Grand Union House, London NW1

Detailed Arboricultural Report

December 2018

Camden **Mixed Developments Limited**

GRAND UNION HOUSE

Detailed Arboricultural Report

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Camden **Mixed Developments Limited**

GRAND UNION HOUSE

Detailed Arboricultural Report

WSP

The Mailbox
Level 2
100 Wharfside Street, Birmingham
B1 1RT

Phone: +44 121 352 4700

WSP.com

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1. INTRODUCTION

1.1. INTRODUCTION

1.1.1. WSP has been instructed by Camden Mixed Developments Ltd. to undertake a tree survey and to subsequently provide a Detailed Arboricultural Report for the partial demolition and redevelopment ('Proposed Scheme') at Grand Union House, Kentish Town Road, Camden (hereafter referred to as 'the Site').

1.1.2. This arboricultural report is British Standard BS 5837 *Trees in relation to design, demolition and construction – Recommendations* compliant and includes a tree survey schedule, arboricultural impact assessment, arboricultural method statement and a tree protection plan.

1.1.3. The purpose of this report is to identify all trees which may reasonably be affected by the Proposed Scheme, to assess the direct and indirect impact of the scheme upon those trees and to recommend such protection measures as are necessary to ensure the long-term wellbeing of trees which are to be retained.

1.2. VALIDITY PERIOD

1.2.1. Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. As a result of this any recommendations made within this report are valid for a period of 24 months from the date of issue.

1.3. LIMITATIONS

1.3.1. This report in no way constitutes a tree hazard assessment survey. Where concerns for tree health and safety exist the necessary and appropriate tree inspections should be carried out.

1.4. DESCRIPTION OF THE PROPOSED SCHEME

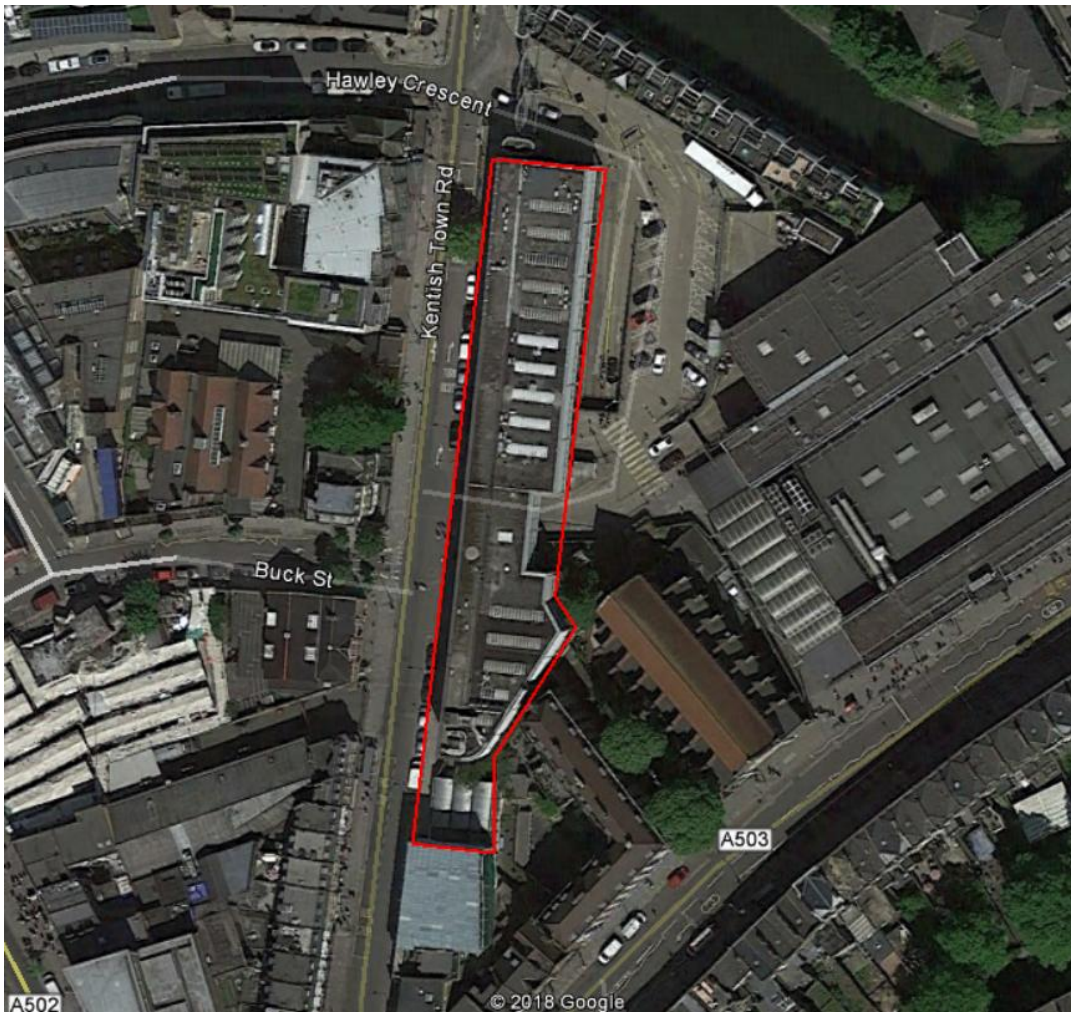
1.4.1. The Proposed Scheme is for the partial demolition and redevelopment of the existing building, to provide a new office (Class B1) building with associated roof terraces, ground floor flexible town centre uses Class A1, A3 and/or D2) and 6 affordable housing units, along with associated landscaping works.

2. SITE DESCRIPTION

2.1.1. The Site is located at Grand Union House, Kentish Town Road, Camden, London, approximately centred at Ordnance Survey (OS) grid reference TQ 28951 84052. The administrative authority is London Borough of Camden.

2.1.2. An aerial image shows the Site within the redline boundary at Figure 1.

Figure 1 - Aerial photograph of the survey area (edged in red)



2.1.3. The surrounding area is urban development with surfacing mostly of asphalt and concrete. To the west is Kentish Town Road. To the north east is access and service roads to the adjacent Sainsbury's supermarket and 12 residential units at Grand Union Walk. To the east Sainsbury's Supermarket and St. Michael's Church and associated churchyard. At the south eastern end are residential flats, the gardens of which border the south east boundary.

2.1.4. There are three trees within 15m of the Site. External to and outside the Study Area, two London plane (*Platanus x acerifolia*) trees are located in St Michael's Churchyard.

3. LEGISLATIVE FRAMEWORK AND GUIDANCE

3.1. LEGISLATIVE FRAMEWORK

3.1.1. Legislation of specific relevance to this report is outlined below.

TREE PRESERVATION ORDERS

3.1.2. The Town and Country Planning Act 1990 places a duty upon local planning authorities to make provision for the preservation and planting of trees when granting permission for new development[1]. It also affords local planning authorities with the power to make Tree Preservation Orders (TPO) where it is expedient in the interests of amenity to make provision for the preservation of trees and woodlands[2].

Purpose of a Tree Preservation Order

3.1.3. The purpose of a TPO is to protect specific trees, groups of trees and woodlands for the purpose of amenity. In the Secretary of State's view 'Orders should be used to protect trees and woodlands if their removal would have a significant negative impact on the local environment and its enjoyment by the public'[3].

3.1.4. A TPO does not prevent the removal of trees in order to implement development. It does however prevent their unauthorised removal and ensures that they can be fully considered when determining whether development is appropriate and acceptable.

