1 Triton Square & St Anne's

Arboricultural Report

OCTOBER 2016

1 TRITON SQUARE & ST ANNE'S PLANNING DOCUMENTS

EXISTING & PROPOSED DRAWINGS VOL. 1 (1 TSQ)
EXISTING & PROPOSED DRAWINGS VOL. 2 (ST ANNE'S)
DESIGN & ACCESS STATEMENT VOL. 1 (1 TSQ)
DESIGN & ACCESS STATEMENT VOL. 2 (ST ANNE'S)
HOUSING STUDY
TOWNSCAPE & VISUAL IMPACT ASSESSMENT
HERITAGE STATEMENT
LANDSCAPE MASTERPLAN
PLANNING STATEMENT
STATEMENT OF COMMUNITY INVOLVEMENT
TRANSPORT ASSESSMENT
ENERGY STATEMENT
SUSTAINABILITY STATEMENT
DAYLIGHT AND SUNLIGHT STUDY
OVERSHADOWING STUDY
INTERNAL DAYLIGHT STUDY
AIR QUALITY ASSESSMENT
SURFACE WATER DRAINAGE PROFORMA
CONSTRUCTION MANAGEMENT PLAN
SOCIO-ECONOMIC ASSESSMENT

ARBORICULTURAL ASSESSMENT

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1 Triton Square and St Anne's, Euston, London

Arboricultural Survey, Impact Assessment and Method Statement

For

M3 Consulting

Project No.: AM3C104/005/001/001

October 2016

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001	Final	21/10/2016	Neil Francis	Rob Hutchinson	Mike Hill

Disclaimer:

Contents

1. Executive Summary

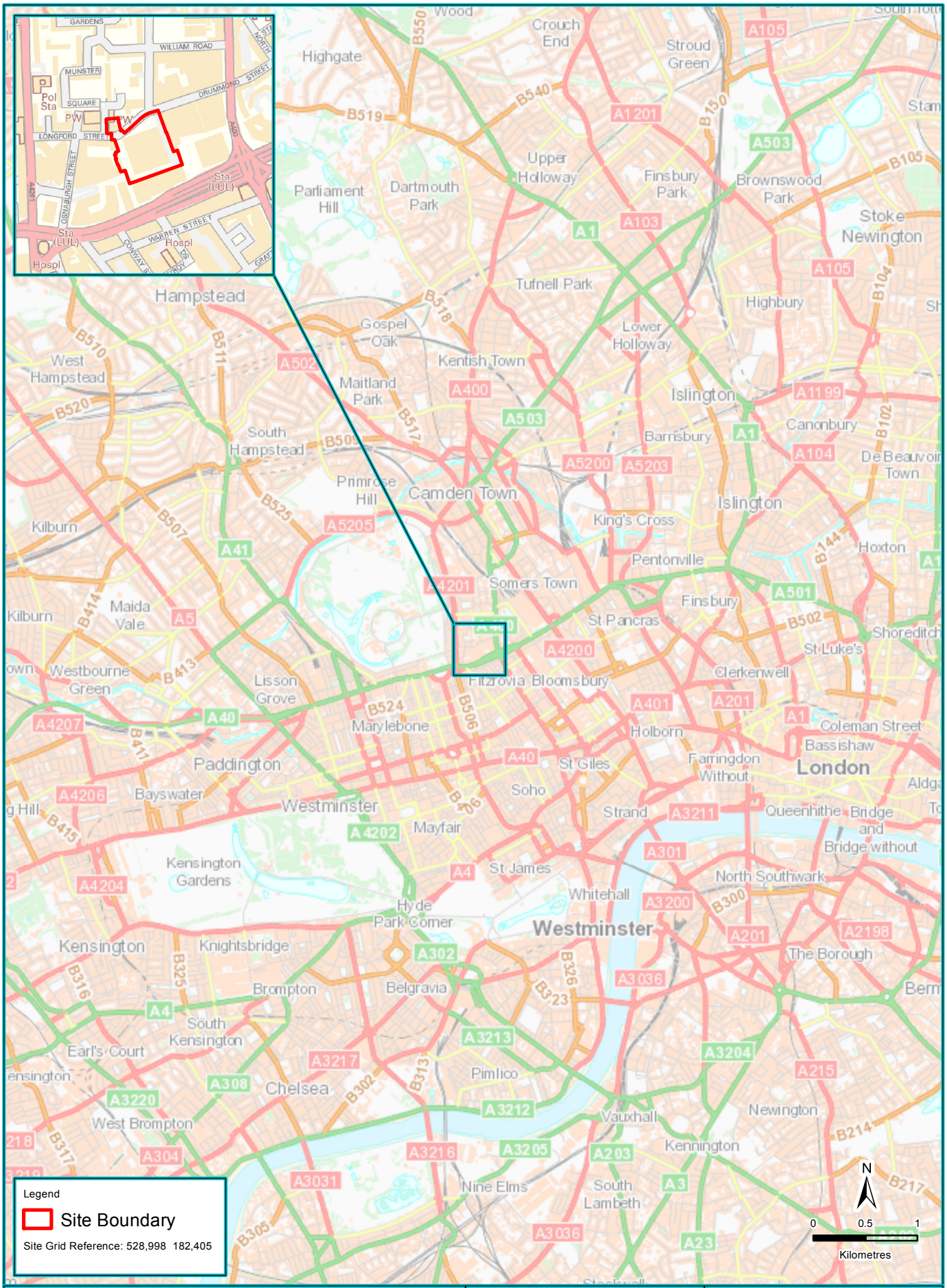
1.1.1 British Land Property Management Limited is involved in the redevelopment of 1 Triton Square and St Anne's, Euston, London. The proposals include the extension of the existing 1 Triton Square office building by three storeys for office use (B1), introduction of flexible retail uses (A1, A3 and A4) and affordable workspace (B1), reprovision of a gym space (D2); demolition of St Anne's Church and its replacement with a residential building (C3) of part 6, part 9 storeys; remodelling of the electricity substation; hard and soft landscaping; reconfigured vehicle and pedestrian accesses and works to the public highway; and all necessary ancillary and enabling works, plant and equipment.

