91 SOUTH END ROAD, HAMPSTEAD, LONDON

PRELIMINARY ARBORICULTURAL ASSESSMENT AND IMPACT ASSESSMENT

A Report to: Lathams Architects

Report No: RT-MME-129955-01

Date: December 2018

MIDDLEMARCH ENVIRONMENTAL

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REPORT VERIFICATION

This study has been undertaken in accordance with British Standard 5837:2012 “Trees in relation to design, demolition and construction - Recommendations”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	20/12/18	Duncan Smith BSc (Hons) M.Arbor.A (Principal Arboricultural Consultant) & Fiona Shuttle BSc (Arboricultural Project Officer)	Dr Philip Fermor CEnv, MCIEEM (Managing Director)	Dr Katy Read CEnv, CEcol, MCIEEM, MCIWEM, C.WEM DipSM (Executive Director)

DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified and experienced arboriculturist to assess any changes to the trees, groups and hedgerows on site and to inform a review of the conclusions and recommendations made.

It should be noted that trees are dynamic living organisms that are subject to natural changes as they age or are influenced by changes in their environment. As such following any significant meteorological event or changes in the growing environment of the trees they should be re-assessed by a suitably qualified and experienced arboriculturist.

NON-TECHNICAL SUMMARY

Middlemarch Environmental Ltd was commissioned to undertake a Preliminary Arboricultural Assessment and Impact Assessment of a site at 91 South End Road, Hampstead, London. It is understood that the site will be the subject of a planning application for a new extension to the existing residential building and levelling works. To fulfil the project brief a desk study and a field survey of the trees present on site were undertaken in December 2018.

The desk study exercise identified that none of the trees present on site are protected by a Tree Preservation Order, however, the site is situated within Hampstead Conservation Area. No works to any trees within the Hampstead Conservation Area (i.e. any trees within the study area) are to be carried out without prior submission of a Section 211 notice to the Local Planning Authority (LPA) giving six weeks' notice of the proposed works.

The field survey was undertaken in December 2018 by Duncan Smith (Principal Arboricultural Consultant). The survey identified that the site's tree stock is primarily composed of early-mature, semi-mature and mature trees which are predominately in a fair condition.

The proposed development of the site will require the removal of five individual trees and the temporary translocation of a hedgerow within the site. Additionally some access facilitation pruning works to the crowns of trees within, and overhanging, the site may be required to minimise the potential for branch damage to occur during development.

The proposed tree removal will have a localised amenity impact due to their secluded location and all trees to be removed were identified to be of a low retention value or easily replaceable. Additionally, even though hedgerow H1 which currently fronts onto South End Road will be moved to permit access for construction vehicles, this can be restored following construction works and so its privacy and screening value in the local landscape can be conserved.

To ensure the protection of trees selected for retention during the course of the proposed development it is recommended that the guidance set out in Sections 5 and 6 of this report are considered and that, during development of the site, the retained trees are protected by the erection of tree protection barriers to the specification set out in BS5837:2012.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BRIEF

Lathams Architects commissioned Middlemarch Environmental Ltd to prepare a combined Preliminary Arboricultural Assessment and Impact Assessment in respect of the proposed development of land at 91 South End Road, Hampstead, London.

The purpose of this report is to:

- Record the current condition of the trees found on the site and categorise them using criteria outlined in BS5837:2012 “Trees in relation to design, demolition and construction - Recommendations”.
- Provide a Tree Constraints Plan that identifies any constraints to development presented by the trees to include root protection areas for the retained trees as described in BS5837:2012.
- Provide guidance detailing arboricultural constraints to development and factors to be considered during the detailed design of the proposed development.
- Detail the impact that the proposed development will have upon the site’s existing tree stock and set out recommendations for the subsequent mitigation or avoidance of impact.

1.2 SITE DESCRIPTION

The site under consideration is the residential dwelling at 91 South End Road, located on the western fringes of Hampstead, London. The site is roughly rectangular in shape and extends to approximately 0.05 ha in size and it is centred on Ordnance Survey Grid Reference TQ 271 857.

The northern site boundary lies adjacent to South End Road, whilst all other boundaries are bound by neighbouring residential properties and gardens. The wider landscape is dominated by a mixture of residential development and recreational parks, including Hampstead Heath which is located approximately 20m north of the northern site boundary at its nearest point.

At the time of the survey, the site comprised a residential building with a front and rear garden containing amenity grassland and scattered trees which were predominantly located adjacent to the garden boundaries.

The locations of the trees surveyed can be found on Middlemarch Environmental Ltd Drawing Number C129955-01-01 in Section 8 of this report.

1.3 DEVELOPMENT PROPOSALS

The proposed development of the site is to remove the existing conservatory, construct a new extension to the existing residential building and to undertake levelling works in the front garden.

