Cambushinnie 400 kV Substation Haul Track

Scottish & Southern Electricity Networks (SSEN) Transmission

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Quality information

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1 Introduction

1.1 Background

1.1.1 AECOM has been instructed by Scottish & Southern Electricity Networks (SSEN) Transmission (The Applicant) to carry out an Arboricultural Impact Assessment (AIA) of the development proposals located at land to the immediate south west of Braco village, for the proposed Cambushinnie haul track development (hereafter referred to as the 'Proposed Development') in support of a planning application under the Town and Country Planning (Scotland) Act 1997.

1.1.2 This report identifies the likely direct and indirect impacts of the Proposed Development along with suitable mitigation measures, as appropriate. **Appendix C Tree Protection Plan** identifies trees to be removed and how retained trees are to be successfully protected.

1.2 Trees and the Planning Process

1.2.1 Scotland's Fourth National Planning Framework (NPF4) (2023)[1] recognises the importance of green infrastructure in the key planning outcomes by improving environmental quality, ecosystem services and climate resilience. A commitment is given to safeguarding and enhancing Scotland's natural and cultural assets to achieve a natural, resilient place. It goes on to identify woodlands as an economic and environmental resource and pledges to increase woodland creation and expansion in Scotland.

1.2.2 Policy 6, forestry, woodland and trees outlines the Scottish Government's intent to protect and expand forests, woodlands and trees, and prioritises the protection of existing woodlands and trees, to ensure that they are sustainably managed on development sites. The policy details how local planning authorities (LPAs) should consider trees and new development with specific weight given to the protection of ancient woodlands, ancient and veteran trees, native woodlands, hedgerows and individual trees of high biodiversity value, and woodlands identified for protection in Scotland's Forestry and Woodland Strategy.

Policy 6

"a) Development proposals that enhance, expand and improve woodland and tree cover will be supported.

b) Development proposals will not be supported where they will result in:

i. Any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition;
ii. Adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value, or identified for protection in the Forestry and Woodland Strategy;
iii. Fragmenting or severing woodland habitats, unless appropriate mitigation measures are identified and implemented in line with the mitigation hierarchy;
iv. Conflict with Restocking Direction, Remedial Notice or Registered Notice to Comply issued by Scottish Forestry.

c) Development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered.

d) Development proposals on sites which include an area of existing woodland or land identified in the Forestry and Woodland Strategy as being suitable for woodland creation will only be supported where the enhancement and improvement of woodlands and the planting of new trees on the site (in accordance with the Forestry and Woodland Strategy) are integrated into the design."

1.2.3 The Scottish Government's Policy on Control of Woodland Removal[2] (2009) (defined as the permanent removal of woodland for the purposes of conversion to another type of land use), contains six principal aims of the policy. These are:

- *"To provide a strategic framework for appropriate woodland removal.*

[1] Scottish Government, 2023. *National Planning Framework 4*. Available online at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf

[2] Forestry Commission Scotland (2009). *Control of Woodland Removal.* [Online] Available from:https://www.forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument/285

- *To support the maintenance and expansion of forest cover in Scotland.*
- *To contribute towards achieving an appropriate balance between forested and non-forested land in Scotland.*
- *To support climate change mitigation and adaptation in Scotland.*
- *To provide a sound basis for Scotland's participation in the global debate and actions on deforestation.*
- *To develop a clear understanding of the nature and extent of future woodland removal in Scotland."*

1.2.4 These are supported by five guiding principles, which are:

- *"There is a strong presumption in favour of protecting Scotland's woodland resources.*
- *Woodland removal should be allowed only where it would achieve significant and clearly defined additional public benefits. In appropriate cases a proposal for compensatory planting may form part of this balance.*
- *Approval for woodland removal should be conditional on the undertaking of actions to ensure full delivery of the defined additional public benefits.*
- *Planning conditions and agreements are used to mitigate the environmental impacts arising from development and Forestry Commission Scotland will also encourage their application to development-related woodland removal.*
- *Where felling is permitted but woodland removal is not supported, conditions conducive to woodland regeneration should be maintained through adherence to good forestry practice as defined in the UK Forestry Standard."*

1.2.5 BS5837:2012 Trees in relation to design demolition and construction – Recommendations[3] (BS5837:2012) provides a framework which sets out how trees should be considered in this context and also explicitly applies to development where planning consent is not required.

1.2.6 BS5837:2012 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This is then used to produce a Tree Constraints Plan showing the above and below ground constraints associated with trees. This drawing is used to inform the design process and to allow the retention of good quality trees where appropriate.

1.2.7 An Arboricultural Impact Assessment is then developed to identify the likely direct and indirect impacts of the Proposed Development, and a Tree Protection Plan is prepared to identify trees to be removed or retained and to illustrate how retained trees are to be protected. An Arboricultural Method Statement is often required as a condition of planning consent to detail how sensitive operations are to be achieved in proximity to retained trees. These elements are the minimum normally required for a planning application and are intended to ensure both a sustainable and harmonious relationship between trees and new development.

1.3 Local Policy Context

1.3.1 Local Planning Authorities (LPAs) in the UK have a statutory duty to consider both the protection and planting of trees when considering planning applications. The potential impact of development on all trees (including those not protected by a Tree Preservation Order or other statutory designation) is therefore a material consideration.

1.3.2 The Site is within the planning authority of Perth and Kinross Council.

1.3.3 A desktop review of Perth and Kinross Council's planning policies relating to trees was undertaken on 4 February 2025, including: the Perth and Kinross Local Development Plan 2 (adopted November 2019) and the Forest & Woodland Strategy 2014-2024 (Adopted March 2020). The following excerpts identify the importance of tree retention, protection and where this is not possible, mitigation for tree loss.

Perth and Kinross Local Development Plan 2

1.3.4 Policy 40: Forestry, Woodland and Trees Policy 40A: Forest and Woodland Strategy

"The Council will support proposals which:

[3] British Standards Institution (BSI), BS5837:2012. Trees in relation to design, demolition and construction – Recommendations.

(a) deliver woodlands that meet local priorities as well as maximising benefits for the local economy, communities, sport and recreation and environment;

(b) protect existing trees/woodland including orchards, especially those with high natural, historic and cultural heritage value;

(c) seek to expand woodland cover in line with the guidance contained in the Perth and Kinross Forest and Woodland Strategy Supplementary Guidance;

(d) encourage the protection and good management of amenity trees, or groups of trees, important for visual amenity, sport and recreation or because of their cultural or heritage interest;

(e) ensure the protection and good management of amenity trees, safeguard trees in Conservation Areas and trees on development sites in accordance with BS5837 'Trees in Relation to Construction';

(f) seek to secure establishment of new woodland in advance of major developments where practicable and secure new tree planting in line with the guidance contained in the Perth and Kinross Forest and Woodland Strategy. The planting of native trees and woodland will be sought where it is appropriate."

1.3.5 The importance of mitigation for tree loss is further emphasised in Policy 40, stating "*The Council will follow the principles of the Scottish Government Policy on Control of Woodland Removal and developers are expected to fully accord with its requirements. In accordance with that document, there will be a presumption in favour of protecting woodland resources except where the works proposed involve the temporary removal of tree cover in a plantation, which is associated with clear felling and restocking.*

In exceptional cases where the loss of individual trees or woodland cover is unavoidable, the Council will require mitigation measures to be provided."

1.3.6 Policy 42: Green Infrastructure further emphasises appropriate tree retention, protection and mitigation, stating "*The Council will require all new development to contribute to green infrastructure by:*

…(d) the protection, enhancement and management of existing green infrastructure within and linked to the site and the incorporation of these into development proposals: (i) open spaces and linkages for active travel or recreation, including links between open spaces and the wider countryside and the provision of new connections where required; (ii) existing species and habitats and the creation of new habitats and wildlife corridors, including trees, hedgerows and woodlands where appropriate…"

The Forest & Woodland Strategy 2014-2024

1.3.7 The Forest & Woodland Strategy expands on policies set out within the Perth and Kinross Adopted Local Development Plan (2019) and provides additional guidance on the priorities to be delivered through themes and objectives, which relate closely to the Scottish Forestry Strategy, aiming to promote sustainable forest management with a wide range of economic, social and environmental benefits.

1.4 Methodology

1.4.1 The initial fieldwork was undertaken in March 2024, during which dimensional data and observational information were collected.

1.4.2 A number of trees were not included on the topographical survey plan and have been plotted indicatively with reference to site features and publicly available aerial photography. Such trees have been marked with an '*' on **Appendix B Tree Survey Schedule**. As such, all positions for these trees must be considered indicative only and the relative distances of features must be measured out on the Site as required.

1.4.3 Following the tree survey, the boundary for the Site has been extended, and some unsurveyed tree features now fall within this boundary. These features are recorded indicatively on the Tree Protection Plan and an appropriate buffer should be determined on Site by an Arboriculturist in advance of any commencement of works to determine the final position of protective fencing.

1.4.4 The survey was otherwise conducted in accordance with the requirements of *BS5837:2012.* The fieldwork informing this report has comprised a preliminary, non-intrusive, visual survey undertaken from ground level with the specific intention of evaluating the quality and benefits of trees on the Site. A diameter tape measure was used to measure stem diameters where feasible.

1.4.5 Where further inspection is deemed appropriate to ascertain the condition of the tree or other arboreal features, this has been identified within the preliminary management recommendations. Average dimensions or dimensional ranges have occasionally been used, where appropriate, to best describe features.

1.4.6 The Root Protection Area (RPA) is the notional extent of what is considered to be the key rooting area for tree health and function. This is generally depicted as a circle but can be amended to a polygon with an equivalent area in accordance with Section 4.6.2 of BS5837:2012 where the RPA is likely to have

developed asymmetrically. The RPAs of all surveyed trees are depicted as a circle; No RPAs have been amended.

1.4.7 A Tree Constraints Plan showing the position of trees and the spatial constraints associated with them is included as **Appendix A Tree Constraints Plan** of this report, which corresponds with **Appendix B Tree Survey Schedule**.

1.4.8 The tree categorisation process recommended by BS5837:2012 is summarised in the table below and corresponds with the tree canopy outline shown in **Appendix A Tree Constraints Plan** and the information in **Appendix B Tree Survey Schedule**.

Table 1. BS5837:2012 Tree categorisation process.

Category	Definition
A	High-quality, minimum of 40+ years remaining contribution
B	Moderate quality, minimum of 20+ years remaining contribution
C	Low quality, minimum of 10+ years remaining contribution
U	Unsuitable for retention, <10 years remaining contribution
1	Arboricultural value
2	Landscape value
3	Conservation or cultural value

2 General Arboricultural Principles

2.1 General Principles

2.1.1 Trees are dynamic living organisms which provide essential benefits to society and the wider environment. Any Proposed Development with the potential to impact on trees must take into consideration the value of trees on the Site, the impact of any proposed activity along with any potential future conflicts on the Site. Suitable measures to safeguard retained trees or mitigate the loss of trees (to be removed) will need to be fully considered and may be subject to a condition of planning consent.

2.1.2 Tree branches and roots frequently grow across site boundaries and off-site trees can pose a significant constraint and should be carefully considered when assessing the developable space within a site.

2.2 Below Ground Constraints

2.2.1 Below ground tree roots and the soil environment in which they grow need to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients, and the storage of energy (carbohydrates) for the future growth and function of the tree.

2.2.2 Roots can be damaged by physical severance or wounding (e.g., following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising the soil level can bury tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement-based aggregates, fuel and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

2.2.3 The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.

2.2.4 The Root Protection Area (RPA) is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients). It is generally accepted that tree roots are predominantly located in the upper 1000mm of soil; however, roots may develop at deeper levels where conditions allow.

2.2.5 RPAs are calculated as per BS5837:2012 Annexes C, D and Section 4.6 in the BS5837:2012 Document[3].

2.2.6 The RPA of the existing tree stock is an important material consideration when considering site constraints and planning development activities. The RPA of significant trees on the Site are shown on **Appendix A Tree Constraints Plan**.

2.2.7 The default position must be that all development, including any associated services will occur outside the RPAs of retained trees. Where this is unavoidable, it may be appropriate to use special measures to install structures, services or surfacing within RPAs which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

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

2.3 Soils

2.3.1 On shrinkable soils, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully assessed, and any foundations must be installed following the recommendations of National House Building Council (NHBC) Standards Chapter *4.2: Building Near Trees*[4] *(2024)* to avoid potential future damage. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet.

2.3.2 The advice of a suitably qualified engineer must be obtained to inform any potential issue of heave. Specific advice in relation to these issues is beyond the scope of this report.

2.4 Above Ground Constraints

2.4.1 Tree stems and branches can restrict available space on a site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay, with significant long term implications for tree health. The future impact of existing

[4] National House Building Council (NHBC) Standards Chapter *4.2: Building Near Trees.* [Online] Available from:https://nhbc-standards.co.uk

trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this must also be taken into consideration.

2.5 Trees and Risk in the Context of Development

2.5.1 Tree owners/managers have a legal duty to prevent foreseeable harm. It is generally accepted that this duty can be fulfilled by undertaking proactive inspections of significant trees to identify obvious defects and by taking appropriate remedial action or gaining further advice as appropriate.

2.5.2 Further guidance is available from the National Tree Safety Group[5].

2.5.3 The tree survey carried out as the basis of this report is primarily for planning purposes, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of trees on the Site. However, when obvious issues have been identified recommendations have been included in the Tree Survey Schedule.

2.5.4 The Construction (Design and Management) Regulations 2015 state that developers and contractors have responsibilities for health and safety as a result of their actions. Should trees be left in an unstable or hazardous condition the Health and Safety Executive (HSE) could seek to prosecute those responsible along with the potential for further Civil claims for damages.

2.6 Trees and Wildlife

2.6.1 Full consideration must be given to the presence of species protected under the Wildlife and Countryside Act 1981 (as amended by the Wildlife and Natural Environment (Scotland) Act 2011), the Conservation of Habitats and Species Regulations 2017 and The Conservation (Natural Habitats, &c.) Regulations 1994, in particular the presence of bats and nesting birds. It is recommended that wherever possible, significant tree/hedge works take place outside of the typical bird nesting season of March to September. The advice of a suitably qualified Ecologist is recommended in relation to any potential impacts on protected species.

2.7 Tree Works

2.7.1 Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998:2010 Tree work – Recommendations (BS3998:2010)[6] by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

[5] National Tree Safety Group (NTSG) (2011). *Common sense risk management of trees*. Forestry Commission.
[6] British Standards Institute (BSI) - BS3998:2010 Tree work – Recommendations

3 Baseline

3.1 The Site

3.1.1 The Site boundary is shown in **Appendix A Tree Constrains Plan** of this report.

3.1.2 The Site is located to the immediate southwest of Braco, bordering the A822 to the east, crossing agricultural land and connecting to the B8033 at the western extent of the Site adjacent to the access road for the Feddal coniferous tree plantation site. The Site includes agricultural land, with timber/shelterbelts encompassing the agricultural land parcels. Watercourses are located to the north and to the east of the Site. The Site shows no dominant aspect.

3.1.3 No on-site soil assessment regarding trees has been undertaken at this stage. The following details a desk-based assessment undertaken on 8 April 2024. Following a review of the Scottish Environment Protection Agency's (SEPA) Scotland's Environment Web Map[7], Site soils are described as alluvial soils: undifferentiated texture and drainage.