1.1.2 A total of 13 individual trees and 10 groups of trees were recorded during the survey and listed in the Tree Schedule. The surveyor recorded one Category A tree, three Category B trees and five Category B groups of trees, eight Category C trees and four Category C groups of trees, one Category U tree and one Category U group of trees.

1.1.3 The development will result in the removal of one tree, four groups of trees and part of one group of trees from the site. However, four of these are Category C or U features and therefore these removals should not have a significant detrimental effect on the arboricultural value of the site.

1.1.4 The proposed new landscaping will incorporate T5, T6, T8, G8a and G9a/b/c. To compensate for the loss of trees as part of the development, two additional trees will be planted in this vicinity as shown on Figure 4.

1.1.5 There should be no harm caused to any trees planned for retention by these proposals subject to the erection of protective fencing (see Figure 3) furnished with tree protection notices (see Appendix 4) and the creation of a Construction Exclusion Zone.



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		Date: 18/07/2016	Date: 18/07/2016

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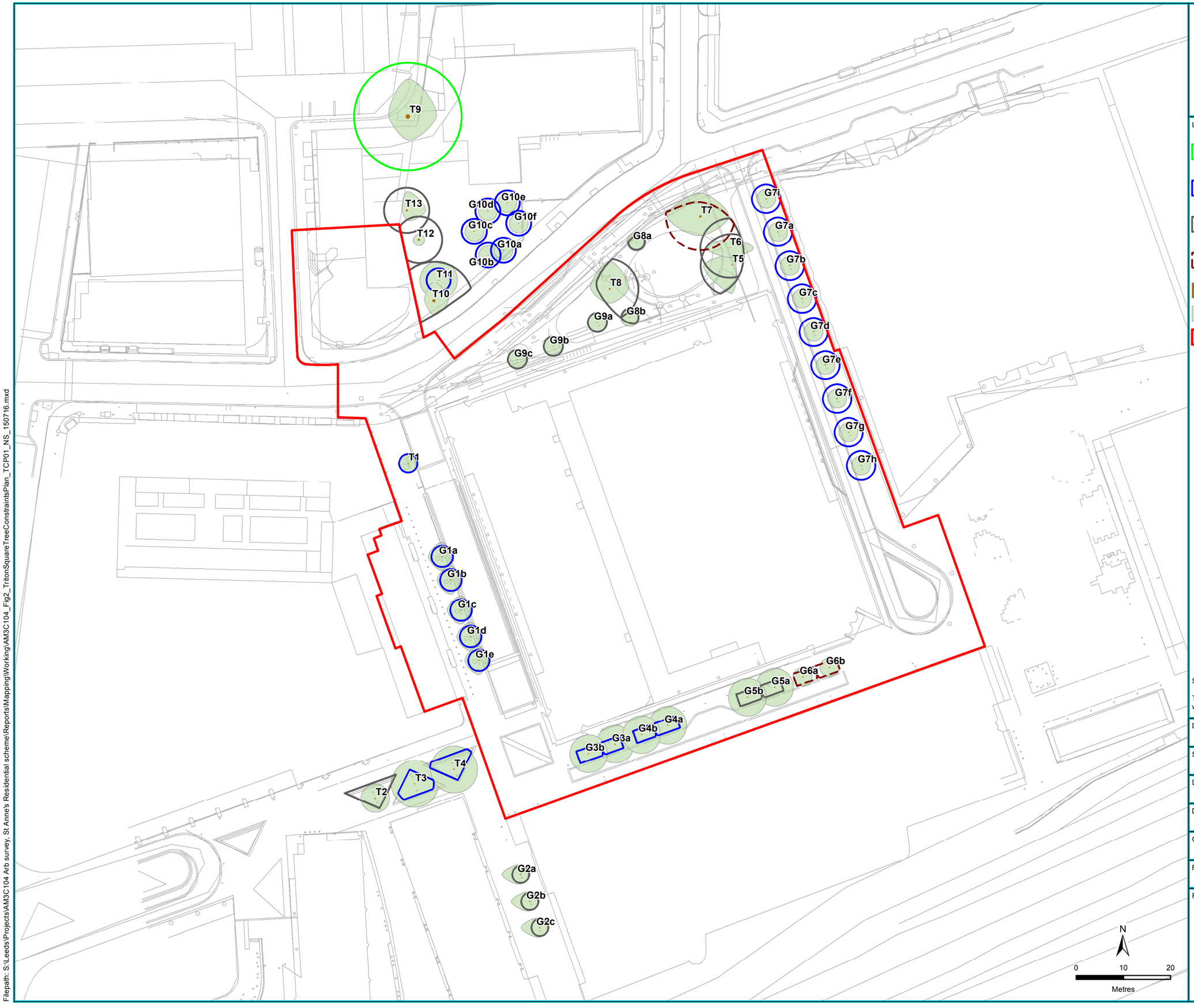

