



571 Gander Green Lane, Sutton,
SM3 9RF

Arboricultural Survey,
Arboricultural Impact Assessment
and
Arboricultural Method Statement
For
Daughters of the Cross of Liège

Project No.: A-BMD-104-002-001-001

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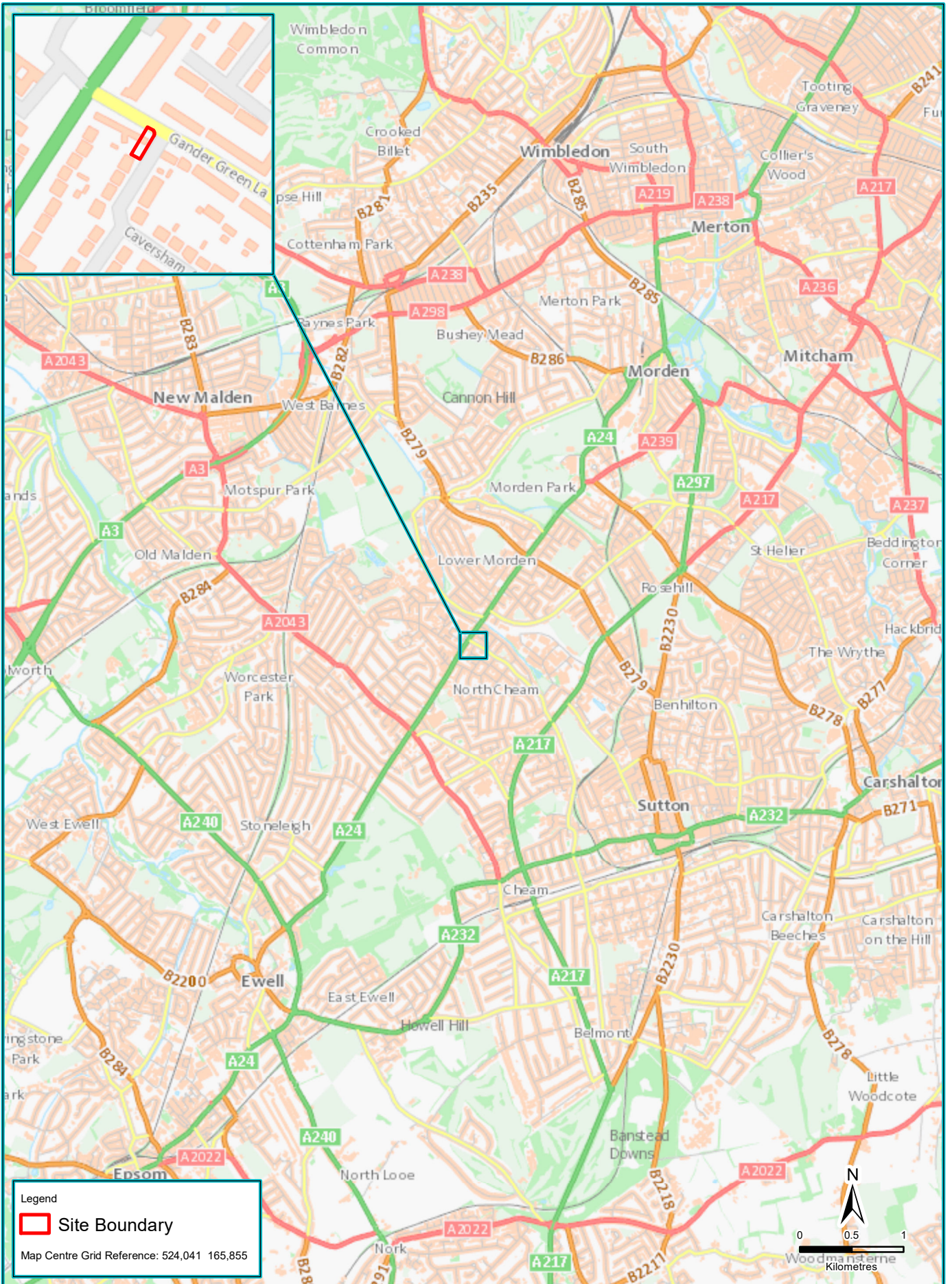
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- FIGURE 1: SITE LOCATION
- FIGURE 2: TREE CONSTRAINTS PLAN (TCP01)
- FIGURE 3: TREE PROTECTION PLAN (TPP01)

1. Summary

- 1.1.1** Daughters of the Cross of Liège are proposing the extension of a residential property in Sutton, London (see Figure 1).
- 1.1.2** Daughters of the Cross of Liège commissioned Thomson Environmental Consultants (Thomson) to undertake an arboricultural survey of trees within and adjacent to the site, and to produce an Arboricultural Impact Assessment (AIA) which discusses the likely impact of the development proposals on the trees at the site, and to compile an Arboricultural Method Statement (AMS) detailing the protection of all the trees at the site.
- 1.1.3** The arboricultural survey was carried out in accordance with BS5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (BS5837:2012).
- 1.1.4** All trees were categorised in accordance with the cascade chart for tree quality assessment in BS5837:2012 (see Appendix 2). Trees were given a ranking of A, B or C in descending order of value and assigned one or more subcategories qualifying the basis of that value as either arboricultural, landscape or cultural. Trees with only short-term remaining value or that require immediate removal for safety or management reasons are given a U rating.
- 1.1.5** A total of six individual trees were recorded during the survey and listed in the Tree Schedule. The surveyor recorded three Category C trees and three Category U trees located within or adjacent to the site (see Figure 2).
- 1.1.6** Category A, B and C trees represent a material consideration to development. Concerted effort should be made to retain A and B category trees within the development. Whilst Category C trees should be retained where possible, should not be retained where they would present a serious constraint to development.
- 1.1.7** The AIA concluded that the proposed development itself will not require the removal of any trees although three Category U trees were recorded during the survey. Accordingly, new tree planting is not deemed necessary.
- 1.1.8** There should be no harm caused to any trees planned for retention by these proposals subject to the erection of protective fencing furnished with tree protection notices, 'no-dig' construction techniques, hand digging post holes for the fence and gates and the creation of a Construction Exclusion Zone.

