Treework Environmental Practice

Arboricultural Impact Assessment

New Henry Street, Bristol

Report Reference Number: 231212-2.1-U1-15PEB-AIA-PM

On behalf of:

Dominus Bristol Ltd
1 London Street
Reading RG1 4PN

December 2023

Document Control Sheet

Project Name: **New Henry Street, Bristol**

Report Ref: **231212-2.1-U1-15PEB-AIA-PM**

Report Title: **Arboricultural Impact Assessment**

	Name	Position	Date
Prepared by:	Paul Muir	Principal Arboricultural Consultant	29th March 2023
Surveyed by:	PaulMuir	Principal Arboricultural Consultant	14th March 2023

Revision	Date	Description	Prepared by
1.0	29th March 2023	Draft	PM
1.1	31st March 2023	Minor amendments	PM
2.0	12th December 2023	New application	PM
2.1	12th December 2023	Client name changed	PM

Table of Contents

Executive Summary

- This report provides an assessment of the impact of the development proposals at New Henry Street, Bristol upon on-site trees and relevant off-site trees, and makes recommendations for mitigating any negative impacts. It is suitable for submission in support of a planning application.

- The design has been developed with careful consideration to minimise the impact on retained trees and to enhance tree cover across the site.

- 9 trees/shrubs and 3 groups of trees were included in the tree survey. Of these, 3 trees and 1 group were outside the site boundary. The data for each is presented within the Tree Schedule at Appendix A.

- 6 trees/shrubs 2 groups and part of 1 group have been identified for removal to facilitate the development, of which, 1 is category C, and 8 are category U.

- No trees or shrubs are to be retained within the site.

- Protection measures will be required for 2 trees and 1 group of trees outside the site adjacent to a working zone required for the construction of steps and repairs to a retaining stone wall, once the requirements are determined. These measures are outlined in Section 3.4 of this report and are illustrated on the Tree Protection Plan at Appendix B. The measures will need to be detailed in an Arboricultural Method Statement.

- One group of trees outside the site will require remedial tree work to create a working zone. These works are detailed in the Tree Schedule at Appendix A.

- An online search has confirmed that no Tree Preservation Orders or Conservation Areas are present on the site.

1 Introduction

1.1 Brief and Context

1.1.1 Treework Environmental Practice was instructed by Dominus Real Estate on 2nd March 2023 to provide an Arboricultural Impact Assessment, in accordance with British Standard BS5837: 2012 Trees in *Relation to Design, Demolition and Construction – Recommendations*, of the effect of development proposals on trees at New Henry Street, Bristol.

1.1.2 This report and the accompanying Tree Protection Plan have been updated with a revised site layout design and landscape proposal to accompany a new planning application with revisions to the design incorporated to respond to comments from the Local Planning Authority. There are no additional impacts on trees as a result of the design revision.

1.1.3 Trees are a material consideration for a Local Planning Authority when determining planning applications, whether or not they are afforded the statutory protection of a Tree Preservation Order or Conservation Area. British Standard BS 5837:2012 *Trees in Relation to Design, Demolition and Construction* sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and new developments. The Standard recommends a sequence of activities that starts in the initial feasibility and design phase (RIBA Stage 2 'Concept Design') with a survey to qualify and quantify the trees on site and establish the arboricultural constraints to development (above- and below-ground) to inform the design in an iterative process, and continues with an assessment of the arboricultural impacts of the final design and measures to mitigate such impacts should they be negative. Detailed technical specifications for mitigation and protection measures are devised in the design phase that follows (RIBA Stage 3 and 4 'Spatial Coordination' and 'Technical Design'), and the sequence ends with the 'Handover' and 'Use' phases (RIBA Stages 6 and 7), with the implementation of those measures once planning permission is granted, guided by Arboricultural Method Statements (RIBA Stage 4 and 5, 'Technical Design' and 'Manufacturing and Construction) and professional guidance where appropriate.

1.1.4 This Arboricultural Impact Assessment (AIA) reports on the direct and indirect impacts of the proposed development on trees in terms of both the buildability of the proposals and the long-term impact of the finished scheme, and where necessary presents mitigation for these impacts.

1.2 Purpose of this Report

1.2.1 This AIA, and accompanying Tree Schedule and Tree Protection Plan, is provided to support a planning application for the proposed development. It sets out the arboricultural impacts of the proposals using the following considerations as a framework:

- Trees to be removed and trees to be retained.
- Remedial tree work to retained trees to allow development and ensure retained trees will form a harmoniously integrated component of the proposed development.
- Suitable measures to protect retained trees.
- Special construction or engineering measures required to enable trees to be harmoniously integrated into the proposed development.

1.3 The Development

1.3.1 The proposed development is for the:

Demolition of existing structures and redevelopment of the site for two buildings comprising light industrial use (Class E(g)(iii)); flexible retail/light industrial use (Class E(a) / Class E(g)(iii)); flexible commercial use (Class E(b-g)); student accommodation use with ancillary community space (Sui Generis); public realm works and landscaping; cycle parking; ancillary plant and servicing; and other associated works.

1.3.2 The following documents have been provided to Treework Environmental Practice:

Document Title	Document/Drawing number	Originator
Topographical Survey	22/281/100/Overview	Maltby Surveys Limited (November 2022)
Proposed Layout	651-CTF-XX-00-DR-L-1000-04 General Arrangement	Churchman Thornhill Finch (16th November 2023)
Tree Constraints Plan	230331-1.3-U1-15PEB-TCP-MM	Treework Environmental Practice

2 Existing Tree Population and Constraints

2.1.1 A survey covering trees on site and trees on adjacent land close enough to be affected by the development was undertaken on 14th March 2023. The full survey results are presented in the Tree Schedule at Appendix A.

