



Energy Recovery Investments

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# **BEDWAS TIPS RECLAMATION PROJECT**

Outline Arboricultural Impact Assessment





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## Outline Arboricultural Impact Assessment

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# 1. INTRODUCTION

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## 1.1. CONTEXT

1.1.1. WSP has been commissioned by Energy Recovery Investments (ERI) to support an outline application for planning permission to remediate colliery tips on land at Bedwas Colliery (hereafter referred to as 'the Site'), covering approximately 130Ha, and a haul road using existing forest road networks through the adjacent Sirhywi forest block to a new connection with existing highways near the A467 at Full Moon Industrial Site (hereafter referred to as 'the Proposed Development').

## 1.2. INSTRUCTION

1.2.1. WSP was then instructed by ERI to carry out an arboricultural survey, collecting baseline constraint data to inform design of the Proposed Development.

## 1.3. LIMITATIONS

- 1.3.1. WSP has provided this report solely for the use of the recipient and accepts no liability to any third parties or any other party using or reviewing the report or any part thereof. WSP makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out within the scope of the contract under which it was supplied.
- 1.3.2. Provisional Tree Preservation Orders (TPOs) may be made whenever a local planning authority deems it appropriate with only those persons interested in the land served with a copy of the Order. Because of this, any reference to the presence of TPOs is only valid on the date at which the desk study search was undertaken. In instances where works unspecified in this report are to be undertaken, and which may impact trees, a further search for the presence of TPOs should be carried out prior to commencement.
- 1.3.3. Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Because of this, any recommendations made within this report are valid for a period of 24 months from the date of survey, when any site conditions change or pruning or other works unspecified in the report are carried out to, or affecting, the subject trees, whichever is the sooner.
- 1.3.4. This report does not constitute a health and safety survey. Where concerns for tree health and safety exist, then necessary and appropriate tree inspections should be carried out.

## 2. METHODS

### 2.1. ARBORICULTURAL STUDY AREA

- 2.1.1. The arboricultural study area shown below covers approximately 130Ha at Bedwas on the main colliery tip site, and also approximately 5Km of forest roads on land to the east to facilitate the project.



**Figure 2-1 - Study Area**

- 2.1.2. The study area covers a mixture of colliery tips and grazed common land at Mynydd-y-Grug in the county of Caerphilly. The proposed haul route follows existing forestry roads, through the Sirhywi forest block on the southern side of the Sirhywi Valley.
- 2.1.3. The arboricultural study area has been informed by the extents of the Proposed Development area which is defined by the current Red Line Boundary (RLB) plus a further area of up to 15m. The purpose of this 15m beyond the Proposed Development is to ensure compliance with BS 5837 which recommends that all arboricultural features whose Root Protection Areas (RPAs) may be impacted are identified and surveyed. BS 5837 has a maximum RPA radius of 15m, hence the extent of the study area buffer zone.

### 2.2. BASELINE DATA COLLECTION

- 2.2.1. Baseline data collection has been undertaken with reference to BS 5837 using the following data sources:

- An arboricultural desk study; and
- A walkover survey of arboricultural features within the study area.

## **2.3. DESK STUDY**

2.3.1. A desk study was undertaken in May 2023 to identify specific statutory and non-statutory arboricultural constraints which may apply to arboricultural features within the study area. The desk study review, as outlined in Appendix A, was undertaken to establish the following statutory and non-statutory arboricultural constraints:

- tree preservation orders;
- conservation areas;
- traditional orchards;
- ancient woodland; and
- ancient or veteran trees.

## **2.4. WALKOVER SURVEY**

2.4.1. A walkover survey of trees within the study area was undertaken over several days in April, May and June 2023. The survey was undertaken to comply with BS 5837 and details of the method used are presented in Appendix A.

## **2.5. PROVIDED DESIGN INFORMATION**

2.5.1. The following information has been viewed and used to prepare this report and arboricultural assessment:

- Drawing “Scope of Proposed Works with Land Ownership – Bedwas Land Reclamation Scheme, Caerphilly” – Job Ref: ERI/SPW/01, dated 16/01/2023 by PM Consultants (UK) Ltd.



### 3. ARBORICULTURAL SURVEY FINDINGS

#### 3.1. DESK STUDY FINDINGS

- 3.1.1. The desk study found no conservation areas within the study area. The desk study also found no records of ancient or veteran trees, nor traditional orchards within the study area.
- 3.1.2. The desk study did confirm the presence of woodland included in Natural Resources Wales (NRW)' Ancient Woodland Inventory<sup>i</sup> (AWI) 2021. Large sections of the Sirhywi block are recorded as ancient, mostly in the Plantations on Ancient Woodland Sites (PAWS) category, together with a few areas categorised as Ancient Semi-Natural Woodland (ASNW) and Restored Ancient Woodland Sites (RAWS). The Sirhywi block is part of the Welsh Government Woodland Estate, managed by NRW.
- 3.1.3. Ancient Woodland is also recorded near both the south-east corner (corresponding with W1 in WSP survey schedule) of the study area, and to the west (40m beyond the site boundary). The screenshot below provides indicative locations.



**Figure 3-1 - Ancient Woodland locations**

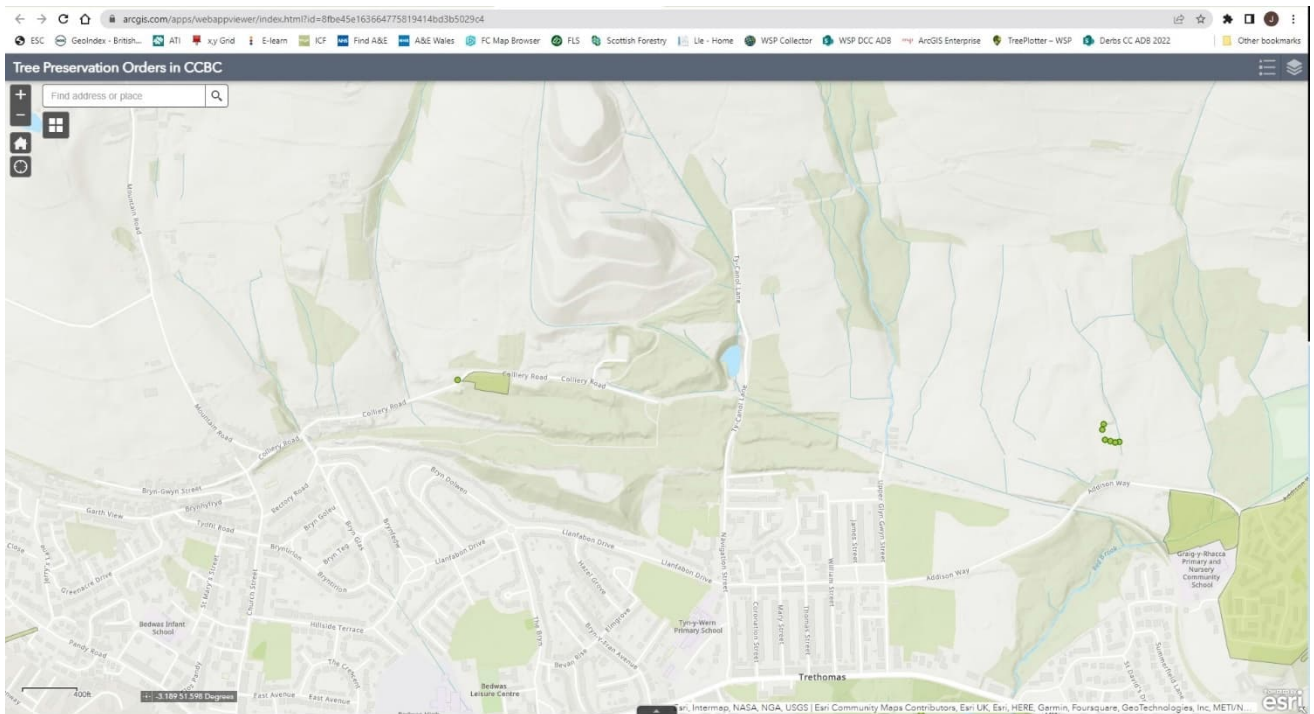
<sup>i</sup> <https://naturalresources.wales/evidence-and-data/research-and-reports/ancient-woodland-inventory/?lang=en>

3.1.4. The desk study also confirmed the presence of two TPOs within the study area. These were:

**Table 3-1 – TPO Details**

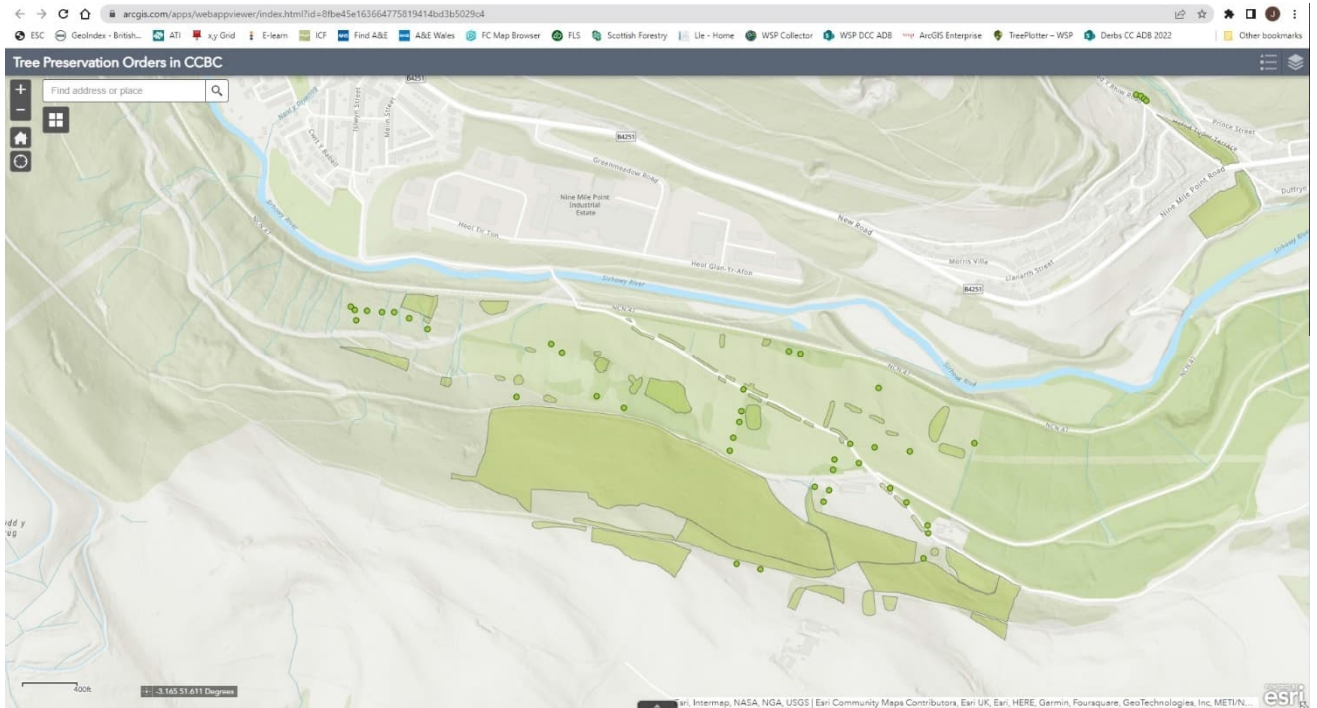
Reference	Title	Features itemised
60/85/RVDC	Bedwas Colliery	T1 A1
3/84/IBC	Ynys Hywel, Cwmfelinfach	T1 to T38 A1 to A6 G1 to G42 W1 to W3

3.1.5. The screenshots below provide indicative TPO locations.



**Figure 3-2 - Bedwas Colliery TPO location**

3.1.6. Feature A1 of the Bedwas Colliery TPO corresponds with WSP survey schedule woodland W1, and aligns broadly with Ancient Woodland recorded in NRW’s AWI dataset as 0.71Ha under Unique ID 14534.



**Figure 3-3 - Ynys Hywel, Cwmfelinfach TPO location**

- 3.1.7. To assist with mapping arboricultural features in the absence of a topographical survey, data was purchased from Bluesky. Their National Tree Map<sup>ii</sup> (NTM) provides canopy extents derived from high resolution remote sensing datasets including LiDAR. Combined with aerial imagery in the public domain, this approach identified areas suitable for capturing as groups and woodlands before deploying to site, improving efficiency during site survey and enabling WSP surveyor to focus on collecting sufficient detailed tree data to provide an accurate record of baseline arboricultural constraints to meet the recommendations in BS 5837.
- 3.1.8. NTM data for the study area is dated 14 April 2020. Desktop GIS analysis found canopy polygons within and intersecting the colliery tips site boundary number 1,357 and cover 12.39Ha, indicating that canopy cover here is currently 9.5%, below average for Wales.
- 3.1.9. NTM data was not purchased for the proposed haul road, given the availability of detailed data recorded by NRW in their Subcompartment Database<sup>iii</sup> (SCDB) for forest management. Data available in the public domain is dated April 2017.
- 3.1.10. NTM canopy polygons and NRW SCDB data is shown on Tree Constraints Plan (TCP) figures. NRW subcompartments are labelled according to the first and second component species as per the Forestry Commission's Species List<sup>iv</sup>.

<sup>ii</sup> <https://bluesky-world.com/ntm/>

<sup>iii</sup> [https://datamap.gov.wales/layers/inspire-nrw:NRW\\_PRODUCTISED\\_SCDB\\_LLE](https://datamap.gov.wales/layers/inspire-nrw:NRW_PRODUCTISED_SCDB_LLE)

<sup>iv</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/698732/Inventoryandplanofoperations\\_V4\\_formula.xlsx](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/698732/Inventoryandplanofoperations_V4_formula.xlsx)

## 3.2. GENERAL SITE DESCRIPTION

- 3.2.1. The main study area is centred approximately on Ordnance Survey Grid Reference ST 178 905, extending over 129.97Ha from the former Bedwas Colliery near Trethomas and Bedwas in the south, up steep slopes to Mynydd-y-Grug Common on the ridgeline above the Sirhywi Valley to the north. The site is accessed via existing stoned tracks from the old colliery at both Colliery Road and Ty Canol Lane via Trethomas in the south, from the unnamed minor road to Mynydd Bach in the west, and from Ty Canol Lane via Machen in the east.
- 3.2.2. Land use currently is mainly agricultural, with grazing livestock present on the common and in adjoining pasture when visited, with low numbers of sheep observed on the colliery tips. Elevation ranges from 125 to 375 metres above sea level.
- 3.2.3. The colliery tips are a prominent feature in the landscape, particularly when viewed from settlements in the Rhymney Valley at Bedwas and Trethomas. With mining having ceased in the 1980s, natural processes appear to be revegetating some parts of the site, with self-set broadleaf woodland advancing northwards uphill and self-set conifer seeding in southwards in places from nearby plantations on the ridgeline above. Large areas remain completely bare, with little organic mineral soil to support tree seedlings. Extensive engineered drainage systems are present, with signs of scouring also observed on steep colliery tip faces.
- 3.2.4. The proposed haul route follows forest roads through the Sirhywi block for 5.3 Km, from NRW barrier 360 at ST 173 914 to a possible new connection with existing highways near the A469. Elevation ranges from 95 to 335 metres above sea level. Despite recent sanitation clearfells to harvest diseased larch crops, the Sirhywi block remains well stocked with timber species, managed for production and other objectives which are set out in NRW's Cwmcarn Forest Resource Plan<sup>v</sup>. The internal forest road network has withstood timber haulage recently, and is in good condition, suitable for use by road going HGVs.

## 3.3. WALKOVER SURVEY FINDINGS

- 3.3.1. An arboricultural survey schedule detailing information about trees in the study area is presented at Appendix B. The spatial locations of arboricultural features are shown on the TCP of Appendix C (drawing 70106037-WSP-EV-TCP-001).
- 3.3.2. The arboricultural study area contains 161 arboricultural features.
- 3.3.3. A summary of tree quality categories is shown in Table 3-2. 65 arboricultural features were moderate quality, with 89 assessed as low quality. Four trees and two groups of trees were assessed as unsuitable for retention due to evidence of severe dieback. Woodland W1 was part of a larger mature woodland area in good condition, assessed as high quality for diverse species and age class structure, reflected in both statutory TPO designation and non-statutory designation as Ancient Woodland.

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<sup>v</sup> <https://naturalresources.wales/about-us/what-we-do/strategies-and-plans/forest-resource-plans/cwmcarn-forest-resource-plan/?lang=en>

**Table 3-2 – Summary of tree quality categories**

<b>BS 5837 Category</b>	<b>Quality</b>	<b>Trees</b>	<b>Groups</b>	<b>Woodlands</b>	<b>Totals</b>
Category A	High	0	0	1	1
Category B	Moderate	52	11	2	65
Category C	Low	74	13	2	89
Category U	Unsuitable	4	2	0	6
<b>Totals</b>		<b>130</b>	<b>26</b>	<b>5</b>	<b>161</b>

## 4. PRELIMINARY ARBORICULTURAL IMPACT ASSESSMENT

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### 4.1. SCOPE OF ASSESSMENT

- 4.1.1. This AIA is preliminary as detailed design is not yet finalised. Assessment is therefore based on potential impacts resulting from the Proposed Development, as shown in Drawing “Scope of Proposed Works with Land Ownership – Bedwas Land Reclamation Scheme, Caerphilly” – Job Ref: ERI/SPW/01, dated 16/01/2023 by PM Consultants (UK) Ltd. Impacts are visualised in the Tree Removals Plan (TRP) included with this report as Appendix D.
- 4.1.2. The scope of this assessment has been established with reference to BS 5837 Clause 5.4 ‘Arboricultural Impact Assessment’. The scope of assessment is defined as including an evaluation of the direct and indirect arboricultural effects of the Proposed Development including, where necessary, any recommendations for mitigation.
- 4.1.3. The assessment includes specific reference to the effects of any tree loss and other potentially damaging activities which would foreseeably occur in the vicinity of retained trees. Further reference is made concerning recommendations for mitigation, including those matters which require inclusion within an AMS.

### 4.2. ASSUMPTIONS AND LIMITATIONS

- 4.2.1. This AIA has been compiled with the following assumptions:
- All construction and demolition activities will be confined to the planning application boundary of the Proposed Development.

#### Limitations

- Enabling works (such as the installation or diversion of services by statutory undertakers beyond the red line boundary) have not been considered;
- Detailed drainage proposals have not been considered; and
- Where the location of arboricultural features is not recorded in topographic surveys, they have been indicatively plotted using GPS and aerial imagery relative to other site features. The accompanying TRP therefore have features plotted with approximate locations only which could have an error of 2m to 5m.

### 4.3. PROPOSED DEVELOPMENT

- 4.3.1. The Proposed Development is the remediation of former colliery tips with materials recovered hauled away via forest roads adjacent in the Sirhywi block. The proposed general arrangement sketch is shown in Appendix D ( Tree Removals Plan – 70106037-WSP-EV-TRP-001).
- 4.3.2. To enable an outline assessment of arboricultural features at risk of impact, the provided design concept plan was used to derive a sketch of assumed maximum site clearance extents. GIS analysis then identified arboricultural features which were assumed to intersect the area of site clearance needed for the Proposed Development.

## 4.4. ARBORICULTURAL FEATURES AT RISK

- 4.4.1. To enable the Proposed Development 68 arboricultural features will need to be removed (or partially removed in the case of groups and woodlands) for the footprint of the construction and operational phases.
- 4.4.2. Subject to detailed design and construction methods, there is a risk of the entire operational site being cleared of all vegetation during remediation. As sketched currently, the operational site appears not to impact woodland W1 significantly but is immediately adjacent.
- 4.4.3. Arboricultural features identified as being at risk of removal are listed below:

**Table 4-1 – Arboricultural Features At Risk of Removal**

Feature type	Removed	Partially Removed
Trees (47)	T39 - T61, T63 – T73, T86 – T90, T92, T100, T101, T122, T123, T124, T127 and T128.	
Groups (15)	G9 – G13, G17, G18, G20 and G22.	G7, G8, G21, G23, G24, G25
Woodlands (4)	W2	W3, W4 and W5

- 4.4.4. It is believed that the haul route, however, should be fit for purpose along most of its length with no need for tree removals, except for the potential new connection to existing highway. Current alignment sketches indicate that a new highway connection will require the removal of trees T100 and T101 together with group G13.

## 4.5. OTHER ARBORICULTURAL IMPACTS

- 4.5.1. Other identified arboricultural impacts associated with the construction of the Proposed Scheme are recorded in Table 4-1. Other arboricultural impacts are defined as identified activities which have the capacity, if uncontrolled, to cause damage to arboricultural features which are to be retained.

### ABOVE GROUND IMPACTS

- 4.5.2. During demolition and construction work there is potential for the stem and branches of retained arboricultural features to be damaged by the contractor making physical contact. Such damage can reduce vitality and cause decline in health.
- 4.5.3. To prevent above ground damage to arboricultural features a construction exclusion zone (CEZ) should be established. An AMS should cover the duration of demolition and construction with appropriate levels of arboricultural supervision where work is near trees.
- 4.5.4. Pruning may be required to enable access for construction. Any pruning must be specified by an arboriculturist to ensure that the extent of work is suitable for the required purpose and for the tree health. Once detailed design has been finalised, a schedule of tree works should be set out within a detailed, site-specific AMS owned by the appointed Principal Contractor.
- 4.5.5. Pruning to facilitate access cannot be definitively identified without knowing the spatial working requirements of the contractor and should be assessed when construction phasing is known. This may impact the trees on access tracks across the site.

## BELOW GROUND IMPACTS

- 4.5.6. During demolition and construction work there is potential for soil compaction and root damage caused by contractors. This could cause loss of vitality and decline in health with a reduction in quality of tree and potential instability or death of trees.
- 4.5.7. To prevent below ground damage to arboricultural features a CEZ should be established within an AMS for the duration of demolition and construction which is demarcated by a tree protection fence. Where access only is required then temporary ground protection measures could be installed to prevent soil compaction and root damage.
- 4.5.8. The indicative RPAs are based on a symmetrical circle and are shown in the TRP. For groups of trees the RPA is based on a distance from the plotted group extent which represents tree stem locations. These RPAs are indicative and the shape can be adjusted by an arboriculturist to ensure that sufficient area, and therefore soil volume, is protected.
- 4.5.9. Table 4-1 also provides details of the arboricultural features which are at risk of damage, the likely cause of damage and the mitigatory measures which are required. Implementation of the recommended mitigation measures will be sufficient to ensure that arboricultural features can be retained without significant loss of value or a notable reduction in health or longevity.

**Table 4-2 – Other identified arboricultural impacts, proposed mitigation and likely effects**

Features	Cause of Impact (construction of)	Potential Impact	Mitigatory Measures
All retained features	Contractor spatial working requirements encroach into RPAs during construction.	Soil compaction and root damage for contractor spatial working requirements. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Establish a CEZ for all retained trees; specify suitable ground protection measures and reference within an AMS.
All retained features	Contractor spatial working requirements conflict with tree crowns during construction.	Injurious contact with above ground (crown) elements of retained trees. Loss of vitality and decline in health. Reduction in quality of trees / potential death of trees.	Arboricultural supervision during site clearance and construction adjacent to the crown of any retained tree. Access facilitation pruning to be specified and implemented as a means of avoiding damage to crowns.

- 4.5.10. The shape of RPAs can be adjusted to ensure that sufficient area, and therefore soil volume is protected. The trees that comprise W1 are mature and therefore have a low capability to cope with change.



## 4.6. MITIGATION PLANTING

- 4.6.1. The Proposed Development has been designed to avoid impacting on trees and vegetation where possible. Tree loss should be mitigated through the implementation of a landscape design including new tree planting. The 'Scope of Proposed Works' drawing provided (Drawing "Scope of Proposed Works with Land Ownership – Bedwas Land Reclamation Scheme, Caerphilly" – Job Ref: ERI/SPW/01, dated 16/01/2023 by PM Consultants (UK) Ltd.) indicates potential areas for new tree planting west and south of the top colliery tip. Replacement tree planting should be considered across the Site where practicable once the reclamation project has been completed.
- 4.6.2. A Landscaping Scheme is being prepared to mitigate and compensate for losses whilst seeking opportunities to enhance biodiversity. A Landscape Ecological Management Plan (LEMP) will be prepared to describe the long-term management of the landscaping scheme.

## 4.7. ARBORICULTURAL METHOD STATEMENT

- 4.7.1. An outline AMS is included in Appendix E. The AMS adopts a precautionary approach to tree protection and addresses activities which have the potential to cause damage to retained trees.
- 4.7.2. The AMS addresses, in principle, the following matters which are of relevance to the Proposed Development:
- arboricultural site supervision;
  - tree works;
  - tree protection fencing;
  - ground protection;
  - additional precautions outside the CEZ; and
  - installation of underground apparatus and service runs.
- 4.7.3. It is recommended that this AMS be viewed as a 'living document'. It should therefore be reviewed, and if necessary updated, at the following stages of design and construction:
- detailed design and discharge of conditions or reserved matters;
  - contractor engagement;
  - pre-commencement; and,
  - prior to any instance where the site clearance or construction methodology is amended.
- 4.7.4. All tree works undertaken must comply with British Standard 3998:2010 – Tree Work Recommendations and should therefore be carried out by skilled tree surgery contractors.
- 4.7.5. It is anticipated that a pre-commencement site meeting would be required with the Local Planning Authority Tree Officer to confirm tree protection measures.

## 5. CONCLUSIONS

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- 5.1.1. An arboricultural baseline has been established through the completion of a desk study and a walkover survey of arboricultural features.
- 5.1.2. The baseline arboricultural resource includes arboricultural features with statutory protection in the form of TPO. Parts of the Site are also recorded as Ancient Woodland. There were no signs or records of veteran trees or traditional orchard.
- 5.1.3. The baseline arboricultural resource potentially impacted by the Proposed Development comprises 68 features. It is assumed that removal of trees is necessary to enable the Proposed Development and this may be extensive.
- 5.1.4. In the absence of detailed design the need for pruning to facilitate access is unknown but is likely to be necessary. Spatial working requirements of the contractor should be assessed when construction phasing is known to inform tree work.
- 5.1.5. All arboricultural features not removed can be retained and protected through demolition and construction. Principles for tree protection are set out in the outline AMS (Appendix E) which includes the need for arboricultural supervision and tree protection fencing.

# Appendix A

ARBORICULTURAL SURVEY  
METHODOLOGY



## SURVEY METHODOLOGY

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### METHOD OF BASELINE DATA COLLECTION

Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:

- An arboricultural desk study; and,
- A walkover survey of all arboricultural features within the study area.

### DESK STUDY

The desk study for the Proposed Development commenced in April 2023 and was completed on 27 June 2023.

The desk study reviewed existing arboricultural information available in the public domain. The desk-study has considered the following sources:

#### TPOs

Caerphilly County Borough Council is responsible for implementing any legal controls imposed through TPOs within the study area. Information on the location of TPOs is accessible on their website<sup>6</sup> which was accessed on 8 June 2023.

#### Conservation Areas

Caerphilly County Borough Council is responsible for implementing any legal controls imposed through conservation areas within the study area. The location of conservation areas is information publicly accessible on their website<sup>7</sup> which was accessed on 27 June 2023.

#### Ancient woodland and traditional orchards

The potential presence of ancient woodland and traditional orchards within the study area was checked using the web based Data Map Wales database which was accessed on 27 June 2023<sup>8</sup>.

#### Ancient and Veteran Trees

The potential presence of ancient and veteran trees within the study area was checked using the Woodland Trust's Ancient Tree Inventory<sup>9</sup>.

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<sup>6</sup> Caerphilly County Borough Council, *Tree Preservation Orders in CCBC* < <https://www.arcgis.com/apps/webappviewer/index.html?id=8fbe45e163664775819414bd3b5029c4> [Accessed 27 June 2023].

<sup>7</sup> Caerphilly County Borough Council, *Conservation Areas* < <https://www.caerphilly.gov.uk/services/planning-and-building-control/conservation-of-the-built-environment/conservation-areas-and-consent?lang=en-GB> [Accessed 27 June 2023].

<sup>8</sup> WG, 2023. *Data Map Wales* [online] Available at: < [>](https://datamap.gov.wales/maps/new#/) [Accessed 27 June 2023].

<sup>9</sup> Ancient Tree Inventory, 2020. *Ancient Tree Inventory* [online] Available at: < [>](https://ati.woodlandtrust.org.uk) [Accessed 27 June 2023].



## WALKOVER SURVEY

A walkover survey was undertaken on 24, 25, 26, 28 April, 16, 17 May and 15 June 2023. The walkover survey was conducted with aerial imagery, Bluesky NTM canopy polygons and proposed Red Line Boundary used as base mapping.

The walkover survey was undertaken in accordance with the following criteria:

- Arboricultural features have been recorded as tree groups or linear areas where this has been deemed appropriate. Tree groups have been recorded on the basis that they form distinct arboricultural features either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value. Wooded areas are recorded where larger expanses of trees exist and included features which may otherwise be referred to as copses, spinneys or shelterbelts. Linear groups are specifically tree groups which are formed of a single line of trees;
- Hedges have been recorded where they form substantial internal or boundary features or where they contribute meaningfully to the landscape character of the local area;
- The trees have been visually inspected from ground level only;
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken;
- Tree heights and crown spreads have been estimated to the nearest 1m;
- Notes have been recorded where they relate to the quality of the arboricultural feature;
- Management recommendations have been provided where work is necessary for the abatement of a hazard which presents a high level of risk to persons or property. Such management recommendations have been communicated to the tree owner/manager separately from this report;
- Stem diameters have been measured in accordance with Annex C of BS 5837;
- Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The diameters of other commonly encountered stems have been measured as per the guidance. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.
- By default, Root Protection Areas (RPAs) are calculated as an area equivalent to a circle with a radius 12 times the stem diameter and are capped at a distance of 15 metres.

## QUALITY ASSESSMENT

The quality of arboricultural features has been determined in accordance with BS 5837 Table 1 a copy of which is provided in Figure 0-1. The purpose of the quality assessment is to enable informed decisions to be made regarding the removal and retention of arboricultural features in the context of development. For an arboricultural feature to be included within a particular quality category it should accord with the description provided.

The quality of each arboricultural feature is defined based on its sub-category. Sub-categories carry equal weight, do not influence retention priority and are simply included to indicate the primary value associated with each surveyed item. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.

The quality and sub-category assigned to each arboricultural feature are identified within the Arboricultural Survey Schedule included in Appendix B of this report.

## Figure 0-1 - BS 5837 Table 1 - Cascade Chart for Tree Quality Assessment

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
<b>Trees unsuitable for retention</b> (see Note)		
<b>Category U</b> Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> <li>Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</li> </ul> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2
	<b>1 Mainly arboricultural qualities</b>	<b>2 Mainly landscape qualities</b>
		<b>3 Mainly cultural values, including conservation</b>
<b>Trees to be considered for retention</b>		
<b>Category A</b> <b>Trees of high quality</b> with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	See Table 2
<b>Category B</b> <b>Trees of moderate quality</b> with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	See Table 2
<b>Category C</b> <b>Trees of low quality</b> with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	See Table 2



## NOTES AND LIMITATIONS

Arboricultural survey data is of a preliminary nature and has been collected based on a walkover survey.

Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy, other vegetation or safety constraints. Safety related features have not been recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.

Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.

Records held on the Ancient Tree Inventory are collected on a voluntary basis, therefore the absence of records does not demonstrate the absence of ancient or veteran trees but may simply indicate a gap in recording coverage.

Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived, and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.

The survey has only been undertaken from land within the client's ownership, from public land or from areas where formal access has been arranged.

The position of arboricultural features not recorded on a topographical survey has been estimated using aerial photography. The position and extent of these features should be regarded as approximate only.