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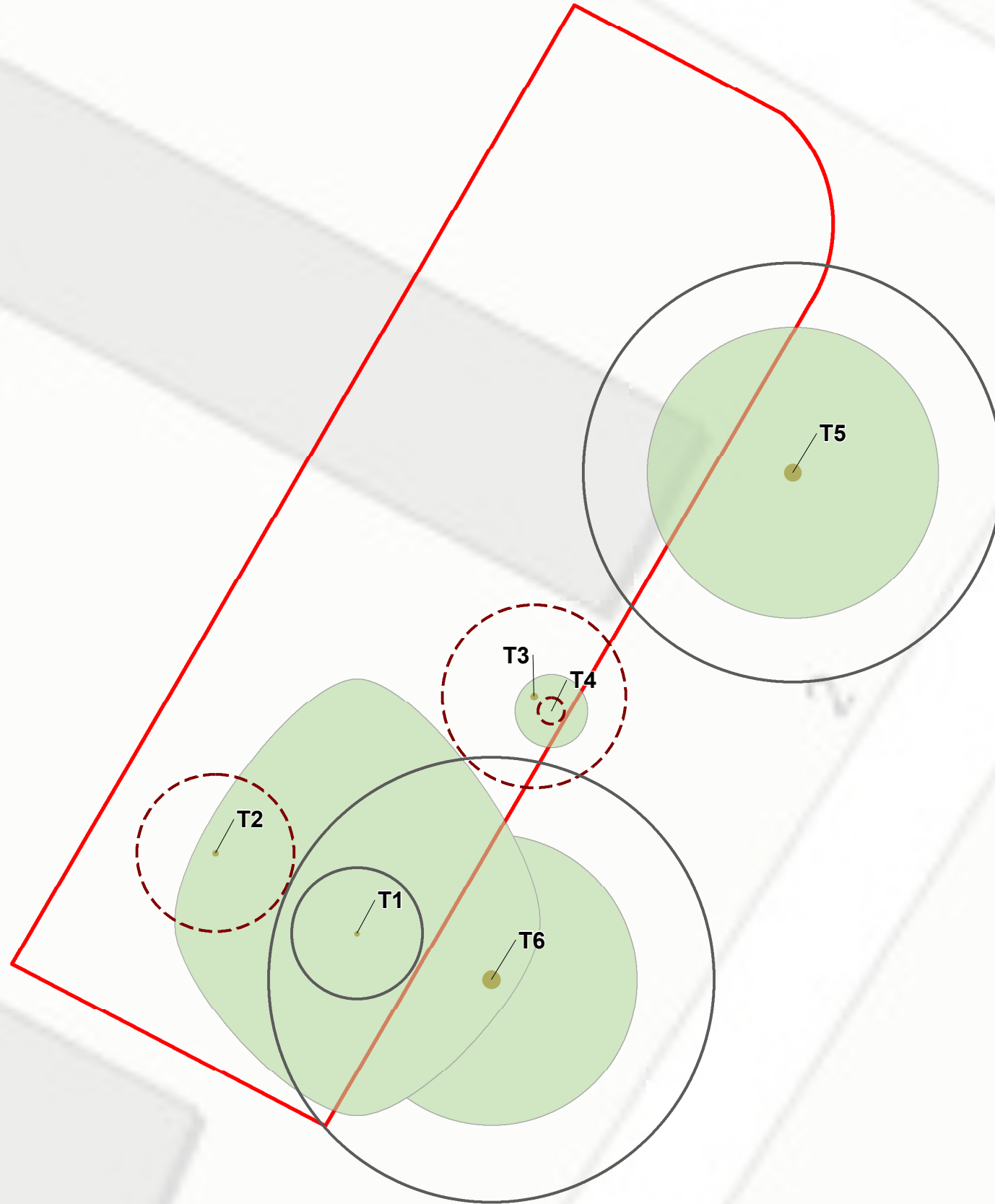
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Legend

-  Root Protection Area of Category 'C' Tree
-  Root Protection Area of Category 'U' Tree
-  Tree Canopy Extents
-  Tree Stem Location
-  Site Boundary



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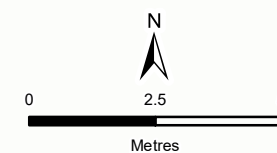
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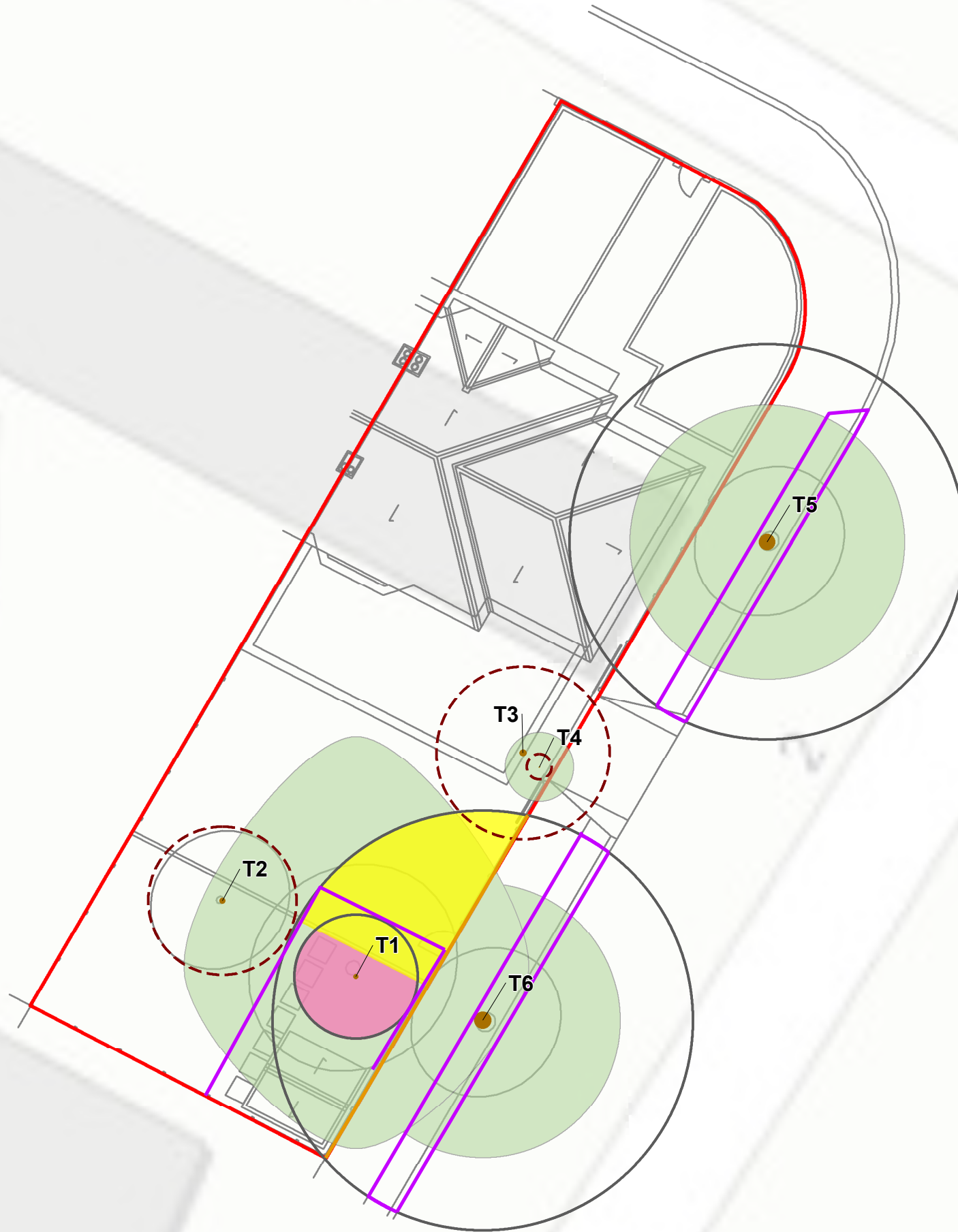
Figure Title
Tree Constraints Plan (TCP01)