2.1.2 The survey was undertaken based on trees plotted using an outline base map as reference in Treework Environmental Practice's specialist tree management software – MyTrees. The basemap contained a topographical survey of the trees. Trees were plotted on the basemap using the topographical survey as reference.

2.1.3 The proposed development is located on a brownfield site containing warehouse,

industrial/factory units with concrete hardstanding across the majority of the site. Trees recorded within the site are limited to the site periphery and comprise only naturally regenerated buddleia, sycamore and elder that have developed adjacent to the boundary steel palisade fence, on top of a retaining stone boundary wall and in an unused, inaccessible area of the site behind an industrial unit. All of the natural regeneration within the site has been classified as category U, being inappropriately located and in locations where there is the potential to cause structural damage or nuisance.

2.1.4 Trees outside the site boundary have also been recorded within the tree population growing adjacent to the cycle path to the north of the site. These are young category C trees and a group of naturally regenerated buddleia. They are implicated in the proposals only because a working zone will be required to create steps from the site through the existing retaining wall, and to allow for repairs to the retaining wall to be carried out.

2.1.5 BS 5837:2012 recommends classifying trees into four quality and value categories to determine their relative retentive worth. A summary of the relative retentive worth of the trees on site (and adjacent to site) as recorded during the tree survey and expressed by their categories is given in Table 1. Appendix A explains the BS 5837:2012 tree categorisation process.

Table 1: Trees/Groups in each Retention Category

BS Category	No. of Trees (T)	No. of Groups (G)	No. of Hedges (H)	No. of Woods (W)	Total
A					
B					
C	3	1			4
U	6	2			8
Total					**12**

2.1.6 Trees present constraints to development both above and below ground. The above ground constraints comprise the physical extent of tree crowns. The below ground constraints comprise the roots, and are expressed in terms of the root protection area (RPA), which is the minimum rooting area that a tree needs to sustain itself in reasonable health. These constraints, as established by the tree-survey, inform this assessment of the impact of the development proposals.

2.1.7 The full results of the tree survey on which this report is based are given in the Tree Schedule at Appendix A, and the above- and below-ground constraints are illustrated on the Tree Protection Plan at Appendix B. Each tree (T), tree group (G), woodland, (W) and hedge (H) has been allocated an individual number to which it is referred in this report and all associated documents. The survey method and limitations are set out in Appendix E.

2.1.8 A search via the Bristol City Council online planning map carried out on 14th March 2023 has confirmed that no Tree Preservation Orders (TPOs) or Conservation Area designations are present on the site.

3 Arboricultural Impact of the Proposals

3.1 Tree Removal and Retention

3.1.1 The row of trees/shrubs (T1-S6) adjacent to the steel palisade fence line, along the eastern boundary and the groups of buddleia (G7) and buddleia and elder (G12) will be removed due to the damage being caused to the fence, and retaining stone wall. No replacements are required to compensate for these removals under the Bristol Tree Replacement Policy as all trees being removed have been assessed to be category U.

3.1.2 Buddleia growing from the northern face of the retaining stone wall within G11 will also be removed to allow for the construction of steps from the site to the cycle path and to allow for the repair and maintenance of the retaining stone wall.

Photograph 1: T8, T9 and G11 from left to right, viewed from the north-east.

3.1.3 No trees will remain within the site boundary and no tree protection measures will be required within the site.

Table 2 – Tree Features for Removal by BS Category

Category A Trees/Groups/Hedges/ Woodland	Category B Trees/Groups/Hedges/ Woodland	Category C Trees/Groups/Hedges/ Woodland	Category U Trees/Groups/Hedges/ Woodland
			1 tree, 5 shrubs and 3 groups
			T1. S2-S6, G7, G11(part) and G12

3.2 Facilitative Tree Works

3.2.1 The natural regeneration around the site boundary and growing from the stone wall will be removed prior to the commencement of the construction phase of the development.

3.2.2 The remaining buddleia in group G11 growing within the verge (rather than from the stone wall), adjacent to the proposed steps will be trimmed back or coppiced to create an appropriate working zone to allow the construction of the steps and to allow the repair and maintenance of the retaining stone wall. The buddleia within G11 are not within the site boundary and ownership is with a third party. Permission will be required from the land owner to prune or coppice these shrubs.

3.3 Tree Protection

3.3.1 ***Root Protection Areas and Construction Exclusion Zones***
The retained trees outside the site should be protected during development by establishing a Construction Exclusion Zone (CEZ) around their Root Protection Areas (RPAs). RPAs are a layout design tool, indicating the minimum area around a tree deemed to contain sufficient roots and soil to maintain the tree's viability. RPAs should be treated as a precautionary area within which activities such as ground compaction, excavation, the storing of materials, ground level changes and other construction activity are likely to cause damage to trees and should therefore be excluded. This CEZ can be achieved by the erection of barriers at the locations shown on the Tree Protection Plan at Appendix B. Tree protection barriers must be installed before any demolition or construction works start, and, unless approved by the Local Planning Authority or by an arboriculturist approved by them, should remain in place until all construction activity has been completed.