# Appendix B

## ARBORICULTURAL SURVEY SCHEDULE







## **KEY - ARBORICULTURAL SURVEY SCHEDULE**

### **REFERENCE ABBREVIATIONS**

T – Tree  
G – Group of trees  
W - Woodland

### **MEASUREMENTS**

Height is estimated to provide a relative indication of tree size.

Stem Diameter measurements are in accordance with BS 5837:2012.

Crown spread for individual trees was estimated in the four cardinal points.

LCH is the lowest canopy height. It is an estimate of the lowest point of foliage above ground level of the tree indicating the clearance below the tree.

LBH is the lowest branch height and is the height above ground level of the first branch union.

### **ASSESSMENTS**

Life stage – Young, Semi-mature, Early Mature or Mature

Physiological condition – Good, Fair, Poor or Dead

Structural condition – Good, Fair, Poor or Unstable

Estimated remaining contribution - <10 years, 10+ years, 20+ years or 40+ years.

BS 5837 Category – A, B, C or U with a single sub-category recorded as 1, 2 or 3.

### **ROOT PROTECTION AREA**

RPA is the radius of a circular Root Protection Area associated with the tree as measured from the centre of the stem. For arboricultural features where more than one stem diameter is recorded the RPA radius is calculated using the largest dimension.

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T1	Ash	4	110	1 - 1 - 1 - 1	1.5	1.5	Y	F	P	Exposed. Stem swept	1.3	10+	C1
T2	Ash	5	100	1 - 1 - 1 - 1	1.5	1.5	Y	F	F	Exposed. Stem straight	1.2	10+	C1
T3	Hawthorn	3	100e	1 - 1 - 1 - 1	0.5	0.5	SM	F	F	Normal for species.	1.2	10+	C1
T4	Rowan	8	120e	2 - 2 - 2 - 2	3	2.5	SM	G	F	Just beyond stock fence. Surrounded by gorse and blackthorn. Excellent form.	1.4	20+	B1
T5	Rowan	5	100e	1 - 1 - 1 - 1	0	1	Y	G	G	Surrounded by gorse and bramble.	1.2	10+	C1
T6	Goat willow	6	270	3 - 3 - 3 - 3	1	0.5	EM	G	P	Historic collapse, stabilised.	3.2	10+	C1
T7	Rowan	4	110	1 - 1 - 1 - 1	1.5	1	Y	G	F	Plus 2 small stems (<75mm)	1.3	10+	C1
T8	Larch	6	170	2 - 2 - 2 - 2	0.5	0.5	SM	G	G	No signs of Phytophthora ramorum yet.	2.0	20+	B1
T9	Rowan	4	160	1 - 1 - 1 - 1	1.5	1	SM	F	G	Normal for species.	1.9	20+	B1
T10	Goat willow	6	300e	2 - 2 - 2 - 2	2	1	SM	G	F	Normal for species.	3.5	20+	C1
T11	Goat willow	6	300e	2 - 2 - 2 - 2	2	1	SM	G	F	1 stem collapsed	3.5	20+	C1
T12	Elder	2	200e	1 - 1 - 1 - 1	0.5	0.5	Y	F	P	Coppice regeneration directly under high voltage powerline.	2.4	10+	C3
T13	Hawthorn	3	110e	1 - 1 - 1 - 1	0.5	0.5	SM	F	P	Smothered in ivy	1.3	10+	C3
T14	Rowan	5	290e	1 - 1 - 1 - 1	1	1	SM	F	F	Normal for species.	3.5	20+	C3
T15	Rowan	6	170e	2 - 2 - 2 - 2	2	1	SM	F	G	Normal for species.	2.0	20+	B1
T16	Silver birch	6	140e	1 - 1 - 1 - 1	1	1	SM	F	F	Normal for species.	1.7	20+	C1
T17	Hawthorn	3	80e	1 - 1 - 1 - 1	0.5	0.5	Y	G	F	Ash sapling adjacent (<75mm)	1.0	20+	C1
T18	Ash	7	190	1 - 1 - 1 - 1	1	1	SM	F	F	Normal for species.	2.3	20+	C1
T19	Hawthorn	4	300e	2 - 2 - 2 - 2	1	0.5	EM	G	F	Squat, with dense, round canopy.	3.6	20+	B1
T20	Goat willow	5	140e	2 - 2 - 2 - 2	1	0.5	SM	G	F	Surrounded by gorse	1.7	20+	C1
T21	Hawthorn	5	250e	2 - 2 - 2 - 2	0.5	0.5	EM	G	F	Normal for species.	3.0	20+	B1
T22	Hawthorn	3	190	1 - 1 - 1 - 1	0.5	0.5	Y	F	F	Clump of small trees	2.2	20+	C1
T23	Ash	4	140	0.5 - 0.5 - 0.5 - 0.5	2	2	SM	P	P	Advanced crown dieback	1.7	<10	U
T24	Ash	4	140	1 - 1 - 1 - 1	2	1	SM	F	G	Normal for species.	1.7	10+	C1
T25	Ash	4	280e	1 - 1 - 1 - 1	2	1	SM	P	P	Significant crown dieback	3.4	<10	U
T26	Rowan	4	160	0.5 - 0.5 - 0.5 - 0.5	2	1	SM	G	F	Normal for species.	1.9	20+	B1
T27	Hawthorn	3	80e	0.5 - 0.5 - 0.5 - 0.5	0.5	0.5	Y	G	F	Normal for species.	1.0	20+	C1
T28	Rowan	2	80	0.5 - 0.5 - 0.5 - 0.5	1	1	Y	G	G	Normal for species.	0.9	20+	C1
T29	Hawthorn	3	130e	1 - 1 - 1 - 1	0.5	0.5	SM	G	F	Normal for species.	1.6	20+	C1
T30	Hawthorn	3	100e	1 - 1 - 1 - 1	0.5	0.5	SM	G	F	Touching dry stone wall	1.2	20+	C1
T31	Silver birch	3	90	0.5 - 0.5 - 0.5 - 0.5	1	1	Y	G	F	Normal for species.	1.0	20+	C1
T32	Goat willow	0	130e	1 - 1 - 1 - 1	2	1	SM	F	F	Next to dewpond, touching dry stone wall	1.6	20+	C1

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T33	Beech	15	1300	4 - 6 - 5 - 5	1.5	1.5	M	G	F	Stem outside site boundary, canopy to east overhanging dry stone wall	15.0	20+	B1
T34	Larch	5	90	1 - 1 - 1 - 1	2	2	Y	F	G	No signs of Phytophthora ramorum yet	1.1	10+	C1
T35	Hawthorn	4	190e	2 - 2 - 2 - 2	0.5	0.5	EM	G	F	Normal for species.	2.3	20+	B1
T36	Goat willow	6	210e	2 - 2 - 2 - 2	1	0.5	SM	G	F	Minor crown damage south-east side	2.5	20+	C1
T37	Hawthorn	4	150e	2 - 2 - 2 - 2	0.5	0.5	SM	F	F	Normal for species.	1.8	20+	C1
T38	Oak	4	120e	2 - 2 - 2 - 0.5	1	1	Y	F	F	Canopy joins adjacent hawthorn. Stem between fence and wall.	1.4	20+	C1
T39	Hawthorn	5	150e	2 - 2 - 2 - 2	0.5	0.5	EM	G	F	Dormouse trap installed	1.8	20+	C1
T40	Goat willow	6	490e	5 - 5 - 5 - 5	1	0.1	EM	F	P	Sprawling stems at base. Dripline poached by grazing livestock.	5.9	20+	C1
T41	Silver birch	10	140	2 - 1 - 2 - 2	6	6	EM	F	F	Wispy, edge of clearfell, stem between fence and wall	1.7	20+	C1
T42	Silver birch	5	110e	2 - 2 - 2 - 2	1	0.5	SM	F	F	Poaching by grazing livestock.	1.3	20+	C1
T43	Goat willow	10	630	7 - 4 - 6 - 5	2	1	EM	F	F	Defect at base beside track. Poaching.	7.5	20+	C1
T44	Elder	3	120	1 - 1 - 1 - 1	0	0	Y	G	F	Dormouse trap installed. Stem between fence and wall.	1.4	20+	C1
T45	Oak	5	140	0 - 0 - 4 - 3	1.5	1.5	SM	F	P	Edge of clearfell. Crown unbalanced.	1.7	10+	C1
T46	Hawthorn	5	130e	2 - 2 - 2 - 2	0.5	0.5	SM	G	F	Normal for species.	1.6	20+	C1
T47	Larch	5	90	1 - 1 - 1 - 1	0.5	0.5	Y	F	F	Machine on site, drainage works. Tree debris nearby. 1 small spruce adjacent.	1.1	10+	C1
T48	Larch	10	210	3 - 3 - 3 - 3	1	1	SM	F	F	Machine on site, drainage works. Tree debris nearby. No sign of Phytophthora ramorum yet.	2.5	20+	C1
T49	Hawthorn	7	260e	2 - 2 - 2 - 2	1	1	M	F	G	Beyond fence on fieldbank	3.1	20+	B1
T50	Hawthorn	7	280e	2 - 2 - 2 - 2	1	1	M	F	G	Beyond fence on fieldbank	3.4	20+	B1
T51	Oak	15	700e	4 - 4 - 4 - 4	2	1	EM	G	F	Normal for species.	8.4	40+	B1
T52	Beech	15	900e	5 - 6 - 6 - 5	2	2	EM	G	F	Normal for species.	10.8	40+	B1
T53	Oak	9	400e	1 - 1 - 1 - 1	1	1	EM	P	P	Normal for species.	4.8	10+	C1
T54	Hawthorn	7	200	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	2.4	10+	C1
T55	Hawthorn	5	350	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	4.2	10+	C1
T56	Ash	17	150	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	1.8	10+	C1
T57	Rowan	5	220	0 - 1 - 5 - 1	0.5	0.5	SM	P	P	Swept crown, historic collapse	2.6	10+	C1
T58	Ash	15	600	4 - 5 - 5 - 2	2	2	EM	F	F	Normal for species.	7.2	20+	B1

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T59	Ash	14	600	2 - 2 - 5 - 5	2	2	EM	F	F	2 trees, 1 combined crown	7.2	20+	B1
T60	Beech	17	1100e	8 - 7 - 8 - 8	2	2	M	F	F	Normal for species.	13.2	20+	B1
T61	Beech	17	1100e	8 - 7 - 8 - 8	2	2	M	F	F	Normal for species.	13.2	20+	B1
T62	Beech	18	1100	8 - 7 - 8 - 8	2	2	M	F	F	Normal for species.	13.2	20+	B1
T63	Sycamore	12	600e	3 - 4 - 4 - 4	2	2	EM	G	F	Normal for species.	7.2	20+	B1
T64	Ash	11	400	3 - 3 - 3 - 3	2	2	SM	F	F	Normal for species.	4.8	20+	B1
T65	Beech	15	700	5 - 5 - 5 - 5	2	2	EM	G	F	Normal for species.	8.4	20+	B1
T66	Hawthorn	5	400	2 - 2 - 2 - 2	1	1	EM	F	F	Normal for species.	4.8	10+	C1
T67	Hawthorn	5	150	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	1.8	10+	C1
T68	Hawthorn	5	140	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	1.7	10+	C1
T69	Hawthorn	5	200e	2 - 2 - 2 - 2	1	1	SM	F	F	Normal for species.	2.4	10+	C1
T70	Beech	17	1000e	6 - 6 - 6 - 6	2	2	M	G	F	Normal for species.	12.0	20+	B1
T71	Beech	17	1000e	6 - 6 - 6 - 6	2	2	M	G	F	Normal for species.	12.0	20+	B1
T72	Ash	18	750e	5 - 5 - 5 - 5	2	2	EM	F	F	Normal for species.	9.0	20+	B1
T73	Beech	18	900e	8 - 7 - 8 - 4	2	2	EM	F	F	Large scaffold failed recently	10.8	20+	C1
T74	Goat willow	5	250e	2 - 3 - 3 - 3	1	1	SM	F	F	Crown overlaps neighbour	3.0	20+	C1
T75	Silver birch	5	150e	2 - 2 - 2 - 2	0.5	0.5	Y	G	P	Bark stripped, central leader tip lost	1.8	10+	C1
T76	Sycamore	5	150e	1 - 1 - 1 - 1	0.5	0.5	Y	G	F	Small tree in dense scrub	1.8	20+	C1
T77	Goat willow	5	240e	2 - 3 - 3 - 3	1	1	SM	F	F	Normal for species.	2.9	20+	C1
T78	Ash	6	100e	2 - 2 - 1 - 1	3	3	Y	G	F	Small ash in dense scrub (buddleia, gorse)	1.2	20+	C1
T79	Ash	8	130e	3 - 3 - 3 - 3	1	1	SM	F	P	Normal for species.	1.6	10+	C1
T80	Oak	9	250	3 - 3 - 3 - 3	1	1	SM	G	G	Normal for species.	3.0	20+	B1
T81	Alder	5	140e	1 - 1 - 1 - 1	0.5	0.5	Y	G	F	Normal for species.	1.7	#N/A	C1
T82	Oak	6	800e	0 - 0 - 0 - 1	3	3	N/A	P	P	Monolith. Tiny crown of epicormics.	9.6	10+	C1
T83	Oak	19	1000e	0 - 10 - 4 - 0	9	5	M	P	P	Eccentric crown. Historic fire damage, bark absent at base on eastern half up to 3m	12.0	10+	C1
T84	Oak	10	600	2 - 2 - 4 - 5	2	2	EM	F	F	Bark damage to base to east, 20cm w, 30cm h	7.2	20+	B1
T85	Oak	8	350e	4 - 4 - 4 - 4	2	2	EM	G	F	Under 400kV powerline	4.2	20+	B1
T86	Oak	10	300e	2 - 3 - 4 - 3	2	2	SM	F	F	Bark stripped	3.5	20+	C1
T87	Larch	10	240e	3 - 3 - 3 - 3	2	2	SM	F	F	Prolific coning, dead lateral, may indicate Phytophthora ramorum	2.9	20+	C1
T88	Larch	10	240e	3 - 3 - 3 - 3	2	2	SM	F	F	Prolific coning, dead lateral, may indicate Phytophthora ramorum	2.9	20+	C1

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T89	Oak	7	200	2 - 2 - 2 - 2	2	2	Y	F	P	Strike damage south side 1m above ground level	2.4	10+	C1
T90	Ash	8	200e	2 - 2 - 2 - 2	2	2	SM	P	P	Ash dieback. Many more nearby.	2.4	<10	U1
T91	Oak	13	550e	5 - 6 - 5 - 7	1	1	EM	G	F	Larger tree top of bank beside track, with bluebell, bramble and bracken.	6.6	20+	B1
T92	Pine	8	250	1 - 2 - 3 - 3	1	1	SM	F	F	Lodgepole	3.0	20+	C1
T93	Oak	15	400	7 - 1 - 2 - 7	6	7	SM	G	F	Edge of clearfell, eccentric crown, lifted over car park.	4.8	20+	B1
T94	Beech	14	550e	6 - 5 - 4 - 5	6	3	EM	F	P	Normal for species.	6.6	20+	B1
T95	Beech	17	850e	6 - 6 - 6 - 6	7	6	M	F	P	Fire damage	10.2	20+	C1
T96	Beech	20	1240	10 - 5 - 4 - 8	7	6	M	G	F	Edge of clearfell, eccentric crown, lifted over carriageway.	14.9	20+	B1
T97	Beech	20	1100e	9 - 9 - 4 - 3	4	6	M	F	F	Edge of clearfell, eccentric crown, lifted over carriageway. Dark exudate on lower stem.	13.2	20+	B1
T98	Oak	10	450e	5 - 3 - 3 - 4	5	5	SM	F	F	Edge of clearfell, suppressed, lifted over carriageway verge.	5.4	20+	B1
T99	Oak	10	550e	3 - 3 - 3 - 2	5	3	SM	P	P	Edge of clearfell, suppressed, lifted over carriageway verge.	6.6	20+	C1
T100	Oak	6	110e	2 - 2 - 2 - 2	1	1	Y	G	F	Normal for species.	1.3	20+	C1
T101	Oak	16	500e	6 - 5 - 3 - 5	2	3	EM	G	F	Edge of clearfell, eccentric crown.	6.0	20+	B1
T102	Oak	16	600e	4 - 3 - 3 - 3	5	2	EM	F	P	Major scaffold historic failure, epicormics responding.	7.2	20+	C1
T103	Beech	20	990	7 - 6 - 6 - 7	2	5	M	G	F	Root Protection Area contains 2 smaller oak and 1 smaller beech.	11.9	20+	B1
T104	Beech	20	840	7 - 6 - 6 - 7	1	4	M	G	F	Normal for species.	10.1	20+	B
T105	Oak	13	450e	6 - 3 - 2 - 4	4	5	EM	F	F	Edge of clearfell, eccentric crown, lifted over carriageway and 30mph signage.	5.4	20+	C1
T106	Alder	5	180e	1 - 1 - 1 - 1	0.5	0.5	Y	F	F	Below high voltage powerline, between road and drainage ditch.	2.2	20+	C1
T107	Oak	15	450e	4 - 4 - 4 - 4	4	3	EM	P	F	Edge of clearfell, junctions with path, thin canopy	5.4	20+	C1
T108	Oak	15	450e	4 - 4 - 4 - 4	4	3	EM	P	F	Edge of clearfell, junctions with path, thin canopy	5.4	20+	C1
T109	Ash	10	450e	1 - 1 - 1 - 1	5	5	EM	D	P	Ash dieback. Next to path.	5.4	<10	U1

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
T110	Alder	12	450e	1 - 2 - 2 - 2	3	3	SM	P	F	Edge of clearfell, suppressed.	5.3	20+	C1
T111	Beech	14	800e	5 - 5 - 5 - 5	1	1	M	G	F	Lapsed pollard.	9.5	20+	B1
T112	Oak	8	270e	8 - 4 - 1 - 4	1	2	SM	F	P	Edge of clearfell, eccentric crown.	3.2	20+	C1
T113	Rowan	9	220e	3 - 2 - 2 - 2	2	2	SM	G	G	Edge of clearfell.	2.6	20+	B1
T114	Silver birch	9	210e	2 - 2 - 2 - 2	4	4	SM	F	G	Edge of clearfell.	2.5	20+	B1
T115	Beech	8	470	4 - 4 - 4 - 4	1.5	1	EM	F	F	1m outside boundary fence.	5.6	20+	B1
T116	Beech	9	490e	4 - 4 - 4 - 4	1.5	1	EM	F	F	1m outside boundary fence.	5.9	20+	B1
T117	Hawthorn	5	200e	2 - 2 - 2 - 2	2	2	EM	F	F	Normal for species.	2.4	20+	B1
T118	Hawthorn	5	200e	2 - 2 - 2 - 2	2	2	EM	F	F	Normal for species.	2.4	20+	B1
T119	Hawthorn	5	200e	2 - 2 - 2 - 2	2	2	EM	F	F	Normal for species.	2.4	20+	B1
T120	Hawthorn	5	200e	2 - 2 - 2 - 2	2	2	EM	F	F	Normal for species.	2.4	20+	B1
T121	Goat willow	9	300e	4 - 4 - 4 - 4	1	1	EM	F	F	Assessed from distance.	3.6	20+	B1
T122	Pine	7	250	2 - 2 - 2 - 2	0.5	1	SM	F	F	Beside concrete drain	3.0	20+	C1
T123	Silver birch	5	130	1 - 1 - 1 - 1	1	0.5	SM	F	P	Beside concrete drain, suppressed by adjacent pine.	1.6	10+	C1
T124	Beech	12	600	4 - 4 - 4 - 4	1	1	EM	F	F	Lone beech in scrub group	7.2	20+	B1
T125	Beech	18	900e	6 - 6 - 6 - 6	2	2	M	G	F	Assessed from distance.	10.8	40+	B1
T126	Beech	18	900e	6 - 6 - 6 - 6	0	0	M	G	F	Assessed from distance.	10.8	40+	B1
T127	Silver birch	7	240	2 - 2 - 2 - 2	2	2	SM	G	F	2m south of track, 2 similar nearby	2.9	20+	B1
T128	Silver birch	4	150	2 - 2 - 2 - 2	2	2	SM	F	F	Right next to track	1.8	20+	C1
T129	Oak	17	900	7 - 7 - 7 - 7	3	4	SM	G	F	Field boundary, fence attached. Lifted over pony paddock.	10.8	40+	B1
T130	Ash	16	500e	5 - 5 - 5 - 5	2	2	EM	F	F	Assessed from distance.	6.0	20+	B1
G1	Silver birch	6	170	2	1	0	SM	G	G	In bracken. Other small willows and thorns nearby	2.0	20+	B2
G2	Silver birch	8	200	2	1	0	SM	F	F	Mixed group. Birch dominant with willow, rowan.	2.4	20+	B3
G3	Beech, cherry, oak	12	450	5	1	0	EM	G	G	Belt of mixed trees beyond site boundary. Beside neighbour's driveway.	5.4	20+	B1
G4	Silver birch	8	150	3	1	0	SM	F	F	Directly under high voltage powerline. Few Goat willow.	1.8	10+	C3
G5	Spruce	6	150	2	0.5	0	Y	G	F	Gappy line just beyond dry stone wall	1.8	20+	C2
G6	Lawson cypress	6	150	2	0.5	0	SM	G	G	Neat linear planting along boundary at farm access track.	1.8	20+	B2

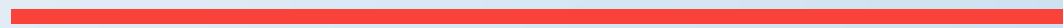
Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
G7	Silver birch, Larch, Pine species	8	250	2	1	0	SM	F	F	Mixed group. Perhaps self-set. Includes Lodgepole pine	3.0	20+	B2
G8	Pine species	23	500	4	5	0	M	F	F	Pine stand next to clearfell	6.0	20+	C2
G9	Silver birch	12	190	3	5	0	SM	F	F	Edge of clearfell. Beyond wall.	2.3	20+	C2
G10	Larch, Spruce	20	400	3	1	0	SM	F	G	Possible plantation. Perhaps self-set. Spruce and larch dominant, but with diverse broadleaf intrusion. Birch, rowan, willow and thorns. Prominent in landscape.	4.8	20+	B2
G11	Larch, Spruce, Pine species	18	350	3	0.5	0	SM	F	F	Mixed. Intruded broadleaf includes birch, rowan, willow, Hawthorn and other.	4.2	20+	B2
G12	Common beech	15	900	8	1	0	M	G	F	Line of larger beech	10.8	20+	B2
G13	Ash	7	110	2	2	0	Y	P	P	Small trees on highway verge, ash dieback severe.	1.3	<10	U
G14	Common alder	8	150	2	1	0	SM	F	F	With birch, willow, culverted stream.	1.8	20+	C2
G15	Common alder	14	500	2	1	0	EM	F	F	With birch, willow, culverted stream. One ash with severe dieback.	6.0	20+	B2
G16	Common alder	17	600	4	2	0	EM	F	F	Mixed, with birch, willow, ash, oak, plus a few large beech. Culverted stream.	7.2	20+	B2
G17	Silver birch, Larch, Pine species, Rowan	9	300	3	1	0	SM	F	F	Mixed group, gappy, with bracken and gorse.	3.6	20+	B2
G18	Goat willow	5	200	2	1	0	EM	F	F	Mixed group, gappy, with bracken. Birch, larch, hawthorn, willow.	2.4	20+	C2
G19	Ash, silver birch	4	120	0	0	0	SM	P	P	Dieback evident	1.4	10+	C2
G20	Silver birch	5	100	1	1	0	Y	G	F	Small group of young birch	1.2	20+	C2
G21	Beech	19	900	0	4	0	EM	P	P	3 large beech. Ganoderma bracket on north stem, associated with split. bark wound on middle stem, heartwood exposed. Crowns lifted on side over track.	10.8	10+	C2
G22	Ash	5	100	0	0	0	Y	D	P	6 dead ash	1.2	<10	U
G23	Mixed - see notes	5	150	2	1	0	SM	F	F	Small trees widely spaced with gorse and bracken. Birch, rowan, hawthorn, pine, willow.	1.8	10+	C2
G24	Mixed - see notes	6	200	3	1	0	SM	F	F	Sparse trees in bracken, gorse and broom. Birch, willow, ash.	2.4	10+	C2

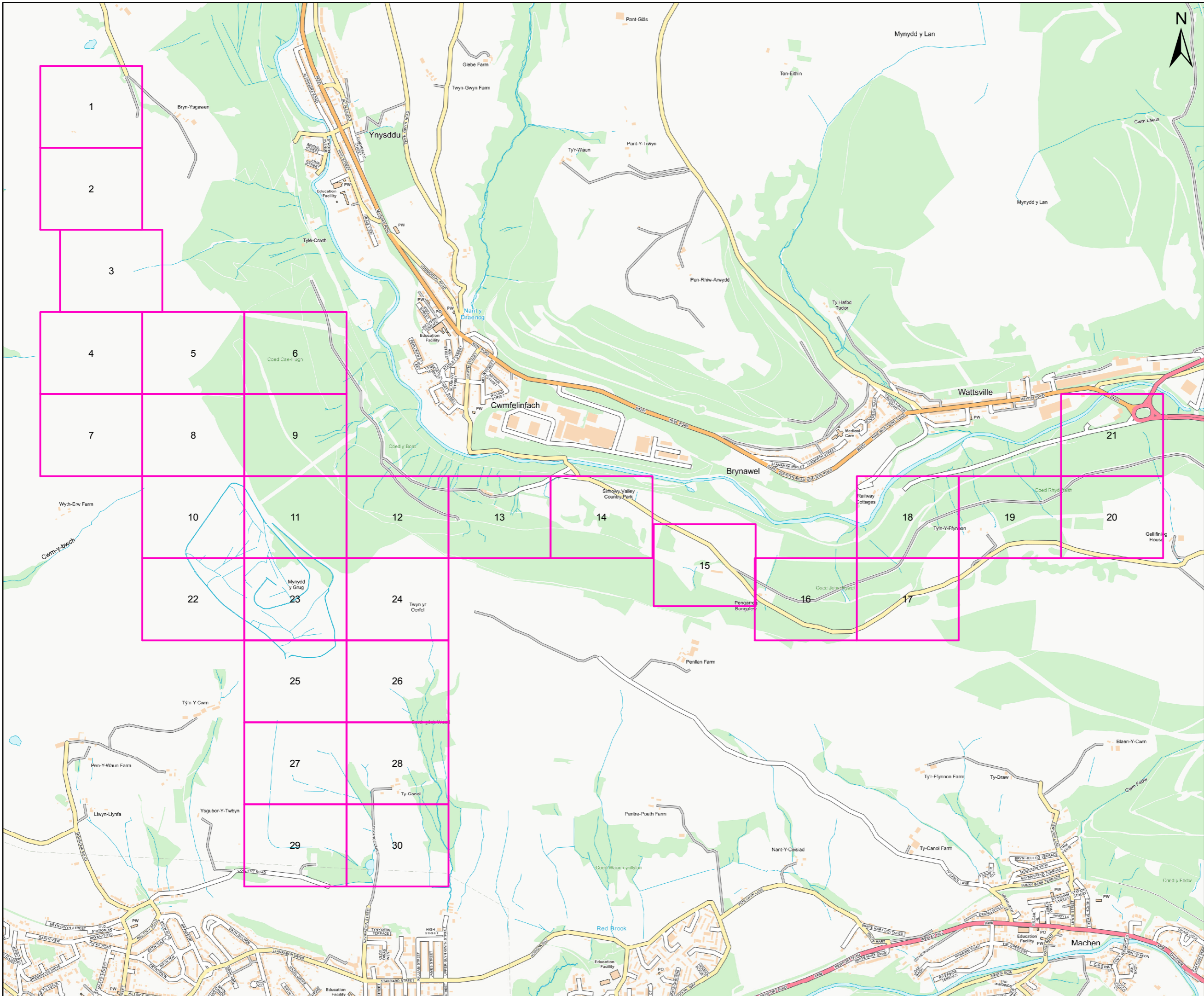
Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N - E - S - W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	Estimated Remaining Contribution	BS5837 Category
G25	Mixed - see notes	6	250	4	2	0	SM	F	F	Medium sized trees near boundary. Birch, ash, sycamore, beech with bramble and broom.	3.0	10+	C2
G26	Mixed - see notes	4	150	2	1	0	SM	F	F	Emerging scrub woodland. Ash, sycamore, birch, willow with buddleia and bramble.	1.8	10+	C2
W1	Mixed - see notes	18	900av	8	4	0	M	G	G	Part recorded as Ancient Woodland, Tree Preservation Order in force at the same location. Large trees in diverse mixture, including beech, oak with good understorey and herb layer.	10.8	40+	A2
W2	Mixed - see notes	0	250av	4	2	0	SM	F	F	Emerging woodland to north side of track, diverse, including oak and larch, dense coarse vegetation beneath.	3.0	10+	C2
W3	Mixed - see notes	0	250av	4	2	0	SM	F	F	Emerging woodland to south side of track below settlement lagoons. Diverse, including ash, birch and willow, dense coarse vegetation beneath.	3.0	10+	C2
W4	Mixed - see notes	17	600av	5	3	0	EM	G	F	Large birch and oak around former quarry, now a pond.	7.2	20+	B2
W5	Mixed - see notes	17	750av	7	3	0	EM	G	F	Diverse species and age class structure, along eastern boundary next to Ty Canol Lane. Oak and beech dominate canopy, with good herb layer and understorey in places.	9.0	20+	B2



