	Limited access to bases. Growing down hill of access track. Up to circa 3-4m below access track ground level.			40+	A2
T600	Common Oak (Quercus robur)	12	600,45 0#	3	6	5	7	4.0/W	0	Fair	M	Fair	No access to base. Downhill of access track. Base of tree is circa 3-4m below access track ground level. Moderate upper crown dieback of western crown with moderate deadwood. Low traffic area.			20+	B1,2
W60 1	Beech (Fagus sylvatica), Sycamore (Acer pseudoplatanus), Oak (Quercus sp)	23	<900#	9	9	9	9	n/a	3	Good	SM- M	Good - Fair	No access, viewed from highway. Regular structure (2 stories), stem exclusion stage, beech dominant circa 80% estimated distribution. Dense Rhododendron understory.			40+	A1,2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T602	Common Oak (Quercus robur)	17	1150#	7	8	8	10	2.5/E	3	Good	V	Fair	Set on edge of low rockface adj., track, multiple failed scaffold limbs to north with large wounds exposing heartwood, good vitality, dense epicormic regrowth. Large propped failed limb to north east with habitat features Inc cavities, hardcore track, roots restricted by rock but some roots still likely below track to east and west of outcrop.	Crown lift to clear road by 5.2m (< 12 months)		40+	A1,2,
G603	Willow (Salix sp), Downy Birch (Betula pubescens), White Willow (Salix alba), Hazel (Corylus avellana)	13	<250#	5	5	5	5	n/a	0	Good	SM- EM	Good - Poor	Limited access to bases. Numerous multi stem willow adjacent to stream.			10+	C1,2
G604	Monkey Puzzle (Araucaria araucana), Oak (Quercus sp), Ash (Fraxinus excelsior), Hazel (Corylus avellana), Sycamore (Acer pseudoplatanus)	15	<300#	3	3	3	3	n/a	0	Good	Y-M	Good - Fair	Rhododendron dominant edge to high forest. Pruned back from highway, edge to. highway forms thick pseudo- hedge.	Fell and treat stump of Rhododendron species. Replant with suitable semi natural native shrub mix. Reduce branches overhanging footpath and highway by pruning small diameter secondary and tertiary branches (up to 50mm) to allow for visibility from Wern junction.		10+	C2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T605	Downy Birch (<i>Betula</i> pubescens)	12	460	3	4	4	4	2.0/W	1	Good	EM	Good	Previous loss of central leader. Three lateral branches forming central upper crown.			20+	B2
G606	Blackthorn (<i>Prunus spinosa</i>)	2	<80#	0.5	3	3	1	n/a	0	Good - Fair	SM	Fair	Leaning south east, located on 2m rockface adj., track, track overhung by 1m with 2.5m clearance.	Crown lift to clear road by 5.2m (< 12 months)		10+	C2
T607	Beech (<i>Fagus</i> sylvatica)	23	900#	9	9	9	9	5.0/S	5	Good	M	Good	No access. Viewed from highway, limited visibility due to dense Rhododendron understory. Minor apical dieback with heterogeneous distribution in crown, overall bud density and branching pattern normal. Stem estimated around 6m setback from highway edge.			40+	A1,2
G608	Hazel (Corylus avellana), Downy Birch (Betula pubescens), Apple (Malus sp), Ash (Fraxinus excelsior), Goat Willow (Salix caprea), Holly (Ilex aquifolium),	12	<150#	3	3	3	3	n/a	0	Good - Dead	Y-SM	Good - Dead	Young likely self set group.			10+	C2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	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
	Beech (<i>Fagus</i> sylvatica)																_
T609	Sycamore (Acer pseudoplatanus)	13	250,20 0,250#	2	6	4	2	3.0/S	2	Good	SM	Fair	No access, circa 4m north of highway edge. Asymmetrical crown likely due to assumed recent canopy opening west. No visibility of base due to Rhododendron understory.			20+	B1,2
T610	Hawthorn (<i>Crataegus</i> <i>monogyna</i>)	5	300#	2	4	3.5	3	1.0/W	2	Good	M	Good	Low over track, mature elder with dieback to north (150,100mm diameter).	Crown lift to clear road by 5.2m (< 12 months)		20+	B1,2
T611	Unknown	2	800#	0	0	0	0	n/a	0	Stum p	M	Stum p	Dead 2.5m tall stump.			<10	U1
T612	Silver Birch (<i>Betula pendula</i>)	12	300#	3	3	3	3	2.5/N	2	Good	SM	Good	No access to base. Downhill of access track, base of tree is circa 1m below access track ground level.			20+	B1
T613	Sycamore (<i>Acer</i> pseudoplatanus)	9	350#	2	5	4	3	1.0/W	2	Good	SM	Good	North of highway edge by circa 2m, emergent in Rhododendron.			20+	B1,2
T614	Beech (<i>Fagus</i> sylvatica)	20	600,50 0#	5	5	5	5	n/a	7	Good	V	Good - Poor	Layered mature beech in rock ledge by footpath. 2nd stem severe decay at branch	Reduce or fell sycamore stems (T619) roadside. Reduce central stem with decay		<10	U2,3

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	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
													stump ca. 3m and tear out wound 5m. Kretzschmaria deusta on root / stem interface of central stem with decay and tear out wound. Kretzschmaria also observed on lateral root growing toward road. Targets consist of footpath road and railway bridge.	and Kretzschmaria to ca. 3m stump. Gain access to garden behind to further assess. Consider reduction of largest stem or fell along with others. (Asap)			
T615	Ash (Fraxinus excelsior)	17	730	7	7	7	7	4.0/S	3	Good	EM	Poor	Stream to east of stem. Included bark union from 1-2m, some adaptive swelling, located adjacent road and track, bark wounds to buttresses to south	Fell (< 3 months)		<10	U1
T616	Common Oak (Quercus robur)	17	1040	8	7	3	12	3.0/N	2	Good	M	Good	Limited access around base. Growing behind access track boundary wall at the top of a steep slope. Forms large canopy with two adjacent oak trees.			40+	A1,2
T617	Common Oak (Quercus robur)	17	960	11	7	11	2	4.0/NE	6	Good	M	Good	Limited access around base. Growing behind access track boundary wall at the top of a steep slope. Forms large canopy with two adjacent oak trees.			40+	A1,2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T618	White Willow (<i>Salix alba</i>)	6	260#	1	2	6	2	1.0/E	1	Good	EM	Fair	Lower stem cavities with good woundwood, low over track.	Crown lift to clear road by 5.2m (< 12 months)		10+	C1,2
T619	Sycamore (Acer pseudoplatanus)	9	200	2	4	2	4	n/a	3	Fair	SM	Poor	Substantial decay. Growing next to beech surface roots with Kretzschmaria. Growing close to road and footpath. Decay possibly associated.	Fell		<10	U2
G620	Silver Birch (<i>Betula pendula</i>), Goat Willow (<i>Salix caprea</i>)	7	<250#	3	3	3	3	n/a	1	Good - Fair	Y-SM	Good - Fair	Group between road and track, small branches starting to obstruct track.	Crown lift to clear road by 5.2m (< 12 months)		10+	C2
T621	Beech (<i>Fagus</i> sylvatica)	19	710#	3	7	2	7	2.5/E	2	Good	M	Fair	At edge of wall. to access road. Codominant in high forest canopy.			40+	A1,2
T622	Common Oak (Quercus robur)	16	880	1	11	7	5	11.0/N	4	Good	M	Good	Limited access around base. Growing down steep slope with base of tree circa 3m below access track ground level. Forms large canopy with two adjacent oak trees. Moderate form suppression.			40+	A2
T623	Hazel (Corylus avellana)	4	150#	1.5	1.5	1.5	1.5	1.0/W	2	Good	EM	Fair	Growing from rockface, set back 1.5m from existing track. Small thorn	Crown lift to clear road by 5.2m (< 12		10+	C2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Coundition Condition (50mm) to west. low over track.	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
	Oak (<i>Quercus</i>																
G624	sp), Sycamore (Acer pseudoplatanus)	12	<350#	4	4	4	4	n/a	4	Fair	SM	Fair	Unable to inspect as on top of rock face.			20+	B2
T625	Beech (Fagus sylvatica)	25	730	6	8	3	4	3.0/NE	3	Good	V	Good - Fair	Codominant in high forest canopy. Cavity in main stem north at circa 1.5m agl. Partially occluded rib from ground level to circa 2m. Good columnar woundwood, remaining opening around 400mm, probed to depth of circa 250mm, opening likely a few cm. Hammer test, cavity audible in central circa metre of occlusion. Striae visible on woundwood.			40+	A1
T626	Beech (<i>Fagus</i> sylvatica)	16	620	2	7	1	5	2.0/SE	1	Good	М	Good	Subdominant in high forest canopy.			40+	A1,2
T627	Beech (<i>Fagus</i> sylvatica)	23	770	6	5	6	1	7.0/E	3	Good	M	Good	Codominant in high forest canopy. Dense moss across stem.			40+	A1,2
T628	Beech (<i>Fagus</i> sylvatica)	20	900	4	4	4	4	n/a	3	Good	М	Fair	Decay at 1.5m. Hollow sounded with mallet at base of sub dominant	Reinspect in 1 year		20+	B2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													stem. Sapwood appears sound, normal callus formation.				
T629	Ash (<i>Fraxinus</i> excelsior)	9	250#	2	1	3	1	3.0/E	3	Poor	SM	Fair - Poor	Adjacent to access road, immediately adjacent to wall. Significant symptoms of chalara ash dieback.	Fell (When funds allow)		<10	U1
G630	Hawthorn (Crataegus monogyna), Hazel (Corylus avellana), Sycamore (Acer pseudoplatanus), Holly (Ilex aquifolium), honeysuckle (Lonicera nitida).	7	<200#	0	0	0	0	n/a	0	Good	Y-SM	Good	Dense understory dominated by Rhododendron. Few likely <i>Lonicera</i> <i>nitida</i> .			10+	C2
T631	Beech (<i>Fagus</i> sylvatica)	6	120#	3	3	3	3	n/a	4	Fair	Υ	Fair				10+	C2
G632	Hazel (<i>Corylus</i> avellana), Silver Birch (<i>Betula</i> pendula), Elder (<i>Sambucus nigra</i>)	11	<250#	3	3	3	3	n/a	0	Good	Y-SM	Good	Growing behind access track boundary wall down steep slope.			10+	C1,2
T633	Silver Birch (<i>Betula pendula</i>)	4	120#	1.5	1.5	1.5	1.5	1.0/N	2	Good	Υ	Fair	Located on rockface, unlikely rooting below track.	Crown lift to clear road by 5.2m (< 12 months)		10+	C1
T634	Sessile Oak (Quercus petraea)	15	1060	4	6	2	7	2.0/W	1	Good	M	Fair	Limited access to base. Dense ivy across main stem. Potential to limit	Sever ivy (< 12 months)		40+	A1,2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Crown reiteration processes. Asymmetrical	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													crown likely due to previous stand competition, tree now removed, secondary crown formation from likely epicormic origin visible.				
T635	Silver Birch (<i>Betula pendula</i>)	12	300#	2	4	3	3	3.0/S	5	Good	EM	Good	No access to base. Growing down steep slope. Base is circa 3m below access track ground level.			20+	B2
T636	Hawthorn (<i>Crataegus</i> <i>monogyna</i>)	4	50,50#	1	1	1	1	0.5/S	2	Good	Υ	Fair	Growing on rockface, unlikely rooting below track.	Crown lift to clear road by 5.2m (< 12 months)		10+	C2
T637	Sycamore (Acer pseudoplatanus)	16	700#	3	5	5	5	n/a	4	Fair	M	Fair	lvy clad. Some branch end dieback.			20+	B2
T638	Common Oak (Quercus robur)	9	1030	1	3	3	1	n/a	0	Dead	М	Dead	Dead stem with significant internal stem decay.	Create monolith at 4m to retain standing deadwood.		<10	U1
T639	Douglas Fir (Pseudotsuga menziesii)	19	400	3	3	3	3	n/a	4	Good	SM	Fair				20+	B2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T640	Sessile Oak (Quercus petraea)	15	920	1	8	3	6	3.0/N	2	Good	M	Fair	Limited access to base. Circa two significant second order limbs in crown east under high forest canopy aborted providing major deadwood, circa 2mx350mm and 7m x 300mm. Upper crown codominant in high forest canopy, epiphytes, moss and ivy throughout crown.			40+	A1,2
T641	Ash (<i>Fraxinus</i> excelsior)	12	360,28 0	5	6	1	7	3.0/S	2	Good	SM	Good	Two stems from ground level. Moderate form suppression from adjacent tree.			20+	B1
T642	Hawthorn (<i>Crataegus</i> <i>monogyna</i>)	4	140	2	2	2	1	0.8/N	0	Good	SM	Good	Growing on steep slope.			10+	C1
G643	Yew (Taxus baccata), Douglas Fir (Pseudotsuga menziesii), Sycamore (Acer pseudoplatanus)	16	250	3	3	3	3	n/a	0	Fair	Y-SM	Fair	Understory rhododendron.			10+	C2
H644	Beech (<i>Fagus</i> sylvatica)	1	200	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good				20+	B2
T645	Common Oak (Quercus robur)	13	880	6	11	6	6	2.0/N	2	Good	V	Fair	Multiple scaffold limb failures leaving large stubs, bark wounds and deadwood, located	Crown reduce overextended limb to south by circa 3- 4m to reduce end weight (< 12 months)		40+	A1,2,