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Legend

-  Hand-dig Post Holes for New Fence and Gate
-  Tree Protection Fencing
-  Root Protection Area of Category 'C' Tree
-  Root Protection Area of Category 'U' Tree
-  Tree Canopy Extents
-  Tree Stem Location
-  Cellular Confinement System
-  Cultivation by Hand Only
-  Site Boundary



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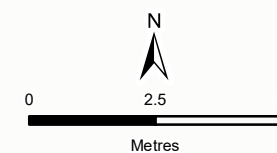
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Client
 Bird and MacDonald

Figure Number
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Figure Title
 Tree Protection Plan
 (TPP01)



2. Introduction

2.1 Development Background

- 2.1.1** Daughters of the Cross of Liège is involved in the development of a site located at 571 Gander Green Lane, Sutton, London. Proposals are for the removal of a shed and erection of an extension comprising additional living space and a garage unit on the south and east sides of an existing residential property. The garage will be accessed via a new access route comprising a sliding gate, situated on the existing east fence line to Caversham Avenue. These proposals are hereafter referred to as 'the development'.
- 2.1.2** The proposed development is located at an existing residential property with an area of approximately 265m² (grid reference TQ240658), shown on Figure 1. The area affected by the development is hereafter referred to as 'the site'.
- 2.1.3** There are a number of trees within the site and adjacent to the site boundary that may be affected by development.
- 2.1.4** A previous planning application, reference DM2020/01486, for the extension of the property, was refused, the reasons for which related to the size/extent of the extension and impacts on the root protection zone of a 'mature Lime tree'.
- 2.1.5** An Application for a Vehicular Crossover at the side of 571 Gander Green Lane, (Caversham Ave) was made in December 2020 (reference number 17177) to the Highways, Transport & Regulatory Services, Kingston & Sutton Shared Environment Service. This was subsequently authorised in January 2021 the details of which can be seen in Appendix 6.

2.2 Site Description

- 2.2.1** The site is currently occupied by a two-storey semi-detached residential property situated on the corner of Gander Green Lane to the north east and Caversham Avenue to the south east. The property includes gardens to the north and south with a shed to the east. Access to the pavement of Caversham Avenue is granted via a gate from the back garden. The property is located within a predominantly residential area and the unbuilt garden space mostly comprises ornamental shrubs and lawn. The back garden features a ~150mm step up onto a slightly raised area of lawn, approximately 10m south west of the building. The back garden is dominated by a single multi-stemmed grey willow tree (*Salix cinerea*), located on the slightly raised lawn.

2.3 Brief and Objectives

- 2.3.1** Daughters of the Cross of Liège commissioned Thomson to undertake an arboricultural survey of the site, including a Tree Schedule (see Appendix 1) and a Tree Constraints Plan (TCP) (see Figure 2), and to produce an Arboricultural Impact Assessment (AIA) and Arboricultural Method Statement (AMS) including a Tree Protection Plan (TPP).
- 2.3.2** The objective of the survey and report was to assess the condition of the existing trees on site and any off site trees that might be affected by the development, providing sufficient information

to enable decisions to be made on potential design layout and tree retention for the proposed development. The brief was to complete:

- An Arboricultural Survey of trees within or immediately adjacent to the site, in line with BS5837:2012.
- Liaison with the Local Planning Authority and Tree Officer 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, which should be used to inform feasibility studies and design options at an early stage.
- An Arboricultural Impact Assessment (AIA), based on the proposed site layout, which evaluates the direct and indirect effects of the proposed design on the trees on site, identifies which trees can realistically be retained, and recommends any necessary mitigation to protect those trees.
- An Arboricultural Method Statement (AMS) detailing how retained trees will be protected on site and how any aspect of the development that is within the root protection areas of retained trees will be implemented with minimum impact on the future health of the trees.
- A Tree Protection Plan detailing how retained trees will be protected during development works.

2.4 Limitations

- 2.4.1 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.
- 2.4.2 A full hazard assessment has not been made and therefore no guarantee is given as to the structural integrity of any of the trees onsite.
- 2.4.3 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 12 months from the date of survey.

3. Methodology

3.1 Desk Study

3.1.1 Records of Tree Preservation Orders (TPOs) existing at the site and Conservation Areas within or adjacent to the site were sought from Sutton London Borough Council.

3.2 Tree Survey

3.2.1 All significant trees at the site were assessed for their potential to be affected by the development proposals. Significant trees are defined as those with a trunk diameter of greater than 75mm at 1.5m above ground level according to the survey methodology outlined in BS5837:2012. Off-site or third party trees have been included where it is likely they would influence the development.

3.2.2 The trees surveyed were inspected from ground level only and no internal investigations were undertaken.

3.2.3 Trees were categorised as single trees or those that formed part of a distinct group such as a woodland or hedgerow. Groups can be defined as cohesive arboricultural features, either aerodynamically (for example, companion shelter), visually or culturally including for biodiversity (BS5837:2012). The information recorded for each tree can be seen in Table 1.

Table 1: Information recorded for each tree during survey.

Attribute	Description
Tree No.	Numerical reference given in sequential order starting at number '1', corresponding with the numbers as set out in Figure 2; trees are given the prefix 'T', groups 'G', woodlands 'W' and hedgerows 'H'.
Species	The common names are based upon on site identification and expressed according to <i>Tree Guide</i> (Johnson & More, 2004).
Height	Measured approximately from ground level with the aid of a clinometer and shown in metres (m).
Stem Diameter	Diameter measured at approximately 1.5m above ground level. In the case of multi-stemmed trees, measurement is taken of each stem at 1.5m, where there are two to five stems; or a mean stem diameter at 1.5m, where there are more than five stems. Given in millimetres (mm).
Canopy Spread	Maximum branch spread measured in metres from the centre of the trunk in the direction of the four cardinal points of the compass (or an average can be given if branches demonstrate an even spread).

