Thomson environmental consultants

43&45 Park Road, Watford

Arboricultural Impact Assessment

and

Arboricultural Method Statement

For

Mr and Mrs Dean

Project No: DEA001-001

January 2024

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Project Number	Report No.
DEA001-001	002

Revision No.	Date of Issue	Author	Reviewer	Approver
001	09.01.24	James Baker	Arthur Cullen	Andrew Poynter

Disclaimer:

Contents

1. Summary

1.1.1 Mr and Mrs Dean are proposing the construction of a new driveway, and landscaping to the front and rear within, 43&45 Park Road, Watford (see Figure 1).

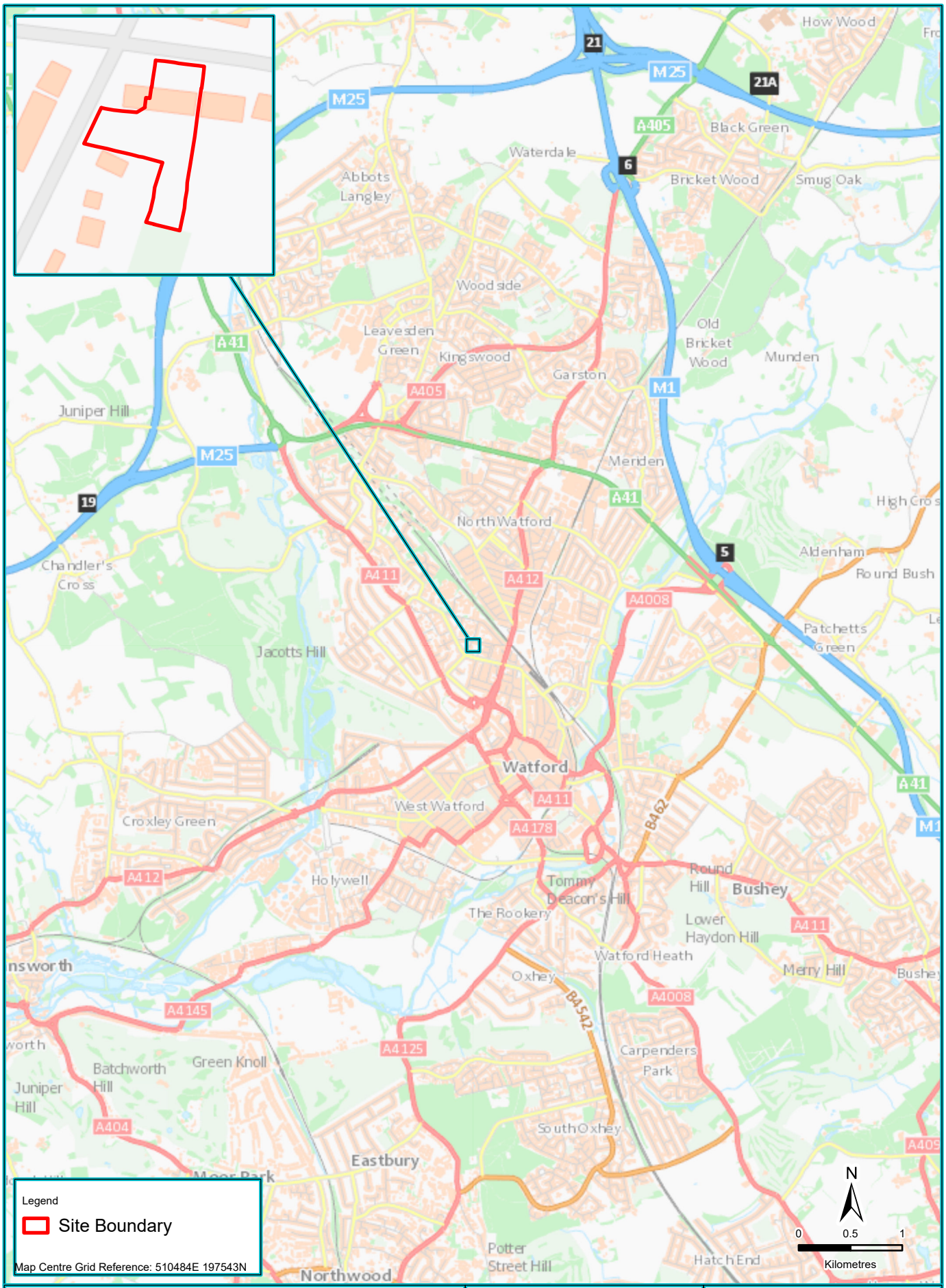
1.1.2 Mr and Mrs Dean commissioned Thomson Environmental Consultants to undertake an arboricultural survey of 25 trees, 3 groups of trees, and 3 Hedges within and adjacent to the site and to produce an Arboricultural Impact Assessment (AIA) and Arboricultural Method Statement (AMS) which discusses the likely impacts of the development proposals on the trees at the site. The arboricultural survey was carried out in accordance with BS5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' (BS5837:2012) on 6th December 2023.

1.1.3 The Tree Survey comprised of 3 Category 'A' individual trees, 8 Category 'B' individual trees, 3 Category 'B' hedges, 13 Category 'C' individual trees, 2 Category 'C' groups of trees, 1 Category 'U' individual trees, and 1 Category 'U' groups of trees.

1.1.4 The driveway and landscaping construction will result in the removal of 6 individual trees, 1 group, of trees and 1 Hedge from the site, comprising of 1 Category 'B' tree, 5 Category 'C' trees, 1 Category 'U' Gorup of trees and 1 Category 'B' Hedge of trees. These trees, group, and Hedge cannot be retained as part of the construction as they are located near the footprint of the new driveway and footpaths.

1.1.5 All retained trees will be protected through the installation of tree protection fencing in order to create a Construction Exclusion Zone and the use of ground protection to protect the Root Protection Areas (RPAs) of retained trees.

1.1.6 Overall, the arboricultural impacts associated to the driveway, garage, and landscaping construction on the site are considered acceptable and can be mitigated by the protection measures listed within this report.



Legend

Site Boundary

Map Centre Grid Reference: 510484E 197543N

Client: Mr and Mrs Dean		Drawing Ref: DEA001-001/404058/1	
Figure Number: 1		Scale at A4: 1:50,000	
Figure Title: Site Location		Drawn: KC	Checked: JB
		Date: 18/12/2023	Date: 18/12/2023