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Legend

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

Site Grid Reference: 529,048 182,359

Drawing Ref	AM3C104/21435/2
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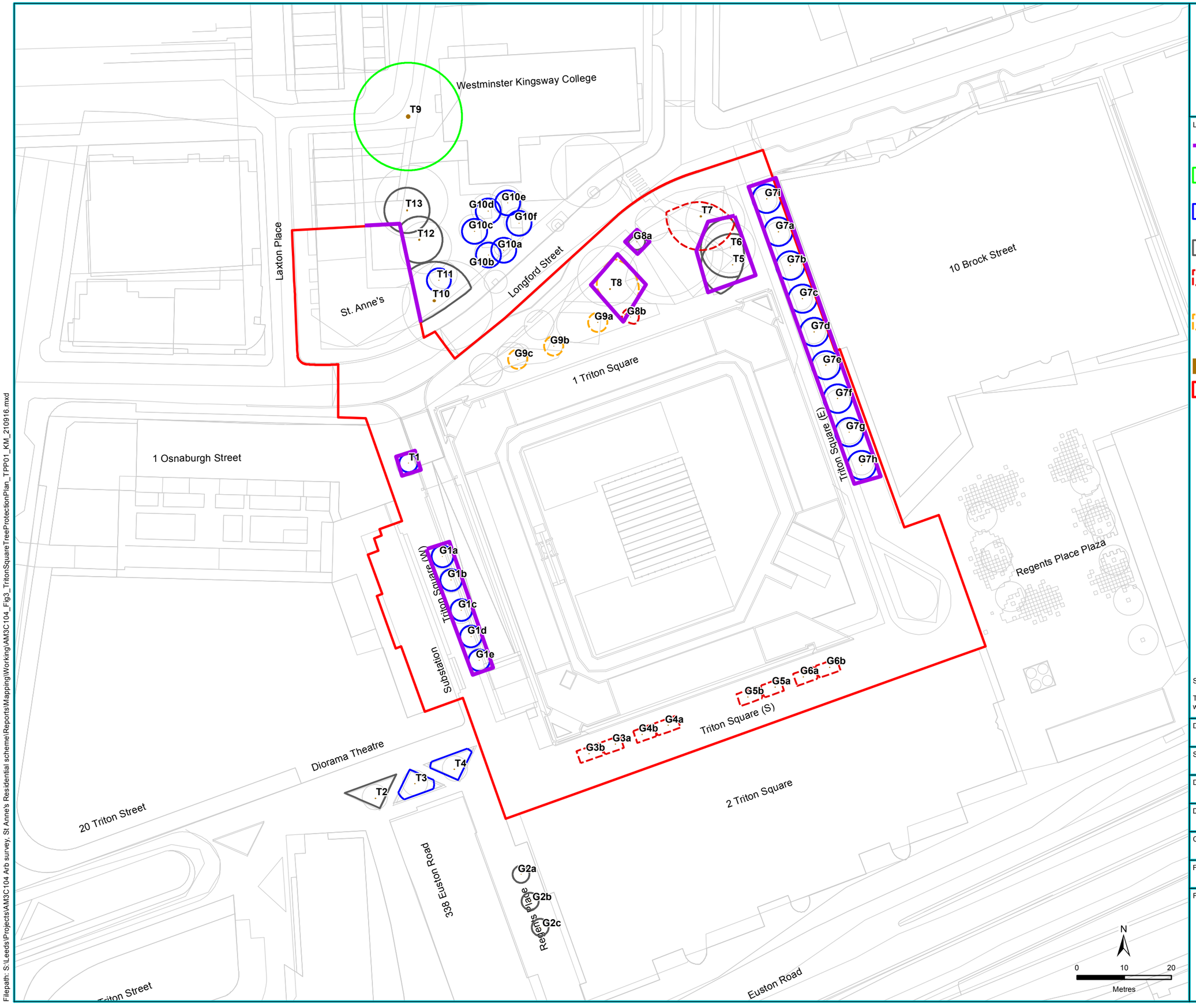
Date: 30/09/2016	Date: 30/09/2016
Client	M3 Consulting
Figure Number	2
Figure Title	Tree Constraints Plan (TCP02)



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Legend

- Tree Protection Fencing
- Root Protection Area of Category 'A' Tree
- Root Protection Area of Category 'B' Tree
- Root Protection Area of Category 'C' Tree
- Tree to be Removed
- Tree May Need to be Removed to Facilitate Construction of Soft and Hard Landscaping
- Tree Stem Location
- Site Boundary

Site Grid Reference: 529,048 182,359

Drawing Ref	AM3C104/21893/2
Scale at A3	1:750
Drawn: KM	Checked: NS
Date: 30/09/2016	Date: 30/09/2016
Client	M3 Consulting
Figure Number	3
Figure Title	Tree Protection Plan and Removal Plan

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Legend

- Proposed Tree
- Existing Tree Stem Location
- Existing Tree Canopy
- Site Boundary

Site Grid Reference: 529,048 182,359

Drawing Ref	AM3C104/22207/1
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Date: 11/10/2016	Date: 11/10/2016
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Figure Number	4
Figure Title	Proposed Tree Plan

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2. Introduction

2.1 Development Background

2.1.1 M3 Consulting is involved in the development of 1 Triton Square and St Anne's, Regent's Place, London. Proposals include the extension of the existing 1 Triton Square office building by three storeys for office use (B1), flexible retail uses (A1, A3 and A4), affordable workspace (B1) and provision of a gym (D2) and the demolition of St Anne's Church and its replacement with a residential (C3) building of part 6, part 9 storeys. There will also be hard and soft landscaping, reconfigured vehicle and pedestrian accesses and works to the public highway. These proposals are hereafter referred to as 'the development'.

2.1.2 The development is located on an area of land (grid reference TQ290823), shown on Figure 1. The area affected by the development is hereafter referred to as 'the Site'. There are a number of trees within the site and adjacent to the site boundaries that may be affected by development.

2.2 Site Description

2.2.1 Triton Square lies to the north of the A501, Euston Road, and is dominated by mixed level office blocks, retail units and bespoke public realm landscaping. Westminster Kingsway College lies to the north of the site and further mixed use buildings are in the immediate vicinity.