Attribute	Description
Crown Clearance	Height above ground level of the first significant branch and direction of growth, and the height above ground level of the overall canopy.
Age Class	<ul style="list-style-type: none"> • Young - less than one-third natural life span spent; • Middle-aged - between one-third and two-thirds natural life span spent; • Mature - greater than two-thirds life span completed; • Over-mature - mature, and in an overall state of decline; • Veteran - surviving beyond the typical age range for the species with a high value in terms of conservation and amenity.
Physiological Condition	Overall health, condition and function of the tree in comparison to a 'normal' example of the species of a similar age; e.g. 'good', 'fair', 'poor' or 'dead'. If deemed necessary, these gradings may be elaborated upon in the 'Comments' section.
Structural Condition	<p>The overall structural condition of the tree including the roots, butt, trunk, limbs and their unions, and the presence of any structural defects, decay or pathological defects.</p> <ul style="list-style-type: none"> • Good - no significant visible structural defects with a form typical for the species; • Fair - a specimen with only minor defects that are easily remedied or of no long term significance; • Poor - significant and irremediable physiological or structural defects that may lead to early or premature decline; • Hazardous - significant structural defects of such a degree that there is a risk of imminent collapse or failure. If deemed necessary, these gradings may be elaborated upon in the 'Comments' section.
Comments	Comments have been made, where appropriate, relating to location, health and condition, structure and form, estimated life expectancy, conservation value and amenity value within the local landscape.
Preliminary Management Recommendations	Tree work that should be undertaken for good arboricultural management, regardless of the requirements of the development.
Estimated Remaining Contribution	The estimated time, in years, that the tree will provide a safe contribution to the site (i.e. <10, 10-20, 20-40 and >40).

Quality Assessment

3.2.4 During the survey, the trees were assessed qualitatively, categorising the quality and value of the trees based on arboricultural, landscape and cultural (including conservation) features. Each

tree was then placed into one of four categories. The four categories can be seen in Table 2. Definitions for these categories can be found in Appendix 2.

Table 2: Quality assessment categories

Category	Description
Category U	Trees 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.
Category A	Trees of high quality with an estimated life expectancy of at least 40 years.
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
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.

3.2.5 Trees categorised as either A, B or C, were also allocated up to three subcategories. The subcategories chosen for each tree are dependent on the main reasons for selection of the particular category grading. The three subcategories are as follows:

- 1 - Category grading based on mainly arboricultural qualities;
- 2 - Category grading based on mainly landscape qualities; and
- 3 - Category grading based on mainly cultural values, including conservation.

Root Protection Areas (RPAs)

3.2.6 Trees that are selected for retention on the site could be at risk of damage during construction, such as root damage during the excavations for foundations or services or any ground-working for landscaping. Further impacts on the trees may potentially result from vehicle movements and materials storage, including root severance, compaction of the soil and exclusion of air and water to the soil. The risk of tree damage is minimised if construction activities are planned to avoid the roots of trees.

3.2.7 The area of ground adjacent to each tree or group of trees that contains the majority of the roots can be calculated using the equation provided in the BS5837:2012. This Root Protection Area (RPA) is a radius around the tree of 12 times the stem diameter for a single stem. For multi-stemmed trees of two to five stems and greater than five stems, the cumulative stem diameters to be multiplied by 12, are calculated as per the equations in Table 3.

Table 3: Equations for the calculation of the RPA of multi-stemmed trees

Number of stems	Equation
Two to five	$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$
More than five	$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

3.2.8 The RPA for each tree in the Tree Schedule has been calculated and, where relevant, has been adjusted to take into account site conditions. For example, when a tree is growing in a confined root space adjacent to an existing building or other solid structure that would restrict root growth in that direction, the RPA has been adjusted accordingly (see Figure 2).

3.2.9 The RPA for tree groups is calculated using the stem of the largest tree within the group. The RPA radius is calculated as per Section 3.2.7 and then used to define the RPA by following the outline of the group's extent.

3.2.10 Where the calculated RPA exceeds 707m², it has been capped at this figure, as per BS5837:2012. This is equivalent to a circle with a radius of 15m or a square with approximately 26m sides.

Date of Survey

3.2.11 The site was visited and the survey undertaken on 26/01/2020 by Alex Cooke, Assistant Arboricultural Consultant MSc BSc (Hons) AMIEnvSc PIEMA.

Weather Conditions

3.2.12 The weather conditions at the time of survey were overcast. Deciduous trees had no leaves.

4. Results

4.1 Desk Study

4.1.1 It was confirmed via the Sutton London Borough Council Tree Protection Status WebApp that no trees within the site or immediately adjacent to the site boundaries are covered by Tree Preservation Orders or located within a Conservation Area.

4.2 Tree Survey

4.2.1 Six significant individual trees located within or immediately adjacent to the site boundary were recorded during the survey. A breakdown of categories can be found in Table 4. The locations of all trees, RPAs, retention categories and reference numbers are shown on Figure 2. A detailed description of each tree is given in the Tree Schedule in Appendix 1.

Table 4: Number of significant trees allocated to each retention category.

Tree Category	Number of Trees	Tree Numbers	Total
A	-	-	-
B	-	-	-
C	3	T1, T5, T6	3
U	3	T2, T3, T4	3
Total	6		6

4.2.2 A list of the criteria used to determine the category and subcategories of the trees can be found in Appendix 2 - Table of Quality Assessment.

Root Protection Areas (RPAs)

4.2.3 The RPAs for the trees and groups surveyed can be seen in Figure 2. The actual RPAs, in m², for the individual trees surveyed are shown in Appendix 1.

5. Arboricultural Impact Assessment (AIA)

5.1 Introduction

5.1.1 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 or retained during the construction phase.

5.1.2 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.

5.2 Documents

5.2.1 This assessment has been based on documents produced by Bird and MacDonald. The details of these documents can be seen in Table 5.

Table 5: Documents upon which this assessment has been based

Originator	Reference No.	Title
Bird and MacDonald	3772 PL-1000 Rev G	Proposed Drawings

5.3 Tree Removals

5.3.1 Three Category U trees, two of which are dead, require removal as part of good arboricultural management.

5.4 Trees to be Retained

5.4.1 Of the trees surveyed three are to be retained and protected throughout development.

5.4.2 The RPAs of the retained trees should be protected by fencing to the specification laid out in BS5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*'. The specification of this fencing is detailed in Section 6.6 of the AMS and an illustrated example can be seen in Appendix 3. The area protected by the fencing shall be known as the Construction Exclusion Zone (CEZ).

Shading

5.4.3 Due to the orientation of the building and the trees being located to the east and south of the building, there will not be a significant effect from shading caused by the retained trees and levels of daylight and sunlight reaching the new building will be acceptable.

5.5 Trees Works

5.5.1 Prior to the erection of protective fencing, it is recommended that tree T1 undergoes a crown reduction to create a sensible working space around the proposed extension. The reduction will be easily tolerated by the tree, a grey willow, and not cause long-term detriment to its health.

5.5.2 All tree work is to be undertaken in accordance with the British Standard BS3998:2010 Recommendations for Tree Work (BS3998:2010).

5.6 Construction Work within RPAs

5.6.1 A new patio is proposed in the back garden, south of the building, on an existing area of lawn which will encroach into the RPAs of T1 and T6. To mitigate against the root severance and soil compaction associated with traditional hard surface construction, a 'no-dig' construction technique will be employed in this area. The new surface should be built on top of the existing ground level (following the removal of the existing vegetation) utilising a cellular confinement system and a permeable surface layer, as outlined in the Arboricultural Association Guidance Note 12 '*The use of cellular confinement systems near trees*'. An illustrated example of this specification can be seen in Appendix 5.

