

TREVOR BASIN ACCESS, WREXHAM

BS 5837: 2012 Arboricultural Impact Assessment

DECEMBER 23

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1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Wrexham Borough Council to undertake an 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 proposed works Trevor Basin car park, Abernant Road, Wrexham.

The site is located in Acrefair, Wrexham, centred on Ordnance Survey (OS) Grid Reference SJ 27402 42608 and centred around the post code LL14 3RY. The site is approximately 4.7 ha. The site is comprised of Queen Street and former industrial land.

An aerial screen shot illustrating the site location (red outline) and survey area (blue outline) is presented in Image 1.



Image 1 Site Boundary (red line), Survey Boundary (blue line). Imagery © 2022 Infoterra Ltd & Bluesky

1.2 Proposed Development

The proposed plans include redevelopment of part of the site into a new arrival car and coach park identified within the Trevor Basin and Surrounding Area Masterplan 2021, as a primary arrival point for the Pontcysyllte & Canal World Heritage Site (WHS).

2 Methodology

2.1 Tree Survey Methodology

Arboricultural surveys were undertaken by Will Green BSc (Hons) (Consultant Arboriculturist and Ecologist) on 13 March 2023 and 7 November 2023 in accordance with BS 5837:2012.

The survey was based on topographical survey, document reference: *59517-Topo/1* (Malcom Hughes, 2022)

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. Photographs of all accessible trees were taken and are provided in Appendix D.

2.2 Study Area

The study area included the site itself (redline boundary) and any trees considered to be within influencing distance of the site and access route (blueline boundary) as displayed in Figure 1).

2.3 Individual trees

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.

For reference, individual trees are identified with the letter T and an associated unique number on the tree schedules and Tree Constraints Plan (TCP). The stem diameter of the trees was recorded at 1.5m above ground level using a rounded-down diameter tape. Measurements were taken in millimetres. The height of the trees was recorded using a clinometer.

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. Crown spread measurements were taken in metres.

Tree age was estimated from visual indicators (such as tree size, form 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.

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

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).

Groups of trees were identified with the letter G and number on the associated schedules and plans.

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

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 Categorisation

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.

2.7 Root Protection Area

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.

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.

Tree RPAs are recorded in the Schedule of Trees (Appendix B) and shown as a pink shaded area on the initial Tree Constraints Plan (and Tree Impact and Protection Plan as appropriate) and form the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the Site.

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.

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.

2.8 Survey Limitations

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 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.

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.

2.9 Arboricultural Impact Assessment

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.

The Arboricultural Impact Assessment (AIA) was undertaken by Will Green BSc (Hons) (Consultant Arboriculturist and Ecologist) in November 2023 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
Landscape General Arrangement Plan (Arcadis)	August 2023	Proposed landscaping and car park designs.

2.10 Tree Constraints Check

The following constraints checks were undertaken for the site on 10 November 2023.

- A tree constraints check performed using the Wrexham Borough Council planning portal map (Wrexham Borough Council 2023).
- 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 2023); and
- A check for catalogued Ancient and Veteran trees using the Woodland Trust Ancient Tree Inventory (Woodland Trust 2023).

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

3 Tree Survey Results

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

3.1 Tree Assessment and Categorisation

A total of 50 arboricultural features were recorded within the study area, these were recorded as 15 individual trees (T), 34 groups of trees (G) and one hedgerow (H)

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 of Trees	No. of Hedgerows
Category A (trees of high quality)	2	0	0
Category B (trees of moderate quality)	3	4	0
Category C (trees of low quality)	8	30	1
Category U (trees of poor quality unsuitable for retention)	2	0	0
Totals	15	34	1

3.2 Tree Species Diversity

A total of 20 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	Tree Groups	Hedgerows
Ash (<i>Fraxinus excelsior</i>)	3	0	0
Beech (<i>Fagus sylvatica</i>)	1	0	0
Bird Cherry (<i>Prunus padus</i>)	1	0	0
Common Lime (<i>Tilia x europaea</i>)	2	1	0

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Tree Species	Individual Trees	Tree Groups	Hedgerows
Goat Willow (<i>Salix caprea</i>)	4	0	0
Hawthorn (<i>Crataegus monogyna</i>)	1	0	0
Hybrid Black-poplar (<i>Populus nigra x canadensis</i>)	2	0	0
Pedunculate Oak (<i>Quercus robur</i>)	1	0	0
Silver Birch (<i>Betula pendula</i>)	0	9	0
Mixed species Including: Alder (<i>Alnus glutinosa</i>) Ash (<i>Fraxinus excelsior</i>) Beech (<i>Fagus sylvatica</i>) Blackthorn (<i>Prunus spinosa</i>) Dog rose (<i>Rosa canina</i>) Elder (<i>Sambucus nigra</i>) Hawthorn (<i>Crataegus monogyna</i>) Hazel (<i>Corylus avellana</i>) Goat Willow (<i>Salix caprea</i>) Lawson Cypress (<i>Chamaecyparis lawsoniana</i>) Leyland Cypress (<i>Cuprocyparis leylandii</i>) Norway Spruce (<i>Picea abies</i>) Pedunculate Oak (<i>Quercus robur</i>) Silver Birch (<i>Betula pendula</i>) Sycamore (<i>Acer pseudoplatanus</i>) White Poplar (<i>Populus alba</i>) Wild Cherry (<i>Prunus avium</i>)	0	24	1
Totals	15	34	1

3.3 Age Diversity

All arboricultural features surveyed within the study area were assessed to be within the Young to Veteran age classifications set by BS 5837: 2012. as illustrated in Table 4.


Table 4: Age Diversity

Age Class	Trees	Groups	Hedgerows
Young	2	18	0
Semi-mature	3	9	0
Early mature	3	5	0
Mature	6	2	1
Veteran	1	0	0
Totals	15	34	1

3.4 Veteran Trees

One veteran tree (T1) was identified during the baseline arboricultural survey and is therefore afforded protections under the National Planning Policy Framework (NPPF) (2023), Details of T1 are provided in Table 5 below.

Table 5: Veteran trees recorded.

Tree ID	Species	Comments/Features	Photo
T1	Ash (<i>Fraxinus excelsior</i>)	Northern main stem hollow from 1.5m up, second upright is also hollow from 1.5m. Some epicormic growth on main limbs. Dieback present. Deadwood throughout crown. Limb tearouts present throughout crown. Evidence of old <i>Inonidus hispidus</i> brackets at base.	

Natural England and the Forestry Commission have prepared guidance, known as standing advice, on how to manage development in proximity to ancient woodland, veteran and ancient trees. This guidance states that buffer zones should be used to protect these trees, and specifically advises that “For ancient or veteran trees (including those on the woodland boundary), the buffer zone should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5 metres from the edge of the tree’s canopy if that area is

larger than 15 times the tree's diameter. This will create a minimum root protection area."
(<https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions>).

This guidance has been followed in the preparation of the determination of the constraints presented by veteran trees to the site. A Veteran Tree Buffer zone (15 x stem diameter) is presented on the accompanying plans. Veteran Tree Buffer zones are displayed as light blue circles in Figure 1: Tree Constraints Plan.

3.5 Tree Constraints Check

It was confirmed by the Wrexham Borough Council that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.

It was confirmed that there are no designated ancient woodlands in the study area.

4 Arboricultural Impact Assessment (AIA)

4.1 Potential Arboricultural Impacts

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.

This should include the effects of any tree loss required to implement the proposed development and any potentially damaging activities proposed in the vicinity of retained trees, including the demolition of existing structures, construction activities relating to the proposed development and its buildability.

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 the Figure 2, the Tree Impacts and Protection Plan (TIPP). Potential RPA incursions are marked in yellow hatching, tree removals are shown in red hatching and the recommended fencing requirements are shown in black lines.

4.2 Tree Removal

Of the 50 arboricultural features on site, a total 17 groups 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 in Table 6.