3.2 The Trees

3.2.1 A total of 146 tree features were identified during the fieldwork, formed of: 89 individual trees, 41 tree groups, nine hedgerows and seven woodlands.

3.2.2 The trees on the Site are between the age ranges of young to mature and are predominantly in a fair to good condition. Species identified on and immediately adjacent to the Site are shown in **Table 2** below.

Table 2. Genera and species identified on and immediately adjacent to the Site.

Species Common Name (*Scientific Name)*	Species Common Name (*Scientific Name)*
Fir species (*Abies spp.)*	Ash (*Fraxinus excelsior)*
Fraser fir (*Abies fraseri)*	Holly (*Ilex aquifolium)*
Caucasian fir (*Abies nordmanniana)*	European Larch (*Larix decidua)*
Noble fir (*Abies procera)*	Larch species (*Larix spp.)*
Norway maple (*Acer platanoides)*	Privet (*Ligustrum vulgare)*
Sycamore (*Acer pseudoplatanus)*	Apple species (*Malus spp.)*
Horse chestnut (*Aesculus hippocastanum)*	Norway spruce (*Picea abies)*
Silver maple (*Acer saccharinum)*	Sitka spruce (*Picea sitchensis)*
Common alder (*Alnus glutinosa)*	Wild cherry (*Prunus avium)*
Silver birch (*Betula pendula)*	Cherry laurel (*Prunus laurocerasus)*
Downy birch (B*etula pubescens)*	Bird cherry (*Prunus padus)*
Dogwood *(Cornus sanguinea)*	Blackthorn (*Prunus spinosa)*
Hazel *(Corylus avellana*)	Sessile oak (*Quercus petraea)*
Hawthorn (*Crataegus monogyna)*	Goat willow (*Salix caprea)*
Beech (*Fagus sylvatica)*	Grey willow (*Salix cinerea)*

[7] SEPA (2025) *Scotland's Environment – Scotland's Soils*. [Online] Available from: https://map.environment.gov.scot/Soil_maps/?layer=1#

Species Common Name (*Scientific Name)*	Species Common Name (*Scientific Name)*
Copper Beech (*Fagus sylvatica* f. *purpurea)*	Willow (*Salix spp.)*

3.2.3 **Table 3** below summarises the number of trees in each BS5837:2012 quality category recorded within or adjacent to the Site.

Table 3. Summary of tree features in each quality category.

Quality Category	A	B	C	U
Number of tree features	49	46	49	2

3.2.4 The most significant tree features on Site are those adjacent to the A822 and B8033 respectively. The dominant trees in both locations form a mature mixed species (predominantly oak on the A822) avenue formed of predominantly high-quality (category A) trees, of even-aged structure. The avenue adjacent to the A822 is therefore at risk of loss due to the associated risk with poor species diversity (such as negative impacts of tree loss from potential changes to climate and novel pests and diseases) however this is inherent to avenue features which are generally formed of single species.

3.2.5 Trees identified on Site include native ash (*Fraxinus excelsior).* Some ash trees may have natural immunity to ash dieback (*Hymenoscyphus fraxineus)* but the majority of the ash population is susceptible (around 80 - >90% of trees). Once infected, ash trees initially showing minor symptoms may decline rapidly over a few years.

3.2.6 Consideration must therefore be made for the monitoring of ash trees on and immediately adjacent to the Site and their removal where appropriate. Ash trees showing late-stage symptoms of ash dieback may become embrittled, either due to degradation/dysfunction of the wood substrate from ash dieback or from secondary pathogens. The subsequent removal of trees in the late stages of ash dieback may become hazardous to contractors undertaking tree removal. Removal of ash trees prior to this stage is therefore recommended.

3.3 Statutory and Non-Statutory Designations

Statutory Designations Overview

3.3.1 A felling permission application[8] may be required by Scottish Forestry to fell more than 5 m^3 in any calendar quarter (subject to relevant exceptions including trees less than 100 mm stem diameter at 1.3 m from ground level, and trees in gardens, designated public open spaces or churchyards). This exemption does not apply within native broadleaved woodland between 0.1 and 5 hectares inclusive or Caledonian Pinewood sites.

3.3.2 Full planning permission is an exemption from the need to apply for consent for works to trees protected by a Tree Preservation Order, the need to give notice of the intention to undertake works within a Conservation Area and the need for a felling permission application with Scottish Forestry (as mentioned above). Prior to any tree works the status of trees to be removed or pruned should be verified with Perth and Kinross Council as appropriate.

3.3.3 Where more than 0.5 ha of woodland is proposed to be removed from a ‘sensitive area’ or more than 1 ha from a ‘non sensitive’ area an Environmental Impact Assessment (EIA) may be required. This must be confirmed in advance with Scottish Forestry[9]. Examples of sensitive areas include designations such as SSSI, Ramsar sites, National Parks, World Heritage Sites. The full list is specified within the EIA regulations Part 2: Determining whether EIA is required[10].

3.3.4 Where trees are subject to a Tree Preservation Order no works are permitted unless a tree works application has been submitted and approved by the LPA. Full planning consent (where the tree works were identified at the application stage) is an exception of this requirement. Other exceptions such as for tree safety works or to meet legal obligations may also apply.

3.3.5 Where trees (with a stem diameter of 75 mm or more (measured at 1.5 m) are present within Conservation Areas at least 6 weeks’ notice must be given to the LPA in advance of any tree works, the LPA can then either take no action and permit the works or make a TPO to secure further protection (whereby any works

[8] Scottish Forestry (2019) *Felling Permission Applications Guidance* [Online] Available from: https://forestry.gov.scot/publications/678-felling-permission-application-guidance/viewdocument/678
[9] Scottish Forestry (2025) *Environmental Impact Assessments.* [Online] Available from: https://forestry.gov.scot/support-regulations/environmental-impact-assessment.
[10] Scottish Government. 2017. The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. Edinburgh: Scottish Government.

would require a Tree Works Application to be submitted which typically has a determination period of at least 8 weeks). Tree works identified as necessary as part of a planning application which has full planning consent are exempt from this requirement. Other exceptions such as those which apply to trees subject to TPO may also apply.

3.3.6 Sites of Special Scientific Interest (SSSI) may afford statutory protection to trees (where trees form part of the protected characteristic of the site).

Non-Statutory Designations Overview

3.3.7 In Scotland, ancient woodland is defined by NPF4 as *"land that has maintained continuous woodland habitat since at least 1750*". Ancient Woodland is considered to be an irreplaceable habitat which is afforded high priority in the planning process. As stated in Scotland's fourth National Planning Framework (NPF4) "*proposals will not be supported where they will result in any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition".*

3.3.8 Native Woodland is defined as woodland in which over 50% of the canopy is made up of species native to the region. Native woodland is mapped on the Scottish Environment Protection Agency's (SEPA) Scotland's Environment online mapping[11]. Native woodlands have importance in Scottish planning policy and are likely to be a material consideration for the determination of any planning application.

3.3.9 Caledonian Pine Woodland is the UK's only native pine woodland which is generally subject to protection and is likely to be a material consideration in the determination of any planning application.

3.3.10 Ancient and veteran trees are afforded a high priority in the planning process, and development proposals will not be accepted where they result in damage or loss of ancient or veteran trees, in accordance with NPF4. Industry guidance such as Ancient and Other Veteran Trees – Further Guidance on Management[12] (Lonsdale, 2013) and Forestry Commission and Natural England Standing Advice (2022)[13] (England) identifies that veteran and ancient trees should have a greater buffer zone than non-veteran trees and that this should be equivalent to 15 x stem diameter (measured at 1.5m) or canopy spread +5m (whichever is greater).

3.3.11 The Ancient Tree Inventory (ATI) provides citizen science data on recorded ancient, veteran or notable trees where they have been identified by volunteers. The tree survey has also considered the potential for surveyed trees to qualify as ancient or veteran. To qualify as ancient a tree should be beyond the normal age for the species and this is considered with reference to tree girth charts provided by the Ancient Tree Forum along with other characteristics such as crown form. There are multiple definitions for veteran trees and no universally recognised system of classification. Most approaches recognise that veteran trees are 'survivors' and are likely to share the habitat features typical of ancient trees without being chronologically ancient. AECOM has considered trees for potential veteran status where they are at least mature and exhibit extensive deadwood or decayed wood habitat features.

Statutory Designations

3.3.12 AECOM reviewed Perth and Kinross Council's online tree preservation orders map[14] on 11 April 2025; no tree preservation orders or conservation areas are identified within or immediately adjacent to the Site.

3.3.13 Scotland's NatureScot web map[15] was reviewed on 11 April 2025 for the presence of Sites of Special Scientific Interest (SSSI), and none were identified on or immediately adjacent to the Site which could affect trees.

Non-Statutory Designations

3.3.14 Following a review of Scotland's environment web map on 11 April 2025, the Site includes no ancient semi natural woodland. One woodland bordering the southeast of the Site (potentially including surveyed features G1, W2 and T3) is identified as a Long-established woodlands of plantation origin, defined as "…*plantation from maps of 1750 (1b1) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest ones, which may be as rich as Ancient Woodland."*

3.3.15 AECOM reviewed the Woodland Trust's Ancient Tree Inventory[16], where no recorded ancient, veteran or notable trees are identified within or immediately adjacent to the Site. During the fieldwork, no trees were identified as ancient or veteran.

[11] SEPA (2025). *Scotland's Environment Map – Native Woodland.* [Online] Available from: https://map.environment.gov.scot/sewebmap/
[12] Ancient Tree Forum (2013). *Ancient and Other Veteran Trees: Further Guidance* [Online] Available from: https://www.ancienttreeforum.org.uk/wp-content/uploads/2015/02/ATF_book.pdf
[13] Natural England (2022). *Ancient woodland, ancient trees and veteran trees.* [Online] Available from: https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions
[14] Perth and Kinross Council (2025) *Heritage Map* [Online] Available from: https://www.pkc.gov.uk/heritagemap
[15] Nature Scot (2025) Site Map Search [Online] Available from: https://sitelink.nature.scot/map
[16] Woodland Trust (n.d.) Ancient Tree Inventory. [Online] Available from: https://ati.woodlandtrust.org.uk/

4 Arboricultural Impact Assessment

4.1 The Proposed Development

4.1.1 The Proposed Development is detailed in **Appendix C Tree Protection Plan** and includes the development of a haul track and associated infrastructure.

4.2 Purpose

4.2.1 This impact assessment sets out the likely principal direct and indirect impacts of the Proposed Development on the tree features on or immediately adjacent to the Site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for tree features to be removed, where appropriate. Tree features include individual trees, groups of trees, or woodland. Tree groups do not meet the minimum threshold for a woodland, which is a minimum area of 0.5 ha, a minimum width of 20 m, and a potential tree canopy cover of 20 per cent.

4.2.2 This arboricultural impact assessment sets out the considered 'worst case scenario' for the Site. It may be feasible to retain a greater level of individual trees, groups and subsequent canopy cover across the Site. This would be determined via a detailed walkover with the Site Manager, Engineer, Site Arboriculturist and, by invitation, Perth and Kinross Council Tree Officer to agree final levels, construction extents, clearance requirements and areas for storage and access.

4.2.3 A brief summary of tree features to be removed, tree works and incursions related to the Proposed Development are detailed within **Table 4** below.

Table 4: Summary of Removals, Incursions and Pruning to Facilitate the Proposed Development

Impact	Category A	Category B	Category C	Category U
Tree features to be removed to facilitate the Proposed Development	T6, T7, T10, T11, T13, T15, T31, T49, T50, T52, T54, T55, T57, and T123.	T9, T14, T21, T34, T35, T37, T51, T132, G82 (part), G121 (part), W116 (part), and W120 (part).	T8, T16, T29, T36, T41, T90, T135, G4 (part), G12 (part), G38, G39, G96 (part), G125, G128 (part), G134 (part), W112 (part), and W24 (part).	T131
Total	**14 Individual trees.**	**Eight individual trees, two part groups, and two part woodlands.**	**Six individual trees, five part-groups, three groups and two part woodlands.**	**One individual tree**
Trees which may require some incursion into their construction exclusion zone to allow the Proposed Development.	T3, T5, T17, T18, T10, T46, T48, T56, T58, T61 and T65.	G44, T60, G82, W116	G12, H146	0
Total	**Eleven individual trees.**	**One individual tree, two groups, one woodland**	**One group, one hedgerow**	**0**
Trees to be pruned to facilitate the Proposed Development	T3 and T46	0	0	0
Total	**Two individual trees.**	**0**	**0**	**0**

4.3 Trees to be Removed

4.3.1 This assessment has been based on the reasonable worst-case scenario, where all trees within the footprint of the haul track (and select trees immediately adjacent) are shown as removed. The detailed design will seek to further avoid or reduce arboricultural impacts where possible.

4.3.2 Fourteen Individual trees of high quality (category A); eight individual trees, parts of two tree groups and part of two woodlands of moderate quality (category B); and six individual trees, part of five groups, three groups and two part woodlands of low quality (category C) may be removed to facilitate the Proposed Development. All of the remaining recorded trees can be retained and protected.

4.3.3 In addition, one tree (T131), identified as unsuitable for retention for more than ten years as a living tree in the context of the current land use (Category U) is likely to be removed to facilitate the Proposed Development. It is considered that this tree feature would require removal regardless of any development proposals; as such it is not considered further within this report.

4.3.4 The total approximate canopy cover loss to facilitate the reasonable worst-case scenario against the survey's baseline canopy cover are shown in **Table 5** below.

Table 5. Baseline Canopy Cover (m^2) within the Site and approximate total Site canopy cover removal (m^2).

Approximate Baseline Site Canopy Cover (m^2)	Approximate Canopy Cover Removal (m^2)
44,586	8,186

4.3.4 Following part removal of trees from groups, a walkover assessment by the Site Arboriculturist is recommended to assess newly exposed trees at the edge of the retained parts of tree groups to assess and confirm suitability for retention. Further remedial works or tree removals may be required where trees previously sheltered by the canopy/woodland conditions are exposed and represent an unacceptable health and safety risk and/or are considered unlikely to adapt to the new conditions (e.g., trees structurally and/or physiologically suppressed, trees with a poor stem diameter to height ratio, trees with a significantly high spring of the crown etc). Any additional tree works must be agreed in advance with the Perth and Kinross Council Tree Officer.

4.3.5 A summary of reasons for tree removal related to the Proposed Development are detailed within **Table 6**. Some trees and groups are potentially affected by multiple elements of the design and therefore the tree identifier label is sometimes repeated in **Table 6**.

