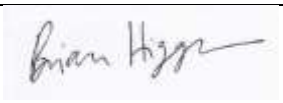
Arboricultural Impact Assessment

At

Gloucester Lodge, Gloucester Gate, Regents Park, London, NW1 4HA

Iconic Properties Limited

Planning Application 'B'

Address	Gloucester Lodge, Gloucester Gate, Regents Park, London, NW1 4HA		
Client	Iconic Properties Limited	**Client Ref**	-
ES Ref	D1006151635v3	**Consultant**	Jonnie Setterfield BSc (Hons)
Report Date	28th October 2015	**Quality Checked**	Gina Anderson BA (Hons)
Technical Arboriculture Approved **Brian Higginson DipArb(RFS) M.Arbor.A**			

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Contents

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Report Caveats

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur, but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. Environmental Services can provide further information on this matter if required.

Please note no statutory control checks have been undertaken (unless specified). Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up to date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species.

Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the 3rd party and undertake further inspection work.

1.0 Introduction

1.1 Environmental Services have been appointed by Iconic Properties Limited to provide advice on the arboricultural issues relating to the proposed development of the above site.

1.2 We undertook a Pre-Development Tree Condition Survey (see Appendix 1), on 16th June 2015. This survey assessed the condition of the tree resource, categorised the trees and provided the Root Protection Area (RPA) information according to the BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations".

1.3 Following preparation of our Tree Condition Survey we received a copy of the layout drawing showing the development proposal for the site.

1.4 Our detailed check with the Local Planning Authority has confirmed that no onsite trees are subject to statutory protection:

1.5 In addition we note the site is located within the Regents Park Conservation Area.

1.6 The tree numbers used in this report refer to the tree numbers used in our Tree Condition Survey.

2.0 Executive Summary

2.1 Gloucester Gate is situated on the north-eastern boundary of Regent's Park's Outer Circle, being approximately half a mile north of The Marylebone Road

2.2 Gloucester Gate is one of London's most prestigious properties boosting a private walled rear garden, double garage, and carriage driveway providing parking for up to 8 cars.

2.3 The trees on the site surround each boundary with mature trees of high amenity value located on the front boundary. Younger trees are located within the site amongst the existing buildings, most of low quality and landscape value.

2.4 The development proposal is to extend the lower ground level out into the front right and left hand side of the property to create a light well similar to the front left hand side of the property. The property will be subjected to minor internal works.

2.5 There are minimal tree impacts within the site and proposed development which will allow a better quality and condition of tree stock to be supported while retaining trees in good physical condition.

2.6 A summary of the affected trees is detailed in the table below:

Impact	Reason	B	C	U
Trees to be removed	To facilitate the development or due to their condition (U cat)	TG1	T10, T11, T12 &T13	T1 &T4
Trees with RPA encroachment	To facilitate construction	T2	N/A	N/A

3.0 Scope of Tree Survey

3.1 To carry out a tree condition survey on the trees and hedgerows at and immediately adjacent to the site, identifying any hazard trees and making recommendations for those trees to be retained and low amenity value and hazard trees to be replaced.

3.2 To undertake the tree survey in accordance with the principles of BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'.

3.3 To produce a tree constraints plan (TCP), showing the location of surveyed trees, their BS5837: 2012 categorisation, the theoretical Root Protection Areas (RPA).

3.4 To carry out an arboricultural impact assessment on the effect of the new development at the site identifying the construction exclusion zones (CEZ) shown on the tree protection plan (TPP). This will also show the locations for tree protective fencing, any temporary ground protection required and identify 'No-Dig' zones for RPAs shown outside of CEZs.

3.5 The purpose of this report is to comment on the arboricultural implication of the proposed development and to aid the preservation of trees to be retained at and adjacent to the site during the construction works by setting out the tree protection methods, construction techniques and working practices that are to be adopted on this site.