Table 6: Trees Requiring Removal

Item no.	Species	Partial or Full Removal	Reason for Removal	Grade
G2	Silver Birch (<i>Betula pendula</i>)	F (574.5m ²)	Within footprint of proposed toilet block and new hardstanding.	C2
G3	Mixed species: Ash (<i>Fraxinus excelsior</i>), Dog rose (<i>Rosa cania</i>), Goat Willow (<i>Salix caprea</i>), Norway Spruce (<i>Picea abies</i>), Silver Birch (<i>Betula pendula</i>)	F (801.7m ²)	Within footprint of proposed new parking areas.	C2
G4	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	P (868.5m ²)	Within footprint of proposed disabled car parking spaces, new woodland planting road resurfaces.	C2
G5	Silver Birch (<i>Betula pendula</i>)	P (116.5m ²)	Within footprint of proposed hardstanding removal for new woodland planting and wildflower meadow creation.	C2
G6	Mixed species: Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Hawthorn (<i>Crataegus monogyna</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	P (1278.8m ²)	Within footprint of proposed hoggin footpath and road resurfacing.	C2
G8	Silver Birch (<i>Betula pendula</i>)	P (138.2m ²)	Within footprint of proposed hoggin footpath.	C2

Item no.	Species	Partial or Full Removal	Reason for Removal	Grade
G9	Mixed species: Alder (<i>Alnus glutinosa</i>), Cherry (<i>Prunus</i> sp.), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Silver Birch (<i>Betula Pendula</i>), Willow (<i>Salix</i> sp.)	P (284.5m ²)	Within footprint of proposed hoggin footpath.	C2
G19	Silver Birch (<i>Betula Pendula</i>)	F (134.4m ²)	Within footprint of proposed car park and woodland creation.	C2
G20	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	P (80.2m ²) ²	Partial removal for proposed access road creation.	C2
G21	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	F (168.7m ²)	Within footprint of new woodland and wildflower meadow creation area.	C2
G23	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	P (75.1m ²)	Within footprint of new woodland and wildflower meadow creation area.	C2
G24	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>)	F (393.0m ²)	Within footprint of new woodland and wildflower meadow creation area.	C2
G25	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	P (1154.5m ²)	Within footprint of proposed new car park and new woodland and wildflower meadow creation area.	C2
G26	Mixed species: Silver Birch (<i>Betula Pendula</i>)	F (991.9m ²)	Within footprint of proposed car park and woodland creation.	C2
G32	Mixed species: Silver Birch (<i>Betula Pendula</i>)	P (102.1m ²)	Within footprint of new woodland creation area.	C2
G33	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	P (8.1m ²)	Within footprint of new woodland creation area.	C2
G34	Silver Birch (<i>Betula Pendula</i>)	P (77.7m ²)	Within footprint of new woodland creation area.	C2

A total of 7248.5m² of arboricultural canopy area as detailed in Figure 2 will be removed as part of the proposed scheme.

The main arboricultural impact associated with the proposed works is the removal of 1268.2 m² of mixed broadleaf Category C trees within G6. The removal of trees within G6 are targeted in the east of the group and on the southern edge of the leaving the more mature sections in the middle and to the north. Given the low retention category attributed to this group and the planting density / area to be removed, this is considered to represent a low arboricultural impact to site which will be suitably mitigated through the developments landscaping design.

The majority of proposed removals associated with the development comprised occasional self-seeded scattered willow and birch groups. Within the context of the proposed scheme, these proposed tree removals are not considered to represent a significant arboricultural impact.

4.3 Potential Incursions within Root Protection Areas

Of the 50 arboricultural features to be fully or partially retained within the study area one individual tree and two groups of trees will be subject to potential incursions within its calculated RPA as presented in Table 7.

Table 7: Potential Root Protection Area Incursions

Item no.	Species	Incursion type and likely significance	RPA m ²	RPA incursion m ²	RPA incursion %	Grade
T14	Hawthorn (<i>Crataegus monogyna</i>)	Potential new tree planting within RPA. This may involve the removal of existing pavement. Has the potential to cause minor disturbance to tree.	13.9	1.6	11.5	C1
G6	Mixed species: Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Hawthorn (<i>Crataegus monogyna</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	Hardstanding uplift and proposed new road within groups RPA. Unlikely to cause significant disturbance to trees within group.	N/A	21.2	N/A	C2
G7	Mixed species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	Hardstanding uplift and proposed new road within groups RPA. Unlikely to cause significant disturbance to trees within group.	N/A.	105.9	N/A.	C2

As described in Table 7 as displayed in Figure 2: Tree Impact and Protection Plan. These incursions have the potential to result in minor disturbances to the condition of impacted trees and will require appropriate mitigation measures as detailed in Section 5 of this report in order to be safely retained.

4.4 Facilitation Pruning

It is not possible to determine the exact degree of facilitation pruning required in order to facilitate the project, however arboricultural features which may require facilitation pruning are G6 and G7. Any requirement for facilitation pruning should be reviewed by the Project Arboriculturist at the detailed design stage and appropriate pruning recommendations incorporated into the site-specific Arboricultural Method Statement.

4.5 General Construction Impacts

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 the Tree Impacts and Protection Plan.

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.

4.6 Evaluation of the impact of proposed tree losses

In general, tree removals proposed comprise 11 young and six semi-mature, self-set groups. The proposed tree removals are considered to represent a low impact to the overall visual public amenity and arboricultural value of the site. The majority of trees to be removed are of low-quality Category C features that provide residents to the east with minor visual screening from the existing water facilities.

5 Mitigation

5.1 Planning Policy

Where trees are statutorily protected, such as a TPO or within a Conservation Area, it is usually a requirement under the Town and Country Planning (Tree Preservation) (England) Regulations (2012) to contact the Local Planning Authority (LPA) and follow the appropriate procedures before undertaking any works that might affect the protected trees. For such trees all non-routine tree works including works to enable development must have Conservation Area Consent or Full Planning Consent from the LPA before the tree works take place. The application to the LPA to remove or undertake works on such trees requires a decision which can often take at least 2 months. This report when submitted as part of a planning application would constitute such an application.

5.2 General Construction Mitigation

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.

All pruning and contracting works should be carried out by a competent qualified contractor in accordance with BS 3998:2010, Tree Work Recommendations.

Adequate allowance for the planning and implementation of site compounds and storage areas and the routing of services for the proposed scheme must be made to avoid encroachment with the RPA of, or prevent direct contact with, all retained trees on site.

5.3 Tree Removal

Tree removals on site should be limited to those displayed in Table 6 of this report as marked by red hatching in Figure 2: Tree Impact and Protection Plan. Any additional tree works requirements outside of those listed in this report should follow procedures set out in a Site Specific Arboricultural Method Statement.

All remaining individual trees and tree groups listed for removal in Table 6 of this report should be removed prior to the commencement of construction or excavation works on site.

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.

All tree works must be carried out by a suitably qualified arboricultural contractor and conducted in accordance with BS 3998: 2010: Tree Work – Recommendations.

5.4 RPA Incursions

Construction of the proposed pedestrian access path, hardstanding resurfacing and the planting of trees within the RPA of trees within group T14, G6 and G7 should work with a minimum standoff of 0.5m from the stems of any trees scheduled for retention within the group wherever possible. The footpath should be constructed using a no-dig construction technique and should comprise of timber edging boards and a porous substrate (self-bound gravel or similar). There should be no requirement for machinery or plant to enter the RPA of T14, G6 and G7 and any works should be limited to using hand-held tools/equipment only.

5.5 Facilitation Pruning

It is likely that minor pruning works will be required to G6 and G7. Any requirement for facilitation pruning should be reviewed by the Project Arboriculturist prior to the commencement of works on site.

All tree works must be carried out by a qualified contractor in accordance with BS 3998: 2010: Tree Work – Recommendations.

Further pruning may be necessary on other areas of the site to facilitate construction activity. Any additional pruning should be confirmed under the Arboricultural Method Statement.