Table 6: Summary of reasons for removal to facilitate the Proposed Development, identifying individual trees and parts of tree groups and woodland by label (note that the same tree or group may be affected by multiple elements of the design)

Design Element	Tree Feature Identifier			
	Category A	Category B	Category C	Category U
Haul Track	T6, T, T10, T11, T13, T15, T49, T50, T52, T54, T55, T57, T123	T9, T14, T34, T35, T37, T51, W116 (part), W120 (part)	G4 (part), W24 (part), T8, T36, G38, G39, W112 (part), G125, G134 (part), T135	0
Visibility	T6, T7, T15	0	T16	0
Sign	0	0	T16	0
Soil Stripping	T31, T49, T52, T54	T51, T132, G82 (part), G121 (part)	W24 (part), T41, T90, G96 (part), G128 (part), T29	T131
Filter Drain	0	0	T90	0
Grass Ditch	0	0	0	0
Carrier Drain	0	T21	G12 (part)	0
Headwall	0	T21	G12 (part)	0
Wall stabilisation	0	0	T29	0
Swale	0	0	W24 (part)	0
Catchpit	0	T21	G12 (part)	0

4.4 Tree Works

4.4.1 Details of the trees for removal, to facilitate the Proposed Development, are included in **Appendix B Tree Survey Schedule**.

4.4.2 Additionally, prior to the commencement of site works, it is recommended that the Site Arboriculturist, Site Manager and Perth and Kinross Council Tree Officer undertake a site walkover to identify trees required for any pruning. There is likely to be a requirement for crown lifting works to the western canopy of T3 and T46 to achieve junction visibility. These trees are in good condition and these works are not considered likely to negatively impact the physiological or structural condition of the trees. These trees are mature and therefore regular repeated substantial tree work is unlikely to be required.

4.4.3 Tree works should be agreed with Perth and Kinross Council and the tree owner as appropriate. All arisings from any tree works are the property of the tree owner and must be offered back to them prior to disposal.

4.4.4 Where identified, all tree work is to follow the principles of *BS3998: 2010 Treework – Recommendations*[17] and must be carried out by suitably qualified and insured contractors. The Arboricultural Association provides a list of contractors who meet these requirements which can be found at www.trees.org.uk.

4.5 Incursions within the RPA of Retained Trees

4.5.1 Twelve individual trees, three groups, one hedgerow and one woodland are subject to an RPA incursion to facilitate the Proposed Development. Measures to mitigate these effects within the RPA are identified below. The measures are also summarised in Table 14.1: Schedule of Mitigation, within the Environmental Appraisal referenced in the table as EM7 Ecological Features and ECO1 Woodland Habitats.

4.5.2 Standard construction methodologies for the installation of new hard surfacing within the RPAs of retained trees is likely to require significant access and excavation, including soil stripping. This may lead to premature tree death through the compaction of soils and the severance of roots enabling colonisation of the inner wood substrate (e.g., by wood decay fungi); a reduction of water uptake and energy storage; hydraulic dysfunction of sapwood and a potentially significant negative effect on tree stability.

4.5.3 Root death may also result where soil levels are increased within RPAs causing a reduction in the normal exchange of soil gases, soil water and a significant increase in mechanical resistance within the soil.

4.5.4 Protection measures must therefore avoid, reduce and/or mitigate against the above impacts, principally by exclusion. The detailed design will seek to further avoid or reduce arboricultural impacts where possible.

4.5.5 A new carrier drain is proposed within the outer RPA of T18 and a new headwall is proposed within the outer RPA of T65. The final alignment of the drain and headwall will be positioned as far from the trees as possible and all excavation within RPAs will be supervised by an arboriculturist and will be undertaken by hand (working around and preserving significant roots where possible). Due to the distance from the tree stems (with excavation limited to the outer extent of the RPA), significant roots are unlikely to be impacted and there will not be an unacceptable impact on tree health and tree stability will not be compromised.

4.5.6 The existing low wall is to be removed within the RPA of T5, G12, T17, T18, T19, T56, T58, T60, T61 and H146. With the careful use of ground protection to protect soil structure in areas of access and by either retaining the existing wall footing in situ or, (where it must be removed), carefully removing the footing using hand tools (including pneumatic breakers) under the supervision of an arboriculturist, no substantial negative impact to retained trees is likely to occur.

4.5.7 Earthworks or working space for earthworks are likely to be required within the RPA of T46, T48, T56, T58, T60, T61, G82 and W116. This is generally limited to the outer extent of RPAs and for T46, T48 and T56 relates to an incursion into the theoretical RPA beyond an existing road (where roots may be less likely to have developed due to the influence of the road). It has been confirmed that no earthworks are anticipated within the RPA of T17. Working space will utilise ground protection measures to protect roots and soil structure. Fencing will restrict access to wider areas of RPA. Where fill material is required, this will be as free draining as possible and will be compacted to the minimum extent feasible. Where cut is required (including topsoil stripping) the edge of the earthworks nearest the tree will be excavated in advance using hand tools to allow roots to be exposed and cleanly pruned back under the supervision of an arboriculturist. Due to the limited extent of the works (confined to outer RPAs) and the careful working methodology to be adopted, no substantive negative impact on retained tree health or condition is anticipated.

4.5.8 A new post and wire fence is proposed within the RPA of G44 and T56. This will be achieved via driven posts which will be located to avoid significant tree roots. All fence works will be carried out via contractors working on foot with no vehicular or plant access within RPAs. This work can be achieved without a negative impact on these tree features.

[17] British Standards Institution (BSI), BS3998:2010. Tree work – Recommendations.

4.5.9 The existing hard surfacing is to be removed and replaced within the RPA of T3 and T56. Tree roots are less likely to be present below the heavily engineered road and the existing subbase will be retained where possible to act as a layer of ground protection. The surface course and upper subbase can be removed with an excavator working from existing hard standing. The lower sub base (e.g. the lowest 100mmm of buildup) will be retained intact where possible. If removal is required, this will be supervised by an arboriculturist and carried out using hand tools or compressed air/soil vacuum unless roots are otherwise demonstrated to be absent (e.g. via trial holes supervised by an arboriculturist) and the methodology is agreed with the Perth and Kinross Council Tree Officer.

4.5.10 Where the principles detailed above are fully adhered to, RPA incursions can be successfully managed to avoid substantial negative impacts on the health or condition of retained trees.

4.6 Soft Landscaping within RPAs

4.6.1 Mechanical stripping and cultivation of soil is highly likely to sever roots, creating a potential ingress for wood decay fungi, reduce physiological health, and potentially significantly affect tree stability. Where impacts are significant, premature tree loss is likely.

4.6.2 No mechanical cultivation of soils may be undertaken within the RPAs of any retained trees. Where isolated cultivation is required, this shall be undertaken by hand dig methodologies only. Where any raising of topsoil is required, this shall not exceed 100mm in depth and will be of good quality and freely draining, installed without significant compaction and avoiding the area immediately surrounding the base of a tree.

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

4.7.1 The storage of materials may be required within the RPAs of retained trees. All access, materials storage or similar within the RPAs of any retained tree will require the use of appropriate ground protection specified to the highest expected load in accordance with **Appendix D Outline Tree Protection Measures section E.2**.

4.7.2 All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the RPA or crown spread of retained trees, including those not specifically covered in this report. Space is likely to be constrained on the Site and will need to be carefully considered. The Construction Exclusion Zones identified on the Tree Protection Plan must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.

4.7.3 The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builder's sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.

4.7.4 The storage of materials and arisings can result in an effectively raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

4.7.5 For these reasons the storage of materials and any washing, mixing or refuelling will take place in agreed allocated areas at least 5 m from the edge of the RPA of retained trees.

4.7.6 Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

4.7.7 Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate within proximity to retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5 m of any part of a retained tree to ensure no damage is sustained.

4.8 Tree Protection

4.8.1 Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant, root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and canopy spread of trees to be retained will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted. Where access is necessary within this area special measures such as the use of ground protection and arboricultural supervision are generally required.

4.8.2 Outline tree protection measures are considered in **Appendix D Outline Tree Protection Measures.** An Arboricultural Method Statement is often required as a condition of planning consent to set out the phasing of site operations, the finalised tree protection measures for the Site and to provide detail on how sensitive elements of work are to be achieved in proximity to retained trees. Issues to be addressed by the Method Statement are listed in the Conclusion of this report.

4.9 Compensation Planting

4.9.1 Compensatory planting is recommended to offset the loss of canopy cover on the Site. Compliance with Section C of the NPF4 may still be met with regard to compensating for canopy cover loss "*Development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered."*

4.9.2 Total loss of canopy cover across the Site is currently estimated at 8,186m^2.

4.9.3 A replanting area of 0.82ha should be secured to ultimately provide equivalent canopy.

4.9.4 New tree planting should be targeted at appropriate locations, such as those adjoining existing woodlands, linking existing green corridors, increasing tree cover within riparian land or targeting areas designated as high priority for new woodland planting.

4.9.5 Woodland planting proposals must be undertaken in accordance with appropriate guidance, including the UK Forest Standard (2023) and Design Techniques for Forest Management Planning (FCGP012) (2014)[18].

4.9.6 When selecting an appropriate species mix for mitigation planting, proposals should take account of the proposed planting site soils (preferably utilising trial holes to determine soils as per forest soils classification) and utilise ecological site classification to guide species choice against the planting objectives (e.g., conservation and amenity). Appropriate maintenance of the new planting should be implemented to secure necessary establishment rates (e.g., as a minimum the control of weeds, beat-up surveys and tree protection checks).

4.10 Tree Planting – General

4.10.1 Tree planting standards are provided in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations and for woodlands, the UKFS (2025)[19].

4.10.2 Existing areas of unsurfaced ground must be protected during the demolition and construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.

4.10.3 Where new trees are to be planted, the minimum planting distances detailed in Annexe A, Table A.1 of BS5837:2012 must be adhered to, to prevent direct damage to services and structures from future tree growth.

4.10.4 New tree planting should be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations[20].

[18] Forestry Commission, 2014. *Design techniques for forest management planning (FCGP012)*. [Online] Available: https://forestry.gov.scot/publications/106-design-techniques-for-forest-management-planning
[19] Forestry Commission, 2025. *The UK Forest Standard (UKFS). Fifth Edition*. [Online] Available: https://www.gov.uk/government/publications/the-uk-forestry-standard
[20] British Standards Institution (BSI) BS8545: 2014 Trees: from the nursery to independence in the landscape – Recommendations

5 The Future Impact of Trees

5.1 Background

5.1.1 BS5837:2012 indicates that where trees are to be retained, the objective must be to achieve a harmonious and sustainable relationship between trees and new development for the long term. The future impact of trees on the Site has been considered in relation to the development proposals.

5.2 Future Growth

5.2.1 The future growth of retained trees is not considered to have a significant negative impact on the Proposed Development.

5.2.2 Trees and groups to be retained must be afforded suitable space to ensure they remain viable in the long term. Trees which are currently not fully grown will increase in size and this must be considered in conjunction with the Proposed Development and future use of the Site. This is most notable for young to semi mature trees. Within woodland conditions, the development of young and semi mature trees in the understory is less predictable and will be subject to the stand dynamics of the surrounding canopy cover (including the processes of suppression, release and shade succession).

5.3 Future Land Use and Tree Management

5.3.1 Tree management is not considered to be a significant constraint to developing the Site, however, the Site includes many large trees of varying condition and where the land use is subject to change, tree condition and the requirement for remedial works or exclusion zones must be reviewed with further advice from an arboriculturist obtained as appropriate.

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

6 Conclusions

6.1 Summary

6.1.1 This assessment has been based on the reasonable worst-case scenario, where all trees within the footprint of the haul track (and select trees immediately adjacent) are shown as removed. The detailed design will seek to further avoid or reduce arboricultural impacts where possible.

6.1.2 Fourteen individual trees of high quality (category A); eight individual trees, parts of two tree groups, part of two woodlands of moderate quality (category B); and six individual trees, part of five groups, three groups and two part woodlands of low quality (category C) may be removed to facilitate the Proposed Development. In addition, one tree (T131), identified as unsuitable for retention for more than ten years as living trees in the context of the current land use (Category U) is likely to be removed to facilitate the Proposed Development. The remaining recorded trees can be retained and protected.

6.1.3 Twelve individual trees, three groups, one hedgerow and one woodland are subject to an RPA incursion to facilitate the Proposed Development. Provided the principles detailed in Section 4.5 are fully adhered to, RPA incursions can be managed to avoid substantial negative impacts on the health or condition of retained trees.

6.1.4 There is likely to be a requirement for crown lifting works to the western canopy of T3 and T46 to achieve junction visibility. These trees are in good condition and these works are not considered likely to negatively impact the physiological or structural condition of the trees. These trees are mature in age and is therefore not considered likely to increase in size significantly. Therefore, ongoing maintenance works to ensure a reasonable clearance from the road is maintained are unlikely to be onerous.

6.1.5 Prior to the commencement of site works, it is recommended that the Site Arboriculturist, Site Manager and Perth and Kinross Council Tree Officer undertake a site walkover to identify trees required for any facilitation pruning (e.g., those trees retained along the access road), to prevent any direct contact wounding to retained trees. Where identified, all tree work is to follow the principles of *BS3998: 2010 Treework – Recommendations* and must be carried out by suitably qualified and insured contractors. The Arboricultural Association provides a list of contractors who meet these requirements which can be found at www.trees.org.uk.

6.1.6 No tree works may be undertaken without the consent of Perth and Kinross Council and the tree owner as appropriate. All arisings from any tree works are the property of the tree owner and must be offered back prior to disposal.

6.1.7 The locations of some tree features were not identified in the topographical survey and are recorded indicatively on the Tree Protection Plan. An appropriate buffer must be determined on Site by an Arboriculturist in advance of any commencement of works to determine the final position of protective fencing (as required).

6.1.8 Compensatory planting is recommended to offset the loss of canopy cover on the Site. The Proposed Development requires removal of trees and groups rather than entire woodland, but compliance with Section C of the NPF4 may still be met with regard to compensating for canopy cover loss "*Development proposals involving woodland removal will only be supported where they will achieve significant and clearly defined additional public benefits in accordance with relevant Scottish Government policy on woodland removal. Where woodland is removed, compensatory planting will most likely be expected to be delivered."*

6.1.9 Total loss of canopy cover across the Site is currently estimated at 8,186m^2.

6.1.10 To compensate for an equivalent area of canopy loss, a replanting area of 0.82 ha should be secured.

6.1.11 New tree planting should be targeted at appropriate locations, such as those adjoining existing woodlands, linking existing green corridors, increasing tree cover within riparian land or targeting areas designated as high priority for new woodland planting.