5.6.2 A new shed is proposed in the south east corner of the back garden which will encroach slightly into the RPA of T1. No special foundations are required to install the shed; it will be supported on lightweight timber bearers. The encroachment is minor and will not have a detrimental impact on the tree..

5.6.3 A new fence and gate are proposed along the eastern boundary that pass through the RPA of tree T1 and T6. Post holes required to fit these should be hand dug so that damage to roots is minimised. Post holes will need to be lined with an impermeable geotextile that prevents concrete post-mix leaching into the soil and burning the tree roots.

5.6.4 A new crossover has been approved by the Council which passes between the RPAs of trees T5 and T6. As shown on Figure 3, there is only the smallest of encroachments into the RPA of tree T5 and these works will have little effect on the trees.

5.7 Services and Utilities

5.7.1 Detailed drawings of underground services are not available at this time; therefore it is not possible to identify any specific potential impacts associated with the site at this stage.

5.7.2 However, it is anticipated that any new services for the proposed development will connect to existing services at the site and will not involve installation in retained trees' RPAs.

5.7.3 The guidelines within National Joint Utilities Group publication '*Guidelines for the planning, installation and maintenance of utility services in proximity to trees*' (NJUG 4, 2007) should be adhered to.

5.7.4 If new services are to be introduced into the site they should be located outside of the RPAs of the three retained Category C trees, where they will not interfere with tree roots. Final positions of any proposed services should be verified and approved by an arboricultural consultant and the Local Authority Tree Officer before implementation.

5.7.5 If service installation is required within RPAs then the guidelines within National Joint Utilities Group publication '*Guidelines for the planning, installation and maintenance of utility services in proximity to trees*' (NJUG 4, 2007) should be adhered to.

5.8 New Planting

5.8.1 Tree planting is not considered necessary for the replacement of the two dead trees and the Category U sycamore being removed. If new trees are desired at a later date, small compact trees should be selected which might include crab apple (*Malus trilobata*), cherry plum (*Prunus cerasifera* 'Pissardii') and Tibetan cherry (*Prunus serrula* 'Tibetica').

5.8.2 New trees should be planted in accordance with British Standard 8545:2014 *Trees: from nursery to independence in the landscape - Recommendations*.

5.9 Conclusion

5.9.1 The development will result in the removal of two dead trees and one small multi-stemmed sycamore of negligible arboricultural value. These removals will not have a significant detrimental effect on the arboricultural value of the site and tree replacements are not deemed necessary for this development due to limited space and the poor quality of the trees being removed.

5.9.2 There should be no harm caused to any trees planned for retention by these proposals subject to the erection of protective fencing furnished with tree protection notices, 'no-dig' construction techniques, hand digging post holes for the fence and gates and the creation of a Construction Exclusion Zone.

6. Arboricultural Method Statement (AMS)

6.1 Introduction

- 6.1.1 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.
- 6.1.2 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.
- 6.1.3 This AMS is to be used in conjunction with the Tree Protection Plan (TPP01) in Figure 3.

6.2 Documents

- 6.2.1 This AMS has been based on documents produced by Bird and MacDonald. The details of these documents can be seen in Table 6.

Table 6: Documents upon which this assessment has been based

Originator	Reference No.	Title
Bird and MacDonald	3772 PL-1000 Rev G	Proposed Drawings

- 6.2.2 The relationship between the trees and the proposed development are shown on the Tree Protection Plan (TPP01), (see Figure 3) which is based on the Tree Constraints Plan (TCP01) and the drawings detailed in Table 6.

6.3 Supervision

- 6.3.1 Before construction commences, a suitably qualified and experienced arboriculturist shall be appointed to oversee key stages of the construction work that will affect the tree, as laid out in Table 8.
- 6.3.2 The 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.
- 6.3.3 A site induction will be held for all personnel in relation to 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.
- 6.3.4 Once the tree protection fencing has been installed, it should be checked for integrity by a suitably qualified arboriculturist.

6.3.5 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 Sutton Council Planning Department.

6.3.6 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.

6.4 List of Contacts

6.4.1 The list of contacts within Table 7 should be used as reference if any deviations from, or issues with, any part of this AMS arise.

Table 7: List of contact details for relevant parties

Name	Job Title	Organisation	Contact Details	
Neil Francis	Principal Arb Consultant	Thomson Environmental Consultants	Neil.francis@thomsonec.com	
			-	07824 692620
Alex Cooke	Assistant Arboricultural Consultant	Thomson Environmental Consultants	alexander.cooke@thomsonec.com	
			-	07580 744452
Simon Bird	Architect	Bird + MacDonald	sb.bmacd@gmail.com	
			07836 285473	+27 72 696 5763
John Worgan	Project Manager	Bird + MacDonald	jsworgan@hotmail.com	
			-	07850 098335

6.5 Tree Removals and Pruning

6.5.1 The three individual trees, T2, T3 and T4 shall be felled to ground level. Trees requiring pruning shall have the works carried out in accordance with BS3998:2010 '*Recommendations for Tree Work*'.

6.5.2 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.

6.6 Protective Fencing

6.6.1 Temporary fencing will be erected as indicated on the Tree Protection Plan (TPP01) in Figure 3. The specification for this fencing will be in accordance with the recommendations given in BS5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (BSI, 2012). It will comprise 2.0m high mesh fencing (Heras type panels are a simple, readily available solution) attached to a scaffold framework. Support scaffolds will be attached to the scaffold framework as necessary at an angle of 45 degrees on the side of the trees and

anchored by further scaffold poles carefully firmed into the ground. The vertical scaffold tubes will be spaced at a maximum interval of 3m.

6.6.2 A diagram illustrating an example of the protective fencing can be seen in Appendix 3.

6.6.3 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.

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

6.6.5 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.

6.6.6 The fencing shall remain in place until soft landscape operations require its full or partial removal. No other construction activity will take place within those areas formerly protected by the fence.

6.7 Ground Protection

6.7.1 There is no requirement for ground protection to be installed for this development.

6.8 Removal of Hard Surfaces within the RPA

6.8.1 There is no requirement for the removal of hard surfaces within the RPAs of the retained trees.

6.9 Construction within RPAs

6.9.1 An area of new paving will be installed in the RPAs of trees T1 and T6 (see Figure 3). In order to prevent root damage and soil compaction around these trees, this will need to be laid on top of the existing ground level using 'no-dig' techniques such as those outlined in Arboricultural Association Guidance Note 12 *'The Use of Cellular Confinement Systems Near Trees - A Guide to Good Practice'*.

6.9.2 This should be constructed using a proprietary cellular-confinement system laid onto a geotextile membrane. This will be positioned on top of the existing ground level (following the

removal of any vegetation). The edges will be securely boarded and staked to prevent the spread of the infill substrate, and finally topped with a layer of permeable tarmac. Geosynthetics Limited's Cellweb® Tree Root Protection system is a good example of the 'no-dig' method and an illustrative example can be seen in Appendix 5.