3.1.5. It is a statutory offence to carry out any of the following works to trees which are protected by a TPO without the formal consent of the Local Planning Authority (LPA):

- Cutting down;
- Topping;
- Lopping;
- Uprooting;
- Wilful damage; and
- Wilful destruction.

CONSERVATION AREAS

3.1.6. A conservation area is an area which has been designated because of its special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance[4]. Trees have the ability to positively contribute towards the character, appearance or general amenity of a

1 Town and Country Planning Act 1990. s.13(197)(a)(b). Norwich: TSO

2 Town and Country Planning Act 1990. s.13(198). Norwich: TSO

3 Department for Communities and Local Government, 2014. Conserving and Enhancing the Historic Environment. [Online] Available at: https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment#what-is-a-conservation-area [Accessed 3 December 2018]

4 Department for Communities and Local Government, 2014. Conserving and Enhancing the Historic Environment. [Online] Available at: https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment#what-is-a-conservation-area [Accessed 3 December 2018]

conservation area and, if not protected by a tree preservation order, are protected by the provisions in section 211 of the Town and Country Planning Act 1990.

3.1.7. Section 211 of the Town and Country Planning Act 1990 makes it a statutory offence to carry out any of the following works to trees[5] located within a conservation area without first providing the Local Planning Authority (LPA) with six weeks' notice of intent[6]:

- Cutting down;
- Topping;
- Lopping;
- Uprooting;
- Wilful damage; and
- Wilful destruction.

3.1.8. Although the LPA must normally be given six weeks' notice of intent to carry out work to trees in a conservation area, certain exemptions do exist. These include, but are not limited to, the following criteria:

- The making safe of dangerous trees where there is an immediate risk of serious harm;
- The removal of dead wood or dead trees;
- Work necessary to abate an actionable legal nuisance; and
- Where work is necessary to implement a grant of full planning consent.

3.1.9. It is therefore essential that, unless a valid exemption applies, London Borough of Camden is given six weeks' notice prior to undertaking any pruning or felling works to, or any development activities within the Root Protection Area (RPA), of any tree protected by virtue of a conservation area.

HEALTH AND SAFETY AT WORK ETC. ACT 1974

3.1.10. The Health and Safety at Work etc. Act 1974 is the primary piece of legislation covering occupational health and safety in Great Britain. It places duties upon employers to ensure that they conduct their business activities with due regard for the safety of employees and members of the public.

3.1.11. Development activities should be undertaken with due regard to health and safety. This applies not only to those engaged in the pruning, felling or planting of trees but also extends to ensuring that trees are not damaged to the point whereby they become unsafe. Potentially hazardous trees should also be identified and subsequently made safe.

TREES ON THIRD-PARTY LAND

3.1.12. Under Common Law any roots or branches which cross a property boundary and encroach onto neighbouring land are deemed to be a nuisance. They are deemed to be a nuisance as they have

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[5] Except for trees whose stem diameter at 1.5 metres (m) above ground level:

- does not exceed 75mm; or
- has a stem diameter of 100mm of less and is to be removed for the sole purpose of improving the growth of other trees (e.g. thinning as part of forestry operations).

[6] This does not apply to trees which are already protected by a TPO; these trees are subject to the procedures and controls for any tree covered by such an Order.

the potential to affect the owner occupier's reasonable enjoyment of their land. This nuisance may be legally abated by the land owner or occupier cutting back encroaching roots or branches to the edge of their property if they so desire.

3.1.13. However, when abating a nuisance in this manner the owner/occupier must ensure that they that they are aware of and/or adhere to the following requirements:

- There is no duty to give notice to the tree owner although it would be considered courteous to do so;
- Unless otherwise agreed with the tree owner all work must be undertaken without trespass onto the neighbouring property;
- All arising's remain the property of the tree owner and should be both offered back and only disposed of with their permission; and
- A duty of care is owed to the landowner at all times meaning that all work should be undertaken with reasonable skill and in accordance with any relevant best practice guidance.

3.1.14. The potential for future nuisance must be considered when undertaking new tree planting with due regard given to the likely effects of encroaching roots and branches on neighbouring land. The possibility of direct physical damage to boundary walls and fences should be avoided by allowing sufficient room for future growth and movement due to wind.

3.2. PLANNING POLICY

3.2.1. National and local planning policies of specific relevance to this report are outlined below:

3.2.2. The National Planning Policy Framework defines 'Green Infrastructure' as 'A network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities'[7]. Trees are a significant component of green infrastructure.

3.2.3. Paragraph 20(d) states 'Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for... conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation'.

3.2.4. Paragraph 9(c) states 'Planning policies and decisions should aim to achieve healthy, inclusive and safe places which… enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling'

3.2.5. Paragraph 181 states 'Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement.'

[7] National Planning Policy Framework (July 2018), Annex 2

LOCAL PLANNING POLICY

3.2.6. Planning controls within the Study Area are administered by London Borough of Camden. Within the Camden Local Plan 2017 repeat reference is made to trees and green infrastructure. The significant policy statement is located within Policy A3 Biodiversity.

> **'Policy A3 Biodiversity:**
>
> *Trees and vegetation*
>
> *The Council will protect, and seek to secure additional, trees and vegetation.*
>
> *We will:*
>
> *j. resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation;*
>
> *k. require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout;*
>
> *l. expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development;*
>
> *m. expect developments to incorporate additional trees and vegetation wherever possible.'*

Further supporting guidance is located within paragraphs 6.75 to 6.83 the Camden Local Plan.

OTHER GUIDANCE

3.2.7. Other guidance of specific relevance to this report is outlined below:

British Standard BS 5837:2012

3.2.8. British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS 5837:2012) provides recommendations and guidance on the relationship between trees and design, demolition and construction processes. It sets out principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures and is applicable whether or not planning consent is required.

4. BASELINE DATA COLLECTION

4.1. STUDY AREA

4.1.1. The study area has been defined as the Site as identified in Figure 1 and any tree within 15m of the Site boundary.

4.2. METHOD OF BASELINE DATA COLLECTION

4.2.1. Baseline data collection has been undertaken with reference to British Standard BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

4.2.2. Baseline data collection has been undertaken using the following data sources:

- An arboricultural desk study, and;
- A walkover survey of all arboricultural features within the study area.

DESK STUDY

4.2.3. A desk-study has been undertaken as a means of identifying any statutory and non-statutory constraints which may apply to arboricultural features within the Study Area. The desk-based review has considered the following sources:

Tree Preservation Orders and Conservation Areas

4.2.4. London Borough of Camden is responsible for implementing any legal controls imposed through Tree Preservation Orders (TPOs) and conservation areas within the study area. The statutory status of trees within the study area was checked by contacting Rav Curry, Planning Assistant at London Borough of Camden, on 14th November 2018.

Notable, Ancient and Veteran Trees

4.2.5. The presence of locally notable, ancient and veteran trees within the study area was checked using the Woodland Trust's Ancient Tree Inventory[8] on 14 November 2018.

4.2.6. A walkover survey of all arboricultural features within the study area was undertaken on 20 November 2018. The survey was undertaken by Peter Canovan, Assistant Arboriculture Consultant.

4.2.7. The survey was undertaken in accordance with British Standard BS 5837:2012 (BS 5837) with ESRI aerial images and Ordnance Survey Master Map forming the base mapping. The tree survey was undertaken in accordance with the following criteria:

- The trees have been inspected using the Visual Tree Assessment methodology as purported by Mattheck and Breoler[9].
- The tree survey was carried out from ground level only.
- No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
- Tree heights and canopy spreads have been estimated to the nearest 1m.