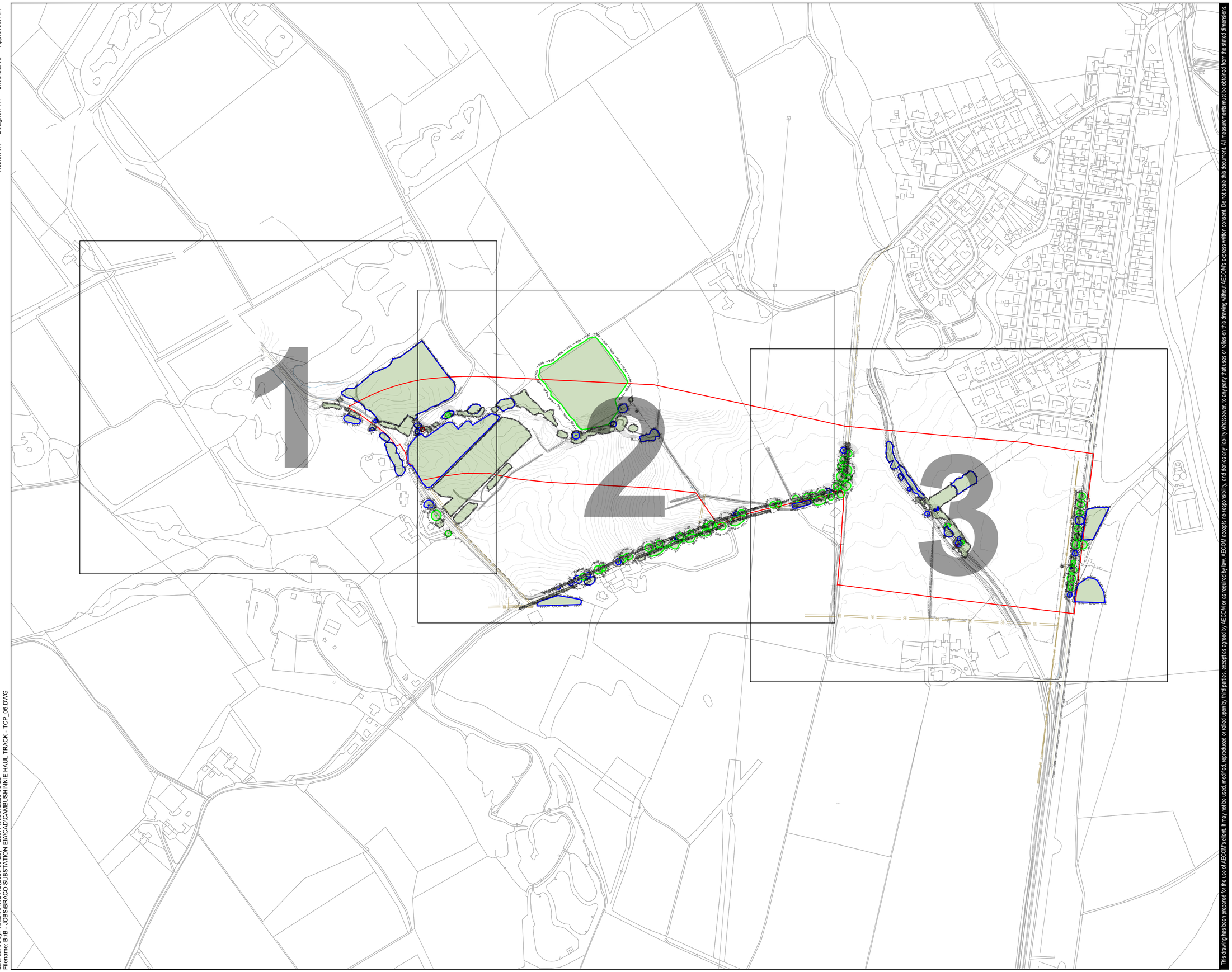
6.2 Issues to be addressed by an Arboricultural Method Statement

- Conditions of planning consent
- Pre commencement meeting and site briefing
- Confirmation of buffers for unsurveyed tree features (where required)
- Order and phasing of operations
- Tree works
- Review of tree suitability and stability following part removal of tree group or woodland features.
- Tree protection fencing
- Ground protection

- Site storage and facilities
- Movement of people, plant and materials
- Enabling works
- Installation of new haul track
- Hard and soft landscaping
- Removal of tree protection measures

Appendix A Tree Constraints Plan

Author: JR Designer: TR Checked: JB Approved: AW



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AECOM

PROJECT

Cambushinnie 400kV Substation Haul Track

CLIENT

Scottish & Southern Electricity Networks (SSEN)

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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
2. TREE LOCATIONS ARE BASED ON THE TOPOGRAPHICAL SURVEY, AERIAL IMAGERY, AND GPS CO-ORDINATES FROM ON SITE WALKOVER.
3. * INDICATES A TREE / GROUP WHOSE POSITION IS APPROXIMATE AS BASED UPON AERIAL PHOTOGRAPHY AND ON SITE OBSERVATIONS.
4. PLANS SHOULD BE READ IN CONJUNCTION WITH THE AECOM ARBORICULTURAL REPORT.
5. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.
6. DRAWING REFERENCES:
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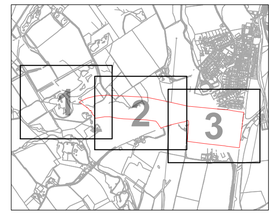
   X_BB Topo Survey 2D.dwg
   Xref_OS Map.dwg

KEY PLAN



KEY

- T# **FEATURE ID TAGS** *(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*
- **SITE BOUNDARY**
- **A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(HIGH QUALITY & VALUE)*
- **B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(MODERATE QUALITY & VALUE)*
- **C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(LOW QUALITY & VALUE)*
- **U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND** *(UNSUITABLE FOR RETENTION)*
- **ROOT PROTECTION AREAS (RPA)** *(AS DEFINED BY BS 5837:2012)*
- **APPROXIMATE SHADING ARC** *(AS DEFINED BY BS 5837:2012)*

ISSUE/REVISION

P02	25.06.25	TITLE BLOCK AMENDMENTS
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SHEET NUMBER **REV.**

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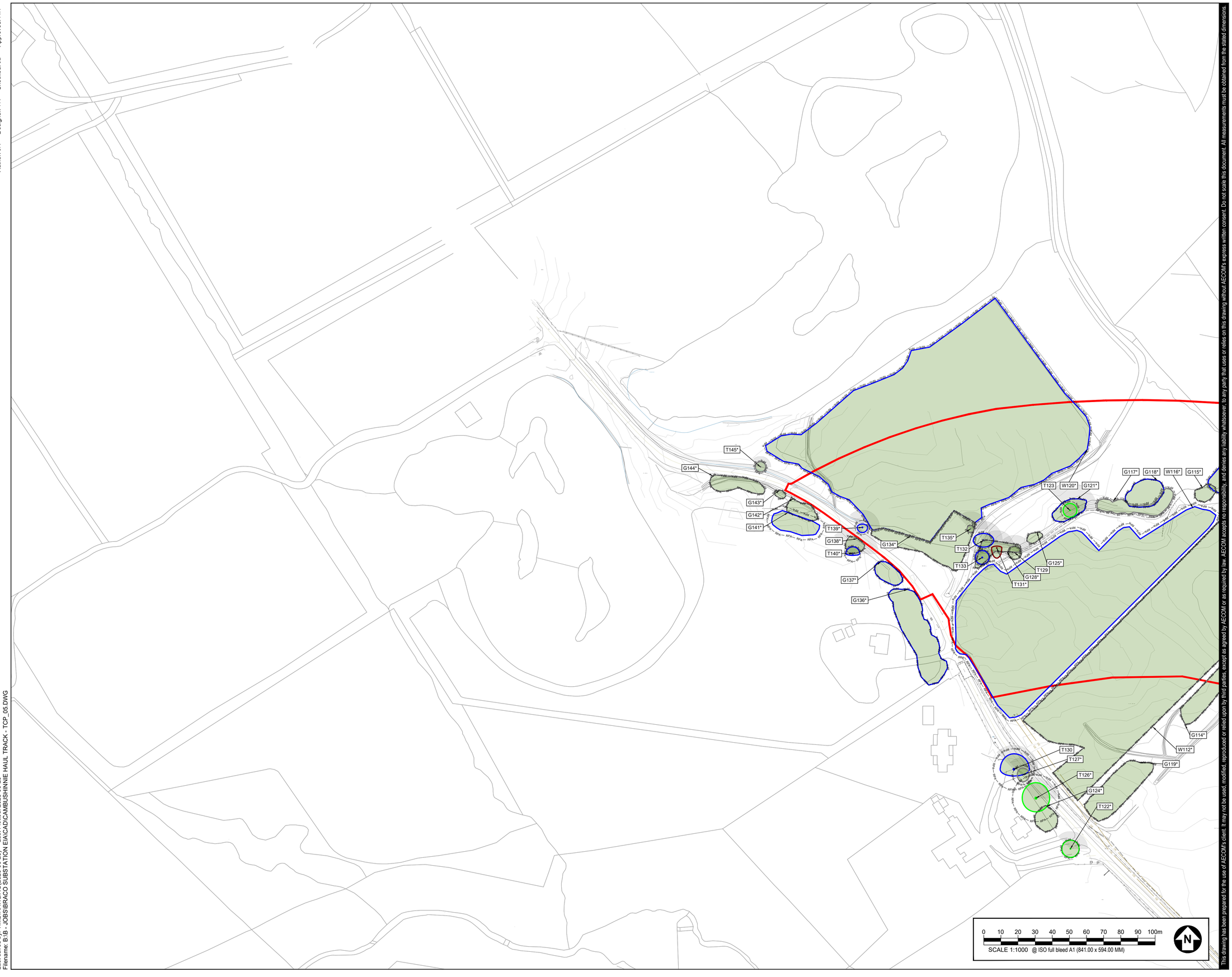
Author: JR Designer: TR Checked: JB Approved: AW



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AECOM

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Cambushinnie 400kV Substation Haul Track

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6. DRAWING REFERENCES:
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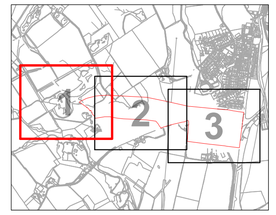
   X_BB Topo Survey 2D.dwg
   Xref_OS Map.dwg

KEY PLAN



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T# **FEATURE ID TAGS** *(A PREFIX OF 'T' DENOTES A SINGLE TREE, 'G' A GROUP, 'H' A HEDGE, 'W' A WOODLAND, AND AN ASTERISK SUFFIX '*' MEANS THE FEATURE WAS PLOTTED INDICATIVELY)*

SITE BOUNDARY

A CATEGORY TREE, GROUP, HEDGE, OR WOODLAND *(HIGH QUALITY & VALUE)*

B CATEGORY TREE, GROUP, HEDGE, OR WOODLAND *(MODERATE QUALITY & VALUE)*

C CATEGORY TREE, GROUP, HEDGE, OR WOODLAND *(LOW QUALITY & VALUE)*

U CATEGORY TREE, GROUP, HEDGE, OR WOODLAND *(UNSUITABLE FOR RETENTION)*

RPA **ROOT PROTECTION AREAS (RPA)** *(AS DEFINED BY BS 5837:2012)*

APPROXIMATE SHADING ARC *(AS DEFINED BY BS 5837:2012)*

ISSUE/REVISION

P02	25.06.25	TITLE BLOCK AMENDMENTS
P01	10.02.25	FIRST ISSUE
I/R	DATE	DESCRIPTION

DRAWING STATUS

ISSUE

PROJECT NUMBER

60721943

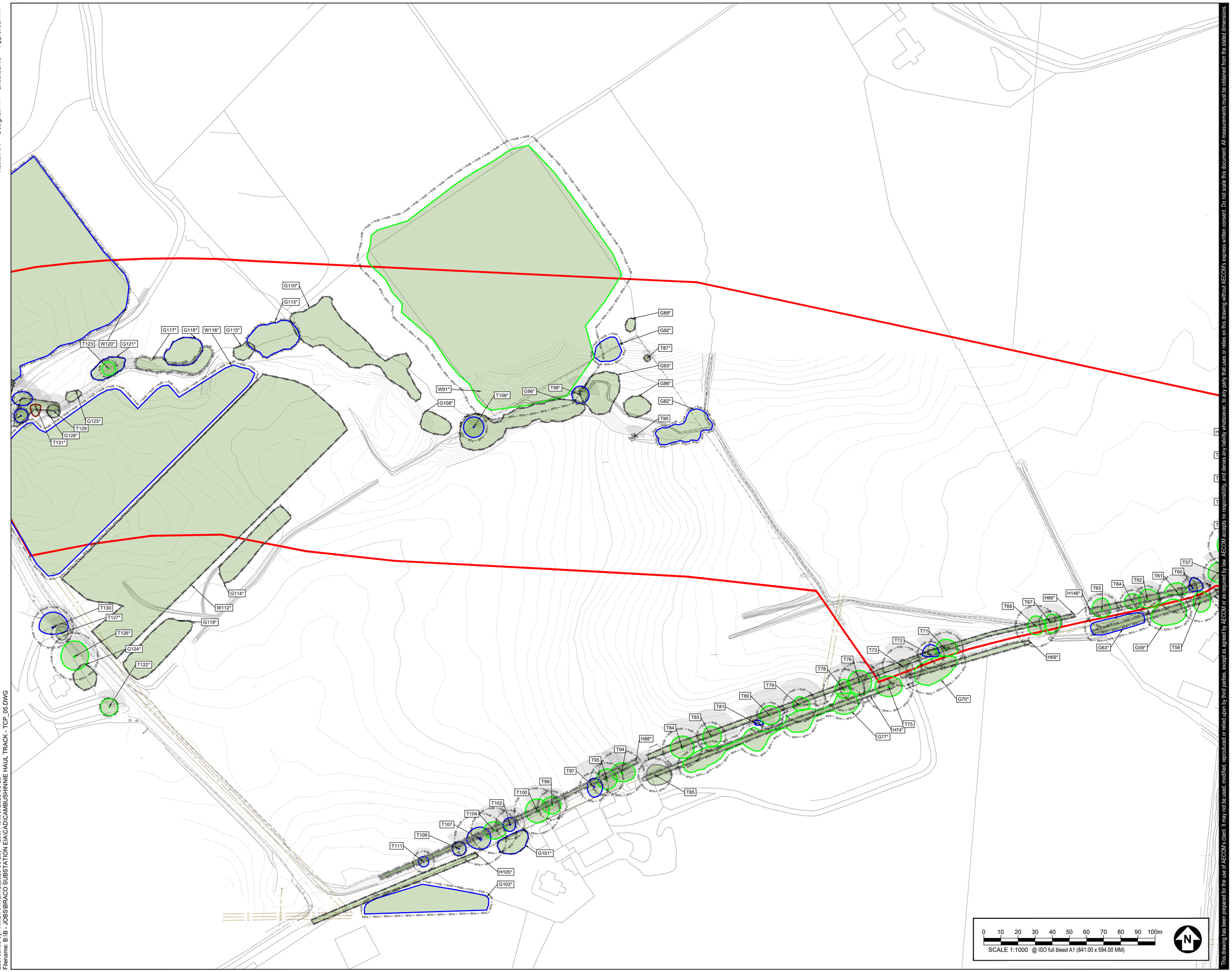
SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 01)

SHEET NUMBER **REV.**

60721943-ACM-XX-XX-AB-TCP-001 P02

Author: JR Designer: TR Checked: JB Approved: AW



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Filename: B:\B - JOBS\BRACO SUBSTATION EIA\CAD\CAMBUSHINNIE HAUL TRACK - TCP_05.DWG

AECOM

PROJECT

Cambushinnie 400kV Substation Haul Track

CLIENT

Scottish & Southern Electricity Networks (SSEN)

CONSULTANT

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GENERAL NOTES

1. TREE CATEGORIES AS DEFINED BY BS 5837:2012
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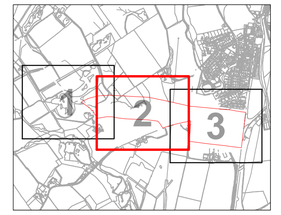
KEY PLAN



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(AS DEFINED BY BS 5837:2012)

APPROXIMATE SHADING ARC
(AS DEFINED BY BS 5837:2012)

ISSUE/REVISION

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PROJECT NUMBER

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SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 02)

SHEET NUMBER / REV.