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													on edge of embankment set above track, overextended to south, ivy on stem and in crown, woodpecker hole 5.5m to east on limb.	Sever ivy to promote epicormic growth on scaffold structure (< 12 months)			
T646	Sessile Oak (Quercus petraea)	15	750#	7	1	6	6	2.0/W	1	Good	M	Fair	Limited access to base due to brambles. Secondary crown forming from likely epicormic origin in canopy gap. Dense ivy into upper crown.			40+	A1,2
T647	Common Oak (Quercus robur)	18	1300	11	8	8	10	2.0/N	1	Good	M	Good	Prominent tree. Numerous large sections of deadwood in southern lower crown.			40+	A1,2
T648	Sessile Oak (Quercus petraea)	10	650#	8	1	3	2	2.0/S	1	Good	EM	Fair	Limited access to base. Structurally suppressed by oak south. Positive phototropic growth north. Epiphytes throughout crown. High quality as dominant semi natural species, significant future potential.			40+	A2
H649	Common privet (<i>Ligustrum</i> ovalifolium)	1	50	0.5	0.5	0.5	0.5	n/a	0	Fair - Poor	Υ	Good				10+	C2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
H650	Hazel (Corylus avellana), Hawthorn (Crataegus monogyna), Sycamore (Acer pseudoplatanus)	1	<70#	1	1	1	1	n/a	0	Good	Y-SM	Good	Gappy managed hedge atop retaining wall circa 1.5m above road level.			10+	C2
T651	Hawthorn (<i>Crataegus</i> <i>monogyna</i>)	3	100,70	1.5	1.5	1.5	1.5	1.0/S	1	Good	EM	Fair	Located adjacent stone wall, maintained at 2-3m height.			10+	C1
G652	Cherry Laurel (Prunus laurocerasus)	4	<90#	2	2	2	2	n/a	0	Good	Υ	Good				10+	C2
G653	Common Oak (Quercus robur)	18	<1000 #	9	9	9	9	n/a	3.5	Good	M	Good	No access to bases. Located behind wall on opposite side of road. Viewed from south eastern field.			40+	A1,2
T654	Red Oak (Quercus rubra)	25	900#	12	12	12	12	5.0/S	8	Good	M	Good	No access, viewed from access track. Dominant in high forest. Significant dead second order limbs in lower crown, likely natural branch shedding.			40+	A1,2
G655	Cherry Laurel (Prunus laurocerasus), Ash (Fraxinus excelsior), Sycamore (Acer pseudoplatanus), Hazel (Corylus avellana), Holly (Ilex aquifolium),	10	<250#	0	0	0	0	n/a	0	Good	Y-SM	Good	Dense understory dominated by Rhododendron species and cherry laurel. Stream east separating group from main woodland stand. Low canopy over access track circa 3m lowest			10+	C2