6.9.3 The proposed redevelopment works show a new fence and gate within the RPA of T1 and T6. As post holes will be required for this, exploratory hand digging should be utilised to determine whether roots are present at those locations. Under the advice of the arboriculturist, any roots present under 25mm in diameter will be pruned back using secateurs or a pruning saw leaving a clean-cut surface and to a lateral root where possible. Roots larger than 25mm, or that occur in clumps, will be assessed for their suitability for pruning by the arboriculturist.

6.9.4 As posts are likely to be fixed using readily available bags of post-mix, the holes should be lined with a suitable geotextile to prevent caustic burns to the roots from the concrete mix.

6.9.5 Works to create the crossover will not affect the RPAs and do not need a specific construction methodology.

6.9.6 The shed in the garden will be supported on timber bearers. This will not require any specific construction methodology as there will not be any significant excavation required and the footprint of the timber bearers is small.

6.10 Services and Utilities

6.10.1 All underground services and drainage routes shall be located so that no excavations are required within the RPAs of the retained trees. In this instance, the best route onto the site is along the southern boundary or the north-west corner of the site.

6.10.2 In the event that an incursion into an RPA is unavoidable, the installation shall comply with the methods and guidelines detailed in *Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees* NJUG 4 (2007). If this does occur, then an arboricultural consultant shall be consulted before any works commence within the RPA to agree the methodology for the excavation.

6.11 Landscaping

6.11.1 The plans provided show new grassed areas within the RPA of the trees T1 and T6. In order to prevent damage to the trees' roots, mechanical preparation of the ground in these areas shall not be allowed. Instead, cultivation using suitable hand tools such as trowels will be used to break up the surface of the existing ground and to help with decompaction of the soil structure. The addition of organic matter will also assist with the soil amelioration.

6.11.2 In addition, it will also be important to adhere to the principles of the CEZ (as detailed in Section 6.6.5) with particular reference to level changes, root severance and 'capping' with impermeable materials. If impermeable surfaces are to be laid within the RPA of any of the retained trees then they should not cover greater than 20% of the area.

6.11.3 An area of mulch forming a circle with a radius of 1m and 5-10cm depth, consisting of shredded bark, bark chips or well-composted green waste to conform to PAS 100 (BSI, 2005), should be placed around the retained and newly planted trees prior to any soft landscaping being undertaken. It should not be spread so that it is piled against the base of the tree where it can retain moisture and result in disease.

6.11.4 It is suggested that an area of mulch be added to the base of the trees should any soft landscaping take place. An area of 1m² and 5-10cm depth of shredded bark, bark chips or well-composted green waste to conform to PAS 100 (BSI, 2005) is suggested. Mulch should not be spread so that it is piled against the base of the tree.

6.12 Sequence of Works

6.12.1 A logical sequence of events is to be observed as shown in Table 8.

Table 8: Sequence of works.

Stage	Event	Arboricultural Supervision required
Stage 1	Prestart meeting with site manager and relevant construction staff.	Yes
Stage 2	Carry out tree removals specified in Section 6.5 and any other necessary tree pruning operations to enable access and create working space.	No
Stage 3	Install Protective Fencing in the positions shown on Figure 3, to the specifications given in Section 6.6	No
Stage 4	Site visit by arboriculturist to sign off the installed fencing and ground protection. Further regular visits will be undertaken by the arboriculturist.	Yes
Stage 5	Complete main construction phase of development.	No
Stage 6	Complete all the landscaping.	No
Stage 7	Removal of all machinery from site.	No
Stage 8	Dismantle protective fencing by hand and remove from site.	No
Stage 9	Arboricultural assessment of retained trees on site to confirm their health post development.	Yes

7. Bibliography

- 7.1.1 British Standards Institution (2014) BS8545:2014 *Trees: from nursery to independence in the landscape - Recommendations*. BSI, London.
- 7.1.2 British Standards Institution (2012) BS5837:2012 *Trees in Relation to Design, Demolition and Construction - Recommendations*. BSI, London.
- 7.1.3 British Standards Institution (2010) BS3998:2010 *Recommendations for tree work*. BSI, London.
- 7.1.4 British Standards Institution (2005) *Publicly Available Specification 100 (PAS 100:2005)*. BSI, London.
- 7.1.5 HM Government. The Town and Country Planning (Tree Preservation) (England) Regulations 2012. London: Office of Public Sector Information (OPSI).
- 7.1.6 Lonsdale, D. (1990) *Principles of Tree Hazard Assessment and Management*. The Stationery Office, London.
- 7.1.7 Matheny, N. & Clark, J.R. (1998) *Trees and Development*. ISA, Champaign, IL.
- 7.1.8 Mattheck, C. & Breloer, H. (1994) *The Body Language of Trees*. The Stationery Office, London.
- 7.1.9 Johnson, O. & More, D. (2004) *Collins Tree Guide*. London: HarperCollins
- 7.1.10 National Joint Utilities Group (NJUG) (2007) *Guidelines for the planning, installation and maintenance of utility services in proximity to trees*. NJUG, London.
- 7.1.11 National Tree Safety Group (2011) *Common Sense Risk Management of Trees* Forestry Commission, Edinburgh
- 7.1.12 Robertson, J, Jackson, N & Smith, M (2006) *Tree Roots in the Built Environment*. The Stationery Office, London.
- 7.1.13 Rose, B. (2020) Guidance Note 12 '*The Use of Cellular Confinement Systems Near Trees - A Guide to Good Practice*'. Arboricultural Association, Gloucestershire