Appendix A

Tree Schedule

New Henry Street, Bristol
Tree Survey BS5837-2012

Treework Environmental Practice

Tree/Group Reference	Tree Count	Species	Height (m)	Stem Count	Stem Diameter (cm)	Crown Radius (m)	Crown Clearance Height (m)	Lowest Branch Height (m)	Life Stage	Physiological Condition	Observations and Recommendations	RPA (m^2)	RPR (m)	Remaining Contribution (Years)	Retention Category	Retention Sub-category
T1	1	*Acer pseudoplatanus* Sycamore	4.5	4	10	N 1.5 E 1.5 S 1.5 W 1.5	2.5	2.0	Young	Fair	Bark wound - Mechanical. Inappropriate species / location. Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. Wall or fence within crown spread. **Fell - Ground level.**			40+	U	
S2	1	*Buddleja sp.* Buddleja	5.0	6	9	N 2.0 E 2.0 S 2.0 W 2.0	0.0	0.0	Young	Good	Inappropriate species / location. Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. Wall or fence within crown spread. **Fell - Ground level.**			40+	U	
S3	1	*Buddleja sp.* Buddleja	2.0	3	5	N 1.5 E 1.5 S 1.5 W 1.5	0.0	0.0	Young	Good	Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. **Fell - Ground level.**			40+	U	
S4	1	*Buddleja sp.* Buddleja	3.0	3	5	N 1.5 E 1.5 S 1.5 W 1.5	0.0	0.0	Young	Good	Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. **Fell - Ground level.**			40+	U	
S5	1	*Sambucus nigra* Elder	4.0	4	6	N 1.5 E 1.5 S 1.5 W 1.5	0.0	0.0	Young	Good	Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. **Fell - Ground level.**			40+	U	

New Henry Street, Bristol
Tree Survey BS5837-2012

Treework Environmental Practice

Tree/Group Reference	Tree Count	Species	Height (m)	Stem Count	Stem Diameter (cm)	Crown Radius (m)	Crown Clearance Height (m)	Lowest Branch Height (m)	Life Stage	Physiological Condition	Observations and Recommendations	RPA (m^2)	RPR (m)	Remaining Contribution (Years)	Retention Category	Retention Sub-category
S6	1	*Buddleja sp.* Buddleja	3.0	3	5	N E S W 1.0 1.0 1.0 1.0	0.0	0.0	Young	Good	Multi-stemmed. Natural regeneration. Rubbing on/growing through steel palisade fence. **Fell - Ground level.**			40+	U	
G7	3	*Buddleja sp.* Buddleja	3.0	5	6	N E S W 1.5 1.5 1.5 1.5	3.0	0.0	Young	Good	Inappropriate species / location. Multi-stemmed. Natural regeneration. Natural regeneration growing on top of stone wall. **Fell - Ground level.**			40+	U	
T8	1	*Acer platanoides* Norway Maple	5.0	1	5	N E S W 1.2 1.2 1.2 1.2	2.5	2.5	Young	Good	Form - Good crown structure. Natural regeneration. Tree located outside site boundary.	1.1	0.6	40+	C	1
T9	1	*Acer campestre* Field Maple	6.0	1	20	N E S W 2.5 2.5 2.5 2.5	3.0	2.0	Young	Good	Form - Good crown structure. Rubbing limbs. Young planted tree / trees. Tree located outside site boundary.	18.1	2.4	40+	C	1
T10	1	*Alnus sp.* Alder sp.	7.0	1	17	NW NE SE SW 2.0 2.0 3.0 2.0	1.0	1.0	Young	Good	Epicormic growth - Bole / principal stems. Young planted tree / trees. Tree located outside site boundary.	13.1	2.0	40+	C	1

New Henry Street, Bristol
Tree Survey BS5837-2012

Treework Environmental Practice

Tree/Group Reference	Tree Count	Species	Height (m)	Stem Count	Stem Diameter (cm)	Crown Radius (m)	Crown Clearance Height (m)	Lowest Branch Height (m)	Life Stage	Physiological Condition	Observations and Recommendations	RPA (m^2)	RPR (m)	Remaining Contribution (Years)	Retention Category	Retention Sub-category
G11	3	*Buddleja sp.* Buddleja	3.5	5	6	N E S W 2.0 2.0 2.0 2.0	0.0	0.0	Young	Good	Inappropriate species / location. Multi-stemmed. Natural regeneration. Natural regeneration growing adjacent to cycle lane and from stone wall. **Prune from adjacent structure.** Trim back buddleia to allow work to be carried out on stone retaining wall. It may be necessary to coppice one or two of the buddleia growing in the verge to create a working zone. **Fell - Ground level.** Remove trees growing from the northern side of the stone retaining wall.	2.0	0.8	40+	C	1
G12	5 3	*Sambucus nigra* Elder *Buddleja sp.* Buddleja	4.0	5	13	N E S W 2.5 2.5 2.5 2.5	0.0	0.0	Semi Mature	Good	Inappropriate species / location. Multi-stemmed. Natural regeneration. Natural regeneration growing adjacent to buildings and from side of stone wall. **Fell - Ground level.**			40+	U	