1.4 DOCUMENTATION PROVIDED

This assessment is based upon the information provided by the client in addition to information collected by Middlemarch Environmental Ltd during a survey of the site undertaken in December 2018. The documents and drawings considered are detailed within Table 1.1.

Author	Document	Drawing Number	Date
Lathams Architecture + Urbanism Ltd	Proposed Site Plan	7304 (08) 04	24/07/18
Mapmatic	Measured Building Survey	2634	01/05/18

Table 1.1: Documentation Provided

2. METHODOLOGY

2.1 DESK STUDY

A desk study was undertaken to identify if any of the trees present within or in close proximity to the site are covered by Tree Preservation Orders (TPOs) or if the site is situated within a Conservation Area. This involved consultation with the Local Planning Authority.

2.2 CONDITION STATUS

To determine the status of the trees within the site a full arboricultural survey has been undertaken, assessing the species and status of all trees present. This survey has been carried out in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

All trees have been assigned a unique reference number. Individual trees above 75 mm in diameter (at 1.5 m above ground level) have had their position plotted to a survey drawing. The trees were visually assessed and a schedule prepared listing: tree number, species, trunk diameter at 1.5 m above ground level (or in accordance with Annex C of BS5837:2012), tree height, crown spread (cardinal points), crown clearance (cardinal points), height of first branch and growth direction, age class and estimated remaining life expectancy in years. Measurements for tree height, first branch height, crown clearance and crown spread were taken to an accuracy of 0.5 m. Stem diameter measurements were recorded to the nearest 10 mm. Any specific observations or recommendations with regard to management were also noted. All these observations and measurements are summarised in Section 4.

Each tree was assessed and assigned to one of the following categories:

- Category A: Those trees of high quality and value with an estimated remaining life expectancy of at least 40 years.
- Category B: Those trees of moderate quality and value with an estimated remaining life expectancy of at least 20 years.
- Category C: Those trees of low quality and value with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150 mm.
- 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.

Categories A, B and C have further sub-categories with regards to the reasons for tree retention:

1: Mainly arboricultural qualities
2: Mainly landscape qualities
3: Mainly cultural values, including conservation.

2.3 ROOT PROTECTION AREA (RPA)

In order to avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the Category A, B and C trees. This is a minimum area around a tree which is deemed to contain sufficient roots and rooting volume to maintain the tree's viability. Protection of the roots and soil structure in this area should be treated as a priority.

These figures have been calculated utilising the formulas within Section 4.6 and Annex D of British Standard 5837:2012.

3. STATUTORY PROTECTION

3.1 TREE PRESERVATION ORDER AND CONSERVATION AREA DESIGNATIONS

Rav Curry (London Borough of Camden) confirmed by email on the 20th December 2018 that there are no Tree Preservation Orders affecting the site.

An internet search using the online mapping provided by Camden Council (http://gis.camden.gov.uk/geoserver/ConservationArea.html) confirms that the study area is situated within Hampstead Conservation Area.

The existence of the Conservation Area confers a degree of statutory legal protection upon the trees with a stem diameter of greater than 75 mm (at 1.5 m above ground level) growing within it. In particular, it should be noted that prior to undertaking any works to trees within the Conservation Area it is necessary to submit a Section 211 notice to the Local Planning Authority giving six weeks' notice of the proposed works. In practice, the submission of a planning application containing fully specified details of proposed tree works will usually meet this requirement.

An authority may treat a planning application for development in a Conservation Area that includes specified tree work as a Section 211 notice if the applicant has clearly stated that it should be considered as such. However, if work is proposed to trees other than those immediately affected by a proposed development then a separate Section 211 notice should be submitted. Where an authority has granted planning permission for development in a Conservation Area, only tree works necessary to implement the development may be carried out. The Authority may use conditions or informatives attached to the permission to clarify this requirement.

3.2 PROTECTED SPECIES

Bats

Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. Consequently causing damage to a bat roost constitutes an offence.

Generally should the presence of a bat roost be suspected whilst completing works on any trees on site then an appropriately licensed bat worker should be consulted for advice.

Birds

Trees and hedgerows offer potential habitat for nesting birds which are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties. This legislation makes it an offence to intentionally or recklessly damage or destroy an active bird nest or part thereof.

As the trees on, and adjacent, to the site provide potential habitat for nesting birds all tree work should ideally be completed outside the nesting bird season (Nesting bird season is generally accepted to be between March and September).

If this is not possible then the vegetation should be subject to a nesting bird inspection by a suitably experienced ecologist prior to commencement of works. If any active nests are identified then the vegetation, and a defined buffer zone, will need to remain in place until the young have naturally fledged.

