

Whittington CSEC - BS 5837: 2012 Arboricultural Impact Assessment

National Grid Cotswolds Visual Impact Provision (VIP)
Project

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1 Introduction

1.1 Overview

- 1.1.1 Arcadis Consulting (UK) Limited (Arcadis) was commissioned by National Grid to undertake a Preliminary Arboricultural Survey and Impact Assessment Report in line with British Standard BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012), henceforth referred to as BS 5837: 2012, in support of the Whittington Sealing End Compound planning application (hereafter referred to as the 'Proposed Project'). The Proposed Project forms part of the wider Cotswolds Visual Impact Provision (VIP) Project (hereafter referred to as the 'wider project'), the purpose of which is to underground a section of 400kV overhead electricity transmission lines, to mitigate the visual impact of existing electricity infrastructure through part of the Cotswolds National Landscape (previously known as Area of Outstanding Natural Beauty). The wider project is located to the east of Cheltenham.
- 1.1.2 The Proposed Project comprises the construction of a CSEC at Whittington to facilitate the connection between new underground cables and the existing overhead line (OHL) and the associated permanent access road (and bell-mouth) to the CSEC, in addition to three temporary bell-mouths created to support the cable construction along classified roads.
- 1.1.3 The CSEC is located off Ham Road and west of Dowdeswell Woods and is centred on Ordnance Survey (OS) Grid Reference SO 99193 21018 and centred around the post code GL54 4EZ. It measures approximately 1.9 ha and is comprised of agricultural open fields and scattered hedgerows.
- 1.1.4 The southern road bell-mouth is located on Aggs Hill Road and is centred on Ordnance Survey (OS) Grid Reference SO 99362 21835 and centred around the post code GL54 4EZ. It is comprised of Aggs Hill Road and hedgerow.
- 1.1.5 The northern road bell-mouth is located on Puckham Scrubs Lane and is centred on Ordnance Survey (OS) Grid Reference SO 99378 22508 and centred around the post code GL54 4EX. It is comprised of Puckham Scrubs Lane and hedgerow.
- 1.1.6 The site entrance from the A40 is located on Ordnance Survey (OS) Grid Reference SP 01012 20544 and centred around the post code GL54 4HF. It is comprised of woodland and the A40.
- 1.1.7 The approximate area for all parts of the planning application redline boundary shown on Image 1 and Image 2 is 3.24 ha.
- 1.1.8 An aerial screen shot illustrating the planning application boundaries (red outline) and survey areas (blue outline) is presented in Image 1 and Image 2.



Image 1 - Site Boundaries (red line), Survey Boundaries (blue line). Imagery © 2024 Infoterra Ltd & Bluesky



Image 2: Planning application boundaries (red line), Survey Boundaries (blue line). Imagery © 2024 Infoterra Ltd & Bluesky

1.2 Proposed Project

1.2.1 The wider Cotswolds VIP project will comprise:

- The removal of a section of OHL, including the permanent removal of 16 pylons (18 pylons will be removed in total, however, two will be replaced under Permitted Development).
- Underground cabling of approximately 7km in length.
- Two new cable sealing end compounds (CSECs) at each end (north and south) and associated replacement terminal pylons (as mentioned above), to connect the new underground cables to the remaining existing overhead line.
- Associated temporary works to facilitate construction, including temporary/permanent access junctions and roads, a temporary haul road, construction compounds, material storage and welfare facilities.
- Ancillary off-site infrastructure (including installation of arcing horns and shunt reactor installation/connection).

1.2.2 The majority of the works will be undertaken using Permitted Development rights under Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended), however, the CSECs require planning permission. The scope of this report is for the Whittington CSEC and associated works only (the 'Proposed Project').

1.2.3 The Proposed Project is for the construction of a CSEC at Whittington to facilitate the connection between new underground cables and the existing OHL and the associated permanent access road (and bell-mouth) to the CSEC, in addition to temporary bell-mouths created to support the cable construction along classified roads. The Proposed Project is located within Cotswold District.

1.2.4 The proposed works within the Whittington CSEC redline comprise:

- CSEC infrastructure.
- Underground cabling from the Whittington CSEC towards the Winchcombe CSEC (note: this is Permitted Development).
- A permanent access road to the CSEC, including a bell-mouth with Ham Road and a turning area.
- A hardstanding area where the overhead line meets with the new underground cables.
- New screening comprising native trees, woodland and scrub planting.
- Temporary bell-mouths on three classified roads to facilitate construction.

1.2.5 The terminal pylon for the Whittington CSEC is located outside the CSEC redline (and is Permitted Development).

2 Methodology

2.1 Tree Survey Methodology

- 2.1.1 An Arboricultural Survey was undertaken by James Potts BSc (Hons) MArborA (Principal Arboriculturist, William Green BSc (Hons), Tech ArborA (Consultant Arboriculturist and Ecologist), Isabel Leggett BSc (Hons) (Graduate Arboriculturist and Ecologist), Danni Treanor BSc (Hons), ACIEEM and Angel Plumb (Hons) on 17-21 July, 18-22 September, 26-27 October, 2-3 November and 4-5 December 2023 in accordance with BS 5837:2012.
- 2.1.2 The survey was based on topographical survey, document reference: BakerHicks Topographical Survey (July 2023).
- 2.1.3 Observations were conducted from ground level, utilising the “Visual Tree Assessment” (VTA) system as outlined in The Body Language of Trees, A Handbook for Failure Analysis Research for Amenity Trees No.4 (Mattheck and Breloer, 1994) with the aid of binoculars.

2.2 Study Area

- 2.2.1 The study area included the planning application site boundaries (redline boundaries) and any trees considered to be within influencing distance of the sites, within an area up to 15 metres outside (blue line boundaries) as displayed in Figure 1: Tree Constraints Plan.

2.3 Individual Trees

- 2.3.1 For the purposes of BS 5837: 2012, only trees with a stem diameter greater than 75mm, (measured at 1.5m above ground level), were included within the survey.
- 2.3.2 For reference, individual trees are identified with the letter T and an associated unique number in the Appendix B: Schedule of Trees and in Figure 1: Tree Constraints Plan.
- 2.3.3 The stem diameter of the trees was recorded at 1.5m above ground level or following Annex C of BS5837:2012, using a rounded-down diameter tape and recorded in millimetres.
- 2.3.4 The height of trees was recorded in metres using a clinometer.
- 2.3.5 The maximum crown spread of each tree was measured from the centre of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a ground tape where safe and practical to do so. Crown spread measurements were recorded in metres.
- 2.3.6 Tree age was estimated from visual indicators (such as tree size and appearance of bark) which was taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records and local knowledge.

- 2.3.7 If direct access to the tree was not possible, estimations from appropriate vantage points were taken, and any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

2.4 Groups of Trees

- 2.4.1 Features that have been recorded as a group where they have been considered to form a cohesive arboricultural feature either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. wood pasture).
- 2.4.2 Groups of trees were identified with the letter G and number on the associated schedules and plans.
- 2.4.3 Crown spread was assessed by measuring the largest crown spread on each compass point (N-E-S-W). Groups have been plotted using aerial imagery. The stem diameter of tree groups has been calculated as an average stem diameter of trees within a group. Heights are displayed as the maximum height of the tallest tree within the group or displayed as a range of heights where two or more distinct height layers have been identified. (i.e. understorey trees/large woody shrubs).

2.5 Hedgerows

- 2.5.1 Hedgerows were identified with the letter H and number on the associated schedules and plans. A 30m section of hedgerow was surveyed for each hedgerow, recording the number of species, average stem diameter, lateral spread and the maximum height. Any individual trees present within the hedgerow were recorded as individual trees.

2.6 Woodlands

- 2.6.1 Woodlands were identified with the letter W and number on the associated schedules and plans. A sample method for surveying woodlands has been used taking average measurements of stem diameter, crown spreads and heights from a selected 50 x 50m sample area of woodland. The size and shape of the sample area varies depending on site access and topography.

2.7 Categorisation

- 2.7.1 Trees surveyed have been categorised according to their quality and value in compliance with Table 1 Cascade chart for tree quality assessment of BS 5837: 2012. A glossary of survey terms can be found in Appendix A: Explanation of Terms and the full cascade chart for tree categorisation is displayed in Table B2 of Appendix B: Schedule of Trees.

2.8 Root Protection Area

- 2.8.1 The Root Protection Area (RPA) of a tree is described in section 3.7 of BS 5837: 2012 as the 'minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. It should be recognised that the calculated RPA may not entirely encompass all of the tree's rooting material.