3.6 If the guidelines and principles outlined in this report are not adhered to, as with all development sites, there is a risk that the construction activities will result in damage to and potentially the death of the retained trees. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

4.0 Terms of Reference

4.1 Reference Documents:

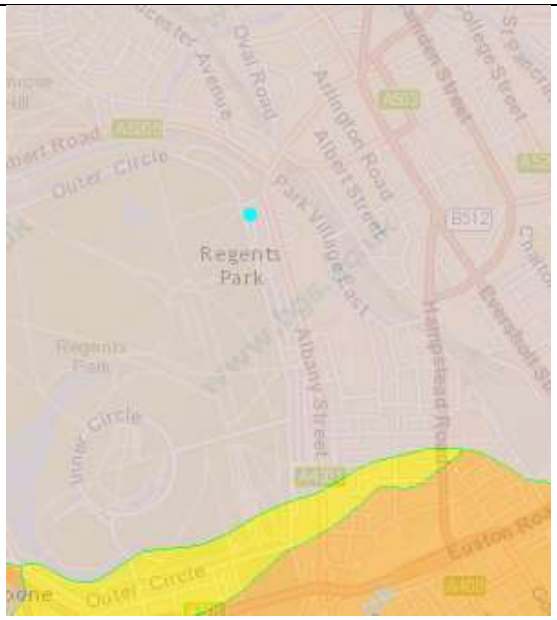
- BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'
- BS3998:2010 'Tree work – recommendations'
- NJUG 4 – National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007"
- Information from the Camden Council local plan and website
- BGS Open Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html

5.0 Description of Site and Proposed Works

5.1 The property is a Regency building situated in a residential street owned by the crown estate. To the front of the property is a carriage type driveway with automatic gates and railings forming the front boundary. The rear courtyard consists of a terraced area between the main property and mews with associated shrub beds, bordering the terrace.

5.2 The immediate and distant landscape character is within the urban setting of London, opposite Regents Park.

5.3 The topography of the site is relatively flat with no undulating features.

Site Location (OS)	Site Location (BGS Soil)
	

Summary

London Clay Formation - Clay, Silt And Sand. Sedimentary Bedrock formed approximately 34 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by deep seas (information from BGS online).

5.4 The underlying site soil has been identified as CLAY and great care should therefore be taken to ensure no compaction of the soils within the identified RPA's as this soil type is less favourable to tree root growth/ moisture movement and aeration.

5.5 All comments regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.

6.0 The Trees

6.1 There are 13 Individual trees, 1 Tree group and 1 hedge surveyed onsite or immediately adjacent to the site boundary.

6.2 By BS5837:2012 categorisation individually there were; 5 "B" category trees, 7 "C" category trees. By group there was 1 "B" category group. In total there were 2 "U" category individual trees which were identified as in poor condition or dead / in decline with less than ten years useful life expectancy. These should be felled and replaced regardless of any impact of the development proposal.

6.3 The trees can be summarized as follows:

BS 5837 Cat	B	C	U
Specific Trees	T2, T3, T5, T6, T7 & TG1	T8, T9, T10, T11, T12, T13 & H1	T1 &T4
Total Number	Six	Seven	Two

6.4 These trees locations and a summary of their visual contributions can be summarized as follows:

BS 5837 Cat	B	C
Southern Boundary Contributing to the street scene from Outer Circle Road	T3, T5 &T6	N/A
Easter Boundary Contributing to the street scene from Gloucester Gate	T2	N/A
Internal contribution only no visual contribution to the street scene	T7 & TG1	T8, T9, T10, T11, T12, T13 & H1

6.5 Amenity value of the trees can only be perceived from the front of the site off Outer Circle Road. All trees set back are screened by the larger vegetation at the frontage. No trees within the rear court yard can be viewed from the public realm.

6.6 The hedgerow identified on the site is not likely to be classified as 'important' within the Hedgerow Regulations 1997.

7.0 Arboricultural Impact Assessment

7.1 The 6 Individual trees to be removed, by BS5837:2012 category, are:

C – T10,T11,T12,T13

U – T1 & T4

The 1 tree group is to be removed, by BS5837:2012 category, they are:

B - TG1

7.1 Tree Removals

7.1.1 The following trees will be removed to facilitate the development

BS 5837 Cat	B	C
Tree to be removed	TG1	T10, T11, T12, T13 & H1 (Partial removal minor)

7.1.2 Every effort has been made to reduce the removal of trees from the site. However, to mitigate the tree loss proposed, the Local Planning Authority is invited to secure a detailed Landscaping Proposal by way of Planning Condition.