4. SURVEY RESULTS

4.1 WEATHER CONDITIONS AND PERSONNEL

The survey was completed on the 18th December 2018 by Duncan Smith, Principal Arboricultural Consultant. The weather conditions at the time of the survey are shown in Table 4.1.

Conditions	Result
Temperature (°C)	12
Cloud Cover (%)	70
Precipitation	Nil
Wind Speed (Beaufort)	F1

Table 4.1: Weather Conditions at Time of Survey

4.2 TREE SPECIES

Tree and shrub species recorded during the survey are listed in Table 4.2.

Common Name	Scientific Name
Apple	*Malus x domestica*
Ash	*Fraxinus excelsior*
Blackthorn	*Prunus spinosa*
Beech	*Fagus sylvatica*
Fig	*Ficus carica*
Holly	*Ilex aquifolium*
Lawson cypress	*Chamaecyparis lawsoniana*
Leyland cypress	*Cupressus x leylandii*
Privet	*Ligustrum ovalifolium*
Silver birch	*Betula pendula*

Table 4.2: Tree Species Recorded During Survey

4.3 TREE QUALITY

Retention Value

The initial stage of a tree survey in accordance to BS5837:2012 looks at the trees on the site in terms of life expectancy and condition. Trees are then categorised according to their retention value.

Category A trees are those that have been assessed as being of a high quality and value; significant amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in Green on the Tree Constraints Plan.

Category B trees are those that have been assessed as being of a moderate quality and value; amendments to the proposed scheme should be considered in preference to their removal. These trees are shown in Blue on the Tree Constraints Plan.

Category C trees are those that have been assessed as being of a low quality and value; the loss of these specimens should not necessarily be considered as a constraint to development. These trees are shown in Grey on the Tree Constraints Plan

Category U trees are those that have been assessed as having no retention value; these trees should not be a material consideration in the planning process. These trees are shown in Red on the Tree Constraints Plan.

Category A, B or C trees are those that should be a material consideration in the planning process whilst Category U trees are those which would be lost in the short term for reasons connected to their physiological or structural condition and hence they should not be a consideration in the planning process.

Overall ten trees and two hedgerows have been inspected in accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

A summary of the trees and hedgerows in each of the four categories is given in Table 4.3.

BS5837:2012 Category	Tree Number
A	Nil.
B	T4.
C	T1, T2, T3, T5, T6, T7, T8, T9, H1, H2.
U	T10.

Table 4.3: Summary of Trees and Hedgerows in BS5837:2012 Categories

4.4 TREE SURVEY SCHEDULE

The full results of the Arboricultural Assessment are detailed in Table 4.4.

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Branch Spread (m)				Min Crown Clearance (m)	Age	Vigour	Struc Cond	Cat	Comments	Preliminary Management Recommendations
					N	E	S	W							
T1	Apple	1	210	6	4.0	4.0	3.0	3.0	2.5	EM	G	F	C	• Typical form for the species. • Dense ivy at crown break. • Heavily branched crown. • No major defects observed.	-
T2	Fig	1	110	3	3.0	1.5	0.5	1.5	1.0	Y	F	F	C	• Multiple pruning wounds on the stem through crown lifting. • All growth heads northwards.	-
T3	Leyland cypress	2	200	4	2.0	2.0	2.0	2.0	1.0	SM	G	F	C	• Maintained topiary specimen. • Base obscured by debris.	-
T4	Silver birch	1	290	17	2.5	2.5	2.5	2.5	4.0	M	G	F	B	• Multiple pruning wounds observed on the stem through crown lifting. • Multiple branch stubs present. • Dead ivy remains on the stem to 6m. • Base obscured by vegetation.	-
T5	Holly	1	140	6	2.0	2.0	2.0	2.0	2.0	SM	G	F	C	• Twin leadered from 1m. • Pruning wounds on the stem through crown lifting	-
T6	Blackthorn	3	240	5	2.5	5.0	1.0	2.5	1.5	M	F	F	C	• Girdling of the upper canopy by rope observed. • Restricted inspection due to access. • Minor deadwood. • Majority of the crown is eastwards.	-
T7	Blackthorn	1	120	6	2.5	2.5	0.5	1.0	2.0	SM	F	F	C	• Offsite. • Pruning wounds on the stem.	-