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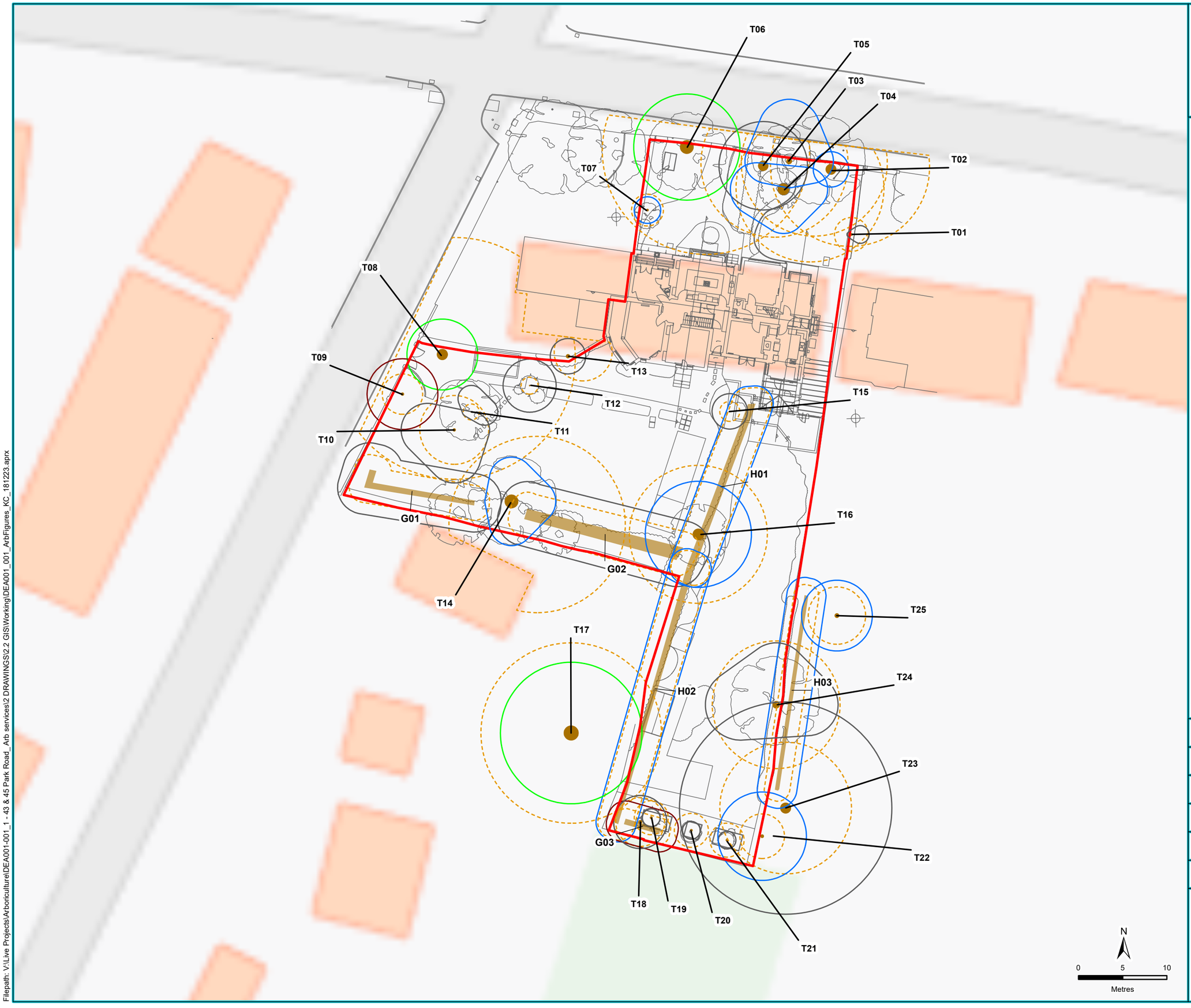

Filepath: V:\Live Projects\Arboriculture\DEA001-001_1 - 43 & 45 Park Road_Arb services\2 DRAWINGS\2.2 GIS\Working\DEA001_001_ArbFigures_KC_181223.aprx

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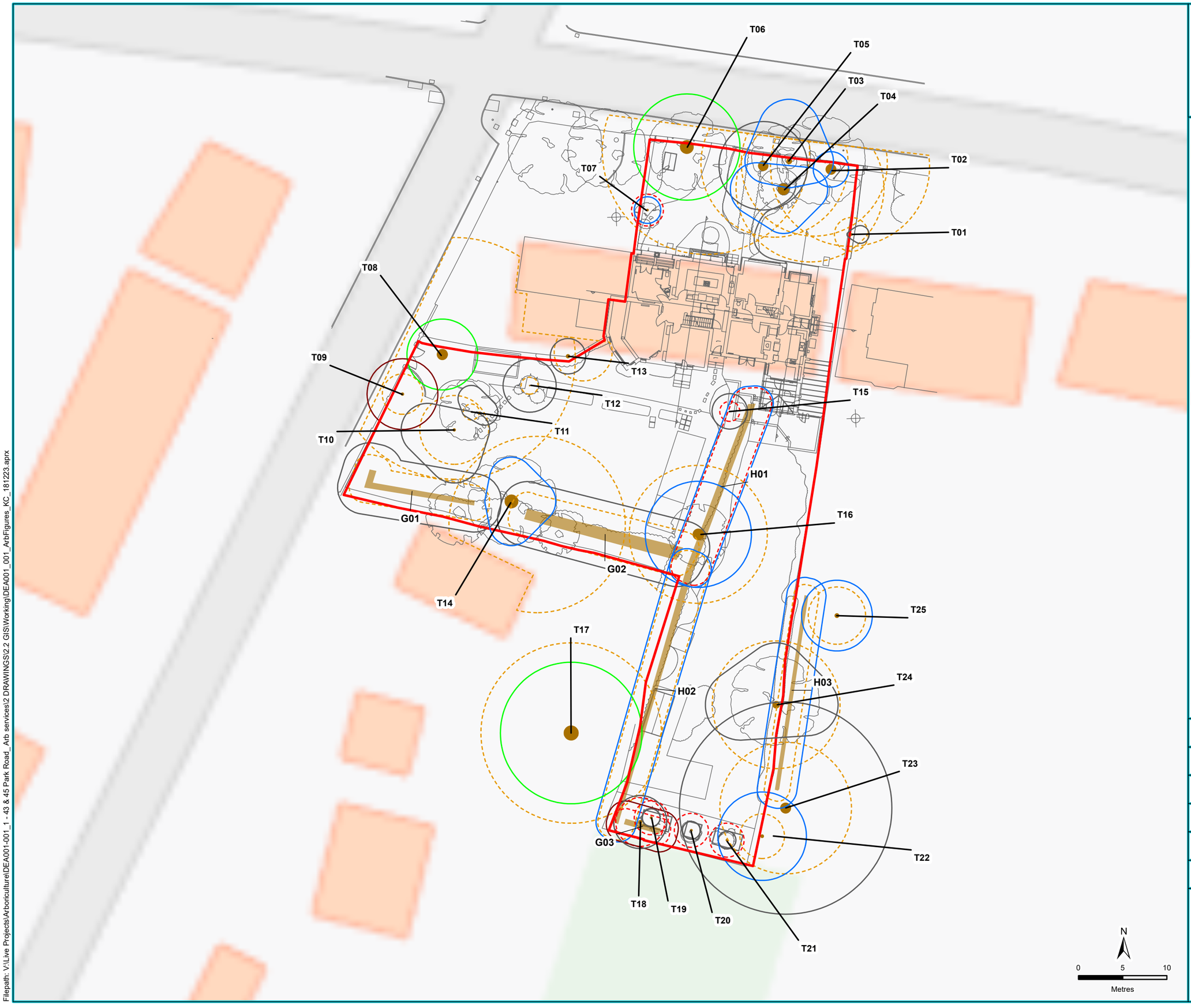
Legend

- Canopy Extent of Category 'A' Tree
- Canopy Extent of Category 'B' Tree
- Canopy Extent of Category 'C' Tree
- Canopy Extent of Category 'U' Tree
- Root Protection Area of Tree / Group
- Extent of Tree Stems within Groups / Hedges
- Site Boundary

Map Centre Grid Reference: 510484E 197543N

This map has been drawn at a sufficient level of accuracy to fulfil the requirements of an Arboricultural survey. The level of accuracy depends on both the size of the area involved, GPS accuracy and the detail of topographic mapping. Every effort has been made to create a map that is as accurate as possible. However, this map is not intended to represent a scaled landscape survey so should not be used to pin-point accurate engineering work or as a basis for detailed site planning where an accurate topographical survey has not been provided to help inform the arboricultural survey.