7.2 Root Protection Area (RPA) Incursions

7.2.1 The following incursions into the RPA's of trees to be retained have been identified:

BS 5837 Cat	B	C	Summary
No RPA Incursion	T5, T6 & T7	T9 & H1(Partial removal minor)	Five
RPA Incursion	T2	N/A	One

7.3 Foundations

7.3.1 The foundations of the proposal will slightly encroach into the RPA of T2. Please refer to the Tree Protection Plan for further information.

7.3.2 To minimise the impact on the trees it is proposed foundation installation will require close arboricultural supervision.

7.3.3 In instances where soil conditions are known to be of a shrinkable clay and retained trees are present in proximity to buildings there is a potential for future tree related subsidence to occur. On this site and in accordance with information from the BGS, soils in relation to the site are known to be London Clay Formation - Clay. The retained and removed trees therefore have the potential to constrain the foundation design for any adjacent new buildings within influencing distance. Final decisions as to the risks presented by retained / removed trees upon adjacent new buildings should be subject to detailed site geotechnical information being available, assessed by a structural engineer.

7.4 Services

7.4.1 The route of any services needs to be carefully considered so as to avoid unnecessary encroachment into retained trees RPA's. Our site assessment has confirmed that the main services currently approach the development area from Outer Circle Road.

7.4.2 The new services are set to be replaced and re-run into the property from the rear mews. This location will not encroach within the RPAs of any retained trees, however the precise location of new excavations for services is not known.

7.5 Ground Levels

7.5.1 No changes to existing ground levels are proposed within the RPA's of retained trees.

7.6 Shading

7.6.1 No shading issues have been identified with the proposal on the basis of the orientation of the tree resource relative to the proposal.

7.7 Site Supervision/ Monitoring

7.7.1 Most damage to trees on developments sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is proposed.

7.7.2 Basic checks will ensure that protective fencing remains intact. Any unforeseen issues can also be identified and discussed before damage to the tree(s) occurs.

7.7.3 The Local Planning Authority is invited to secure the following schedule by way of Planning Condition. To be effective the Local Planning Authority must provide us with a copy of the formal Decision Notice to ensure we can then contact and follow up the proposed monitoring. A copy of the Decision Notice should be emailed to planning@innovation-environmental.co.uk . The number of proposed visits is driven by the scale of the proposal.

7.7.4 A more detailed explanation of what will be assessed during the proposed monitoring visits is contained in Appendix 5.

Visit	Date	Status
Pre-commencement Inspections Attend site to inspect type and location of tree protection and any temporary ground protection prior to development commencing and discuss any issues associated with demolition/ enabling works.	**TBC**	**Incomplete**
Site Inspection Attend site to confirm fencing remains in place and supervise etc.	**TBC**	**Incomplete**
Site Inspection Final site visit to confirm that no damage has been done to retained trees/ identify any remedial actions in the event damage has occurred. Assess any required tree surgery following construction.	**TBC**	**Incomplete**

8.0 Recommendations

8.1 The preliminary treeworks recommended are included in the tree tables contained within this report within the tree works schedule at Appendix 5.

8.2 That during the construction build phase, following current consultation with the arboriculturist, adequate provision is made for the protection of existing trees on site and the areas to be planted with new trees and shrubs.

8.3 That by liaison with the council tree officer, formal agreement should be sought regarding the tree pruning required and tree protection methods employed to protect retained trees. These will be via the production of a site specific method statement (SSMS) and will include:

- Tree protective fencing as shown on the tree protective plan
- No ground excavations within tree RPAs, unless approved by the tree officer
- Any anti-compaction measures taken
- The specific location of services trenches where possible to avoid excavations within RPAs, or if necessary to be undertaken by hand dig only
- Specific methods for construction of site access routes and new drainage ditches close to or within retained trees RPAs

8.4 Pre-commencement site meetings should be arranged to discuss the recommendations in this and subsequent reports and method statements. Copies of all relevant arboricultural reports should be available on site.

8.5 The SSMS should be developed further with the contractor through the development process to include comments made by them and the client and design team as well as council officers. A copy of the tree report, including the site specific method statements and tree protection plan is kept on site at all times.

8.6 That details of site inspection / supervision visits by the consultant arboriculturist are recorded and sent to the council tree officer with copies retained by the site manager.