# Appendix C

## TREE CONSTRAINTS PLAN





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### Key

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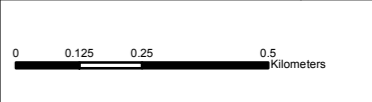
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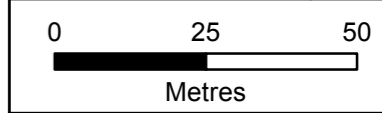
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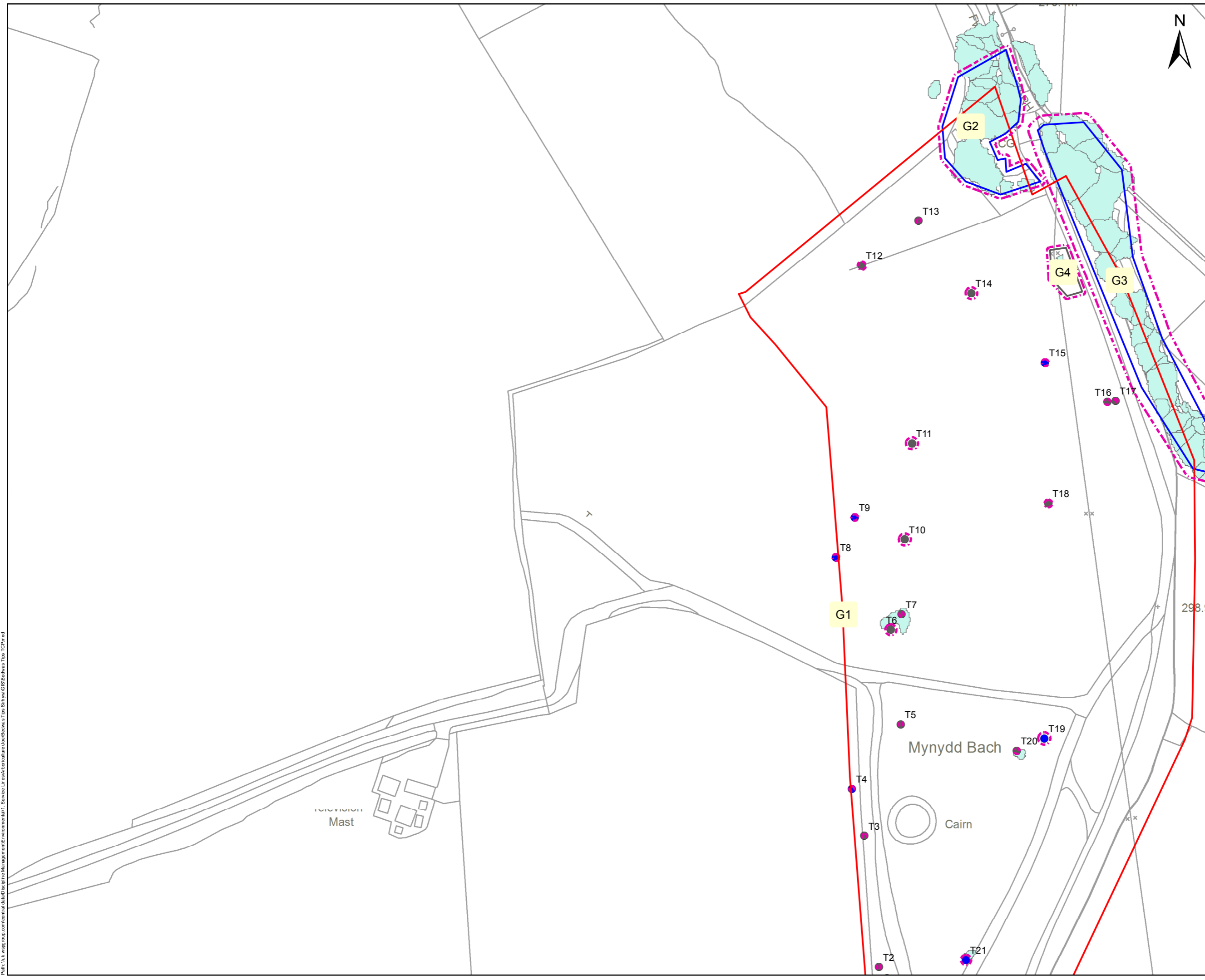
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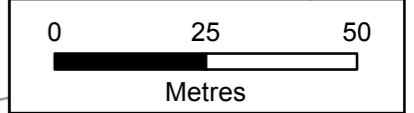
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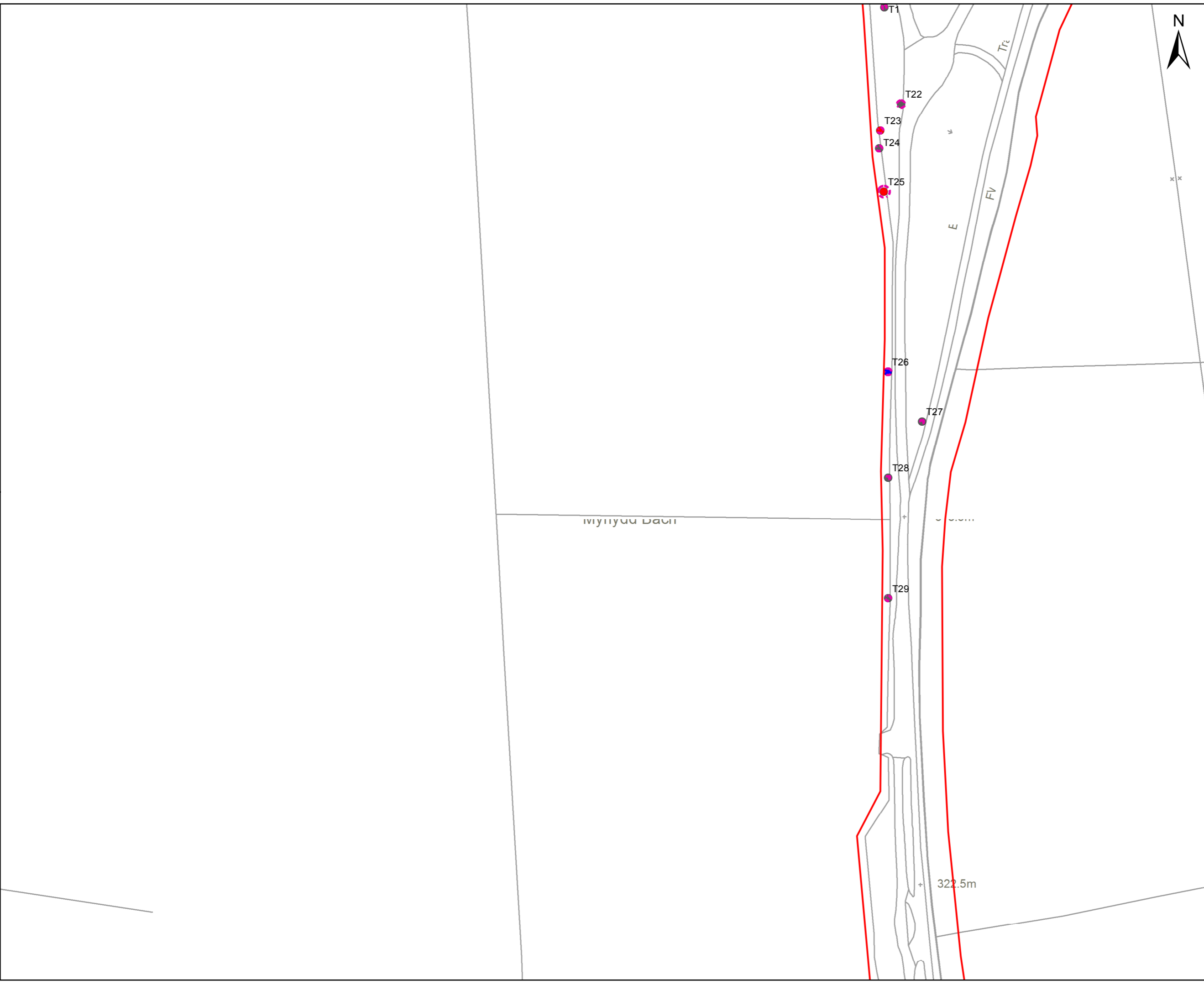
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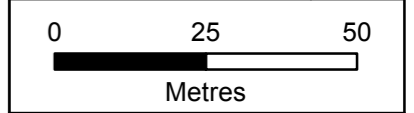
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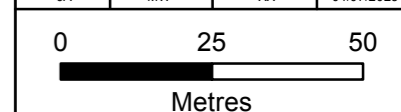
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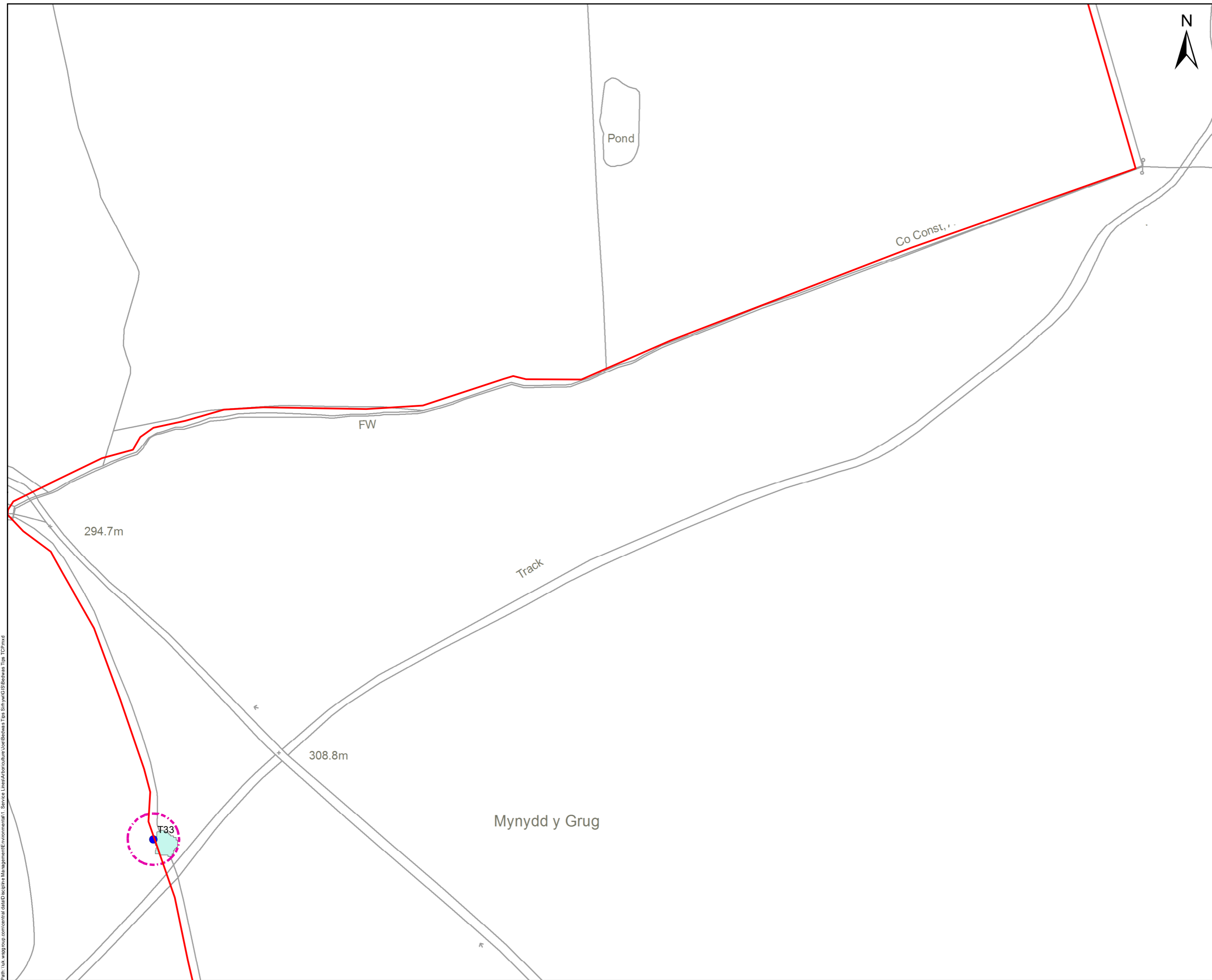
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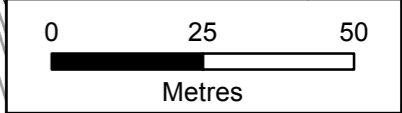
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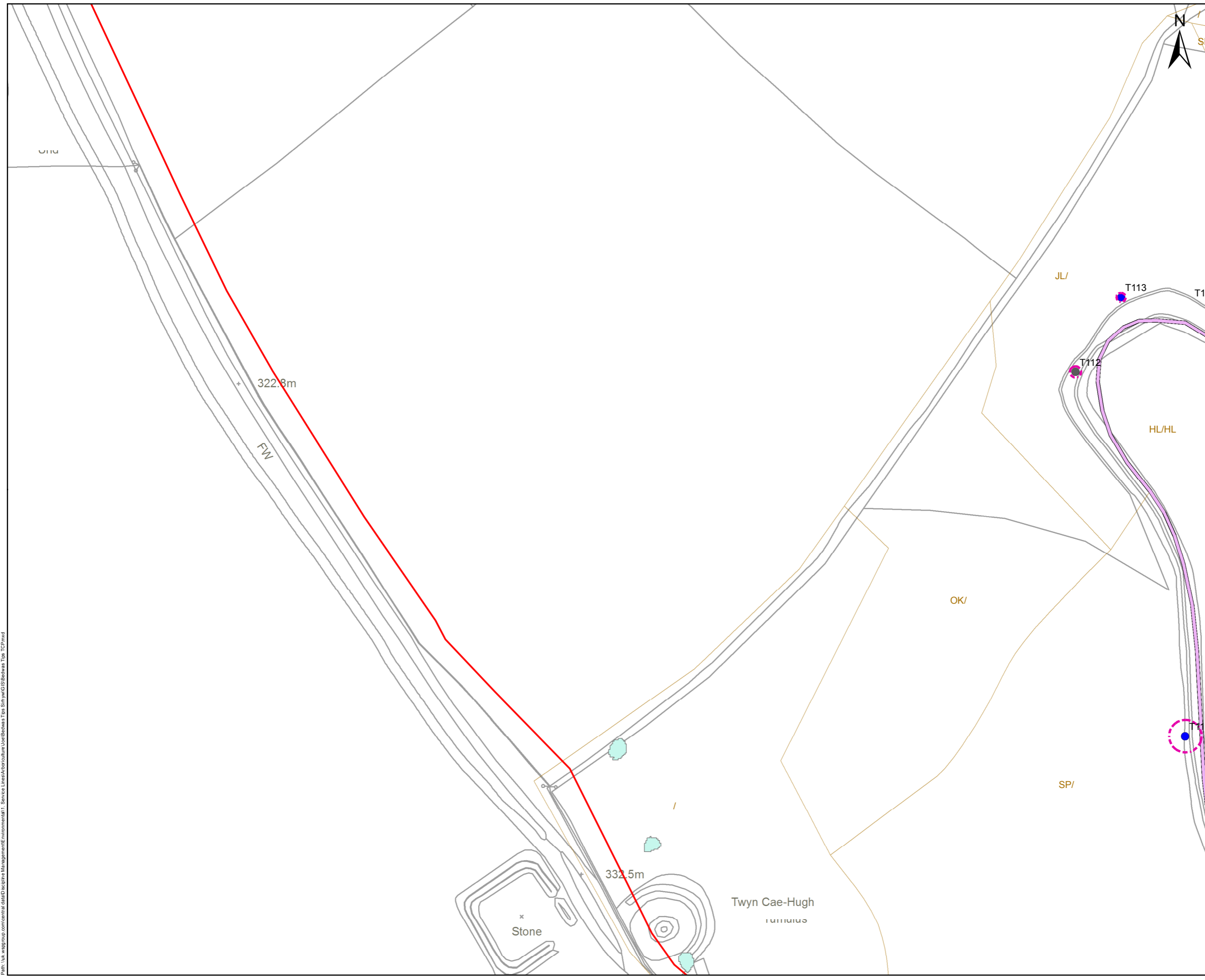
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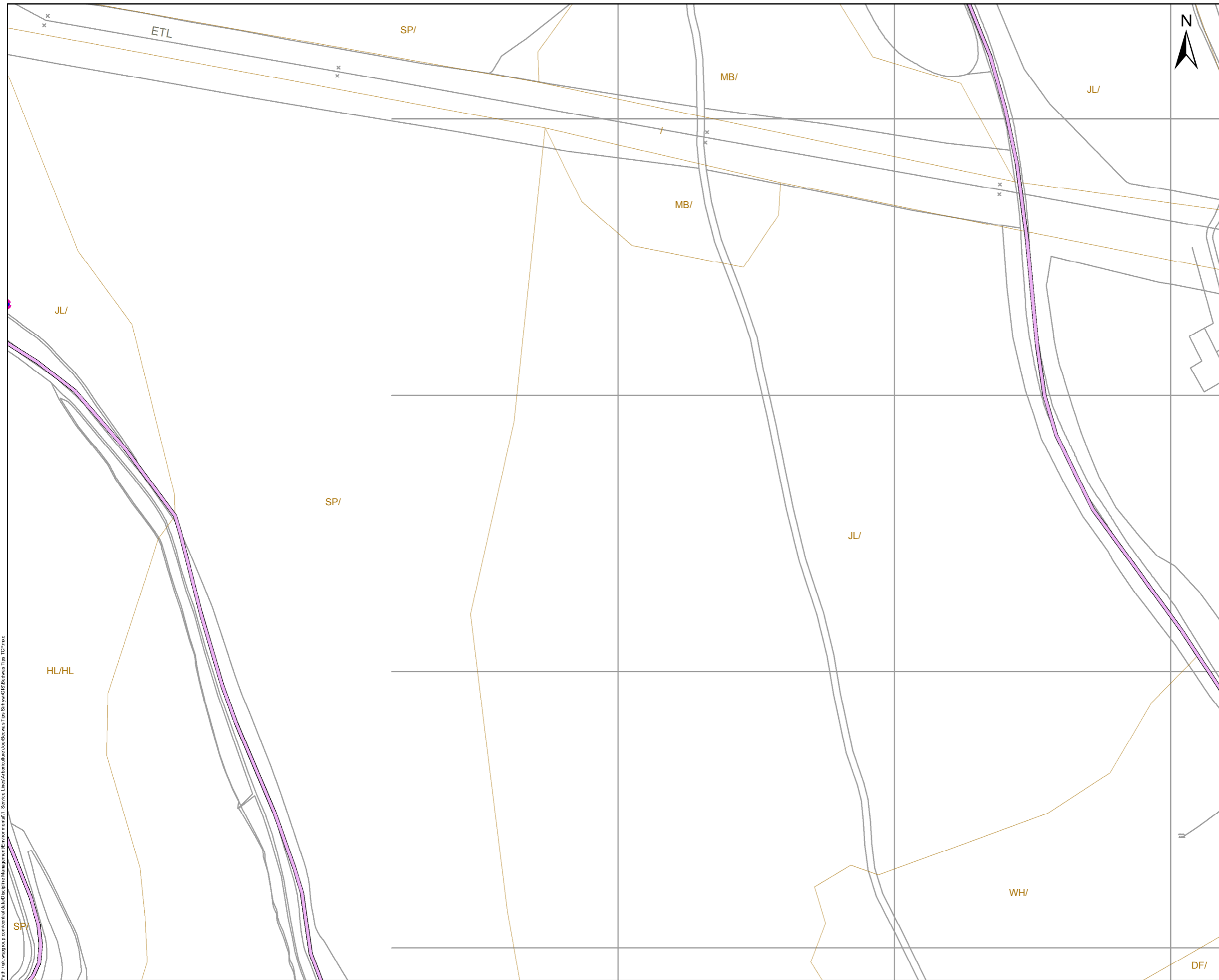
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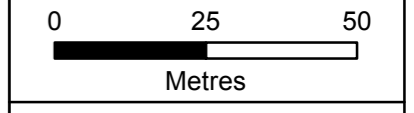
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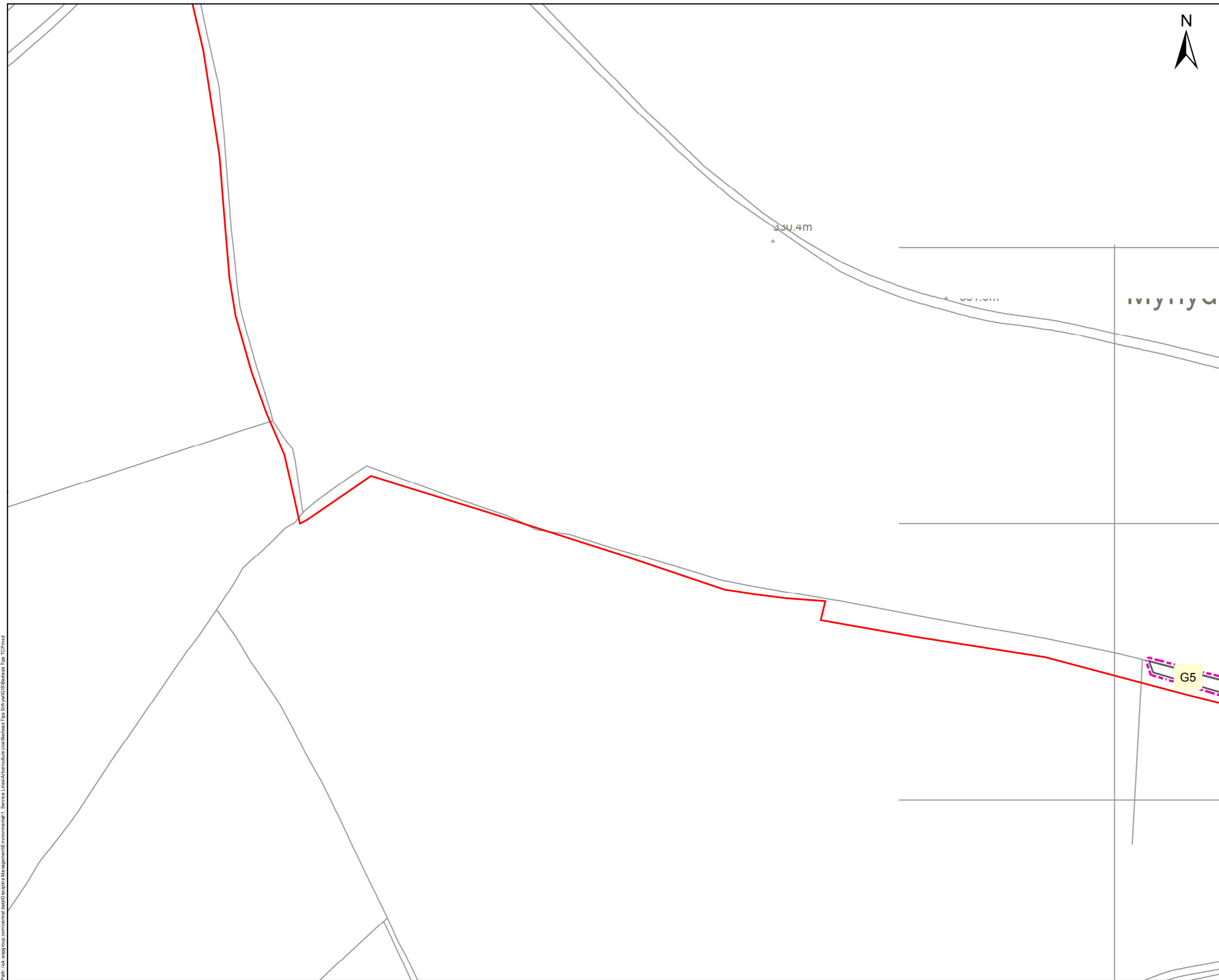
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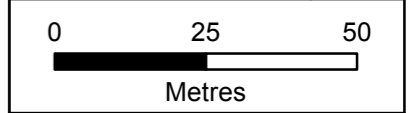
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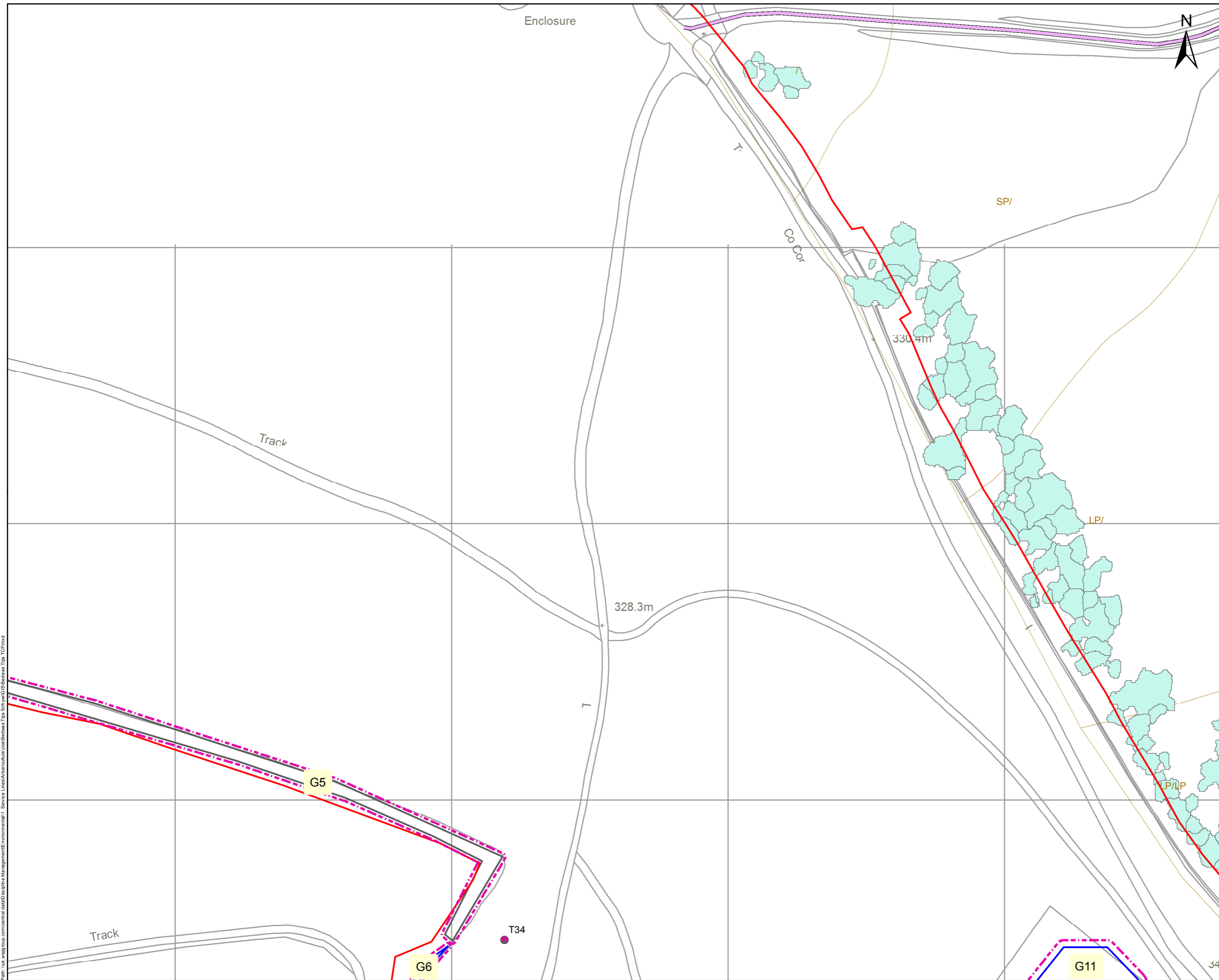
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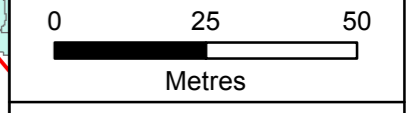
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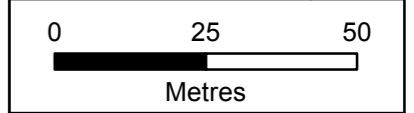
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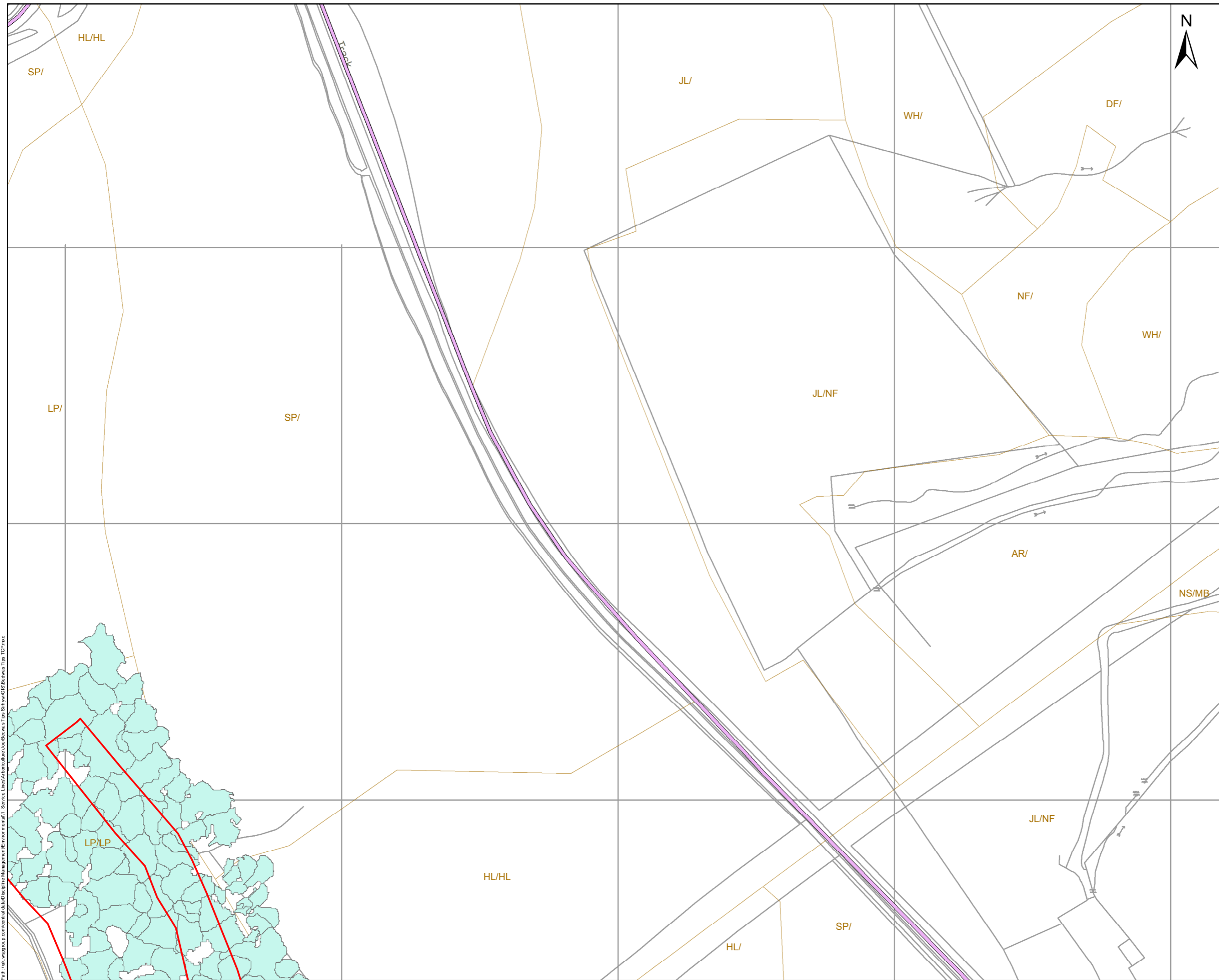
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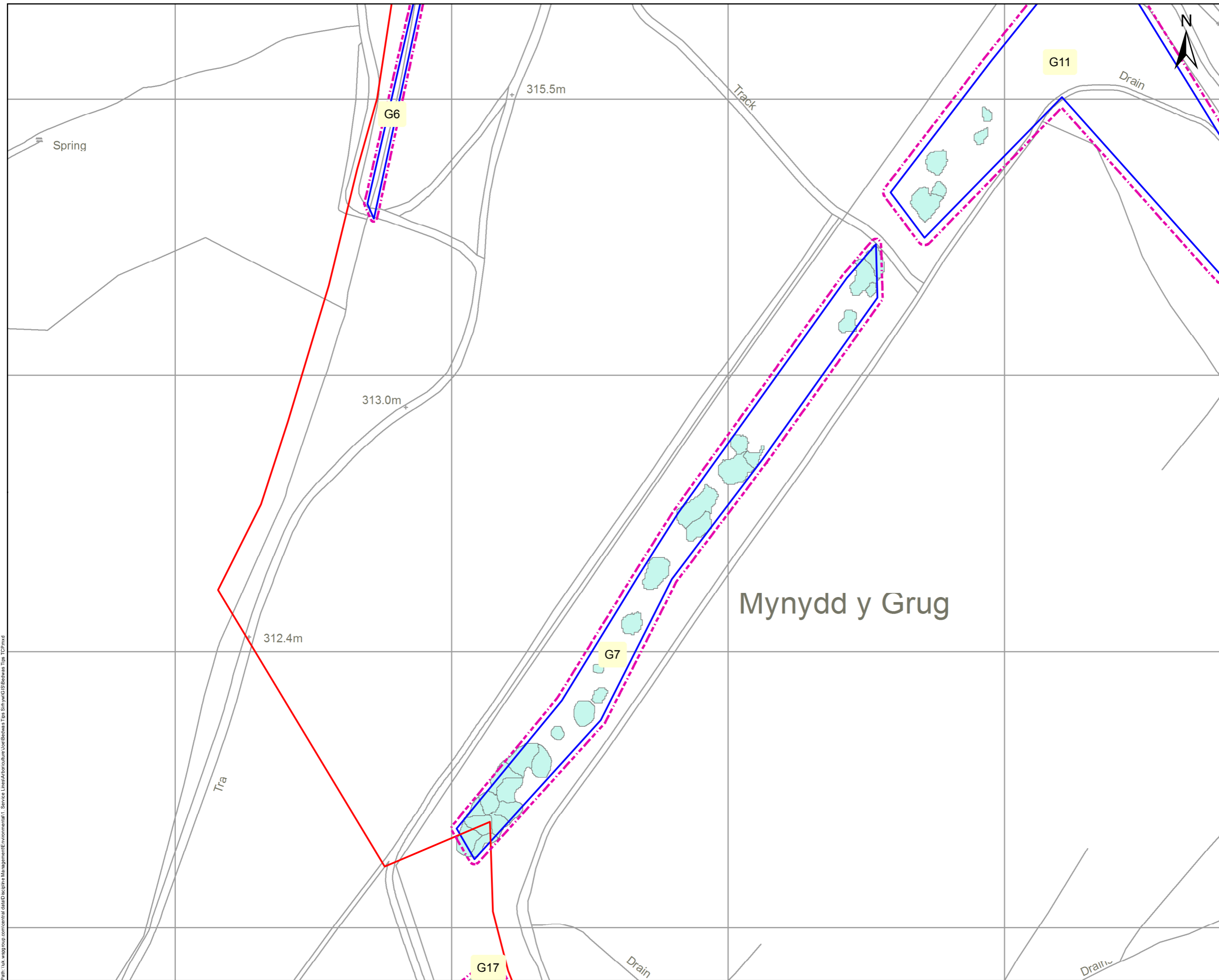
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**Key**

- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

- Forest Roads
- Indicative Canopy Spread
- Sirhywi block stock map

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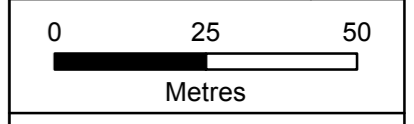
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**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan  
10 of 30**

Scale at A3  
**1:1,250**

Drawn	JA		
Stage 1 check	JA	Stage 2 check	MW
Originated	XX	Date	04/07/2023



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Job Title

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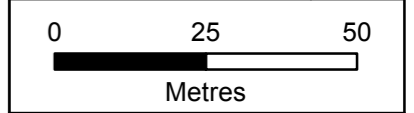
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**Tree Constraints Plan**  
11 of 30

Scale at A3

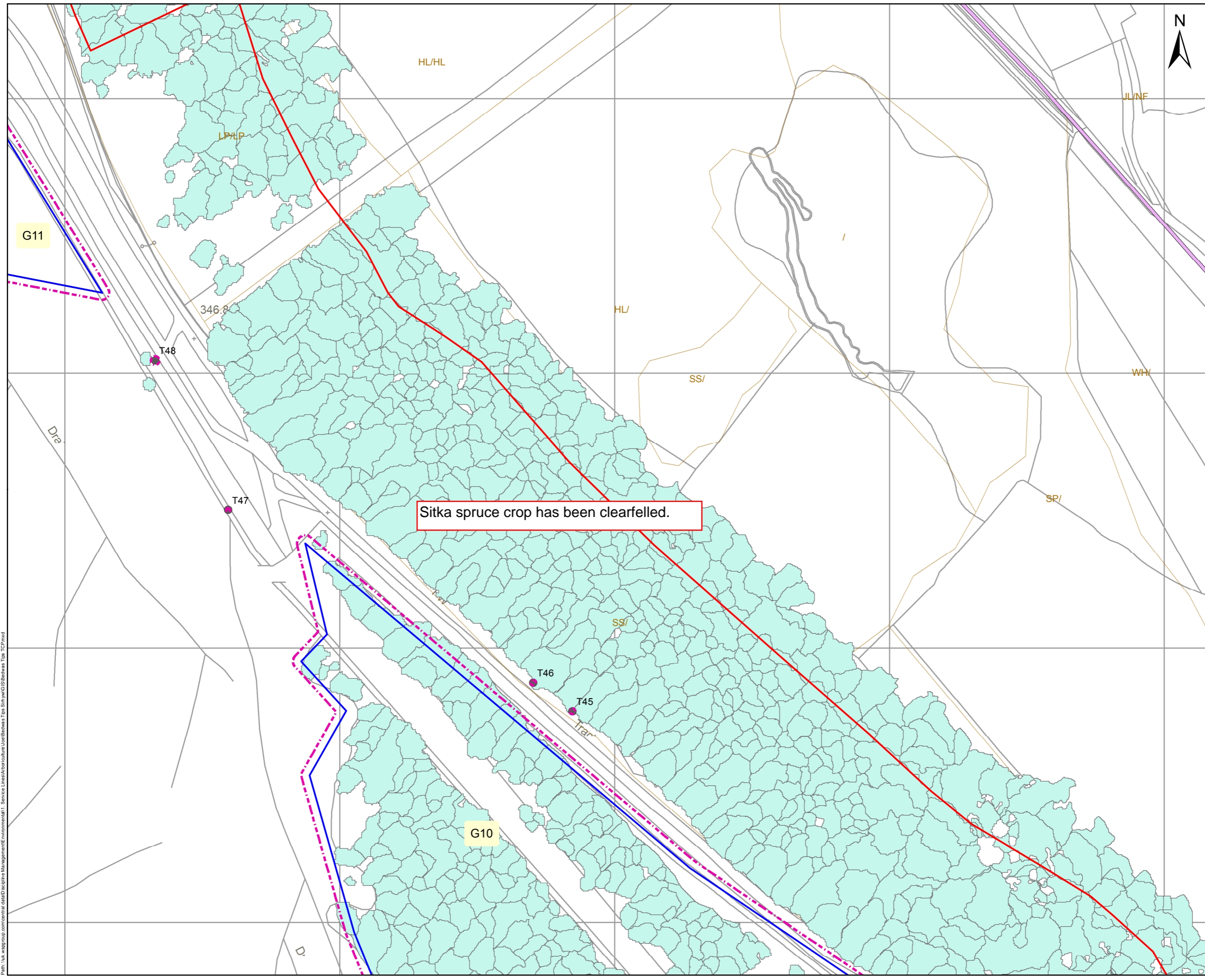
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			04/07/2023



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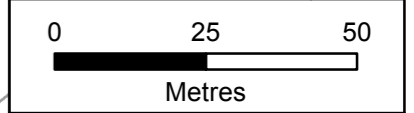
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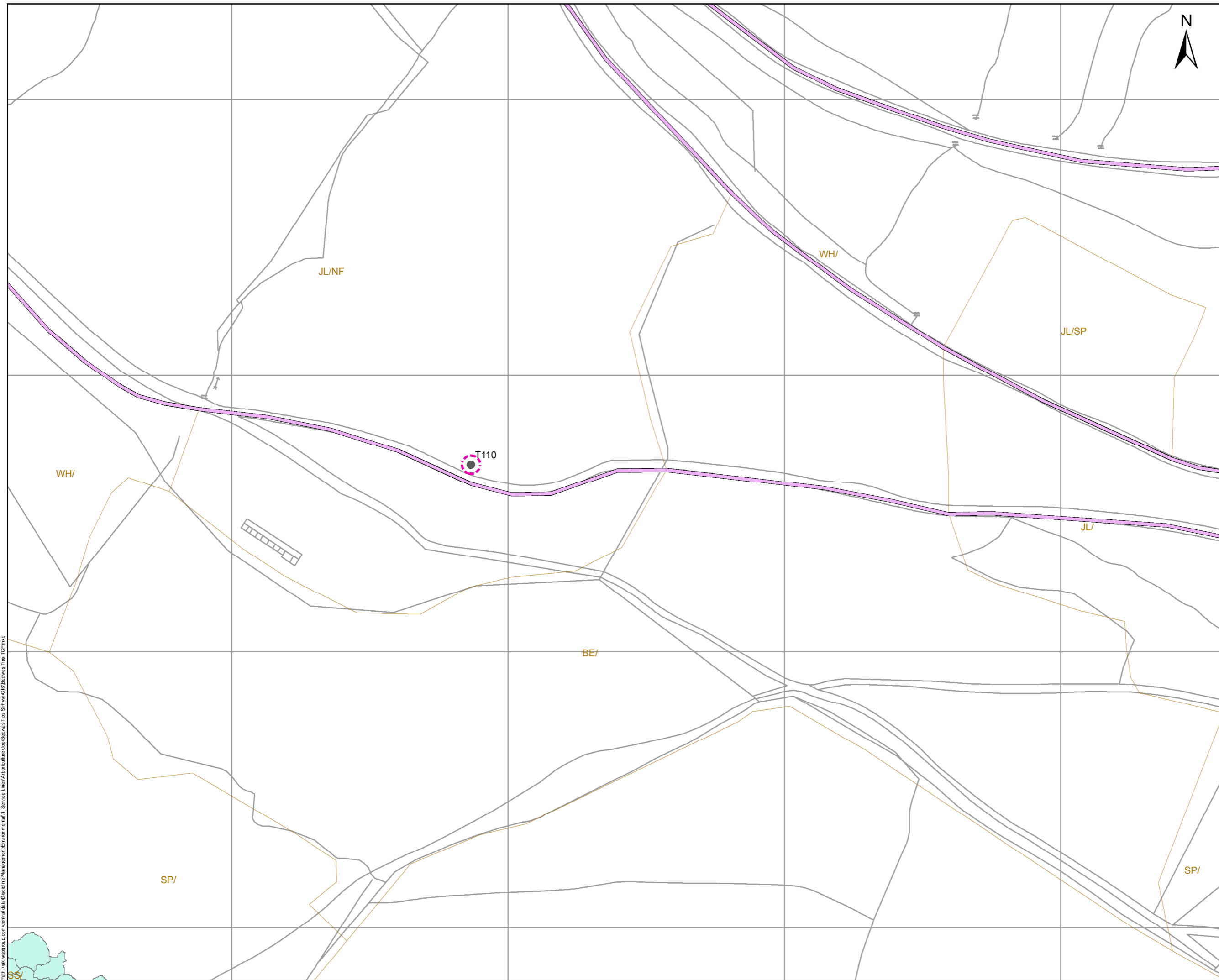
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**Tree Constraints Plan  
12 of 30**

Scale at A3  
**1:1,250**

Drawn	JA	Stage 1 check	Stage 2 check	Originated	Date
		JA	MW	XX	04/07/2023



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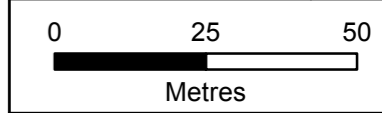
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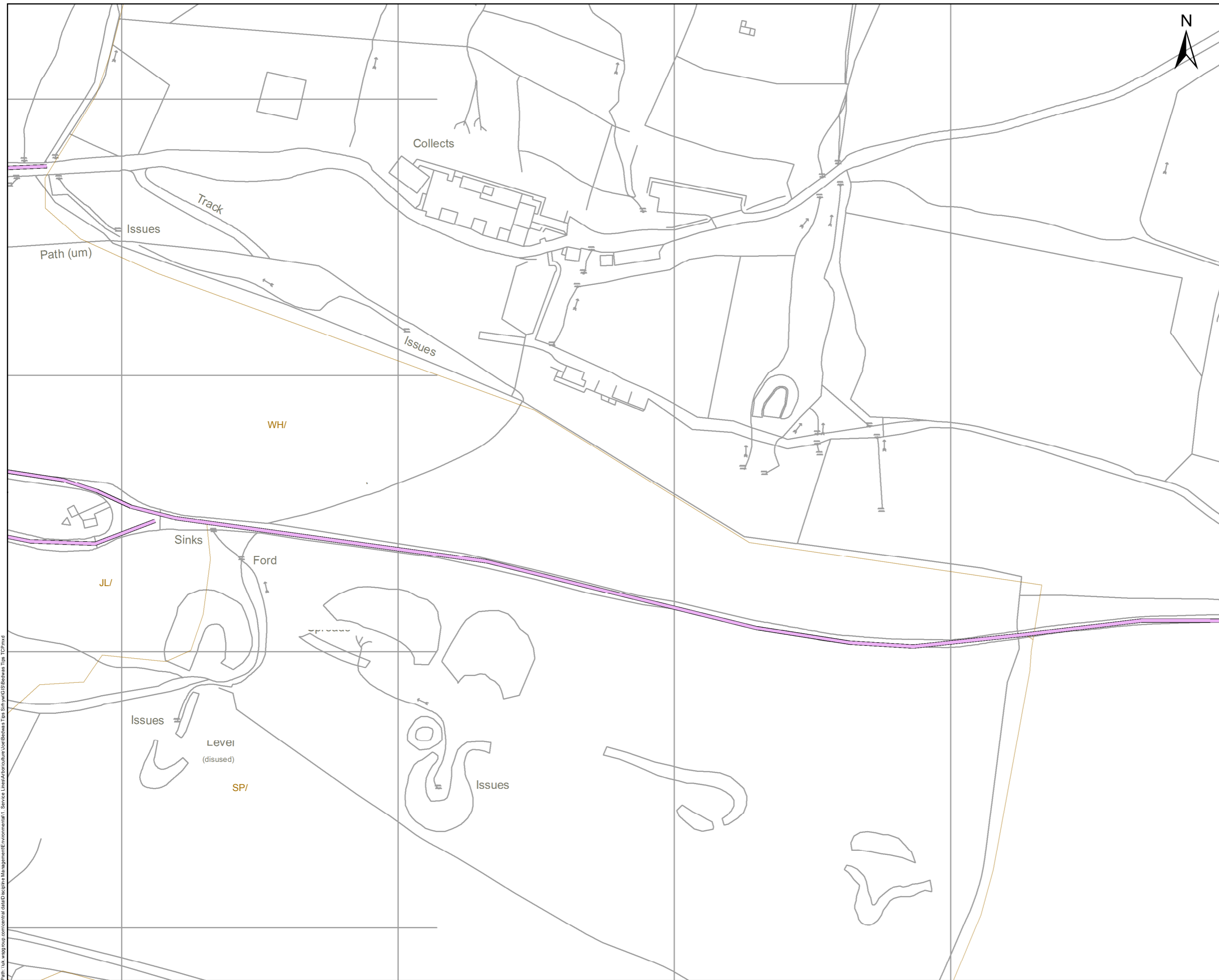
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13 of 30**

Scale at A3  
**1:1,250**

Drawn	JA		
Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	04/07/2023



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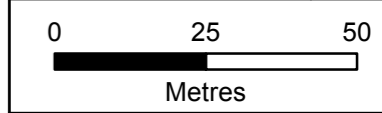
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**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan**  
14 of 30

Scale at A3  
**1:1,250**

Drawn	JA	Stage 1 check	Stage 2 check	Originated	Date
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-  B
-  C
-  U




**Groups**

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-  U

**Woodland**

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-  C

 Forest Roads

 Indicative Canopy Spread

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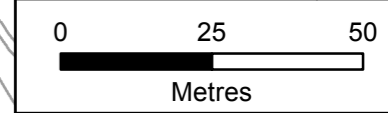
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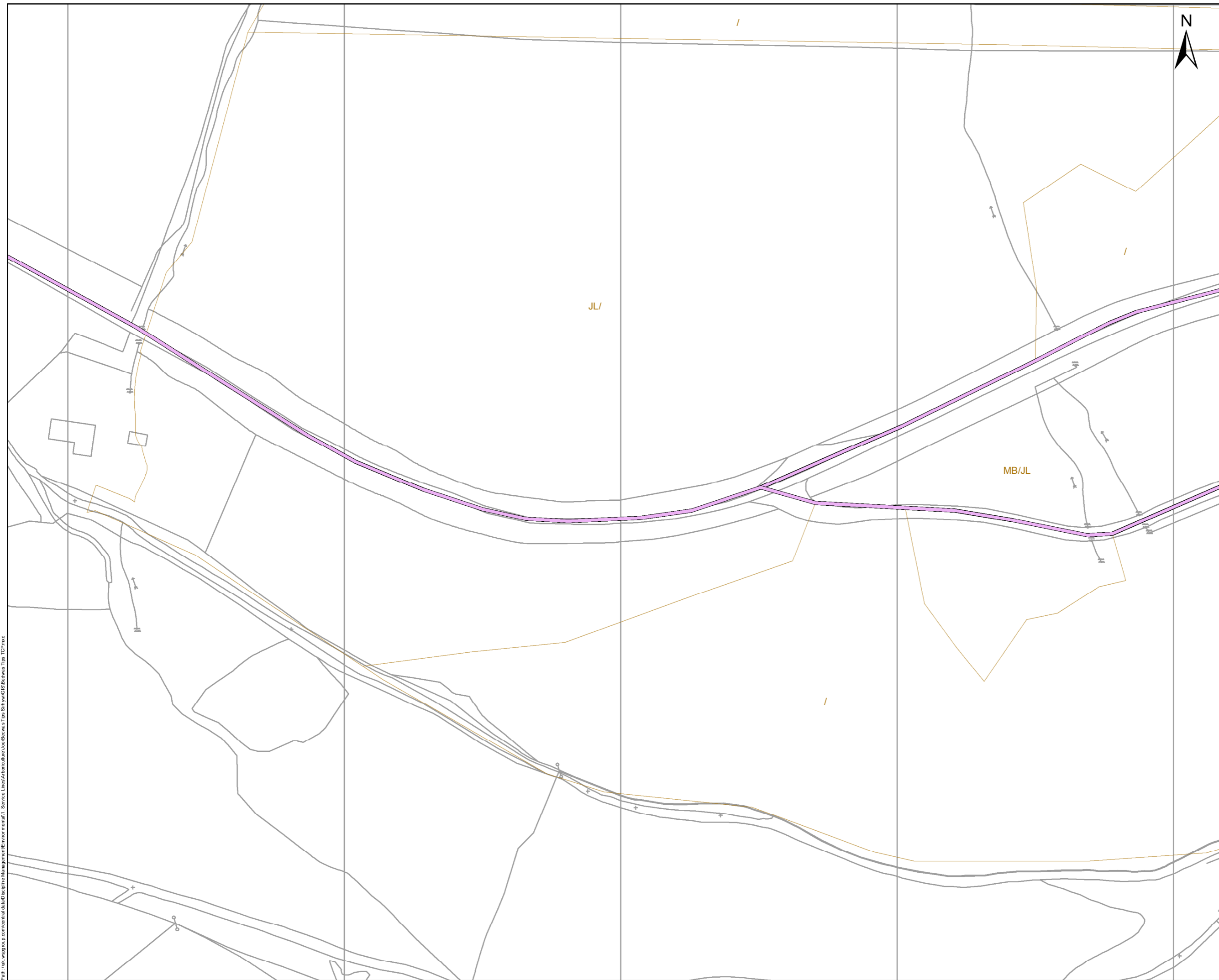
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**Tree Constraints Plan  
15 of 30**

Scale at A3  
**1:1,250**

Drawn	JA	Originated	Date
Stage 1 check	JA	Stage 2 check	MW
		XX	04/07/2023



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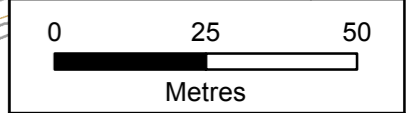
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**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan  
16 of 30**

Scale at A3  
**1:1,250**

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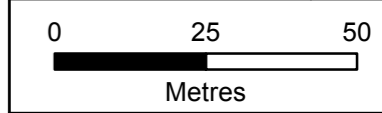
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan  
17 of 30**

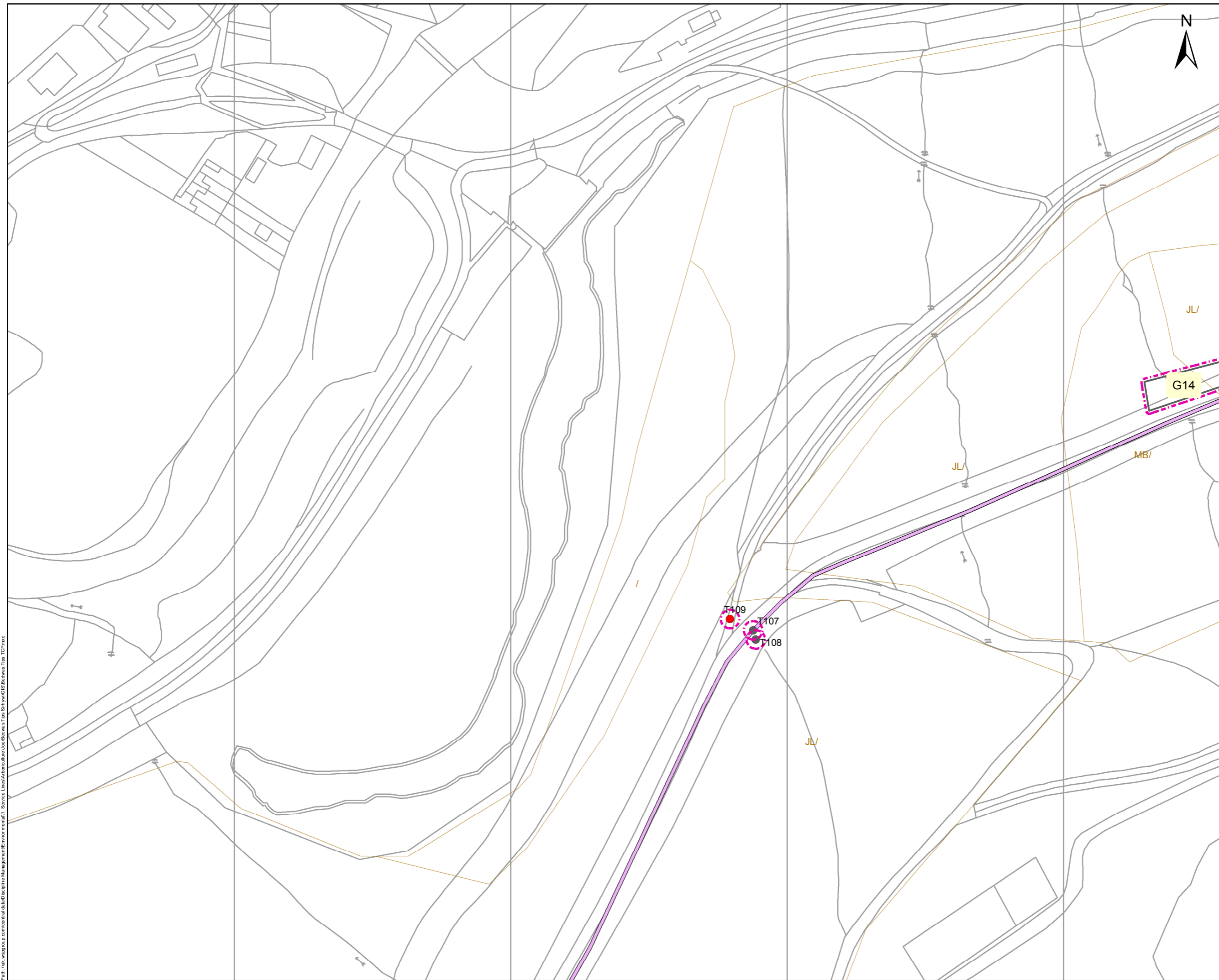
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**70106037-WSP-EV-TCP-001**

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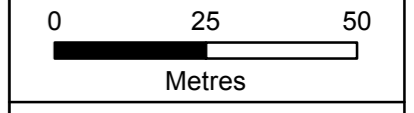
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Drawing Title  
**Tree Constraints Plan  
18 of 30**

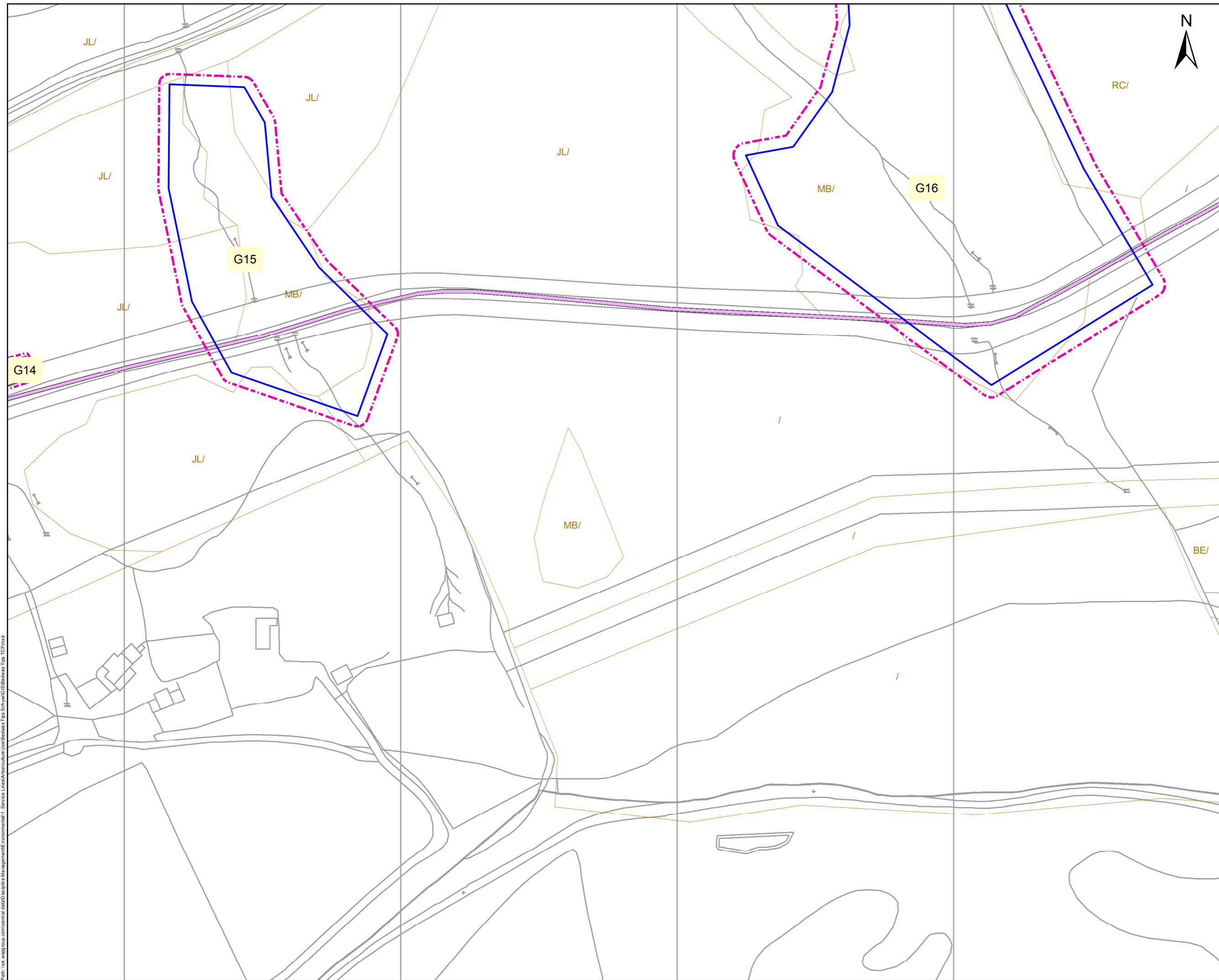
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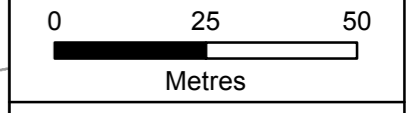
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Drawing Title  
**Tree Constraints Plan  
19 of 30**

Scale at A3  
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Drawn	JA	Originated	Date
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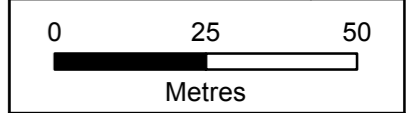
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Drawing Title  
**Tree Constraints Plan  
20 of 30**

Scale at A3  
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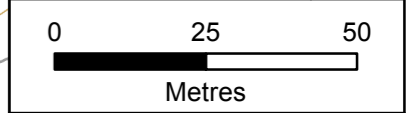
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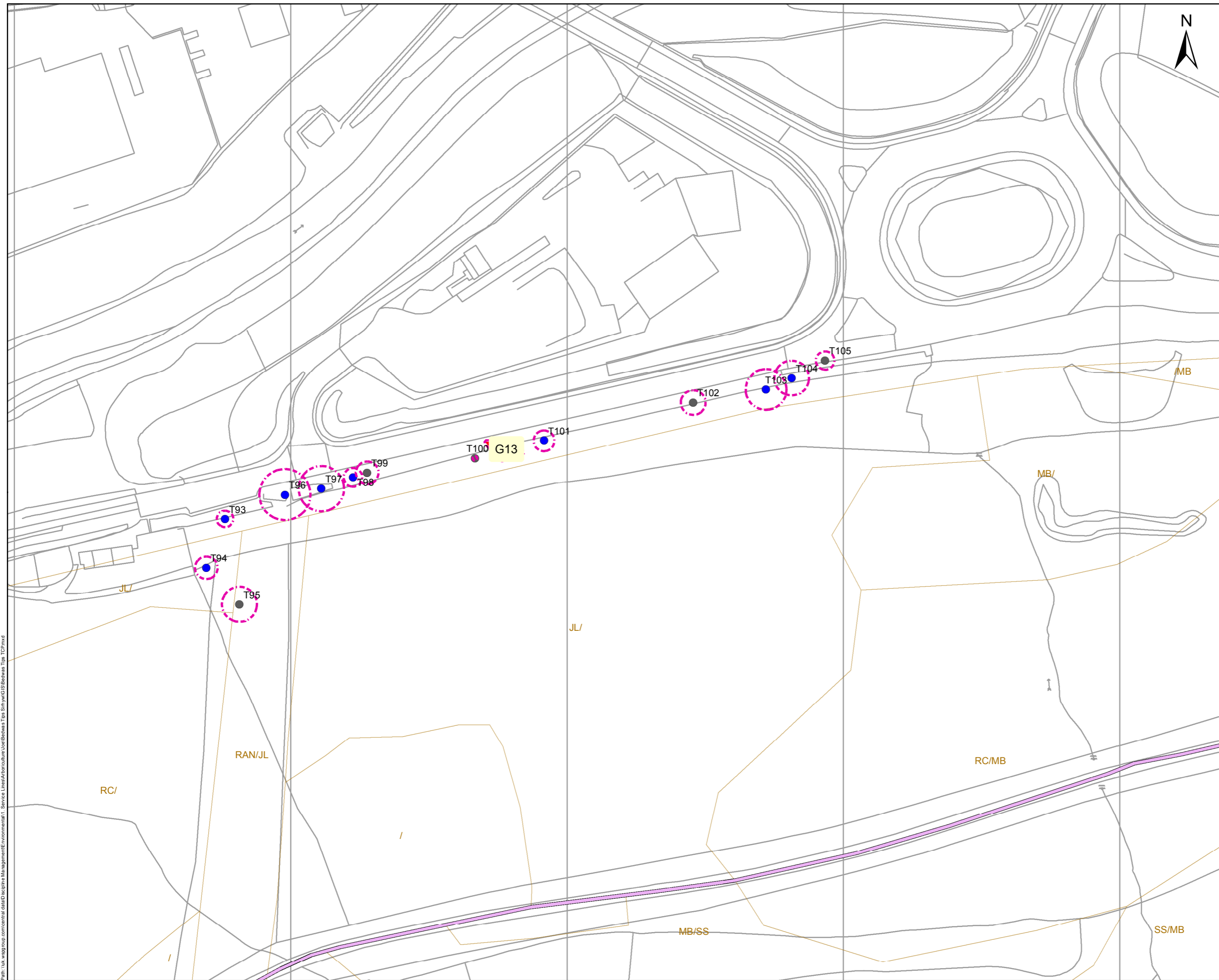
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21 of 30**

Scale at A3  
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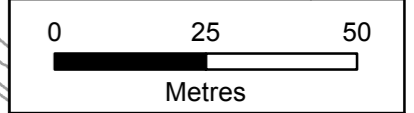
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Drawing Title  
**Tree Constraints Plan  
22 of 30**

Scale at A3  
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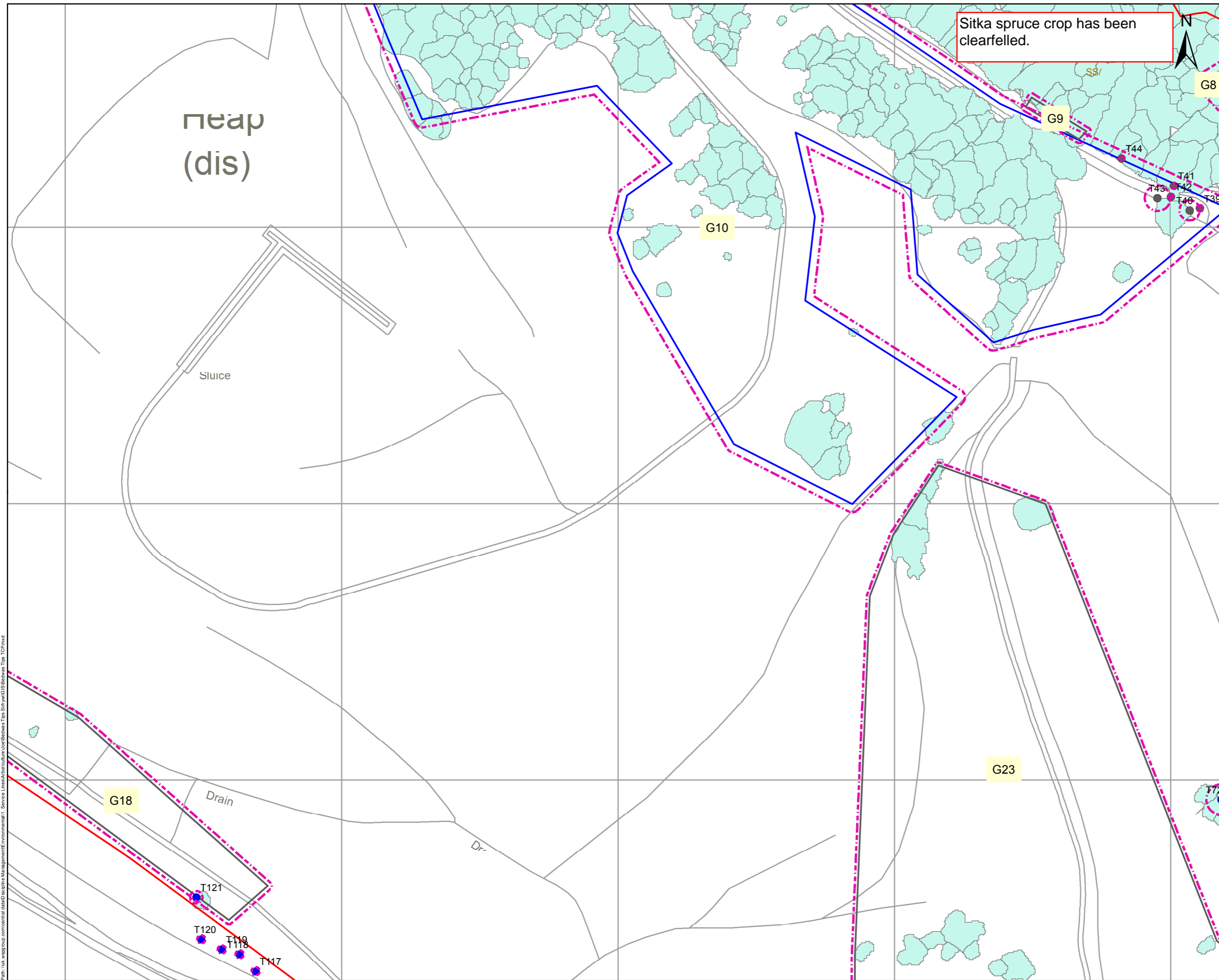


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Sitka spruce crop has been clearfelled.