2.2.2 St Anne's sits at the junction of Longford Street and Laxton Place. A small area of amenity grass and scattered broadleaved trees lies immediately to the east of the site, beyond which is Westminster Kingsway College. To the south of the Site are mixed use buildings including residential apartments, retail units and offices.

2.3 Brief and Objectives

2.3.1 M3 Consulting commissioned Thomson Ecology Ltd on 30th June 2016 and 4th July to undertake an arboricultural survey of the site, including a Tree Schedule (see Appendix 1) and a Tree Constraints Plan (TCP) (see Figure 2, TCP02).

2.3.2 The objective of the surveys and report was to assess the condition of the existing trees on the 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 carry out:

- An arboricultural survey of trees (grouped where deemed appropriate) within or immediately adjacent to the site at 1 Triton Square and St Anne's, Euston, London in line with BS5837:2012;
- A desk study to determine the presence of any Tree Preservation Order and Conservation Area restrictions at the site;
- A report of our methods and the results, including the Tree Schedule and a Tree Constraints Plan.

2.3.3 This report details the methods and results of the tree survey and provides the Tree Schedule and TCP.

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 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 Camden 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 or impact upon 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 '*Tree Guide*' (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).

Attribute	Description
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).
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	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	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. 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

Attribute	Description
	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 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	√(stem diameter 1)² + (stem diameter 2)² … + (stem diameter 5)²
More than five	√(mean stem diameter)² x 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 diameter 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 707m^2, 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 11th and 15th July 2016 by Callum Henderson BSc (For) MArborA.

Weather Conditions

3.2.12 The weather conditions at the time of survey were dry and sunny. Deciduous trees were in full leaf.

4. Results

4.1 Desk Study

4.1.1 It was confirmed by Camden London Borough Council Local Planning Authority, via telephone, on 13th and 20th July 2016, 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 A total of 13 significant individual trees and 10 groups of 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.

	Category 'A' Trees and Groups of Trees	Category 'B' Trees and Groups of Trees	Category 'C' Trees and Groups of Trees	Category 'U' Trees and Groups of Trees
Number of Trees and Groups of Trees in each Category	1	8	12	2
Tree and Tree Group Numbers	T9	T3, T4, T11, G1, G3, G4, G7, G10	T1, T2, T5, T6, T8, T10, T12, T13, G2, G5, G8, G9	T7, G6

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 m^2, for the individual trees surveyed are shown in Appendix 1.

5. Recommendations

5.1 Site Specific Guidance

5.1.1 All trees on the Site should be considered for retention where possible, with the greatest consideration given to Category A trees where these specimens occur, then Category B trees and finally Category C trees. However, the retention of Category C trees should not be at the expense of an efficient design. Category U trees are recommended for removal for sound arboricultural reasons. Where trees of any category are on adjacent land, and removal is required for the development, permission must be sought from the landowner before any works can be undertaken.

5.2 Triton Square

5.2.1 Due to the urban nature of Triton Square, there are numerous above ground and below ground constraints which pose a challenge to the retention of existing trees and the successful establishment of any new tree planting which will be incorporated into new landscaping proposals. Surveys and existing plans of the site have shown a complex underground matrix of built structures, numerous live and redundant services and an anthropeic soilscape that has been highly modified causing compaction, restricted aeration and water drainage as well as increased contaminants and highly modified soil temperature regimes.

5.2.2 The four groups of Pin oak trees (*Quercus palustris*), G3, G4, G5 and G6 are in variable condition and are positioned between 1, Triton Square and Santander. They have been planted in relatively small, raised planters with limited volume of suitable rooting material. The lack of available nutrients and soil water will become a serious limiting factor in the future growth and vitality of the trees. This is already reflected in the condition of the crowns, all of which have deadwood. G6 in particular has poor crown vigour as a result of the soil conditions.

5.2.3 Because of the tall nature of the surrounding buildings, it is unlikely that the trees within these four tree groups have sufficient sunlight to enable them to form healthy, well-structured crowns that will be sustainable in the long term. G6a/b are currently Category U trees and G5a/b are currently Category C trees. With G3a/b and G4a/b all being of the same species and planted in the same conditions, it could be expected that G3 and G4 are also likely to decline in health, further compromising their useful life expectancy.

5.2.4 Four Category C trees T2, T5, T6 and T8 and the Category C group of trees, G2, are showing signs of dieback in their crowns and require tree works to manage their size and health.

5.2.5 The Category U trees T7 and G6 are poor specimens with less than 10 years' safe useful life expectancy. They should be removed as part of good arboricultural practice.

5.3 St Anne's Residential Scheme

5.3.1 The Category A London plane tree, T9, has a high amenity value. It is worthy of retention and concerted efforts should be made to retain and protect this tree during any future development works.

5.3.2 The Category B tree, T11, and Category B group of trees, G10, include cockspur thorns. They are good examples of typical form for their species and removal of these trees would adversely affect the value of the local landscape.

5.3.3 The three Category C trees, T10, T12 and T13 have all been previously topped and do not currently have much live crown. Whilst it is expected that regrowth will initially be vigorous, the practice of topping is not considered good arboricultural practice and can lead to structural problems from weakly attached regrowth. Category C trees are a material consideration in the planning process, but should not be a constraint. The retention of these trees at the expense of the proposed development is not recommended.

6. Arboricultural Impact Assessment (AIA)

6.1 Introduction

6.1.1 The purpose of this AIA is to assess the likely impact of the proposed development on the existing trees on the Site and to determine which trees are to be removed or retained during the construction phase.

6.1.2 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.

6.2 Documents

6.2.1 This assessment has been based on documents produced by Andy Sturgeon Landscape and Garden Design and M3 Consulting. The details of these documents can be seen in Table 5.