[8] www.ati.woodlandtrust.org.uk

[9] Mattheck, C., Breloer, H., 2006. *The body language of trees*. Norwich: The Stationary Office

4.2.8. Stem diameters have been measured in accordance with Annex C of BS 5837. Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The diameters of other commonly encountered stems have been measured where most appropriate and this is recorded within the schedule.

4.2.9. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1. Root Protection Areas are calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

NOTES AND LIMITATIONS

4.2.10. Arboricultural survey data is of a preliminary nature and has been collected during a walkover survey. Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy or vegetation or safety constraints. Safety related features have recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.

4.2.11. Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Significant environmental events (such as extreme weather conditions) or changes to the Site may render it invalid within a shorter timescale.

4.2.12. Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the Site visit and may be subject to change should further or more detailed inspections be undertaken.

4.2.13. The survey has only been undertaken from land within the client's ownership or from public land.

4.2.14. The position of arboricultural features not recorded on a topographical survey has been estimated using aerial photography. The position and extent of these features should be regarded as approximate only.

5. BASELINE CONDITIONS

5.1. DESK STUDY

5.1.1. The desk study confirmed that no tree preservation orders are in place within the study area following communications with the LPA.

CONSERVATION AREAS

5.1.2. The arboricultural features listed in Table 1 – Trees in conservation areas have been identified as being afforded statutory protection by virtue of their location within a designated conservation area. A plan showing the location and extent of the conservation areas(s) is included within Appendix B of this report.

Table 1 – Trees in conservation areas

Tree Reference	Conservation Area
T1	Regents Canal Conservation Area[10]
T2	Regents Canal Conservation Area
T3	Regents Canal Conservation Area

ANCIENT, VETERAN AND NOTABLE TREES.

5.1.3. No Ancient, Veteran or Notable trees were identified during desk study within the study area.

5.2. SITE VISIT / SURVEY

5.2.1. A total of three trees were identified and surveyed within the Study Area. Details of which are provided within the Arboricultural Survey Schedule included in Appendix BC of this report. A summary of the surveyed features including their category[11] and designation is provided in Table 2.

[10] https://www.camden.gov.uk/theme/fc-sw2/ccm/content/environment/planning-and-built-environment/two/planning-policy/supplementary-planning-documents/conservation-area-appraisal-and-management-strategies/regents-canal/;jsessionid=B76FED9F5009E63BD1B8BB53DDD70203

[11] Categories are assigned based upon the criteria described within British Standard BS 5837:2012 Table 1.

Table 2 - Summary of surveyed arboricultural features

BS 5837 Category	Quality	Trees
A	High	0
B	Moderate	2
C	Low	1
U	Very Low	0
TOTAL		3

Sub-categories

5.2.2. The value associated with each arboricultural feature is defined by its sub-category. Sub-categories vary depending upon the overall quality of the arboricultural feature, carry equal weight, do not influence retention priority and are simply included to indicate the primary value(s) associated with each surveyed item. The sub-category assigned to each arboricultural feature are identified within the Arboricultural Survey Schedule included in Appendix BC of this report.

5.2.3. Sub-categories are defined as follows:

Table 3 – Sub-categories associated with high quality category A arboricultural features

Sub-category	Area of value	Estimated remaining life expectancy (years)	Description
1	Arboricultural	>40	Trees that are of particularly good examples of their species (e.g. notable specimens), 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).
2	Landscape	>40	Trees, groups, or woodlands of particular visual importance as arboricultural and/or landscape features.
3	Cultural	>40	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. ancient trees, veteran trees and ancient woodland).

Table 4 – Sub-categories associated with moderate quality category B arboricultural features

Sub-category	Area of value	Estimated remaining life expectancy (years)	Description
1	Arboricultural	>20	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. the presence of significant though remediable defects including

			unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit category A designation.
2	Landscape	>20	Trees present in numbers, usually 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.
3	Cultural	>20	Trees with material conservation or other cultural value.

Table 5 – Sub-categories associated with low quality C category arboricultural features

Sub-category	Area of value	Estimated remaining life expectancy (years)	Description
1	Arboricultural	>20	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
2	Landscape	>20	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.
3	Cultural	>20	Trees with no material conservation or other cultural value.

Very Low Quality U Category Arboricultural Features

5.2.4. Very low quality arboricultural features are those which have been identified as warranting inclusion within BS 5837 category U. Sub-categories are not assigned to very low quality features which are identified by one or more of the following features[12]:

- Trees that have serious irremediable structural defects;
- Trees that are dead or are showing signs of immediate and irreversible physiological decline, and;
- Trees infected with significant pathogens or very low quality trees suppressing specimens of better quality.

MODERATE QUALITY ARBORICULTURAL FEATURES

5.2.5. Two moderate quality trees were located within the study area. T1 was an elm street tree, in good health while the other was an alder located in a neighbouring property.

[12] These features do not apply in the instance that a tree is defined as ancient or veteran

LOW QUALITY ARBORICULTURAL FEATURES

5.2.6. T3 was identified as a low value birch tree. This was located behind hoarding, consequently, the stem diameter has been estimated. The condition of the lower part of the tree could not be assessed.

6. ARBORICULTURAL IMPACT ASSESSMENT

6.1.1. The following Arboricultural Impact Assessment (AIA) evaluates the direct and indirect effects of the proposed design on existing trees and identifies the necessary mitigation measures where these are deemed appropriate.

6.2. POTENTIAL ARBORICULTURAL IMPACTS

ARBORICULTURAL FEATURES TO BE REMOVED/RETAINED

6.2.1. The current design shown in drawing 120_11_00 at Appendix B, from AP Architects, shows that the removal of T3 will be necessary. This is a low value Birch tree. The tree provides minimal amenity to the surrounding area. The LPA will need to give consent for removal under the terms of the Conservation Area or through agreed planning permission.

6.2.2. Both T1 and T2 will be retained, but will require protection during construction.

ARBORICULTURAL FEATURES TO BE PRUNED

6.2.3. Presently it is assumed that approximately 1.5 to 2m clearance from the building façade will be required to accommodate scaffolding and access during construction. Both crowns of T1 and T2 are within 2m of the building and consequently pruning may be required. As growth of these trees is relatively young and reasonably flexible, the designer and main contractor shall seek to erect scaffold around the trees in liaison with the project arboriculturist. Where scaffold erection and access cannot avoid damage to trees and where trees are likely to be negatively impacted by construction, conservative pruning shall be undertaken to allow access. Works shall be specified by the project arboriculturist in accordance with BS3998(2010): Tree Work. Recommendations.

POTENTIALLY DAMAGING ACTIVITIES

6.2.4. Working in proximity to T1 and T2 may impact on these trees. Therefore, protective fencing outside the Root Protection Area (RPA) is required. Where this cannot reasonably be achieved, for example on the footway, fencing shall be altered to allow the maximum possible RPA, while also meeting the requirement of the Highway Authority for traffic movement and visibility splays. In any event the stems of trees shall be protected by fixed fencing or hoarding (not fixed to the tree) and where vehicles enter the RPA, ground protection shall be laid out to reinforce the ground.

6.2.5. Dust and debris from demolition or construction may settle on the tree and impact the tree's health. Dust suppression will be required to mitigate against this.