- 2.8.2 RPAs were calculated in accordance with Section 4.6.1 in BS: 5837:2012 using the measurement of the stem diameter at 1.5m above ground level or at ground level if the tree is multi-stemmed. The shape and size of an RPA can be amended in accordance with Section 4.6.3 of BS: 5837:2012.
- 2.8.3 Tree RPAs are recorded in the Schedule of Trees (Appendix B) and shown as a pink shaded area on the initial Figure 1: Tree Constraints Plan (and Figure 2: Tree Impacts and Protection Plan as appropriate) and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site.
- 2.8.4 Where RPAs have been calculated for tree groups, hedgerows or woodlands, they have been represented as an offset (in meters) from the plotted canopy line of the feature in question when detailed in Appendix B: Schedule of Trees.
- 2.8.5 No soil assessment or above/below ground investigations into the true extent of a trees rooting area were undertaken as they are beyond the scope of this report.

2.9 Survey Limitations

- 2.9.1 Of the arboricultural features surveyed, two were located in areas where access to their main stems was not possible and as such, estimations have been made regarding their dimensions. Inaccessible trees are marked with a hash (#) in the Schedule of Trees.
- 2.9.2 Only trees with the potential to be affected by development within or adjacent to the site as determined by the survey boundary displayed in Image 1 and Image 2 have been included within this report. Any additional trees in the vicinity of the proposed scheme have been deemed to not be affected by the proposals and have not been included.
- 2.9.3 Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.10 Arboricultural Impact Assessment

- 2.10.1 An AIA is a study undertaken by an arboriculturist, to identify, and evaluate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of proposed development. The AIA may also include identification of mitigation measures which have been included within this report.
- 2.10.2 The AIA was undertaken by James Potts, BSc (Hons) MArborA (Principal Arboriculturist) and Isabel Leggett BSc (Hons) (Graduate Arboriculturist and Ecologist) in April 2024 as a desk-based study based on the collected field data and design details provided on behalf of the Client. Table 1 provides the data sources used.

Table 1: Data Sources

Document / Plan Title and Author	Date	Information Type
30003359-BHK-XX-XX-DR-HV-0035	18.04.2024	Whittington Overall Site Layout

2.11 Tree Constraints Check

2.11.1 The following constraints checks were undertaken for the site on 03 April 2024.

- A tree constraints check was performed using the Cotswold District Council planning portal map (Cotswold District Council 2024).
- The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to search for statutory designated sites of nature conservation value and areas of ancient woodlands listed on the Ancient Woodland Inventory (DEFRA 2024); and
- A check for catalogued Ancient and Veteran trees using the Woodland Trust Ancient Tree Inventory (Woodland Trust 2024).

2.11.2 The results of which are provided in Section 3 of this report.

3 Tree Survey Results

3.1.1 Full details of the survey data are presented within the Schedule of Trees in Appendix B and within Figure 1: Tree Constraints Plan.

3.2 Tree Assessment and Categorisation

3.2.1 A total of 40 arboricultural features were recorded within the study area (the redline application boundary and the blueline 15m buffer). These were recorded as 23 individual trees (T), two groups of trees (G), 13 hedgerows (H) and two woodland groups (W).

3.2.2 Each arboricultural feature was assigned to one of four categories, as listed in Table 2.

Table 2: Tree Categories Recorded

Tree Category	No. of Individual Trees	No. of Groups	No. of Hedgerows	No. of Woodland Groups
Category A (trees of high quality)	0	0	0	1
Category B (trees of moderate quality)	3	1	3	1
Category C (trees of low quality)	19	1	10	0
Category U (trees of poor quality unsuitable for retention)	1	0	0	0
Totals	23	2	13	2

3.3 Tree Species Diversity

3.3.1 A total of 19 different individual tree species were recorded during the survey and are represented throughout the survey area. A summary of the species surveyed can be found within the tree schedules in Appendix B and also provided in Table 3. A number of mixed species arboricultural features were also recorded, the composition of which are presented in the accompanying survey schedule provided in Appendix B.

Table 3: Tree Species Recorded

Tree Species	Individual Trees	Groups of Trees	Hedgerows	Woodland Groups
Ash (<i>Fraxinus excelsior</i>)	6	0	0	0
Blackthorn (<i>Prunus spinosa</i>)	0	1	1	0
Common Whitebeam (<i>Sorbus aria</i>)	2	0	0	0
Hawthorn (<i>Crataegus monogyna</i>)	6	0	1	0
Hazel (<i>Corylus avellana</i>)	1	0	0	0
Pedunculate Oak (<i>Quercus robur</i>)	1	0	0	0
Silver Birch (<i>Betula pendula</i>)	3	0	0	0
Sycamore (<i>Acer pseudoplatanus</i>)	4	0	0	0
Mixed species Including:	0	1	11	2
Ash (<i>Fraxinus excelsior</i>)				
Beech (<i>Prunus padus</i>)				
Elder (<i>Sambucus nigra</i>)				
Elm (<i>Ulmus minor</i>)				
Field Maple (<i>Acer campestre</i>)				
Common Whitebeam (<i>Sorbus aria</i>)				
Hawthorn (<i>Crataegus monogyna</i>)				
Hazel (<i>Corylus avellana</i>)				
Holly (<i>Ilex aquifolium</i>)				
Blackthorn (<i>Prunus spinosa</i>)				
Goat Willow (<i>Salix caprea</i>)				
Guelder Rose (<i>Viburnum opulus</i>)				
Lawson Cypress (<i>Chamaecyparis lawsoniana</i>)				
Scots Pine (<i>Pinus sylvestris</i>)				
Pedunculate Oak (<i>Quercus robur</i>)				
Sycamore (<i>Acer pseudoplatanus</i>)				
Silver Birch (<i>Betula pendula</i>)				
Cherry Sp. (<i>Prunus sp.</i>)				
Wayfaring Tree (<i>Viburnum lantana</i>)				

Tree Species	Individual Trees	Groups of Trees	Hedgerows	Woodland Groups
Totals	23	2	13	2

3.4 Age Diversity

3.4.1 All arboricultural features surveyed within the study area were assessed to be within the Semi-Mature to Mature age classifications set by BS 5837: 2012, as illustrated Table 4.

Table 4: Age Diversity

Age Class	Trees	Groups	Hedgerows	Woodlands
Young	1	0	1	0
Semi-mature	13	0	6	0
Early mature	7	2	5	2
Mature	2	0	1	0
Totals	23	2	13	2

3.5 Tree Constraints Check

3.5.1 It was confirmed by the Cotswold District Council Planning Portal Map that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.

3.5.2 It was confirmed that there are no designated ancient woodlands or veteran trees identified in the study area using online data sources listed in Section 2.11.

4 Arboricultural Impact Assessment (AIA)

4.1 Potential Arboricultural Impacts

- 4.1.1 Development can have an adverse impact on trees and other woody vegetation within a site. This can result in: (1) immediate tree removal to facilitate the footprint of a new development; (2) potential future tree loss through the early decline of trees due to soil compaction; (3) root disturbance and damage within a tree's rooting area; and (4) canopy removal or damage due to plant movement. The AIA is used to appraise any direct and indirect effects of the proposed design and where necessary recommend mitigation.
- 4.1.2 This should include the effects of any tree loss required to implement the Proposed Project and any potentially damaging activities proposed in the vicinity of retained trees, including the demolition of existing structures, construction activities relating to the Proposed Project and its buildability.
- 4.1.3 The potential arboricultural impacts have been assessed using the design detail listed in Table 1. Tree removals, potential RPA and canopy incursions have been presented on Figure 2: Tree Impacts and Protection Plan (TIPP). Tree removals are shown in red hatching and the recommended fencing requirements are shown in black lines.

4.2 Tree Removal

- 4.2.1 Of the 40 arboricultural features within the redline boundaries, a total of six individual trees, three hedgerows and one woodland group are located within, or immediately adjacent to development works and will require full or partial removed to facilitate the proposals. These tree removals are listed Table 5.