Table 4.4 : Results of Arboricultural Survey (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Branch Spread (m)				Min Crown Clearance (m)	Age	Vigour	Struc Cond	Cat	Comments	Preliminary Management Recommendations
					N	E	S	W							
T8	Ash	1	270	10	3.5	3.5	1.5	2.0	3.0	EM	G	F	C	• Crown has been topped in the past resulting in decay at the wound sites. • New regrowth extends by 3m.	-
T9	Ash	1	290	12	1.0	4.0	5.0	3.0	3.0	EM	F	F	C	• Multiple pruning wounds on the stem through crown lifting. • Tree has been topped in the past with decay at the wound sites and regrowth to 4m.	-
T10	Privet	1	320	10	0.5	0.5	5.0	5.0	2.5	OM	F	P	U	• All of the crown weight leans toward the property to the south-west. • Multi-leadered form with several areas of bark inclusion. • Vertical crack on the main stem observed with oozing liquid. • Exposed roots lift the pavement.	-
H1	Beech	-	110	3.5	0.5	0.5	0.5	0.5	0.5	SM	G	F	C	• Maintained hedgerow	-
H2	Lawson cypress	-	80	2.5	0.5	0.5	0.5	0.5	0.0	M	G	F	C	• Maintained hedgerow	-

Key

Age Class
Y: Young = tree within first third of average life expectancy
EM: Early mature = tree within second third of average life expectancy
M: Mature = tree within final third of average life expectancy
OM: Over mature = tree beyond average life expectancy

Structural Condition
G: G = no structural defects
F: Fair = remedial structural defects
P: Poor = significant structural defects

000: Estimated dimension due to access restrictions
RPA: Root Protection Area

Table 4.4 (cont'd): Results of Arboricultural Survey

4.5 ROOT PROTECTION AREA (RPA)

Table 4.5 provides details of the Root Protection Area (RPA) of all trees and hedgerows surveyed which were classified as Category A, B or C specimens. This table also gives an approximate root protection radius for these trees.

Tree No.	Species	Diameter (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m^2)
T1	Apple	210	2.7	23
T2	Fig	110	1.5	7
T3	Leyland cypress	200	2.4	18
T4	Silver birch	290	3.6	41
T5	Holly	140	1.8	10
T6	Blackthorn	240	3	28
T7	Blackthorn	120	1.5	7
T8	Ash	270	3.3	34
T9	Ash	290	3.6	41
H1	Beech	110	1.5	7
H2	Lawson cypress	80	1.2	5

Table 4.5: RPA and Approximate Root Protection Radius of Category B and C Trees and Hedgerows Surveyed

5. ARBORICULTURAL IMPACT ASSESSMENT

5.1 INTRODUCTION

This section of the report details the potential impacts that the proposed development may have upon the site's tree stock. The assessment has been based upon the documents detailed in Table 1.1 with reference to the results of the field survey undertaken in December 2018.

The location of the trees can be found on Drawing Number C129955-01-01 in Section 8 and a schedule of the trees surveyed can be found within Section 4.

5.2 IMPACTS FROM DEMOLITION AND RELATED OPERATIONS

5.2.1 Building Demolition

The proposed development will require the demolition of the existing conservatory on site. However, following the tree removal detailed in Table 5.1, these works will be located well away from the trees to be retained.

5.2.2 Removal of Hard Surfaces

If hard surfaces are to be removed within the RPAs of trees to be retained, care should be taken to minimise the potential for damage to occur to roots and an appropriate working methodology should be followed which will be detailed in an Arboricultural Method Statement.

5.2.3 Removal of Services

There are no areas on site where the removal of existing underground services are likely to require works within the RPAs of retained trees.

5.3 IMPACTS FROM DEVELOPMENT LAYOUT

5.3.1 Tree Removal

The proposed development will require the removal of three trees within the site. The trees to be removed are detailed within Table 5.1 and are identified on the Draft Tree Protection Plan, Drawing Number C129955-01-02, in Section 8 of this report.

Tree Number	Species	BS5837 Category	Reason for Removal
T1	Apple	C	Proximity of tree to the new extension.
T2	Fig	C	Poor condition and limited aesthetic contribution.
T3	Leyland cypress	C	To increase light levels at the front of the property
T5	Holly	C	Poor condition and to permit construction access to the front of the residential property.
T10	Privet	U	Poor condition.

Table 5.1: Tree Removal

Overall, the proposed development will require the removal of five individual trees, in addition to a few shrubs, across both the front and rear gardens.

One of the trees to be removed, number T10, was assessed as being unsuitable for long term retention when considered in accordance with BS5837:2012 due to its poor structural condition. The removal of this tree would be required irrespective of the proposed development and as such its removal should not be seen as a material consideration in the planning process.

The four remaining trees to be removed have been assessed as having a low retention value when considered in accordance with BS5837:2012. It is not considered that the removal of these trees should be seen as a constraint to the development of the site as they are not in such a condition that they are likely to make a lasting contribution to the landscape character of the site.