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Comments	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
	Yew (Taxus baccata)												clearance of cherry laurel.				
T656	Sessile Oak (Quercus petraea)	7	850#	4	4	4	4	n/a	1	Good	M	Good	Some deadwood throughout. Ivy clad stem.			40+	A2
T657	Larch (<i>Larix sp</i>)	16	820	3	6	5	3	n/a	4	Good - Fair	M	Good - Fair	Few failed limbs partially attached in crown, typical of species, dense ivy limiting visibility.			40+	A1
T658	Sycamore (Acer pseudoplatanus)	18	930	7	7	5	7	5.0/SW	2	Good	M	Good	Limited access to base. Prominent tree. Dense ivy cover 0-17m.			40+	A1
T659	Douglas Fir (Pseudotsuga menziesii)	10	400	0	2	1	4	5.0/W	5	Poor	EM	Fair - Poor	Circa 2m east of track edge, no access. Significant limb of ash hung up in crown, likely cause of significant wounding to crown resulting in significant loss of crown structure/leaves.			10+	C1
G660	Elder (Sambucus nigra), Sycamore (Acer pseudoplatanus), Holly (Ilex aquifolium)	5	<90#	2	2	2	2	n/a	0	Good	Y-SM	Good	Growing directly adjacent to building.			10+	C2
T661	Ash (Fraxinus excelsior)	10	250,20 0,200, 200#	4	4	4	4	n/a	3	Poor	SM	Fair	Severely dying back.			10+	C2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T662	Common Oak (Quercus robur)	16	850#	9	9	9	9	5.0/W		Good	M	Fair	Limb failure east at 6m leaving large wound, appears recent, no obvious decay, lower stem wound to east from base to 0.6m, generally sounds normal/solid, deadwood over track.	Remove dead wood where it presents a hazard to track (< 3 months)		40+	A1
T663	Unknown	0	800#	0	0	0	0	n/a	0	Stum p	M	Stum p				<10	U1
T664	Ash (Fraxinus excelsior)	17	1160#	7	14	12	7	3.5/S	5	Good - Fair	M	Good - Fair	Previous second order stem failures in crown. Dense ivy into upper crown. Moderate to minor bud sparsity, irregular branching pattern likely due to limb failures and subsequent crown regeneration reiteration.			40+	A1,2
G665	Elder (Sambucus nigra), Sycamore (Acer pseudoplatanus), Goat Willow (Salix caprea)	5	<100#	1	1	1	1	n/a	0	Fair - Dead	Υ	Fair - Dead	Dying trees immediately adjacent to old building.	Fell (< 12 months)		<10	U2
T666	Goat Willow (Salix caprea)	4	70,70#	1	1	1	1	n/a	0	Good	Υ	Good				10+	C1
T667	Beech (<i>Fagus</i> sylvatica)	20	1050	9	9	9	9	6.0/N	5	Good	M	Fair	Fluted stem base, limited access, multiple branch failure stubs to			40+	A1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
			'	'	'	'	'	'					South from 5-8m, smaller than 150mm.				
G668	Ash (Fraxinus excelsior), Sycamore (Acer pseudoplatanus)	7	<130#	3	3	3	3	n/a	0	Good - Fair	Y-SM	Good - Fair	Dense rose present. Previous major clearance pruning and coppicing of sycamore. Growing directly behind large wall.	Fell trees to reduce likelihood of damage to wall.		<10	U2
T669	Cedar (<i>Cedrus</i> sp)	16	1000	8	8	8	8	n/a	5	Dead	M	Dead		Create monolith at 5m		<10	U2
T670	Unknown	15	800#	5	5	5	5	5.0/W	2	Dead	M	Fair - Poor	No access, likely dead cypress species. Target of access road.	Monolith to 5m, retain deadwood as coarse woody debris around base. (< 3 months)		<10	U1
T671	Goat Willow (Salix caprea)	2	80#	1.5	1.5	1.5	1.5	n/a	0	Good	Υ	Fair	Multi stemmed with 10mm stems X circa 20. combined diameter estimated. Growing adjacent wall.			<10	U1
T672	Horse Chestnut (Aesculus hippocastanum)	19	820,55 0,630, 550,83 0	10	5	8	7	4.0/W	2	Good	M	Good	Circa 4m clearance over access track. Five stems from 0.6-1.3m. Good unions. Previous major crown lifting with large pruning wounds of up to 400mm diameter.			40+	A1,2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													Predominantly left as stubs. Old pruning wound to west at 2.5m. Unidentified fungal fruiting body present on wound. Likely saprophytic. Stem sound tested to circa 2m with normal wood density.				
T673	Western Red Cedar (<i>Thuja</i> <i>plicata</i>)	20	600,60 0#	3	3	3	3	n/a	3	Good - Fair	M	Good - Fair	No access, east of stream. Circa 11m from track edge. Codominant stems from circa 1.5m, no obvious inclusion visible. Multiple bifurcations in crown typical of species.			40+	A1
T674	Common Oak (Quercus robur)	10	700#	4	6	5	5	3.0/S	7	7 Fair	M	Fair	Dense ivy, beyond 1.2m retaining wall, potential previously reduced crown, deadwood and stubs to north and east.			20+	B1,2
T675	Common Oak (Quercus robur)	8	620#	6	6	3	7	2.5/S	2	2 Fair	М	Fair	Dense ivy, beyond 1.2m retaining wall. Deadwood and stubs to west, crown orientated west, ivy suppressed upper crown.	Sever ivy (< 12 months) Crown lift to clear road by 5.2m (< 12 months)		20+	B1,2
T676	Oak (Quercus sp)	8	800#	0	3	0	0	5.0/S	1	l Dead	M	Fair - Poor	Monolith at track edge. Fell and retain as coarse woody debris if	Fell and retain as coarse woody debris if outside risk tolerance.		<10	U1

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Coundition Condition Comments	Preliminary Management Comments	Development	Estimated Remaining Contribution (years)	Category
G677	Silver Birch (Betula pendula), Sycamore (Acer pseudoplatanus), Oak (Quercus sp)	7	<150#	3	3	3	3	n/a	3	Good - Fair	Y-SM	Good - Fair	Located beyond old building wall, larger trees set further back.			10+	C2
T678	Beech (<i>Fagus</i> sylvatica)	25	930#	8	8	8	8	8.0/N	3	Good	M	Fair	Decay/dysfunction to base south from ground level circa 1.4mx600mm. Hammer test, wooden density in area of dysfunction very poor, hammer sinks into wood. Probed to depth of circa 350mm. Wood density outside zone normal. Crown branching pattern and bud density normal. Downgraded due to nondurable heartwood of beech.			20+	B1
T679	Portugal Laurel (<i>Prunus</i> <i>lusitanica</i>)	7	260,25 0,230, 220,10 0,100#	6	6	3	6	2.0/W	2	Good	M	Fair	Growth orientated to west, suppressed by tree no longer present, asbestos at base.			10+	C2
T680	Horse Chestnut (Aesculus hippocastanum)	25	1040	9	4	5	3	7.0/N	1	Good	V	Good	Dense ivy cover 0- 17m. Two stems from 3m with good union. Eastern stem has previously failed and is circa 500mm diameter and 5m long.			40+	A1,2, 3

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Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	Condition	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
													Major cavities are present on failed stem with likely significant internal stem decay.				
T681	Beech (<i>Fagus</i> sylvatica)	25	860	9	4	6	11	8.0/W	5	Good	M	Fair	Two stems from 3.5m with tight included union. Adaptive growth present with upright form and overlapping canopies.			40+	A1,2
T682	Beech (<i>Fagus</i> sylvatica)	18	640	5	7	7	7	n/a	1	Good	EM	Good				40+	A2
T683	Beech (<i>Fagus</i> sylvatica)	25	890	6	9	8	11	5.0/W	5	Good	M	Good	Good example of species.			40+	A1,2
G684	Cherry Laurel (Prunus laurocerasus), Portugal Laurel (Prunus lusitanica)	10	<300#	5	5	5	5	n/a	2	Good - Fair	Y-M	Good - Fair		Crown lift to clear road by 5.2m (< 12 months)		10+	C2
T685	Portugal Laurel (<i>Prunus</i> <i>lusitanica</i>)	7	600,20 0,200, 200	0	4	6	6		3	Good - Poor	OM	Good - Dead	Central stem collapsed away from road. Remaining stems appear sound. Deadwood has potential for habitat.			<10	U3
T686	Beech (<i>Fagus</i> sylvatica)	25	800	2	6	8	5	8.0/S	3	Good	M	Good	No access. Northeast of drainage channel/stream. Normal branching			40+	A1,2

Tree ID	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (N)	Canopy Spread (S)	Canopy Spread (E)	Canopy Spread (W)	First Significant Branch (m)	Canopy Clearance (m)	Physiological Condition	Life Stage	Structural Condition	pattern and bud density. Codominant in high forest canopy.	Preliminary Management Comments	Development Impact	Estimated Remaining Contribution (years)	Category
T687	Red Oak (Quercus rubra)	15	440	4	6	0	12	9.0/W	9	Good	EM	Fair	Significant lean west due to major form suppression from adjacent trees. Large section of deadwood over access track.	Remove dead wood (< 3 months)		20+	B2

Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree of T=Tree/H=Hedge/G=Group/W=Woodland	or group.					
Species	Common name followed by botanical name show	n in <i>italics</i>					
Ht	Estimated height of the tree above ground level						
RPA	Root Protection Area (As defined by BS5837)						
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level.	Av / Average:					
	(MS = Multi-stem tree measured in accordance with BS5837 Annexe C)	indicates an average					
Spread	The width and breadth of the crown. Estimated on the four compass points in metres. The width and breadth of the crown. Estimated measured dimension for the crown.						
Crown clearance	The estimated height (in metres) above ground group or fea level of the lowest significant branch attachments.						
#	Estimated dimensions						
	Indicates estimated position of tree (not indicated on topographical survey).						
Cat / Category	Categorisation of the quality and benefits of trees on Site as per Table 1 and 2 of BS5837:2012.						
3 7	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 les (grey).	s than 150mm					
	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 species (having typically reached its approximate						

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.

Ancient (A): Tree which has additional value one that has reached a great age compared to other trees of the same species, typically in the final third of its expected lifespan.

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).

Appendix C High Level Tree Protection Plan

PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

CONSULTANT

Mid Point, Alencon Link,
Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
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GENERAL NOTES

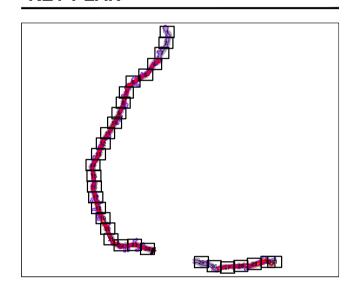
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KEY PLAN



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DRAWING STATUS

ISSUE

PROJECT NUMBER

60686216

SHEET TITLE

HIGH LEVEL TREE PROTECTION PLAN (SHEET 00)

SHEET NUMBER REV.