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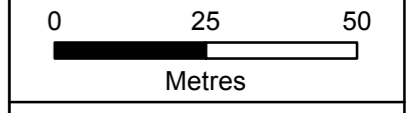
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Drawing Title  
**Tree Constraints Plan  
23 of 30**

Scale at A3  
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Stage 1 check JA	Stage 2 check MW	Originated XX	Date 04/07/2023
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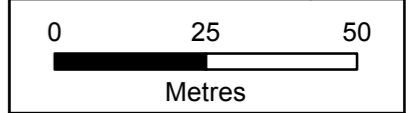
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**FOR INFORMATION**

Job Title  
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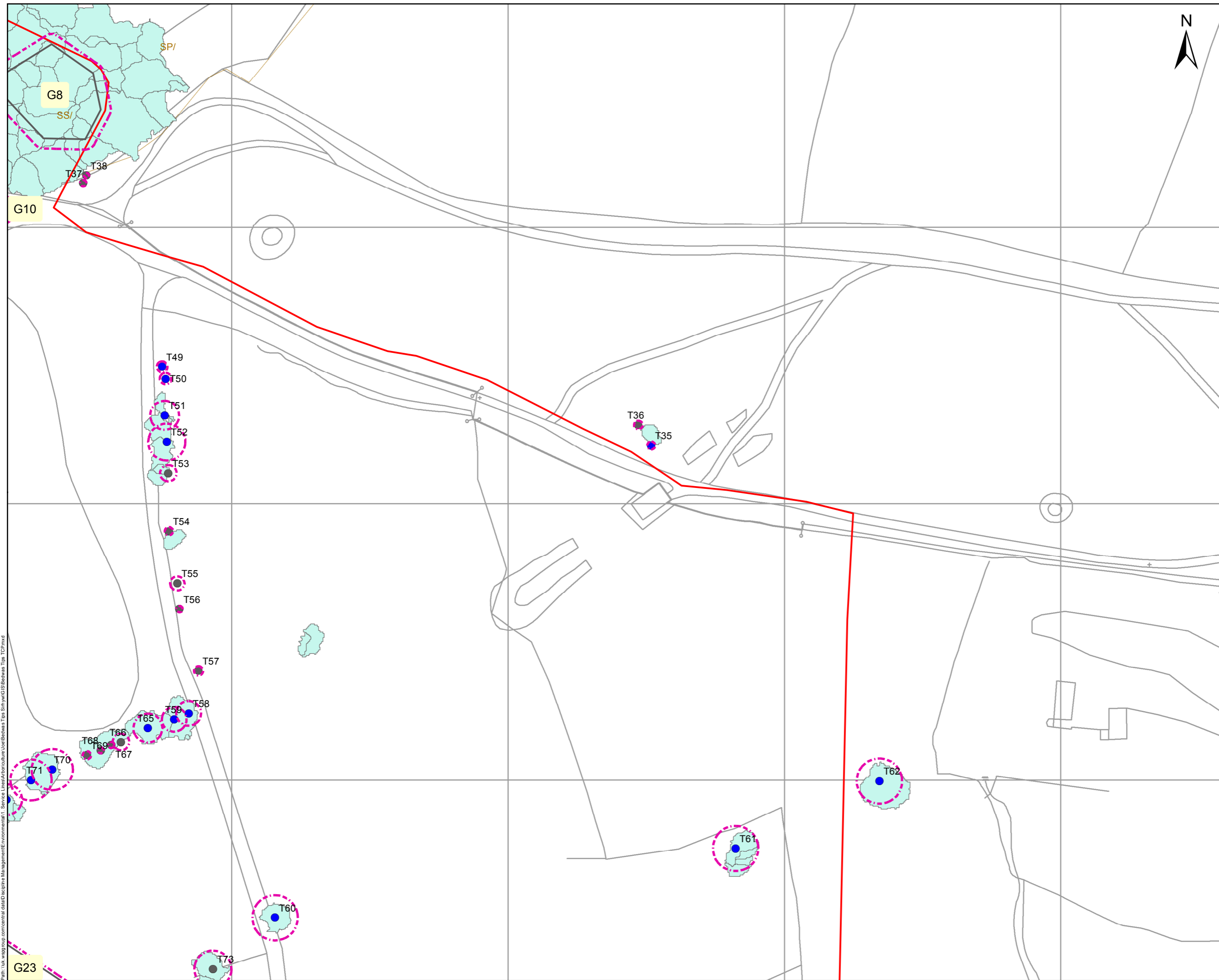
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24 of 30**

Scale at A3  
**1:1,250**

Drawn	JA			
Stage 1 check	Stage 2 check	Originated	Date	
JA	MW	XX	04/07/2023	



Drawing Number  
**70106037-WSP-EV-TCP-001**



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- Key**
- Site Boundary
  - Indicative RPA

- Trees**
- BS5837 Category**
- B
  - C
  - U

- Groups**
- BS5837 Category**
- B
  - C
  - U

- Woodland**
- BS5837 Category**
- A
  - B
  - C
- Forest Roads
  - Indicative Canopy Spread
  - Sirhywi block stock map

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Revision Details	By	Date	Suffix
	Check		

Drawing Status

**FOR INFORMATION**

Job Title

**Bedwas Tips Land Reclamation**

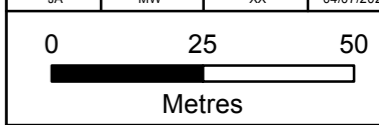
Drawing Title

**Tree Constraints Plan  
25 of 30**

Scale at A3

**1:1,250**

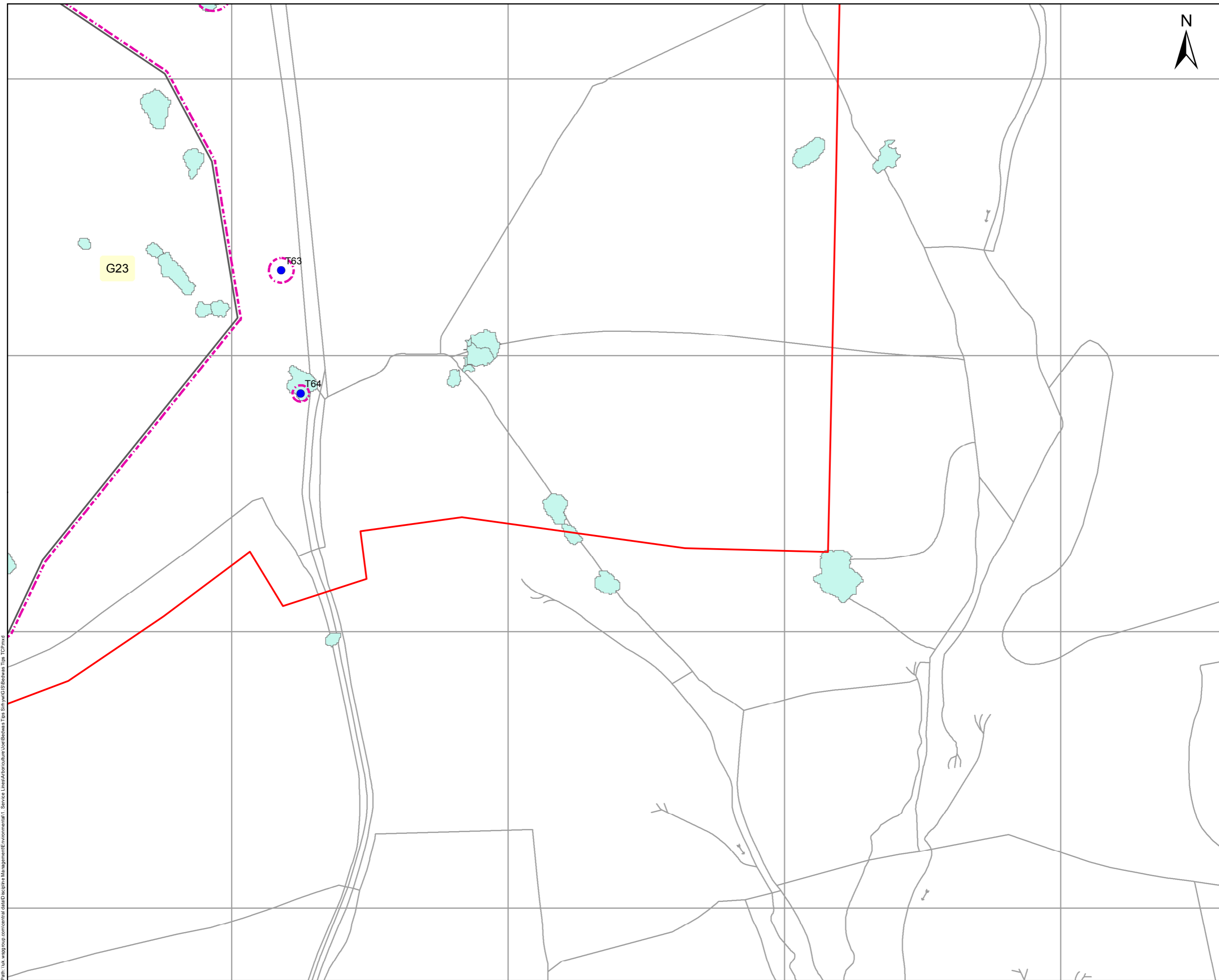
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Stage 1 check	Stage 2 check	XX	04/07/2023
JA	MW		



Drawing Number

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**Key**

- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

- Forest Roads
- Indicative Canopy Spread
- Sirhywi block stock map

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Revision Details	By	Date	Suffix
	Check		

Drawing Status

**FOR INFORMATION**

Job Title

**Bedwas Tips Land Reclamation**

Drawing Title

**Tree Constraints Plan**  
26 of 30

Scale at A3

**1:1,250**

Drawn

JA

Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	04/07/2023



Drawing Number

**70106037-WSP-EV-TCP-001**

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**Key**

- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

- Forest Roads
- Indicative Canopy Spread
- Sirhywi block stock map

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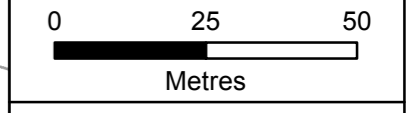
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan  
27 of 30**

Scale at A3  
**1:1,250**

Drawn JA	Stage 1 check JA	Stage 2 check MW	Originated XX	Date 04/07/2023
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Drawing Number  
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**Key**

-  Site Boundary
-  Indicative RPA




**Trees**

**BS5837 Category**

-  B
-  C
-  U


**Groups**

**BS5837 Category**

-  B
-  C
-  U

**Woodland**

**BS5837 Category**

-  A
-  B
-  C

 Forest Roads

 Indicative Canopy Spread

 Sirhywi block stock map

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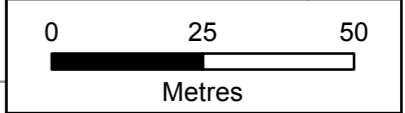
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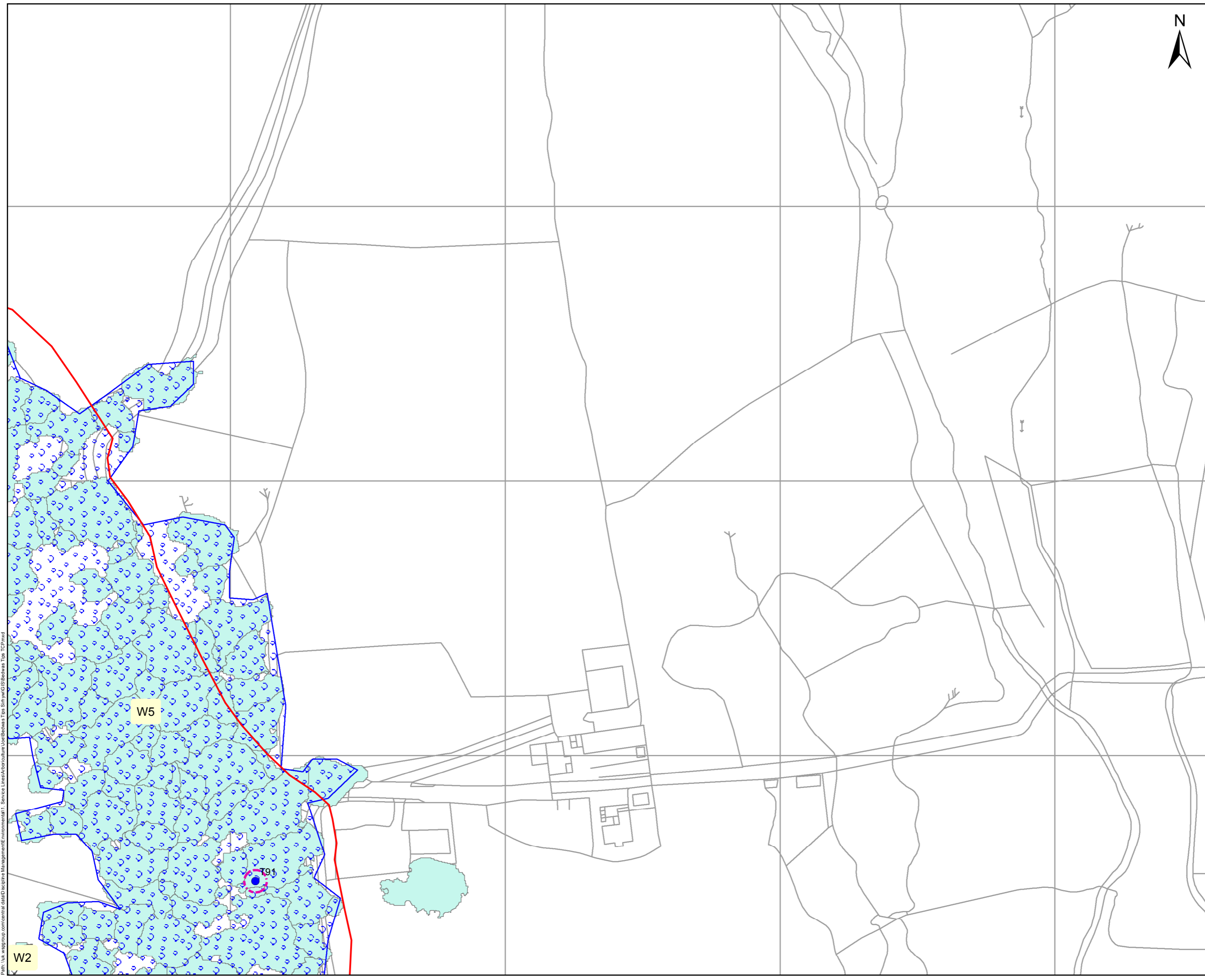
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28 of 30**

Scale at A3  
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		XX	04/07/2023



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**Key**

- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

- Forest Roads
- Indicative Canopy Spread
- Sirhywi block stock map

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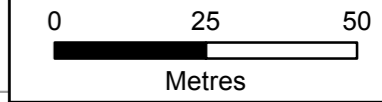
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Constraints Plan  
29 of 30**

Scale at A3  
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Drawn	JA	Originated	Date
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		XX	04/07/2023



Drawing Number  
**70106037-WSP-EV-TCP-001**



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- Key**
- Site Boundary
  - Indicative RPA

- Trees**
- BS5837 Category**
- B
  - C
  - U

- Groups**
- BS5837 Category**
- B
  - C
  - U

- Woodland**
- BS5837 Category**
- A
  - B
  - C
- Forest Roads
  - Indicative Canopy Spread
  - Sirhywi block stock map

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	Check	Suffix

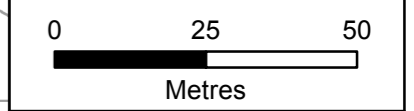
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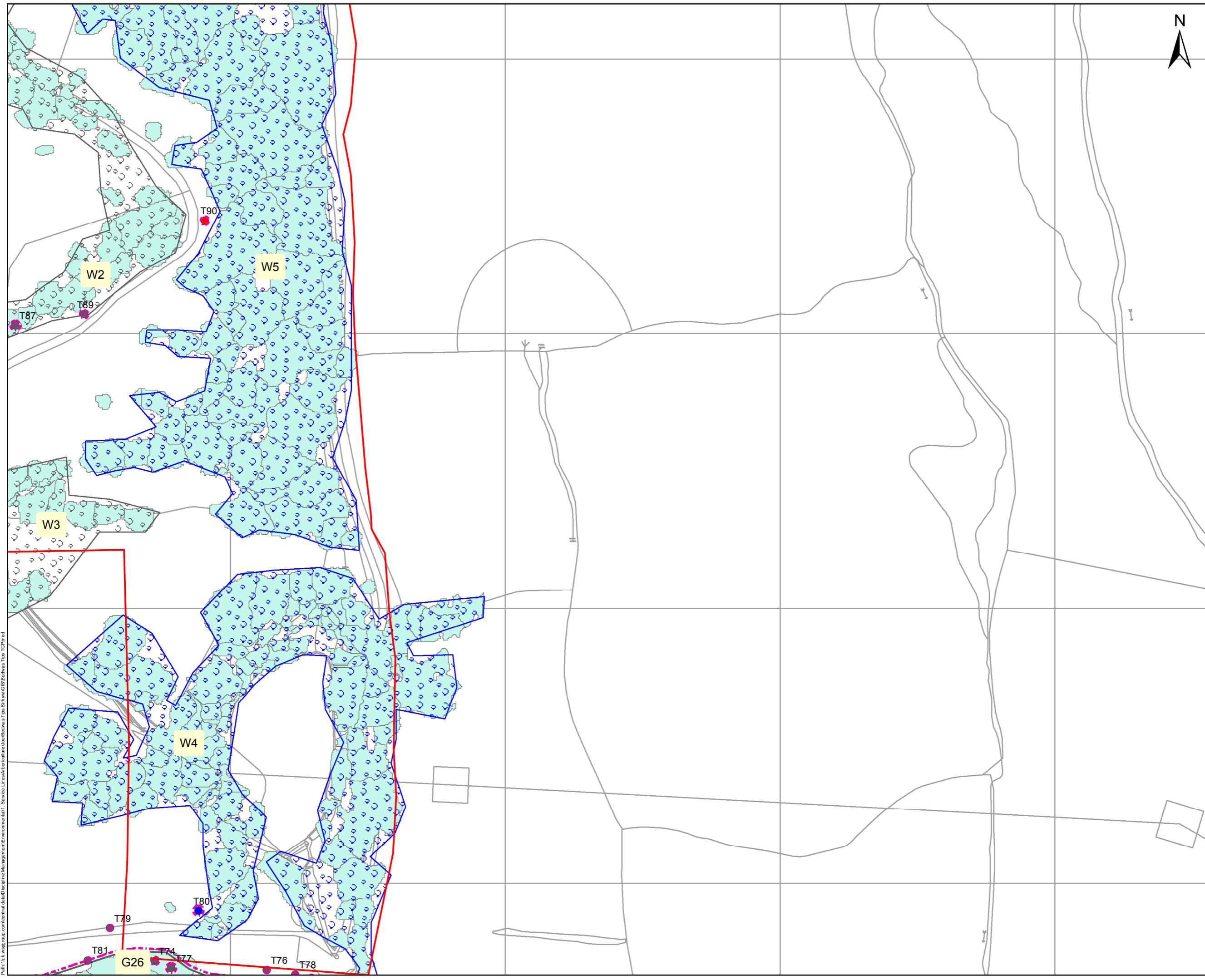
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**Tree Constraints Plan  
30 of 30**

Scale at A3  
**1:1,250**

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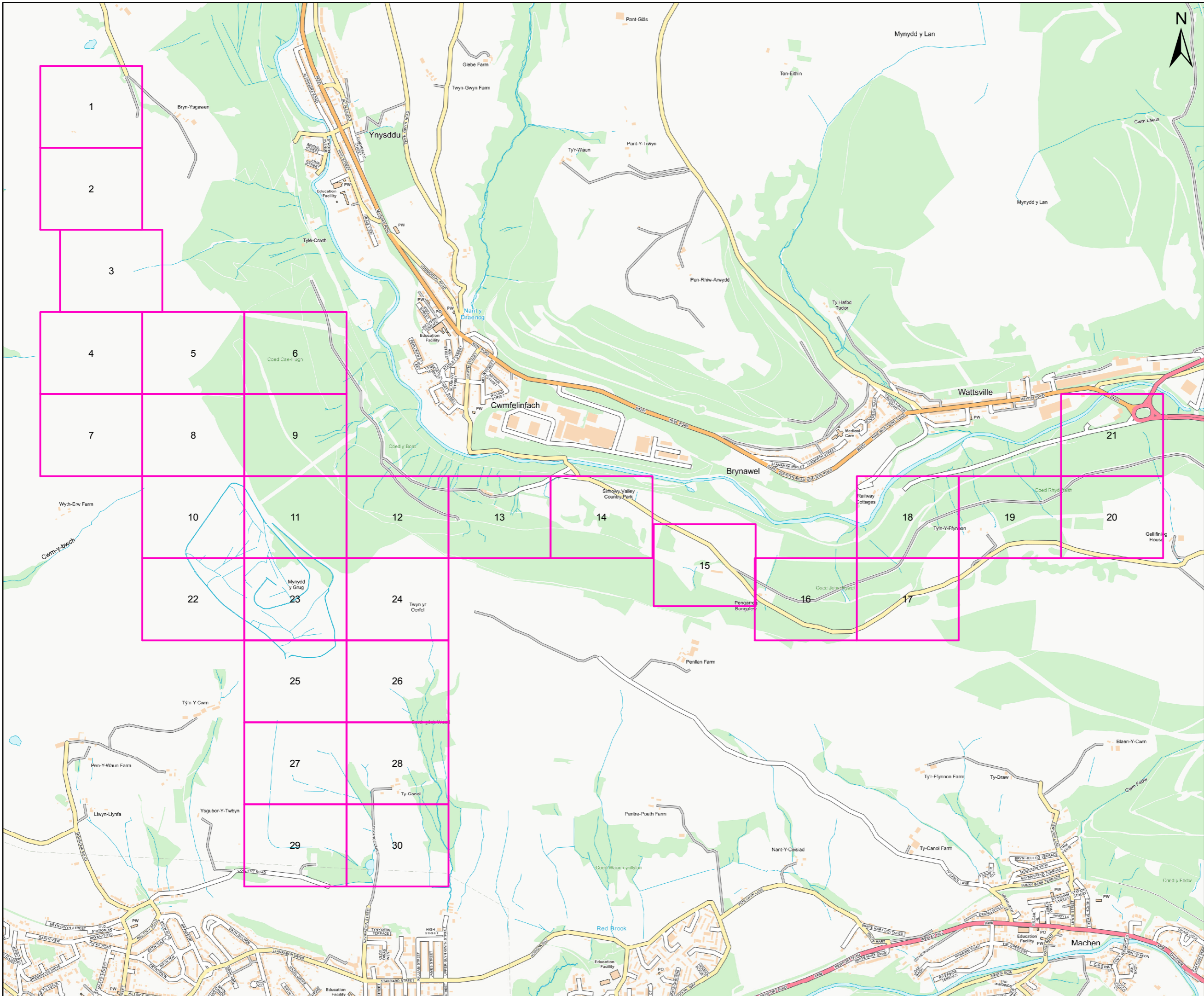
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# Appendix D

## TREE REMOVALS PLAN





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### Key

Map sheets

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	Check		

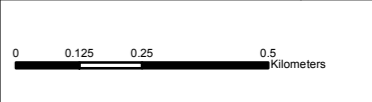
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Key to Grid Layout**

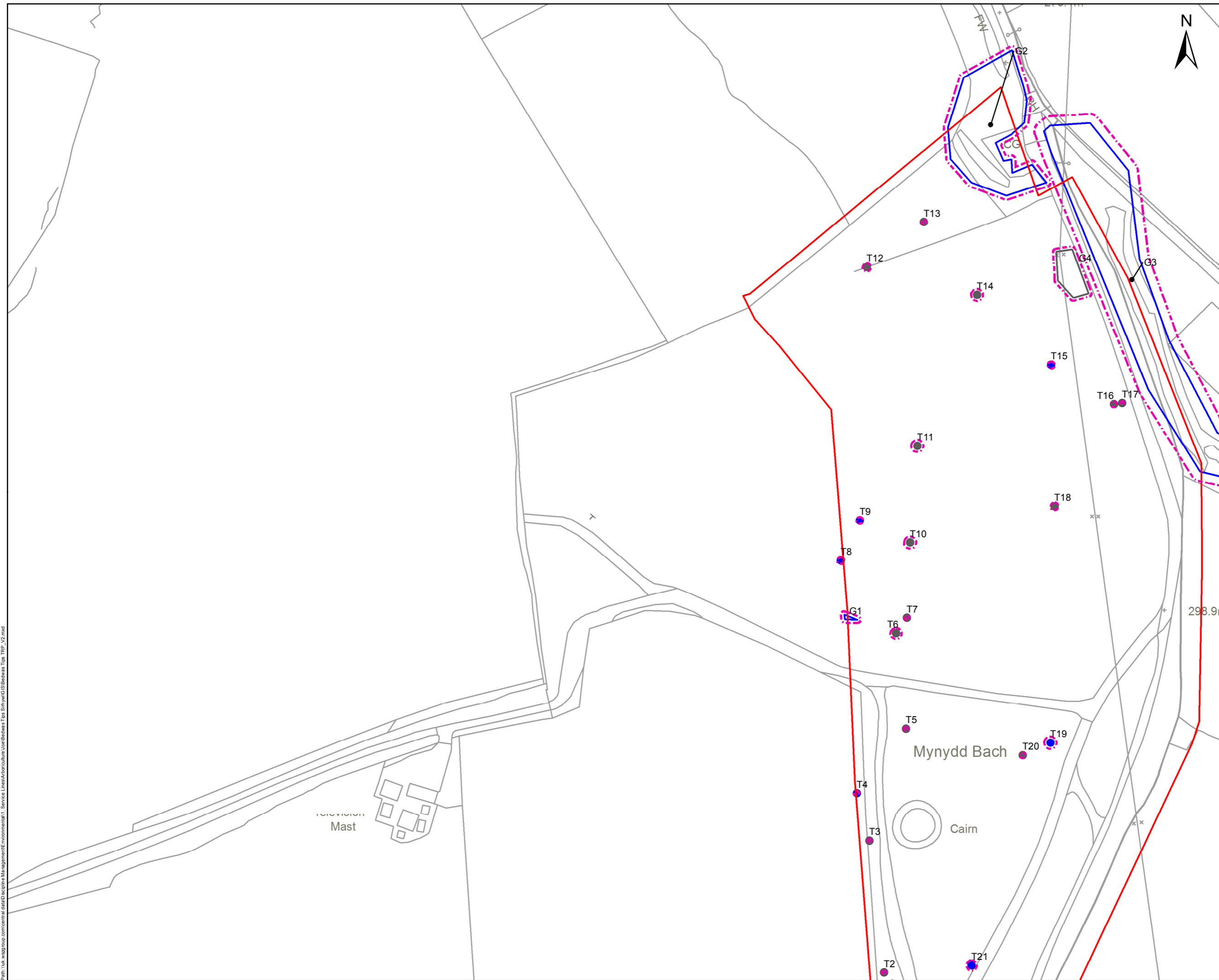
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		XX	05/07/2023



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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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Revision Details	By	Date	Suffix

Drawing Status  
**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
1 of 30**

Scale at A3  
**1:1,250**

Drawn JA	Stage 1 check JA	Stage 2 check MW	Originated XX	Date 05/07/2023
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Drawing Number  
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C
- Sirhywi block stock map