5.6 Tree Re-provisioning

The current indicative design for the proposed development includes mitigation tree planting within the soft landscape. Both the planting of individual trees and groups of trees are proposed in the current landscape design however, specifics regarding the number of trees, species and size are yet to be finalised. Based on the current designs for the proposed development it is believed the level of planting provides appropriate mitigation for the proposed loss of trees on the Site however, this will need to be reviewed once a detailed design has been finalised.

A tree replacement strategy should be developed for the trees to be removed which should take into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas.

The species, number, size, type of stock, location and planting aids for the compensating planting should be chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought from an ecologist and arboriculturist. Furthermore, liaison with the LPA Tree Officer will be necessary during the planning process to agree an approved tree compensation and or landscape scheme plan.

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.

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.

5.7 Installation of new services and/or diversion of existing services

At the time of this report, finalised layouts for electricity, water and gas services are not confirmed. It is recommended that the locations of the proposed services be carefully planned in consultation with an Arboricultural Consultant and wherever possible, existing service pipes and trenches are re-used to avoid the need for excavations inside the RPAs of trees to be retained.

Prior to the commencement of works, the locations of and excavation methods for the installation of any proposed services must be fully agreed upon by the Local Planning Authority. Excavations for the installation of new services inside the RPAs of any trees to be retained should not be a requirement of finalised construction layouts.

5.8 Bespoke Arboricultural Method Statement

While preliminary tree protection measures have been provided in Appendix C of this report, when further detail is known as to the construction process at detailed design stage, a bespoke AMS may also be required to protect trees to be retained over the course of the works.

A bespoke AMS should include the following details:

- Conditions of planning consent
- Pre commencement meeting and site briefing
- Order and phasing of operations
- Tree works
- Tree protection fencing
- Ground protection
- Site storage and facilities
- Movement of people, plant and materials
- Demolition
- Enabling works
- Installation of new surfacing

- Installation of new structures
- Installation of new services and/or diversion of existing services
- Hard landscaping
- Soft Landscaping
- Removal of tree protection measures

6 Statutory Tree Protection and Guidance

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

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.

There are exemptions for statutory undertakers under the Town and Country Planning Regulations which include:

- 1 where the land on which the tree is situated is operational land of the statutory undertaker and the work is necessary; and
 - 1.1. in the interests of the safe operation of the undertaking;
 - 1.2. in connection with the inspection, repair or renewal of any sewers, mains, pipes, cables or other apparatus of the statutory undertaker;
 - 1.3. 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.
- 2 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).

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.

7 Trees and Planning

7.1 The Planning Process

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.

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.

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 Tree Constraints Plan (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).

Following the production of the final scheme design, an Arboricultural Impact Assessment (AIA) is produced to identify the likely direct and indirect impacts of the proposed development, 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.

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 development.

7.2 National Planning Policy Framework 2023

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 adaptation. 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.

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.

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.

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 180, c)”

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

The following relevant local planning policies are extracted from the Wrexham Borough Local Plan (Wrexham Borough 2013):

Policy SP15: Natural Environment

“Development will only be supported where it protects, conserves and enhances the natural environment including:

- *Internationally protected Special Areas of Conservation, Special Protection Areas, and Ramsar Sites,*
- *Nationally protected Sites of Special Scientific Interest and National Nature Reserves;*
- *Protected Species and their habitat;*
- *The Clwydian Range and Dee Valley Area of Outstanding Natural Beauty including recognising the importance it has in contributing to the Outstanding Universal Value and setting of the Pontcysyllte Aqueduct and Canal World Heritage Site;*
- *Local Wildlife Sites including the strategic ecological network on Wrexham Industrial Estate and Regionally Important Geological Sites;*
- *Local Nature Reserves;*
- *Special Landscape Areas recognised for their outstanding local landscape character;*
- *natural landscape features such as trees, hedges and woodland and the green networks between them which contribute to the quality and diversity of the natural environment and play an important role in mitigating the impact of climate change;*
- *The quality of natural services including water, air and soils*
- *Developing and maintaining Green Infrastructure links; and*
- *Habitats and species of principal importance to Wales*

Policy NE3: Trees, Woodland and Hedgerows

Development will only be permitted where it does not cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value or those that provide important ecosystem services including mitigating the effects of climate change. Development affecting all existing and new proposed woodlands should:

- i) Support proposals which assist in the respectful and appropriate use and protection of woodlands and boundary edges,*
- ii) Promote sustainable management to deliver multiple benefits, and*
- iii) Support the relevant aims and objectives of the Wrexham Tree & Woodland Strategy 2016-2026 and all subsequent amendments.*

Avoiding adverse or detrimental impact on trees, woodlands and hedgerows should be the primary objective of any proposal however, where adverse effects cannot justifiably be avoided and sustainable integration is not possible then adequate mitigation will be required. In such cases development should include proposals for the planting of new trees, woodlands, and hedgerows within the site, ensuring connectivity between proposed and existing green infrastructure.

6.18 Strategic Policies SP5 and SP20 supports the creation, enhancement, protection and management of a network of green infrastructure and states that one of the ways that this will be achieved is by increased planting of trees and woodland. This policy is required to provide detailed guidance on considering proposals which have the potential to affect existing trees, woodland and hedgerows and to guide the integration of planting within new development. The purpose of the policy is to protect trees, woodlands and hedgerows with natural heritage, amenity value, or that provide important ecosystem services. It supports the aims and objectives of the Wrexham Tree and Woodland Strategy 2016 – 2016.

6.19 In accordance with the aims and objectives of the Wrexham Tree & Woodland Strategy, new development should ensure that existing trees, woodlands, traditional orchards and hedgerows of recognised value are conserved, enhanced and managed accordingly. The Council will expect that significant trees, woodlands, traditional orchards and hedgerows be retained, and protected alongside development proposals and accordingly are afforded appropriate allocation of space to promote and allow characteristic and unhindered natural development. Where possible, amenity trees and trees of large stature should be retained and incorporated within public open space.

6.20 Further guidance will be contained within SPG relating to 'Trees and Development'.

6.21 Ancient woodlands are irreplaceable habitats of high biodiversity value, providing historical and cultural links as well as recreational and educational benefits 88 and, as such will be protected from development and associated impacts that would have a detrimental impact upon the values and services provided.

6.22 Veteran, heritage, ancient trees and ancient hedgerows cannot be recreated and therefore developments will be expected to provide for their retention and longterm protection through the provision of maximum clearances from proposed development, adequate protective measures and management plans. The Local Planning Authority will not approve development that presents an unacceptable level of risk to such trees and hedgerows and their associated habitats and species.

6.23 Where appropriate and in accordance with the Town & Country Planning Act 1990, Tree Preservation Orders will be served to protect important amenity trees from removal or harm."

8 Summary

A total of 50 arboricultural features were recorded within the study area, these were recorded as 15 individual trees (T), 34 groups of trees (G) and one hedgerow (H)

Each arboricultural feature was assigned to one of four categories, as listed below:

- Category A features: two individual trees have been identified as Category A (trees of high quality) as part of this survey;
- Category B features: three individual trees and four groups of trees have been identified as Category B (trees of moderate quality) as part of this survey;
- Category C features: eight individual trees, 30 groups of trees and one hedgerow have been identified as Category C (trees of low quality) as part of this survey;
- Category U features: two individual trees have been identified as Category U (trees of poor quality unsuitable for retention) as part of this survey.

One veteran tree (T1) was identified during the baseline arboricultural survey and is therefore afforded protections under the National Planning Policy Framework (NPPF) (2023). This tree is retained in the current designs.

It was confirmed by the Wrexham Borough Council that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions.

It was confirmed that there are no designated ancient woodlands in the study area.

Of the 50 arboricultural features on site, a total 17 groups are located within, or immediately adjacent to development works and will require full or partial removed to facilitate the proposals.

Of the 50 arboricultural features to be fully or partially retained within the study area two tree groups (G6 and G7) will be subject to potential incursions within its calculated RPA

Some minor facilitation pruning works within groups G6 and G7 will be necessary to facilitate proposed construction works and future site usage.