Drawing Ref	DEA001-001/404059/1
Scale at A3	1:400
Drawn: KC	Checked: JB
Date: 03/01/2024	Date: 03/01/2024
Client	Mr and Mrs Dean
Figure Number	2
Figure Title	Tree Constraints Plan (TCP01)



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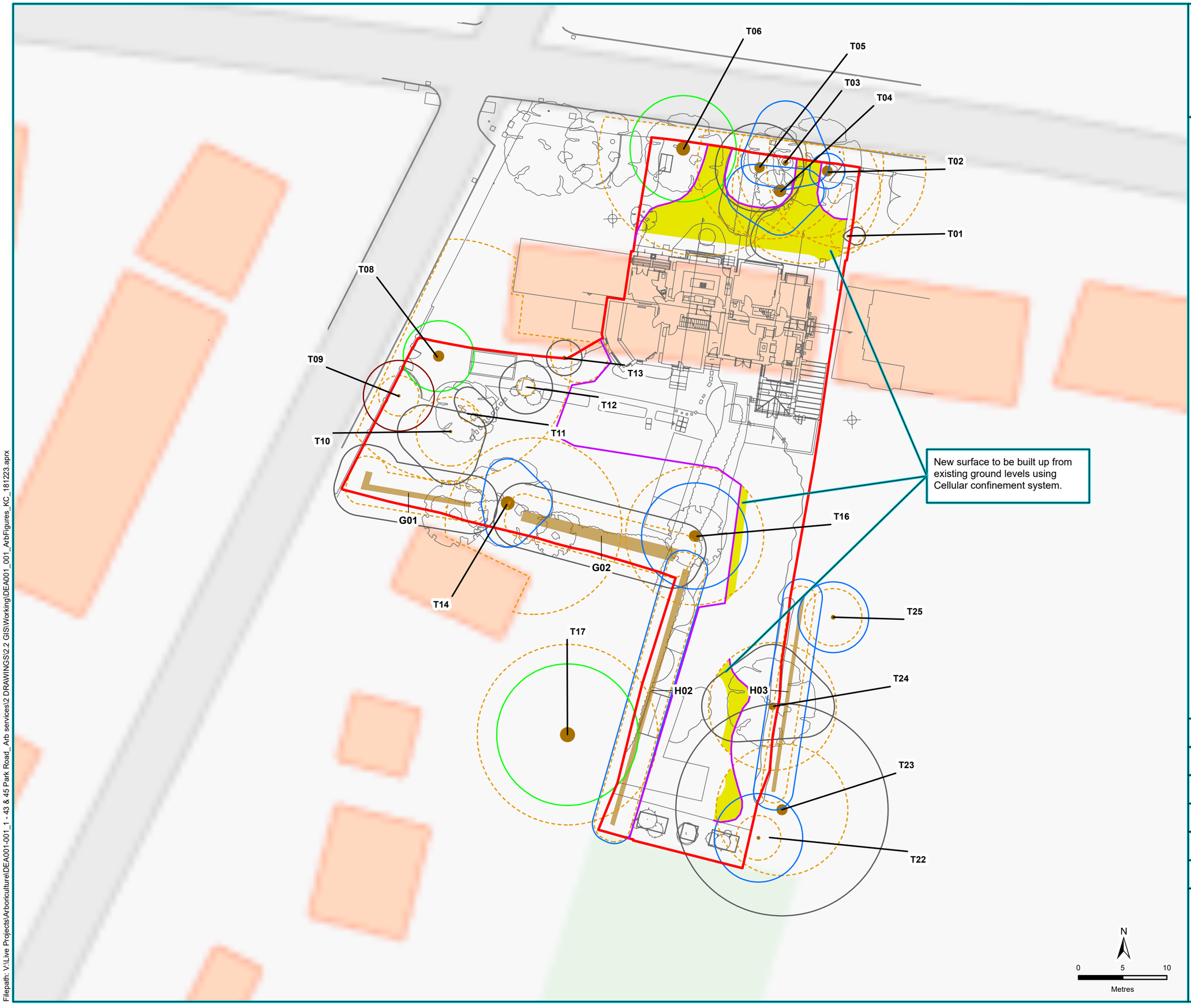
Legend

- Canopy Extent of Category 'A' Tree
- Canopy Extent of Category 'B' Tree
- Canopy Extent of Category 'C' Tree
- Canopy Extent of Category 'U' Tree
- Root Protection Area of Tree / Group
- Root Protection Area of Tree / Group to be Removed
- Extent of Tree Stems within Groups / Hedges
- Site Boundary

Map Centre Grid Reference: 510484E 197543N

This map has been drawn at a sufficient level of accuracy to fulfil the requirements of an Arboricultural survey. The level of accuracy depends on both the size of the area involved, GPS accuracy and the detail of topographic mapping. Every effort has been made to create a map that is as accurate as possible. However, this map is not intended to represent a scaled landscape survey so should not be used to pin-point accurate engineering work or as a basis for detailed site planning where an accurate topographical survey has not been provided to help inform the arboricultural survey.

Drawing Ref	DEA001-001/404156/1
Scale at A3	1:400
Drawn: JB	Checked: AS
Date: 03/01/2024	Date: 03/01/2024
Client	Mr and Mrs Dean
Figure Number	3
Figure Title	Tree Retention and Removal Plan (TRRP01)



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Legend

- Tree Protection Fencing
- New Areas of Hardstanding to Include 'Cellweb'
- Canopy Extent of Category 'A' Tree
- Canopy Extent of Category 'B' Tree
- Canopy Extent of Category 'C' Tree
- Canopy Extent of Category 'U' Tree
- Root Protection Area of Tree / Group
- Extent of Tree Stems within Groups / Hedges

Map Centre Grid Reference: 510484E 197543N

This map has been drawn at a sufficient level of accuracy to fulfil the requirements of an Arboricultural survey. The level of accuracy depends on both the size of the area involved, GPS accuracy and the detail of topographic mapping. Every effort has been made to create a map that is as accurate as possible. However, this map is not intended to represent a scaled landscape survey so should not be used to pin-point accurate engineering work or as a basis for detailed site planning where an accurate topographical survey has not been provided to help inform the arboricultural survey.

Drawing Ref	DEA001-001/404185/1
Scale at A3	1:400
Drawn: JB	Checked: AS
Date: 08/01/2024	Date: 08/01/2024
Client	Mr and Mrs Dean
Figure Number	4

Figure Title

Tree Protection Plan (TPP01)

2. Introduction

2.1 Development Background

2.1.1 Mr and Mrs Dean are proposing the construction of a new driveway, and landscaping to the front and rear at 43&45 Park Road, Watford.

2.1.2 There are a number of trees within the site and adjacent to the site boundary that will be affected by development.

2.2 Brief and Objectives

2.2.1 Mr and Mrs Dean commissioned Thomson Environmental Consultants to complete an arboricultural impact assessment and method statement based on the development proposals for the site.

2.2.2 The objective of the survey was to assess the condition of the existing trees on site and any off-site trees that might be affected by the development of the site, providing sufficient information to enable decisions to be made on the potential design layout and tree retention. The brief was to complete:

- An Arboricultural Survey of trees within or immediately adjacent to the site, in line with BS5837:2012 (Separate document '231214 DEA001-001 43&45 Park Road, Arb Survey.merged).
- A desktop exercise to determine whether trees on site are subject to a Tree Preservation Order or are covered by Conservation Area restrictions;
- An Arboricultural Report detailing our survey methods, results and recommendations, including the Tree Schedule and Tree Constraints Plan (TCP), which should be used to inform feasibility studies and design options at an early stage;
- An Arboricultural Impact Assessment based on the development proposals; and
- An Arboricultural Method Statement to detail the specific methodologies required to ensure the successful protection of retained trees throughout all phases of the development.