Tree Schedule Key

Treework Environmental Practice

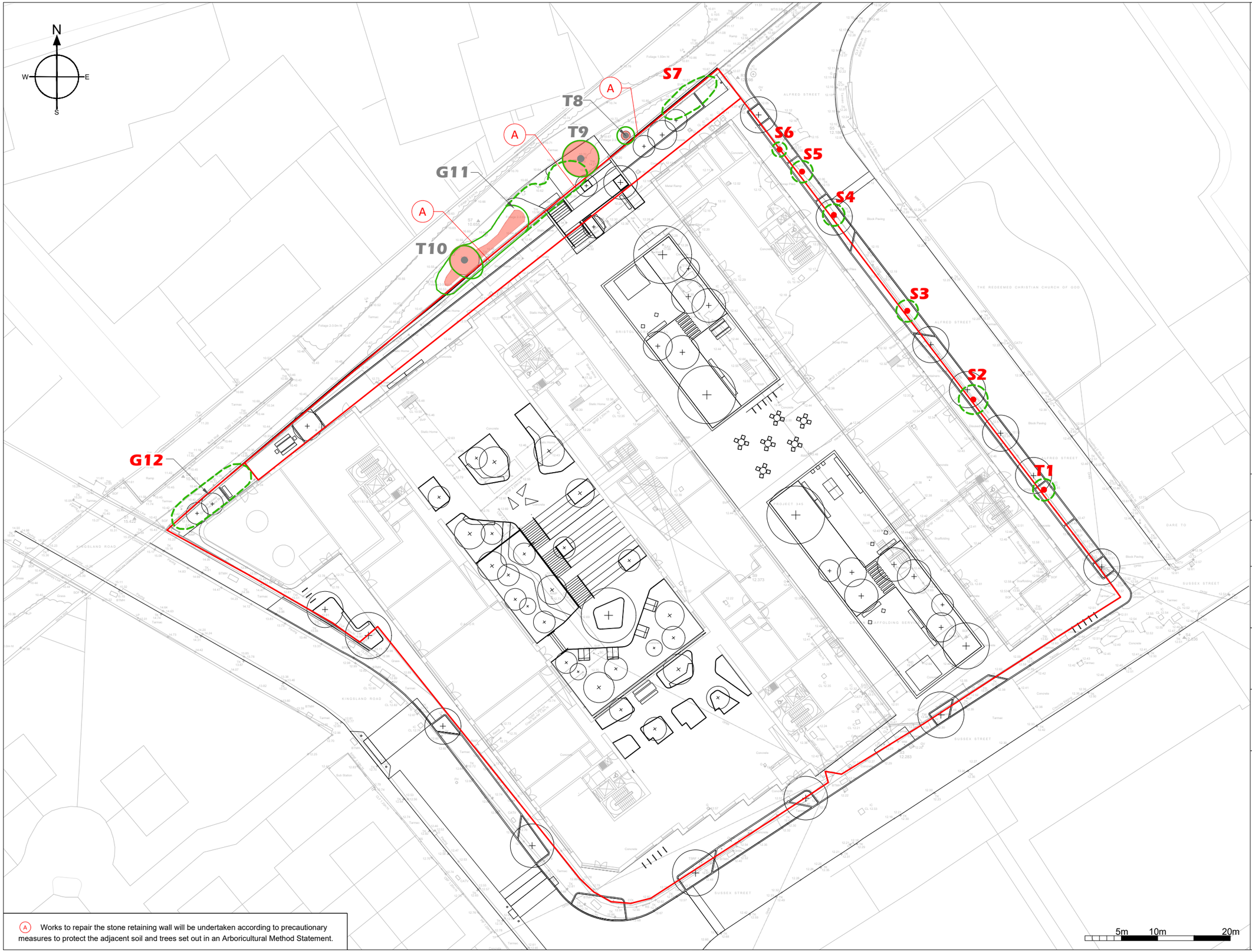
Tree/Group Reference	Reference number for individual trees or groups of trees, prefixed by T (Tree), G (Group), W (Woodland), H (Hedge) or S (Shrub) to indicate the type of feature.
Tree Count	Number of trees of a particular species recorded within a group feature, with the default value of 1 for single trees.
Species	Scientific name followed by common name (where available).
Height (m)	Tree height to the nearest metre, either measured with a device or estimated. Tree height for group records refers to the estimated average height of trees within the group (unrepresentative trees may be excluded from this estimate).
Stem Count	Number of stems. Stem count indicates whether the tree is single-stemmed or multi-stemmed and informs the RPA calculation.
Stem Diameter (cm)	Stem diameter, measured at 1.5m above ground level in accordance with Annex C of BS5837:2012. Diameters of multi-stemmed trees are presented as a combined stem diameter calculated in accordance with the formulae in Section 4.6.1 of BS5837:2012. Stem diameter for group records refers to the estimated average stem diameter of trees within the group (unrepresentative trees may be excluded from this estimate).
Crown Radius (m)	Distance from stem position to crown periphery in either the four cardinal or four ordinal directions, estimated to the nearest half metre. Crown spreads for group records refer to the estimated average spreads of trees within the group (unrepresentative trees may be excluded from this estimate).
Crown Clearance Height (m)	Distance between the ground and the lowest point of the crown periphery, estimated to the nearest half metre.
Lowest Branch Height (m)	Height of the lowest branch, the removal of which is considered likely to have a significant negative effect on the tree in terms of physiology or in terms of the size of wound created.
Life Stage	Young, Semi-mature, Early Mature, Mature, Late Mature, Ancient or Veteran.
Physiological Condition	Good, Fair, Poor, Dead.
Observations	General description of the tree or tree group, including basic features and morphology, structural and physiological condition, growing conditions and surroundings.
Recommendations	Management recommendations for tree works to address immediate unacceptable risks, or to facilitate development proposals.
RPA (m^2)	Minimum area around a tree deemed to contain sufficient roots and rooting soil volume to maintain the tree's viability, in which the protection of roots and soil structure is treated as a priority. Calculated from the stem diameter according to the formulae in BS5837:2012. RPA for group records is based on the estimated average stem diameter of trees within the group (unrepresentative trees may be excluded from this estimate).
RPR (m)	Radius of the RPA, in metres, when this is plotted as a circle around the tree stem.
Remaining Contribution (years)	Estimated number of years for which the tree will continue to make a positive contribution to the site, banded as < 10, 10-20, 20-40, 40 +.
Retention Category	Quality and value category (**A**, **B**, **C** or **U**) as defined in Table 1 of BS5837: 2012 (reproduced below), where **A** = high quality and value; **B** = moderate quality and value; **C** = low quality and value and **U** = tree identified for removal due to poor condition regardless of development proposals.
Retention Sub-category	One or more sub-categories (1-3) as defined in Table 1 of BS5837: 2012 (reproduced below), assigned for Categories **A**, **B** or **C** where 1 = arboricultural qualities, 2 = landscape qualities and 3 = conservation and cultural value.