In general, tree removals proposed comprise relatively 11 young and six semi-mature self-set groups. The proposed tree removals are considered to represent a low impact to the overall visual public amenity and arboricultural value of the site. The majority of trees to be removed are of low-quality Category C features that provide residents to the east with some minor of visual screening from the existing water facilities.

The current indicative design for the proposed development includes mitigation tree planting within the soft landscape. Both the planting of individual trees and groups of trees are proposed in the current landscape design however, specifics regarding the number of trees, species and size are yet to be finalised. Based on the current designs for the proposed development it is believed the level of planting provides appropriate mitigation for the proposed loss of trees on the Site however, this will need to be reviewed once a detailed design has been finalised.

Any tree works must be carried out by a qualified contractor must be in accordance with BS 3998: 2010: Tree Work – Recommendations.

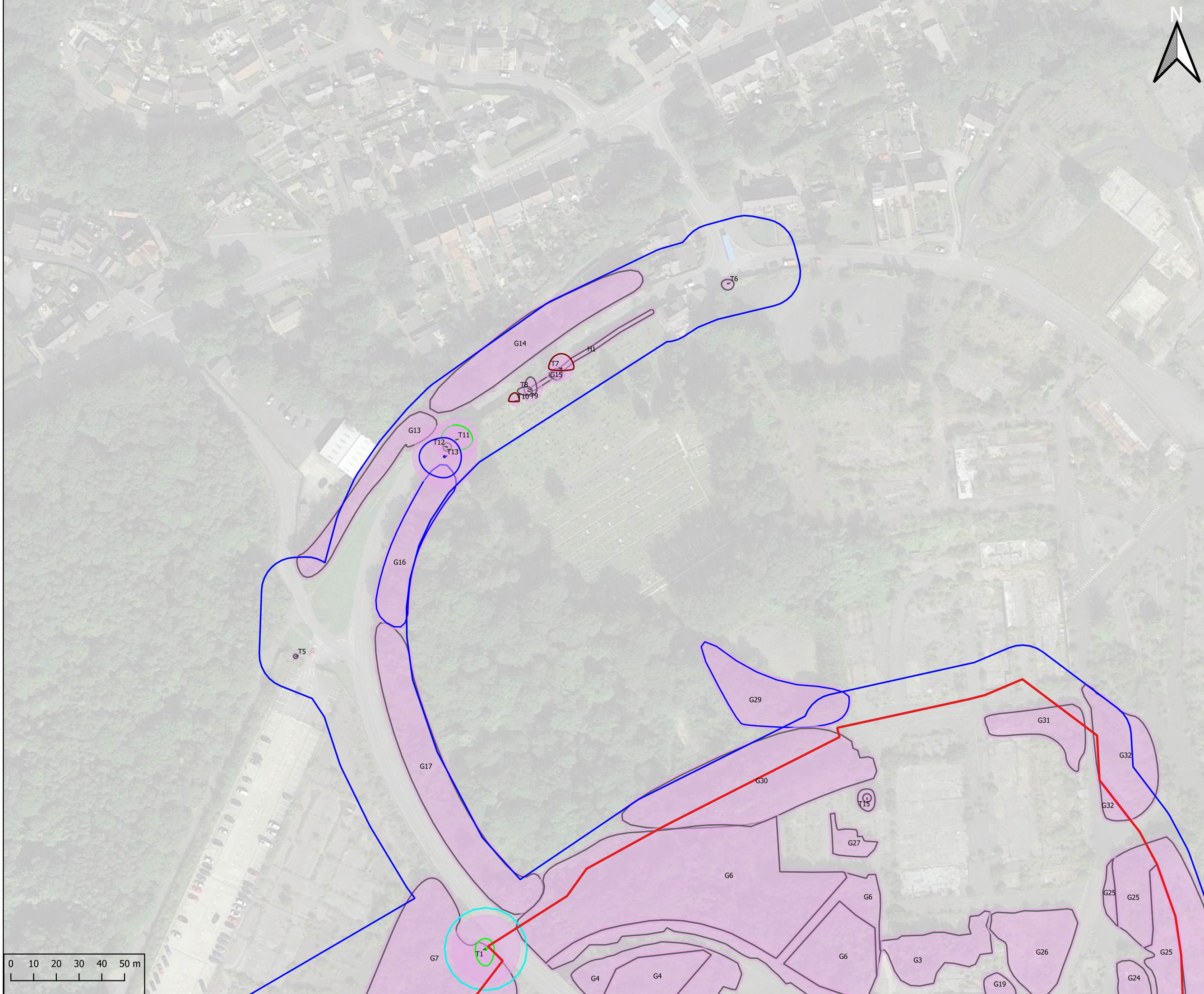
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9 References

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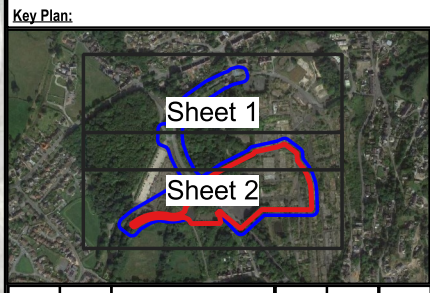
Trevor Basin, Wrexham
BS 5837: 2012 Arboricultural Impact Assessment

FIGURE 1. Tree Constraints Plan



Legend:

- ▭ Site Boundary
- ▭ 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)



P1	19/12/23	For information	WG	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client **Wrexham Borough Council**

PROJECT:
Trevor Basin Acces

ARCADIS Design & Consultancy for natural and built assets

Registered office: Arcadis, 80 Fenchurch Street, London, EC3M 4BY, www.arcadis.com
 Coordinating office: Arcadis, 80 Fenchurch Street, London, EC3M 4BY, Tel: 44 (0)20 7812 2000

TITLE:

**FIGURE 1
TREE CONSTRAINTS PLAN**

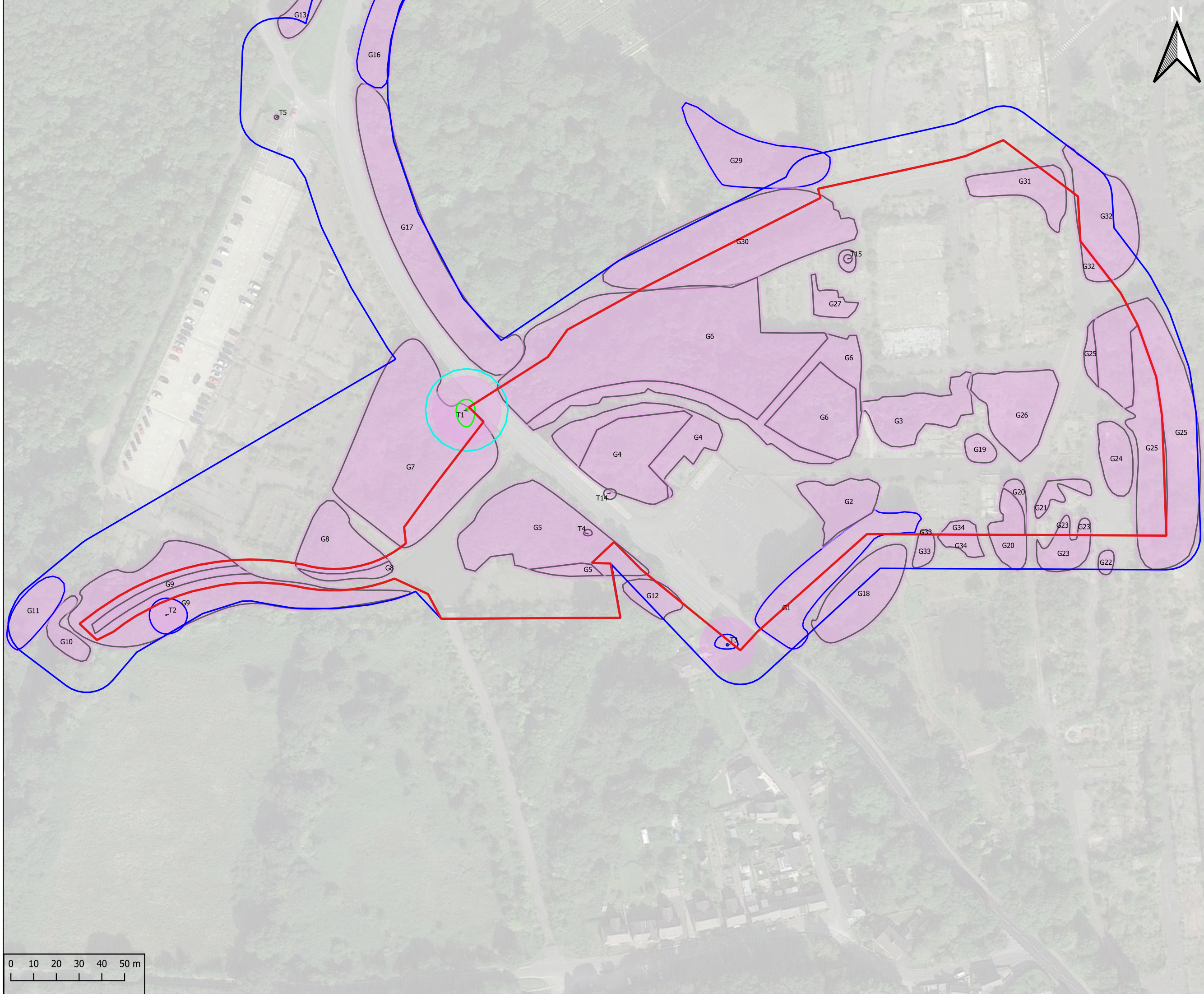
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Approved:	BM	Date:	19/12/23	Sign:	
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Suitability Code:	00	Project Number:	10054502		