2.3 Limitations

2.3.1 The information provided within this report and in the accompanying Tree Schedule covers only those trees that were inspected and their condition at the time of survey.

2.3.2 A full hazard assessment has not been made and therefore no guarantee is given as to the structural integrity of any of the trees on site.

2.3.3 Where trees were clad in ivy (*Hedera helix*), or where dense epicormic growth or dense underplanting obscured the main stem, this was recorded in the Tree Schedule. The inspection

of such trees is impeded and as such a further inspection may be required following the removal of the obstruction. The retention categories of such trees should be considered as provisional only.

2.3.4 Measurements for off-site trees have been estimated and therefore may not fully represent the related constraints.

2.3.5 Whilst this report makes general observations on the long-term potential of the trees surveyed, trees are dynamic organisms and subject to continual change, thus this report should not be relied upon for the purposes of development for more than 24 months from the date of survey.

3. Arboricultural Impact Assessment (AIA)

3.1 Introduction

3.1.1 The purpose of the AIA is to assess the likely impact of the proposed development on the existing trees on site and to determine which trees are to be removed to accommodate the development of the site, and which trees can be retained.

3.1.2 The proposals of the site consist of a new driveway to the front of the properties, along with hard and soft landscaping to the front and rear.

3.1.3 The protection of retained trees is paramount to their survival during the development process and their consequent long-term contribution to the site. The Root Protection Areas (RPAs) identified in the arboricultural survey and Tree Constraints Plan (TCP) should remain protected throughout the development to avoid potential damage, such as:

- Soil compaction;
- Root severance due to excavation;
- Soil coverage with impermeable material;
- Alterations in ground level;
- Leaks and spillages from stored materials; and
- Vehicle and heavy plant collision.

3.2 Documents

3.2.1 This assessment This assessment has been based on documents produced by Stefan Shaw Studio and Studio gb. The details of these documents can be seen in Table 1.

Table 1: Documents upon which this assessment has been based

Originator	Reference No.	Title
Stefan Shaw Studio	0158_1100_	Proposed Ground Floor
Studio gb	No refs	Landscape statement
Thomson EC	(TCP01)	Tree Constraints Plan

3.3 Tree Removals

3.3.1 The trees proposed for removal are either located near the footprint of the new driveway and landscaping or would sustain damage too significant during construction and would need to be removed to facilitate the development.

3.3.2 A total of 6 trees, 1 group of trees, and 1 Hedge require removal, comprising of 1 Category ‘B’ tree, 5 Category ‘C’ trees, 1 Category ‘U’ group of trees and 1 Category ‘B’ Hedge.

3.3.3 A breakdown of the associated categories assigned to these trees can be seen in Table 2 and the species of tree, along with the Category and reason for removal in Table 3.

Table 2: Number of trees to be removed within each retention category

Removal	Tree Category				Total
	A	B	C	U	
Number of Trees	0	1	5	0	6
Number of Groups	0	0	0	1	1
Number of Hedges	0	1	0	0	2
Total	**0**	**2**	**5**	**1**	**9**

Table 3: Details of trees to be removed

Tree Number	Species	Category	Reason
T07	gum species; Eucalyptus sp.	B 1	To facilitate the driveway
T15	california lilac; Ceanothus	C 1	To facilitate landscaping
T18	ash; Fraxinus excelsior	C 1	To facilitate landscaping
T19	Chusan palm; Trachycarpus fortunei	C 1	To facilitate landscaping
T20	Chusan palm; Trachycarpus fortunei	C 1	To facilitate landscaping
T21	Chusan palm; Trachycarpus fortunei	C 1	To facilitate landscaping
G03	hazel; Corylus avellana / bay; Laurus nobilis / ash; Fraxinus excelsior	U	For arboricultural reasons
H01	yew; Taxus baccata / holly; Ilex aquifolium	B	To facilitate landscaping

3.4 Trees to be Retained

3.4.1 The following trees and groups are to be retained within the site, equating to 19 individual trees, 2 groups of trees, and 2 hedges. These comprise of 3 Category 'A' trees, 7 Category 'B' trees, 8 Category 'C' trees, 1 Category 'U' tree, 2 Category 'C' groups of trees, and 2 Category 'B' hedges, Table 4 lists the trees and groups of tees that are to be retained as part of the development proposals.

Table 4: Trees to be retained

Trees to be retained
T01 T02 T03 T04 T05 T06 T08 T09 T10 T11 T12 T13 T14 T16 T17 T22 T23 T24 T25 G01 G02 H02 H03

3.5 Impact on retained trees

3.5.1 To minimise the proposals and impacts this will have on the tree's RPA's, a combination of stem and tree barrier protection, ground protection, manual excavation, No-dig surfacing, and Arboricultural supervision will be required. These are set out below and full details will be employed in (Section 4) of arboricultural method statement.

3.6 Tree Pruning

3.6.1 No trees require maintenance works prior to the erection of protective fencing. If future works are identified as part of the development, they should be undertaken in accordance with British Standard BS3998:2010 Recommendations for Tree Work (BS3998:2010).

3.7 Tree Protection

3.7.1 Considering the proximity of some of the proposed works to the stems of the retained trees, there will be requirement of a mixture of stem and barrier protection and standard tree protection fencing in accordance with BS5837:2012.

3.7.2 Stem and barrier protection can be in the form of protective e.g Trunk Protection, or a timber box design, plastic style pedestrian barriers or similar and temporary ground protection. Such details are provided within the arboricutural method statement.

3.8 Enabling works

Removal of existing hard standing areas

3.8.1 There is a requirement for the removal of existing hard surface within RPAs of T03, T04, and T05. This will require shallow excavations permitted only to the depth of the existing sub-base, to prevent potential damage to roots underneath.

3.8.2 Works should not exceed beneath the depth stated above and will be undertaken in accordance with the arboricultural method statement (see section 4), the works to remove the existing hard standing will have no significant impacts on adjacent retained trees.

3.8.3 For full details of the measures required to protect all retained trees during the enabling and remediation phase, see section 4.9.5 within the AMS of this report.

3.9 Construction Work within RPA's

Installation of new a driveway, and footpaths

3.9.1 New hard surfaces are proposed within the root protection areas of several trees, all highlighted on the attached Figure 4. These areas of the site are anticipated to contain a high number of tree roots and again, the construction technique will need to avoid a conventional sub-base in favour of a three-dimensional cellular confinement system.

3.9.2 The new surfaces should be built upon existing site levels, with only grass and any loosened top-soil being removed. The new surfaces will then be built up and incorporate a suitable geotextile and cellular confinement system, with the finished surface being porous.

3.9.3 For full details of the measures required to protect all retained trees during the construction of the new hard surfaces, see section 4.1.4 and 4.1.7 within the AMS of this report.

Proposed metal railings

3.9.4 The proposed metal railings are located through the RPAs of T02, T03, T04, T05 and T06 proposed for retention.

3.9.5 The installation of railings within RPAs is generally not significant in terms of causing significant damage to roots, excavations for post holes should be as small as possible and dug by hand using tools appropriate to the task, it is recommended that post holes will be sleeved to prevent any concreate leaking into the soil.

3.10 New Planting

3.10.1 All trees removed as part of the development should be replaced at the landscaping stage of the project with new trees that are suitable to the site conditions and the wider landscape. Details of trees to be planted can be found within the Landscaping Statement.