Additionally, it is recommended that the existing hedgerow H1 fronting South End Road is temporarily translocated to allow for access for excavation and construction vehicles. However, trees within this hedgerow will be kept alive and stored in tubs adjacent to the existing residential building for the duration of the construction works, then re-planted following completion of the works. As such, the local landscape value and screening function of the hedgerow fronting will be restored.

5.3.2 Tree Pruning

Trees at the front of the residential property may require crown lifting to permit access for construction vehicles. However, these works will be of a minor extent and will be routine in nature. As such it is not considered that they will have a significant impact upon the long-term health, or visual quality, of the trees.

All tree pruning works should be detailed in the Arboricultural Method Statement and completed in accordance with the current best practice guidance set out within BS3998:2010 “Tree Work – Recommendations” by suitably qualified and insured arboricultural contractors.

5.4 DIRECT IMPACTS FROM CONSTRUCTION

5.4.1 Works within RPAs

Following the proposed tree removal, major works will largely fall outside of the RPAs of retained trees. However, no-dig methodologies and ground protection installation should be applied throughout the front garden to minimise the potential for damage to occur to roots of tree numbers T5, T6, T7, T8, T9 and hedgerow H2. Additionally, tree protection barriers should be erected prior to the commencement of works.

Subject to the works being completed in accordance with an appropriate working methodology; which should be specified within an Arboricultural Method Statement (AMS) for the proposed development, it is considered that the works can be completed without impacting significantly upon the health of the retained trees.

5.4.2 Works within Canopy Spreads

Following completion of the proposed access facilitation pruning works, detailed in Section 5.3.2, it is considered that the potential for branch damage to occur is minimal, and that the trees can be adequately protected from harm during the development by the prior erection of tree protection barriers.

5.5 IMPACTS FROM CONSTRUCTION RELATED OPERATIONS

5.5.1 Site Access

It is understood that construction access to the site will be from South End Road. To facilitate access, hedgerow H1 will be temporarily translocated and stored in tubs, protected in locations away from the proposed works, then replanted in its current location along the garden frontage adjacent to South End Road. Additionally, it will be necessary to ensure retained trees adjacent to the access route are protected from potential impact damage by the installation of tree protection barriers and ground protection measures established prior to the commencement of the development. Tree protection measures for this aspect of the development will be detailed in the Arboricultural method Statement.

5.5.2 Delivery and Storage of Materials

Material deliveries to the site will be from South End Road, as detailed above. Materials should be stored outside the RPAs of trees where possible. However, it will be necessary to install ground protection measures to minimise the potential for harm to occur to the trees. Additionally protective barriers should be installed to prevent impact damage occurring to the stems of the trees. Locations for material storage should be detailed in the Arboricultural Method Statement.

5.6 POST-DEVELOPMENT IMPACTS

5.6.1 Shading

Following the tree removal proposed in Table 5.1, the orientation of the retained trees in relation to the house and proposed extension is such that shading of primary living spaces is unlikely to occur.

5.6.2 Privacy and Screening

The proposed development does not require the removal of any trees that contribute significantly to privacy and screening of the site. As such no impact is anticipated.

5.6.3 Direct Damage to Structures

Following the tree removal detailed in Section 5.3.1, it is not considered that the continued growth of any retained tree will cause significant conflict with the proposed development.

5.6.4 Future Pressure for Removal

Following the tree removal recommended in Section 5.3.1, the layout of the proposed development is such that future pressure for tree removal is generally unlikely to result.

5.6.5 Seasonal Nuisance

It is not considered that a significant degree of seasonal nuisance will occur.

5.7 SUMMARY OF IMPACTS

In summary it is considered that the proposed development of the site will not have an impact upon the visual amenity of the local area as a result of the proposed tree removal and pruning works necessary to facilitate it. However there are a number of areas of site where works are to be undertaken within the RPAs of retained trees which may have an impact upon them. Nonetheless, the nature of those works are such that they can be completed without impacting significantly upon the trees subject to the adoption of appropriate working practices which will be detailed in an Arboricultural Method Statement.

6. MITIGATION AND PROTECTION

6.1 INTRODUCTION

This section of the report details the initial protection, mitigation and avoidance measures suggested to prevent harm to the retained trees.

6.2 GENERAL TREE PROTECTION

6.2.1 Construction Exclusion Zone

To minimise the potential for harm to occur to the root systems and canopies of retained trees during development it will be necessary to implement construction exclusion zones throughout the site. These are areas surrounding the trees' RPAs and canopies in which no construction works, or related activities, will be undertaken.

It is recommended that the exclusion zones are afforded protection at all times through the use of tree protection barriers and/or ground protection (specified in accordance with BS5837:2012). No works that cause compaction of the soil or severance of tree roots, except where undertaken in accordance with specialised methodologies detailed in an Arboricultural Method Statement, will be undertaken within any exclusion zone.