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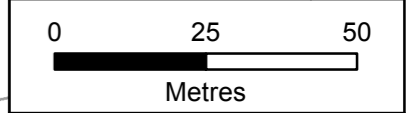
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Job Title  
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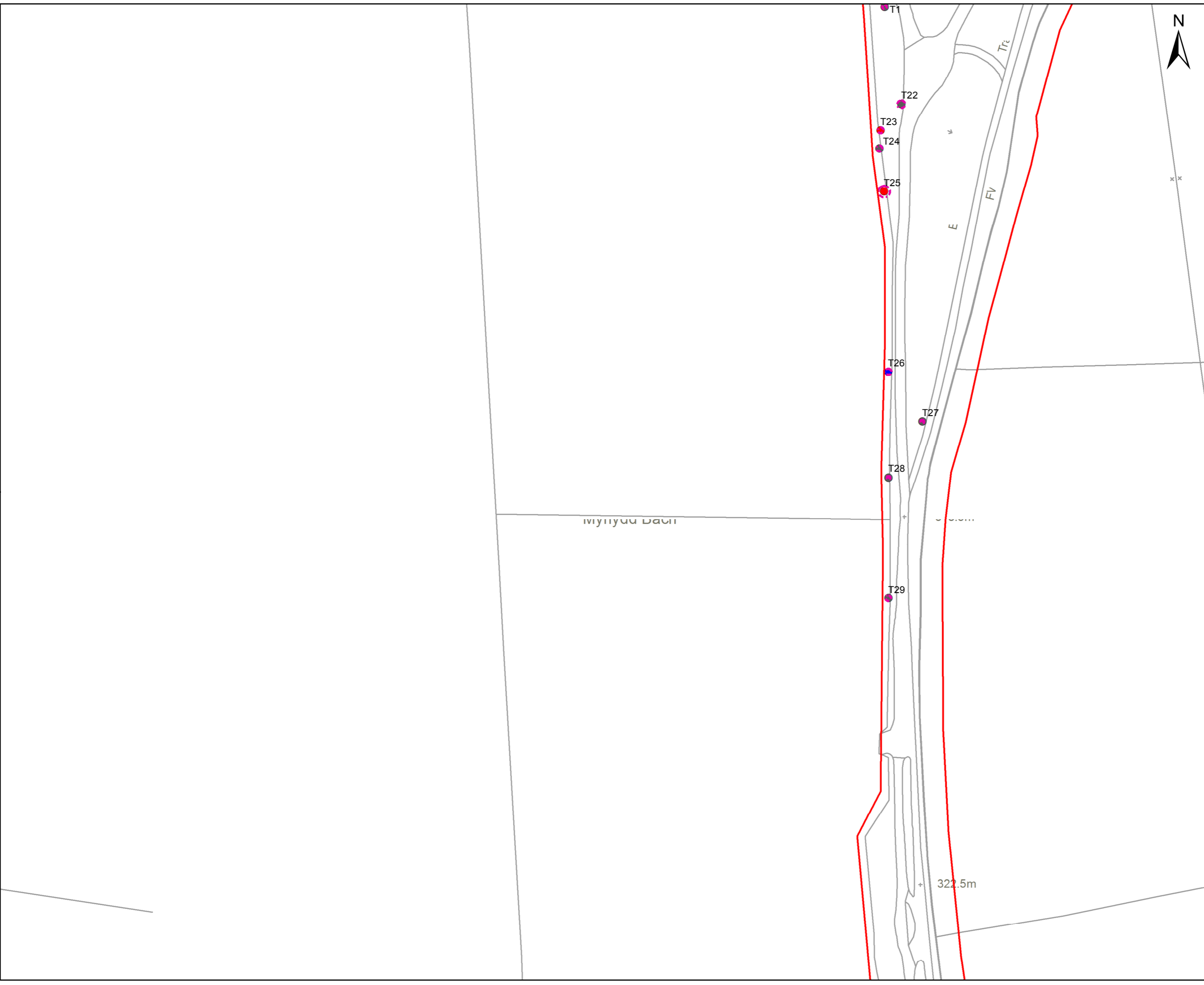
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2 of 30**

Scale at A3  
**1:1,250**

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Stage 1 check JA	Stage 2 check MW		








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-  Proposed Haul Road
-  Trees At Risk of Removal
-  Assumed Extents of Site Clearance
-  Site Boundary
-  Indicative RPA




**Trees**

**BS5837 Category**

-  B
-  C
-  U





**Groups**

**BS5837 Category**

-  B
-  C
-  U

**Woodland**

**BS5837 Category**

-  A
-  B
-  C
-  Sirhywi block stock map

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	Check		

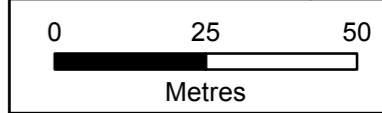
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
3 of 30**

Scale at A3  
**1:1,250**

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Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	05/07/2023



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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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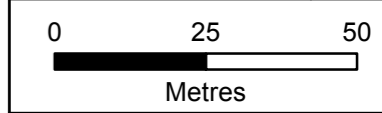
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
4 of 30**

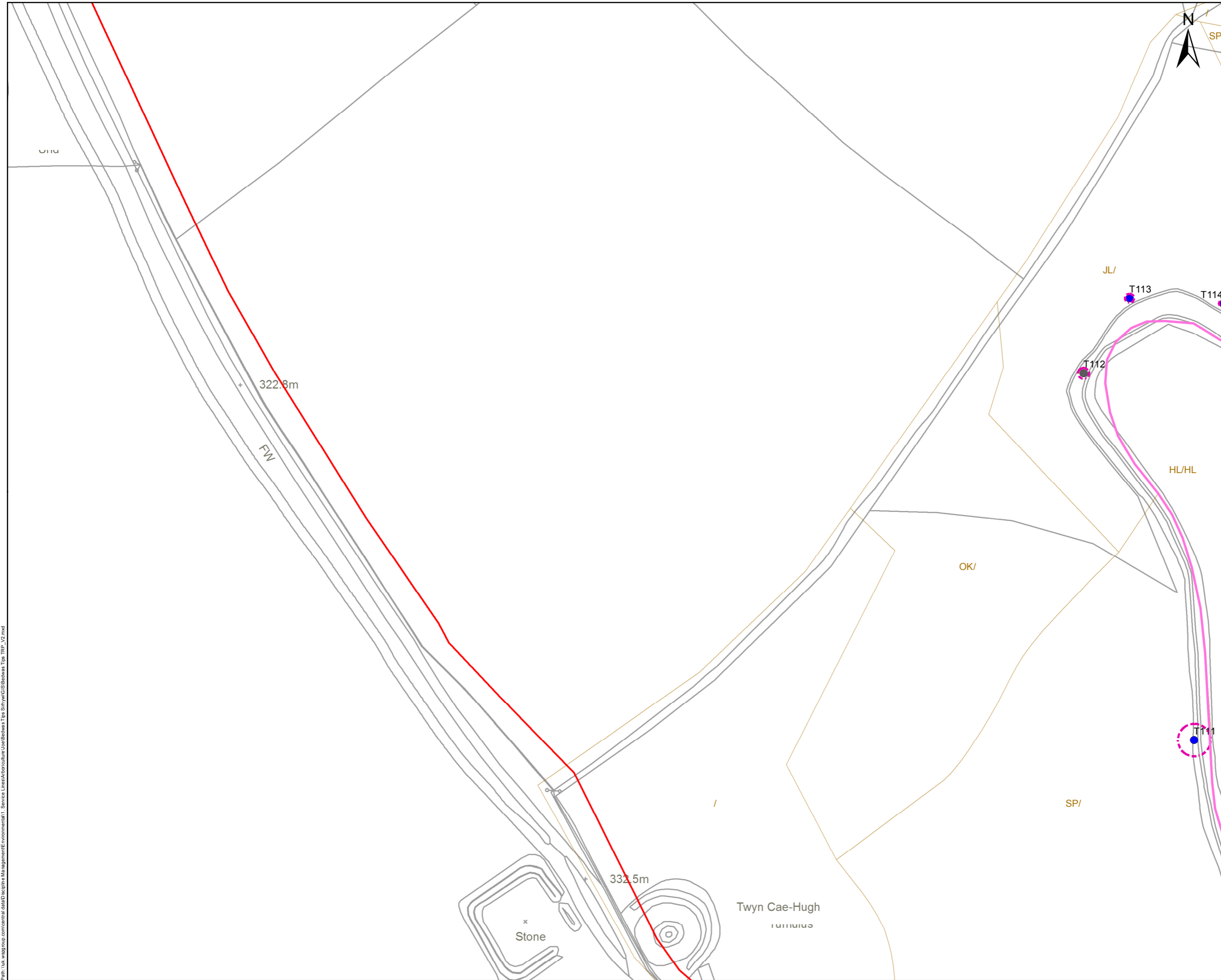
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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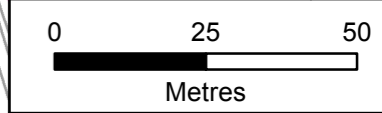
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Drawing Title  
**Tree Removals Plan  
5 of 30**

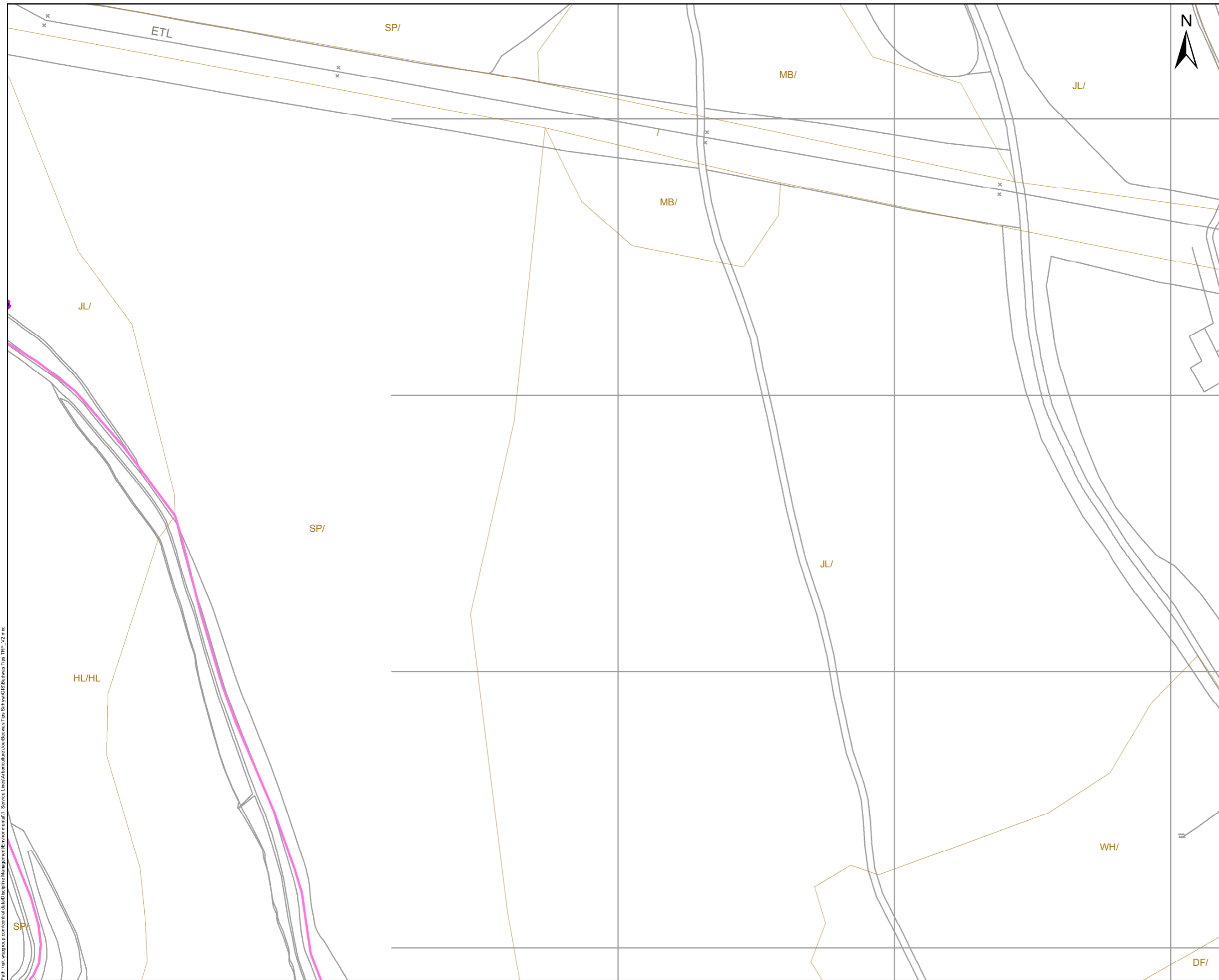
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Stage 1 check	JA	Stage 2 check	MW		



Drawing Number  
**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

Sirhywi block stock map

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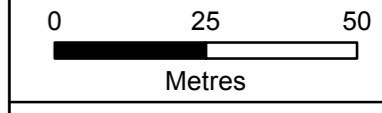
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
6 of 30**

Scale at A3  
**1:1,250**

Drawn JA		Date	
Stage 1 check JA	Stage 2 check MW	Originated XX	05/07/2023



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



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**Key**

-  Proposed Haul Road
-  Trees At Risk of Removal
-  Assumed Extents of Site Clearance
-  Site Boundary
-  Indicative RPA




**Trees**

**BS5837 Category**

-  B
-  C
-  U




**Groups**


**BS5837 Category**

-  B
-  C
-  U

**Woodland**

**BS5837 Category**

-  A
-  B
-  C

 Sirhywi block stock map

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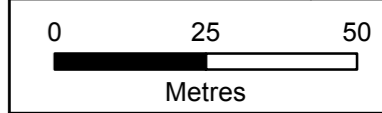
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Drawing Title  
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7 of 30**

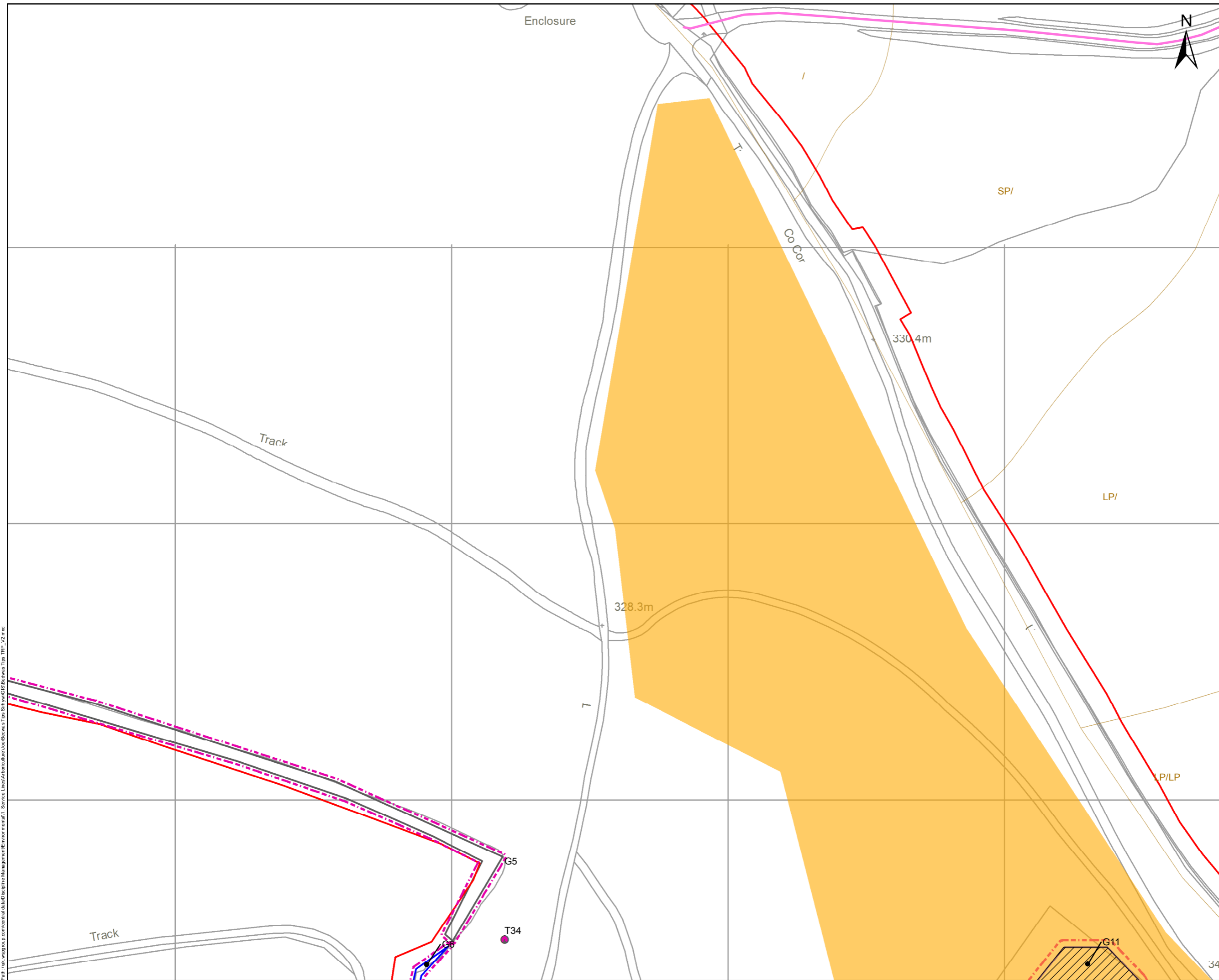
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Drawn	JA		
Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	05/07/2023



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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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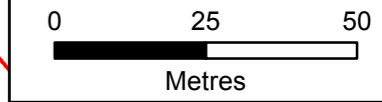
**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
8 of 30**

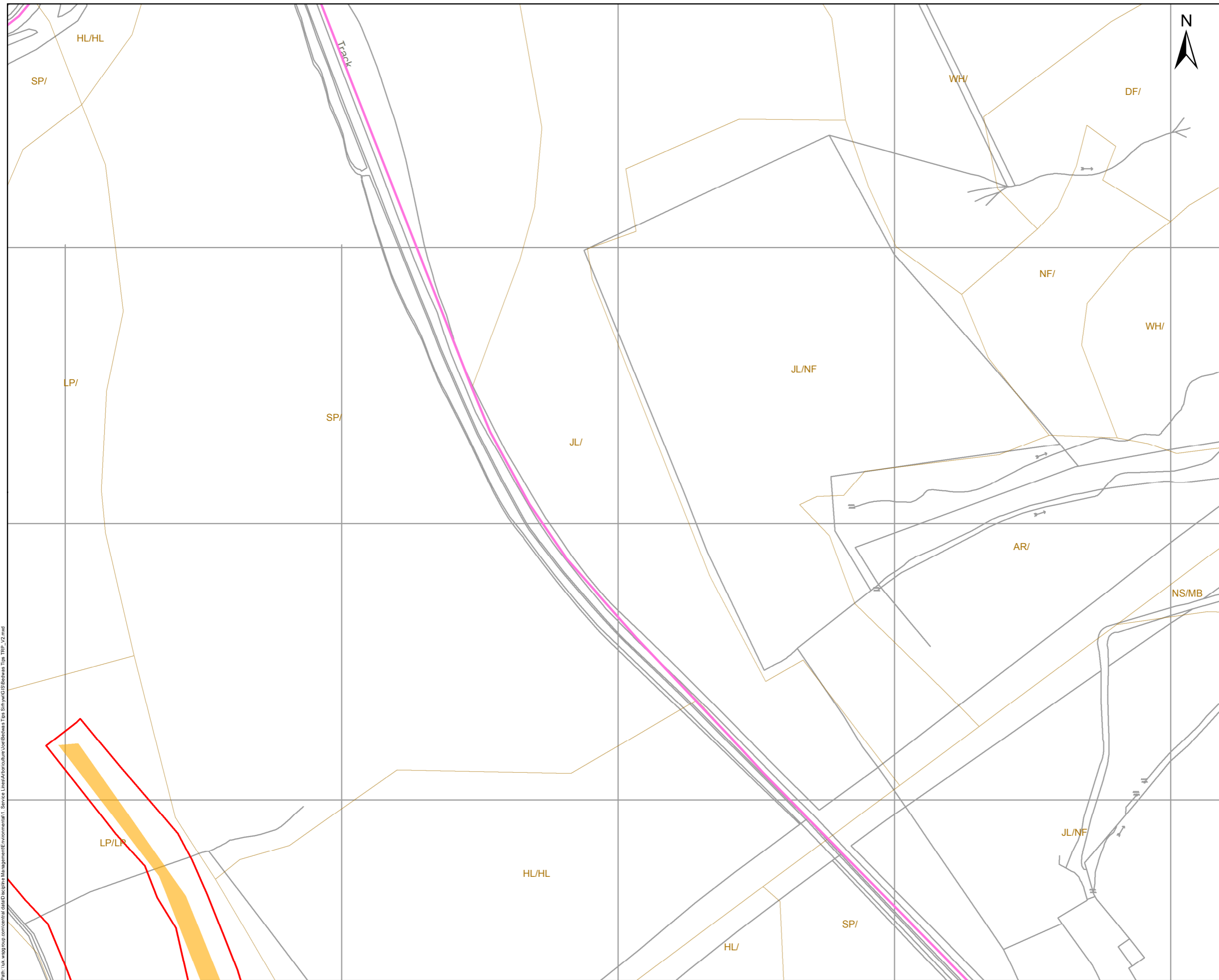
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Drawn JA		Originated XX	Date 05/07/2023
Stage 1 check JA	Stage 2 check MW		



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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
9 of 30**

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**1:1,250**

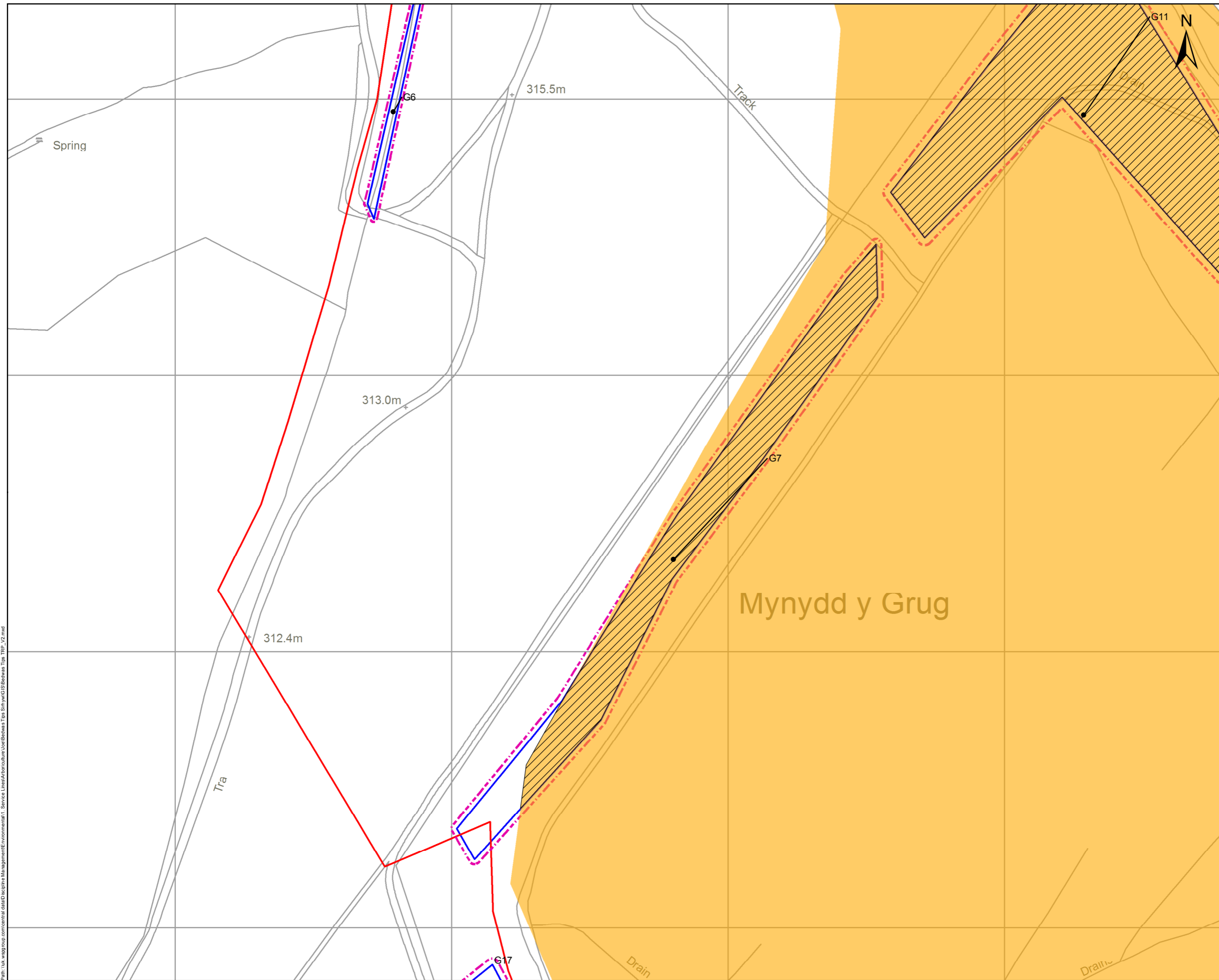
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Stage 1 check JA	Stage 2 check MW	Originated XX	Date 05/07/2023
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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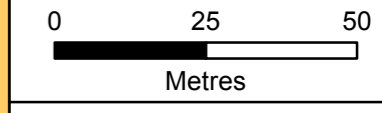
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
10 of 30**

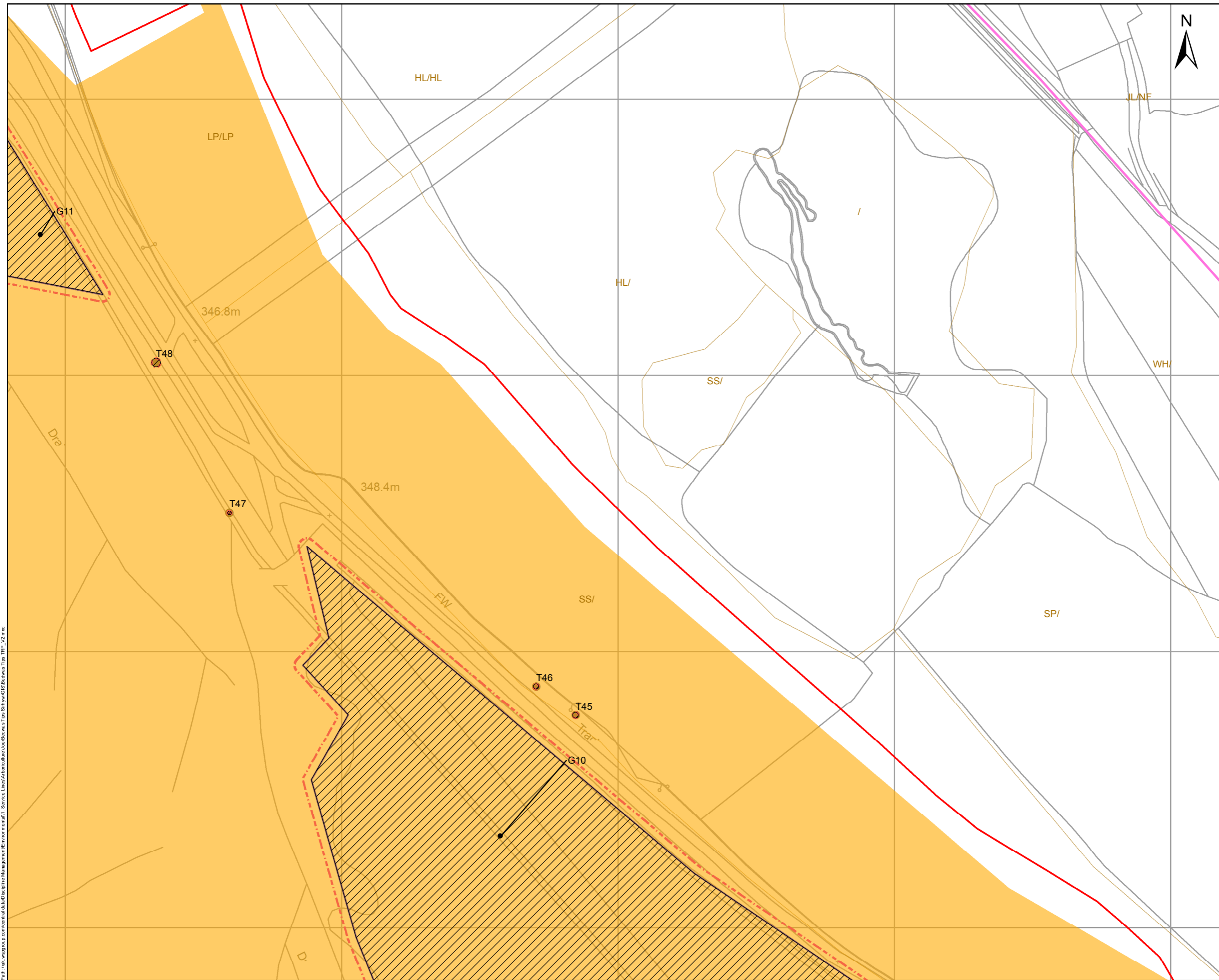
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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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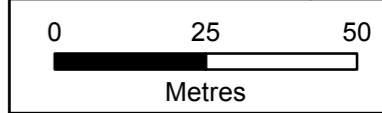
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
11 of 30**

Scale at A3  
**1:1,250**

Drawn	JA	Originated	Date
Stage 1 check	JA	Stage 2 check	MW
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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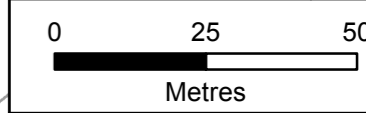
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Job Title  
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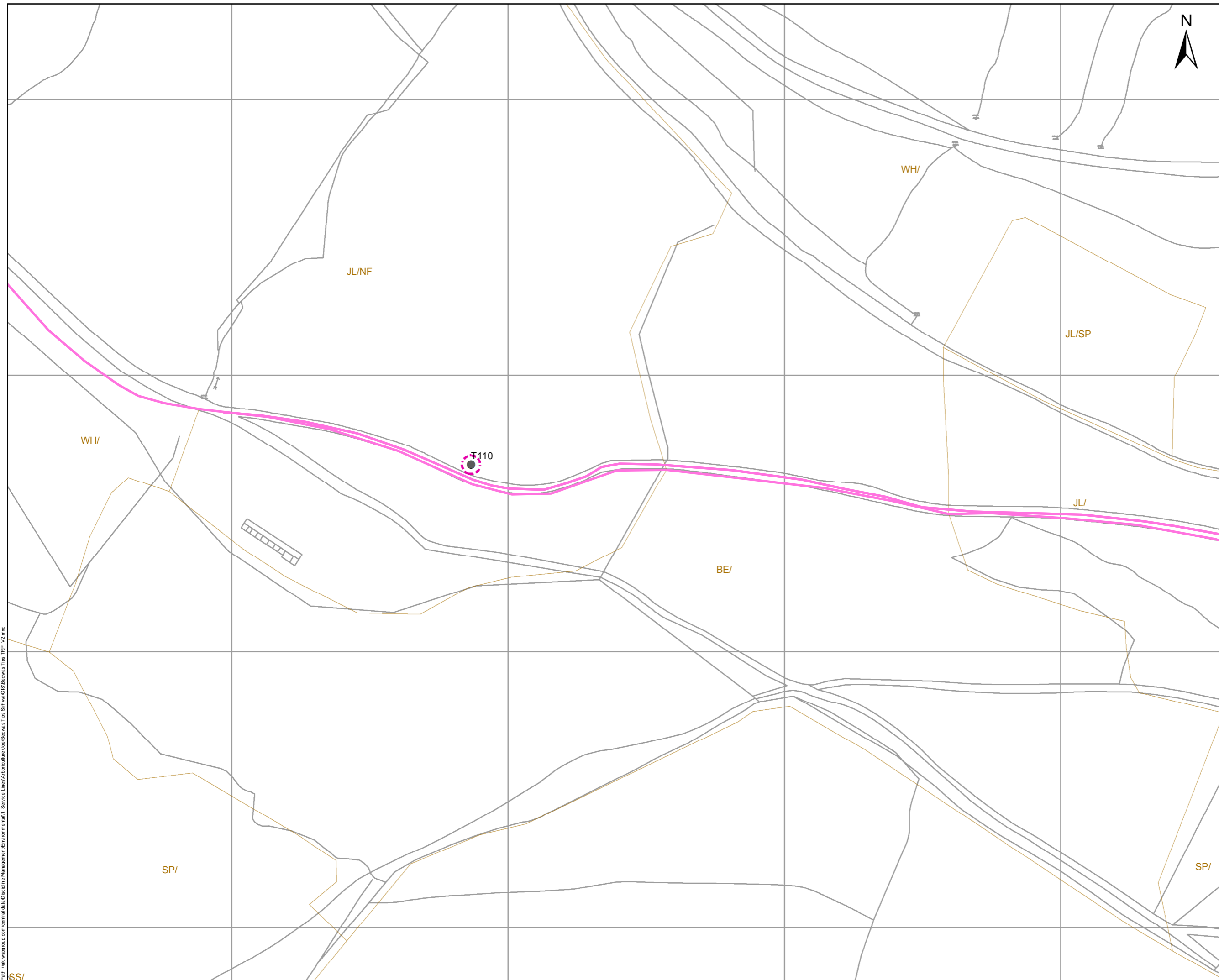
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**Tree Removals Plan  
12 of 30**