LEGAL AND POLICY CONSTRAINTS TO WORKS REQUIRED AND IMPACTS

6.2.6. All trees are located within the conservation area. Consequently, all tree works will require notification by the LPA or confirmed consent under planning permission. Also, where retained trees may be damaged by construction, there is the potential for prosecution by the LPA for damage to protected trees conservation area. It is therefore essential to minimise all impacts to retained trees.

6.3. TREE PROTECTION PLAN

6.3.1. The above and below ground constraints associated with retained arboricultural features are identified in the Tree Protection Plan(s) included within Appendix D of this report. These account for

the physical and physiological requirements of each tree and include their root protection area, crown spread and stem location.

6.3.2. The Tree Protection Plan(s) shows the location of the proposed tree protection measures which, in this instance, extend to protective fencing around the stems and RPA's for T1 and T2.

6.3.3. All tree protection measures have been specified by a suitably qualified and experienced arboriculturist and are fit for the purpose of excluding construction activities from the root protection areas and canopies of retained trees.

6.4. ARBORICULTURAL METHOD STATEMENT

An arboricultural method statement should adopt a precautionary approach to tree protection and should address any activities which have the potential to cause damage to retained trees.

7. GLOSSARY OF TERMS

Table 6 – Glossary of Terms

Term	Definition
Arboricultural Method Statement	A methodology for the implementation of any aspect of development which is within the root protection area, or has the capacity to adversely affect, any retained tree.
Arboriculturist	A person who has, through relevant education, training or experience, gained expertise in the field of trees in relation to construction.
Construction Exclusion Zone	An area within which all Site clearance and construction activities, access and storage of materials are prohibited.
Crown	The upper part of a tree, measured from the lowest branch, including all branches and foliage.
Proposed Scheme	All works associated with the proposed development of the Site
Root Protection Area	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's vitality.

Appendix A

ARBORICULTURAL METHOD STATEMENT

PURPOSE

The purpose of this Arboricultural Method Statement (AMS) is to provide a summary of the tree protection measures which must be adopted in order to ensure the sustainable preservation of retained trees. The measures described are deemed to be appropriate given the scale, intensity and proximity of development to nearby trees.

ARBORICULTURAL MONITORING

General Requirements

Effective tree protection can only be achieved by adherence to a logical sequence of works combined with effective arboricultural monitoring. The purpose of arboricultural monitoring is to ensure that all tree protection measures are fit for purpose, are implemented in accordance with any approved details and as a means of enabling any previously unforeseen arboricultural issues to be promptly identified and suitably addressed.

The Principal Contractor will be responsible for ensuring that all Site personnel are made aware of the requirements of this AMS and that any future amendments are known and understood. Copies of the approved AMS will be available on Site the requirements of which will be incorporated into all relevant Site management documents and Site induction procedures.

Pre-Commencement

A pre-commencement meeting will be held between the Principal Contractor, local authority tree officer and the project arboriculturist. The purpose of this meeting will be to ensure that all aspects of the tree protection measures are clear and understood and that any future sequencing and supervisory arrangements are agreed. The details of this meeting will be recorded and will be circulated to all parties in writing.

The Principal Contractor shall nominate a person to be responsible for all arboricultural matters onsite. This person must:

- Be present on site whenever work is being undertaken,
- Be aware of their arboricultural responsibilities,
- Have the authority to stop any work that is causing, or has the potential to cause harm to any retained tree,
- Be responsible for ensuring that all Site operatives are aware of their responsibilities toward retained trees and the consequences of any failure to observe those responsibilities,
- Make immediate contact with the local authority and/or the project arboriculturist in the event of any tree related problems occurring, whether actual or potential.

During/Post-Construction

Once works commence the project arboriculturist will undertake a programme of monitoring. This may include phone and email contact with the Site manager, regular Site visits and direct monitoring of sensitive works. The frequency of any monitoring will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur on the Site.

The project arboriculturist will maintain a record of all aspects of the arboricultural monitoring which has been undertaken. This will provide a record of compliance with any agreed tree protection measures and will assist in the efficient discharge of any relevant planning conditions or demonstration of compliance with any statutory requirements.

A recommended programme of arboricultural monitoring is detailed within Table 7.

Table 7 - Recommended programme of arboricultural monitoring

Prior To Any Demolition, Site Preparation Or Construction Works Onsite		
Stage	Action / Operation	Arboricultural Input
	Pre start meeting. To discuss the precise location and timing of all tree protection measures.	Review the proposed tree protection measures and agree any changes. Agree final supervision and monitoring requirements. Circulate details to all parties.
	Completion of approved tree works.	Review the proposed works with the chosen tree work contractor. Supervise sensitive works if necessary.
	Installation of all protective fencing and ground protection measures.	Review the proposed works with the contractor. Document and sign off the completed works. Prepare and issue documents identifying agreed revisions.
During Any Demolition, Site Preparation and Construction Works		
Stage	Action / Operation	Arboricultural Input
	During any external works which occur within, or immediately adjacent to, the RPA of any retained tree.	As necessary to ensure compliance with the AMS and during any unplanned works within the RPA of any retained tree.
Once All Construction Activities are Complete		
Stage	Action / Operation	Arboricultural Input
	Soft and hard landscaping works.	Arboricultural monitoring and supervision to be undertaken as required.
	Snagging survey	Undertake post-development tree survey. Provide list of any remedial works as required.
	Project completion	Sign-off by Project Arboriculturist

TREE SURGERY

A schedule of identified tree works is provided below.

Table 8 - Schedule of tree works

TREE REFERENCE NUMBER	RECOMMENDED WORKS
T3	Remove
T1 and T2	Review Site layout and prune clear of scaffolding or access only where necessary.

Tree works shall be undertaken in accordance with details provided in Table 8. All tree pruning work shall adhere to British Standard BS 3998:2010.

The statutory protection afforded by the Wildlife and Countryside Act 1981 (Amended) and Countryside and Rights of Way Act 2000 (Amended) will also be adhered to. Where there is evidence that bats, nesting birds or other protected species are present then specialist advice will be obtained prior to the commencement of work.

All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.

Should the requirement for a tree felling or pruning arise which is additional to that identified in Table 8 then the following process shall be applied:

- Any specification shall be technically approved by an arboriculturist;
- Written approval shall be obtained from the Local Planning Authority prior to implementation of the work.

TREE PROTECTION FENCING

Purpose

To protect retained trees including their stems, crowns, rooting areas and the soil within which they grow.

General Requirements

Tree protection fencing will be used to prevent access to the root protection areas (RPAs) of retained trees and will be erected within the locations shown on the Tree Protection Plan(s) included within Appendix D of this report. In all instances the following specification will be strictly adhered to:

- Once erected tree protection fencing shall remain in-situ until all construction activities are complete.
- The area to the rear of the tree protection fencing shall be considered to form a Construction Exclusion Zone. No construction activities, storage of materials or pedestrian or vehicular access shall take place within this area.
- All weather notices will be attached to the tree protection fencing at suitable intervals and shall include suitably sized informative text containing the following statement:

''TREE PROTECTION FENCING

CONSTRUCTION EXCLUSION ZONE – NO ACCESS''

- Regular daily checks will be carried out by an appointed person to ensure that all tree protection fencing is still in place and functioning; any damage will be rectified without delay.

Timing

Tree protective fencing shall be erected prior to any works onsite including demolition, ground work or the importation of plant and materials.

Primary Tree Protection Fencing

The purpose of primary tree protection fencing is to form a construction exclusion zone during Site clearance and construction.

Once erected primary protective fencing shall remain in-situ until all construction activities are complete.