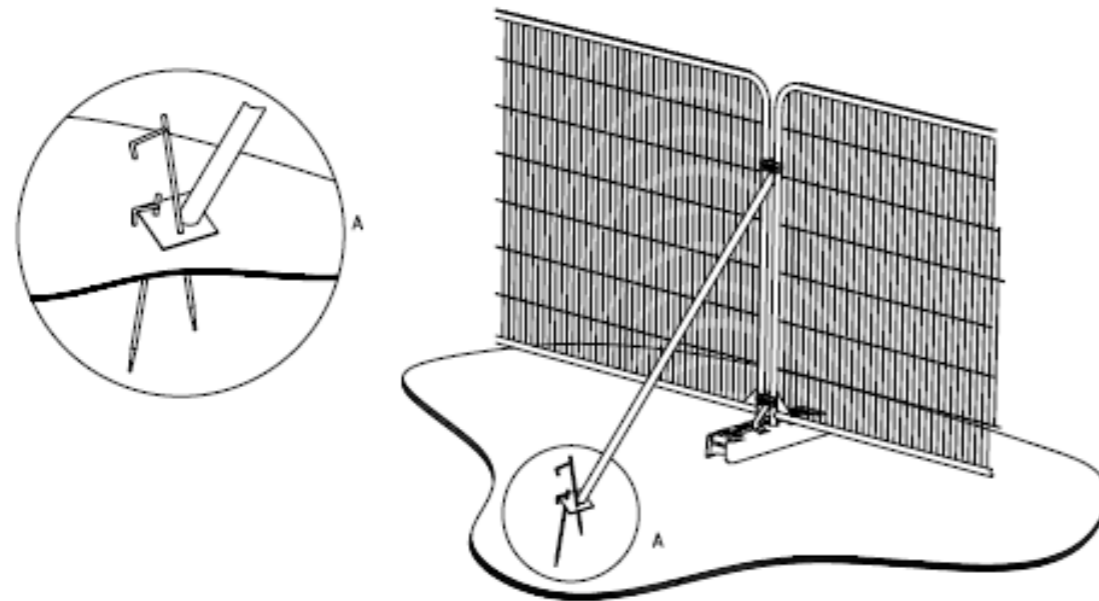
Appendix 1 - Tree Schedule

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m)				Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition		Comments	Preliminary Management Recommendations	BS Category	RPA (m ²)	RPA Radius (m)
				N	E	S	W					Physiology	Structure					
T1	grey willow; <i>Salix cinerea</i>	10	230, 120, 210, 65, 45	7	5	5	5	1.75E	1.75	Middle- aged	0-10	Fair	Fair	Some exposed sapwood and ripewood; compression/included union not significant	-	C2	10.2	1.8
T2	Dead tree	2	180	-	-	-	-	-	-	-	-	Dead	Dead	This tree is dead	Remove tree	U	-	-
T3	Dead tree	3	210	-	-	-	-	-	-	-	-	Dead	Dead	This tree is dead	Remove tree	U	-	-
T4	sycamore; <i>Acer pseudoplatanus</i>	3.5	40, 30, 20, 30, 40	1	1	1	1	0.5W	1.75	Young	> 10	Poor	Poor	Cut to stump at ground level with regrowth sprouting	Remove tree	U	-	-
T5	common lime; <i>Tilia x europaea</i>	14	480	4	4	4	4	2.5S	4	Middle- aged	> 40	Fair	Good	Some exposed sapwood due to bark missing near base	-	C2	104.2	5.76
T6	common lime; <i>Tilia x europaea</i>	15	510	4	4	4	4	s.5S	2.5	Middle- aged	> 40	Good	Good	Epicormic growth at base; crown reduced previously; good regrowth	-	C2	117.7	6.12

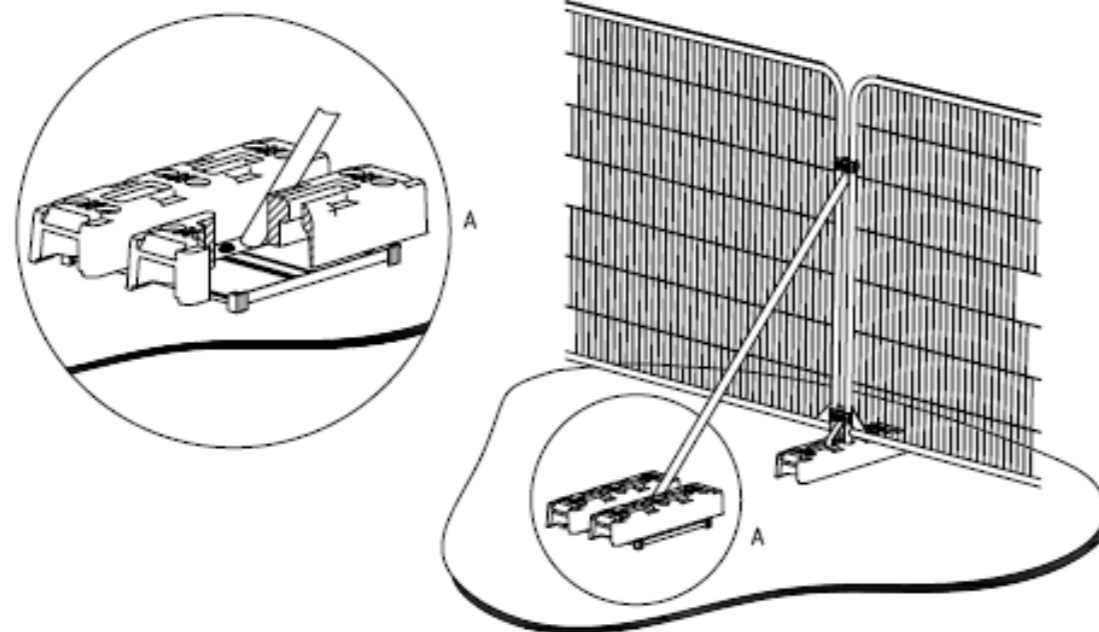
Appendix 2 - Table of Quality Assessment

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

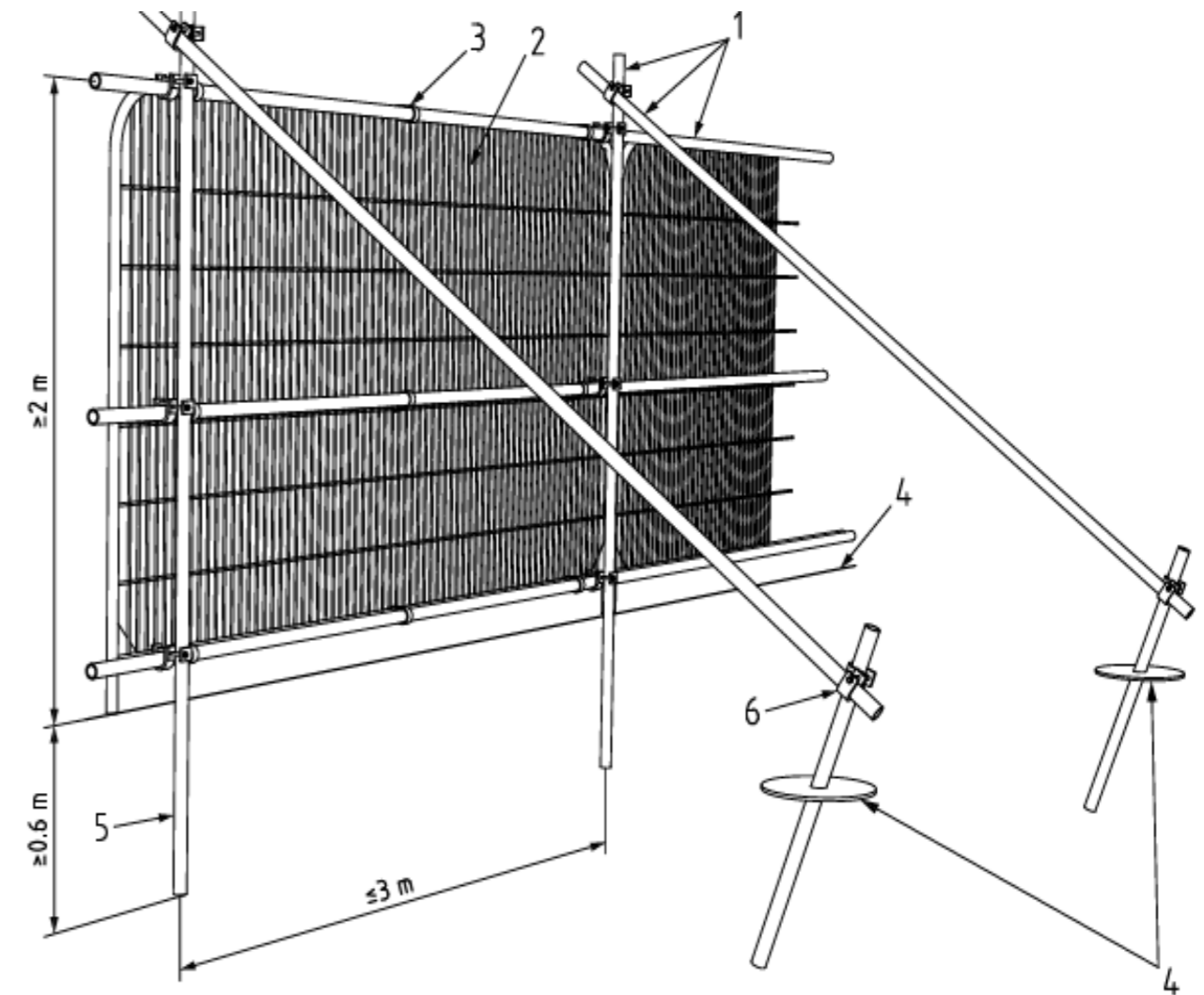
Appendix 3 - Example of Protective Fencing