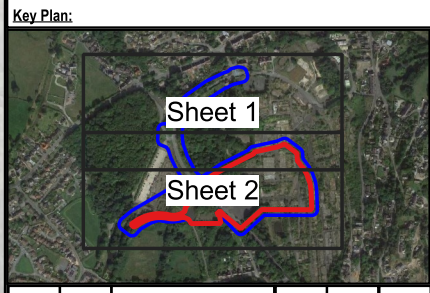
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FOR INFORMATION
NOT TO BE USED FOR DESIGN OR CONSTRUCTION

Drawing Number: **10054502-AUK-XX-XX-DR-ZZ-00005** Revision: **P01**



- Legend:**
- Site Boundary
 - 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)



P1	19/12/23	For information	WG	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client **Wrexham Borough Council**

PROJECT:
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 Coordinating office: Arcadis, 80 Fenchurch Street, London, EC3M 4BY, Tel: 44 (0)20 7812 2000

TITLE:

**FIGURE 1
TREE CONSTRAINTS PLAN**

Sheet 2 of 2

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Drawn:	WG	Date:	19/12/23	Sign:	
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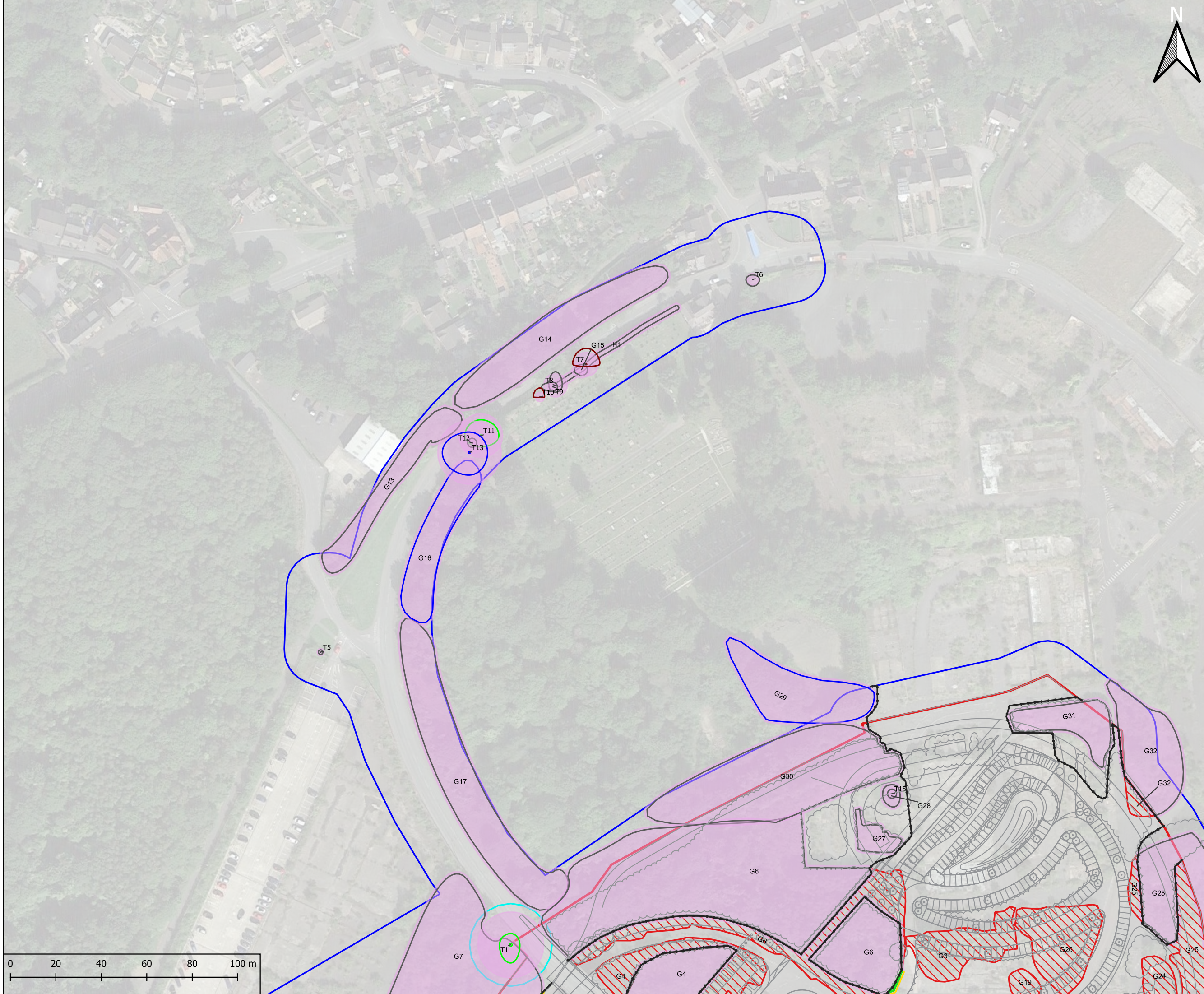
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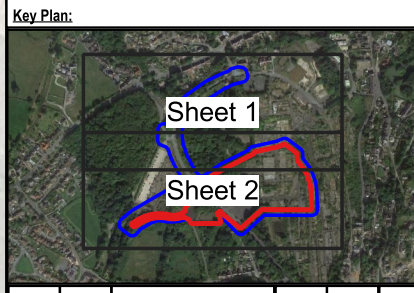
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Trevor Basin, Wrexham
BS 5837: 2012 Arboricultural Impact Assessment

FIGURE 2. Tree Impact and Protection Plan



- Legend:**
- Site Boundary
 - 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)
 - Veteran Tree Buffer Zone
 - Trees/Groups to be Removed
 - Root Protection Area Incursions
 - Facilitation Pruning
 - Tree Protection Fencing



P1	19/12/23	For information	WG	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client **Wrexham Borough Council**

PROJECT:
Trevor Basin Access

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 Tel: 44 (0)20 7812 2000
 www.arcadis.com

TITLE:

**FIGURE 2
TREE IMPACTS AND PROTECTION PLAN**

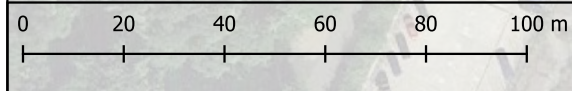
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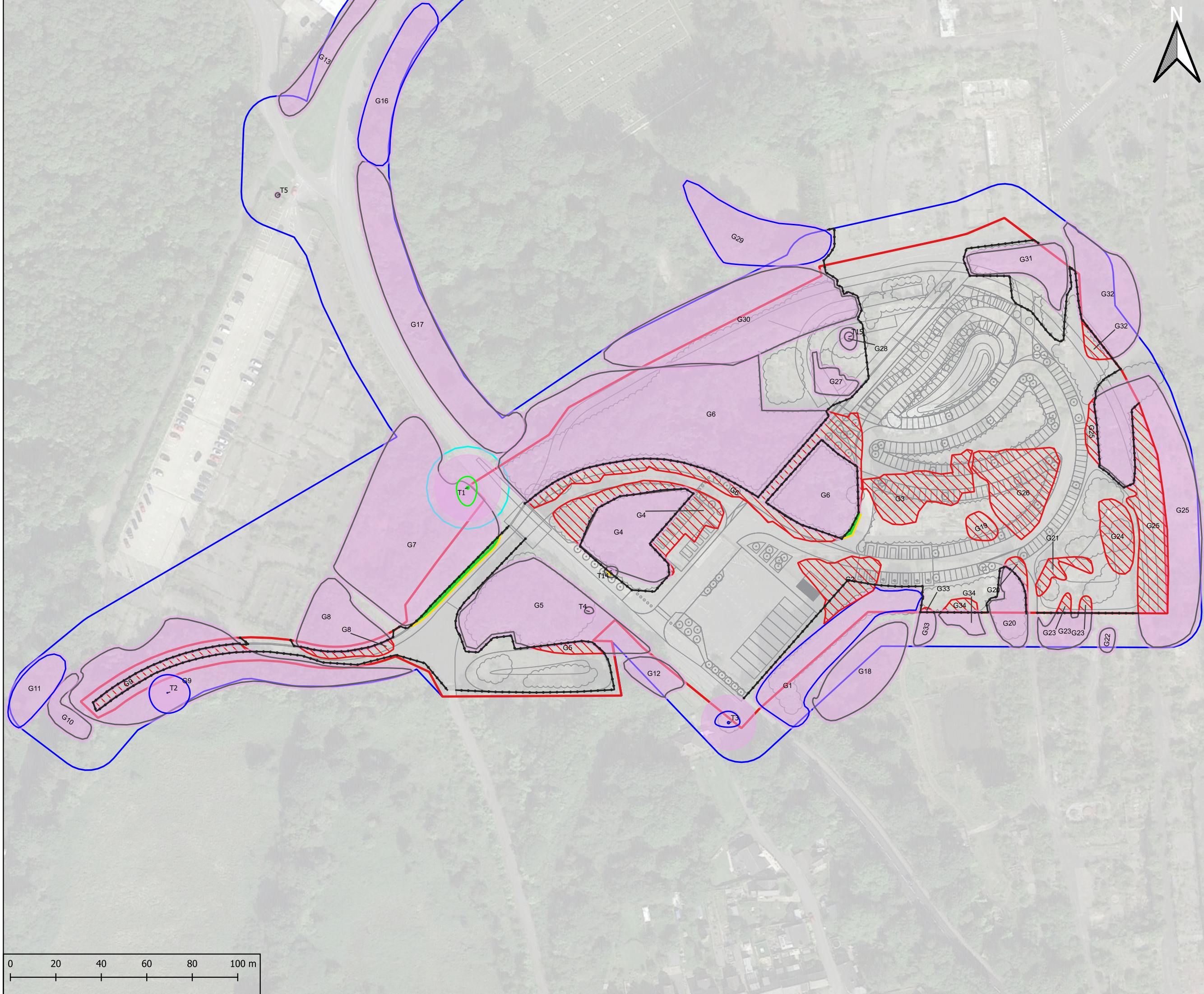
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Suitability Description:

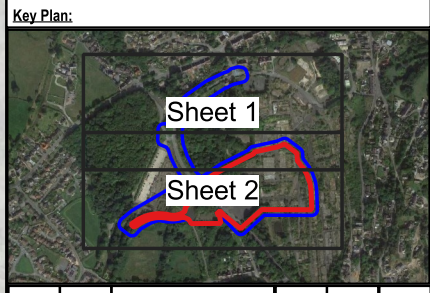
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Drawing Number: 10054502-AUK-XX-XX-DR-ZZ-00006
 Revision: PO1





- Legend:**
- Site Boundary
 - 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)
 - Veteran Tree Buffer Zone
 - Trees/Groups to be Removed
 - Root Protection Area Incursions
 - Facilitation Pruning
 - Tree Protection Fencing



P1	19/12/23	For information	WG	JP	BM
Rev	Date	Description	Drawn	Check	Approv

Client **Wrexham Borough Council**

PROJECT:
Trevor Basin Access

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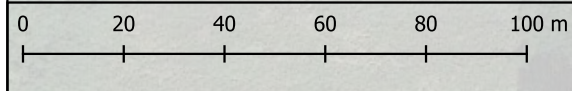
**FIGURE 2
TREE IMPACTS AND PROTECTION PLAN
Sheet 2 of 2**

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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: **Wrexham Borough Council**
Survey date: **13 March 2023 / 11 November 2023**

Project: **Trevor Basin, Wrexham**
Surveyor: **Will Green BSc (Hons)**

Table B1 Tree Schedule

Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T1	Ash (<i>Fraxinus excelsior</i>)	13	1210	5	4	8	5	3e	14.5	662.3	V	Poor	Poor	Northern main stem hollow from 1.5m up, second upright is also hollow from 1.5m. Some epicormic growth on main limbs. Dieback present. Deadwood throughout crown. Limb tearouts present throughout crown. Evidence of old <i>Inonidus hispidus</i> brackets at base.	<10	A3
T2	Goat Willow (<i>Salix caprea</i>)	14	6 X 300	8	10	9	8	3n	8.8	244.3	M	Fair	Fair	Deadwood throughout crown, multiple stems from base, potentially a lapsed coppice in old hedgerow.	40+	B1
T3	Pedunculate Oak (<i>Quercus robur</i>)	12	1000	5	5	2	6	3	12.0	452.4	M	Good	Fair	Crown pruned and managed around telephone wires. Dense lower crown. Sparse upper crown indicating retrenchment. Small tearout wounds present in lower canopy. Closed pruning wounds in upper canopy. Epicormic growth present on mainstem and lower canopy.	40+	B1
T4	Goat Willow (<i>Salix caprea</i>)	5	10 X 80	2	2	1	2	0	3.0	29.0	Y	Fair	Fair	-	40+	C1
T5	Goat Willow (<i>Salix caprea</i>)	4	70, 60, 80, 40	1	1	1	1	0	1.5	7.5	Y	Fair	Fair	Open pruning wounds at 1m.	20+	C2
T6#	Ash (<i>Fraxinus excelsior</i>)	9	200	2	3	3	3	2	2.6	21.0	EM	Good	Good	Off site tree.	20+	C1
T7	Ash (<i>Fraxinus excelsior</i>)	9	440	7	6	1	6	5 n	5.3	87.6	EM	Poor	Poor	Deadwood throughout crown. Ivy to 10m. Thin crown throughout.	<10	U
T8	Common Lime (<i>Tilia x europaea</i>)	9	350, 200, 150	6	3	3	3	3 e	5.2	83.7	EM	Fair	Fair	Lower crown is sparse. Ivy clad to 10m.	20+	C2
T9	Common Lime (<i>Tilia x europaea</i>)	9	150, 75, 80	2	2	2	5	1	2.2	15.6	SM	Poor	Poor	-	10+	C2
T10	Bird Cherry (<i>Prunus padus</i>)	8	170	4	2	0	3	2 w	2.0	13.1	SM	Poor	Poor	Large bark damage north at 1.5m. Minor deadwood throughout crown.	<10	U
T11	Beech (<i>Fagus sylvatica</i>)	17	800	7	8	5	7	2s	9.6	291.7	M	Good	Good	Ivy covering base. Cemetery tree. Occluded pruning wounds. Typical minor deadwood throughout the crown.	40+	A3