60721943-ACM-XX-XX-AB-TCP-002 P02

Author: JR Designer: TR Checked: JB Approved: AW

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Filename: B:\B - JOBS\BRACO SUBSTATION EIA\CAD\CAMBUSHINNIE HAUL TRACK - TCP_05.DWG

AECOM

PROJECT

Cambushinnie 400kV Substation Haul Track

CLIENT

Scottish & Southern Electricity Networks (SSEN)

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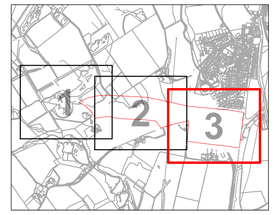

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(AS DEFINED BY BS 5837:2012)

APPROXIMATE SHADING ARC
(AS DEFINED BY BS 5837:2012)

ISSUE/REVISION

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DRAWING STATUS

ISSUE

PROJECT NUMBER

60721943

SHEET TITLE

TREE CONSTRAINTS PLAN (SHEET 03)

SHEET NUMBER / REV.

60721943-ACM-XX-XX-AB-TCP-003 P02

Appendix B Tree Survey Schedule

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
G1*	European Larch (Larix decidua)	24	<450#	4	4	4	4	n/a	5	Good	SM-M	Good - Fair	Stem exclusion, regular structure.		20+	B1,2	
W2*	Sitka Spruce (Picea sitchensis),European Larch (Larix decidua),Elder (Sambucus nigra)	30	<500#	4	4	4	4	n/a	5	Good - Dead	SM-M	Good - Poor	Stem exclusion, regular structure, Sitka dominant. Few dead suppressed trees within stand. Rhododendron.		20+	B1,2	
T3*	Beech (Fagus sylvatica)	15	800#	7	7	7	7	1.0/S	5	Good	M	Good	Established immediately east of boundary wall, lower crown managed back from footway.		40+	A1	Crown lifting works to the western canopy to achieve junction visibility
G4*	Rowan (Sorbus aucuparia),Bird Cherry (Prunus padus),Sessile Oak (Quercus petraea),Cherry Laurel (Prunus laurocerasus),Dogwood (Cornus sanguinea Dogwood),Sycamore (Acer pseudoplatanus),Wild Cherry (Prunus avium),Silver Birch (Betula pendula),Hawthorn (Crataegus monogyna),Grey willow (Salix cinerea),Holly (Ilex aquifolium),Sitka Spruce (Picea sitchensis),Blackthorn (Prunus spinosa),Beech (Fagus sylvatica)	10	<350#	3	3	3	3	n/a	0	Good	Y-EM	Good - Fair	Underwood to high forest overstory. Scrub with mixed high forest late shade-succession species and pioneers.		10+	C1,2	Partial removal in accordance with the TPP.
T5*	Sessile Oak (Quercus petraea)	14	780#	6	5	6	5	2.0/SW	5	Good	EM	Good	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Few previous minor limb union failures within crown with		40+	A2	

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
													good peripheral wound-wood- typical of species and age.				
T6*	Sessile Oak (Quercus petraea)	14	800#	6	5	6	6	4.0/W	5	Good	M	Good	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Few previous limb union failures within crown with good peripheral wound-wood-typical of species and age. Major deadwood over highway north at circa 9m. Wound to stem north at circa 5m, approx., 1mx500mm. Likely limb union failure. Peripheral wound-wood, good adaptive swelling, no obvious decay of exposed inner wood visible.	Remove dead limb over highway north. (< 3 months)	40+	A2	Fell
T7*	Sessile Oak (Quercus petraea)	13	780#	4	5	6	6	2.0/S	4	Fair	M	Good	No access to base, viewed from footway east. Upper crown with significant gaps, approximately 40% crown density, retained live limbs with no obvious deviation to the expected branching pattern. Lower crown, likely secondary within former dysphotic (low light) zone, with high density - sign of crown retrenchment and regeneration.		40+	A2	Fell
T8*	Sessile Oak (Quercus petraea)	9	220,170	4	1	3	2	2.0/W	5	Good	SM	Fair	Established east of dry stone wall on highway verge. Multi-stemmed from ground level, no stool, minor inclusion. Contact wound to stems at circa ground level. Gouge wounding. Peripheral wound-wood, unlikely to occlude.		10+	C1	Fell
T9*	Sessile Oak (Quercus petraea)	17	1060#	9	6	9	6	2.5/SW	5	Fair - Poor	M	Fair	No access to base, viewed from footway east. Upper	Remove deadwood	20+	B1,2	Fell

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
													crown with significant gaps, approximately 30% crown density, retained live limbs with no obvious deviation to the expected branching pattern, moderate bud density. Lower crown, likely secondary within former dysphotic (low light) zone, with poor density of limb regeneration with moderate to poor bud density of live limbs. Multiple previous limb union failures throughout crown with peripheral wound-wood - typical of species. Likely squirrel damage to limbs, increased limb shedding likely due to this. Deadwood in central crown with target of highway.	in crown with target of highway. Retain arisings at base. (< 3 months)			
T10*	Sessile Oak (Quercus petraea)	12	750#	6	5	6	5	4.0/N	4	Good	M	Good	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Moderate to high crown gaps north in mid to upper crown. Overall branching pattern and bud density normal.		40+	A2	Fell
T11*	Sessile Oak (Quercus petraea)	12	540#	6	4	6	4	3.0/S	2	Good	EM	Good	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west.		40+	A2	Fell.
G12*	Blackthorn (Prunus spinosa),Cherry Laurel (Prunus laurocerasus),Sycamore (Acer pseudoplatanus),Silver Birch (Betula pendula),Wild Cherry (Prunus avium),Grey willow (Salix cinerea),Dogwood (Cornus sanguinea Dogwood),Wild privet	8	<150#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	Underwood to high forest overstory. Scrub with mixed high forest late shade-succession species and pioneers.		10+	C2	Partial removal in accordance with the TPP.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
	(Ligustrum vulgare),Apple (Malus sp),Rowan (Sorbus aucuparia)																
T13*	Sessile Oak (Quercus petraea)	14	800#	8	6	6	6	3.0/S	3	Good	M	Good	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Moderate crown gaps, overall branching pattern and bud density normal. Major dead third order limb in central crown northeast.	Remove dead limb in central crown northeast, retain arisings at base. (< 3 months)	40+	A2	Fell
T14*	Sessile Oak (Quercus petraea)	12	650#	6	4	5	4	2.0/S	5	Fair - Poor	EM	Fair	No access to base, viewed from footway east. Upper crown with significant gaps, approximately 50% crown density, retained live limbs with no obvious deviation to the expected branching pattern, moderate bud density. Lower crown, likely secondary within former dysphotic (low light) zone, with poor density of limb regeneration with moderate to poor bud density of live limbs. Deadwood in central crown with target of highway.	Remove deadwood in crown with target of highway. Retain arisings at base. (< 3 months)	20+	B1,2	Fell.
T15*	Sessile Oak (Quercus petraea)	12	750	3	5	3	4	2.0/S	5	Fair	M	Fair	Significant dieback of primary crown with dead secondary limbs retained. Good central crown regeneration where light levels restored with crown retrenchment. Bleeding patch to stem circa 1m north. Hammer test to base north and east, density audibly normal.	Remove deadwood in crown with target of highway. Retain arisings at base. (< 3 months)	40+	A3	Fell.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
T16*	Ash (Fraxinus excelsior)	9	150#	2	2	2	2	3.0/E	4	Good	SM	Good	Established on highway verge.		10+	C1	Fell.
T17*	Sessile Oak (Quercus petraea)	14	820	7	5	7	6	2.0/W	1	Good	M	Good	Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west.		40+	A1,2	
T18*	Sessile Oak (Quercus petraea)	15	1000	7	7	7	7	2.0/SW	2	Good	M	Good	Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Major deadwood in central crown, normal volume for species and age. Potential target of highway.	Remove deadwood with target of highway, retain arisings at base. (< 3 months)	40+	A1,2	
T19*	Sessile Oak (Quercus petraea)	12	800#	8	6	5	5	4.0/SE	5	Good	M	Fair	No access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Major deadwood in crown north over highway verge.		40+	A2	
T20*	Wild Cherry (Prunus avium)	8	180#	3	1	1	3	1.0/S	2	Good	SM	Fair	Structurally suppressed by oak southeast. Good future potential as edge tree.		20+	B2	
T21*	Sessile Oak (Quercus petraea)	11	700#	5	4	4	4	2.0/S	2	Fair - Poor	EM	Fair	Limited access to base. Viewed from footway east. Highwayside avenue of oak, forming high forest overstory of shelterbelt to agricultural land west. Significant crown gaps. Circa 40% retain live crown area. Poor lower crown regeneration. Major		20+	B2	Fell.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
													deadwood over highway verge.				
T22*	Elder (Sambucus nigra)	4	150#	2	2	2	2		0	Good	EM	Fair	Typical of species. Stem diameter estimated from ground level due to mass proliferation of stems at circa 1.5m above ground level.		10+	C1	
W23*	Bird Cherry (Prunus padus),Hazel (Corylus avellana),Wild Cherry (Prunus avium),Goat Willow (Salix caprea),Hawthorn (Crataegus monogyna),Apple (Malus sp),Silver Birch (Betula pendula),Ash (Fraxinus excelsior)	10	<310#	3	3	3	3	n/a	0	Good - Poor	Y-EM	Good - Fair	Stem exclusion stage - thicket. Dominated by light demanding short and long lived pioneer species. Dense lichen establishment. One ash with significant symptoms of ash dieback.		20+	B1,2	
W24*	Rowan (Sorbus aucuparia),Bird Cherry (Prunus padus),Hazel (Corylus avellana),Blackthorn (Prunus spinosa),Beech (Fagus sylvatica),Goat Willow (Salix caprea),Wild Cherry (Prunus avium),Apple (Malus sp),Ash (Fraxinus excelsior),Hawthorn (Crataegus monogyna),Sycamore (Acer pseudoplatanus),Whitebeam (Sorbus aria)	9	<150#	3	3	3	3	n/a	0	Good - Fair	Y-SM	Good - Fair	Stem exclusion stage - thicket. Dominated by short lived pioneer species. Beech seedlings in understory. Broom present in canopy gaps.		10+	C1,2	Partial removal in accordance with the TPP.
T25*	Silver Birch (Betula pendula)	11	440	3	3	3	3	3.0/W	3	Good	M	Good	Locally dominant. Emergent in thicket. Good example of species.		40+	A1	
T26*	Silver Birch (Betula pendula)	12	330	3	3	3	3	3.0/S	4	Good	M	Good	Locally dominant, emergent in thicket.		20+	B1	
T27*	Ash (Fraxinus excelsior)	8	300#	1	3	4	1	2.0/NE	1	Poor	SM	Fair - Poor	Extensive crown dieback with vigorous vertical epicormic flushing across branching structure. Symptoms of ash dieback.	Fell if outside risk tolerance.	<10	U1	

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
T28*	Sycamore (Acer pseudoplatanus)	7	380,350 #	6	4	4	5	n/a	0	Good	EM	Fair	No access to base. Established east of watercourse on bank. Intermediate to ash, likely to become dominant following decline of ash.		20+	B1	
T29*	Common Alder (Alnus glutinosa)	6	100,90#	2	2	2	2	n/a	0	Good	SM	Good	Typical of riparian habitat.		10+	C1,2	Fell
G30*	Sycamore (Acer pseudoplatanus)	9	<400#	5	5	5	5	n/a	2	Good	SM	Good - Fair	No access to bases. Cluster of stems established east of watercourse. Locally dominant.		20+	B1,2	
T31	Silver Birch (Betula pendula)	14	400,400	4	3	5	4	2.0/W	2	Good	M	Fair	Locally dominant. Codominant union at circa 1.3m, cup union formation. Good example of species.		40+	A1	Fell.
T32*	Sycamore (Acer pseudoplatanus)	6	150#	2	2	2	2	1.0/E	1	Good	SM	Good			10+	C1	
T33	Sycamore (Acer pseudoplatanus)	4	40#	1	1	1	1	0.5/E	1	Good	Y	Good			10+	C1	
T34*	Goat Willow (Salix caprea)	5	160,160 ,120,18 0	6	0	1	1	n/a	0	Good	EM	Poor	Previous failure of stem base, stem split in two on ground level, extensive exposure of inner wood. Dense harping regeneration of young growth from second order branch scaffold. No obvious visible decay of exposed inner wood, fibrous root form central to failure. Material conservation value.		20+	B3	Fell.
T35*	Silver Birch (Betula pendula)	10	220	2	2	2	2	5.5/S	5	Good	EM	Good	Emergent within thicket.		20+	B1	Fell.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
T36*	Sycamore (Acer pseudoplatanus)	10	220	0	2	1	2	1.0/SW	1	Good	SM	Good	Codominant to sycamore north.		10+	C1,2	Fell.
T37*	Sycamore (Acer pseudoplatanus)	10	310,310,250,200#	4	4	4	4	1.0/W	0	Good	SM	Fair	Established on western slope of bank. Multiple included unions, structurally durable species.		20+	B1	Fell.
G38	Hawthorn (Crataegus monogyna)	3	<50#	1	1	1	1	n/a	0	Good	Y	Good - Fair	Likely self sown. Circa four trees.		10+	C2	Fell.
G39*	Sycamore (Acer pseudoplatanus)	8	<200#	2	2	2	2	n/a	0	Good	SM	Fair	No access. Circa three trees on watercourse edge.		10+	C1,2	Fell.
G40*	Sycamore (Acer pseudoplatanus),Goat Willow (Salix caprea),Hazel (Corylus avellana),Hawthorn (Crataegus monogyna),Beech (Fagus sylvatica),Ash (Fraxinus excelsior)	10	<350#	3	3	3	3	n/a	0	Good - Fair	Y-EM	Good - Fair	Riparian tree group. Willow and sycamore dominant in canopy. Inherent conservation value for bank stabilisation and heterogeneity of watercourse light levels.		20+	B2,3	
T41*	Elder (Sambucus nigra)	5	170,190,190,150,200#	5	3	4	2	1.0/S	1	Good	M	Fair	Limited access due to watercourse. Cluster of stems from ground level, no stool.		10+	C1,2	Fell.
T42*	Grey willow (Salix cinerea)	8	350#	3	3	3	3	n/a	0	Good	M	Fair	No access to base. Established at watercourse edge west. Stem diameter estimated from ground level due to mass proliferation of stems at circa 1.5m above ground level.		20+	B1	

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
G43*	Sycamore (Acer pseudoplatanus),Beech (Fagus sylvatica)	8	<280#	3	3	3	3	n/a	0	Good	SM	Good	No access to bases. Established at watercourse edge west. X1 of each species.		20+	B2	
G44*	Sycamore (Acer pseudoplatanus),Grey willow (Salix cinerea),Ash (Fraxinus excelsior)	9	<300#	3	3	3	3	n/a	0	Good	Y-SM	Good - Fair	Limited access, riparian tree group. Grey willow on bank with basal stem failures, harping.		20+	B1,2	
H45*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna)	1	<100#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Managed hedgerow.		10+	C2	
T46*	Lime (Tilia sp)	17	750	6	6	6	2	2.0/SW	4	Good	M	Good	Good example of species, part of significant highwayside avenue.		40+	A2	Crown lifting works to the western canopy to achieve junction visibility
H47*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna)	1	<100#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Managed hedgerow.		10+	C2	
T48*	Sessile Oak (Quercus petraea)	18	1100#	8	8	8	8	4.0/W	4	Good	M	Good	No access to base. Good example of species, part of significant highwayside avenue. Major deadwood in crown over highway.	Remove dead wood over highway, retain arisings at base. (< 3 months)	40+	A1,2	
T49*	Lime (Tilia sp)	18	750	5	5	8	2	n/a	4	Good	M	Good	Good example of species, part of significant highwayside avenue. Moderate deadwood in		40+	A2	Fell.