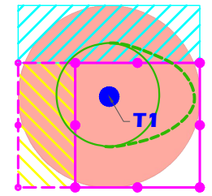
Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			RGB 127-000-000
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	RGB 000-255-000
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing 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 value	RGB 000-000-255
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 150 mm	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 collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	RGB 091-091-091

Appendix B

Tree Protection Plan





T1 Tree or Group Reference Number	Tree Protection Fencing
Tree Stem Position A Category Tree	Initial Tree Protection Fencing
Tree Stem Position B Category Tree	Ground Protection
Tree Stem Position C Category Tree	Special Engineering /Supervised Excavations
Tree Stem Position U Category Tree	Construction Exclusion Zone
Tree Crown	Pruning/Tree Removal
Root Protection Area	Site Boundary

Date:
December 2023

Scale:
1:500 @ A3

Project Name:
New Henry Street, Bristol

Drawing Title:
Tree Protection Plan

Drawing Number:
231212-2.1-U1-15PEB-TPP-NC

(A) Works to repair the stone retaining wall will be undertaken according to precautionary measures to protect the adjacent soil and trees set out in an Arboricultural Method Statement.

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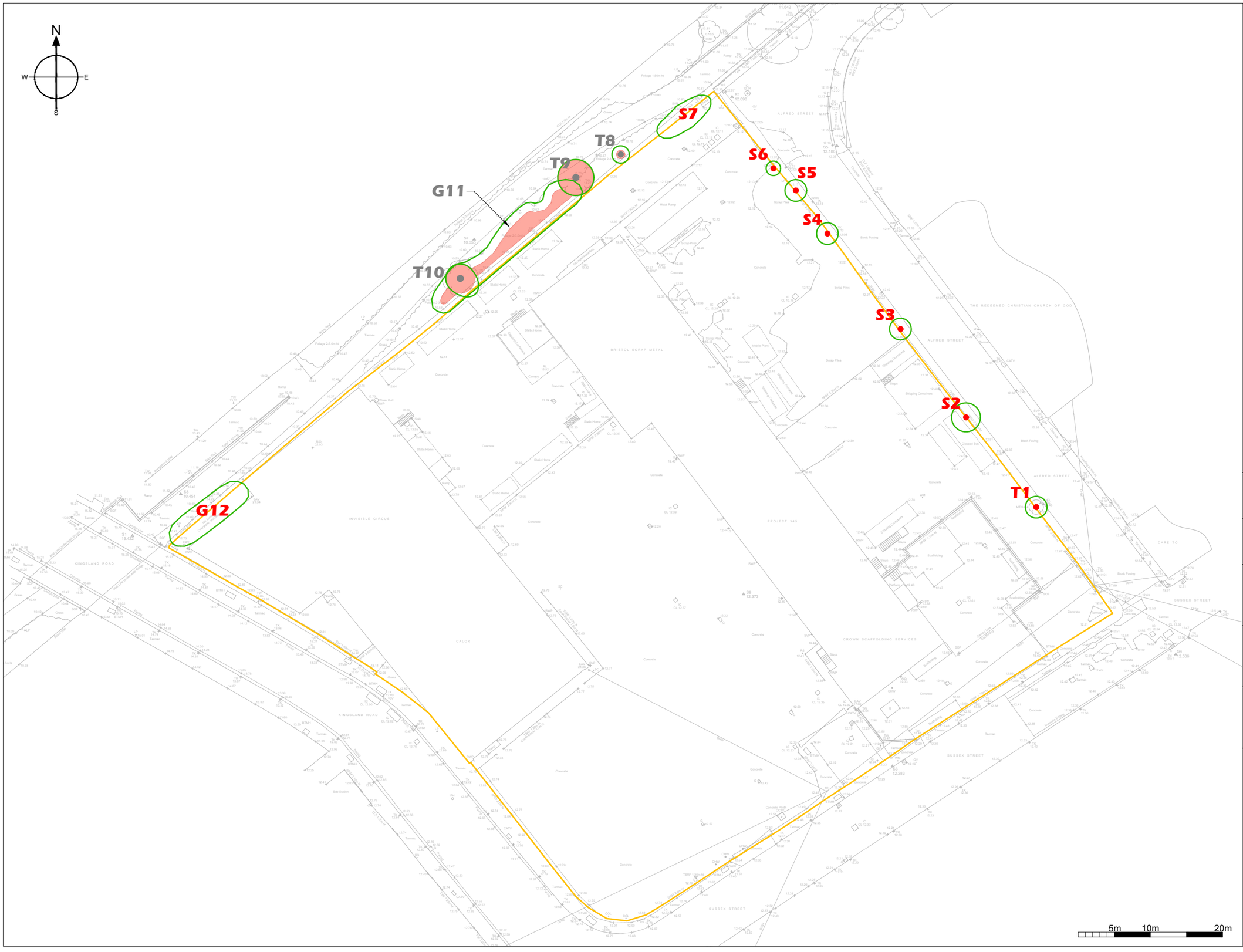
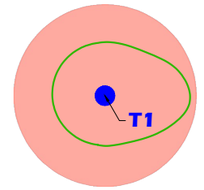
Appendix C

Tree Constraints Plan





T1 Tree or Group Reference Number	Tree Stem Position A Category Tree
Tree Crown	Tree Stem Position B Category Tree
Root Protection Area	Tree Stem Position C Category Tree
Tree Survey Boundary	Tree Stem Position U Category Tree

Date:
March 2023

Scale:
1:500 @ A3

Project Name:
New Henry Street, Bristol

Drawing Title:
Tree Constraints Plan

Drawing Number:
230331-1.3-U1-15PEB-TCP-NC

Treework Environmental Practice

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Appendix D

Tree Protection Specifications

Technical Measures to Prevent Tree Damage

Tree Pruning

Tree pruning will be carried out where the design and/or planned site operations encroach into the crowns of trees and where these encroachments can be accommodated through facilitation pruning without significantly reducing the landscape value and/or viability of the tree.