6.2.2 Tree Protection Barriers

The protective barriers should be erected prior to the commencement of any site works e.g. before any materials or machinery are brought on site or the stripping of soil commences. The potential location of protective barriers will be identified in a Tree Protection Plan in an Arboricultural Method Statement.

The protective barriers are to be constructed in accordance with the specification detailed in BS5837:2012 (Figure 2, Appendix 2). Any variation to the specification of the protective barrier will be agreed with the Local Planning Authority Arboricultural Officer.

6.2.3 Ground Protection

Ground protection measures will need to be installed within the RPA of tree numbers T5, T6, T7, T8 and T9 to permit access for construction and to provide space for site activities. In this respect the use of Eve TuffTrak or a similar preformed ground protection mat is recommended prior to the commencement of development.

6.3 MITIGATION OR AVOIDANCE OF IMPACTS

6.3.1 Design Amendments

It is not considered that design amendments are required as the trees requiring removal are typically of a low value and there are no areas where significant conflicts between the proposed development and retained trees will occur. Subject to the adoption of appropriate working methodologies, the proposed works are unlikely to impact the health of retained trees.

7. RECOMMENDATIONS

An Arboricultural Method Statement will be required for the site as the proposed development will require works to be undertaken within the RPAs of retained trees.

The purpose of a Method Statement is to ensure that all site operations can occur with minimal risk of adverse impact upon trees that are to be retained. The document will identify all areas where specific working methods will be required to ensure protection to trees. The document will also specify in detail the final locations and extent of tree protection barriers and ground protection.

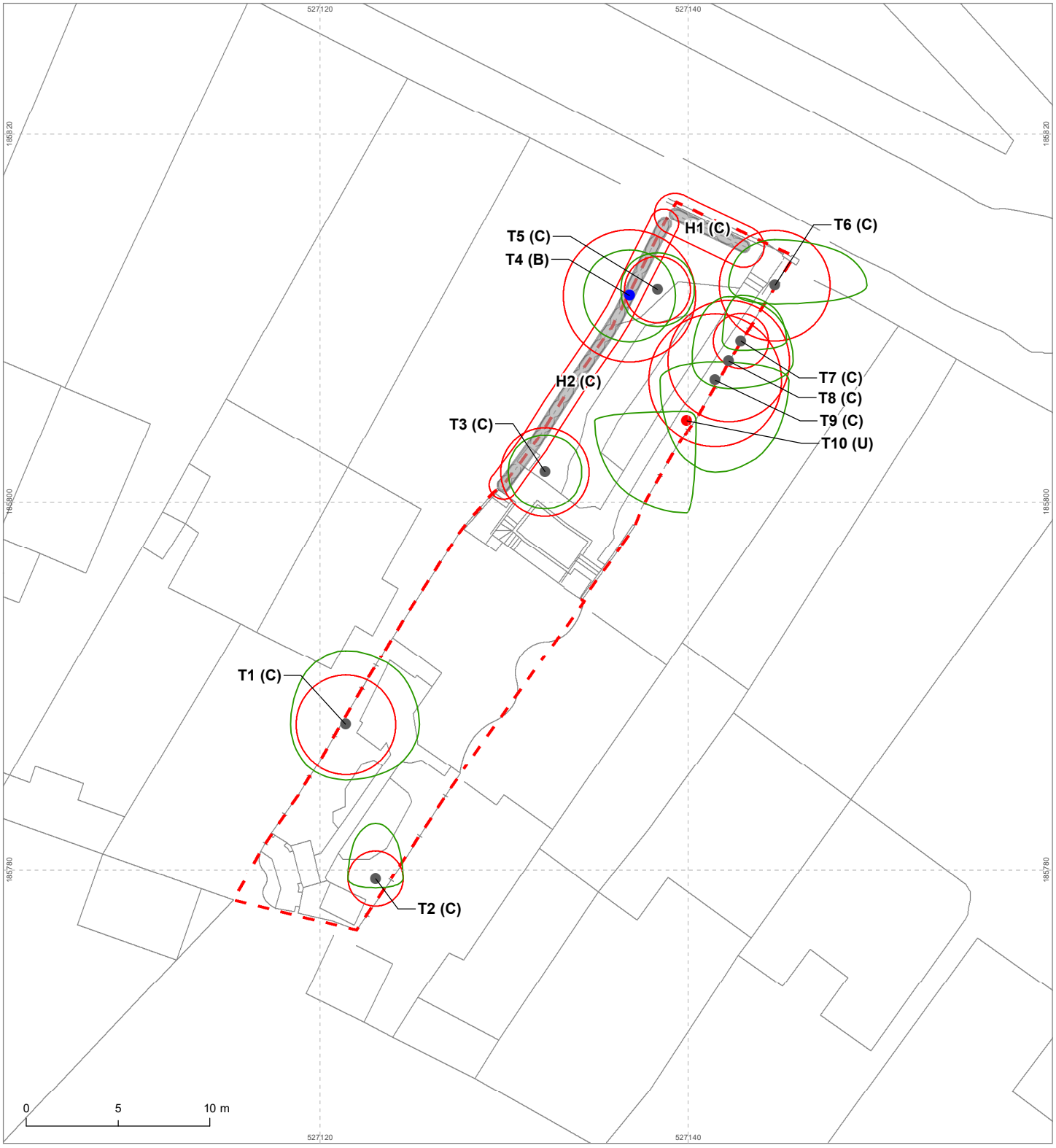
In relation to this development the method statement should address the following:

- Final material storage and site access locations.
- Final protective barrier and ground protection locations and specifications.
- Details and specifications of hedgerow H1 translocation.
- Pre-commencement site meeting and schedule of auditing of tree protection measures and supervision of works within RPAs of retained trees.

8. DRAWINGS

Drawing Number C129955-01-01 – Tree Constraints Plan

Drawing Number C129955-01-02 – Draft Tree Protection Plan



Legend

- Category B tree
- Category C tree
- Category U tree
- Category C group
- Current canopy extent
- Root Protection Area
- Site boundary

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

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Project	91 South End Road, Hampstead, London
Drawing	Tree Constraints Plan
Client	Lathams Architects
Drawing Number	C129955-01-01
Revision	00
Scale @ A4	1:300
Date	December 2018
Approved By	DS
Drawn By	CD

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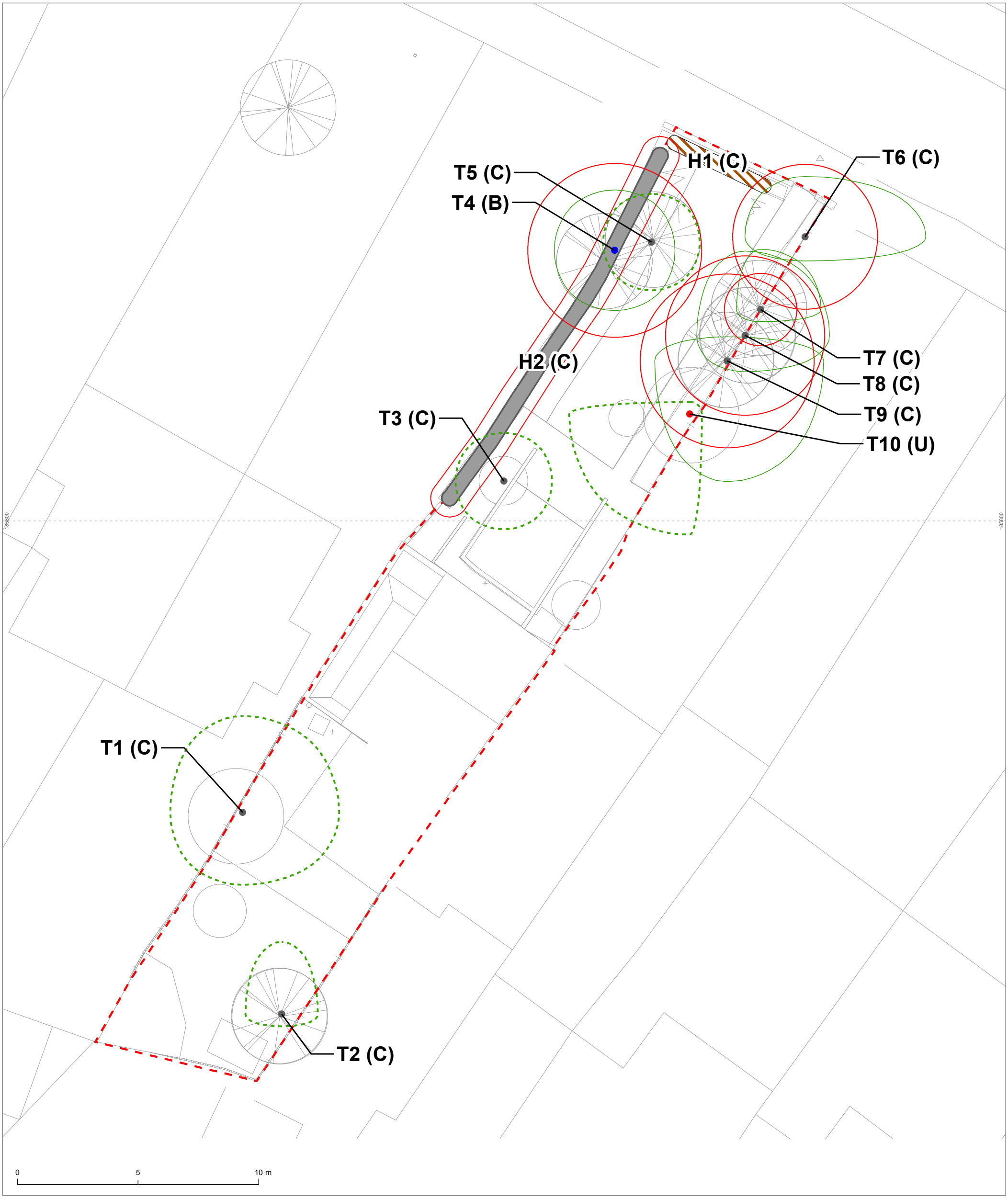