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													crown, normal volume for species and age.				
T50*	Sessile Oak (Quercus petraea)	18	1050	6	9	9	7	3.0/E	3	Good	M	Good	Good example of species, part of significant highwayside avenue.		40+	A1,2	Fell.
T51*	Norway Maple (Acer platanoides)	15	550	5	5	5	5	4.0/N	6	Good	M	Good	Collective value as part of highway avenue.		20+	B1,2	Fell.
T52*	Norway Maple (Acer platanoides)	15	760	7	2	7	5	3.0/N	6	Good	M	Good	Good example of species, part of significant highwayside avenue.		40+	A1,2	Fell.
H53*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna),Norway Maple (Acer platanoides)	1	<100#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Managed hedgerow.		10+	C2	
T54*	Sycamore (Acer pseudoplatanus)	13	680	5	5	5	8	2.5/S	5	Good	EM	Good	Part of significant highwayside avenue.		40+	A2	Fell.
T55*	Lime (Tilia sp)	17	1090	8	8	8	8	1.5/N	0	Good	M	Fair	Part of significant highwayside avenue. Wound at codominant union southeast from union at approx., 2.5m to circa 1m below. Partially to fully occluded with good wound-wood, sap bleed from opening at base. No crown gap above. No defect to northern aspect of stem union. Structurally durable genus.		40+	A2	Fell.
T56*	Horse Chestnut (Aesculus hippocastanum)	15	1000	7	9	7	6	3.0/W	1	Good	M	Good - Fair	Good example of species. Part of significant highway avenue. Significant stub formed of second order limb west at circa 4m,		40+	A1,2	

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													approx., 5mx500mm. Stub over BT line.				
T57*	Horse Chestnut (Aesculus hippocastanum)	14	800#	7	5	5	7	1.0/N	0	Fair	M	Good	Part of significant highwayside avenue. Minor apical dieback of southern crown.		40+	A2	Fell.
T58*	Sycamore (Acer pseudoplatanus)	15	950	6	6	6	4	3.0/S	4	Good	M	Fair	Part of significant highwayside avenue. Cup union at circa 3m with likely natural brace above. Moderate deadwood in crown over verge.		40+	A1,2	
G59*	Common Lime (Tilia X europaea),Horse Chestnut (Aesculus hippocastanum)	16	<800#	7	7	7	7	n/a	2	Good	EM-M	Good			40+	A2	
T60*	Sycamore (Acer pseudoplatanus)	14	530	6	2	6	2	3.0/N	4	Fair	EM	Good	Part of highwayside avenue. Significant crown gaps, retained live limbs with normal bud density. Major deadwood over verge.		20+	B1,2	
T61*	Norway Maple (Acer platanoides)	11	950	6	1	5	8	1.5/W	3	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy. Torn stub west at circa 3m, epicormic regeneration.		40+	A2	
T62*	Horse Chestnut (Aesculus hippocastanum)	11	650#	6	5	7	5	2.0/E	1	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy. Minor torn stubs over highway south at circa 3m.		40+	A2	
G63*	Norway Maple (Acer platanoides), Sycamore (Acer pseudoplatanus),Horse Chestnut (Aesculus hippocastanum)	15	700	5	5	5	5	n/a	3	Good	EM-M	Fair	Sycamore, horse chestnut. Group maintained back from overhead line. Included unions. Wounding with decay, likely localised.		20+	B1,2	
T64	Norway Maple (Acer platanoides)	10	600#	5	4	5	5	3.0/N	3	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A2	

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T65*	Horse Chestnut (Aesculus hippocastanum)	11	790	7	4	5	6	2.0/W	0	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy. Included unions in crown, adaptive growth, species with moderate structural durability		40+	A2	
H66*	Beech (Fagus sylvatica),Ash (Fraxinus excelsior),Hawthorn (Crataegus monogyna),Norway Maple (Acer platanoides),Elder (Sambucus nigra)	2	<30#	1	1	1	1	n/a	0	Good	Y-SM	Good	Managed hedgerow.		10+	C2	
T67*	Sycamore (Acer pseudoplatanus)	11	550	5	6	6	3	3.0/N	2	Good	EM	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A2	
T68*	Common Lime (Tilia X europaea)	11	1000	6	5	5	5	3.0/N	1	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A2	
H69*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna),Elder (Sambucus nigra),Sycamore (Acer pseudoplatanus),English Elm (Ulmus procera)	1	<80#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Managed hedgerow.		10+	C2	
G70*	Sycamore (Acer pseudoplatanus),Norway Maple (Acer platanoides)	16	<900#	6	6	6	6	n/a		Good	M	Good			40+	A2	
T71*	Common Lime (Tilia X europaea)	12	850#	6	4	7	6	3.0/E	1	Good	M	Good	Limited access to base. Forms part of high-quality avenue. Codominant in canopy. Dense epicormic growth preventing inspection of base. Included union at circa 3 m, adaptive growth, structurally durable		40+	A2	

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													species, union considered of minor significance.				
T72*	Sycamore (Acer pseudoplatanus)	12	650#	6	1	5	5	1.5/E	1	Good	EM	Fair	Limited access to base. Forms part of high-quality avenue. Structurally suppressed south, in canopy. Codominant union at circa 2 m, inclusion likely to form.		20+	B1,2	
T73*	Horse Chestnut (Aesculus hippocastanum)	15	950#	4	7	6	2	1.0/E	1	Fair	M	Fair	Limited access to base. Forms part of high-quality avenue. Codominant in canopy. Second order stem west now retained stub to circa 4 m, stub approx., 2 m x 450 mm. Union at circa 2 m with hairline split with length of 1.1 m; topped stem now stub considered sufficient to address this structural defect Peripheral wound-wood. Asymmetrical crown. Hammer test to stem, density south audibly normal. Dead limb south over highway at circa 5 m.		10+	C1,2	
H74*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna),Elder (Sambucus nigra),Sycamore (Acer pseudoplatanus), English Elm (Ulmus procera)	1	<80#	0.5	0.5	0.5	0.5	n/a	0	Good	SM	Good	Managed hedgerow.		10+	C2	
T75*	Sycamore (Acer pseudoplatanus)	16	1200	6	6	8	8	3.0/N	6	Good	M	Good	Limited access to base. Good example of species. Minor included unions, species with high structural durability. Previous crown raising works north over overhead line, no obvious stem wounds visible.		40+	A1,2	
T76*	Norway Maple (Acer platanoides)	15	1000#	7	7	7	7	3.0/E	2	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy. Major deadwood west in crown, low risk. Considered normal volume for species and age. Three stems arising from circa 3m,		40+	A1,2	

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													limited visibility, likely cup unions.				
G77*	Sycamore (Acer pseudoplatanus), Horse Chestnut (Aesculus hippocastanum)	16	<900#	8	8	8	8	n/a	4	Good	M	Good	No access to base. Forms high-quality avenue.		40+	A2	
T78*	Sycamore (Acer pseudoplatanus)	15	1000#	6	5	4	5	3.0/E	3	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A1,2	
T79*	Norway Maple (Acer platanoides)	16	800	5	3	6	4	1.0/E	2	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy. Major deadwood in crown south, likely natural branch pruning due to light conditions.		40+	A1,2	
T80*	Sycamore (Acer pseudoplatanus)	16	650#	6	5	6	6	4.0/E	3	Good	EM	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A2	
T81*	Sycamore (Acer pseudoplatanus)	11	350#	2	1	4	1	3.0/E	3	Good	SM	Fair	No access to base. Forms part of high-quality avenue. Codominant in canopy. Likely previous structural suppression or similar from west, minor lean with dense epicormic regeneration across main stem.		20+	B1,2	
G82*	Silver Birch (Betula pendula),Grey willow (Salix cinerea)	9	<350#	3	3	3	3	n/a	0	Good	Y-EM	Good	Seminatural grove, individuals largely of low quality, collective value. Broom as understory. Birch with hybrid characteristics showing white lentils with downy shoots, potentially B x aurita.		20+	B2	Partial removal in accordance with the TPP.
T83*	Sycamore (Acer pseudoplatanus)	16	700#	6	6	6	5	3.0/E	3	Good	EM	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A1,2	

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T84*	Sycamore (Acer pseudoplatanus)	17	950#	7	6	7	7	3.0/S	4	Good	M	Good	No access to base. Forms part of high-quality avenue. Dominant in canopy. Dead limb in crown at circa 10m over highway.		40+	A1,2	
T85*	Sycamore (Acer pseudoplatanus)	15	800	6	6	10	5	4.0/E	4	Poor	M	Fair	No access. Significant dieback of upper and western crown, eastern lower crown with normal branching pattern and leaf density.		10+	C1	
G86*	Grey willow (Salix cinerea),Hawthorn (Crataegus monogyna)	6	<150#	4	4	4	4	n/a	0	Good	Y-EM	Good	No access. Grove of willow and thorn.		10+	C1,2	
T87*	Silver Birch (Betula pendula)	5	100#	2	2	2	2		0	Good	SM	Good	Likely self sown.		10+	C1,2	
H88*	Beech (Fagus sylvatica),Hawthorn (Crataegus monogyna)	2	<100#	0.5	0.5	0.5	0.5	n/a	0	Good	Y-SM	Good	Managed hedgerow, estimated average height.		10+	C2	
G89*	Norway Spruce (Picea abies),Silver Birch (Betula pendula)	5	<80#	1	1	1	1	n/a	0	Good	Y-SM	Good	Likely self set grove, dominantly spruce.		10+	C1,2	
T90*	Downy Birch (Betula pubescens)	7	160#	1	1	1	1	2.0/S	1	Good	SM	Good	Bark damage to three basal shoots west, likely caused by mammals.		10+	C1,2	Fell.
W91*	Silver Birch (Betula pendula),Downy Birch (Betula pubescens),Sitka Spruce (Picea sitchensis),Norway Spruce	30	<700#	3	3	3	3	n/a		Good - Fair	Y-M	Good - Fair	Viewed from south and west. Rhododendron visible at periphery west.		40+	A2	

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	(Picea abies),Larch (Larix sp),Sycamore (Acer pseudoplatanus),Rhododendron (Rhododendron sp.)																
G92*	Norway Spruce (Picea abies)	16	<400#	3	3	3	3	n/a	8	Good	EM	Good	Two spruce, codominant. Beyond stand edge.		20+	B1,2	
G93*	Grey willow (Salix cinerea),Hawthorn (Crataegus monogyna),Willow (Salix sp)	6	<200#	4	4	4	4	n/a	0	Good	Y-EM	Good	No access. Grove of willow and thorn, likely S. viminalis.		10+	C1,2	
T94*	Sycamore (Acer pseudoplatanus)	16	1100#	6	5	8	6	2.0/E	0	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy. Dense epicormic growth north limiting visibility, typical of species.		40+	A1,2	
T95*	Norway Maple (Acer platanoides)	16	800#	6	6	6	6	2.0/N	4	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A1,2	
G96*	Dogwood (Cornus sp.)	1	<20#	1	1	1	1	n/a	0	Good	Y-SM	Good	Scrub.		10+	C2	Partial removal in accordance with the TPP.
T97*	Norway Maple (Acer platanoides)	16	700	5	6	5	4	2.5/N	2	Fair	EM	Fair	No access to base. Forms part of high-quality avenue. Codominant in canopy. Apical dieback northwest, surrounding crown with normal branching pattern.		20+	B1,2	
T98*	Silver Birch (Betula pendula)	11	350#	5	5	5	5	1.0/E	1	Good	M	Good	No access. Viewed from. slope apex south.		20+	B1,2	
T99*	Sycamore (Acer pseudoplatanus)	10	700#	5	5	5	6	1.0/W	2	Good	EM	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A1,2	

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T100*	Common Lime (Tilia X europaea)	15	900,650 #	7	7	7	7	n/a		Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy.		40+	A1,2	
G101*	Common Alder (Alnus glutinosa),Silver Maple (Acer saccharinum)	9	<200#	3	3	3	3	n/a	3	Good	SM	Good - Fair	No access.		20+	B2	
T102*	Norway Maple (Acer platanoides)	11	700#	4	4	3	4	2.0/E	1	Fair - Poor	EM	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy. Apical dieback, deviation to the normal branching pattern. Circa 70% live crown density. Major deadwood in central crown west, considered normal volume for growing conditions.		20+	B2	
G103*	Fir (Abies sp)	18	<400#	3	3	3	3	n/a		Good	SM-EM	Good - Fair	No access. Woodland stand intersected by overhead line. Likely no thin regime.		20+	B1,2	
T104*	Horse Chestnut (Aesculus hippocastanum)	15	1100#	5	5	7	6	2.0/E	0	Good	M	Good	No access to base. Forms part of high-quality avenue. Codominant in canopy. Limited visibility, few stem wounds partially occluded with good wound-wood.		40+	A1,2	
H105*	Sycamore (Acer pseudoplatanus),Norway Maple (Acer platanoides),Hawthorn (Crataegus monogyna),Beech (Fagus sylvatica),Hazel (Corylus avellana),Field Maple (Acer campestre),English Elm (Ulmus procera)	4	<20#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	Managed. Overhead line above hedge.		10+	C2	

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T106*	Grey willow (Salix cinerea)	7	350,250, 250,200, 250,200, 150,150, 180	6	6	6	6	n/a	0	Good	M	Good - Poor	No access. Limbs likely layering, forming spreading clonal tree.		20+	B1,3	
T107*	Copper Beech (Fagus sylvatica `Purpurea´)	10	900,900#	7	6	6	8	2.0/W	0	Good	M	Fair	No access to base. Forms part of high-quality avenue. Codominant in canopy. Limited visibility due to live crown ratio. Included union at circa 1.5 m, detritus buildup. Potential *Kretzschmaria deusta* visible on union south. Stem east with wound from circa 1.5 m to approx., 3 m, limited visibility, peripheral wound-wood.	Undertake detailed assessment of inner wood integrity to lower stem using digital tomography (< 12 months).	20+	B1,2,3	
G108*	Willow (Salix sp)	4	<30#	1	1	1	1	n/a	0	Good	SM-M	Good - Fair			10+	C1,2	
T109*	Beech (Fagus sylvatica)	10	350#	4	4	4	4	1.5/W	0	Good	SM	Good - Fair	No access to base. Forms part of high-quality avenue. Codominant in canopy. Limited visibility.		20+	B1,2	
G110*	Grey willow (Salix cinerea),Silver Birch (Betula pendula),Dogwood (Cornus sp.),Willow (Salix sp)	10	<250#	3	3	3	3	n/a	0	Good - Poor	Y-SM	Good - Fair	Likely natural regeneration. Salix viminalis and broom.		10+	C2	
T111*	Common Lime (Tilia X europaea)	8	450,250#	3	3	3	3	2.5/E	0	Good	SM	Good	No access to base.		20+	B1,2	