Tree pruning operations will:

- be specified by the arboricultural consultant
- be in accordance with current best practice
- be carried out by a suitably experienced and qualified arborist

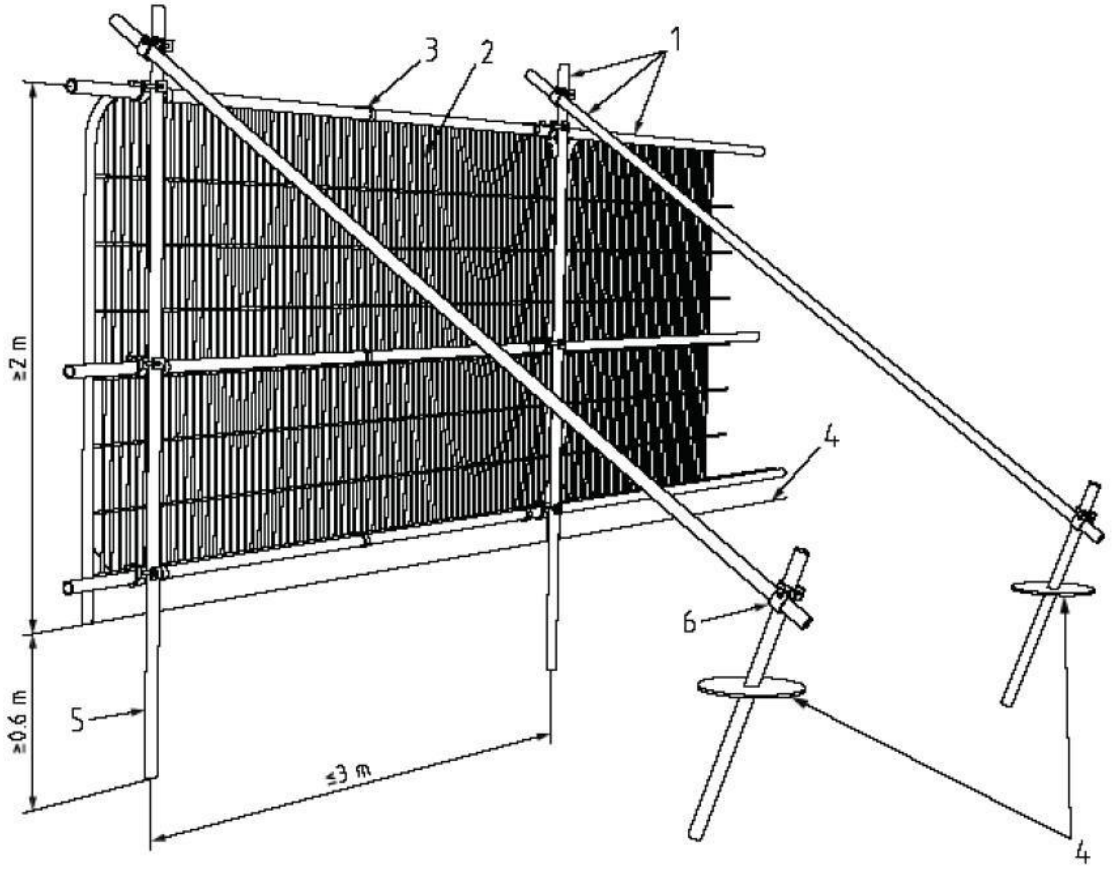
Tree Protection Fencing

Tree protection fencing will be located at the edge of the Construction Exclusion Zone (CEZ) and will be suitably robust to provide sufficient protection for trees. The performance requirement for fencing will be determined by the type of activity that will take place in the area around the CEZ.

Typically the performance requirement for the Tree Protection Fencing will be:

- Tree Protection Fencing will be installed prior to commencement of activity on the site.
- Tree Protection Fencing will only be removed once all works associated with the development have been completed.
- The Tree Protection Fencing will be installed and removed without causing damage to retained trees.
- Installation, removal and, where required, replacement of Tree Protection Fencing will be supervised and signed off by the Arboricultural Consultant.
- The Tree Protection Fencing will be stable and robust (typical construction method, in accordance with BS5837: 2012, see below).
- The area between the Tree Protection Fencing and the tree will be a Construction Exclusion Zone (CEZ)
- Fence panels will be made of mesh (e.g.: Heras fencing) or, if solid, will have 30cm windows cut into enough panels to enable conditions within the CEZ to be viewed.
- The CEZ will be clearly identified (see Construction Exclusion Zone sign example below)