Trevor Basin, Wrexham
BS 5837:2012 Arboricultural Impact Assessment

Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
T12	Hybrid Black-poplar (<i>Populus nigra x canadensis</i>)	20	400	2	2	2	2	10	4.8	72.4	M	Poor	Poor	Cemetery tree. No lower canopy. Dominated by adjacent tree. Minor deadwood throughout crown.	10+	C3
T13	Hybrid Black-poplar (<i>Populus nigra x canadensis</i>)	20	1000, 600	9	8	10	12	3 s	14.0	615.2	M	Fair	Fair	Moderate deadwood present in northern crown over the road. Previous storm damage present throughout the crown. Ivy to 10m. Roots present in pavement surface. Pruning wounds in crown.	40+	B3
T14	Hawthorn (<i>Crataegus monogyna</i>)	6	100, 95	2	3	3	3	0	1.7	8.6	M	Fair	Fair	-	40+	C1
T15	Goat Willow (<i>Salix caprea</i>)	4	6 X 85	2	2	2	2	1	2.5	19.6	SM	Fair	Fair	Tree is multistem from 1m.	40+	C1
G1	Mixed Species: Lawson Cypress (<i>Chamaecyparis lawsoniana</i>), Leyland Cypress (<i>Cupressocyparis x leylandii</i>), Silver Birch (<i>Betula pendula</i>)	16	250	4	4	4	4	0	3.0	1.0	EM	Good	Good	Screening group. Some self seeded birch. Larger trees to the west closest the road.	40+	B2
G2	Silver Birch (<i>Betula pendula</i>)	4	75	2	2	2	2	0	0.9	1.0	Y	Fair	Fair	Self seeded birch group with butterfly bush.	20+	C2
G3	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Dog rose (<i>Rosa cania</i>), Goat Willow (<i>Salix caprea</i>), Norway Spruce (<i>Picea abies</i>), Silver Birch (<i>Betula pendula</i>)	7	100	2	2	2	2	0	1.2	1.0	SM	Fair	Fair	-	40+	C2
G4	Silver Birch (<i>Betula pendula</i>)	10	75	2	2	2	2	0	0.9	1.0	Y	Fair	Fair	-	20+	C2
G5	Silver Birch (<i>Betula pendula</i>)	6	100	2	2	2	2	0	1.2	1.0	Y	Fair	Fair	Self seeded group dominated by birch and butterfly bush.	20+	C2

Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G6	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Hawthorn (<i>Crataegus monogyna</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	7	200	5	5	5	5	0	2.4	1.0	SM	Fair	Fair	Mixed group situated on earth bank, some semi mature oak, willow, sycamore and birch situated at the top of the earth bank to the north. The rest of the group comprises young and semi mature trees with a thick bramble understory.	40+	C2
G7	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	6	100	2	2	2	2	0	1.2	1.0	Y	Fair	Fair	Self seeded group, thick understory of butterfly bush and bramble.	20+	C2
G8	Silver Birch (<i>Betula pendula</i>)	3	75	2	2	2	2	0	0.9	1.0	Y	Fair	Fair	-	20+	C2
G9	Mixed Species: Alder (<i>Alnus glutinosa</i>), Cherry (<i>Prunus sp.</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>), Silver Birch (<i>Betula Pendula</i>), Willow (<i>Salix sp.</i>)	10	150	3	3	3	3	0	1.8	1.0	SM	Fair	Fair	-	20+	C2
G10#	Mixed Species: Alder (<i>Alnus glutinosa</i>), Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Sycamore (<i>Acer pseudoplatanus</i>)	14	300	6	6	6	6	0	3.6	1.0	M	Good	Good	Minor and moderate deadwood through crowns. Surveyed from a distance due to high winds.	40+	C2
G11#	Mixed Species: Alder (<i>Alnus glutinosa</i>), Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula Pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>)	14	320	6	6	6	6	0	3.8	1.0	EM	Fair	Fair	Group of mature trees situated offsite. Some trees are ivy clad. No access to base of trees.	40+	B2

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Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G12	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Hazel (<i>Corylus avellana</i>)	14	200	3	3	3	3	0	2.4	1.0	EM	Fair	Fair	Northern side is dominated by Hazel and Ash to the south. Mainstem of Ash not accessible. Dieback present in crown. Ivy clad mainstems.	20+	C2
G13	Mixed Species: Alder (<i>Alnus glutinosa</i>), Ash (<i>Fraxinus excelsior</i>), Hazel (<i>Corylus avellana</i>), Pedunculate Oak (<i>Quercus robur</i>), Sycamore (<i>Acer pseudoplatanus</i>)	12	150	3	3	3	3	0	1.8	1.0	SM	Fair	Good		40+	C2
G14#	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Cherry sp. (<i>Prunus</i> sp.), Goat Willow (<i>Salix caprea</i>), Lawson Cypress (<i>Chamaecyparis lawsoniana</i>), Leyland Cypress (<i>Cupressocyparis x leylandii</i>), Sycamore (<i>Acer pseudoplatanus</i>)	14	175	4	4	4	4	5	2.1	1.0	SM	Fair	Fair	Group situated in steep bank and next to roadside. Ash have dieback and some mainstems are ivy clad. Limited access to assess trees due to terrain and high winds.	20+	C2
G15	Common Lime (<i>Tilia x europaea</i>)	10	200	4	4	4	4	2	2.4	1.0	SM	Fair	Fair	Small group of Ash, thinning crowns in the north of group.	20+	C2
G16#	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Hawthorn (<i>Crataegus monogyna</i>), Hybrid Black-poplar (<i>Populus nigra x canadensis</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>)	12	300	4	4	4	4	0	3.6	1.0	EM	Good	Good	Group lining edge of river. Situated on steep bank. Limited access due to high winds.	40+	B2

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Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G17	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Hawthorn (<i>Crataegus monogyna</i>), Hybrid Black-poplar (<i>Populus nigra x canadensis</i>), Pedunculate Oak (<i>Quercus robur</i>), Sycamore (<i>Acer pseudoplatanus</i>)	12	250	4	4	4	4	0	3.0	1.0	EM	Fair	Fair	Larger trees situated outside of blue line boundary. Self seeded silver birch and butterfly bushes. A stand of Japanese knotweed was identified close the the bridge.	40+	C2
G18	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Grey Willow (<i>Salix cinerea</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>)	6	100	2	2	2	2	0	1.2	1.0	Y	Fair	Fair	Mixed species group surrounding pond. No access to group due to pond.	20+	C2
G19	Silver Birch (<i>Betula pendula</i>)	3	50	1	1	1	1	0	0.6	1.0	Y	Fair	Fair	Self seeded group of willow, birch and butterfly bush situated in hard standing.	10+	C2
G20	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	5	100	2	2	2	2	0	1.2	1.0	SM	Fair	Fair	Self seeded group of willow, birch and butterfly bush situated in hard standing.	20+	C2
G21	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	4	75	1	1	1	1	0	0.9	1.0	Y	Fair	Fair	Self seeded group of willow, birch and butterfly bush situated in hard standing.	20+	C2
G22	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	3	75	1	1	1	1	0	0.9	1.0	Y	Fair	Fair	-	20+	C2
G23	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	4	100	2	2	2	2	0	1.2	1.0	SM	Fair	Fair	Self seeded group of willow, birch and butterfly bush situated in hard standing. No access to western half of group due to heras fencing.	10+	C2

Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G24	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>)	4	75	2	2	2	2	0	0.9	1.0	Y	Fair	Fair	Self seeded group of willow, birch, butterfly bush and sycamore situated in hard standing.	40+	C2
G25	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	5	100	2	2	2	2	0	1.2	1.0	SM	Fair	Fair	Self seeded group, group is situated in three tiers cascading south.	20+	C2
G26	Silver Birch (<i>Betula pendula</i>)	3	75	1	1	1	1	0	0.9	1.0	Y	Fair	Fair	Self seeded situated in hardstanding.	10+	C2
G27	Silver Birch (<i>Betula pendula</i>)	3	75	1	1	1	1	0	0.9	1.0	Y	Fair	Fair	Self seeded group.	10+	C2
G28	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	3	50	1	1	1	1	0	0.6	1.0	Y	Fair	Fair	Self seeded surrounding goat willow.	10+	C2
G29	Mixed Species: Ash (<i>Fraxinus excelsior</i>), Beech (<i>Fagus sylvatica</i>), Guilder rose (<i>Viburnum opulus</i>), Hawthorn (<i>Crataegus monogyna</i>), Hazel (<i>Corylus avellana</i>), Leyland Cypress (<i>Cupressocyparis x leylandii</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>)	12	400	4	4	4	4	0	4.8	1.0	M	Good	Fair	Mature group surrounding pond.	40+	B2
G30	Mixed Species: Goat Willow (<i>Salix caprea</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>)	4	100	2	2	2	2	0	1.2	1.0	Y	Fair	Fair	Self seeded group.	20+	C2
G31	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	4	75	2	2	2	2	0	0.9	1.0	Y	Good	Good	Self seeded group	10+	C2

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Tree ID	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				Height of crown clearance (m)	RPA Radius (m)	RPA (m ²) (T) / RPA Offset (m) (G, H, W)	Age	Physiological condition	Structural condition	Comments	Estimated remaining contribution (years)	Category grading
				N	E	S	W									
G32	Silver Birch (<i>Betula pendula</i>)	4	100	2	2	2	2	0	1.2	1.0	Y	Fair	Fair	Self seeded group.	10+	C2
G33	Mixed Species: Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula pendula</i>)	3	75	1	1	1	1	0	0.9	1.0	Y	Fair	Fair	Self seeded group.	10+	C2
G34	Silver Birch (<i>Betula pendula</i>)	3	75	2	2	2	2	0	0.9	1.0	Y	Fair	Fair	Self seeded group.	20+	C2
H1	Mixed Species: Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>)	2	75	1	1	1	1	0	0.9	1.0	M	Good	Good	Maintained church hedge.	40+	C3

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.	<ul style="list-style-type: none"> 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.

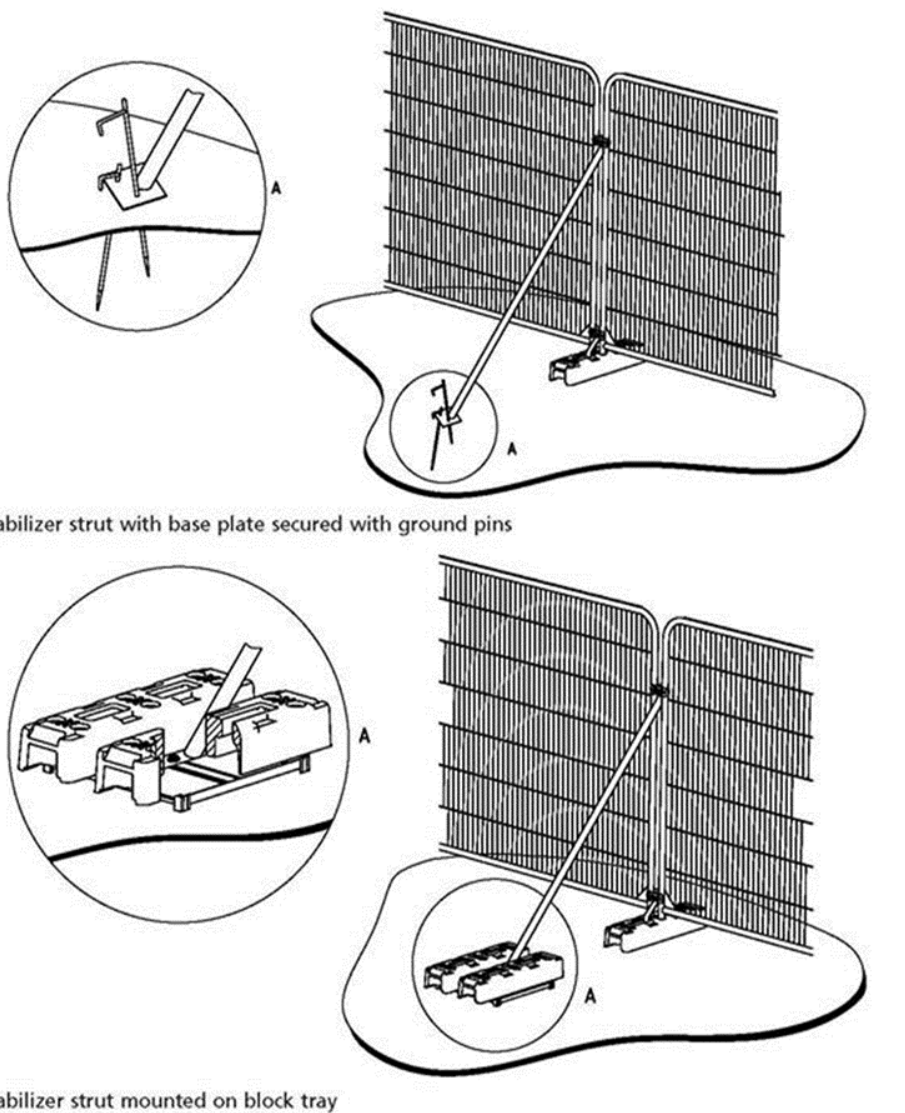


Figure C1 Tree protection fencing specification (extract from BS 5837: 2012)

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





APPENDIX D. Photographs

Tree No.	Description	Photograph
T1	<p>Veteran Ash (<i>Fraxinus excelsior</i>)</p> <p>Northern main stem hollow from 1.5m up, second upright is also hollow from 1.5m. Some epicormic growth on main limbs. Dieback present. Deadwood throughout crown. Limb tearouts present throughout crown. Evidence of old <i>Inonidus hispidus</i> brackets at base.</p>	
T2	<p>Goat willow (<i>Salix caprea</i>)</p>	

Tree No.	Description	Photograph
T3	Pedunculate oak (<i>Quercus robur</i>)	 A photograph showing a paved road with double yellow lines. A utility pole stands on the right side of the road. In the background, there is a large, leafless tree and a hillside covered in greenery under a cloudy sky.
G1	Mixed species group comprising: Lawson Cypress (<i>Chamaecyparis lawsoniana</i>), Leyland Cypress (<i>Cupressocyparis x leylandii</i>), Silver Birch (<i>Betula pendula</i>)	 A photograph of a dense group of evergreen trees, including cypresses and birches, behind a metal fence. The sky is overcast.

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Tree No.	Description	Photograph
G6	Mixed species group comprising: Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Hawthorn (<i>Crataegus monogyna</i>), Pedunculate Oak (<i>Quercus robur</i>), Silver Birch (<i>Betula pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>), Wild Cherry (<i>Prunus avium</i>)	 A photograph showing a dense thicket of trees and shrubs along the edge of a paved road. The trees are mostly bare, suggesting a late autumn or winter setting. The road is dark and appears to be asphalt.
G11	Mixed species group comprising: Alder (<i>Alnus glutinosa</i>), Ash (<i>Fraxinus excelsior</i>), Goat Willow (<i>Salix caprea</i>), Silver Birch (<i>Betula Pendula</i>), Sycamore (<i>Acer pseudoplatanus</i>)	 A photograph showing a mixed group of trees in a field. The trees are mostly bare, and the ground in the foreground is covered with low-lying vegetation and some fallen leaves. The sky is overcast.

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