3.10.2 Areas designated for new tree planting should be protected during the construction phase and the ground suitably prepared, including soil decompaction if necessary, prior to the new trees being planted.

3.11 Conclusion

3.11.1 The new driveway and landscaping will result in the removal of 6 trees, 1 group of trees, and 1 Hedge comprising of 1 Category 'B' tree, 5 Category 'C' trees, 1 Category 'U' group of trees and 1 Category 'B' Hedge.

3.11.2 Retained trees which are adjacent to the new driveway installation will require tree stem and barrier protection and ground protection due to their close proximity to the working area.

3.11.3 Checks made on Watford Borough Council's online interactive mapping software confirmed that T02, T03, T04, T05, T06, and T08 as referenced within our survey are subject to Tree Preservation

Order (TPO number 138) and the site is within a conservation area. Any works to these trees will need the prior approval of the council either via inclusion of the work within an approved planning application or by way of a trees works application.

3.11.4 There are several areas of the site where new hard surfaces within the root protection areas of retained trees will require a 'no-dig' construction methodology.

3.11.5 Trees removed as part of these proposals will be replaced with trees in line with the 'Landscaping Statement'.

3.11.6 Overall, the arboricultural impacts associated to the development of the site are considered acceptable. Protection measures should be implemented in strict accordance with the arboricultural method statement at section 4 of this report.

4. Arboricultural Method Statement (AMS)

4.1 Introduction

4.1.1 The purpose of this AMS is to demonstrate how work will be undertaken on the site to avoid an unacceptable impact on, and provide an adequate level of protection for, the retained trees.

4.1.2 This AMS sets out the tree protection required to facilitate the proposed development, and should not be read as a definitive engineering or construction statement for this site. Matters relating to construction or engineering detail should be referred to a qualified structural engineer for further information and specification. This AMS is to be used in conjunction with the Tree Protection Plan (TPP01) in Figure 4.

4.2 Documents

4.2.1 This assessment has been based on documents produced by Stefan Shaw Studio and Studio gb. The details of these documents can be seen in Table 5. The relationship between the trees and the proposed development are shown on Tree Protection Plan (TPP01), (see Figure 4) which is based on the Tree Constraints Plan (TCP01) and the drawings detailed in Table 5.

Table 5: Documents upon which this assessment has been based

Originator	Reference No.	Title
Stefan Shaw Studio	0158_1100_	Proposed Ground Floor
Studio gb	No refs	Landscape statement
Thomson EC	(TCP01)	Tree Constraints Plan

4.3 Arboricultural Issues

4.3.1 Below are the key aspects of the development that require attention to ensure the successful protection of retained trees as outlined within the arboricultural impact assessment:

- Removal of existing hard standing area
- Installation of new driveway, and footpaths
- Installation of metal railings

4.4 Supervision

4.4.1 Before construction commences, a suitably qualified and experienced arboriculturist shall be appointed to oversee key stages of the construction work that will affect retained trees, as laid out in Table 7.

4.4.2 The appointed project arboriculturist shall hold a pre-commencement meeting with the site manager, relevant construction staff and Local Authority Tree Officer (if appropriate) to explain and agree the contents of this AMS to ensure its correct implementation.

4.4.3 This meeting will detail the site procedures and rules that relate to all retained and protected trees on site, as well as explaining the content of the agreed AMS. Construction staff shall be required to sign and confirm that they fully understand their responsibilities with respect to trees and will abide by these requirements. The Site Manager shall retain copies of the site induction statements for future reference where necessary.

4.4.4 Once the tree protection fencing has been installed, it should be checked that it is in the correct location and is in line with the specification attached to this report.

4.4.5 After each site visit by the arboriculturist, a report of the visit shall be submitted to the local authority detailing the result of the visit. Where necessary, this will be supported with photographic evidence highlighting unacceptable practices as well as good site management and tree protection measures.

4.4.6 In the event that there is a non-approved incursion into a construction exclusion zone, works on site should be temporarily suspended and the lead arboriculturist consulted. A site visit may be necessary to inspect the affected tree and a report of the incident, including any remedial actions taken, sent to Watford Borough Council Tree Officer.

4.4.7 Any changes to the nature and sequence of works specified in this AMS regarding the retained trees should be agreed with an arboricultural consultant at least 48 hours before their realisation.

4.5 List of Contacts

4.5.1 The list of contacts within Table 6 should be used as reference if any deviations from, or issues with, any part of this AMS arise.

Table 6: List of contact details for relevant parties

Name	Job Title	Organisation	Contact Details	
James Baker	Arb Consultant	Thomson Environmental Consultants	James.baker@thomsonec.com	
			-	07432 051067
Stefan Shaw	Director	Stefan Shaw Studio	stefan@stefanshawstudio.com	
				07824 617137
Vladimir Guculak	Director	Studio gb	vguculak@studiogb.uk	
			-	075 3906 9104

4.6 Tree Removals

4.6.1 As detailed within the Arboricultural Impact Assessment, 6 trees, 1 group, and 1 hedge require removal. Trees shall be felled and the stumps ground out, works will be carried out in accordance with BS3998:2010 *'Recommendations for Tree Work'*.

4.6.2 Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber lorries, tractors, excavators or cranes should be parked or driven beneath the crowns of any

retained trees, to prevent subsequent soil compaction and root death. All arisings are to be removed and the site is to be left in as tidy and orderly manner as possible.

4.7 Tree Protection Fencing

4.7.1 Temporary fencing and plastic style pedestrian barriers will be erected as indicated on the Tree Protection Plan (TPP01) in Figure 4. The specification for the barriers will be in accordance with the recommendations given in 6.2.2 and fencing BS5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations*' (BSI).

4.7.2 The fencing will comprise 2.0m high mesh fencing (Heras type panels are a simple, readily available solution) supported by a stabiliser strut at an angle of 45 degrees on the side of the trees, anchored by further ground pins (see Appendix 4). The vertical scaffold tubes will be spaced at a maximum interval of 3m.

4.7.3 A barrier will be erected where possible to demarcate the RPA's and also within the RPA's. In accordance with 6.2.2.1 of BS5387:2012, the site team will maintain the barriers so that they remain rigid and complete, for as long as they are in-situ.

4.7.4 Clear signs will be attached at 4m intervals along the fencing stating 'Tree Protection Area – Keep Out'. These should be outward facing and weather protected and maintained for the duration of the works. A suitable sign can be seen in Appendix 4.

4.7.5 The area protected by the fence shall be known as the Construction Exclusion Zone (CEZ).

4.7.6 The following principles must be maintained within the CEZ:

- Existing ground levels shall not be altered;
- No excavation shall occur to avoid root severance;
- No plant or vehicles shall enter the CEZ;
- Impermeable surfacing shall not be laid down over soil ('capping');
- No materials, fuels or chemicals shall be stored within any of these areas;
- No fires to be lit where flames may reach within 5m of the CEZ;
- No structures or fixtures of any kind shall be fastened in any way to the trunks of the retained trees;
- No drainage or irrigation pipes shall be installed within the RPAs of the retained trees; and
- Any unwanted vegetation shall be removed by hand.

4.7.7 The fencing shall remain in place until soft landscape operations, or construction works within RPAs as indicated on the Tree Protection Plans, require its re-alignment or removal. No other construction activity will take place within those areas formerly protected by the fence.

4.8 Tree Stem Protection

4.8.1 In order to prevent damage from machinery and construction work on site, some retained trees should have their stems protected with a proprietary stem protection e.g Trunk Protecta, or a 2m

high, heavy-duty plywood box constructed around its stems and tree protection notices displayed (see Appendix 7).