Table 5: Trees Requiring Removal

Item no.	Species	Partial or Full Removal	Reason for Removal	Grade
T3	Sycamore (<i>Acer pseudoplatanus</i>)	F 15.9 m ²	Within footprint of proposed CSEC and bell-mouth.	C2
T19	Hazel (<i>Corylus avellana</i>)	F 12.6 m ²	Within footprint of proposed road bell-mouth.	C1
T20	Hawthorn (<i>Crataegus monogyna</i>)	F 50.3 m ²	Within footprint of proposed road bell-mouth.	C1
T21	Pedunculate Oak (<i>Quercus robur</i>)	F 12.6 m ²	Within footprint of proposed road bell-mouth.	C1
T22	Hawthorn (<i>Crataegus monogyna</i>)	F 1.8 m ²	Within footprint of proposed road bell-mouth.	C1

Item no.	Species	Partial or Full Removal	Reason for Removal	Grade
T23	Hawthorn (<i>Crataegus monogyna</i>)	F 12.6 m ²	Within footprint of proposed road bell-mouth.	C1
H6	Mixed species: Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Common Whitebeam (<i>Sorbus aria</i>), Blackthorn (<i>Prunus spinosa</i>)	P 8.4 m	Within footprint of CSEC and bell-mouth.	C2
H12	Mixed Species: Hazel (<i>Corylus avellana</i>), Field Maple (<i>Acer campestre</i>), Blackthorn (<i>Prunus spinosa</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>)	P 57.4 m	Within footprint of proposed road bell-mouth.	C2
H13	Mixed Species: Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Dog Rose (<i>Rosa canina</i>), Blackthorn (<i>Prunus spinosa</i>)	P 16.5 m	Within footprint of proposed road bell-mouth.	C2
W2	Mixed species: Ash (<i>Fraxinus excelsior</i>), Beech (<i>Prunus padus</i>), Hawthorn (<i>Crataegus monogyna</i>), Holly (<i>Ilex aquifolium</i>), Elder (<i>Sambucus nigra</i>), Blackthorn (<i>Prunus spinosa</i>), Pedunculate Oak (<i>Quercus robur</i>)	P 390.0 m ²	Within footprint of proposed road bell-mouth redline boundary.	B2

4.2.2 A total of 495.8m² of arboricultural canopy area and 82.3m of hedgerow as detailed in Figure 2: Tree Impacts and Protection Plan will be removed as part of the Proposed Project.

4.3 General Construction Impacts

4.3.1 Construction access, site works, and storage areas have the potential to directly or indirectly impact the stem, canopy or RPAs of the trees scheduled for retention which are located around the proposed works as displayed in Figure 2. In order to ensure that these features are successfully retained during the proposed works, temporary protective fencing will be required to demarcate a Construction Exclusion Zone (CEZ) around all retained trees as displayed on Figure 2: Tree Impacts and Protection Plan.

4.3.2 The CEZ acts to protect both tree roots and branches and should be suitably protected with appropriate temporary fencing for the duration of the demolition and construction phases of the development; exact specifications for this will depend on the nature of the proposed development.

4.4 Evaluation of the Impact of Proposed Tree Losses

- 4.4.1 In general, the proposed tree removals are considered to represent a low to moderate impact to the overall visual public amenity and arboricultural value of the site.
- 4.4.2 The nine Category C features to be removed provide low amenity and arboricultural value to the site. The one Category B feature (W2) to be partially removed provides moderate arboricultural value as a screening group in relation to the A40. The extents of proposed works in W2 are shown as a loss of canopy cover resulting from the footprint of the proposed bell mouth and access road. In order to minimise this impact as much as possible, the project construction team must work closely with a project arboriculturist to work around existing tree locations avoid the requirement for tree loss wherever possible.
- 4.4.3 In order to offset the arboricultural impact to associated with tree loss as part of this application, tree reprovisioning is recommended as detailed in Section 5 of this report.

5 Mitigation

5.1 General Construction Mitigation

- 5.1.1 Site operations involving plant with booms, jibs and counterweights should be planned in advance to prevent contact with retained trees. All operations involving such plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from the retained trees is maintained.
- 5.1.2 All pruning and contracting works should be carried out by a competent qualified contractor in accordance with BS 3998:2010, Tree Work Recommendations.
- 5.1.3 Adequate allowance for the planning and implementation of site compounds and storage areas and the routing of services for the Proposed Project must be made to avoid encroachment with the RPA of, or prevent direct contact with, all retained trees on site.

5.2 Tree Removal

- 5.2.1 Tree removals on site should be limited to those displayed in Table 5 of this report as marked by red hatching in Figure 2: Tree Impacts and Protection Plan. If any additional tree works are required beyond those detailed in this report, they must be captured in an updated AIA covering design revisions which must also be approved by the Local Planning Authority'.
- 5.2.2 All remaining individual trees and tree groups listed for removal in Table 5 of this report should be removed prior to the commencement of construction or excavation works on site.
- 5.2.3 It will be necessary to conduct pre works ecology checks for nesting birds prior to the felling of any trees. An ecological consultant should be consulted to ensure correct procedures are followed.
- 5.2.4 All tree works must be carried out by a suitably qualified arboricultural contractor and conducted in accordance with BS 3998: 2010: Tree Work – Recommendations.

5.3 Ground Protection

- 5.3.1 Temporary ground protection will be required where pedestrians, machinery and/or vehicles are working within the RPAs of trees to be retained. This should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. For example, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane. Ground protection should remain in-situ throughout the duration of the proposed works and only be removed upon completion.

5.4 Facilitation Pruning

- 5.4.1 It is not possible to determine the exact degree of facilitation pruning required for access. However currently minimal to no facilitation pruning works are expected as outline development areas are to be

kept outside of tree canopy/RPA extents wherever possible. Any requirement for facilitation pruning should be reviewed by the Project Arboriculturist at the detailed design stage who will provide appropriate recommendations for required pruning works as required.

- 5.4.2 Any tree works should be completed prior to the commencement of any development or construction vehicles/plant entering the Site. It is recommended that all tree works are carried out in accordance with BS3998:2010: Tree Work - Recommendations.

5.5 Tree Re-provisioning

- 5.5.1 A tree replacement strategy has been developed for the CSEC for the trees to be removed which takes into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. Liaison with the LPA Tree Officer is necessary to agree an approved tree compensation and or landscape scheme plan.
- 5.5.2 During the detail design stage this indicative planting should be developed into a full planting plan and schedule to form a tree replacement strategy which should mitigate the loss of any arboricultural features to be removed, currently predicated as T3, T19, T20, T21, T22, T23, H6, H12, H13 and W2. Where areas of trees (groups and hedgerow) have been removed to facilitate development stem numbers should be counted and replaced using the correct ratio for the category they are valued at.
- 5.5.3 The species, number, size, type of stock, location and planting aids for the compensating planting has been chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought further from an ecologist and arboriculturist during the detailed design stage. A tree replacement strategy will also need to be confirmed for the temporary bell-mouths at the detailed design stage.
- 5.5.4 All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all any formative pruning/tree maintenance works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

5.6 Further Work

- 5.6.1 Should any future proposed development require additional tree works or removals, they must be captured in an updated AIA covering all outline and detailed design revisions which must also be approved by the Local Planning Authority'.
- 5.6.2 This document encloses details of Preliminary Tree Protection Measures (Appendix C) to be implemented on site prior to the commencement of demolition or construction works. A site-specific Arboricultural Method Statement will be required post planning. The productions of the AMS should work with project design and construction teams to ensure the safe retention and protection of all trees scheduled for retention over the course of proposals designers.

6 Statutory Tree Protection and Guidance

6.1 Town and Country Planning (Tree Preservation) (England) Regulations 2012

- 6.1.1 The Town and Country Planning (Tree Preservation) (England) Regulations 2012 make provision for, amongst other things, the form of Tree Preservation Orders (TPOs) and for applications for consent to carry out work on trees subject to an order. The order makes it an offence to cut down, uproot, prune, lop or damage the tree (including the roots) in question without first obtaining the Council's consent. A TPO can apply to a single tree, a group of trees or woodland. Anyone who wishes to fell or carry out work to a tree protected by a TPO must apply to the Council to obtain permission.
- 6.1.2 There are exemptions for statutory undertakers under the Town and Country Planning Regulations which include:
- Where the land on which the tree is situated is operational land of the statutory undertaker and the work is necessary; and
 - In the interests of the safe operation of the undertaking.
 - In connection with the inspection, repair or renewal of any sewers, mains, pipes, cables or other apparatus of the statutory undertaker.
 - To enable the statutory undertaker to carry out development permitted by or under the Town and Country Planning (General Permitted Development) Order 1995. This is only where works are within an operational site and does not include works outside of operational sites.
 - Where works are granted planning permission no additional specific permission in regard to works to TPOs is required.

6.2 Town and Country Planning Act 1990 (as amended).

- 6.2.1 Conservation Areas are protected under the Town and Country Planning Act 1990 (as amended). Where trees within a Conservation Area are not a TPO permission must also be obtained by the Local Planning Authority (LPA) under a Section 211 notice, which gives the LPA the opportunity to consider protecting a tree. The exception is when a tree is less than 7.5 cm in diameter, measures 1.5 m above ground or 10 cm if thinning to help the growth of other trees.