60686216-ACM-XX-XX-AB-HLTPP-000 P02

PROJECT

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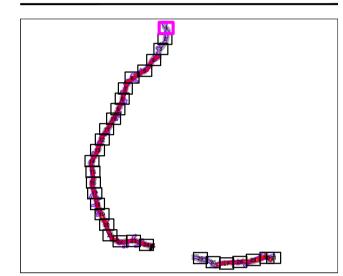
CONSULTANT

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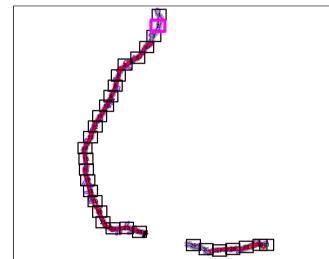
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SHEET TITLE HIGH LEVEL TREE PROTECTION PLAN

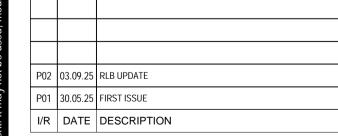
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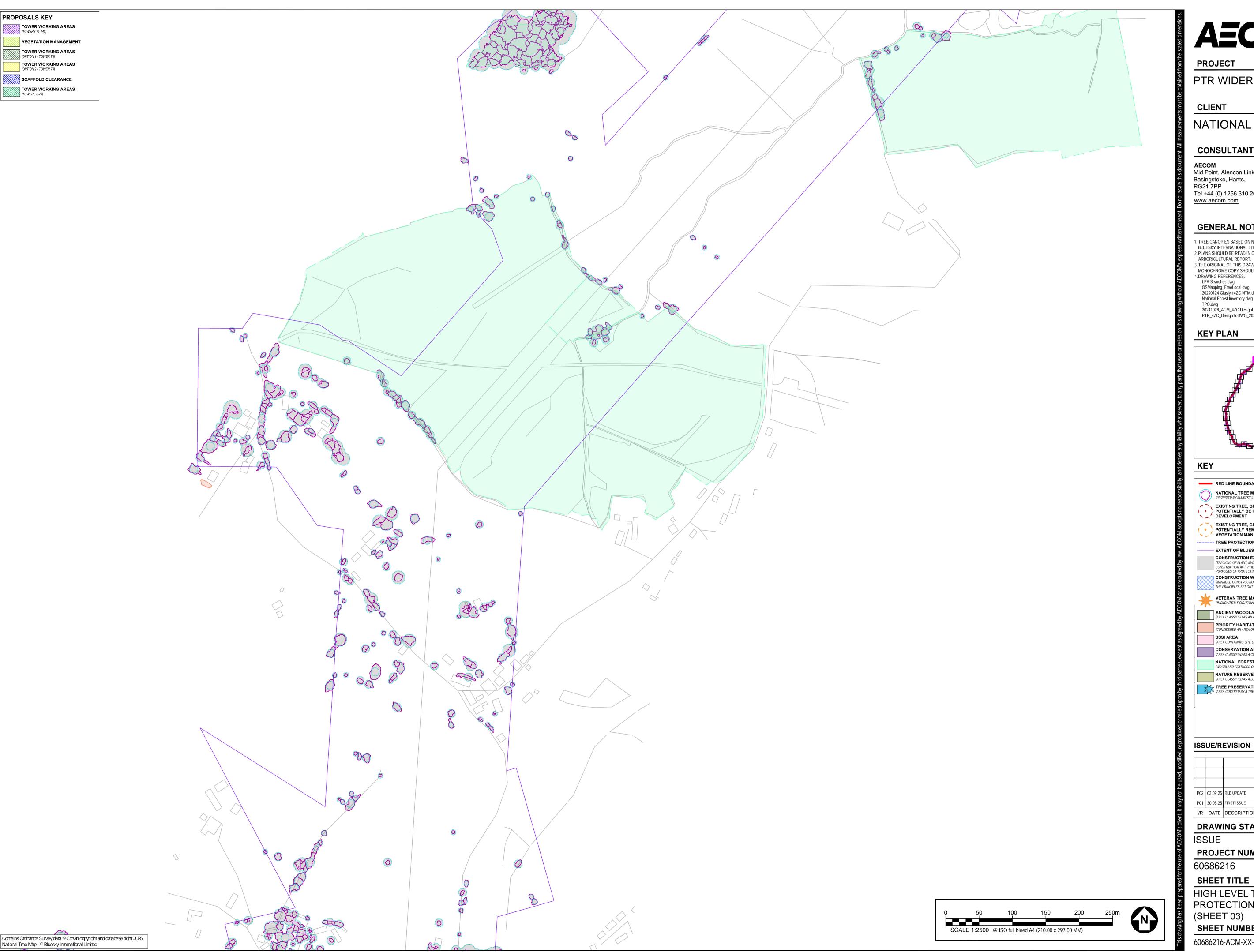
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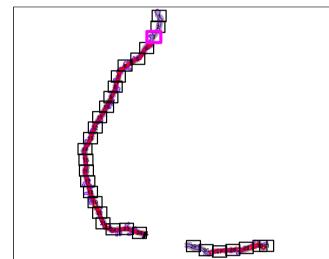
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KEY PLAN





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HIGH LEVEL TREE PROTECTION PLAN

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60686216-ACM-XX-XX-AB-HLTPP-003 P02

PROJECT

PTR WIDER WORKS

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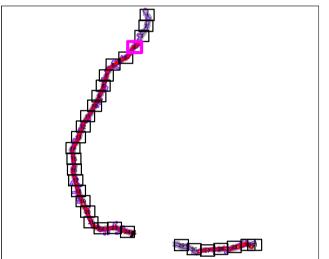
CONSULTANT

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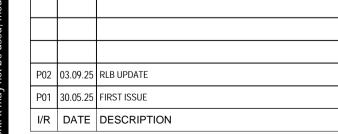
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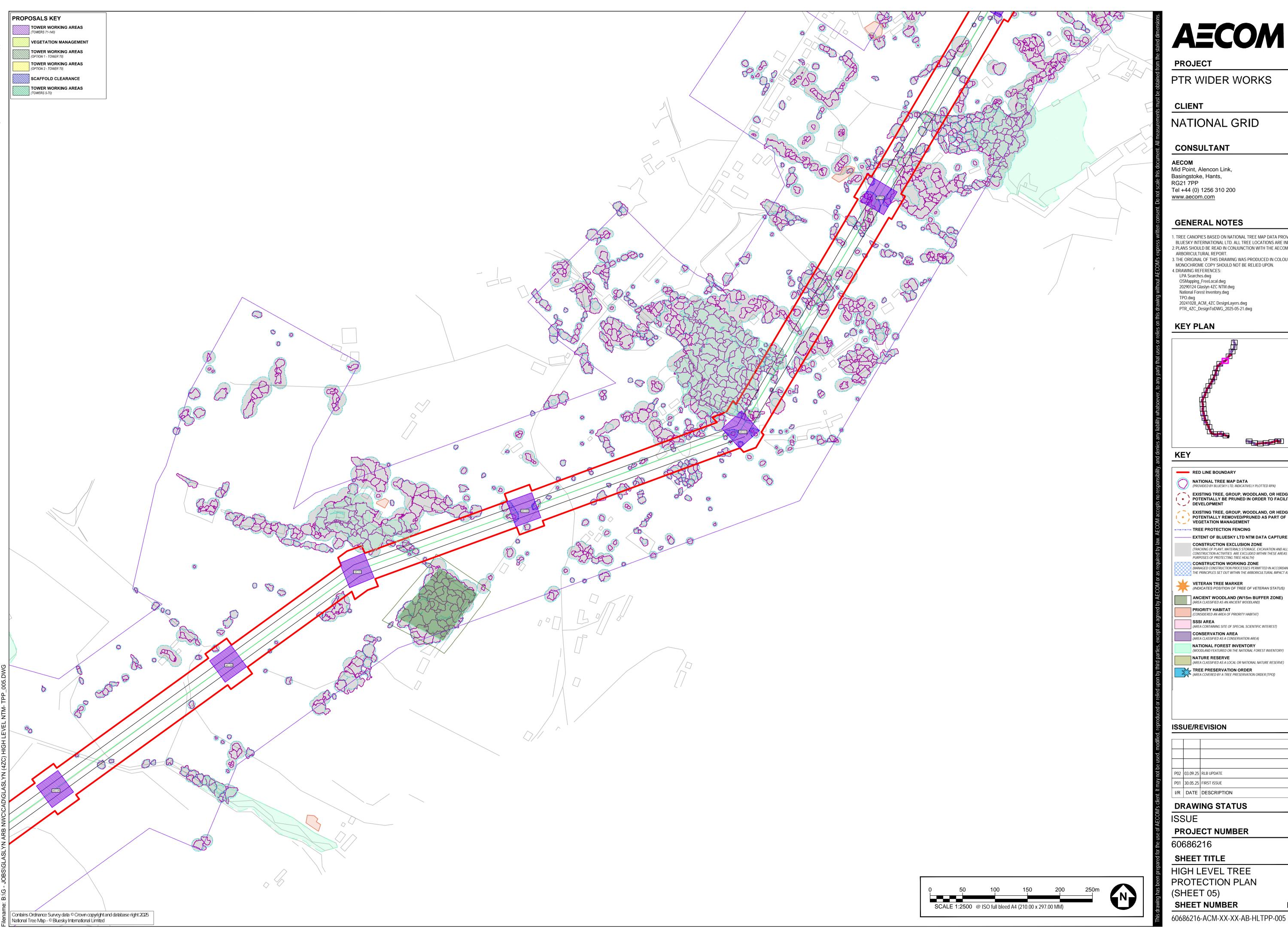
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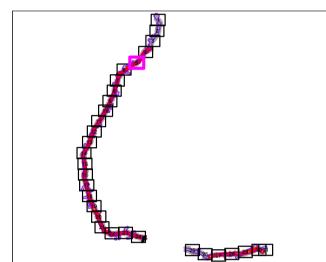
HIGH LEVEL TREE PROTECTION PLAN