Scale at A3  
**1:1,250**

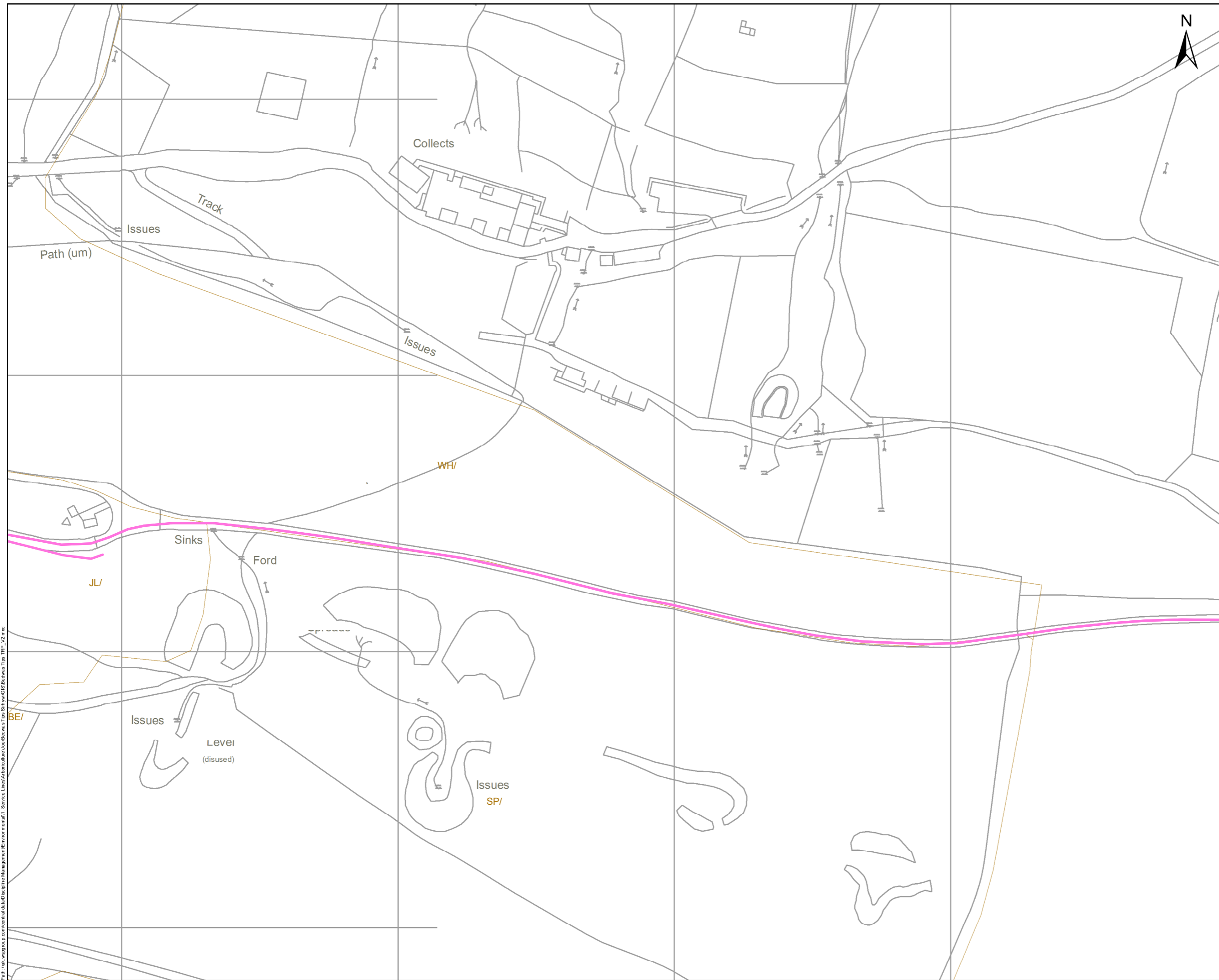
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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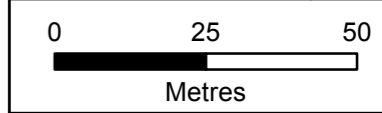
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
13 of 30**

Scale at A3  
**1:1,250**

Drawn	JA		
Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	05/07/2023



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



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**Key**

-  Proposed Haul Road
-  Trees At Risk of Removal
-  Assumed Extents of Site Clearance
-  Site Boundary
-  Indicative RPA




**Trees**

**BS5837 Category**

-  B
-  C
-  U




**Groups**


**BS5837 Category**

-  B
-  C
-  U

**Woodland**

**BS5837 Category**

-  A
-  B
-  C

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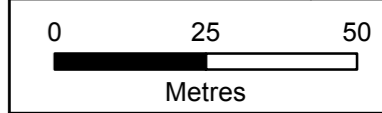
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**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
14 of 30**

Scale at A3  
**1:1,250**

Drawn	JA		
Stage 1 check	Stage 2 check	Originated	Date
JA	MW	XX	05/07/2023



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**70106037-WSP-EV-TCP-001**





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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA
- Trees**
- BS5837 Category**
- B
- C
- U
- Groups**
- BS5837 Category**
- B
- C
- U
- Woodland**
- BS5837 Category**
- A
- B
- C
- Sirhywi block stock map

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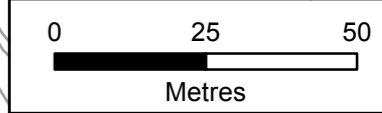
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
15 of 30**

Scale at A3  
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



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**Key**

-  Proposed Haul Road
-  Trees At Risk of Removal
-  Assumed Extents of Site Clearance
-  Site Boundary
-  Indicative RPA




**Trees**

**BS5837 Category**

-  B
-  C
-  U




**Groups**


**BS5837 Category**

-  B
-  C
-  U

**Woodland**

**BS5837 Category**

-  A
-  B
-  C

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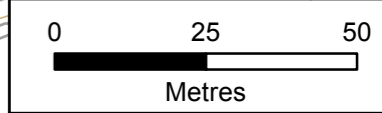
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**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
16 of 30**

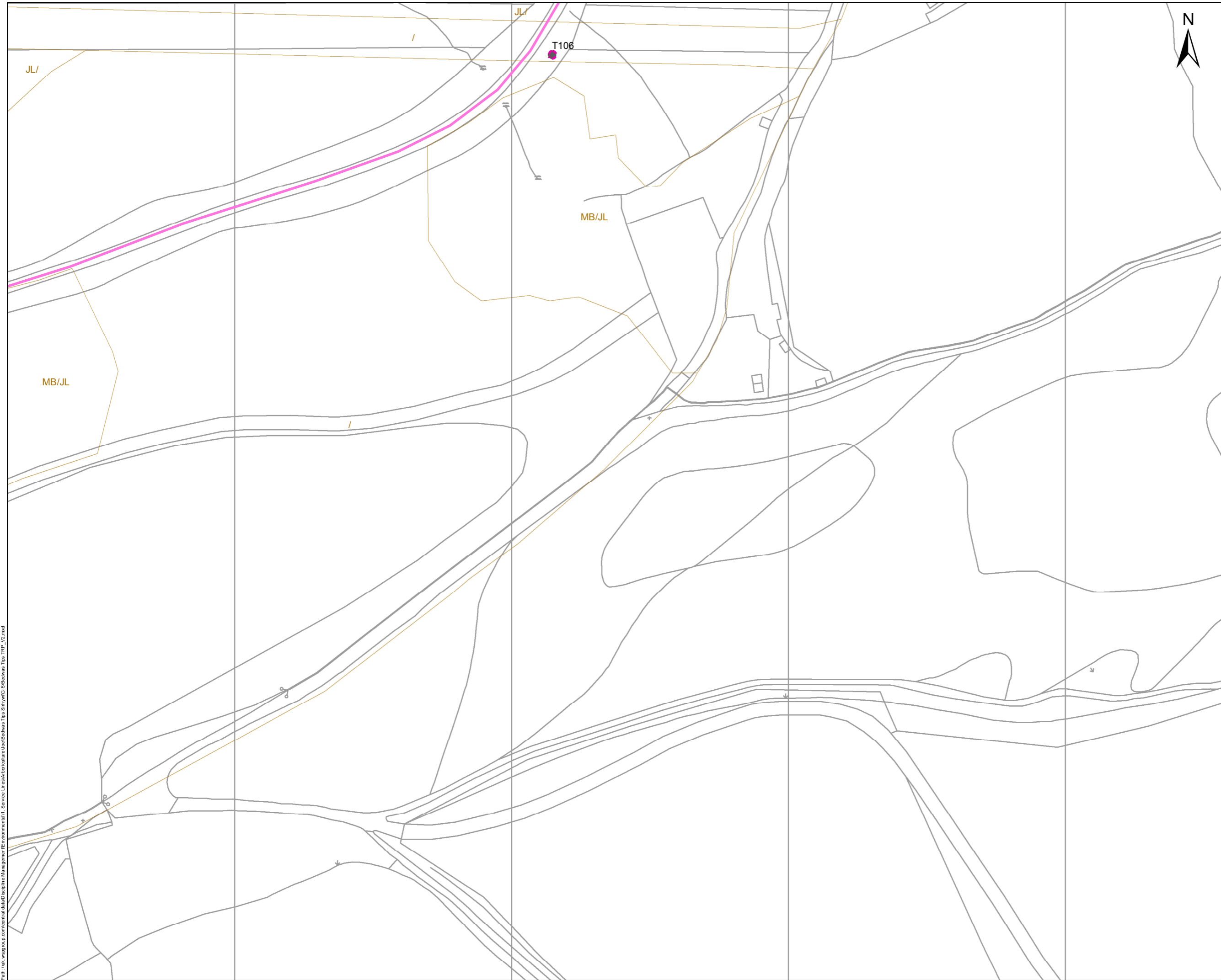
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		XX	05/07/2023



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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C
- Sirhywi block stock map

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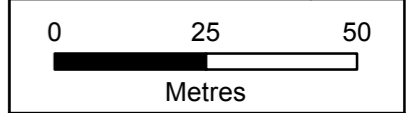
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
17 of 30**

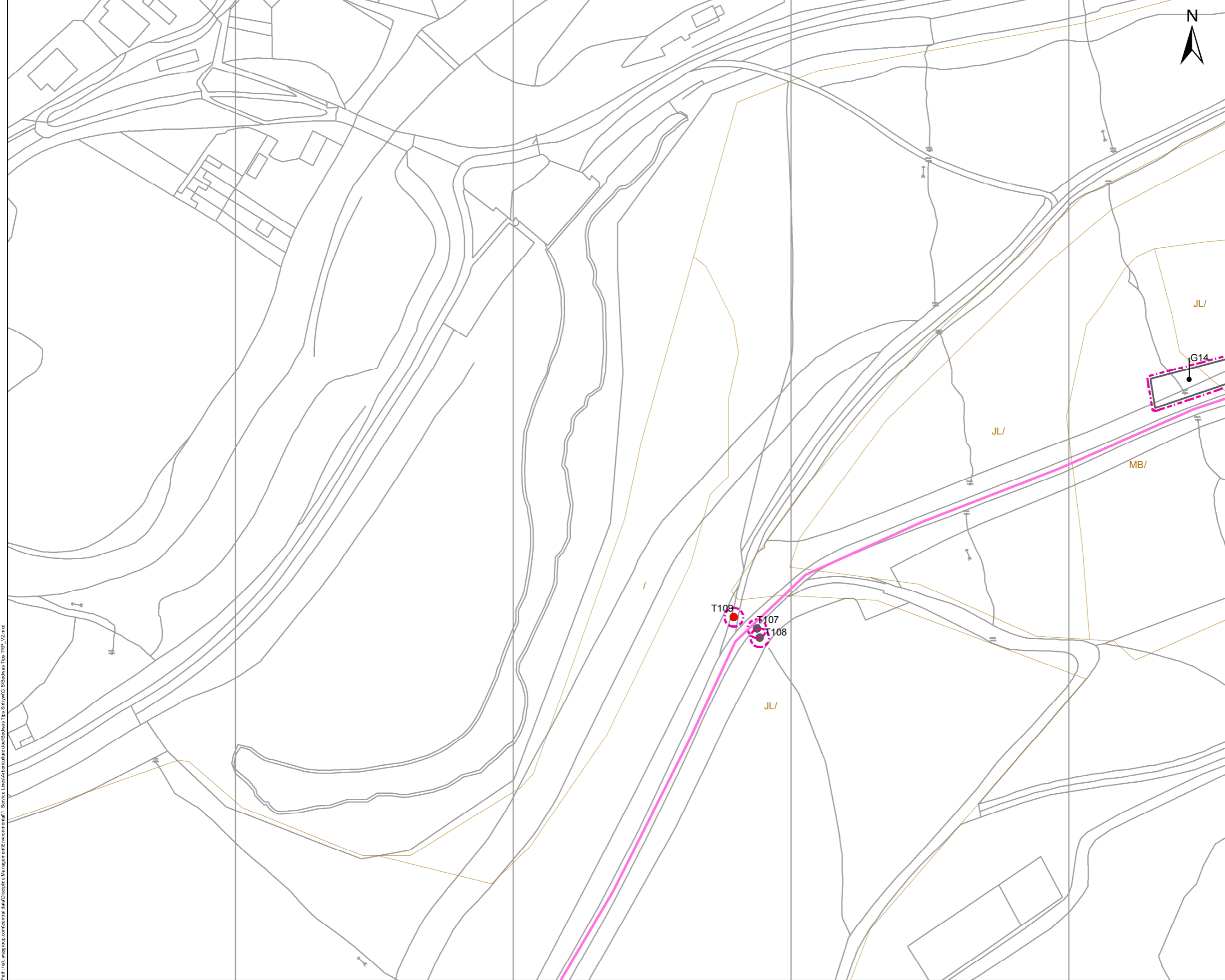
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Stage 1 check JA	Stage 2 check MW	Originated XX	05/07/2023



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**70106037-WSP-EV-TCP-001**

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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C
- Sirhywi block stock map

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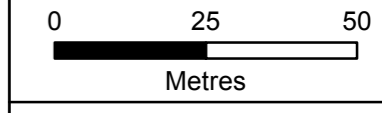
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
18 of 30**

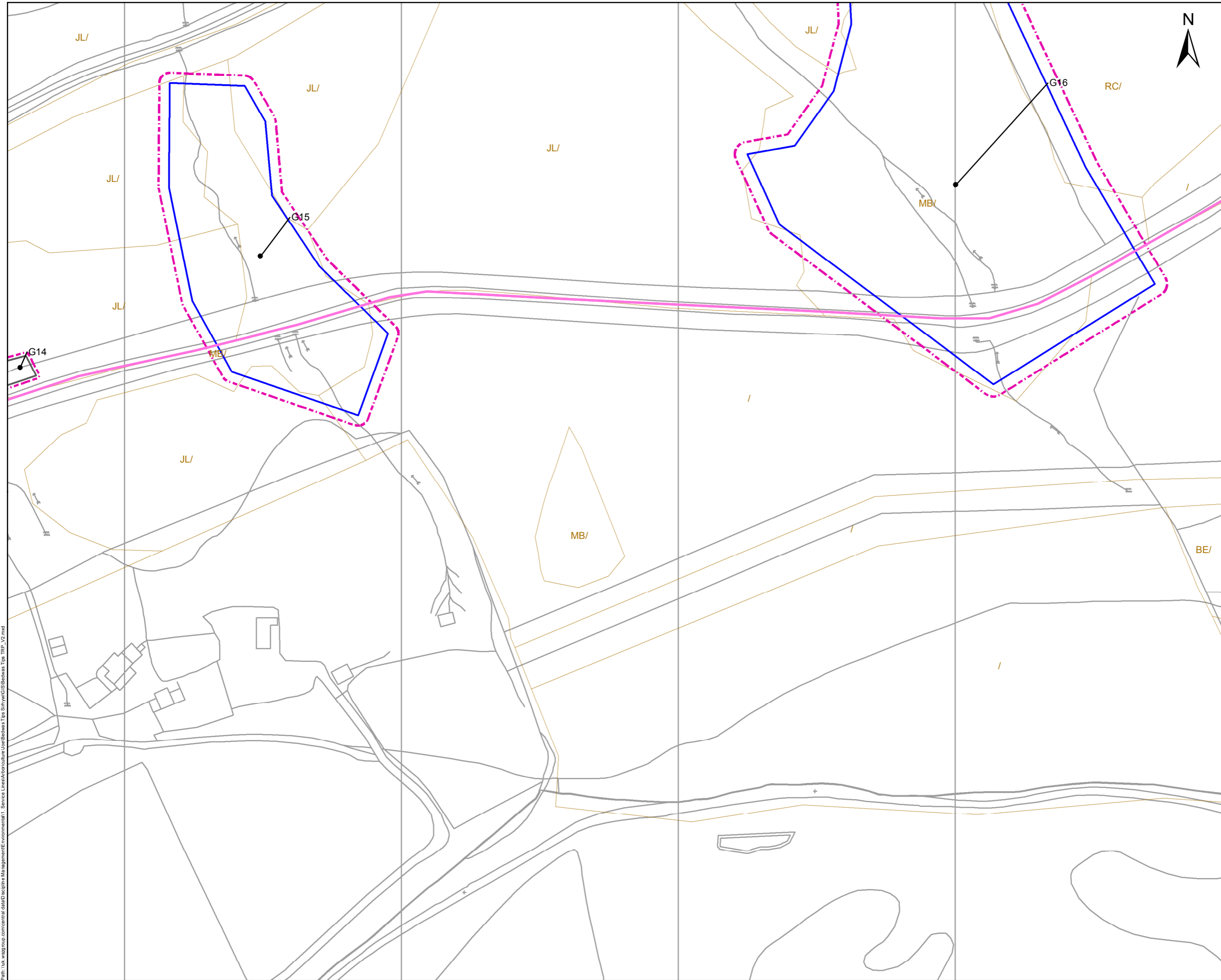
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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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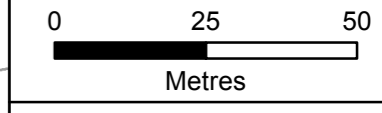
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Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
19 of 30**

Scale at A3  
**1:1,250**

Drawn	JA	Originated	XX	Date	05/07/2023
Stage 1 check	JA	Stage 2 check	MW		

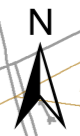


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**Key**

- Proposed Haul Road
- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

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**Groups**

**BS5837 Category**

- B
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- U

**Woodland**

**BS5837 Category**

- A
- B
- C

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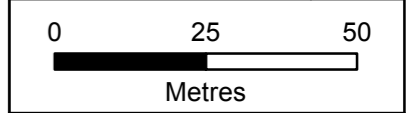
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**FOR INFORMATION**

Job Title  
**Bedwas Tips Land Reclamation**

Drawing Title  
**Tree Removals Plan  
20 of 30**

Scale at A3  
**1:1,250**

Drawn	JA	Stage 1 check	Stage 2 check	Originated	Date
		JA	MW	XX	05/07/2023


















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- Key**
-  Proposed Haul Road
  -  Trees At Risk of Removal
  -  Assumed Extents of Site Clearance
  -  Site Boundary
  -  Indicative RPA
- Trees**
- BS5837 Category**
-  B
  -  C
  -  U
- Groups**
- BS5837 Category**
-  B
  -  C
  -  U
- Woodland**
- BS5837 Category**
-  A
  -  B
  -  C
-  Sirhywi block stock map

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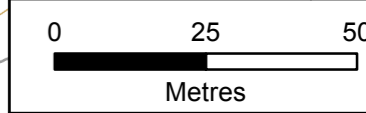
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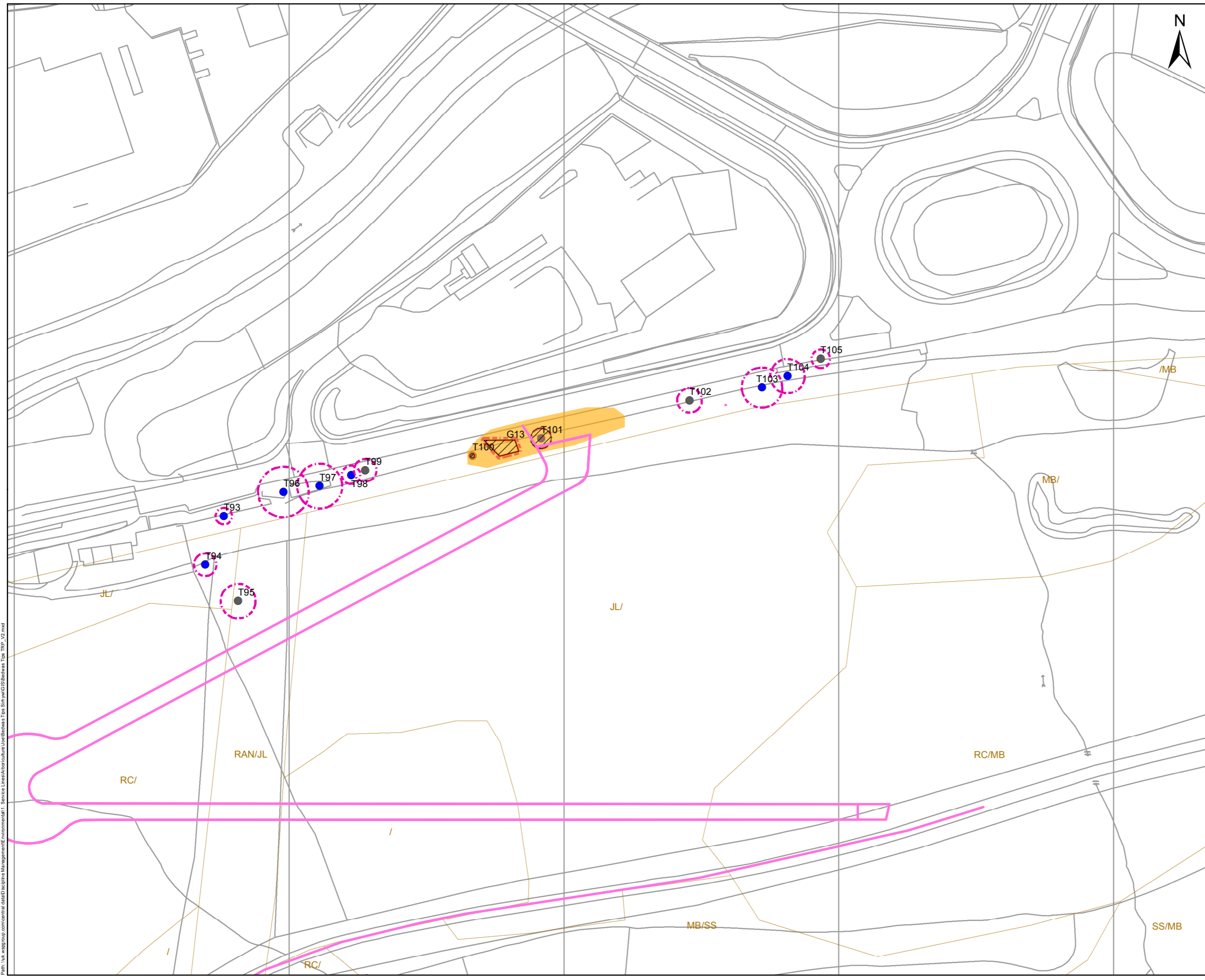
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**Key**

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- Trees At Risk of Removal
- Assumed Extents of Site Clearance
- Site Boundary
- Indicative RPA

**Trees**

**BS5837 Category**

- B
- C
- U

**Groups**

**BS5837 Category**

- B
- C
- U

**Woodland**

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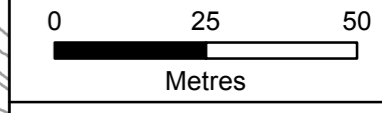
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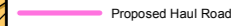