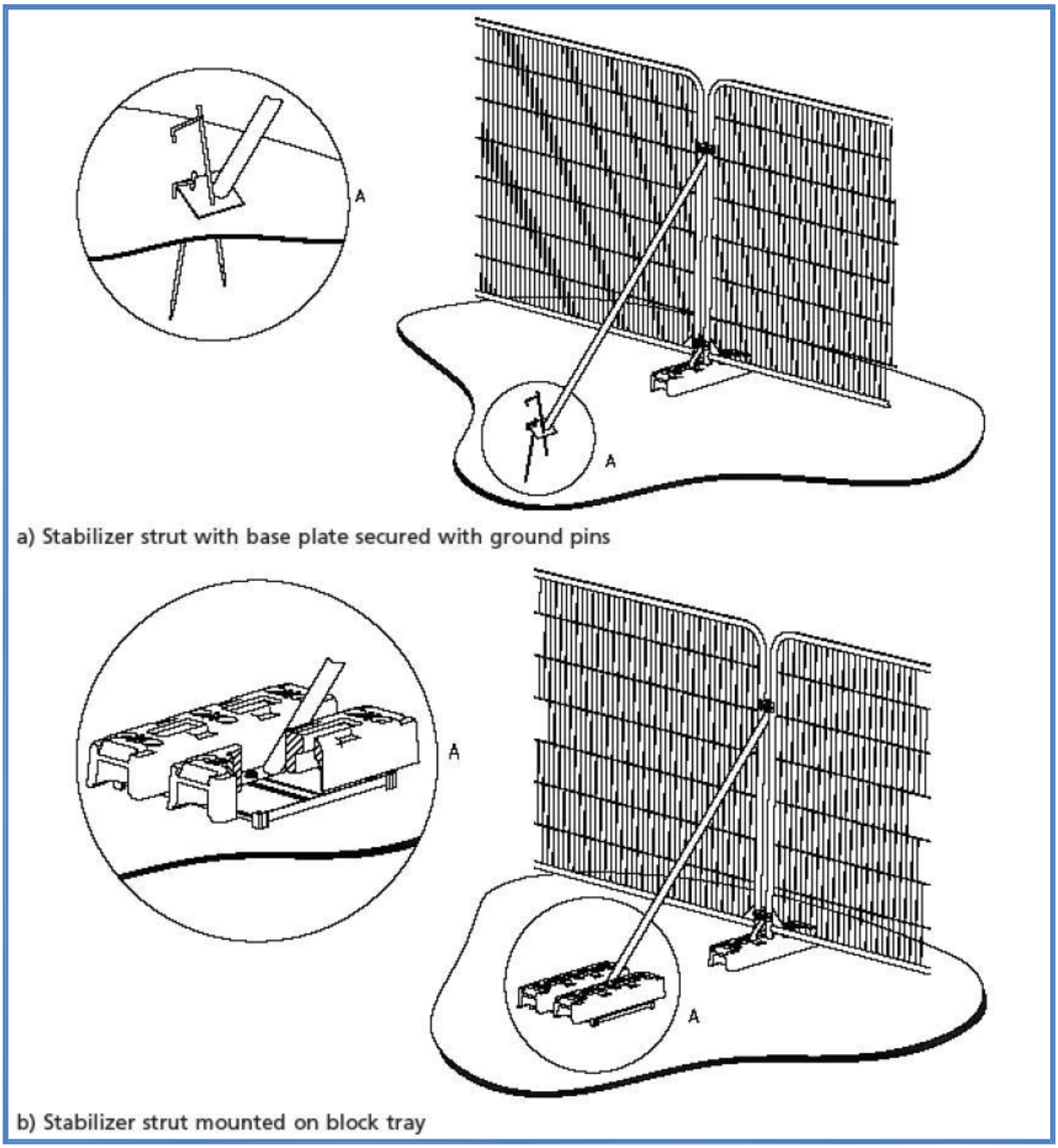
Example Tree Protection Fencing Sign



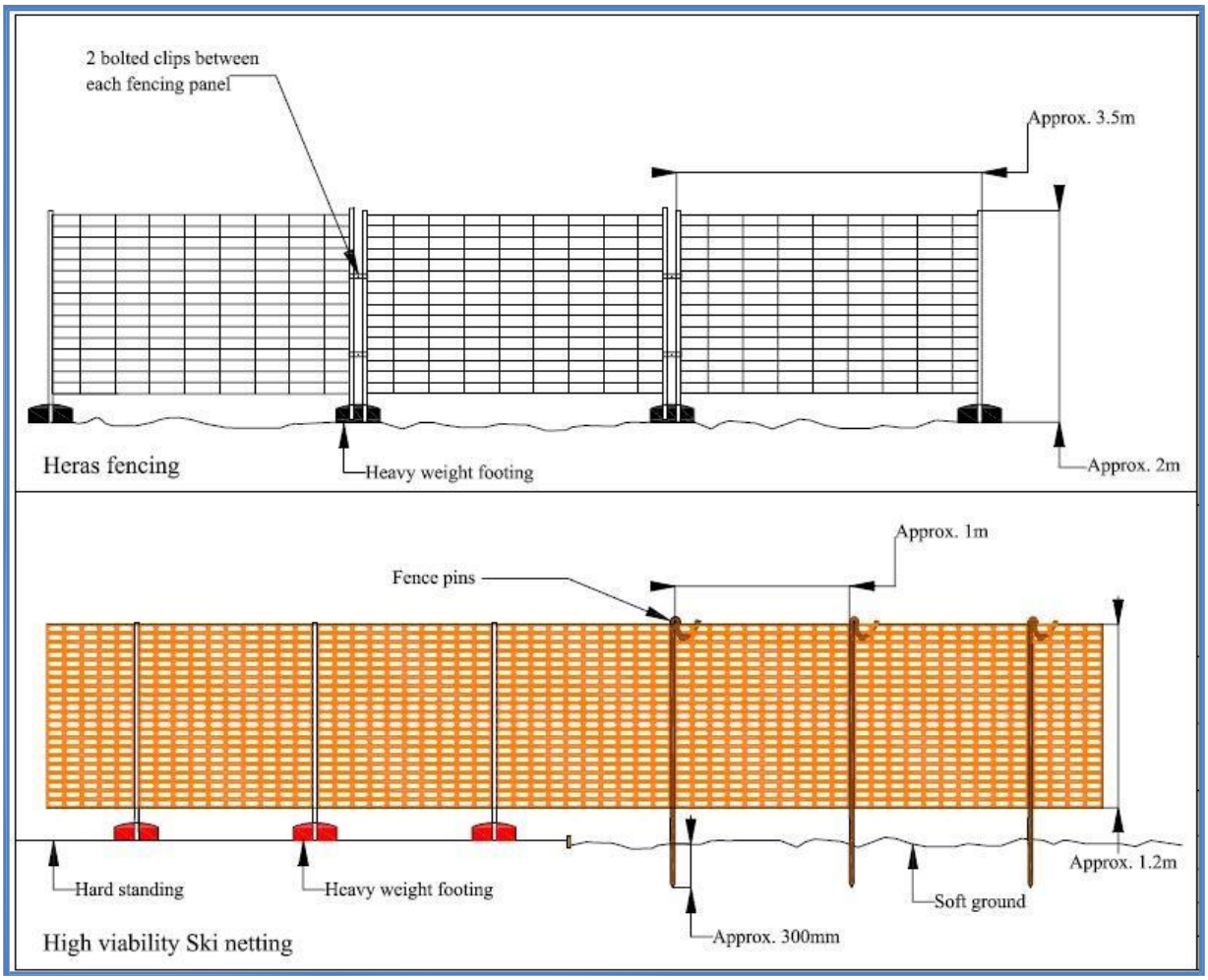
Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