9.0 Conclusions

9.1 The site is located within an urban landscape setting, there are few significant amenity value trees on site. Most of which are "B" category standard trees. The dominant individual tree species on this site is mixed and versatile with large native trees to the front of the property and smaller ornamental trees located within and around the property borders. All trees are protected within the Camden Conservation area. Most of the trees are in need of some basic crown pruning works due to their lack of recent management.

9.2 Four 'C' category individual trees constrain the proposed layout. Two trees are 'U' category and should be felled regardless of the constraining development. One "B" category group is in conflict with the proposed layout and will be required to be felled along with the partial removal of H1.

9.3 Tree protection measures, including the use of tree protective fencing will adequately protect the other retained trees RPAs if accompanied by detailed methods and supervision by a consultant arboriculturist.

9.4 Sufficient development room will be available after protection measures are instigated as described within this report. Excavations within retained tree RPAs for construction operations such as; service trenches; changes in levels, foundations excavations and removal of existing hard surfacing will be avoided where possible.

9.5 The development of the site will bring an opportunity for best practice tree management of the remaining trees and group areas on the site and an opportunity for further native tree and hedgerow planting. All tree works, translocation and landscape replacement tree planting will require agreement with the council officers.

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10.0 Appendices

Appendix 1 Key to Survey Sheets

Appendix 2 Tree Survey Sheets

Appendix 3 Tree Constraints Plan

Appendix 4 Tree Protection Plan

Appendix 5 Tree Works Schedule

Appendix 6 Site Inspection & Monitoring Schedule

Appendix 7 BS5837:2012 Tree Constraints & Protection Methods

Appendix 8 Tree Protection Fencing Specification

Appendix 9 Temporary Ground Protection Specification

Appendix 10 Photographs

Appendix 1 – Key to Tree Survey Sheets

Key

BS 5837 Cat	Description
A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
B	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
C	Those trees of low quality and value: currently in adequate condition to remain until new planting could be established (> 10 years)
U	Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed regardless of development

Note: Sub categories are denoted in the tree survey data (A1, B1, C2 etc.). You are referred to the BS for further detail if required.

Tree No.	T (tree), G (group), H (hedge), W (woodland) + Ref No.
Species	Common Name
Ht (m)	Measured height in metres
DBH (m)	Diameter at 1.5m above ground level
Branch Spread	In m to cardinal points
Cr Ht Clearance (m)	Overall height of lowest branches from the ground level on side of proposed development
Life Stage	Young, Semi-Mature, Early-Mature, Mature, Over-Mature
General Observations	Observations on the condition of the tree(s)
Tree Work Specification	Proposed tree works in accordance with BS3998
BS Cat	See above
Life Exp	Estimated remaining contribution in years.
RPA Radius(m)	Radius of the trees Root Protection Area measured from the trunk to the edge of the RPA circle in metres
RPA (m2)	Overall Root Protection Area in m2
*	Indicates where tree data may have been estimated as tree was offsite / restricted access / dense vegetation hindering full inspection