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W112*	Caucasian Fir (Abies nordmanniana),Ash (Fraxinus excelsior),Willow (Salix sp)	1	<10#	0.5	0.5	0.5	0.5	n/a		Good	Y	Good	Plantation, circa 1 m centres.		10+	C2	Partial removal in accordance with the TPP.
G113*	Grey willow (Salix cinerea),Silver Birch (Betula pendula),Willow (Salix sp)	10	<300#	3	3	3	3	n/a		Good	Y-EM	Good	Willow dominant grove, one emergent birch. S. viminalis present.		20+	B1,2	
G114*	Fraser Fir (Abies fraseri)	3	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	Likely A. fraseri. ID feature of well exserted bracts obscuring purple cone behind.		10+	C2	
G115*	Dogwood (Cornus sp.),Willow (Salix sp)	5	<70#	1	1	1	1	n/a		Good - Poor	Y-SM	Good - Fair	Salix viminalis with poor leaf density.		10+	C2	
W116*	Noble Fir (Abies procera), Sycamore (Acer pseudoplatanus),Silver Birch (Betula pendula),Goat Willow (Salix caprea),Wild Cherry (Prunus avium),Norway Spruce (Picea abies),Downy Birch (Betula pubescens),Fir (Abies sp),Grey willow (Salix cinerea),Hawthorn (Crataegus monogyna),Norway Maple (Acer platanoides),Rowan (Sorbus aucuparia),Dogwood (Cornus sp.),Beech (Fagus sylvatica)	15	<400	3	3	3	3	n/a		Good - Fair	Y-EM	Good - Fair	Regular structure, no understory re-initiation. Likely previously/recently thinned. Spiraea sp., and Rhododendron sp. bushes northwest.		20+	B1,2	Partial removal in accordance with the TPP.
G117*	Dogwood (Cornus sp.),Willow (Salix sp),Hawthorn (Crataegus monogyna)	5	<150#	1	1	1	1	n/a		Good - Poor	Y-SM	Good - Fair	Salix viminalis with poor leaf density. Occasional gorse.		10+	C2	
G118*	Silver Birch (Betula pendula)	12	<250#	3	3	3	3	n/a	8	Good	SM-EM	Fair	No access. Dense birch grove. Collective value.		20+	B2	

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G119*	Fraser Fir (Abies fraseri)	3	<20#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	Likely A. fraseri. ID feature of well exserted bracts obscuring purple cone behind.		10+	C2	
W120*	Norway Maple (Acer platanoides),Hawthorn (Crataegus monogyna),Silver Birch (Betula pendula),Sycamore (Acer pseudoplatanus),Fir (Abies sp),Common Alder (Alnus glutinosa),Goat Willow (Salix caprea),Grey willow (Salix cinerea),Ash (Fraxinus excelsior)	15	<400#	4	4	4	4	n/a	0	Good	Y-EM	Good	Regular structure, likely thinned.		20+	B1,2	Partial removal in accordance with the TPP.
G121*	Silver Birch (Betula pendula)	10	<350#	4	4	4	4	n/a	0	Good	Y-M	Good - Fair	No access. Grove of birch.		20+	B1,2	Partial removal in accordance with the TPP.
T122*	Downy Birch (Betula pubescens)	10	450#	5	5	5	5	2.0/N	1	Good	M	Good	No access, likely garden edge tree. Setback circa 12 m from road edge. Good example of species.		40+	A1	
T123*	Silver Birch (Betula pendula)	16	440#	4	4	4	4	2.5/E	8	Good	M	Good	No access. Good example of species.		40+	A1	Fell.
G124*	Ash (Fraxinus excelsior)	9	<150#	3	3	3	3	n/a	2	Fair	SM	Fair	No access, likely garden edge trees. Overall branching structures normal. Bases setback from road edge by circa 3 m.		10+	C2	
G125*	Willow (Salix sp)	5	<20#	1	1	1	1	n/a	0	Good	Y	Fair			10+	C2	Fell.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
T126*	Beech (Fagus sylvatica)	12	900,600,350#	9	8	8	8	2.0/E	3	Good	M	Fair	No access, likely garden edge trees - three trees established in immediate proximity. Setback circa 2 m from road edge.		40+	A1	
T127*	Ash (Fraxinus excelsior)	10	350,200,250#	4	4	4	3	2.0/E	2	Fair - Poor	SM	Fair	No access, likely garden edge tree. Crown apices with dieback, masses of internal crown vertical epicormic shoot development, symptom of ash dieback. One elder immediately north of base, overhangs fence by circa 1 m.		10+	C1	
G128*	Downy Birch (Betula pubescens),Willow (Salix sp)	5	<100#	1	1	1	1	n/a	0	Good	Y-SM	Good - Fair	Bankside likely natural regeneration. Salix viminalis.		10+	C1,2	Partial removal in accordance with the TPP.
T129*	Crack Willow (Salix fragilis)	10	300#	4	4	4	4	1.0/S	1	Fair	EM	Fair	Moderate crown sparsity, internal crown twig dieback. Circa 50% lead density.		10+	C1,2	
T130*	Ash (Fraxinus excelsior)	14	1000#	9	4	9	8	4.0/E	6	Fair	M	Fair	No access, likely garden edge tree. Wound to stem north at circa 1.5 m, approx., 300 mmx600 mm, adaptive swelling with peripheral wound-wood. Epicormic regeneration. Likely canker. Few wounds throughout crown likely cankers. Wounding not considered extensive. Major deadwood in crown. Few crown gaps, epicormic development throughout crown, overall branching pattern normal.		20+	B1	
T131*	Common Alder (Alnus glutinosa)	10	300#	1	6	3	3		1	Dead	SM	Poor	Dead tree.		<10	U1	Fell.

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
T132*	Downy Birch (Betula pubescens)	11	410	4	4	6	6	3.0/E	2	Fair	M	Good	Deviation in branching pattern at crown apices, retained leaf density normal.		20+	B1	Fell.
T133*	Common Alder (Alnus glutinosa)	8	380	4	4	4	4	0.5/S	1	Good	M	Good	Likely self sown, typical of riparian habitat.		20+	B1	
G134*	Dogwood (Cornus sp.),Willow (Salix sp)	5	<50#	1	1	1	1	n/a	0	Good	Y-SM	Good	Dense scrub.		10+	C2	Partial removal in accordance with the TPP.
T135*	Silver Birch (Betula pendula)	10	200	2	2	2	2	2.0/N	2	Good	SM	Good	Good future potential.		10+	C1	Fell.
G136*	Beech (Fagus sylvatica),Wild Cherry (Prunus avium),Common Oak (Quercus robur),Sitka Spruce (Picea sitchensis),Norway Maple (Acer platanoides)	15	<410#	5	5	5	5	n/a	2	Good	Y-EM	Good - Fair	Stems north at circa 6 m from road edge, canopy at edge, moving to 10 m and beyond south. Rhododendron in understory.		20+	B1,2	
G137	Common Oak (Quercus robur),Wild Cherry (Prunus avium)	12	<270#	3	3	3	3	n/a	2	Good	SM-EM	Good - Fair	Bases circa 6 m back from road edge. Canopy approx., 1 m back.		20+	B2	
G138*	Dogwood (Cornus sanguinea Dogwood),Hawthorn (Crataegus monogyna),Common Oak (Quercus robur)	6	<180#	2	2	2	2	n/a	0	Good	SM	Fair	Scrub and one suppressed semi mature oak. Scrub canopy circa 1.5 m from road edge.		10+	C2	
T139*	Common Alder (Alnus glutinosa)	10	350	2	3	3	3	3.0/S	2	Good	M	Good	Circa 2 m to road edge. Contact wound to base		20+	B1	

Tree ID	Species	Est Height	Stem Diameter (mm)	Canopy N	Canopy S	Canopy E	Canopy W	First Significant Branch	Canopy Clearance	Physiological Condition	Age	Structural Condition	Condition Comments	Preliminary Management Comments	Estimated Remaining Contribution in Years	Category	Works to Facilitate the Proposed Development
													south, good wound-wood, partially occluded.				
T140*	Sycamore (Acer pseudoplatanus)	15	380	4	1	4	4	3.0/S	3	Good	SM	Fair	Included union from circa 3 m, structurally durable species. Circa 10 m from road edge.		20+	B1	
G141*	Fir (Abies sp),Sycamore (Acer pseudoplatanus),Common Alder (Alnus glutinosa),Rowan (Sorbus aucuparia)	11	<470	3	3	3	3	n/a	3	Good	SM-EM	Good - Fair	Set back circa 10 m from road edge, water filled ditch at road edge.		20+	B1,2	
G142*	Dogwood (Cornus sanguinea Dogwood)	3	<20#	1	1	1	1	n/a	0	Good	Y	Good - Fair	Mass of dogwood.		10+	C2	
G143	Grey willow (Salix cinerea)	4	<50#	3	3	3	3	n/a	0	Good	Y	Fair	Cluster of willow in and adjacent to ditch, one crown at road edge.		10+	C2	
G144*	Dogwood (Cornus sanguinea Dogwood),Willow (Salix spp)	8	<140#	2	2	2	2	n/a	0	Good	Y-SM	Good - Fair	Scrub. Multiple willow species. Likely S. cinerea and viminalis. Scrub canopy at road edge.		10+	C2	
T145*	Grey willow (Salix cinerea)	6	220,150 , 150#	3	3	3	3	0.5/S	0	Good	SM	Fair	Stems estimated at ground level due to mass proliferation at circa 1.5 m. On bank circa 2.5 m above road level. Crown at ditch edge north.		10+	C1	
H146*	Beech (Fagus sylvatica), Hawthorn (Crataegus monogyna), Sycamore (Acer pseudoplatanus),	1.5	<50#	0.5	0.5	0.5	0.5	n/a	0	Good	Y	Good	Managed hedgerow section.		10+	C1	

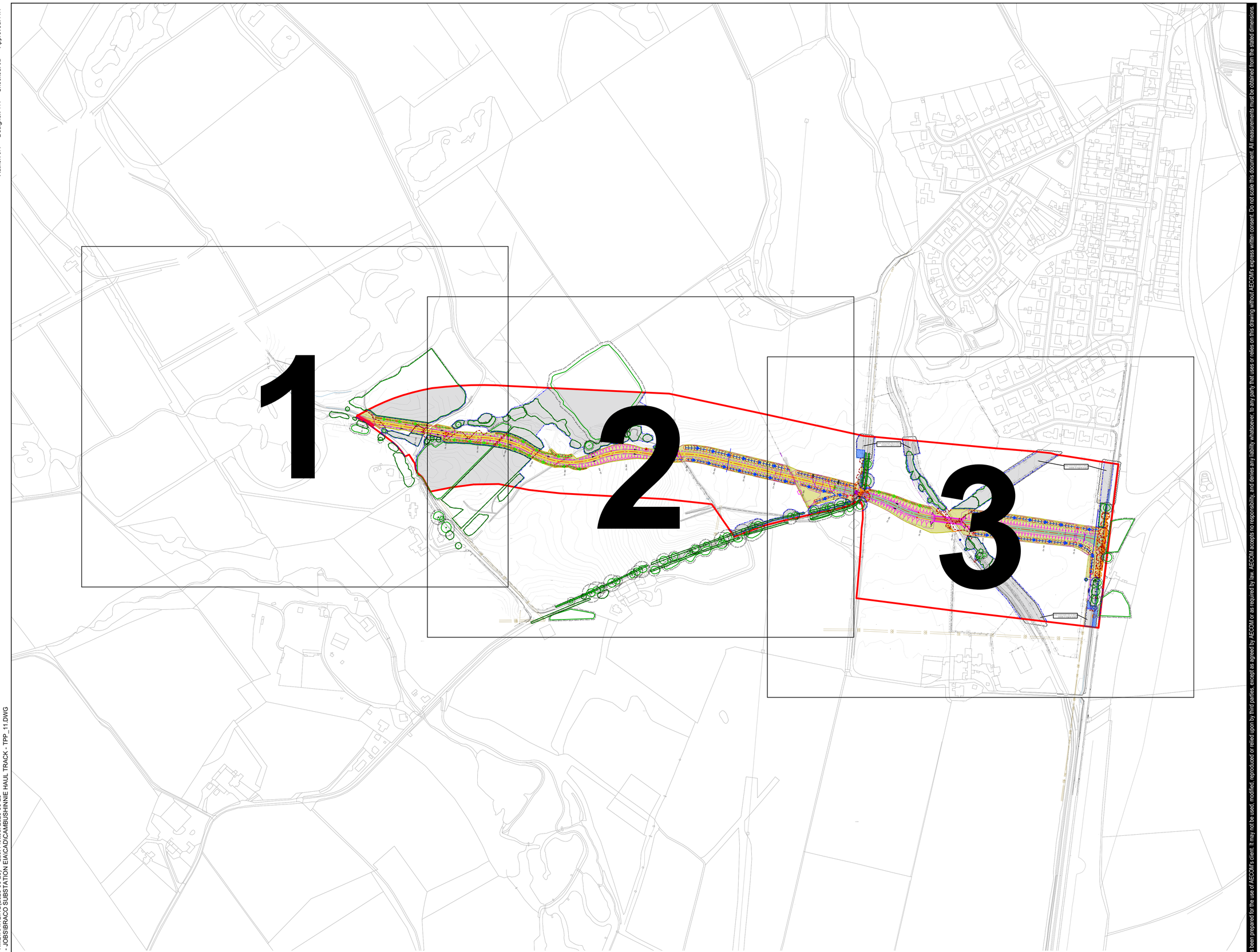
Key to Terms and Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland.
Species	Common name followed by scientific name shown in *italics.*
RPA	Root Protection Area (As defined by BS5837:2012)
Stem diameter	Diameter of main stem, measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annexe C).
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.
#	Estimated dimensions.
*	Indicates estimated position of tree (not indicated on topographical survey).
Av	Indicates an average representative measured dimension for the feature.
Category	Categorisation of the quality and benefits of trees on Site as per **Table 1** and **2** of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation)
	A=High-quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).
Life stage	**Young (Y):** Newly planted tree 0-10 years. **Semi-Mature (SM):** Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size). **Early Mature (EM):** Tree in the second third of its normal life expectancy for the species (some potential for future growth in size) **Mature (M):** Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size). **Over Mature (OM):** Tree beyond the normal life expectancy for the species. **Veteran (V):** Tree which is of interest biologically, aesthetically or culturally because of its condition, size or age.
Structural condition	**Good:** No significant structural defects **Fair:** Structural defects which can be resolved via remedial works. **Poor:** Structural defects which cannot be resolved via remedial works. **Dead:** Dead.
Physiological condition	**Good:** Normal vitality including leaf size, bud growth, density of crown and wound wood development. **Fair:** Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds. **Poor:** Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species. **Dead:** Dead **Fair/Good** = Indicates an intermediate condition **Fair – Good** = Indicates a range of conditions (e.g. within a group)

Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).