4.9 Ground Protection

4.9.1 There will be a requirement for ground protection within areas of RPA's where the installation of the new driveway is to take place.

4.9.2 The ground protection will be provided by inter-linked ground protection boards (e.g. MaxiTrack) placed on top of a compression resistant substrate (e.g. 150mm depth of woodchip). This temporary surface should be installed prior to any plant movement within that area and should only be removed when:

- There is no further intention for plant to access this area; or
- It is temporarily lifted to allow works within that area of ground.

4.9.3 This surface is only adequate for the use of mini excavators (i.e. up to a gross weight of 2*t*). No machinery larger than this should be carrying out works in areas requiring ground protection.

4.9.4 In all instances, if it is possible to keep heavy machinery and plant located on existing areas of hard standing, or outside of root protection areas entirely, then this approach should be favoured above accessing grassed areas afforded protection by compaction matting, as there is still the potential for ground compaction.

4.9.5 *Removal of existing hard standing areas*

4.9.6 Existing hard surfaces should be retained for as long as possible if access is needed within that particular area of the site by heavier machinery or plant. This will prevent potential ground compaction and the need for installing ground protection.

4.9.7 When the surfaces are to be removed, excavations can initially involve the use of a mini-excavator, located on existing hard standing areas, carefully scraping and lifting the pavers. Once the depth of the existing sub-base has been reached no more excavation work is to take place.

4.9.8 If larger diameter structural roots (greater than 25mm) are exposed during the scrape, excavations near the root/s should be carried out using handheld tools as appropriate. Excavations should not at any point extend beyond the depth of the existing sub-base, to ensure any potential roots beneath are retained undamaged.

4.9.9 Any exposed roots smaller than 25mm diameter will be pruned cleanly back to the soil surface as promptly as possible using hand tools appropriate to the task, under the supervision of the project arboriculturist. Under no circumstance will structural roots greater than 25mm diameter be pruned during these works.

4.10 Construction Works

4.10.1 *Installation of new driveway and footpaths*

4.10.2 The new driveway and footpaths are to be built at existing ground levels to prevent deep excavations within RPAs and to contain a cellular confinement system.

4.10.3 The ground that needs to be accessed will be covered by inter-linked ground protection boards (e.g. MaxiTrack) placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip). This temporary surface should be installed prior to any plant movement within the RPAs and should only be removed when there is no further intention for plant access / movement within these areas.

4.10.4 All excavations within 2m of the stem of the trees will be dug by hand using appropriate hand tools. All soil and sods of grass will be removed from the RPA by wheelbarrow and stored entirely outside the RPA.

4.10.5 Any exposed roots <25mm will be pruned cleanly back to the soil surface as promptly as possible using sharp hand tools appropriate to the task. Roots >25mm will not be pruned at any time.

4.10.6 Any depressions in the scraped surface will be levelled off using sharp sand. A suitable geo-textile and cellular confinement system (cellweb) will then be utilised to construct the path from this level. No compaction or vibration of the existing soil is to be carried out prior to laying these materials.

4.10.7 The driveway will require a grid (100mm-150mm) and the footpaths only (75mm-100mm). The cells are to be filled with a 'no-fines' angular substrate to ensure the surface does not become impermeable. Edgings are also to be built up from within this footprint, requiring no excavations outside the extent of the cellular confinement system. The specification for the build-up can be found at Appendix 5.

4.11 Sequence of Works

4.11.1 A logical sequence of events is to be observed as shown in Table 7.

Table 7: Sequence of works.

Stage	Event	Arboricultural Supervision required
Stage 1	Prestart meeting with site manager and relevant construction staff. This will include site induction for all personnel.	Yes
Stage 2	Carry out tree removals specified in Section 3.3	No
Stage 3	Install ground protection, site compound building and materials storage facility.	No
Stage 4	Install Protective Barriers in the position shown on Figure 4, to the specifications given in Section 3.6	No

Stage	Event	Arboricultural Supervision required
Stage 5	Site visit by arboriculturist to sign off the installed fencing, barriers and ground protection. Further regular visits will be undertaken by the arboriculturist.	Yes
Stage 6	Removal of existing hard standing.	Yes
Stage 7	Removal of all machinery from site.	No
Stage 8	Arboricultural assessment of retained trees on site to confirm their health post development.	Yes

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Appendix 1 - Tree Schedule

Tree/Group No	Species	Height (m)	Stem diameter (mm)	N	E	S	W	Height of lowest limb and direction	Crown clearance (m)	Age class	Estimated remaining contribution	Physiological condition	Structural condition	Comments	Preliminary management recommendations	BS category	RPA (m2)	RPA radius (m)
T01	cherry laurel; Prunus laurocerasus	3	160.00	0	2	0	0	0 W	0	Semi-mature	10+	Fair	Fair	Previously maintained laurel shrub	None	C 1	11.58	1.92
T02	Lawson's cypress; Chamaecyparis lawsoniana	21	610.00	2	2	2	2	3 N	3	Early mature	20+	Good	Good	Prominent tree presenting good form, adjacent to a footpath. Subject to a TPO (number 138).	None	B 1	168.27	7.32
T03	yew; Taxus baccata	19	326.67	7	5	3	5	0 W	4	Early mature	20+	Fair	Fair	Signs of the top previously being reduced, normal vitality Subject to a TPO (number 138).	None	B 1	145.64	6.81
T04	yew; Taxus baccata	19	650.00	2	5	5	6	3 SW	4	Early mature	20+	Fair	Fair	Signs of previous pruning works in lower canopy Subject to a TPO (number 138).	None	B 1	191.06	7.80
T05	Lawson's cypress; Chamaecyparis lawsoniana	20	590.00	5	5	5	5	6 N	5	Mature	10+	Poor	Fair	The top has previously been reduced, the is minor dead wood in the top canopy Subject to a TPO (number 138).	None	C 1	157.41	7.08
T06	western red cedar; Thuja plicata	19	780.00	6	6	6	6	5 N	5	Mature	40+	Good	Good	Lower stem is clad in ivy, the has previously been reduced, tree has responded well. Subject to a TPO (number 138).	None	A 1	275.12	9.36
T07	gum species; Eucalyptus sp.	4	150.00	1	1	1	1	2 S	2	Young	20+	Good	Good	Previously maintained canopy	None	B 1	10.17	1.80
T08	yew; Taxus baccata	14	630.00	4	4	4	4	3 SE	4	Mature	40+	Good	Good	Previously Well-maintained yew tree, normal vitality Subject to a TPO (number 138).	None	A 1	420.38	11.57
T09	cherry laurel; Prunus laurocerasus	5	190.00	4	4	4	4	0 N	0	Early mature	<10	Poor	Fair	Top is starting to die back, low vitality	None	U	16.32	2.28
T10	magnolia; Magnolia sp.	6	186.67	0	4	6	6	1 E	1	Early mature	10+	Fair	Fair	Stem divides into three from the base	None	C 1	47.52	3.89
T11	hazel; Corylus avellana	6	75.00	3	3	0	1	0 N	2	Semi-mature	10+	Fair	Fair	Growing adjacent to the magnolia stem	None	C 1	2.54	0.90
T12	cabbage palm; Cordyline australis	4	80.00	3	3	3	3	1 N	2	Semi-mature	10+	Fair	Fair	Well-maintained palm tree	None	C 1	2.89	0.96