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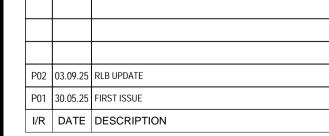
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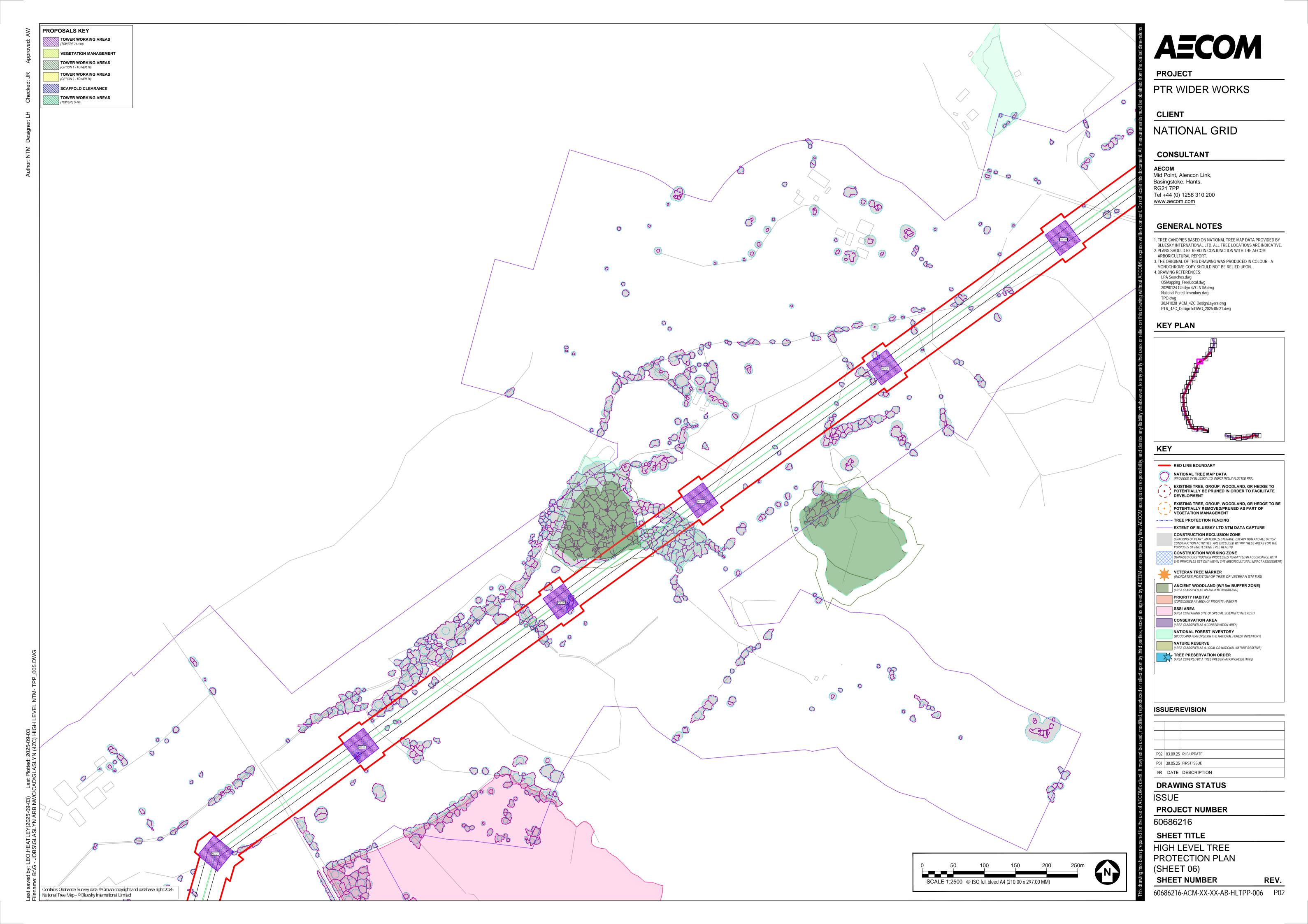




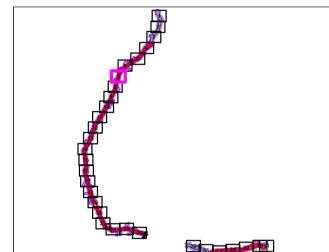


HIGH LEVEL TREE PROTECTION PLAN

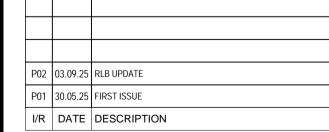
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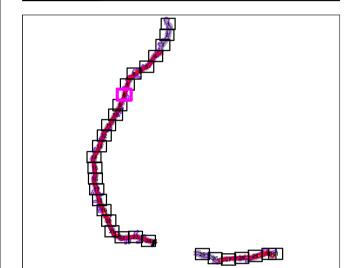
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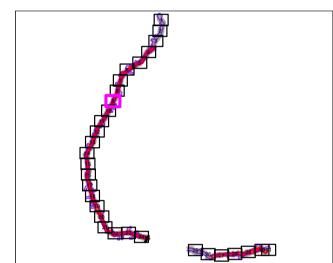
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HIGH LEVEL TREE PROTECTION PLAN (SHEET 08)

SHEET NUMBER

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- 1. TREE CANOPIES BASED ON NATIONAL TREE MAP DATA PROVIDED BY BLUESKY INTERNATIONAL LTD. ALL TREE LOCATIONS ARE INDICATIVE. 2. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM
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NATIONAL TREE MAP DATA EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO POTENTIALLY BE PRUNED IN ORDER TO FACILITATE EXISTING TREE, GROUP, WOODLAND, OR HEDGE TO BE POTENTIALLY REMOVED/PRUNED AS PART OF VEGETATION MANAGEMENT - TREE PROTECTION FENCING - EXTENT OF BLUESKY LTD NTM DATA CAPTURE 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) CONSTRUCTION WORKING ZONE
(MANAGED CONSTRUCTION PROCESSES PERMITTED IN ACCORDANCE WITH THE PRINCIPLES SET OUT WITHIN THE ARBORICULTURAL IMPACT ASSESSMENT) VETERAN TREE MARKER
(INDICATES POSITION OF TREE OF VETERAN STATUS) ANCIENT WOODLAND (W/15m BUFFER ZONE) (AREA CLASSIFIED AS AN ANCIENT WOODLAND) (CONSIDERED AN AREA OF PRIORITY HABITAT) (AREA CONTAINING SITE OF SPECIAL SCIENTIFIC INTEREST) CONSERVATION AREA
(AREA CLASSIFIED AS A CONSERVATION AREA) NATIONAL FOREST INVENTORY (WOODLAND FEATURED ON THE NATIONAL FOREST INVENTORY) (AREA CLASSIFIED AS A LOCAL OR NATIONAL NATURE RESERVE) TREE PRESERVATION ORDER
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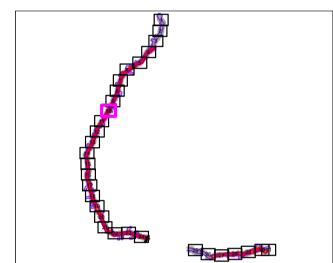
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NATIONAL GRID

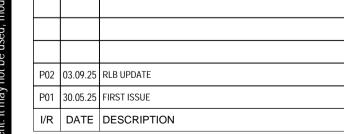
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 20290124 Glaslyn 4ZC NTM.dwg
- National Forest Inventory.dwg





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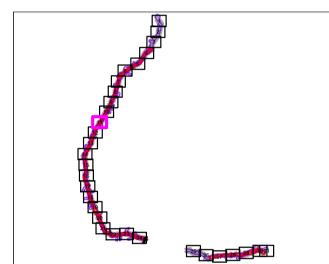
DRAWING STATUS