6.3 The Hedgerow Regulations 1997

- 6.3.1 The Hedgerow Regulations 1997 protect 'Important' hedgerows by controlling their removal through a system of notification. Under the Regulations, it is unlawful to remove or destroy most countryside hedgerows (excluding those forming garden boundaries) without the written permission of the LPA. The legislation details criteria to determine whether a hedgerow qualifies as an 'Important' hedgerow. Schemes with planning consent will not require further approval from the LPA. Where hedgerows meet the criteria of the Regulations to be 'Important hedgerows' a formal request will need to be made to the LPA for its removal.

- 6.3.2 There are some other exceptions including for carrying out work for the purpose of flood defence or land drainage, pursuant to, or under, the Land Drainage Act 1991, the Water Resources Act 1991 or the Environment Act 1995.

7 Trees and Planning

7.1 The Planning Process

- 7.1.1 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 TPO or other statutory designation) is a material consideration in determining a planning application.
- 7.1.2 BS 5837 provides a framework which sets out how trees should be considered in the planning process and also explicitly applies to development where planning consent is not required.
- 7.1.3 BS 5837 recommends that a tree survey is undertaken to identify the quality and benefits of trees and the spatial constraints associated with them. This information is then used to produce a TCP illustrating the above and below ground constraints associated with trees RPA. The TCP is intended to be used to inform the design process and to identify those trees considered to be a constraint to development due to the quality and value (in a non-fiscal sense).
- 7.1.4 Following the production of the final scheme design, an AIA is produced to identify the likely direct and indirect impacts of the proposed project, along with a Tree Protection Plan (TIPP) to identify trees to be removed and retained and to illustrate the protection of retained trees. An Arboricultural Method Statement (AMS) is also often required as a condition of planning consent to detail how sensitive operations are to be undertaken in close proximity to retained trees.
- 7.1.5 These documents and plans are considered the minimum requirement for arboricultural matters within a planning application and are intended to ensure both a long term sustainable and harmonious relationship between existing trees and the proposed project.

7.2 National Planning Policy Framework 2023

- 7.2.1 The National Planning Policy Framework (NPPF 2023) seeks to ensure that new development is sustainable and underlines the importance of green infrastructure, of which trees form an integral part. This includes recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaption. The NPPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity. Finally, it specifically identifies veteran and ancient trees and woodland as a highly valuable and irreplaceable habitat.
- 7.2.2 At the heart of the National Planning Policy Framework (NPPF) is a presumption in favour of sustainable development, and specifically states that for decision making, the LPA should be approving development proposals that accord with the development plan without delay.
- 7.2.3 Section 15 of the NPPF recognises the importance of conserving and enhancing the natural environment, and specifically acknowledges the role of trees and woodland in the provision of natural capital and ecosystem services.

- 7.2.4 It further acknowledges the importance of ancient woodlands and veteran trees for habitats and biodiversity and requires that planning consent should be refused where development schemes require the removal of such features unless there are wholly exceptional reasons, stating that:

“development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.” (Paragraph 186, C)”

- 7.2.5 Where the LPA does not have a development plan or the development plan is out of date, the LPA should grant planning consent insofar as the development proposals do not breach the NPPF.

7.3 Local Planning Policy

Relevant local planning policy from Cotswold District Council Local Plan 2011-2031 in relation to trees and development is summarised below (Cotswold District Council 2024):

Cotswold District Local Plan 2011-2031, Policy EN7: Trees, Hedgerows and Woodlands

1. *Where such natural assets are likely to be affected, development will not be permitted that fails to conserve and enhance:*
 - A. *trees of high landscape, amenity, ecological or historical value;*
 - B. *veteran trees;*
 - C. *hedgerows of high landscape, amenity, ecological or historical value; and/or*
 - D. *woodland of high landscape, amenity, ecological or historical value.*
2. *Where trees, woodland or hedgerows are proposed to be removed as part of development, compensatory planting will be required.*
3. *Development proposals affected by (2) above should, where appropriate, have regard to the potential for new or extended woodland to assist in carbon storage and to be a potential local source of biomass or biofuel.*

Cotswold District Local Plan 2011-2031, Policy EN8: Biodiversity and Geodiversity: Features, Habitats and Species

1. *Development will be permitted that conserves and enhances biodiversity and geodiversity, providing net gains where possible.*
2. *Proposals that would result in significant habitat fragmentation and loss of ecological connectivity will not be permitted.*
3. *Proposals that reverse habitat fragmentation and promote creation, restoration and beneficial management of ecological networks, habitats and features will be permitted, particularly in areas subject to landscape-scale biodiversity initiatives. Developer contributions may be sought in this regard.*
4. *Proposals that would result in the loss or deterioration of irreplaceable habitats and resources, or which are likely to have an adverse effect on internationally protected species, will not be permitted.*
5. *Development with a detrimental impact on other protected species and species and habitats “of principal importance for the purpose of conserving biodiversity” will not be permitted unless adequate provision can be made to ensure the conservation of the species or habitat.*

8 Summary

- 8.1.1 A total of 40 arboricultural features were recorded within the study area, these were recorded as 23 individual trees (T), two groups of trees (G), 13 hedgerows (H) and two woodland groups (W).
- 8.1.2 Each arboricultural feature was assigned to one of four categories, as listed below:
- Category A features: one woodland group (W) has been identified as Category A (trees of high quality) as part of this survey;
 - Category B features: three individual trees (T), one group of trees (G) three hedgerows (H) and one woodland group (W) have been identified as Category B (trees of moderate quality) as part of this survey;
 - Category C features: 19 individual trees (T), one groups of trees (G) and 10 hedgerows (H) have been identified as Category C (trees of low quality) as part of this survey;
 - Category U features: one individual tree (T) has been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey.
- 8.1.3 It was confirmed by the Cotswold District Council Planning Portal Map that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.
- 8.1.4 It was confirmed that there are no designated ancient woodlands in the study area and no veteran trees were identified during the survey.
- 8.1.5 Of the 40 arboricultural features within the study area, a total of six individual trees, three hedgerows and one woodland group are located within, or immediately adjacent to development works and will require full or partial removed to facilitate the Proposed Project.
- 8.1.6 In general, the proposed tree removals are considered to represent a low impact to the overall visual public amenity and arboricultural value of the site. The trees to be removed are of moderate and low-quality Category B and C features.
- 8.1.7 Any tree works must be carried out by a qualified contractor must be in accordance with BS 3998: 2010: Tree Work – Recommendations.
- 8.1.8 A tree replacement strategy has been developed for the CSEC for the trees to be removed which takes into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. During the detail design stage this indicative planting should be developed into a full planting plan and schedule to form a tree replacement strategy which should mitigate the loss of any arboricultural features to be removed.
- 8.1.9 This document encloses details of Preliminary Tree Protection Measures (Appendix C) to be implemented on site prior to the commencement of demolition or construction works. A site-specific AMS will be required post planning. The productions of the AMS should work with project design and construction teams to ensure the safe retention and protection of all trees scheduled for retention over the course of proposals designers.

9 References

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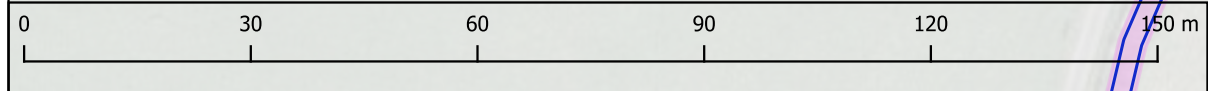
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Figure 1 – Tree Constraints Plan



Legend:

- Application Site Boundary
- Application Survey Boundary
- Canopy extent of A Category Tree/Group
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- Canopy extent of U Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)

Key Plan:

P1	24/05/24	For information	IL	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client

National Grid

PROJECT:

Cotswold VIP

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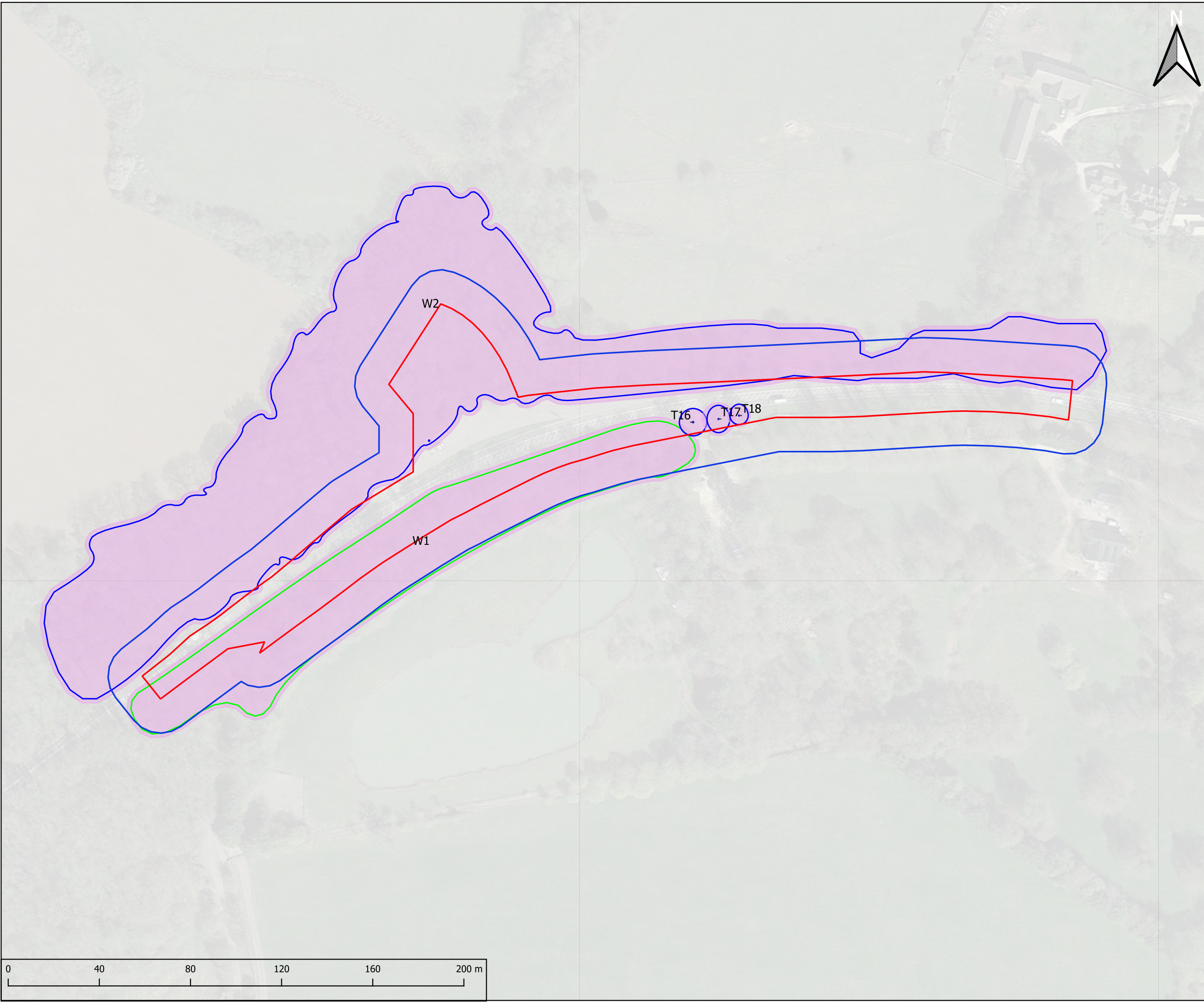
FIGURE 1
TREE CONSTRAINTS PLAN
SHEET 1 OF 4

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Legend:

- Application Site Boundary
- Application Survey Boundary
- Canopy extent of A Category Tree/Group
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- Canopy extent of U Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)

Key Plan:

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FIGURE 1
TREE CONSTRAINTS PLAN
SHEET 2 OF 4

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Revision:
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- Legend:**
- Application Site Boundary
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 - Canopy extent of A Category Tree/Group
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 - Canopy extent of U Category Tree/Group
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**FIGURE 1
TREE CONSTRAINTS PLAN**

SHEET 3 OF 4

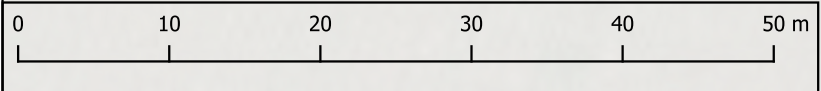
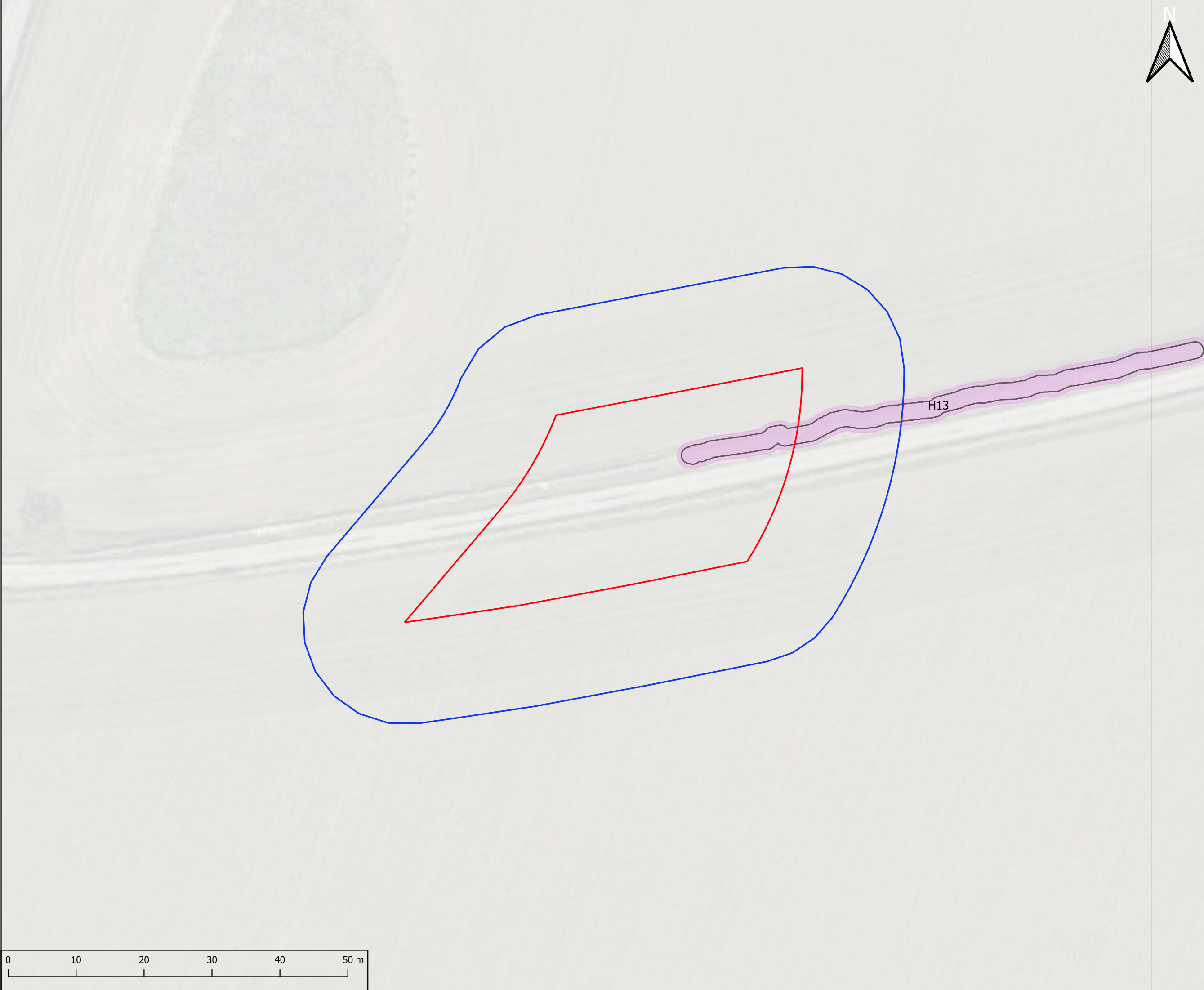
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Legend:

- Application Site Boundary
- Application Survey Boundary
- Canopy extent of A Category Tree/Group
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- Canopy extent of U Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)

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FIGURE 1
TREE CONSTRAINTS PLAN
SHEET 4 OF 4

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Revision:
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Figure 2 – Tree Impact and Protection Plan



Legend:

- Application Site Boundary
- Application Survey Boundary
- Tree Protection Fencing
- Canopy extent of A Category Tree/Group
- Canopy extent of B Category Tree/Group
- Canopy extent of C Category Tree/Group
- Canopy extent of U Category Tree/Group
- BS 5837:2012 Root Protection Area (RPA)
- Trees/Groups to be Removed