Table 5: Documents upon which this assessment has been based

Originator	Title
Andy Sturgeon Landscape and Garden Design	160916_Project Mint Landscape Design
M3 Consulting	160916_Project Mint Arboricultural Impact Assessment Briefing Pack
M3 Consulting	Appendix D 2 of 3 Logistics Ground Floor

6.3 Tree Removals

6.3.1 A total of one tree, four groups of trees and part of one group of trees require removal as part of this development. A breakdown of the associated categories assigned to these specimens can be seen in Table 6 and the species of tree to be removed in Table 7.

Table 6: Number of trees to be removed within each retention category

	Category 'A' Trees	Category 'B' Trees	Category 'C' Trees	Category 'U' Trees
Number of Trees / Groups of trees	-	2	2	2

Table 7: Details of trees to be removed

Tree Number	Species	Category	Reason
T7	*Acer saccharinum*; silver maple	U	This tree is in a poor condition and should be removed for sound arboricultural reasons.
G3a,b	*Quercus palustris*; pin oak	B1;2	These trees are in poor condition and should be removed.
G4a,b	*Quercus palustris*; pin oak	B1;2	These trees are in poor condition and should be removed.
G5a,b	*Quercus palustris*; pin oak	C1;2	These trees are in poor condition and should be removed.
G6a,b	*Quercus palustris*; pin oak	U	These trees are in poor condition and should be removed.
G8b	*Acer saccharinum;* silver maple	C1;2	To facilitate the development.

6.4 Trees to be Retained

6.4.1 Of the trees surveyed, 12 individual trees, three groups of trees and part of one group of trees are to be retained and protected throughout development. Trees T1, T2, T3, T4 and two groups of trees, G7 and G1, lie outside the proposed line of hoarding that is to be erected during the development works. However, in the interests of due diligence, tree protection fencing will be utilised to afford them protection from construction activities.

6.4.2 The RPAs of the retained trees within the hoarding, 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 7.6.1 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).

6.4.3 As the development involves the refurbishment of the existing building, and because the existing trees are under a carefully planned and regular maintenance regime which ensures their size is measured, the provided space available for existing trees to grow into will be sufficient to ensure

their long term retention. New trees are to be planted in an open space where their future growth will not be inhibited and the same planned and regular maintenance regime implemented.

Shading

6.4.4 As the development is not of a residential nature, there should not be a major issue arising from the shade cast by the retained trees.

6.5 Tree Works

6.5.1 Prior to the erection of protective fencing, there are seven individual trees and four groups of trees which, in order to maintain their health and future structural integrity, require some maintenance works. All tree work is to be undertaken in accordance with the British Standard BS3998:2010 Recommendations for Tree Work (BS3998:2010). Full details of all trees requiring work are given in Table 8.

Table 8: Schedule of tree works for on-site trees

Tree No.	Species	Works	Category
T1	*Platanus* x *hispanica*; London plane	Remove dead wood.	C1;2
T2	*Quercus palustris*; pin oak	Remove dead wood, reduce length of crown by up to 1m	C1;2
T3	*Quercus palustris*; pin oak	Remove dead wood, reduce length of crown by up to 1m	B1;2
T4	*Platanus* x *hispanica*; London plane	Remove dead wood, reduce length of crown by up to 1m	B1;2
T5	*Acer saccharinum*; silver maple	Remove deadwood.	C1;2
T6	*Acer saccharinum*; silver maple	Remove deadwood, crown lift to 2.5m above ground level.	C1;2
T8	*Acer saccharinum*; silver maple	Remove deadwood, reduce the length of crown by up to 2m crown lift up to 2.5m above ground level	C1;2
G1	*Platanus* x *hispanica*; London plane	Remove dead wood, crown lift to 3m above ground, reduce crown length by 1m on all compass points.	B1;2
G2	*Acer saccharinum*; silver maple	Crown lift to 2.5m above ground level.	C1;2

Tree No.	Species	Works	Category
G7	*Quercus palustris*; pin oak	Remove dead wood, reduce length of crowns up to 1m at all compass points, Crown lift to 3m above ground level.	B1;2
G9	*Quercus palustris*; pin oak	Remove the canes	C1;2

6.6 Construction Work within RPAs

6.6.1 An area of soft and hard landscaping towards the north of the site will impact on the RPAs of retained trees T5, T6 and G8a. The retention of these trees is proposed in the first instance and the RPAs of these trees shall be protected with tree protection fencing. If this is not possible, consideration will be given to removing these trees and replacing them with trees of a suitable size and species.

6.6.2 Retained trees T8 and G9 also sit within the footprint of the new soft and hard landscaping. Whilst it is the intention to retain these trees, if it is not possible to install the landscaping with the trees retained '*in-situ*' and afforded the necessary protection, these trees might need to be removed and replaced with trees of a suitable size and species.

6.6.3 The RPAs of T1, T5, T6, T8, G1, G7, G8a and G9 are currently covered by hard standing surfacing and an area of low growing ground cover. If it is possible to retain the existing sub-base and soils, any new surfacing material within these RPAs should be porous in nature to allow air and water to reach the underlying soil environment and roots.

6.6.4 The RPA of T10 has been adjusted to take into account unfavourable rooting conditions beneath the pavement and highway and St Anne's Church. If, during demolition of St Anne's Church and the construction of St Anne's, roots from trees T10 and T12 are discovered, it might be necessary to remove these trees and replace them with new tree planting.

6.7 Services and Utilities

6.7.1 Where existing services situated within RPAs require upgrading, care must be taken to minimise any disturbance, and where feasible trenchless techniques are to be employed, and only where necessary should manual excavation be considered.

6.7.2 If new services are to be introduced into the site they should be located outside of the RPAs 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.

6.7.3 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.