PROJECT NUMBER

HIGH LEVEL TREE PROTECTION PLAN

60686216-ACM-XX-XX-AB-HLTPP-010 P02

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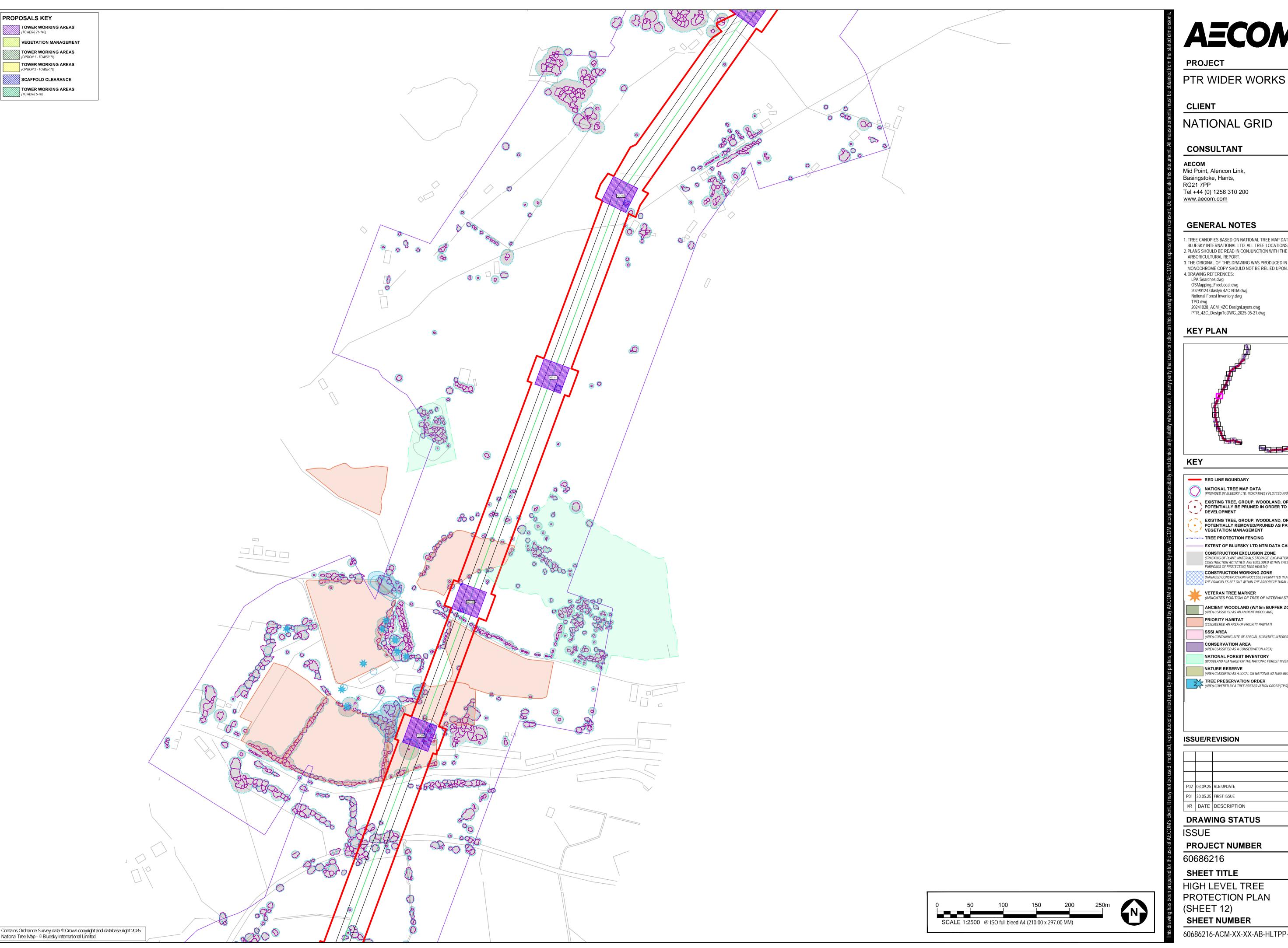




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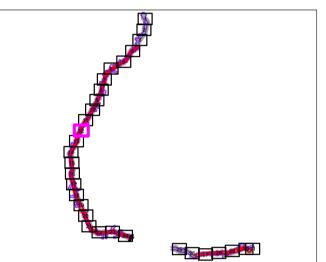
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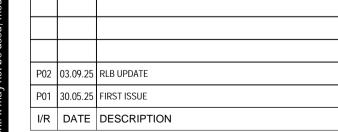


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HIGH LEVEL TREE PROTECTION PLAN

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PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

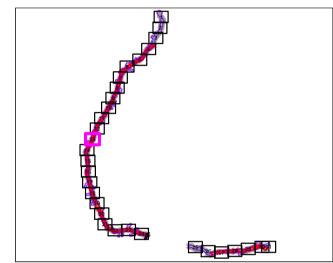
CONSULTANT

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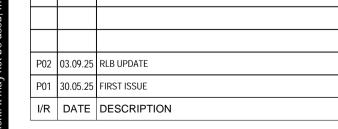
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RED LINE BOUNDARY



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DRAWING STATUS

PROJECT NUMBER

60686216

SHEET TITLE

HIGH LEVEL TREE PROTECTION PLAN (SHEET 13)

SHEET NUMBER

60686216-ACM-XX-XX-AB-HLTPP-013 P02

PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

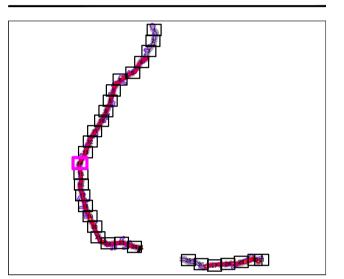
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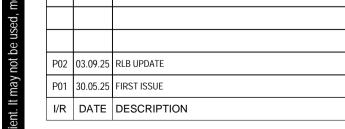
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KEY PLAN





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DRAWING STATUS

PROJECT NUMBER

60686216

SHEET TITLE

HIGH LEVEL TREE PROTECTION PLAN (SHEET 14)

SHEET NUMBER

60686216-ACM-XX-XX-AB-HLTPP-014 P02



PROJECT

PTR WIDER WORKS

CLIENT

NATIONAL GRID

CONSULTANT

AECOM
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Basingstoke, Hants,
RG21 7PP
Tel +44 (0) 1256 310 200
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GENERAL NOTES

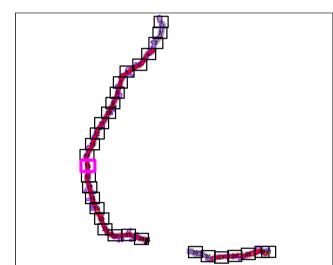
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KEY PLAN



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DRAWING STATUS

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PROJECT NUMBER

60686216

SHEET TITLE
HIGH LEVEL TREE

PROTECTION PLAN (SHEET 15) SHEET NUMBER

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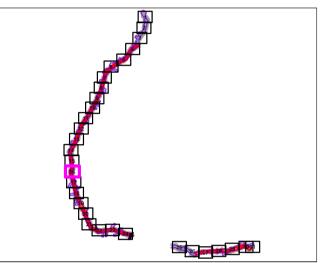
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ISSUE/REVISION

P02 03.09.25 RLB UPDATE P01 30.05.25 FIRST ISSUE I/R DATE DESCRIPTION

DRAWING STATUS

PROJECT NUMBER

60686216

SHEET TITLE HIGH LEVEL TREE

PROTECTION PLAN (SHEET 16)

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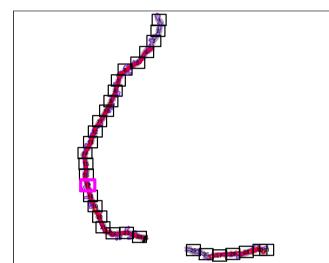
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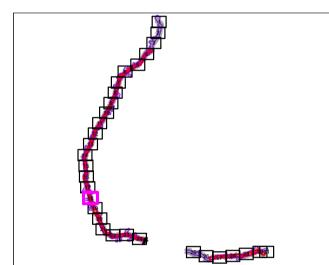
HIGH LEVEL TREE PROTECTION PLAN (SHEET 17)

SHEET NUMBER

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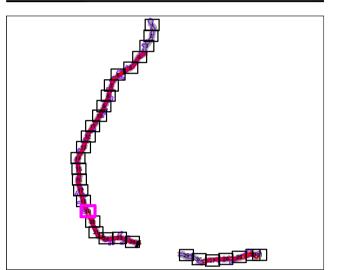
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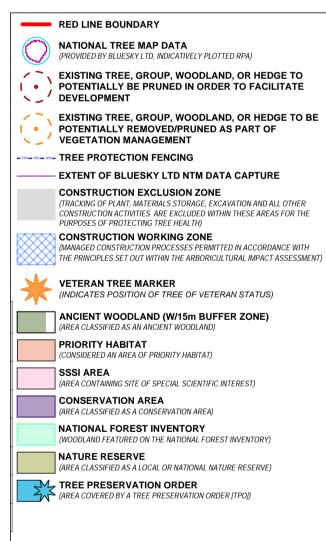
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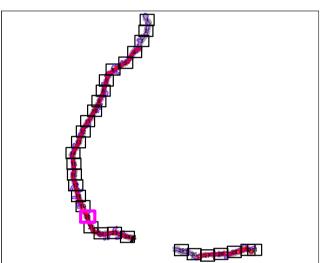
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SHEET TITLE HIGH LEVEL TREE

PROTECTION PLAN (SHEET 19)

SHEET NUMBER 60686216-ACM-XX-XX-AB-HLTPP-019 P02

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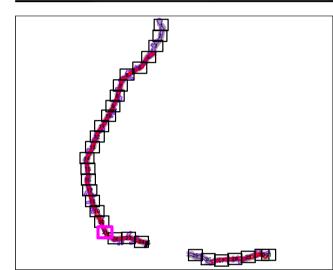