Secondary Tree Protection Fencing

The purpose of secondary tree protection fencing is to form a construction exclusion zone until such time as:

- Other tree protection measures (e.g. ground protection in the form of new hard surfacing) can be deployed;
- Specific approved works are undertaken.

Secondary tree protection shall remain in-situ until such time as other protection measures or approved works are to be installed or undertaken. Following completion of any approved activity secondary tree protection fencing shall be re-erected in order to protect any exposed ground within the RPA.

Specification for Fencing

Primary and secondary tree protection fencing shall comply with the following requirements:

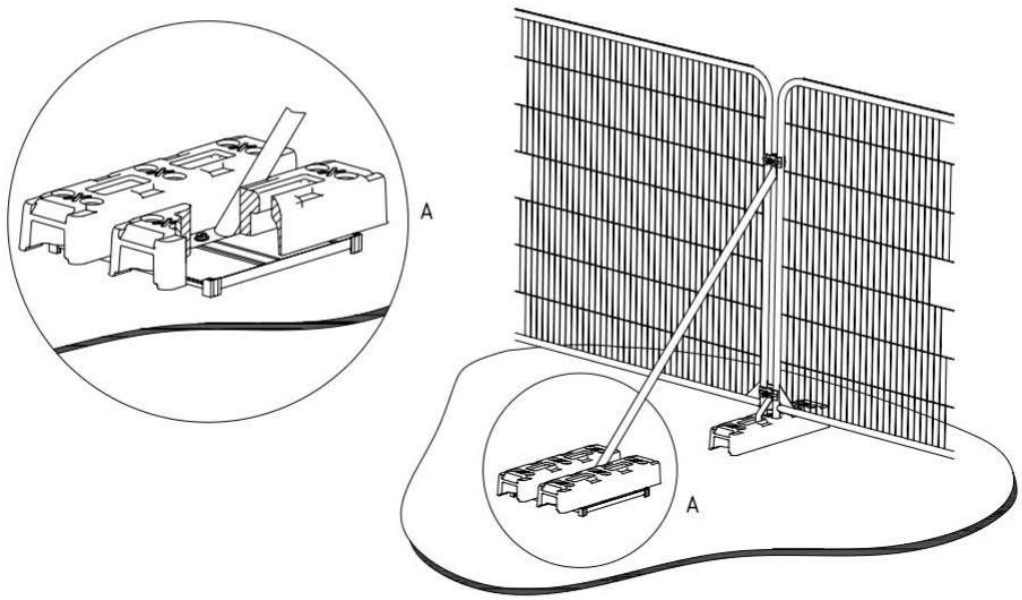


Figure 2 – Specification for tree protection fencing

Specification:

2m tall welded mesh panels on rubber or concrete feet

Joined using a minimum of two anti-tamper couplers (installed with nuts to inside of fence) at least 1m apart

Panels to be supported on inside by stabilising struts

Stabilising struts to be mounted in a block tray (insert (A))

Notes on Fencing within the Study Area.

Where fencing is not able to be installed around T1 and T2, the RPA's will be protected with ground protection where vehicles may enter the RPA. T1 will require stem protection. This can be achieved by creating a plywood hoard around the stem leaving sufficient room to avoid damage to the bark. The hoard shall also be created to a height that does not contact the lowest main branch of the tree.

GROUND PROTECTION

Purpose

To provide construction access within root protection areas whilst preventing access to underlying soil and roots.

General Requirements

Ground protection shall be employed within the locations shown on the Tree Protection Plan(s) included within Appendix D of this report. In all instances the following specification will be strictly adhered to:

- Unless otherwise stated within this report ground protection shall remain in-situ until all construction activities are complete.
- Regular daily checks will be carried out by an appointed person to ensure that ground protection is still in place and functioning; any damage will be rectified without delay.

Timing

Ground protection shall be in-situ prior to any works onsite including demolition, ground work or the importation of plant and materials.

Specification

Ground protection shall be sufficiently robust to prevent damage or disturbance of the underlying soil. In order to accord with BS 5837:2012 ground protection shall comply with the following specification:

Areas of Unmade Ground

- For pedestrian only access ground protection measures shall include a single thickness of scaffold boards placed on top of 100mm depth of compression resistant material (e.g. woodchip) laid onto a geotextile membrane.
- For pedestrian activities and plant up to 2 tons in weight proprietary interlinked ground protection boards will be used and placed on top of 150mm depth of compression resistant material (e.g. woodchip) laid onto a geotextile membrane.
- For wheeled or tracked equipment exceeding 2 tons in weight a structural engineer will design an alternative system. This may include the use of temporary cellular confinement systems, reinforced concrete slabs or track board systems details of which are to be approved before construction commences.

Areas of Existing Hard Surfacing

Areas of existing hard surfacing identified for use as ground protection shall not be removed during Site clearance and shall be retained throughout the construction period.

Areas of existing hard surfacing shall be assessed by an engineer to ensure that they are sufficient to prevent damage or disturbance to the underlying soil. A precautionary approach to any anticipated loadings should be adopted.

In instances where the engineer identifies existing surfacing as inadequate then a specification for additional protection must be provided and any requirements actioned onsite.

PRECAUTIONS OUTSIDE CONSTRUCTION EXCLUSION ZONE

In all instances the following tree protection measures will be adopted during any Site clearance or construction activities undertaken immediately outside, or in proximity to, the root protection area of any retained tree:

- Oil, bitumen, cement or other material likely to be injurious to a tree will not be stored or mixed within 10m of any stem unless contained within a bunded structure. Concrete mixing will not be carried out within 10m of a tree unless undertaken within a bunded container. Any spillage shall be immediately reported to the project arboriculturist who will determine what mitigation is required.
- Fires will not be lit nearer than five metres from the limit of any crown spread; will be down-wind of any tree and will be prevented from becoming so large as to cause damage to any nearby tree.
- Notice boards, telephone cables or other services will not be attached to any part of any tree. Trees to be retained will not be used as anchors for equipment used to remove stumps, roots, other trees or for any other purposes.
- Care will be exercised when using cranes or similar equipment near the spread of the canopy of a tree.
- It is essential that allowance be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees.

EXCAVATION WITHIN ROOT PROTECTION AREAS

Areas to be excavated but which are within root protection areas are identified on the Tree Protection Plans included in Appendix D of this report. In all instances excavatory work will be undertaken in accordance with the following methodology:

Pre-Commencement

- All staff involved will be made aware of this working methodology.
- Prior to undertaking any works the location of any root protection areas and excavations must be determined and shall be marked out using non-toxic marker paint.

Mechanical Excavation

- Soil shall be carefully removed using a non-toothed excavator bucket. The leading edge of the bucket shall be angled parallel to the soil surface and the soil removed in thin layers of approximately 25mm depth. An observer/banksman shall be present at all times and shall keep watch for the presence of roots. If roots are identified then the excavator shall stop work and soil surrounding the root shall be excavated by hand.
- Spoil shall be deposited outside of the root protection area.
- On no account shall plant or machinery operate from within the root protection area unless positioned on suitable ground protection[13].
- The soil surface shall be inspected in between each use of the bucket. Should evidence of tree roots be found then the area shall be carefully excavated by hand as a means of exposing any underlying roots without risk of damage.
- If tree roots are uncovered then they shall be treated in the following manner:
    - Roots <25mm Ø shall be cleanly cut back to the edge of the excavation using a sharp saw or secateurs
    - Roots >25mm Ø shall only be severed following technical approval from an arboriculturist. If approval is given then roots shall be cleanly cut back to the edge of the excavation using a sharp saw.
- Once excavation reached the desired depth the final soil surface shall be inspected for the presence of roots which could become damaged during construction. The advice of an arboriculturist shall be sought regarding the most suitable means of protecting any roots which may have been identified.