Appendix C Tree Protection Plan

Author: JR Designer: TR Checked: JB Approved: AW



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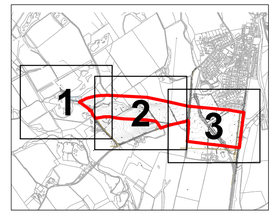
KEY PLAN



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Author: JR Designer: TR Checked: JB Approved: AW

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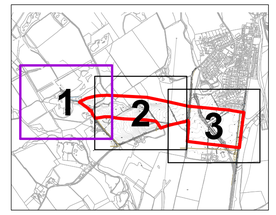

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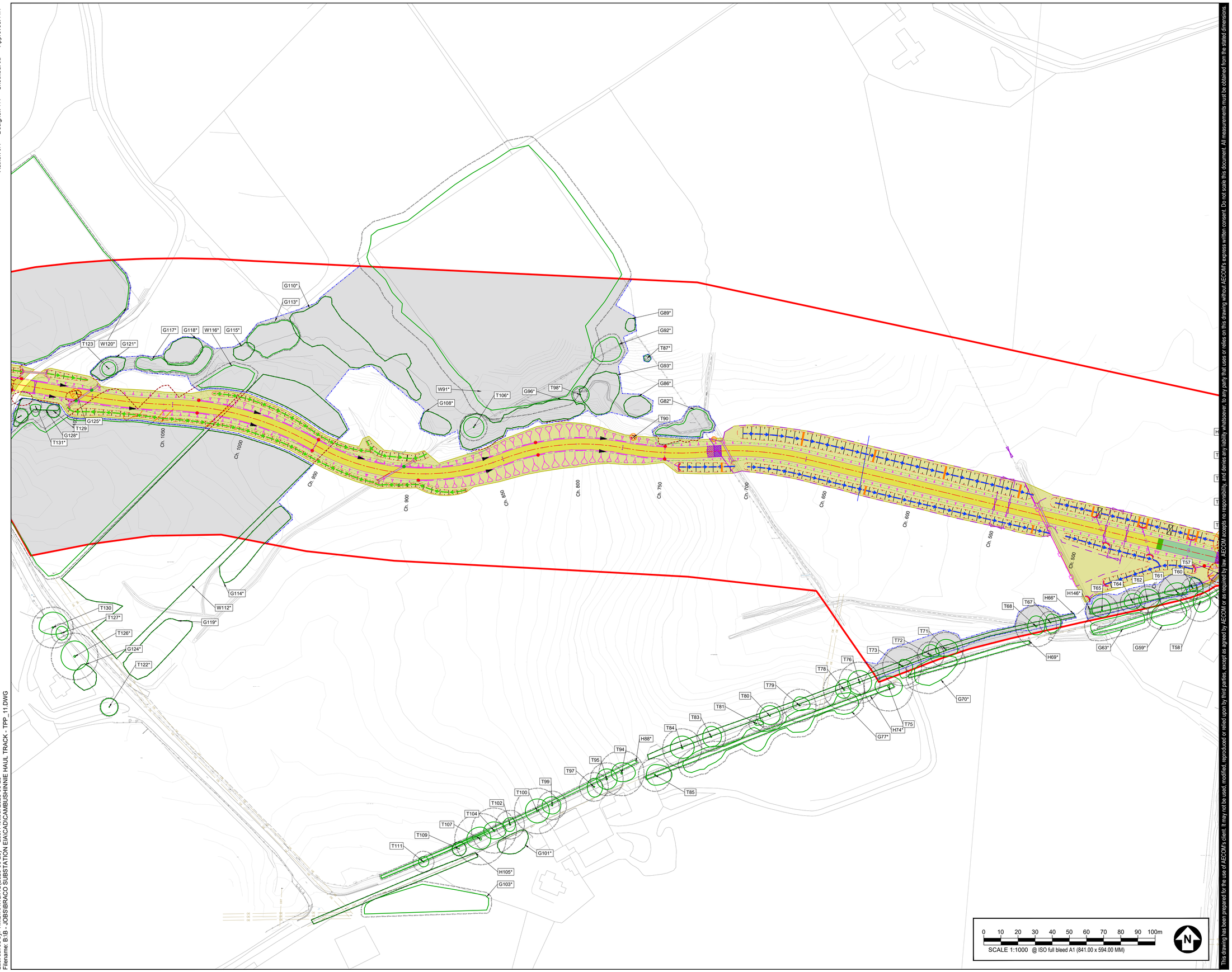

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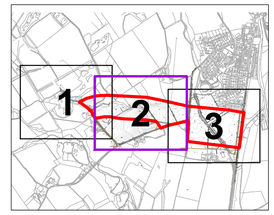

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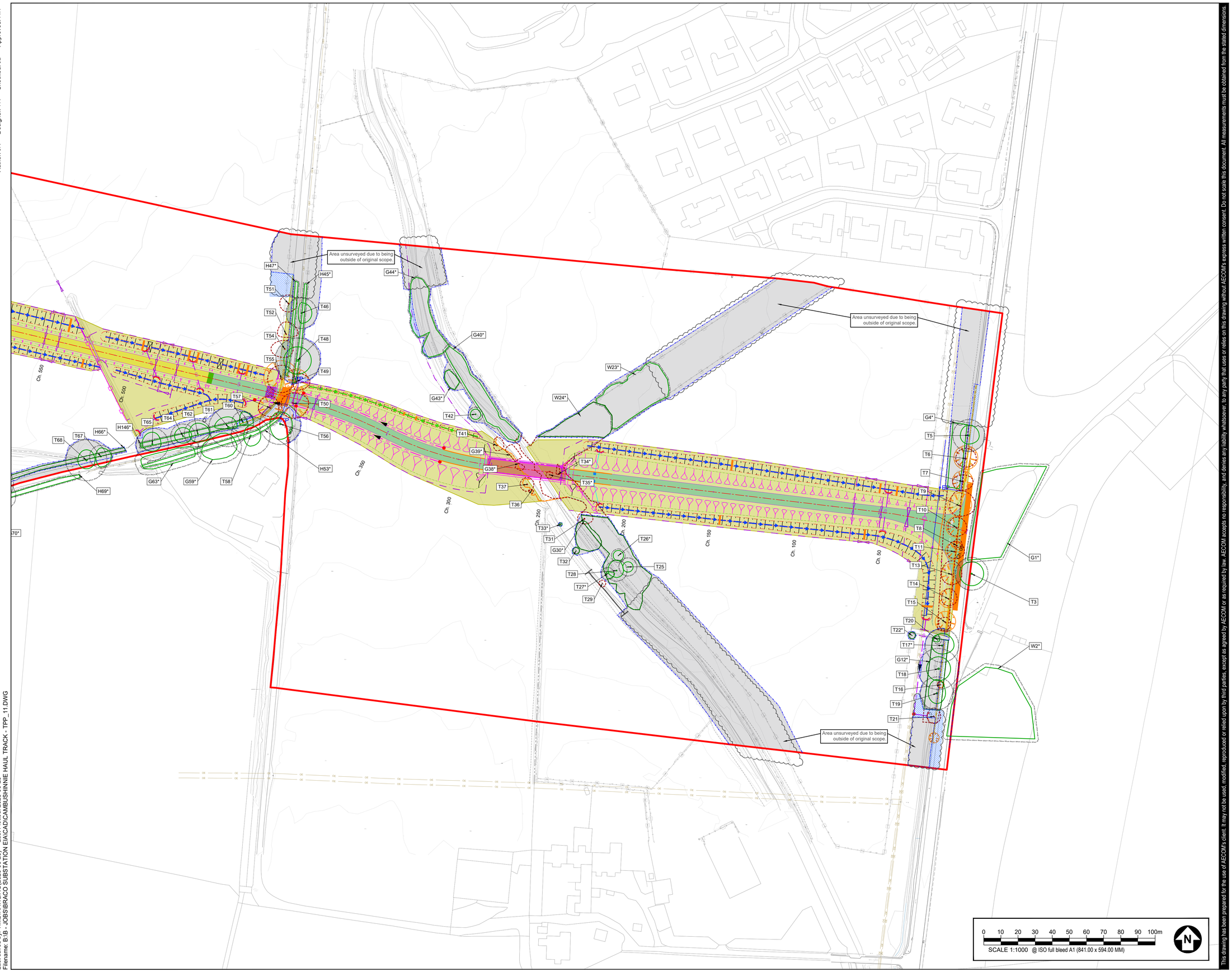

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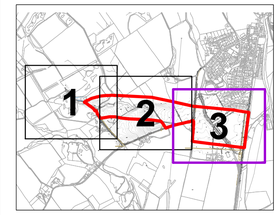

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TREE PROTECTION PLAN (SHEET 03)

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Appendix D Outline Tree Protection Measures

D.1 Outline Tree Protection Measures

The default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ) unless agreed otherwise. Protection measures will be installed as set out in **Appendix C Tree Protection Plan** of this report.

The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of the LPA Tree Officer. Any damage to tree protection measures must be reported immediately.

Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached as per BS 5837:2012 Figure 2 (included below). Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees.

Alternative equivalent robust and immovable fencing specification including site hoarding will also be appropriate.

Suitable all weather signage will be fixed to fencing to notify site staff and visitors of the construction exclusion zone and its purpose (example included as **Appendix E Tree Protection Signage (Example)**).

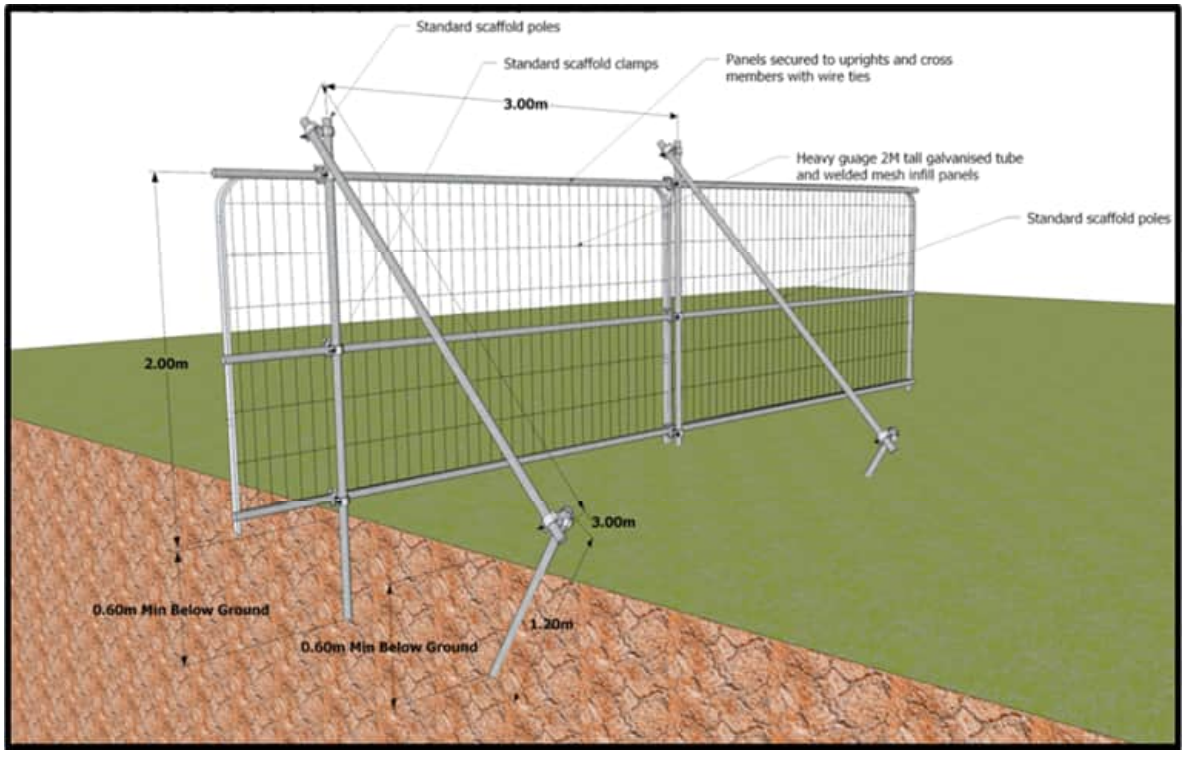

Figure 1 Default specification for protective barrier

When entering and exiting the Site the fencing contractor must avoid the production of ruts on the unprotected surface of the ground.

Protective fencing and ground protection shall stay in place until all development operations have been completed and the prior consent of the LPA Tree Officer and/or an arboriculturist has been obtained.

D.2 Ground Protection

Should access be unavoidable within the RPA of a retained tree, fit for purpose ground protection must be in place which is sufficient to protect the structure of the soil from damage based on the heaviest anticipated load.

As set out in section 6.2.3.3 of BS5837:2012 the following ground protection measures will be appropriate:

- Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100 mm of woodchip on a geotextile separation layer.
- Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150 mm woodchip or sharp sand.
- Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.

As a guide the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4g per cm^3 for clay soils, to 1.75g per cm^3 for sandy soils.

Tree protective measures shall stay in place until all construction operations are completed and removal is agreed with the Site arboriculturist and/or the Local Authority Tree Officer as appropriate.

D.3 General Guidance for the Management of Exposed Roots

Excavation must only take place within the RPA of a retained tree with the prior agreement of an arboriculturist and the Local Authority Tree Officer. All excavation must be undertaken using hand tools or compressed air (such as an air spade).

The following general principles will apply:

- Individual or small groups of roots less than 25 mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean cut end (ideally 100 mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.
- Where roots are encountered which are larger than 25 mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action (following consultation with the Local Authority Tree Officer where appropriate).
- Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations should utilise the parent material and must not be significantly compacted.

D.4 Storage, Use and Mixing of Materials

The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builder's sand and herbicides), can result in the death of tree roots and beneficial soil organisms; and have a significant impact on the future health and appearance of trees.

The storage of materials can result in an effective raised soil level. This buries tree roots at depths where air and water are less available and can lead to the decline or death of the tree.

For these reasons the storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5 m from the edge of the RPA of retained trees.

Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.

D.5 Services

Where any works to services are required the following guidance should be followed.

Where existing services become redundant within the RPA of a retained tree, the default position must be that they be decommissioned and left in situ. Where this is not feasible the following principles are to be observed.

Existing services are to be removed by winching out from an access/inspection chamber located outside of an RPA. It may be acceptable to fill redundant pipe work with an inert material or undertake pipe bursting where necessary within the RPA of retained trees.

Excavation to install services has the potential to result in unacceptable root severance which could result in instability, dysfunction, or the death of trees. Repeated incursions are particularly damaging and must be avoided by bundling services wherever possible.

The default position will therefore be that all services be routed outside of the RPA of retained trees. The following general principles will apply and where services must be routed within the RPA of a retained tree this process will be subject to a detailed method statement with approval from the Planning Authority. The principles of the National Joint Utilities Group (NJUG) Volume 4 guidance must be adhered to.

All services must be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring) with all access pits and inspection chambers being located outside of the RPA. The route must run as far from the main stem of a retained tree as possible and must be at a minimum depth so that the upper 1m of the soil profile is undisturbed. The depth of the run may need to be adjusted to account for soil type and species variation and this must be determined subject to the advice of an arboriculturist.

This operation must take place as specified in a Method Statement. Any water pipes must be constructed so as to be resistant to ingress by tree roots (both existing trees, and newly planted trees) which could include the use of root barriers where appropriate.

Appendix E Tree Protection Signage (Example)