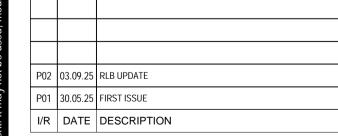


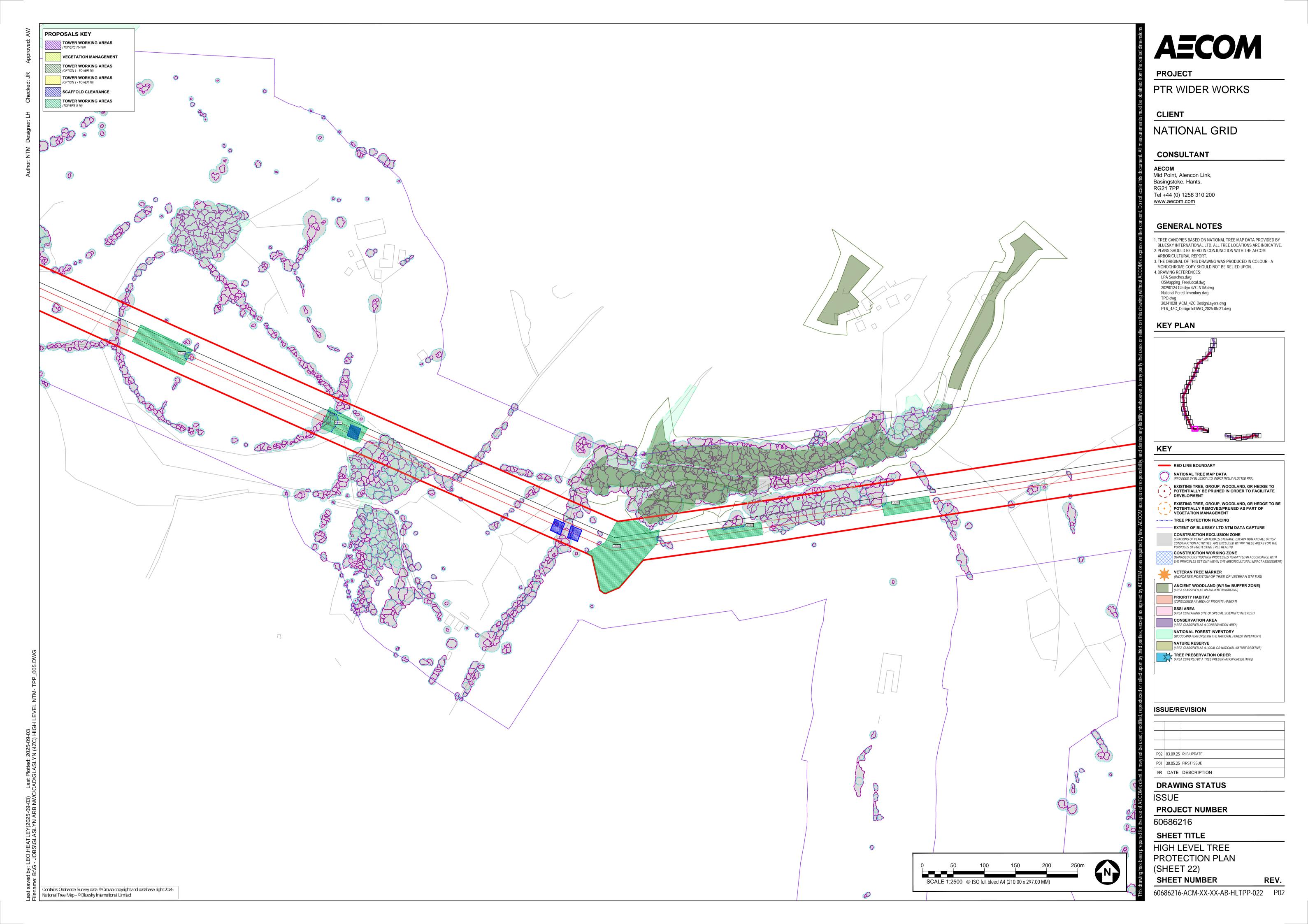
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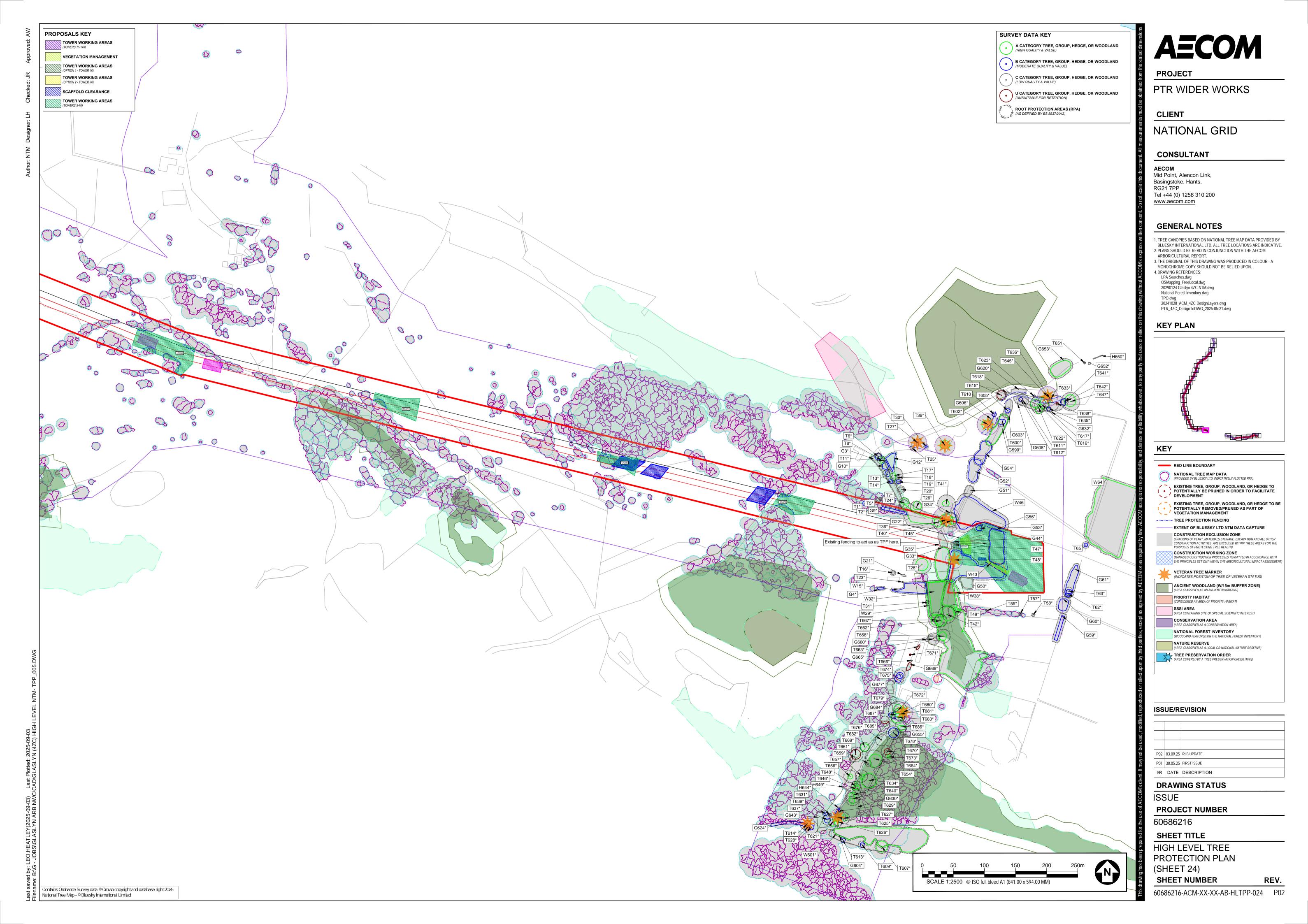
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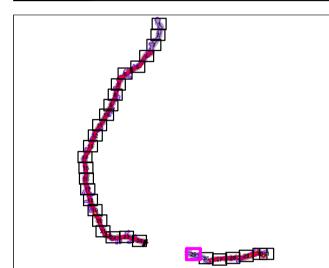