Hand Excavation

- Soil shall be carefully removed using hand tools only. Spoil shall be deposited outside the root protection area. A trowel shall be used to loosen and remove soil in proximity to roots whilst a brush or compressed air shall be used to remove any soil which may adhere to the outside of any root.
- Those excavations closest to the tree(s) shall be carried out first. These shall be undertaken under the direct supervision of the project arboriculturist. Hand excavations shall be carried out

[13] For plant up to 2 tons in weight proprietary interlinked ground protection boards will be used and placed on top of 150mm depth of compression resistant material (e.g. woodchip) laid onto a geotextile membrane.

For wheeled or tracked equipment exceeding 2 tons in weight a structural engineer will design an alternative system. This may include the use of temporary cellular confinement systems, reinforced concrete slabs or track board systems details of which are to be approved before construction commences.

to a minimum depth of 0.6m beyond which mechanical means may be employed should the project arboriculturist deem it acceptable.

- If tree roots are uncovered then they shall be treated in the following manner:
  - Roots <25mm Ø shall be cleanly cut back to the edge of the excavation using a sharp saw or secateurs
  - Roots >25mm Ø shall only be severed following technical approval from an arboriculturist. If approval is given then roots shall be cleanly cut back to the edge of the excavation using a sharp saw.

- Once excavation reached the desired depth the final soil surface shall be inspected for the presence of roots which could become damaged during construction. The advice of an arboriculturist shall be sought regarding the most suitable means of protecting any roots which may have been identified.

Post-Excavation

- Exposed roots and soil closest to the tree shall be covered at the earliest opportunity to protect them from extremes of temperature and desiccation.
- Where uncured concrete is to be used then an impermeable membrane shall be installed to prevent leachate from coming into contact with roots or the soil that surrounds them.
- Where excavations render soil at risk of collapse then bracing or other support measures shall be employed. These shall be sufficient to prevent any loosening or further loss of soil from within the rooting area of any nearby tree.

REPLACEMENT OF HARD SURFACING WITHIN ROOT PROTECTION AREAS

Aim

To enable existing hard-surfacing to be replaced/upgraded without detriment to nearby trees.

Design

The design shall be provided by a structural engineer. If necessary hand tools may be used as a means of excavating trial pits and establishing whether the structure of the existing hard surfacing is fit for purpose. Surfacing shall be deemed fit for purpose if:

- Existing surfacing can resist deformation during construction. This shall be assessed with regard to all anticipated loadings with additional support (e.g. steel plates) to be provided should it be deemed inadequate, and;
- Proposed surfacing can resist deformation during normal use.

The design shall ensure that underlying soil and roots remain undisturbed and undamaged with due regard given to the fact that roots may be present directly beneath the sub-base. The preferred option shall be to retain any sub-base in-situ.

If the sub-base is to be removed then it shall be replaced with a three-dimensional cellular confinement system.

Timing

At no point shall works be undertaken if:

- There is a risk that surfacing will become damaged and result in disturbance of the underlying soil, or;
- Surfacing is removed without additional tree protection measures have been previously agreed and implemented.

Specification

All works to be subject to an agreed programme of arboricultural supervision.

The preferred option is that new surfacing shall be laid directly on top of existing. If necessary the tarmacadam surface course may be planned to allow re-surfacing to take place.

The existing sub-base and edging shall be retained and shall not be disturbed.

If new permeable surfacing is used then holes should be made through the existing surface in order to allow the passage of air and water. Holes should be 50 millimetres diameter and a one metre centres.

If existing sub-base is to be removed then it must be replaced with a three-dimensional cellular confinement system. This must be designed by a structural engineer in conjunction with a suitably qualified and experienced arboriculturist. A permeable surface must be used wherever practicable.

INSTALLATION OF NEW FOUNDATIONS ADJACENT TO ROOT PROTECTION AREAS

Aim

The prevent encroachment into, and disturbance of, root protection areas adjacent to new foundations.

Design

Foundations shall be designed to avoid encroachment into root protection areas.

Designers shall consider the method of construction as part of the overall design. The below ground working area must not encroach into the root protection area although above ground construction access may be available subject to the use of appropriate tree protection measures and avoidance of any tree stems and crowns.

Measures must be put in place which remove the risk of soil loosening or collapse within the root protection area.

Timing

At no point shall work be undertaken without appropriate tree protection measures having been agreed and implemented.

Specification

Where piled foundations are to be employed then due regard must be given to formation of any below ground capping beams including the space required for any shuttering.

Strip foundations may be utilised but may require the use of sheet piles or bracing in order to ensure soil stability within the root protection area.

Where safe to do so all roots >25mm Ø must be cut back to the edge of the excavation using a sharp saw or secateurs.

Where uncured concrete is to be used an impermeable membrane shall be installed to prevent leachate from entering the root protection area.

INSTALLATION OF UNDERGROUND APPARATUS AND SERVICE RUNS

Purpose

To ensure underground services can be installed, operated and maintained without detriment to retained trees. To prevent services becoming damaged by trees.

Design

Wherever possible any underground services (cabling and pipes) shall be located outside the root protection area of any retained tree. Soakaways must not be located within root protection areas.

Wherever possible services will be grouped together, will utilise common ducts and have all inspection chambers located outside of the RPA.

Timing

At no point shall work be undertaken without appropriate tree protection measures having been agreed and implemented.