6.8 Site Facilities

6.8.1 Any site accommodation, storage areas and welfare facilities shall be sited outside the RPAs of retained trees and on suitable load bearing ground protection so that the soil structure will not be

compacted. Site access will be positioned so that retained trees and their RPAs will not be affected by incoming and outgoing traffic, including pedestrians. Cranes should be sited so that their routine operations will not affect the retained trees.

6.9 Post Development Management

6.9.1 The retained trees and any new trees planted as part of the final landscaping scheme should be subject to some form of tree management system. Guidance on the level of tree management required can be found in the National Tree Safety Group publication, '*Common sense risk management of trees*' (NTSG, 2011).

6.10 Conclusion

6.10.1 The development will result in the removal of one tree, four groups of trees and part of one group of trees from the site. However, four of these are Category C or U features and therefore these removals should not have a significant detrimental effect on the arboricultural value of the site.

6.10.2 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 (see Appendix 4) and the creation of a Construction Exclusion Zone.

7. Arboricultural Method Statement (AMS)

7.1 Introduction

7.1.1 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.

7.1.2 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.

7.1.3 This AMS is to be used in conjunction with the Tree Protection Plan (TPP01) in Figure 3.

7.2 Documents

7.2.1 This AMS has been based on documents produced by Andy Sturgeon Landscape and Garden Design and M3 Consulting. The details of these documents can be seen in Table 9.

Table 9: Documents upon which this assessment has been based

Originator	Reference No.	Title
Andy Sturgeon Landscape and Garden Design	160916_Project Mint Landscape Design	Andy Sturgeon Landscape and Garden Design
M3 Consulting	160916_Project Mint Arboricultural Impact Assessment Briefing Pack	Arup Associates
M3 Consulting	Appendix D 2 of 3 Logistics Ground Floor	Arup Associates

7.2.2 The relationship between the trees and the proposed development are shown on the Tree Protection Plan and Removal Plan (see Figure 3) which is based on the Tree Constraints Plan (TCP01) and the drawings detailed in Table 9.

7.3 Supervision

7.3.1 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 11.

7.3.2 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.

7.3.3 However, 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.

7.4 List of Contacts

7.4.1 The list of contacts within Table 10 should be used as reference if any deviations from, or issues with, any part of this AMS arise.

Table 10: List of contact details for relevant parties

Name	Job Title	Organisation	Contact Email	Contact Number
Neil Francis	Regional Head Arboriculture	Thomson Ecology	Neil.francis@thomsonecology.com	0113 247 3784
TBC	Tree Officer	Camden London Borough Council	-	0207 974 4444
TBC	Site Manager	-	-	-
Mark Mortimer	Assistant Project Manager	M3 Consulting	M.Mortimer@m3c.co.uk	020 7710 4413

7.5 Tree Removals and Pruning

7.5.1 The one individual tree, T7, four groups of trees G3, G4, G5, G6 and part of one group of trees, G8b, shall be felled to ground level. The stumps of the felled trees shall be left in place or ground out to below ground level. Trees requiring pruning shall have the works carried out in accordance with BS3998:2010 *'Recommendations for Tree Work'*.

7.5.2 Trees T1, T2, T3, T4, T5, T6 and tree groups G1, G7 and G9 require deadwood to be removed from their crowns to reduce the risk of harm to people or property. Trees T2, T3, T4 and tree group G7 also require their crowns to be reduced by 1m in length at all compass points and tree T8 by up to 2m in length. Tree T6, T8 and tree group G2 shall have their crowns lifted to give a minimum clearance of 2m from ground level and tree groups G1 and G7 by 3m. The canes within the crowns of tree group G9 shall be removed. None of these minor works will have an impact on the local amenity and long term health of these trees.

7.5.3 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.

7.6 Protective Fencing

7.6.1 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. Clear signs will be attached at 6m intervals along the fencing stating 'Construction Exclusion Zone – No Access'.

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

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

7.6.4 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.

7.6.5 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.

7.7 Ground Protection

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

7.8 Removal of Hard Surfaces within the RPA

7.8.1 Hard standing will require removal from within the RPAs of T1, T5, T6, T8, G1, G7, G8a and G9 (see Figure 3). To prevent damage to any underlying roots this will be removed by hand where possible. Machinery can be used if necessary to break up and remove larger or more substantial sections of the surface; however, the machinery should be footed outside the RPA or on sections of the surface not yet removed.

7.9 Construction within RPAs

7.9.1 New hard and soft landscaping encroaches into the RPAs of T1, T5, T6, T8, G1, G7, G8a and G9. If excavation is required within these RPAs, this shall be carried out by hand using suitable hand tools to ensure that no major roots are present. Roots under a diameter of 25mm may be pruned using secateurs or a pruning saw leaving a clean-cut surface and to a lateral root where possible under the supervision of an arboriculturist. If roots over a diameter of 25mm are encountered, the advice of an arboriculturist should be sought before any severance of the roots is undertaken.

7.10 Services and Utilities

7.10.1 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.

7.10.2 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.

7.11 Landscaping

7.11.1 Any landscaping within the RPAs of the retained trees should adhere to the principles of the CEZ (as detailed in Section 7.6.4) 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.

7.11.2 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 1m^2 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.

7.12 Sequence of Works

7.12.1 A logical sequence of events is to be observed as shown in Table 11.

Table 11: Sequence of works.