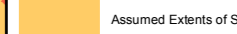


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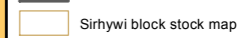
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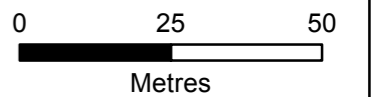
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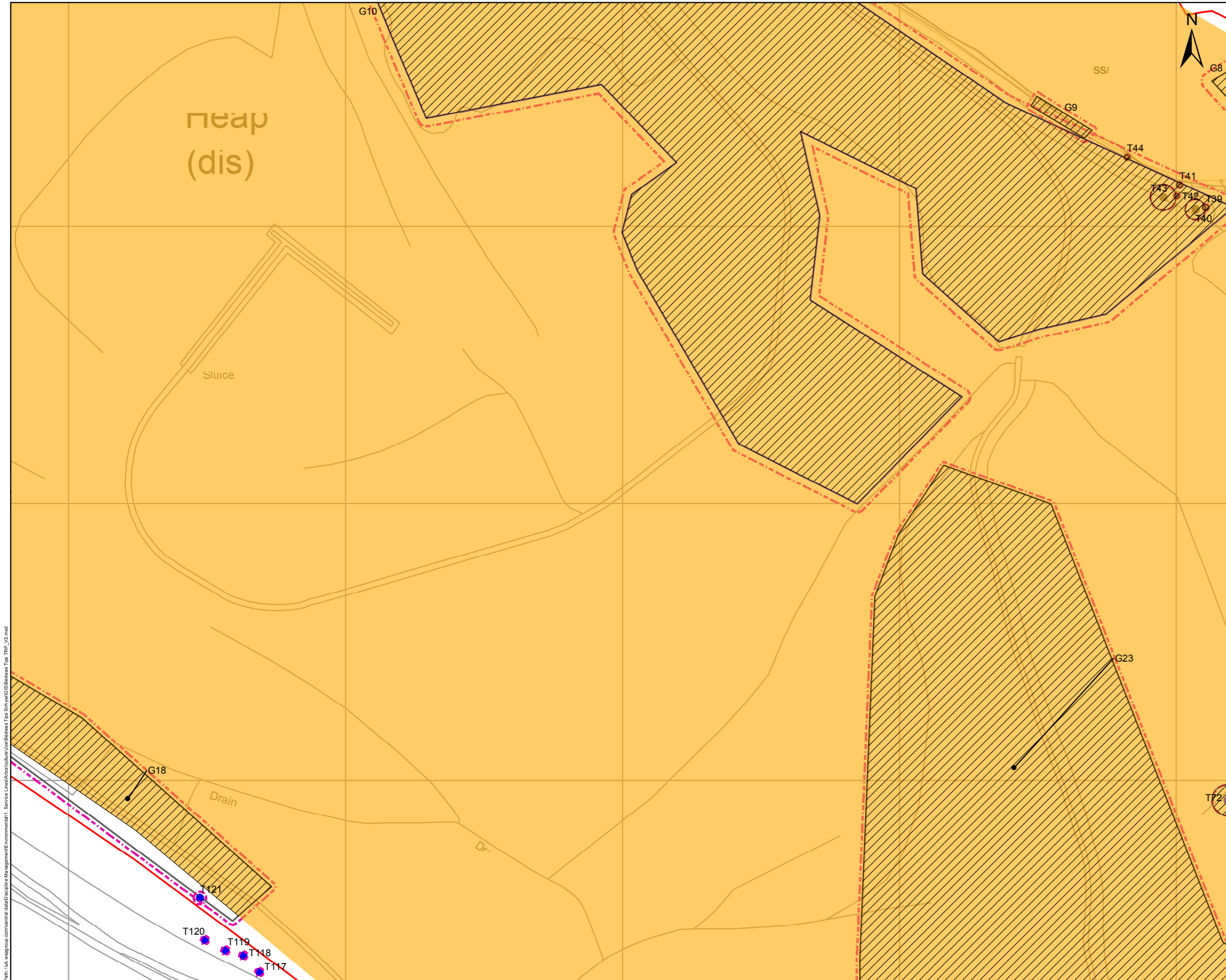
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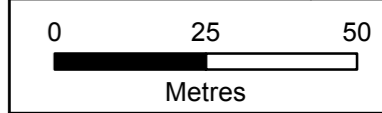
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
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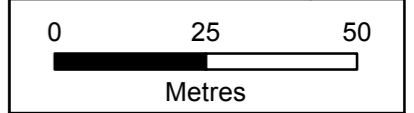
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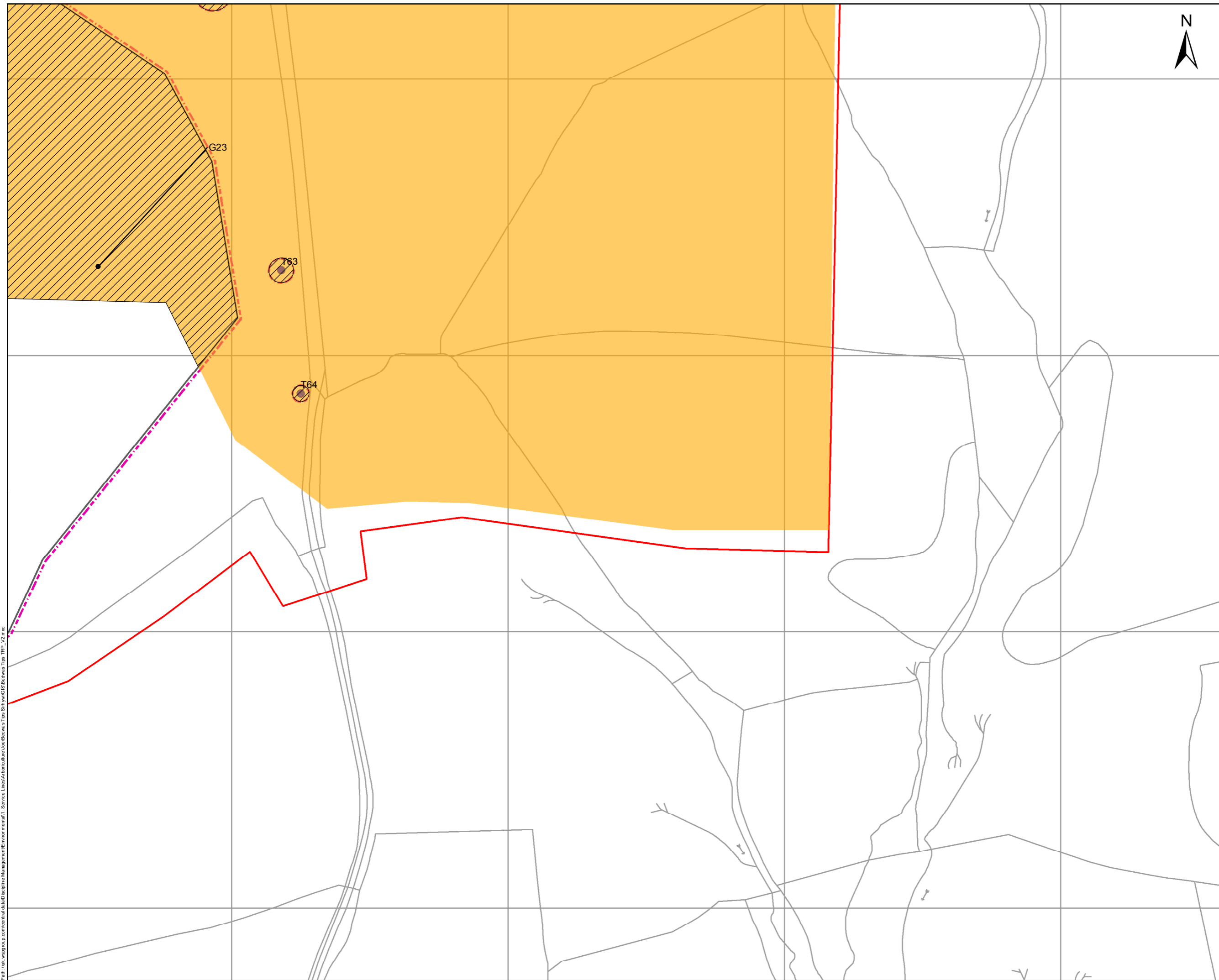
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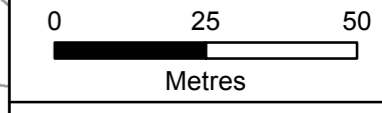
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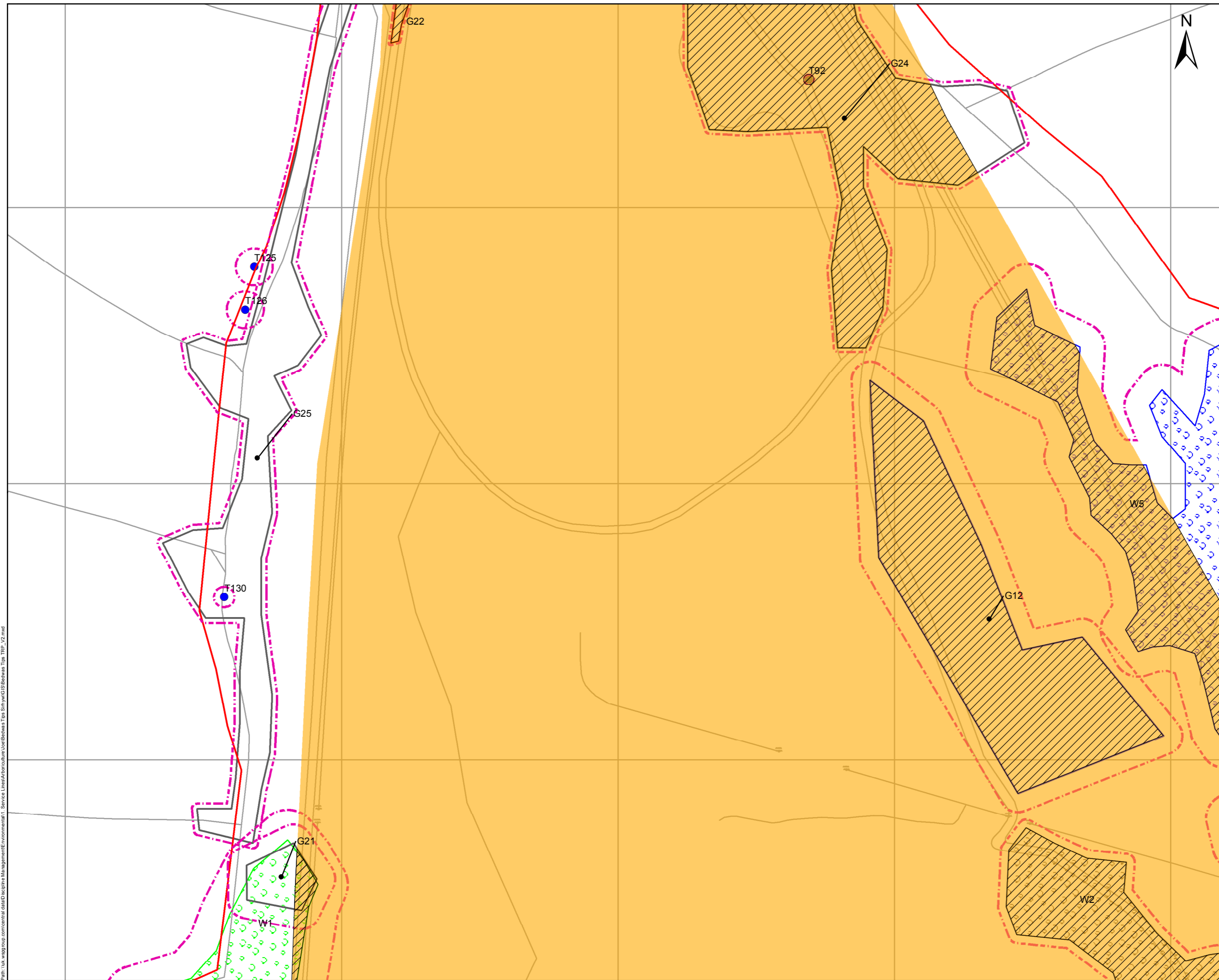
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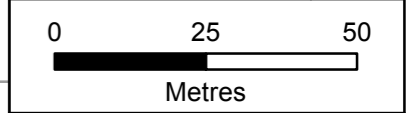
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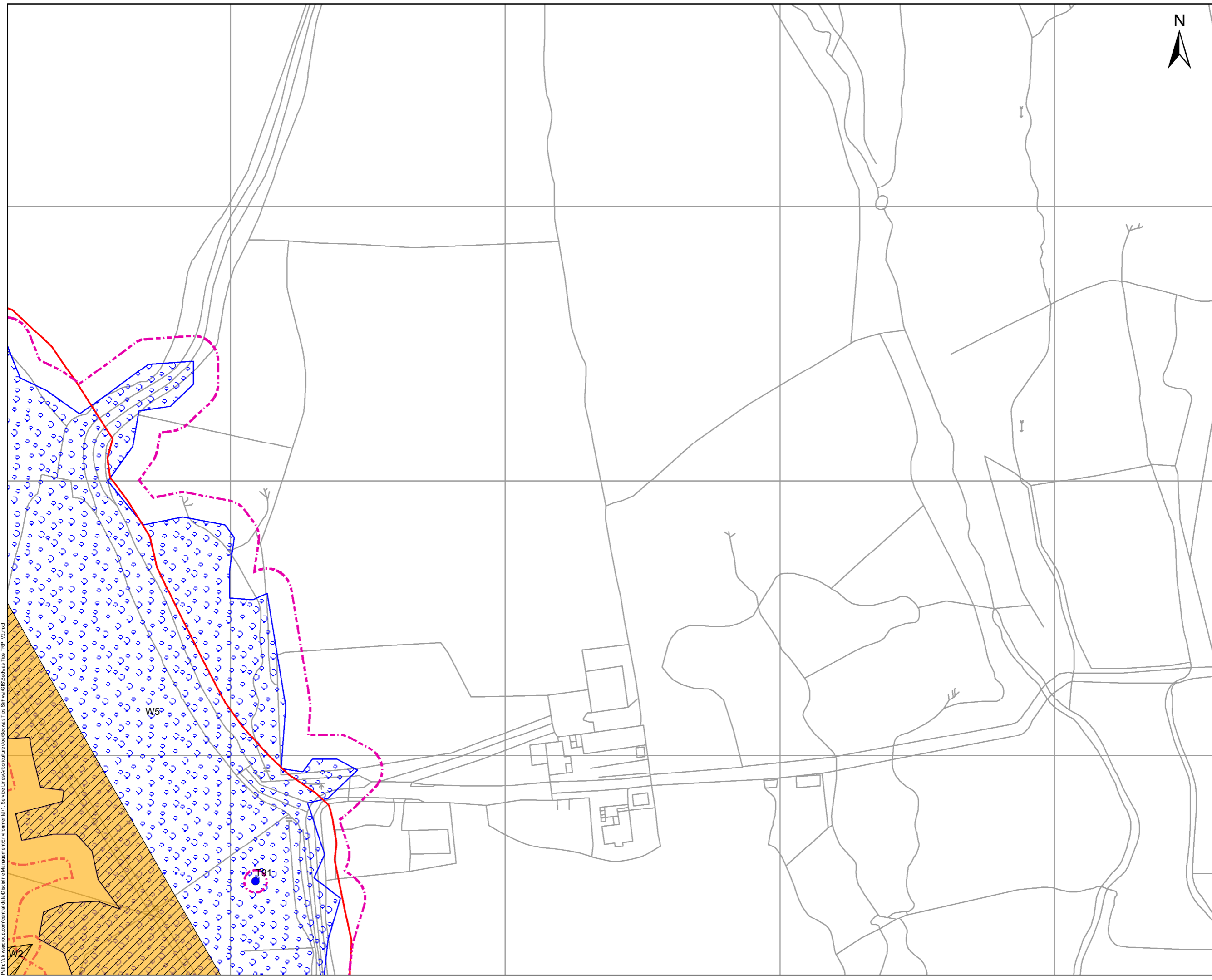
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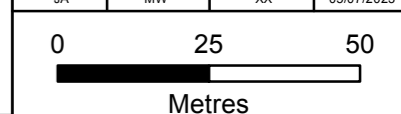
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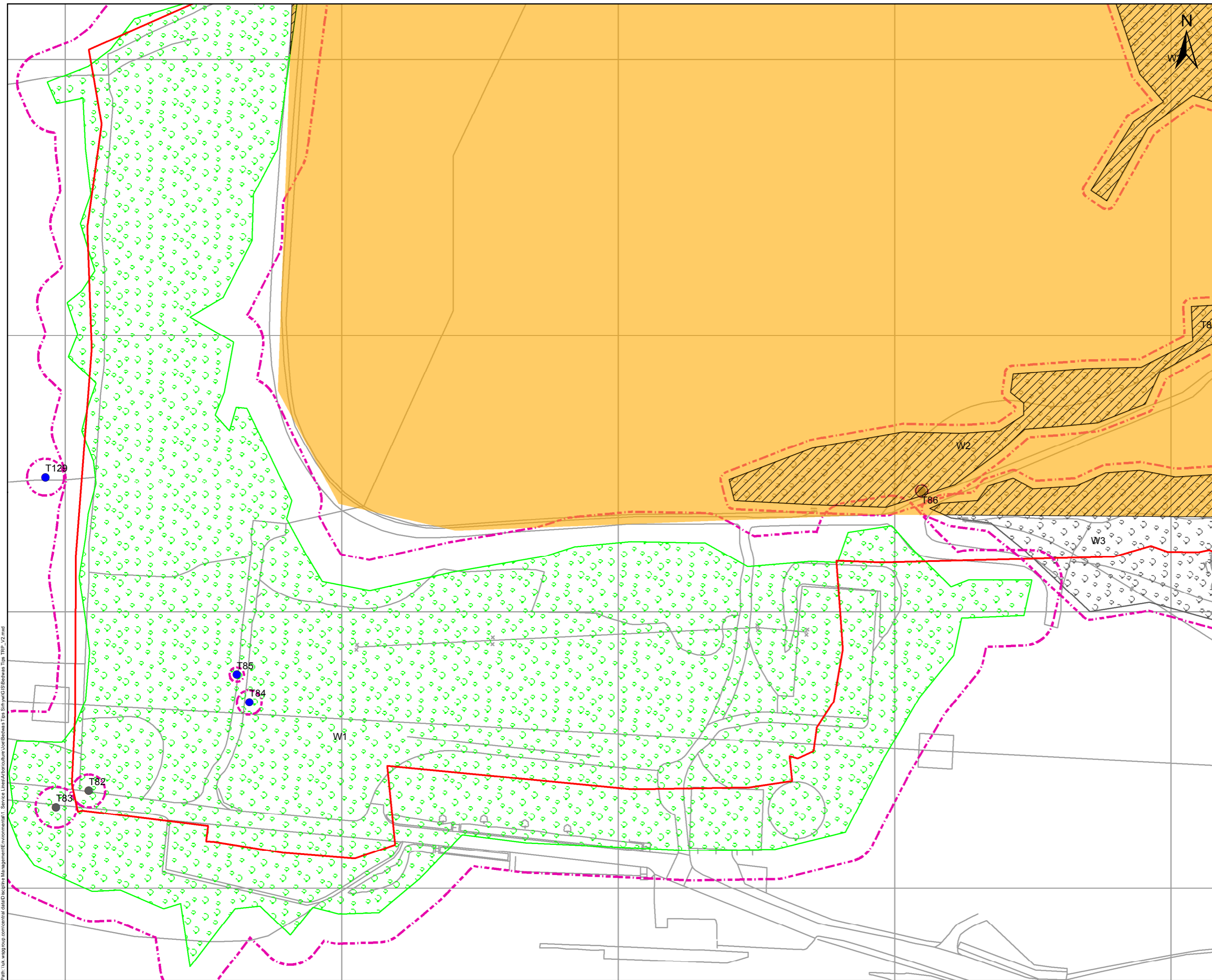
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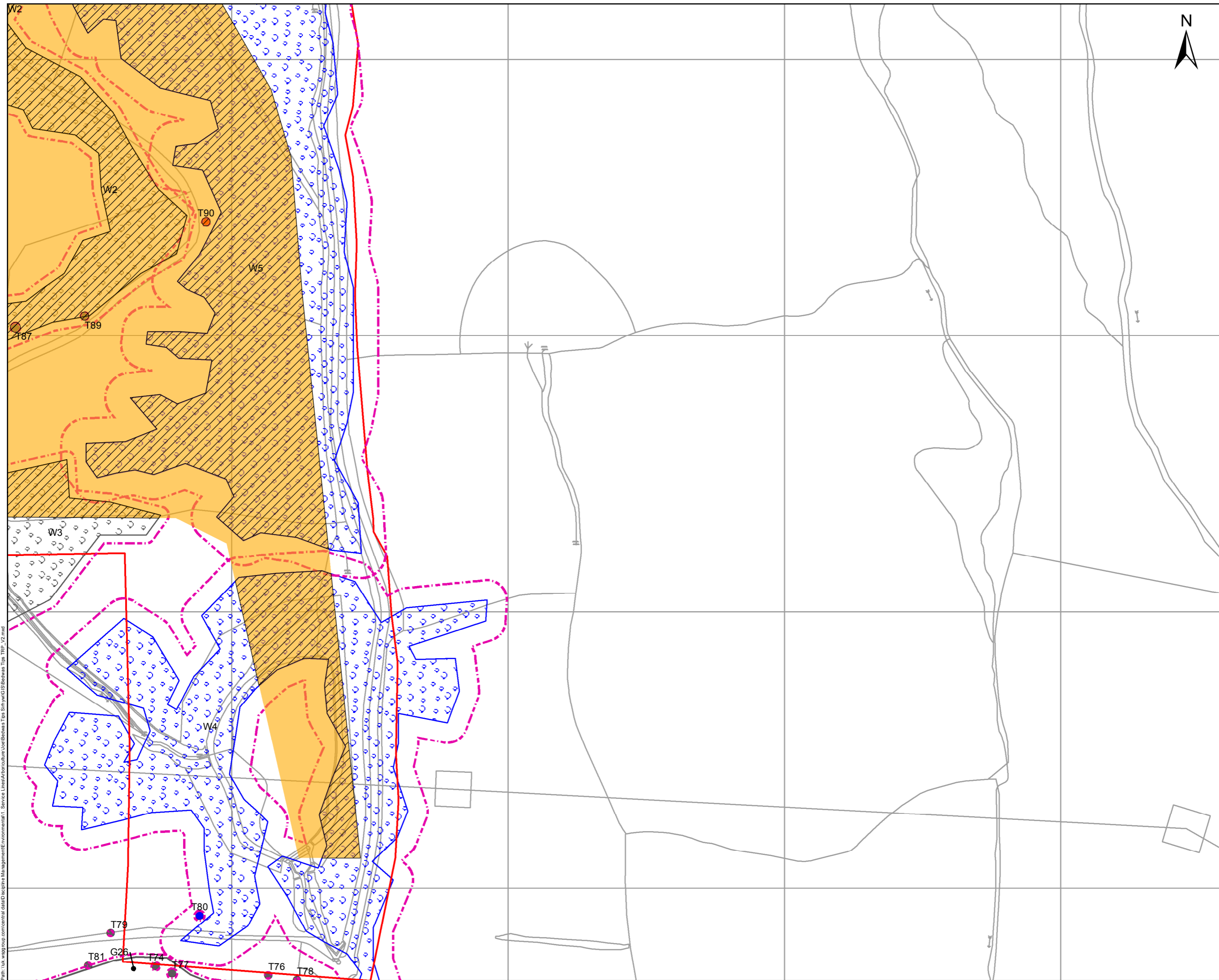
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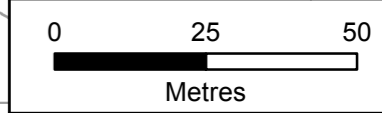
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# Appendix E

OUTLINE ARBORICULTURAL  
METHOD STATEMENT





## INTRODUCTION

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The outline Arboricultural Method Statement (AMS) is designed to provide guidance to the Principal Contractor to ensure appropriate protection is given to retained trees during the demolition and construction phases of the project.

The AMS should be considered as a working document and be modified appropriately with input from the Site Manager and the appointed project arboriculturist acting as an Arboricultural Clerk of Works (ACoW).

## PHASING

Detailed below is the phasing programme which should be followed by the contractor throughout the life of the Proposed Development to ensure that trees are protected in accordance with the Arboricultural Method Statement.

### Phase 1 – Pre-development

- Pre-commencement site meeting with client, contractor, Local Planning Authority, engineer and appointed arboriculturist;
- Pegging out of construction areas;
- With reference to project plans and in consultation with client, contractor, LPA and scheme arboriculturist confirm trees to be removed and trees to be retained;
- Install protective fencing; and
- Carry out tree removal.

### Phase 2 – Scheme development/construction

- Establish site compounds – location for cabins, car park and the storage of materials;
- Carry out initial ground works and services installations; and
- Undertake main development.

### Phase 3 – post-development

- Carry out soft landscaping;
- Remove protective fencing; and
- Remove ground protection.

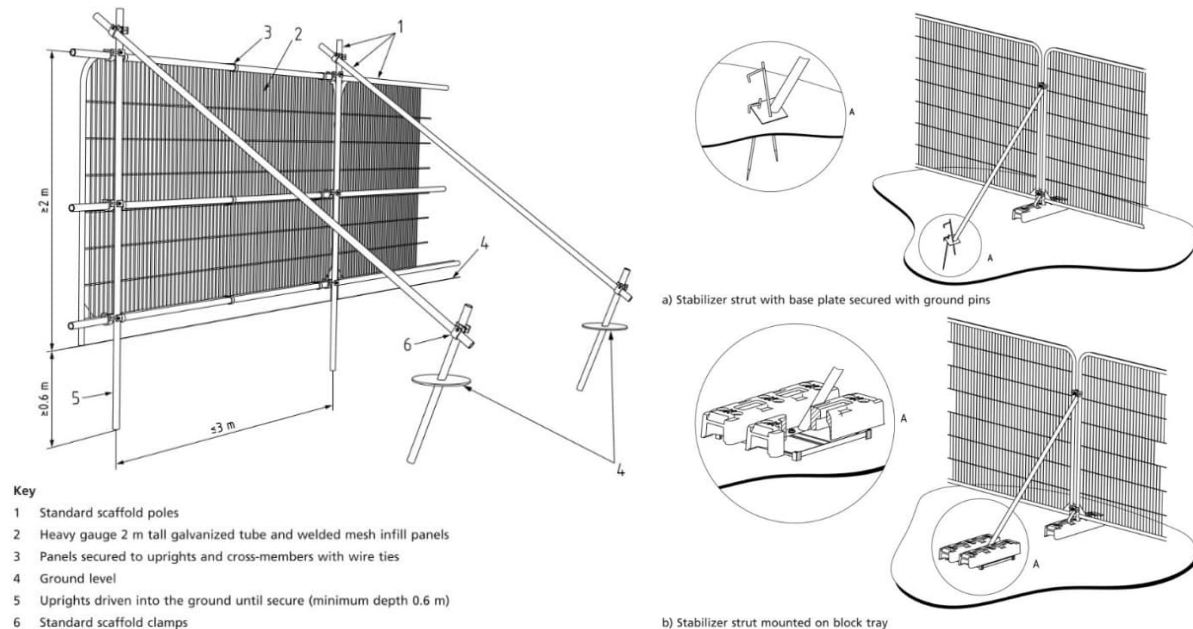
## TREE PROTECTION

Effective tree protection can only be achieved by adherence to a logical sequence of works combined with effective arboricultural monitoring. Tree protection fencing in accordance with BS5837:2012 (or similar and approved) shall be erected prior to the commencement of any of the following activities:

- The delivery of any plant or materials;
- Demolition;
- Soil stripping;
- Construction works;
- Installation of utilities; and
- Landscape works.

The protective fencing will be erected to protect retained trees with positioning agreed on site with the ACoW. Typical examples of the type of tree protection fencing are included in Figure E1.

**Figure E-1 - Tree Protection Fencing**



Extracts taken from BS 5837:2012 - *Trees in relation to design, demolition and construction – Recommendations*.

All weather notices should be attached to the tree protection fencing at suitable intervals and positioned at eye level. These notices should include suitably sized informative text containing the following statement:

**TREE PROTECTION FENCING**  
**CONSTRUCTION EXCLUSION ZONE – NO ACCESS**

Once erected these areas should be regarded as sacrosanct, and, once installed, barriers should not be removed or altered without prior recommendation by the project arboriculturist and, where necessary, approval from the Local Planning Authority (LPA).

This fencing is to remain in place until completion of all construction works on site.

The areas covered by the tree protection fencing are known as the Construction Exclusion Zones (CEZ) and should not be compromised. The following shall apply within these areas:

- No mechanical excavations;
- No excavations by other means without the agreement of the project arboriculturist;
- No change in levels (except removal of grass sward using hand tools);
- No storage of plant or materials;
- No storage or handling of any chemicals including cement washings; and
- No vehicular access.



Where the Root Protection Areas (RPAs) for retained trees exceeds the perimeter of the tree protection fencing then temporary ground protection should be installed in areas of soft landscaping. This should be in accordance with BS5837:2012.

Suitable ground protection with the objective of avoiding soil compaction and therefore leaving the tree roots to function unimpaired shall consist of the following:

- For pedestrian access only: single thickness scaffold boards laid butt jointed on a 100mm compression-resistant layer of woodchip, laid on a geo-textile membrane. Or a single thickness of scaffold boards laid on top of a driven scaffold frame to form a suspended walkway.
- For pedestrian-operated machinery up to 2 tonnes gross weight: proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane.
- For wheeled or tracked construction traffic exceeding 2 tonnes gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

On completion of all works the above systems shall be removed only with the consent of the LPA. Surface de-compaction and root zone enhancement measures may then be undertaken. This may include spiking, aeration and/or injection of rhizobium inoculants.

## **ADDITIONAL PRECAUTIONS OUTSIDE THE CEZ**

Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning in consultation with the project arboriculturist. Notice boards, telephone cables or any other services shall not be attached to any part of a tree to be retained.

## **SITE HUTS, STORAGE OF MATERIALS AND SPOIL**

Temporary site compounds, including mobile WCs and all their service connections, are to be positioned clear of the RPAs of retained trees.

The delivery, storage, mixing and discharge of concrete and all other cement-based materials shall be carried out so that there is no run-off and spillage near the RPAs of retained trees. No substances that are potentially injurious to plant tissue (including diesel, bitumen, concrete, mortar and other phyto-toxic materials) shall be stored, discharged, prepared or used, where direct contact, infiltration or run-off might reasonably be considered liable to harmfully affect existing root growth or other parts of retained trees. Where chemicals are stored it is now standard practice to have emergency spillage kits available to



minimise the impacts of any accidental spillages to the local environment. All cement mixing, vehicle washing or any other activity where toxic chemicals are used shall have the provision to contain any accidental spillage. This can be achieved using suitable soil bunding or using a supporting timber framework sealed with heavy duty plastic sheeting.

No building materials shall be stored within RPAs of retained trees. Spoil from any site activity, including demolition and any materials from the project designated for re-use, shall either be removed from site; or, if kept on site, shall be stored or piled well clear of RPAs of retained trees.

## **INSTALLATION OF UNDERGROUND SERVICES**

All underground services should be routed well outside the RPAs of all retained trees as mechanical trenching severs any root present and can adversely affect the local soil hydrology. Where this is not feasible then it is preferable to keep all apparatus in common ducts to minimise disturbance.

Provided that roots can be retained and suitably protected (i.e. exposed roots are immediately wrapped or covered to prevent desiccation and rapid temperature change and all wrappings removed prior to backfilling) excavation with hand tools may be acceptable for shallow service runs under the supervision of the project arboriculturist.

Where services are to pass within the RPA then plans showing the proposed route should be drawn up with input from the project arboriculturist. Trenchless insertion methods should be used with the entry and exit pits situated outside the RPAs.

Demolition of existing structures in close proximity to retained trees should be carried out under the supervision of the project arboriculturist as necessary and should be undertaken from within the footprint of the building or structure using the “top down, pull back” method. Great care must be exercised to ensure that no parts of the adjacent trees are damaged during this process.

## **REMOVAL OF FOUNDATIONS, FOOTPATHS, HARD SURFACING WITHIN THE CEZ**

Temporary pedestrian access shall be allowed within the CEZ to carry out these operations. A suitable gap in the fencing shall be created just wide enough to allow pedestrian and wheelbarrow access only. On completion of the works the breach shall be closed to prevent further access.

The foundations of the demolished buildings and any hard surfacing to be removed from within the RPA should be broken up using low impact pneumatic tools only not breakers attached to JCBs, unless absolutely necessary due to the nature of the materials. If this is the only option then this must first be agreed with the arboriculturist.

Work to remove the existing hard surfacing should begin at the furthest point from the edge of the CEZ and continue back towards the protective fencing. Removal of the existing hard surfacing should be carried out in 2m strips working from the undisturbed surface. This will



allow any exposed roots to be suitably covered to prevent desiccation in a timely manner. The exposed surface can then be made good as the work proceeds to avoid unnecessary travel over the newly uncovered ground. The existing hard surfacing prior to its removal should be used as the working platform. Sections of existing path/foundation shall be broken out separately and debris carefully lifted clear and exported outside the protective fencing using wheelbarrows.

As each section of existing surfacing is removed it shall immediately be replaced with topsoil. The topsoil shall be imported using wheelbarrows and loose tipped. Grading shall be undertaken using hand tools only to avoid compaction.

No reduction of levels of the underlying soil surface shall be carried out.

Topsoil shall conform to BS3882:2007 Specification for Topsoil and Requirements for Use and shall be stored in convenient piles adjacent to the working area just outside the CEZ.

## **SOFT LANDSCAPING WITHIN THE CEZ**

For all soft landscape works, excavations and ground preparation within these areas is to be carried out using hand tools only in a sensitive manner to ensure root damage is kept to a minimum. At no time shall a rotavator be used within any of the protected areas to prepare the soil.

Removal of existing vegetation and turf will be carried out by hand only. Any herbicide used during the development works shall be appropriate for the type of vegetation to be killed and all instructions, warnings and other relevant information from manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained.

Care should be taken to avoid changes in ground levels within the RPAs and no changes in ground levels shall occur within 1m of the trunks of all retained trees.

No works shall be carried out within the RPAs if the soil moisture levels are high enough to allow compaction to occur. If compaction of the ground has occurred then decompaction measures should be undertaken, these may include forking, spiking, soil augering and tilled radial trenching.

Final grading to marry in new levels with existing ground will be achieved by importing good quality topsoil and spreading it using hand tools only. Areas of proposed grass shall then be raked to a fine tilth and will be grass seeded or turfed as necessary by hand.

All new tree planting should be undertaken in accordance with *BS8545:2014 Trees: from nursery to independence in the landscape. Recommendations*. Planting pits for shrubs or trees must be hand excavated taking care to avoid damage to existing tree roots. If substantial roots are discovered then the planting pit should be relocated if possible in order to retain them. Hedging plants if bare root shall be notch planted and no trench planting shall take place within the RPAs. If fertiliser is to be incorporated into the planting pits it



should be a slow release type such as 'Enmag' or other similar approved and should be applied in accordance with the manufacturer's recommendations.

Roots shall be retained and carefully worked around, wherever practicable. No root greater than 25mm dia. shall be cut without confirmation from the project ACoW. If damage does occur to a root greater than 25mm dia, then advice must be sought from the project ACoW. Where it is essential to sever roots they shall be cleanly cut, using an appropriate, sharp bladed hand-tool.

If in the course of operations, roots, that are to be retained, are unearthed, they shall not be left unduly exposed, but shall be covered with hessian, or similar, to protect from desiccation. Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand, or other loose granular fill before soil or other material is replaced.

Where materials or plants are to be brought into or removed from the RPAs they should be transported in wheelbarrows and must be moved across existing hard surfacing or temporary ground protection in accordance with BS5837:2012 in a way that prevents compaction of the soil.

Mulch should be applied to open soils and shrub planting areas to inhibit weed growth, reduce groundwater evaporation, resist and mitigate soil compaction and reduce maintenance requirements. Material that may be used shall include well composted wood chip, pulverised bark, leaf mould or green waste conforming to PAS 100. The depth of mulch should not exceed 100mm, taking particular care not to lay excessive mulch around new plants and should be avoided in areas of established tree growth.

## **CONSTRUCTION OF NEW FOOTPATHS WITHIN THE CEZ**

The construction of any new footpaths within the RPAs must be installed using a 'no dig' construction method as follows:

Re-align the tree protection fencing (see Tree Protection) to allow access to the immediate working area only.

Remove all existing vegetation from the surface using hand tools only. Arisings should be removed from the RPA using wheelbarrows only. No further excavations in this area are to take place. Any voids or depressions within the ground surface are to be made good using sharp sand (not builder's sand) to maintain levels.

Install standard 150 x 50mm concrete kerb edging for lateral support held in place with a minimum amount of concrete haunching and carefully secured to the ground with an appropriate method between the kerb edge and haunching at 900mm centres.

Lay down a permeable geotextile separation membrane over the existing ground. Install a cellular confinement mat (e.g. Cellweb) of 100mm thickness on top of this membrane. Expand the mat to its full length and trim to the desired length and width. Carefully peg down the matting with proprietary staking pins to keep the cells open. Fill all the cells with a



20-40mm no fines angular granular stone working from the area furthest from the tree first. Continue filling all the cells using the filled cells as a working platform.

Put down a second layer of permeable geotextile membrane before installing a permeable wearing course of 20mm porous tarmac over a 40mm base.

Topsoil is to be graded down from the top of the kerb edge to the existing ground level to avoid creating trip hazards.

## **MONITORING**

Once the protective fencing and ground protection measures have been installed but prior to the commencement of the development a site inspection should be undertaken by the project ACoW. This is to confirm that all protection measures have been installed in accordance with the Tree Protection Plans and method statement.

Regular monitoring visits should be carried out as necessary during the development.

On completion of the development a general survey of the trees is recommended to identify any remedial action necessary as a result of the works. Note that permission for any additional tree works not included in the original development consent may need to be obtained through application to the LPA.

If any arboricultural issues arise during the development, then the site manager should immediately contact the project ACoW for advice on how to proceed.





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