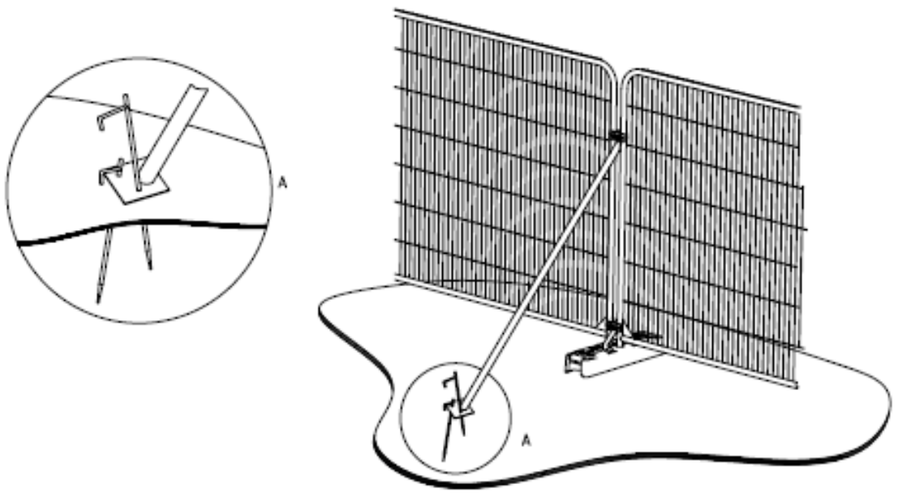
Tree/Group No	Species	Height (m)	Stem diameter (mm)	N	E	S	W	Height of lowest limb and direction	Crown clearance (m)	Age class	Estimated remaining contribution	Physiological condition	Structural condition	Comments	Preliminary management recommendations	BS category	RPA (m2)	RPA radius (m)
T13	false cypress species; Chamaecyparis sp.	5	240.00	2	2	2	2	2 W	2	Semi-mature	10+	Fair	Fair	Off-site tree, stem has been estimated	None	C 1	26.05	2.88
T14	sycamore; Acer pseudoplatanus	22	780.00	5	5	5	3	4 N	6	Mature	20+	Fair	Fair	Signs of previous pruning works, tree still presents good form throughout	None	B 1	275.12	9.36
T15	california lilac; Ceanothus	4	62.50	2	2	2	2	1 S	2	Semi-mature	10+	Good	Good	Set within a flower bed	None	C 1	4.01	1.13
T16	Lawson's cypress; Chamaecyparis lawsoniana	21	650.00	6	6	6	6	3 S	6	Mature	20+	Good	Good	Set within a hedge, with good form throughout	None	B 1	191.06	7.80
T17	beech; Fagus sylvatica	22	850.00	8	8	8	8	8 W	7	Mature	40+	Good	Good	Off-site tree stem has been estimated, canopy has previously been reduced	None	A 1	326.72	10.20
T18	ash; Fraxinus excelsior	10	230.00	3	3	3	3	3 W	4	Young	10+	Good	Good	Set within a flower bed	None	C 1	23.92	2.76
T19	Chusan palm; Trachycarpus fortunei	3	160.00	1	1	1	1	2 E	2	Early mature	10+	Good	Good	Set of three palms within planting beds	None	C 1	11.58	1.92
T20	Chusan palm; Trachycarpus fortunei	3	160.00	1	1	1	1	2 E	2	Early mature	10+	Good	Good	Set of three palms within planting beds	None	C 1	11.58	1.92
T21	Chusan palm; Trachycarpus fortunei	3	160.00	1	1	1	1	2 E	2	Early mature	10+	Good	Good	Set of three palms within planting beds	None	C 1	11.58	1.92
T22	Leyland cypress; x Cupressocyparis leylandii	14	210.00	5	5	5	5	2 E	2	Semi-mature	20+	Good	Good	Off-site tree, stem has been estimated	None	B 1	19.94	2.52
T23	ash; Fraxinus excelsior	22	620.00	12	12	12	12	10 S	11	Mature	10+	Good	Good	Set within the boundary hedge, stem has been estimated. Tree has good form throughout	None	C 1	173.83	7.44
T24	ash; Fraxinus excelsior	19	425.00	7	7	2	8	8 N	5	Mature	10+	Fair	Fair	Set within the boundary hedge, stems have been estimated and signs of previous pruning works	None	C 1	163.70	7.22
T25	spruce species; Picea sp.	11	270.00	4	4	4	4	2 N	2	Early mature	20+	Fair	Good	Off-site tree, stem has been estimated	None	B 1	32.97	3.24

Tree/Group No	Species	Height (m)	Stem diameter (mm)	N	E	S	W	Height of lowest limb and direction	Crown clearance (m)	Age class	Estimated remaining contribution	Physiological condition	Structural condition	Comments	Preliminary management recommendations	BS category	RPA (m2)	RPA radius (m)
G01	hazel; Corylus avellana / hawthorn; Crataegus monogyna / laburnum species; Laburnum sp.	5	140.00	3	3	3	3	-	2	Early mature	10+	Fair	Fair	Mixed species group adjacent to the boundary fence	None	C	-	1.68
G02	Norway spruce; Picea abies / cherry laurel; Prunus laurocerasus / Leyland cypress; x Cupressocyparis leylandii / laburnum; Laburnum anagyroides	4	150.00	3	3	3	3	-	1	Early mature	10+	Fair	Fair	Mixed species group set within a flower bed	None	C	-	1.80
G03	hazel; Corylus avellana / bay; Laurus nobilis / ash; Fraxinus excelsior	7	95.00	2	2	2	2	-	2	Young	<10	Fair	Fair	Mixed species group growing on boundary wall	Fell	U	-	1.14
H01	yew; Taxus baccata / holly; Ilex aquifolium	4	150.00	2	2	2	2	-	0	Mature	20+	Good	Good	Well maintained boundary hedge	None	B	-	1.80
H02	yew; Taxus baccata / holly; Ilex aquifolium	3	150.00	2	2	2	2	-	0	Mature	20+	Good	Good	Well maintained boundary hedge	None	B	-	1.80
H03	holly; Ilex aquifolium / cherry laurel; Prunus laurocerasus	3	100.00	2	2	2	2	-	0	Early mature	20+	Good	Good	Well maintained boundary hedge	None	B	-	1.20

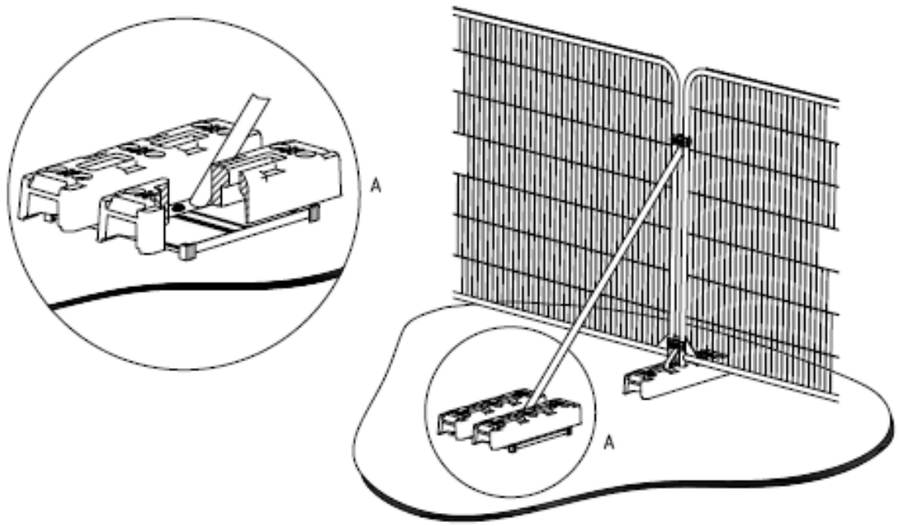
Appendix 2 – Table of Quality Assessment