Legend

- Category B tree
- Category C tree
- Category U tree
- Category C group
- Hedgerow to be tempoarily translocated
- Current canopy - tree to be removed
- Current canopy - tree to be retained
- Root protection area
- Site boundary
- Proposed plan

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

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Project	91 South End Road, Hampstead, London
Drawing	Tree Retention Plan
Client	Lathams Architects
Drawing Number	C129955-01-02
Revision	00
Scale @ A3	1:150
Date	December 2018
Approved By	FS
Drawn By	GT

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APPENDICES

APPENDIX 1: Headings for Protective Barrier Notices and Example Protection Sign

APPENDIX 2: Details of Protective Barrier

APPENDIX 1

Headings for Protective Barrier Notices

Root Protection Area (RPA) Model Notice

DON'T excavate within this area
DON'T use any form of mechanical plant with this area
DON'T store materials, plant or equipment within this area
DON'T move plant or vehicles within this area

DO contact the Local Authority Arboricultural Officer or owner of the tree if excavation within this area is unavoidable
DO protect any exposed roots uncovered within this area with dry sacking
DO backfill with a suitable inert granular and top soil material mix as soon as possible on completion of work

ANY WORK in this area requires a permit from the Local Authority Arboricultural Officer

PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

TREE PROTECTION AREA

KEEP OUT !

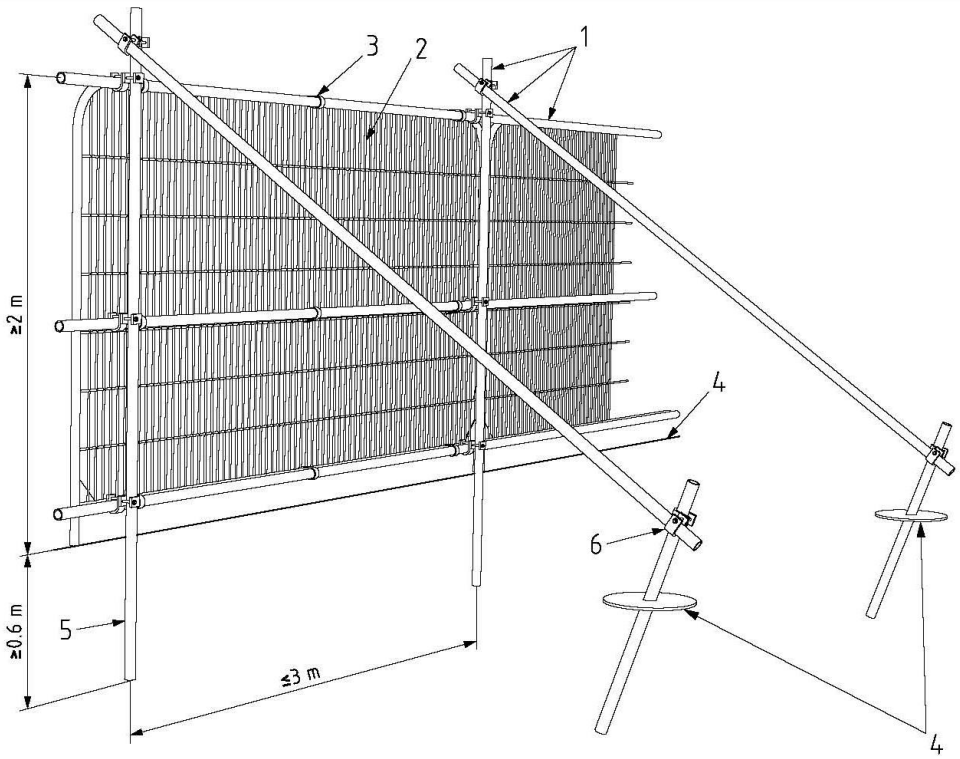
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

APPENDIX 2

Details of Protective Barrier

Figure 2 **Default specification for protective barrier**



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