BS5837: 2012 - Figure 2 – Tree Protective Barrier



BS5837: 2012 - Figure 3 – Examples of Above Ground Stabilisation Systems



Examples of specification fencing that may be appropriate for areas of low-intensity activity

No-dig Construction and Special Engineering Measures

No-dig construction methods and special engineering measures will be employed to enable the construction of roads and other built features within the RPAs of trees without damaging tree roots. Installation of built features using no-dig and special engineering measures will meet the following performance criteria:

- Ensure that tree roots are not damaged.
  - *For the roots of the trees to remain undamaged there must be no excavation, soil stripping or site grading within the rooting areas – in other words NO DIGGING.*
- Ensure that soil is not compacted.
- Ensure that no spilled toxic materials seep into the soil.
- Ensure that sufficient rain water reaches tree roots.
- Ensure that gaseous exchange can take place within the soil around tree roots.
- All operations will be supervised and signed off by the Arboricultural Consultant.

Appendix E

Tree Survey Method and Limitations

Treework Environmental Practice

Tree Survey Method and Limitations

Tree Survey Method

1. The tree survey was conducted from ground level aided by the Visual Tree Assessment method (Mattheck and Breloer, 1994) and in accordance with BS5837: 2012.

2. All trees on the site with a stem diameter of over 75 mm (measured at 1.5 m above ground) were included in the survey.

3. Offsite trees within influencing distance of the site (typically those located within a distance of up to 12 times their stem diameter away from the site) were included in the survey.

4. Data collected included:

   - a designated tree number
   - type of feature (trees, group, woodland, hedge)
   - number of trees in group
   - tree species
   - height (metres)
   - number of stems
   - stem diameter (in centimetres, as measured at 1.5 m above ground)
   - crown clearance (height of periphery of crown spread above ground level in metres)
   - height of lowest branch (metres),
   - branch spread (to N, S, E and W)
   - age class
   - physiological condition
   - useful life expectancy
   - structural condition
   - BS5837 retention category (A, B, C or U)
   - site notes (where this has a bearing on the present or future health or structural condition of the tree)
   - preliminary management recommendations.

5. All measurements were made in metric using measuring devices where applicable. Estimated stem diameters (e.g., due to lack of access or dense undergrowth) were recorded as such and are shown in the Tree Schedule in bold (see the key at the end of the Tree Schedule table at Appendix A for an explanation of the measurements and codes presented therein).

6. While the appraisals of the surveyed trees are not tree risk assessments, they nonetheless take into account observed structural defects in drawing conclusions about the trees' retentive worth.

Survey Limitations

1. The survey was a preliminary assessment from ground level and observations were made solely from visual inspection for the purposes of an assessment relevant to planning and development. Only binoculars, trowel, mallet and fine manual metal probe were used to aid tree assessment, where necessary. No invasive or other detailed internal decay detection devices were used in assessing trunk condition.

2. The conclusions relate to conditions found at the time of survey. Any significant alteration to the site that may affect the trees that are present or have a bearing on the planning implications (including level changes, hydrological changes, extreme climatic events or other site works) will require a re-assessment of the trees and the site.

3. This survey is not a tree safety inspection. It is carried out in order to inform the planning process. Where clear and obvious hazards have been observed, these have been addressed in the recommendations (see Appendix A - Tree Schedule). A full assessment of the levels of risk posed by trees would need to consider site use together with tree hazards.

Treework Environmental Practice

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3.3.2 The type of barriers should match the level of activity around the retained trees. Where a high level of construction activity is expected, fencing must be braced to be robust to vehicular impact and to prevent it from being easily repositioned; a specification similar to drawing 3 in BS 5837:2012 will be suitable (reproduced at Appendix D). In areas away from the main construction activity and vehicle movement, it may be appropriate to install a lower specification fencing, examples of which are given at Appendix D.

3.3.3 All protection fencing should carry identifying signs that state its purpose and proscribe its removal until all demolition and construction work is complete. An example sign is given at Appendix D.

3.3.4 Fencing will only be required to protect retained trees outside of the site boundary on the cycle path north of the site. Fencing will need to be specified following discussions with the contractor tasked with repairing the stone wall and building the steps, to determine the extent of the working zone required.

3.4 Special Technical Measures

3.4.1 An Arboricultural Method Statement should be produced before construction of the steps and repair of the retaining stone wall are commenced to guide sensitive works around retained trees outside the site boundary.

3.4.2 Protection measures will involve tree protection fencing in combination with ground protection measures and control of the use and storage of materials required for construction, such as fuels and cement. A scaffold platform at the base of the wall from which to carry out the works is a likely requirement to ensure that soil with the RPA of retained trees is protected from compaction or contamination.

3.5 Additional Precautions

3.5.1 ***Utilities and Services***

No trenching operations are being proposed within the RPA of retained trees T8, T9 and G11, outside the site boundary to the north.

3.5.2 ***Soft Landscaping***

The landscape proposals for the scheme include 55 newly planted trees and shrubs within the site and 12 new street trees to be located in planting pits within the public footpath. This constitutes a significant increase in the number of trees present within and around the site.