Specification

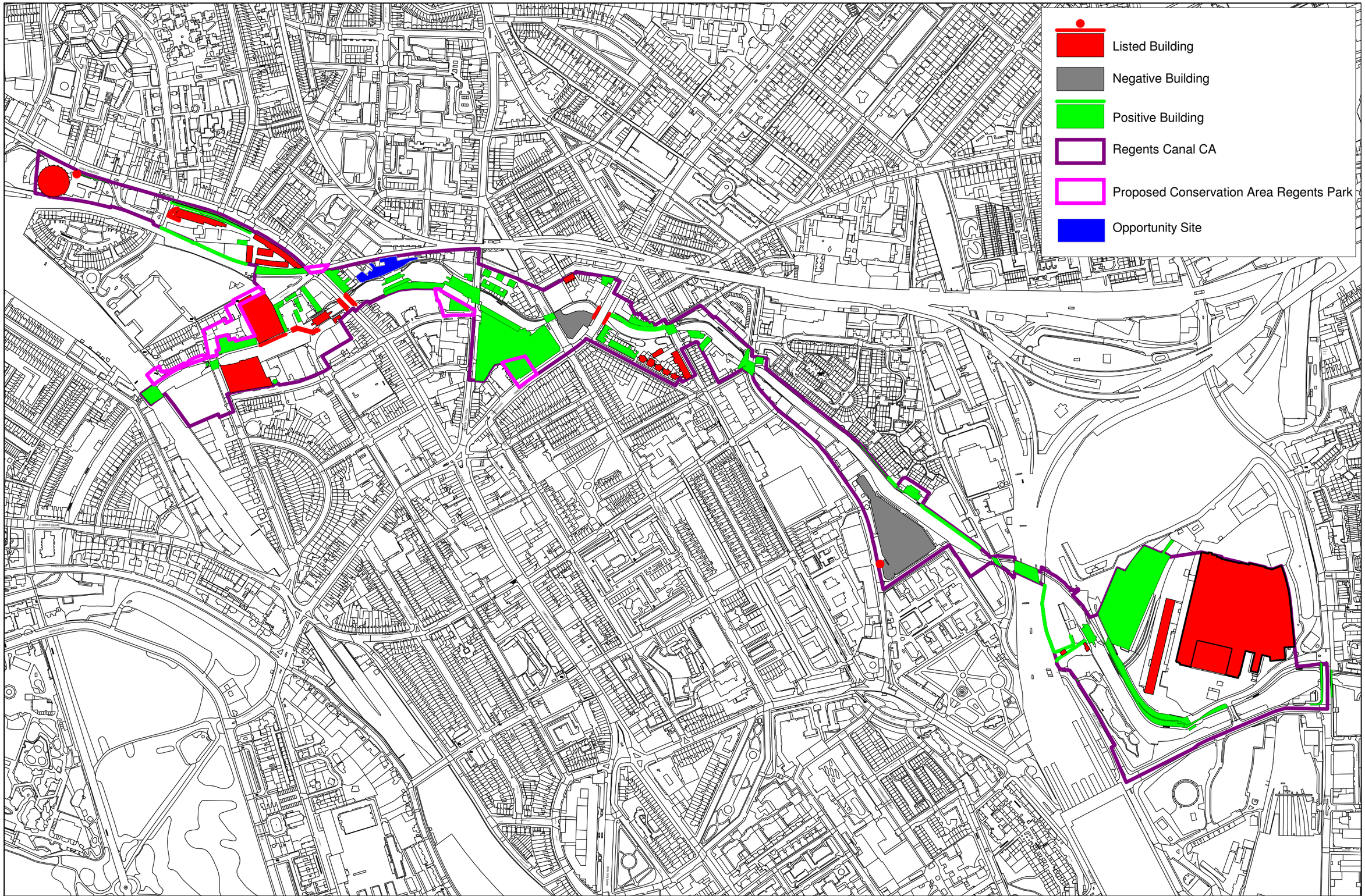
Any new services installed within the zone of influence (not just the root protection area) of any proposed, or retained, tree will incorporate sealed and flexible joints and be sufficiently robust to avoid damage due to differential soil movement.

In situations where services must pass through the root protection area of a retained tree then trenchless techniques will be used wherever possible. Receptor pits will be located outside the root protection area and potentially toxic external lubricants will not be used.

In situations where trenchless techniques are impractical then the use of open trenches will only be considered if they can be excavated without the need for shoring of the sides. The method of excavation will be using an ‘air-spade’ or similar to ensure that soil can be removed from around the tree roots whilst causing only minimal damage.

Appendix B

PLANS AND SUPPORTING DOCUMENTATION



Regents Canal Conservation Area Townscape Appraisal

N W E S

#Map for Internal Use Only#

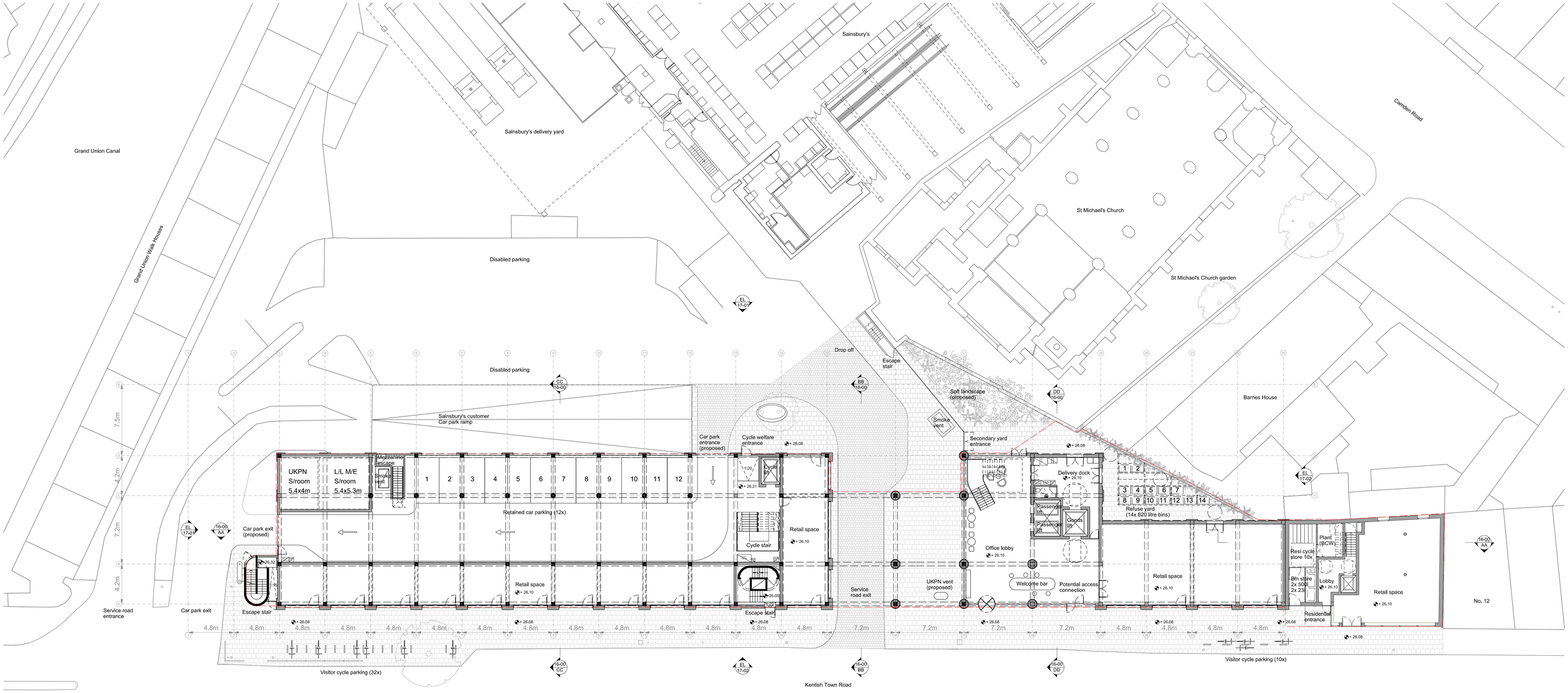
Scale 1: Not Usable Scale

Print Date: 01/09/2008

Printed By: L.Small

Camden

Map Ref No: c02186



Notes

Do not scale from drawings
Discrepencies to be reported immediately to the Architect
To be read in conjunction with all relevant Architects', Landscape Architects', and Structural Engineers' drawings.
All existing site, tree and building information has been compiled from different sources.
All dimensions to be checked on site.