Stage	Event	Arboricultural Supervision required
Stage 1	Carry out tree removals and tree works specified in Tables 7 and 8.	No
Stage 2	Install hoarding in order to secure the site.	No
Stage 3	Install Protective Fencing in the position shown on Figure 3, to the specifications given in Section 7.6.	No

Stage	Event	Arboricultural Supervision required
Stage 3	Complete main construction phase of development.	No
Stage 4	Complete all the landscaping.	No
Stage 5	Removal of all machinery from site.	No
Stage 6	Dismantle protective fencing by hand and remove from site.	No

8. References

8.1.1 British Standards Institution (2012). BS5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*. BSI, London.

8.1.2 British Standards Institution (2010). BS3998:2010 *Recommendations for Tree Work.* BSI, London.

8.1.3 Johnson, O. & More, D. (2004). *Collins Tree Guide*. London: HarperCollins.

8.1.4 Lonsdale, D. (1990). *Principles of Tree Hazard Assessment and Management*. The Stationery Office, London.

8.1.5 Matheny, N. & Clark, J.R. (1998). *Trees and Development.* ISA, Champaign, IL.

8.1.6 Mattheck, C. & Breloer, H. (1994). *The Body Language of Trees.* The Stationery Office, London.

8.1.7 National Joint Utilities Group (NJUG) (2007). NJUG Volume 4: *Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees*. NJUG, London.

8.1.8 National Tree Safety Group (2011). *Common Sense Risk Management of Trees* Forestry Commission, Edinburgh

8.1.9 Patch, D. & Holding, B. (2007). Arboricultural Practice Note 12: *Through the Trees to Development.* London: AAIS.

9. Appendix 1 – Tree Schedule

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m) N	E	S	W	Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition Physiology	Structure	Comments	Preliminary Management Recommendations	BS Category	RPA (m^2)
T1	*Platanus* x *hispanica*; London plane	14	270	3	3	3	3	4SW	3	Middle-aged	10-20	Poor	Poor	Dead wood in crown.	Remove dead wood.	C1;2	33
T2	*Quercus palustris*; pin oak	14	250	5	5	5	5	4NW	4	Middle-aged	20-40	Fair	Fair	Southern canopy nearly touching building, dead wood in crown.	Remove dead wood, reduce length of crown by up to 1m	C1;2	28
T3	*Quercus palustris*; pin oak	14	260	5	5	5	5	5S	4	Middle-aged	20-40	Fair	Fair	Southern canopy nearly touching building, dead wood in crown.	Remove dead wood, reduce length of crown by up to 1m	B1;2	31
T4	*Platanus* x *hispanica*; London plane	14	260	5	5	5	5	5S	4	Middle-aged	20-40	Fair	Fair	Southern canopy nearly touching building, dead wood in crown.	Remove dead wood, reduce length of crown by up to 1m	B1;2	31
T5	*Acer saccharinum*; silver maple	19	270, 270, 150, 150	2	0	6	6	3W	6	Mature	10-20	Good	Fair	Deadwood in crown	Remove deadwood.	C1;2	86

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m) N	E	S	W	Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition Physiology	Structure	Comments	Preliminary Management Recommendations	BS Category	RPA (m^2)
T6	*Acer saccharinum*; silver maple	19	190, 190, 130, 230, 230	2	5	2	5	4W	2	Mature	10-20	Fair	Fair	Deadwood in crown; low crown	Remove deadwood, crown lift to 2.5m above ground level.	C1;2	88
T7	*Acer saccharinum*; silver maple	20	490	5	6	4	7	6NE	2	Over-mature	<10	Poor	Poor	Deadwood in crown; cavities on stem	Fell to ground level	U	109
T8	Acer saccharinum; silver maple	20	400	6	4	3	4	2N	2	Mature	10-20	Poor	Poor	Deadwood in crown	Remove deadwood, reduce the length of crown by up to 2m crown lift up to 2.5m above ground level	C1;2	72
T9	*Platanus* x *hispanica*; London plane	19	950	8	6	5	4	4NW	2.5	Mature	20-40	Fair	Fair	lapsed pollard at 3m, 1.8m away from two boundary walls, lateral reduction to scaffold branches year, <10% crown has Massaria	-	A1;2;3	408
T10	*Acer saccharinum*; silver maple	9	690	4	3	3	2	5S	5	Mature	10-20	Poor	Poor	Topped this year	-	C1;2	215
T11	*Crataegus crus-galli*; cockspur thorn	4	210	4	4	4	4	3NE	2.5	Middle-aged	20-40	Fair	Fair	Co-dominant at 2.5m , dead wood in lower canopy	-	B1;2	20

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m) N	E	S	W	Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition Physiology	Structure	Comments	Preliminary Management Recommendations	BS Category	RPA (m^2)
T12	*Quercus rubra*; red oak	8	410	1	1	1	1	6NE	5	Mature	10-20	Poor	Poor	Topped this year 3.1 m east of boundary wall, new growth water shoots.	-	C1;2	76
T13	*Acer saccharinum*; silver maple	8	400	4	4	2	1	3E	3	Mature	10-20	Poor	Poor	Tree previously topped approx 0.5m west of boundary wall, located in play area for young children	-	C1;2	72
G1	*Platanus* x *hispanica*; London plane	10	190	3	2	3	3	-	3	Young	20-40	Fair	Fair	A group of 5 trees. Deadwood in crown; trees nearly touching building	Remove dead wood, crown lift to 3m above ground, reduce crown length by 1m on all compass points.	B1;2	-
G2	*Acer saccharinum*; silver maple	8	150	2	2	2	4	-	2	Young	10-20	Fair	Fair	A group of 3 off-site trees Low crowns.	Crown lift to 2.5m above ground level.	C1;2	-
G3	*Quercus palustris*; pin oak	14	250	4	4	4	4	-	8	Middle-aged	20-40	Fair	Fair	A group of 2 trees. Deadwood in crown; trees nearly touching buildings.	Remove dead wood, reduce crown length at all compass points and crown thin up to 10%.	B1;2	-