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray



Key

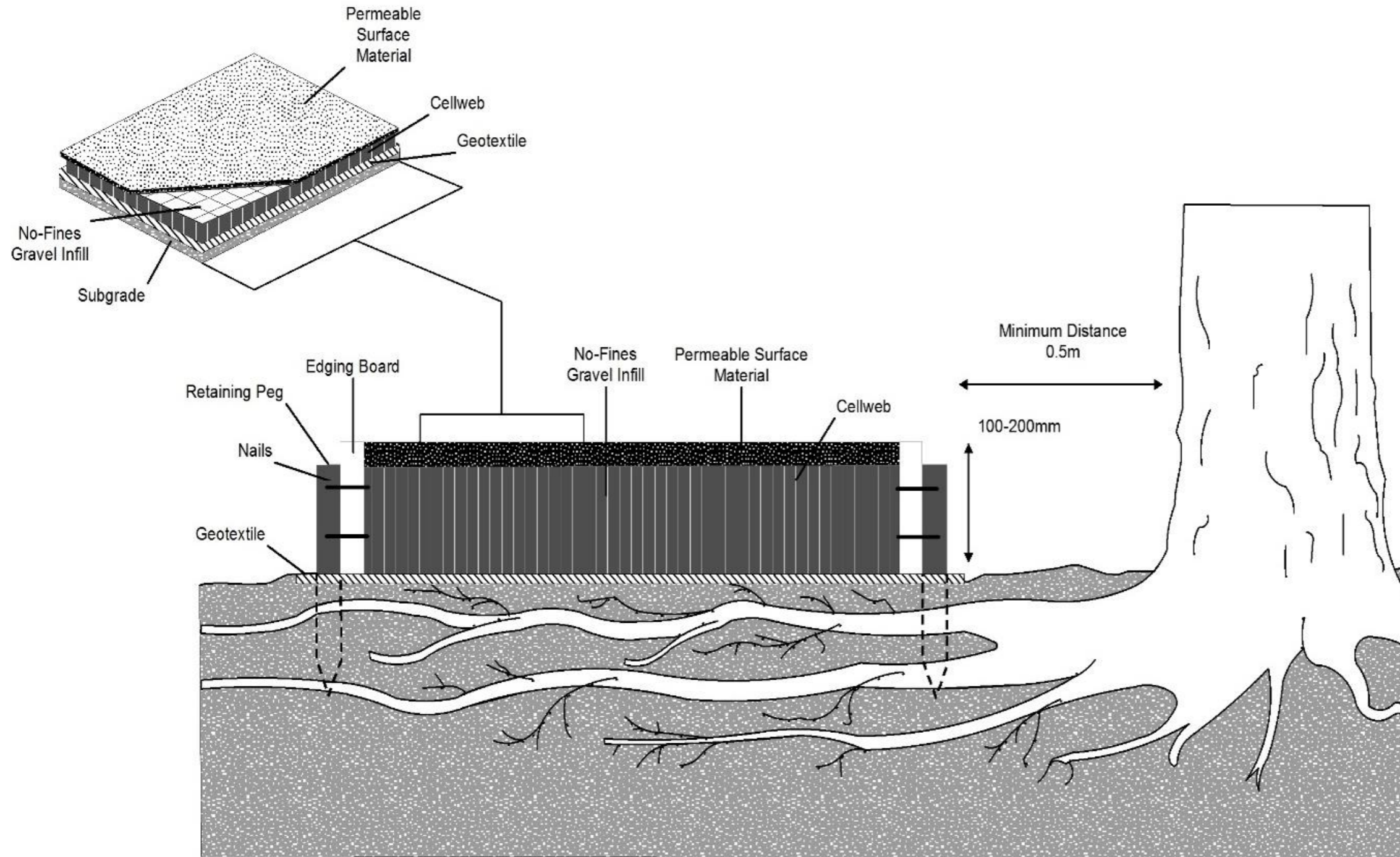
- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Appendix 4 - Tree Protection Fencing Notice



Appendix 5 - Example of 'No-dig' Construction

No-dig Construction Detail



Appendix 6 - Crossover Agreement



Matthew Hill

Assistant Director – Highways, Transport &
Regulatory Services

Kingston & Sutton Shared Environment Service
Highways & Transport
24 Denmark Road
Carshalton
SM5 2JG

APPLICATION NUMBER: 17177

S Veronica
571 Gander Green Lane
Sutton
SM3 9RF

Call Centre: 020 8770 5000
Email: vehicle.crossovers@sutton.gov.uk

Date: 04/01/2021

Dear Sir/Madam

**Application for Vehicular Crossover at the side of 571 Gander green
Lane, (Caversham Ave)**

I refer to your recent enquiry dated 18/12/2020 concerning a vehicle crossing to serve the above property. (Subject to Planning)

An inspection has recently taken place, and the application assessed against the Vehicle cross-over Policy. The cost for will be £1,240.32 (Do not send any money at this time)

Please proceed with constructing the “Hardstanding” and remove any fence or wall, when you have done this please let me know and I will send you the payment form.

Should you have any further queries please do not hesitate to contact me.

Yours sincerely

RRowsell

Ricky Rowsell

07734973949
Highways Crossover Engineer
Highways and Transportation