Key Plan:

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FIGURE 2
TREE IMPACTS AND PROTECTION
PLAN
SHEET 1 OF 4

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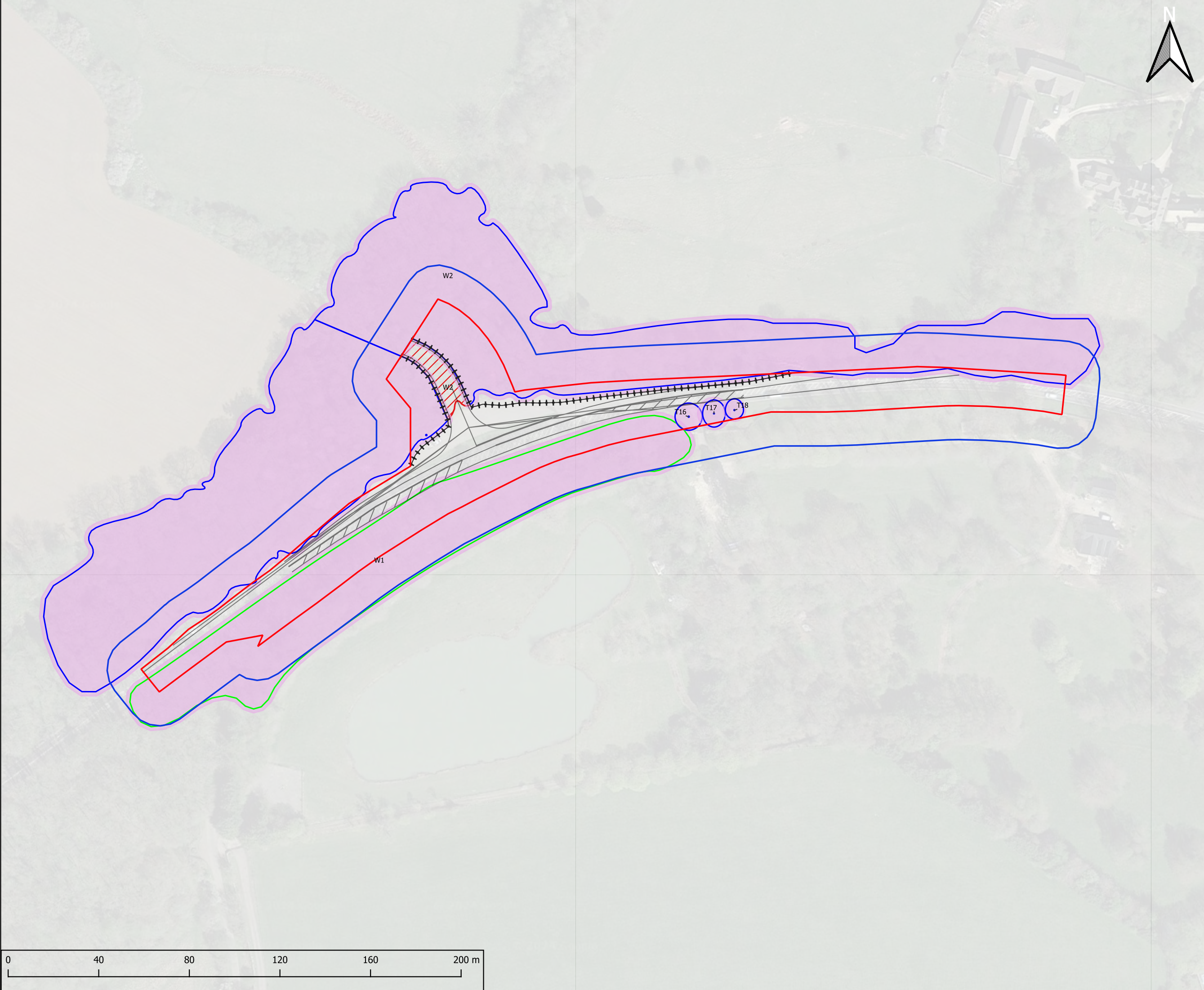
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Drawing Number:

30167905-ARC-XX-260-DR-R-00006

Revision:

P01



Legend:

- Application Site Boundary
- Application Survey Boundary
- Tree Protection Fencing
- Canopy extent of A Category Tree/Group
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- BS 5837:2012 Root Protection Area (RPA)
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Key Plan:



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FIGURE 2
TREE IMPACTS AND PROTECTION
PLAN
SHEET 2 OF 4

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Suitability Description:

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Legend:

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**FIGURE 2
TREE IMPACTS AND PROTECTION
PLAN
SHEET 3 OF 4**

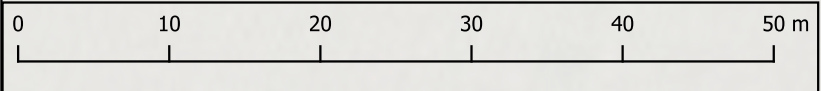
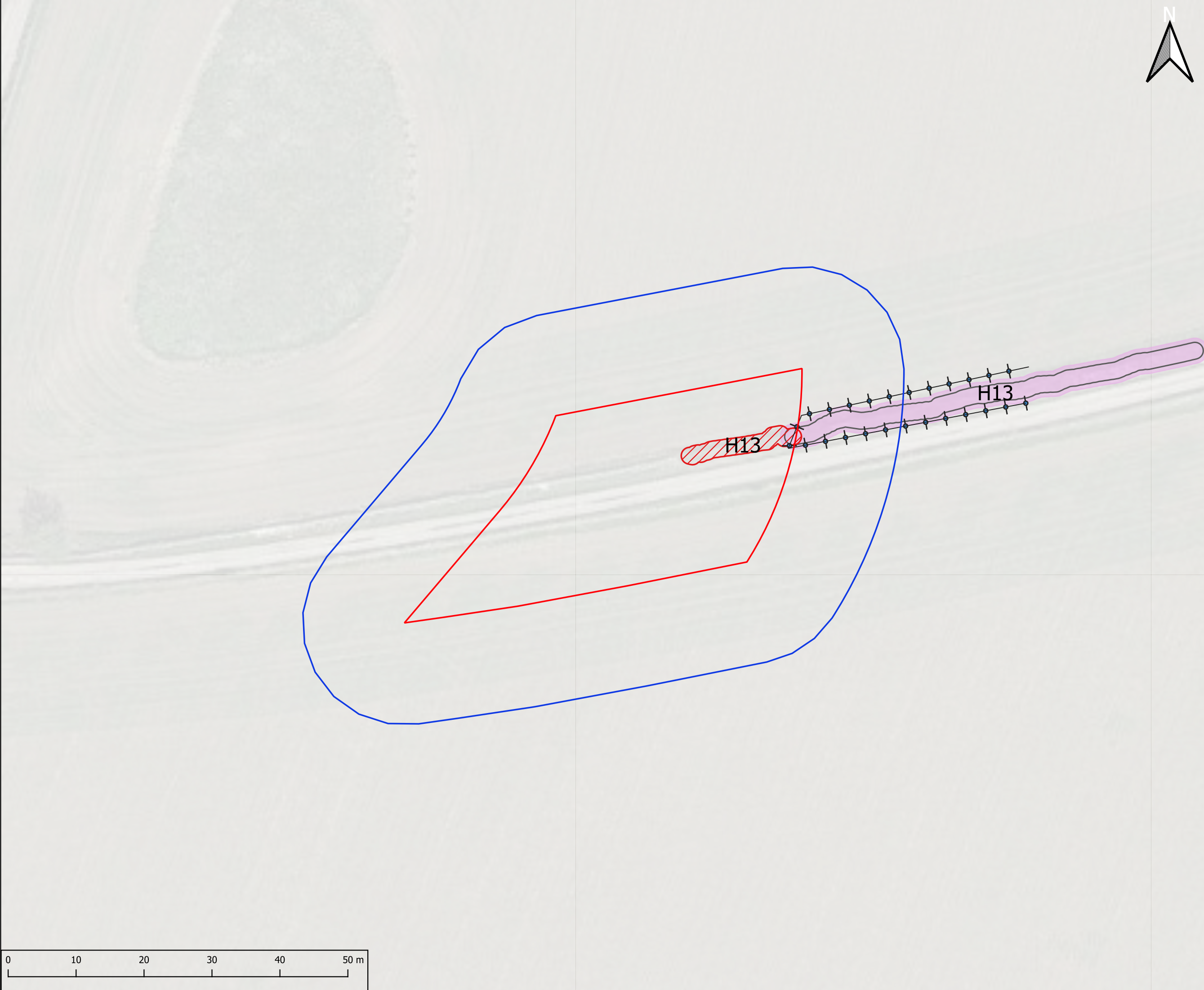
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Revision:
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Legend:

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FIGURE 2
TREE IMPACTS AND PROTECTION
PLAN
SHEET 4 OF 4

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Appendix A

Explanation of Terms

Age Class

Young (Y) – Establishing tree that could be transplanted without specialist equipment.