Appendix 2 – Tree Survey Sheets

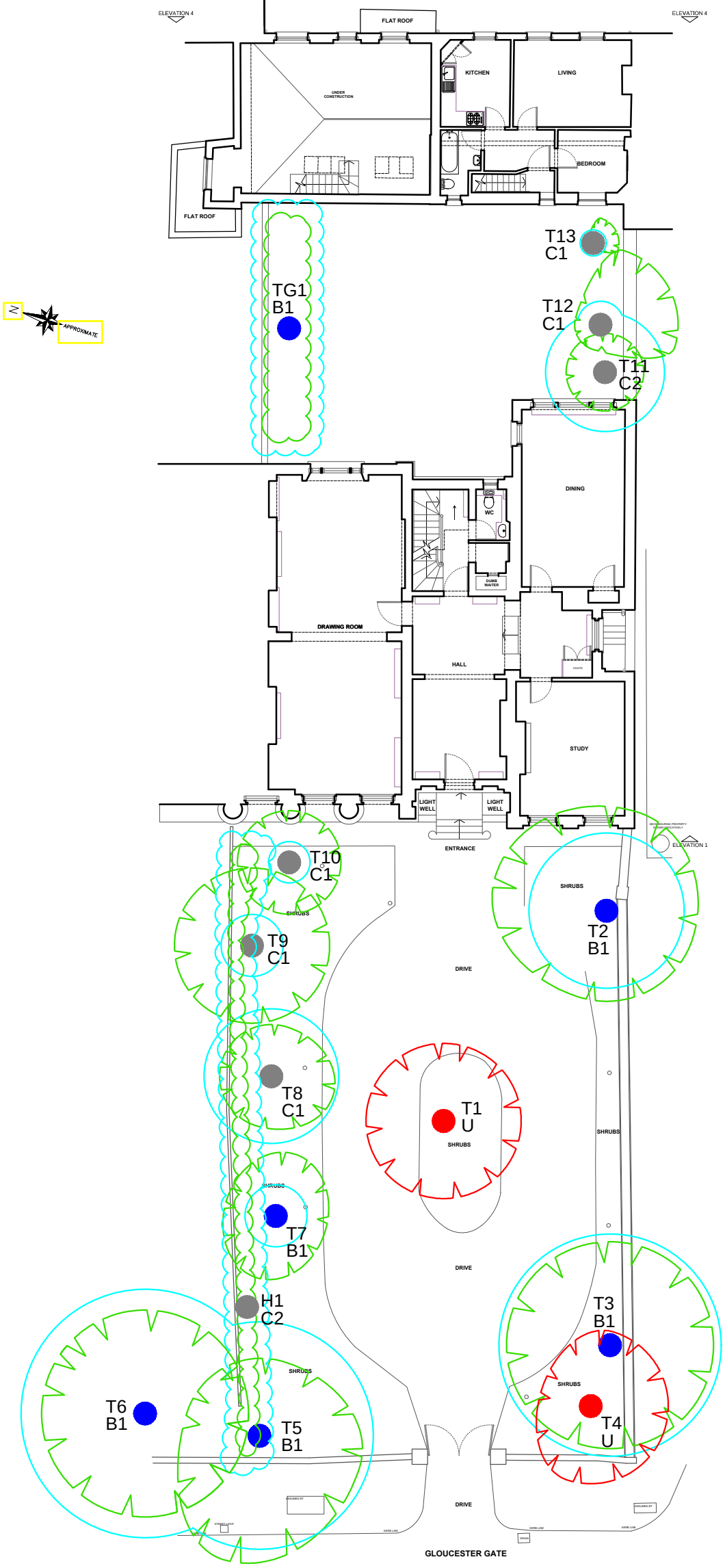
Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
TG1	Hornbeam.	0.19	1	4.5	1.2	1.2	1.2	1.2	B1	Early-Mature	10_19	1.8	Average form, shape and condition. Pleached Hornbeams maintained for screening, subjected to regular pruning. 5x trees in group.	Fell to ground level.	16
T1	Weeping Ash.	0.65	1	8.7	3	3	3	3	U	Mature	<10	2	Dead gross defect	Fell to ground level. (To be replaced)	191
T2	Magnolia.	0.25	1	7.6	4.5	4	3.5	3.5	B1	Early-Mature	20_39	0	Average form, shape and condition. No significant recent crown management. Multiple pruning wounds partially occluded.	No Works.	28
T3	Ash.	0.36	1	12	4	4	4	4	B1	Mature	20_39	2.4	Average form, shape and condition. Unable to inspect due to restricted access. Minor deadwood, subject to previous branch failures.	No Works.	59
T4	Cherry.	0.27	2	4.7	2	3	3	3	U	Early-Mature	<10	1	Poor form (Asymmetric canopy), shape and condition. Dense crown, moderate crown deadwood. Co-dominant tree with included unions. Tree colonised by fungi thought to be Phellinus igniarius.	Fell to ground level.	23
T5	False Acacia.	0.37	1	10.4	3	3	4	5	B1	Early-Mature	10_19	3	Average form, shape and condition. Dense crown, moderate crown deadwood.	No Works.	62