Key
- Site boundary
- Existing fabric
- Proposed fabric

Rev.	Date	Description	Drawn	Check

1 5 20m

AP

Andrew Phillips
Unit 12, 3 Gunthorpe Street,
London, E1 7RQ
Tel: +44 (0)207 377 9783
www.andrewphillips.co

Project
Grand Union House
London

Project number
120

Client
Camden Mixed Developments Limited

Drawing name
Ground floor plan (00)
Proposed

Drawing number
11_00

Date	07/12/2018
Scale / Format	1:200/A1
Drawn / Checked	JC / JC
Approved	AP
CAD Reference	120_11_00

Issue
Planning 00

Appendix C

ARBORICULTURAL SURVEY SCHEDULE

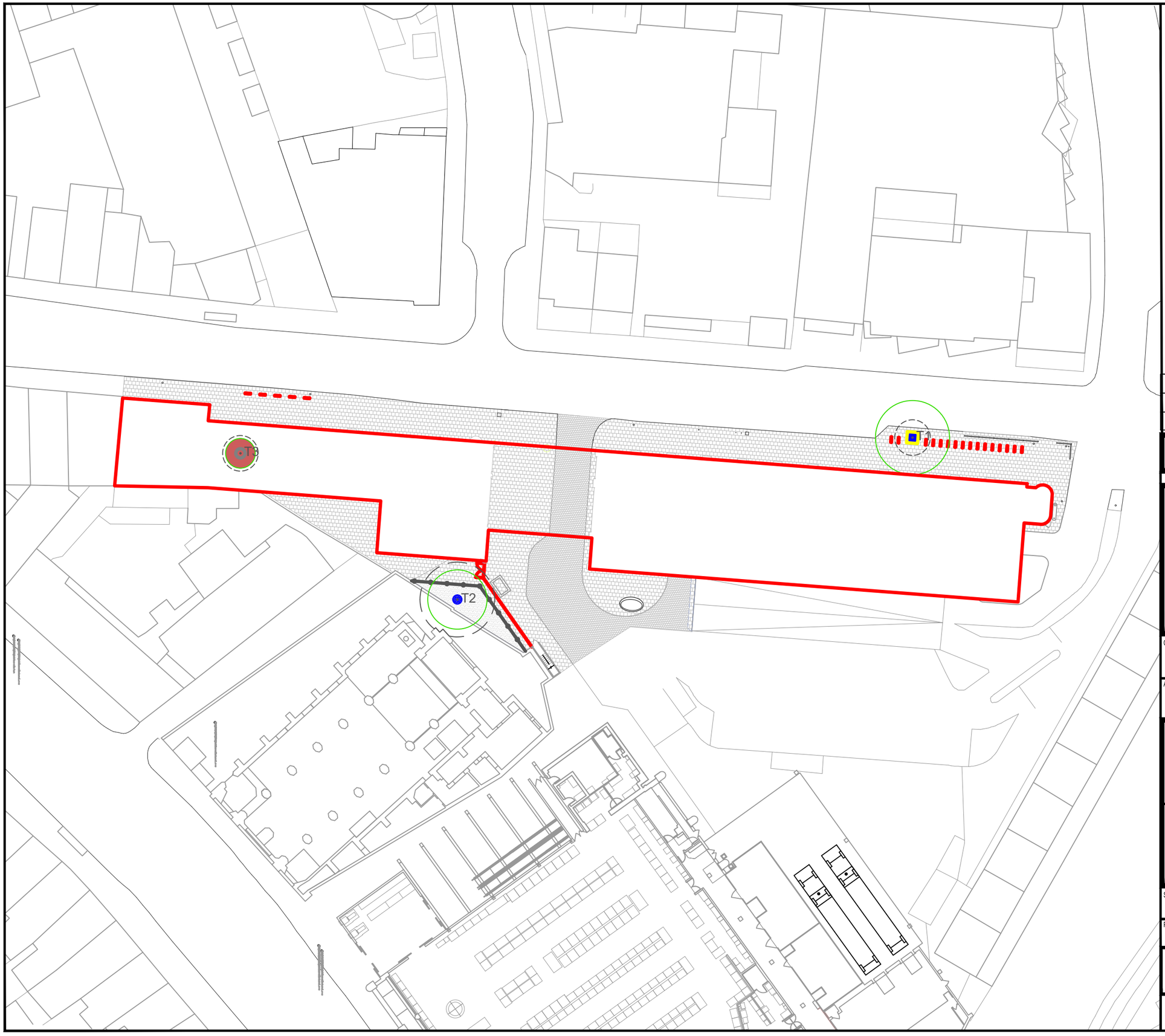
Key:

REFERENCE NUMBER:	Individual reference number					
TYPE:	T - Tree	G - Group	W - Woodland	H - Hedge		
SPECIES:	Species listed by common name					
HEIGHT:	Overall height (m)					
DIAMETER:	Stem diameter (mm) calculated in accordance with BS 5837 paragraph 4.6.1. An average stem diameter is provided for groups, woodlands and hedges. * Denotes an estimated stem diameter					
NO. OF STEMS:	Number of stems (individual trees only)					
N, E, S, W:	Crown spread taken at each cardinal point (m)					
LCH:	Lowest crown height (m)					
FSB:	Height of lowest significant branch (m)					
AGE CLASS:	Young - < 1/3rd estimated life expectancy	Semi-mature – 1/3rd to 2/3rd estimated life expectancy	Mature - > 2/3rd estimated life expectancy	Veteran – a tree which exists significantly beyond its normal life expectancy		
PHYSIOLOGICAL CONDITION:	Good	Fair	Poor	Dead		
STRUCTURAL CONDITION:	Good	Fair	Poor			
ESTIMATED REMAINING CONTRIBUTION:	>10 years	10+ years	20+ years	40+ years		
CATEGORY:	BS 5837 Category - A, B, C, U	BS 5837 Sub-category - 1, 2, 3				
RPA RADIUS	The radius of the circular Root Protection Area associated with the tree as measured from the centre of the stem (m)					

Tree Ref.	Type	Species	Height	Diameter	N	S	E	W	LCH	FSB	Age Class	Physiological Condition	Structural Condition	Preliminary Management	Estimated Remaining Contribution:	Category	Subcategory	Notes	RPA radius	RPA area	Environmental Status	Statutory Status
T1	T	Elm	12	200	5	5	5	5	2	2	Mature (Early)	Good	Fair	Retain	40+	B	3	Street Tree. Lower bark damage road side.	2.4	18.10	None	Conservation Area
T2	T	Alder	16	400	4	4	4	4	3	3	Mature (Early)	Fair	Fair	Retain	10+	B	3	Tree is located in tight space between rear of Grand Union House and rear wall of Church.	4.8	72.38	None	Conservation Area
T3	T	Silver Birch	12	200	2	2	2	2	5	4	Mature (Early)	Fair	Fair	None	10+	C	1	Behind Hoarding in close proximity to building. Lower half of tree not visible.	2.4	18.10	None	Conservation Area

Appendix D

TREE PROTECTION PLANS



DO NOT SCALE

T TREE

CATEGORY GRADING

B CATEGORY

C CATEGORY

ATTRIBUTES

INDICATIVE ROOT PROTECTION AREA

INDICATIVE TREE CANOPY

TREE TO BE REMOVED

OTHER ATTRIBUTES

TREE PROTECTION FENCING

PROTECTIVE HOARDING AROUND STEM

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	05/12/2018	JM	TREE T2 LOCATION AMENDED	DW	DW
P01	04/12/2018	JM	FIRST ISSUE	DW	DW

DRAWING STATUS:

TECHNICALLY APPROVED

wsp

1 Capital Quarter, Tyndall St, Cardiff, CF10 4BZ, UK
T+ 44 (0) 292 076 9200
wsp.com

CLIENT:

CAMDEN MIXED DEVELOPMENT LIMITED

ARCHITECT:

NOT APPLICABLE

PROJECT:

GRAND UNION HOUSE

TITLE:

TREE PROTECTION PLAN

SCALE @ A3:	CHECKED:		APPROVED:
1:500	DW		DW
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70009120	JM	JM	04/12/2018

DRAWING No:	REV:
70009120-TPP-EV-001	P02

The Mailbox
Level 2
100 Wharfside Street, Birmingham
B1 1RT

wsp.com