Semi-mature (SM) – Fully established but has not reached its ultimate height and has significant growth potential.

Early-mature (EM) – A tree reaching its ultimate potential height, growth rate is slowing, will still increase in DBH.

Mature (M) – A mature specimen with limited potential for any significant increase in size.

Over Mature (OM) – A senescent or moribund specimen with a limited safe useful life expectancy.

Veteran (V) – A specimen of high value due to either its age, size, or ecological significance. Can be identified by the presence of specific characteristics.

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

BS 5837 Retention Category

Each tree, group of trees or hedge is assigned to a retention category. Category A trees of high quality and amenity value. Category B trees of moderate quality and amenity value. Category C trees of low quality or amenity value. Category U trees of very low quality or requiring immediate removal due to health and safety concerns

British Standards BS 5837:2012 recommends that these categories may be further broken down into sub-categories A1 A2 A3 pertaining to Arboricultural, Landscape or Cultural values respectively.

Appendix B

Schedule of Trees

Client: National Grid

Project: Cotswolds VIP

Survey date: 17-21 July, 18-22 September, 26-27 October, 2-3 November & 4-5 December 2023

Surveyor: James Potts BSc (Hons), MArborA, William Green BSc (Hons), Isabel Leggett BSc (Hons), Danni Treanor BSc (Hons), ACIEEM & Angel Plumb (Hons)

Table B1 Tree Schedule

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T1	Ash (<i>Fraxinus excelsior</i>)	6	200	2	2	2	2	2	2.4	18.1	SM	F	F	Minor dieback.	10+	C1
T2	Ash (<i>Fraxinus excelsior</i>)	6	200	2	2	2	2	2	2.4	18.1	SM	F	F	Minor dieback.	10+	C1
T3	Sycamore (<i>Acer pseudoplatanus</i>)	9	200	2	2	3	2	1	2.4	18.1	SM	F	F	Ivy cladding.	20+	C2
T4	Ash (<i>Fraxinus excelsior</i>)	10	350	5	5	3	3	3	0.0	0.0	SM	P	F	Major dieback.	<10	U
T5#	Hawthorn (<i>Crataegus monogyna</i>)	4	200	2	4	2	2	2	2.4	18.1	SM	F	F	Inaccessible.	20+	C1
T6#	Hawthorn (<i>Crataegus monogyna</i>)	5	200	2	4	2	2	2	2.4	18.1	SM	F	F	Inaccessible.	20+	C1
T7	Sycamore (<i>Acer pseudoplatanus</i>)	6	200	2	4	2	2	2	2.4	18.1	SM	F	F	Ivy cladding.	20+	C1
T8	Common Whitebeam (<i>Sorbus aria</i>)	6	250	4	3	5	3	2	3.0	28.3	SM	F	F	-	20+	C2
T9	Sycamore (<i>Acer pseudoplatanus</i>)	4	100	1	1	1	1	1	1.2	4.5	SM	F	F	-	20+	C1
T10	Common Whitebeam (<i>Sorbus aria</i>)	6	200	2	2	2	2	2	2.4	18.1	SM	F	F	Ivy cladding.	20+	C1
T11	Ash (<i>Fraxinus excelsior</i>)	6	350	3	3	3	3	3	4.2	55.4	EM	F	F	-	10+	C2
T12	Sycamore (<i>Acer pseudoplatanus</i>)	6	300	3	3	3	3	2	3.6	40.7	SM	F	F	-	40+	C2
T13	Ash (<i>Fraxinus excelsior</i>)	8	500	5	6	5	5	3	6.0	113.1	EM	P	P	Ivy clad, limited top growth with signs of dieback. Decay at base of southern mainstem.	10+	C1

Schedule of Trees

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T14	Ash (<i>Fraxinus excelsior</i>)	8	500	3	3	3	4	3	6.0	113.1	EM	P	P	Ivy clad, limited top growth with signs of dieback. Decay at base of southern mainstem. Phoenix growth from base.	10+	C1
T15	Hawthorn (<i>Crataegus monogyna</i>)	5	300	4	4	3	3	1	3.6	40.7	EM	F	F	-	20+	C2
T16	Silver Birch (<i>Betula pendula</i>)	15	520	6	6	6	6	2	6.2	122.3	M	G	G	No defects, tree along main road.	20+	B1
T17	Silver Birch (<i>Betula pendula</i>)	12	375, 340, 330	6	5	6	5	3	7.3	165.2	EM	F	F	-	20+	B1
T18	Silver Birch (<i>Betula pendula</i>)	14	420	5	4	4	4	2	5.0	79.8	EM	F	F	Ivy cladding.	20+	B1
T19	Hazel (<i>Corylus avellana</i>)	4	75	2	2	2	2	0	2.2	15.3	EM	G	G	-	20+	C1
T20	Hawthorn (<i>Crataegus monogyna</i>)	5	200, 250	4	4	4	4	0	3.8	46.4	M	F	F	-	40+	C1
T21	Pedunculate Oak (<i>Quercus robur</i>)	4	200	2	2	2	2	0	2.4	18.1	Y	G	G	-	40+	C1
T22	Hawthorn (<i>Crataegus monogyna</i>)	3	150	1	1	1	1	0	1.8	10.2	SM	G	G	-	20+	C1
T23	Hawthorn (<i>Crataegus monogyna</i>)	4	100, 75, 75	2	2	2	2	0	1.7	9.6	SM	F	F	-	10+	C1
G1	Mixed Species: Silver Birch (<i>Betula pendula</i>), Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Guelder, Rose (<i>Viburnum opulus</i>), Sycamore (<i>Acer pseudoplatanus</i>), Whitebeam (<i>Sorbus aria</i>) (<i>Sorbus aria</i>), Oak (<i>Quercus robur</i>)	14	200	3	3	3	3	0	2.4	1.0	EM	F	F	Roadside group.	20+	B2
G2	Blackthorn (<i>Prunus spinosa</i>)	10	50	2	2	2	2	0	0.6	1.0	EM	P	P	Ivy clad group of Blackthorn.	20+	C2

Schedule of Trees

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
W1	Mixed Species: Beech (<i>Fagus sylvatica</i>), Silver Birch (<i>Betula pendula</i>), Goat Willow (<i>Salix caprea</i>), Lawson Cypress (<i>Chamaecyparis lawsoniana</i>), Scots Pine (<i>Pinus sylvestris</i>), Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>)	20	650	5	5	5	5	5	7.8	3	EM	G	G	Highway screening belt, mixed species, minimal understorey.	40+	A2
W2	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Beech (<i>Fagus sylvatica</i>), Pedunculate Oak (<i>Quercus robur</i>), Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Holly (<i>Ilex aquifolium</i>)	16	500	3	3	3	3	2	6	3	EM	F	F	Plantation Woodland, mainly ash showing dieback.	20+	B2
H1	Hawthorn (<i>Crataegus monogyna</i>)	2	100	1	1	1	1	0	1.2	1	SM	G	G	-	20+	C2
H2	Mixed Species: Hawthorn (<i>Crataegus monogyna</i>), Ash (<i>Fraxinus excelsior</i>), Blackthorn (<i>Prunus spinosa</i>), Field Maple (<i>Acer campestre</i>)	3	100	2	2	2	2	0	1.2	1	EM	F	F	Ivy and bramble throughout.	40+	C2
H3	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Elm (<i>Ulmus procera</i>), Hazel (<i>Corylus avellana</i>)	3	100	1	1	1	1	0	1.2	1	SM	F	F	Scattered along boundary wall.	20+	C2
H4	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>)	2	100	2	2	2	2	0	1.2	1	EM	G	G	Wide linear boundary hedge. Bramble throughout.	40+	B2
H5	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>)	2	100	1	1	1	1	0	1.2	1	SM	F	F	Bramble throughout.	20+	C2
H6	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Sycamore (<i>Acer pseudoplatanus</i>), Common Whitebeam (<i>Sorbus aria</i>)	2	100	1	1	1	1	0	1.2	1	SM	F	F	-	20+	C2