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T6	Oak.	0.4	1	13.7	4	4	4	4	B1	Early-Mature	20_39	2	Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	72
T7	Japanese Maple.	0.12	M/s	4	2	2.5	2	2.5	B1	Early-Mature	10_19	1	Average form, shape and condition. Ornamental tree.	No Works.	5
T8	Pittosporum	0.26	2	5.5	2	2	2.5	2	C1	Early-Mature	10_19	1.5	Average form, shape and condition. Subject to crown management - Lifted /Reduced.	No Works..	21
T9	Lilac.	0.12	M/s	4.6	3	3	3	3	C1	Early-Mature	10_19	1	Average form, shape and condition. Multi stemmed tree with moderate included unions.	No Works.	5
T10	Cotoneaster.	0.067	1	4	2	2	2	2	C1	Semi-Mature	10_19	0	Average form, shape and condition. Young newly set tree.	Fell to ground level.	2
T11	Rhododendron.	0.19	1	8.2	1.5	1.5	1.5	1.5	C2	Early-Mature	10_19	2	Poor form (Asymmetric canopy), shape and condition. In close proximity to building, multiple pruning wounds on main stem, low quality landscape tree.	Fell to ground level.	16

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
T12	Lilac.	0.09	M/s	3.6	1	3	3	1	C1	Early-Mature	10_19	1	Poor form (Asymmetric canopy), shape and condition.	Fell to ground level.	3
T13	Japanese Maple.	0.04	1	3.4	0	1	1	0	C1	Young	10_19	0	Poor form (Asymmetric canopy), shape and condition. Young newly established tree.	Fell to ground level.	1
H1	Yew.	0.08	M/s	3.5	1	1	1	1	C2	Early-Mature	20_39	1	Average form, shape and condition. Maintained Hedgerow.	Remove section of hedge as indicated on TPP	2

Appendix 3 – Tree Constraints Plan

Tree No	Species	DBH(m)	No of Stems	Ht (m)	BS Cat
T1	Weeping Ash.	0.65	1	8.7	U
T2	Magnolia.	0.25	1	7.6	B1
T3	Ash.	0.36	1	12	B1
T4	Cherry.	0.27	2	4.7	U
T5	False Acacia.	0.37	1	10.4	B1
T6	Oak.	0.4	1	13.7	B1
T7	Japanese Maple.	0.12	M/s	4	B1
T8	Pittosporum	0.26	2	5.5	C1
T9	Lilac.	0.12	M/s	4.6	C1
T10	Cotoneaster.	0.067	1	4	C1
T11	Rhododendron.	0.19	1	8.2	C2
T12	Lilac.	0.09	M/s	3.6	C1
T13	Japanese Maple.	0.04	1	3.4	C1
H1	Yew.	0.08	M/s	3.5	C2
TG1	Hornbeam.	0.19	1	4.5	B1



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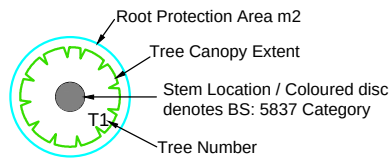
Tree Survey Drawing Key



See Innovation Environmental Tree Survey for Individual Tree Details

KEY

Refer to Innovation Environmental arboricultural report for details

- Category A - high quality and value
- Category B - moderate quality and value
- Category C - low quality and value
- Category U - removal

RPA - root protection area as defined by Table 2 BS 5837:2012

Category U - removal

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REV AMENDMENTS DRAWN DATE AUTH'D

PROJECT
Gloucester Lodge, Gloucester Gate, Regents Park, London, NW1 4HA

CLIENT
Iconic Properties Limited

TITLE
Tree Constraint Plan (TCP)

Job	Scale	DRG NO	Revision
D1006151635	1:200 @ A3	11896	-
Date 28/07/2015	Type MT.TCP.11896.v1		