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 be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have serious, irremediable, structural defects, 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 might be desirable to preserve			DARK RED
	1 Mainly arboricultural values	**2 Mainly landscape values**	**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 of formal or semi-formal arboricultural features (e.g. the dominant and/or principle 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)	LIGHT GREEN
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	MID 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 value	GREY

Appendix 3 – Tree Protective Fencing Specification



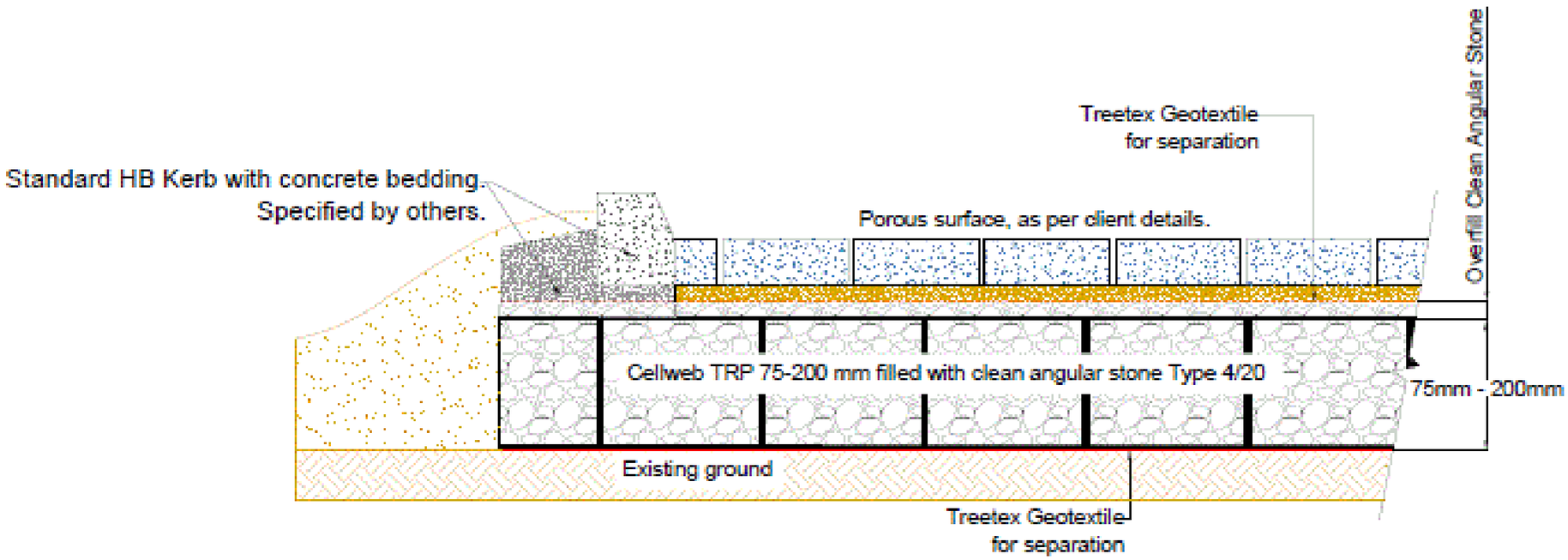
a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix 4 - Tree Protection Fencing Notice

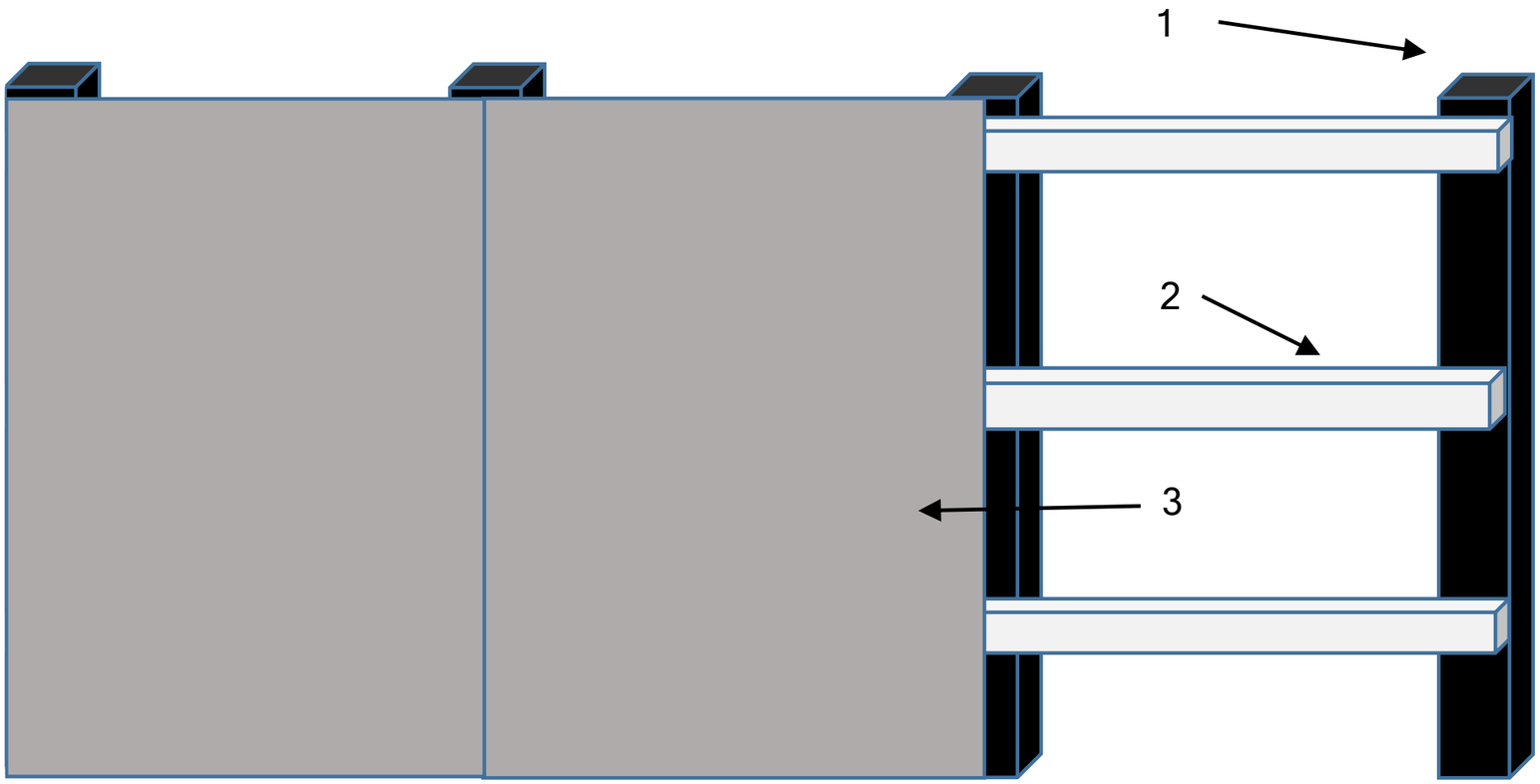
Appendix 5 – Specification of 'No-dig' Construction



Note: Subbase could be required depending on the existing ground CBR %
and the type of traffic on the surface.

Appendix 6 - Example of Stem Protection and Barriers

Appendix 7 - Example of Protective Fencing



1. 100mm x 100mm timber posts at 1.2m centres

2. Three 100mm x 50mm timber rails

3. 12mm WBP Virola hardwood through plywood framed panels