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m) N	E	S	W	Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition Physiology	Structure	Comments	Preliminary Management Recommendations	BS Category	RPA (m^2)
G4	*Quercus palustris*; pin oak	14	250	4	4	4	4	-	6	Middle-aged	20-40	Fair	Fair	A group of 2 trees. Deadwood in crown; trees nearly touching buildings.	Remove dead wood, reduce length of crown 1m at all compass points, crown thin up to 10%.	B1;2	-
G5	*Quercus palustris*; pin oak	14	250	4	4	4	4	-	6	Middle-aged	10-20	Poor	Poor	A group of 2 trees. Deadwood in crown; trees nearly touching buildings.	Remove and replace eastern tree, remove deadwood, reduce length of crown by up to 1m at all compass points	C1;2	-
G6	*Quercus palustris*; pin oak	14	250	2	2	2	2	-	5	Middle-aged	<10	Poor	Poor	A group of 2 trees. Poor crown vigour; deadwood in crown	Remove and replace	U	-
G7	*Quercus palustris*; pin oak	14	250	2	2	2	2	-	2	Middle-aged	20-40	Fair	Fair	A group of 9 trees. Crowns nearly touching buildings; deadwood in crown	Remove dead wood, reduce length of crowns up to 1m at all compass points, Crown lift to 3m above ground level.	B1;2	-
G8	*Acer saccharinum*; silver maple	6	140	2	2	2	2	-	2	Young	10-20	Good	Good	A group of 2 trees.	-	C1;2	-

Tree/ Group No.	Species	Height (m)	Stem Diameter (mm)	Canopy Spread (m) N	E	S	W	Height of Lowest Limb and Direction (m)	Crown Clearance (m)	Age Class	Estimated Remaining Contribution (years)	Condition Physiology	Structure	Comments	Preliminary Management Recommendations	BS Category	RPA (m^2)
G9	***Quercus palustris***; pin oak	12	170	2	2	2	2	-	2	Young	10-20	Fair	Fair	A group of 3 trees. Canes attached to the top half of the stem	Remove the canes	C1;2	-
G10	***Crataegus crus-galli***; cockspur thorn; ***Crataegus monogyna***; hawthorn	4	220	2	2	2	2	-	-	Middle-aged	20-40	Fair	Fair	1x cock-spur 4x common hawthorn, around sitting area	-	B1;2;3	-

Table 12: Summary of Tree Losses and Gains

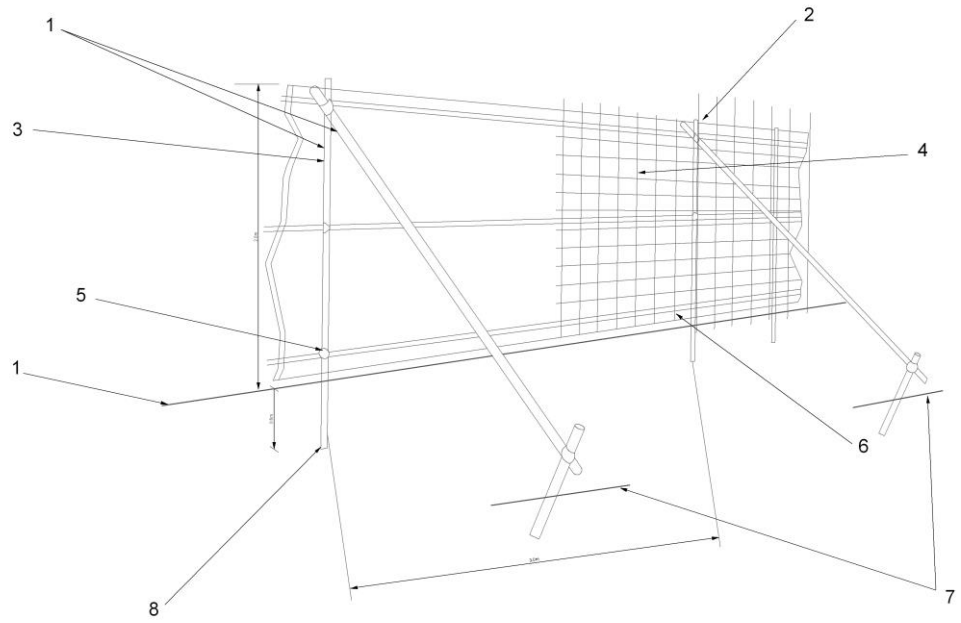
	Category 'A' Trees	Category 'B' Trees	Category 'C' Trees	Category 'U' Trees	Total
Number of Existing Trees / Groups of trees	1	8	12	2	23
Number of Trees / Groups of Trees to be Removed	-	2	2	2	6

	Category 'A' Trees	Category 'B' Trees	Category 'C' Trees	Category 'U' Trees	Total
Number of Additional Trees Being Replanted	-	2	-	-	2
Final Number of Proposed Trees / Groups of Trees	1	8	10	-	19
Net Loss of Trees / Groups of Trees	-0	0	2	2	4

10. 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

11. Appendix 3 – Example of Protective Fencing



1. Standard scaffold poles.
2. Uprights to be driven into the ground.
3. Heras panels secured to uprights with ties and where necessary standard scaffold clamps.
4. Weldmesh wired to the uprights and horizontals.
5. Standard clamps.
6. Wire twisted and secured on inside face of fencing to avoid easy dismantling.
7. Ground level.
8. Approx. 0.6m driven into the ground

Tree Protection Fencing

12. Appendix 4 – Tree Protection Notice

TREE PROTECTION AREA

KEEP OUT!

THE FOLLOWING **MUST** BE OBSERVED BY ALL PERSONS:

- THE PROTECTIVE FENCING MUST NOT BE REMOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA
- NO EXCAVATIONS SHALL OCCUR IN THE PROTECTED AREA

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN CONSENT OF THE LOCAL PLANNING AUTHORITY FOLLOWING CONSULTATION WITH AN ARBORICULTURAL CONSULTANT