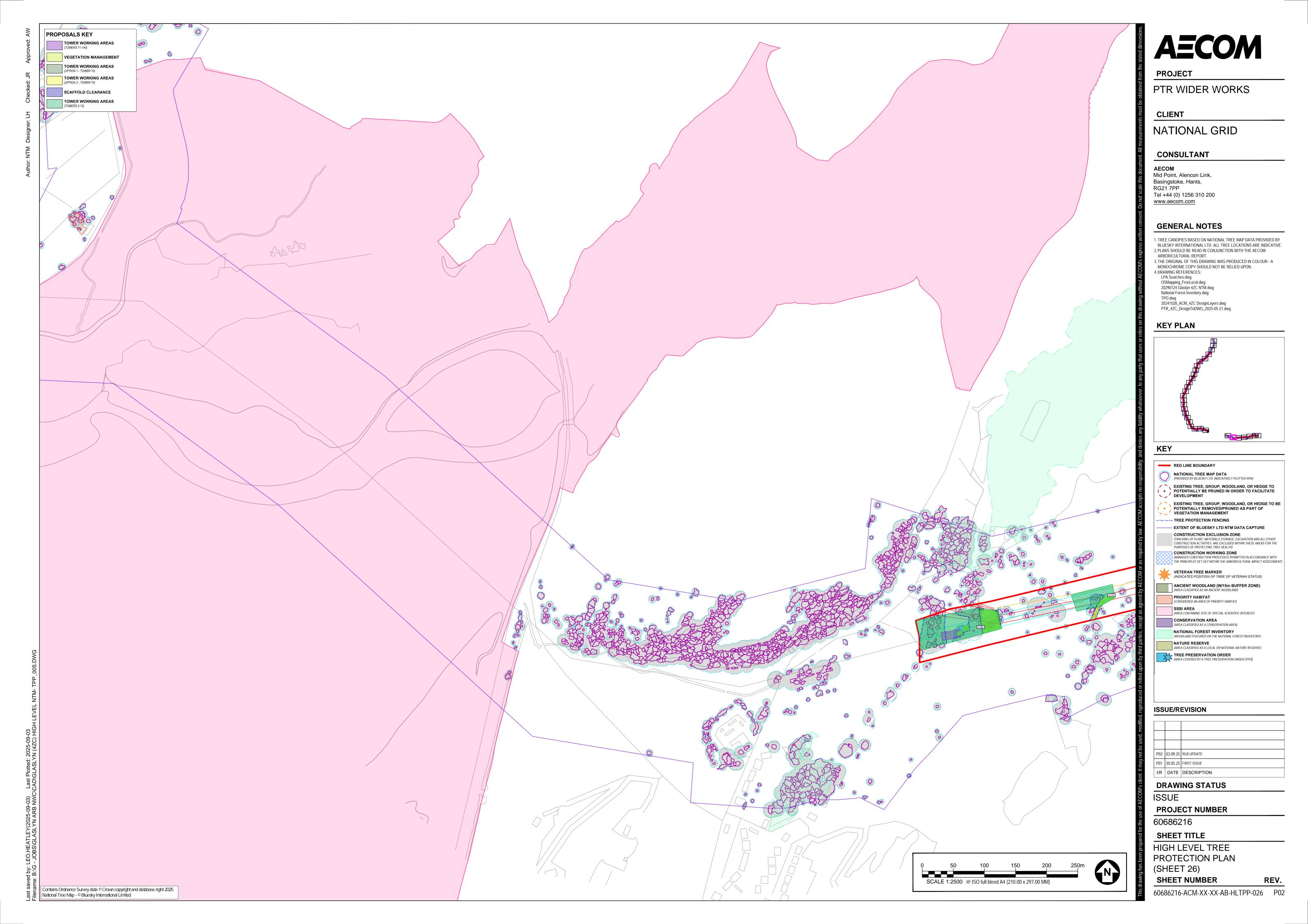
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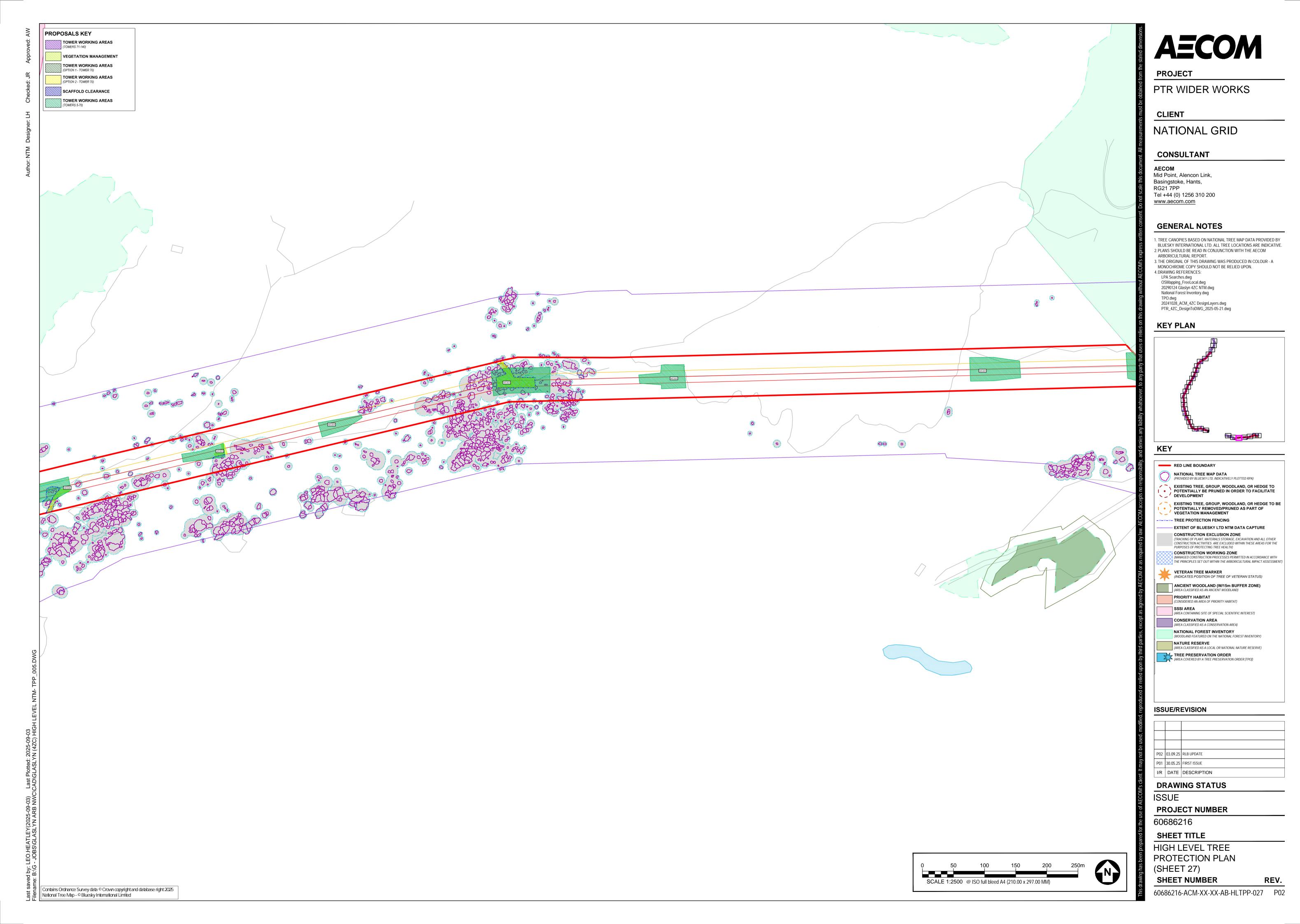


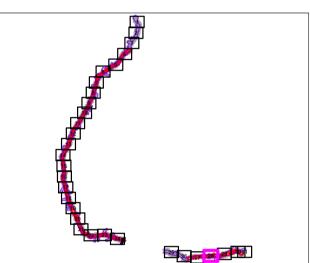


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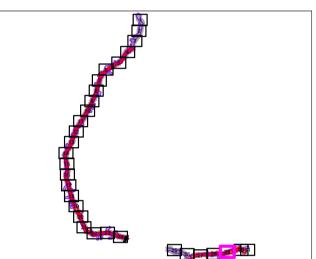
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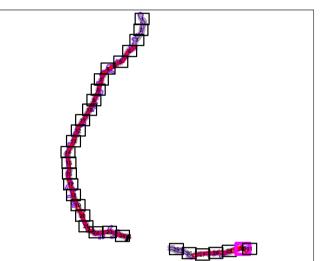
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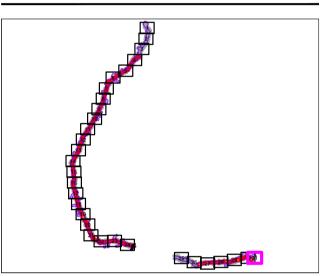
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HIGH LEVEL TREE
PROTECTION PLAN

(SHEET 31)
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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 (although the wider works do not comprise development and do not need planning permission). The potential impact of development on all trees (including those not protected by a TPO or other statutory designation) is a material consideration where planning permission is required. Most of the wider works site is in Gwynedd with part in Eryri National Park.

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 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.

The Eryri Local Development Plan $2016 - 2031^2$ has policies which pertain to the importance of trees to the character and importance of the National Park, stating the importance of protection of the trees as a natural asset:

To conserve and enhance the 'Special Qualities' and purposes of the National Park, development will only be permitted where all the following apply:

¹ Current Joint Local Development Plan (gov.wales)

² Cynllun-Datblygu-Lleol-Saesneg.pdf (gov.wales)

Development Policy 1: General Development Principles (1)

6. The development does not result in the loss of landscape features, including woodland, and Ancient Semi-Natural woodland in particular, healthy trees.

Appendix E Site Photography



Plate E-1: T40 veteran oak located by existing track. Temporary ground protection in RPA see **Appendix F.2**.



Plate E-2: T602 is a veteran tree growing on top of an elevated rocky outcrop above an existing track.



Plate E-3:T48 is located behind a partially collapsed dry stone wall next to an existing track



Plate E-4: T645 is a veteran oak growing on the edge of a plateau elevated circa 3 metres above the level of the adjacent access track.

Appendix F Outline Tree Protection Measures

F.1 Outline Tree Protection Measures

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 HLTPP 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 2 (included <u>as **Plate F-1**</u>). 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**).

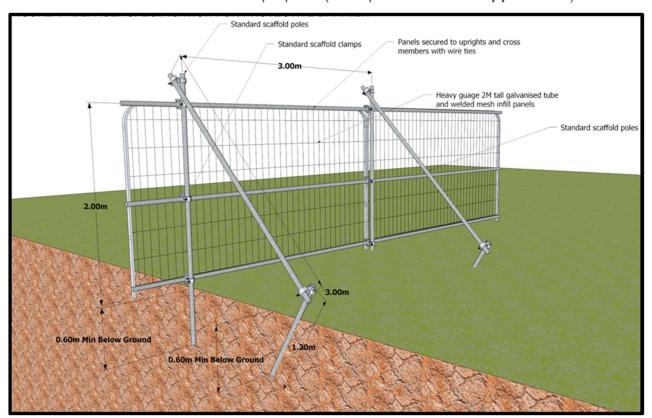


Plate F-1: Default specification for protective barrier

When entering and exiting the Site the fencing contractor must avoid the production of ruts on the unprotected surface of the ground. Protective fencing and ground protection shall stay in place until all development operations have been completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained.

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 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.
- 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 grams per cubic centimetre (g per cm³) for clay soils, to 1.75 g per cm³ 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 100mm 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

Tree Protection Signage (Example)