Schedule of Trees

Tree reference number	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m²) (T) / RPA Offset (m) (G, H, W)	Age class	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
H7	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>)	2	100	1	1	1	1	0	1.2	1	SM	F	F	-	20+	C2
H8	Blackthorn (<i>Prunus spinosa</i>)	1	100	1	1	1	1	0	1.2	1	SM	F	F	-	20+	C2
H9	Mixed Species: Sycamore (<i>Acer pseudoplatanus</i>), Hazel (<i>Corylus avellana</i>), Guelder Rose (<i>Viburnum opulus</i>), Oak (<i>Quercus robur</i>), Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>)	6	100	3	3	3	3	0	1.2	1	EM	G	G	Roadside hedgerow.	40+	B2
H10	Mixed Species: Holly (<i>Ilex aquifolium</i>), Hazel (<i>Corylus avellana</i>), Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), wayfaring tree, Elder (<i>Sambucus nigra</i>), Cherry Sp. (<i>Prunus sp.</i>), Sycamore (<i>Acer pseudoplatanus</i>)	4	100	2	2	2	2	0	0.6	1	M	G	G	Hazel dominated species rich hedgerow. Continous linear feature with bramble understorey. Some ivy throughout.	40+	B2
H11	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>)	3	100	1	1	1	1	0	0.6	1	EM	F	F	Linear field boundary feature.	40+	C2
H12	Mixed Species: Hazel (<i>Corylus avellana</i>), Field Maple (<i>Acer campestre</i>), Blackthorn (<i>Prunus spinosa</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>)	3	50	1	1	1	1	0	0.6	1	Y	F	F	-	20+	C2
H13	Mixed Species: Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Dog Rose (<i>Rosa canina</i>), Blackthorn (<i>Prunus spinosa</i>)	3	150	2	2	2	2	0	1.8	1	EM	F	F	Bramble throughout.	40+	C2

Denotes estimated value

Table B2 Key to Categories

Trees unsuitable for retention				
Category and Definition	Criteria (including subcategories where appropriate)			Identification on Plan
Category U Those in such a condition that they cannot realistically be retained as a living tree in the context of the current land use for longer than 10 years.	- Trees that have a serious, irremediable structural defect such that their early loss is expected due to collapse, including those that will become unviable after removal of other U category trees (i.e. Where for whatever reason the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant immediate or irreversible overall decline. - Trees infected with pathogens of significance to the health and or safety of other trees nearby by or very low-quality trees suppressing adjacent trees of better quality.			Red
Trees to be considered for retention				
Category and Definition	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values	Identification on Plan
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are a particularly good example of their species, especially if rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.	Tree groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Tree groups or woodlands of significant conservation historical, commemorative or other value	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in the high category but are downgraded because of impaired condition.	Trees present in numbers, usually as groups or woodlands such that they attract a higher collective rating than they might as individuals: or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural benefits.	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands but without this conferring on them significantly greater landscape value and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural benefits.	Grey

Appendix C

Preliminary Tree Protection Measures

Overview

This Preliminary Arboricultural Method Statement (AMS) provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process. Should a bespoke AMS be recommended by the suitably qualified arboriculturist, one should be drawn up in liaison with the contractor undertaking the works.

Protective Fencing

The purpose of this fencing is to provide protection to the RPAs of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words "Construction Exclusion Zone" and listing restrictions which apply. All personnel must be made aware of these restrictions.

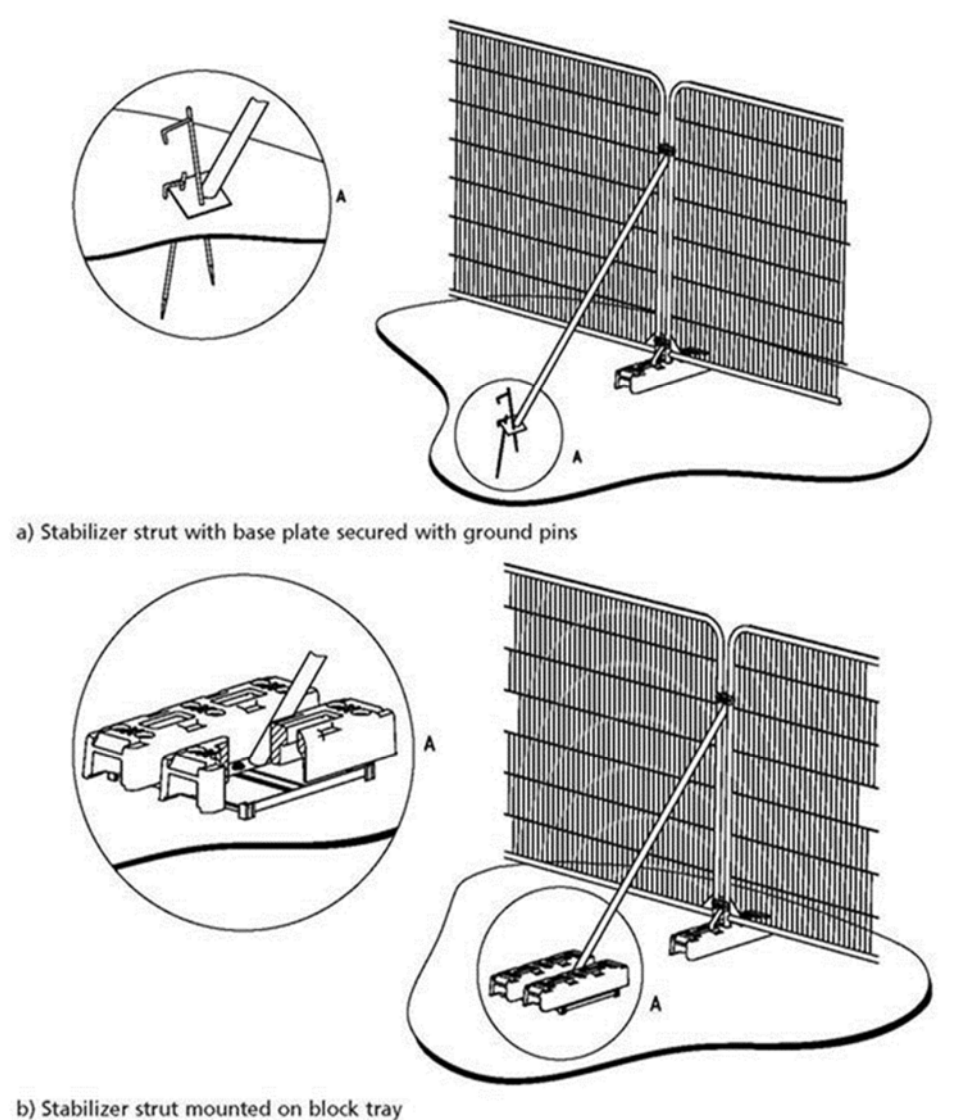


Figure C1 Tree protection fencing specification (extract from BS 5837: 2012)

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by a suitably qualified arboriculturist as the area to be protected during development, from site clearance and construction work through the use of barriers and/or ground protection to ensure the successful long-term retention of a tree. Fencing or ground protection shall not be taken down or relocated at any time without prior agreement and/or site supervision as recommended by the arboriculturist.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity must occur within these areas.
- No works on trees unless agreed by a suitably qualified arboriculturist.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures*
- No storage of soil, rubble or other materials.

- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.
- *Site huts, provided they are of the “Jack Leg” type, can be sited to act as ground protection for the duration of the construction.

Temporary Ground Protection

New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. The ground protection might comprise one of the following:

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

New Permanent Surfacing Within RPAs

Any new surfacing within the RPAs shall occur above ground level without soil stripping. New surfaces shall be constructed on a cellular confinement to prevent localised compaction of the rooting medium post development. Porous geotextile membranes shall be used both above and below the cellular confinement system to prevent mixing of materials with the binding layer or the soil. The new surface needs to be permeable to air and water (resin bound gravel or similar is recommended). This is to allow roots to respire without there being a build-up of carbon dioxide, and to ensure the roots continue to receive the moisture and oxygen they require to function. Traditional kerbing requires excavation to install and will therefore not be suitable within the root protection areas of retained trees. As an alternative, haunched kerbing, treated timber edging, aluminium L-shaped edging, galvanised metal edging or no fixed edging shall be used. Construction of the new surface will require access into the construction exclusion zone defined by the temporary ground protection. The ground protection shall not be removed until new surface is installed. The root protection areas should not be left exposed during construction.

General Canopy Protection

Since the canopies of retained trees may be in close proximity to areas of plant operation, the following restrictions will apply:

- All plant will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.

- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.

Hazardous Materials

Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.

Example of Protective Fencing Signs



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