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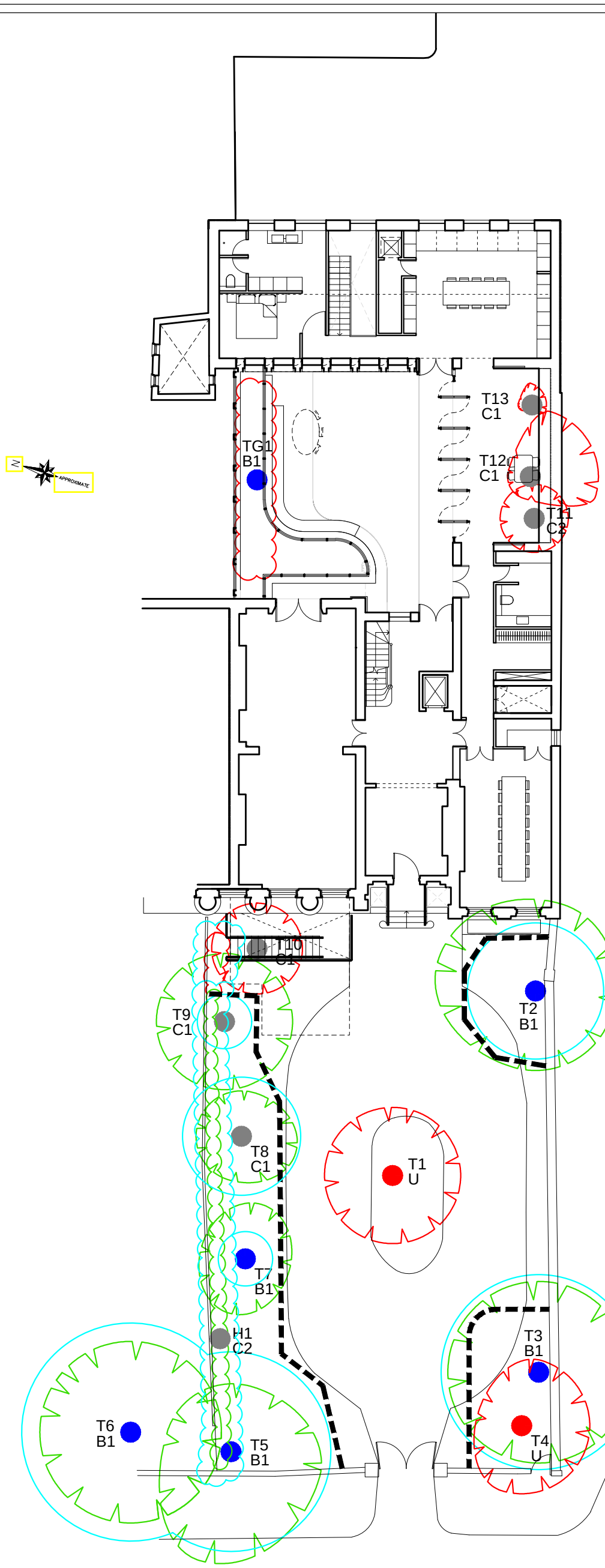
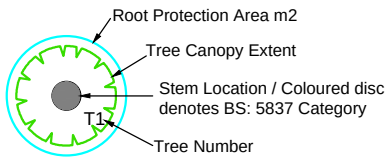
Appendix 4 – Tree Protection Plan



Tree Survey Drawing Key



See Innovation Environmental Tree Survey for Individual Tree Details

KEY

- Tree to be retained
- Tree to be Pruned
- Tree to be removed
- Tree protective fencing

innovation group environmental services

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REV	AMENDMENTS	DRAWN	DATE	AUTH'D
A	New Baseplan Added	SPB	20/10/15	B Higginson

PROJECT

Gloucester Lodge, Gloucester Gate, Regents Park, London, NW1 4HA

CLIENT

Iconic Properties Limited

TITLE

Tree Protection Plan (TPP)
Planning Application B

Job	Scale	DRG NO	Revision
D1006151635	1:200 @ A3	11896	A
Date: 28/07/2015	Type: MT.TPP.11896.v2		

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Appendix 5 – Tree Works Schedule

To Be Removed

Tree No.	Species	Proposed Tree Works	Observations	BS Cat
TG1	Hornbeam.	Fell to ground level.	Average form, shape and condition. Pleached Hornbeams maintained for screening, subjected to regular pruning. 5x trees in group.	B1
T1	Weeping Ash.	Fell to ground level. (To be replaced)	Dead gross defect (Should be removed due to hazardous condition).	U
T4	Cherry.	Fell to ground level.	Poor form (Asymmetric canopy), shape and condition. Dense crown, moderate crown deadwood. Co-dominant tree with included unions. Tree colonised by fungi thought to be Phellinus igniarius.	U
T10	Cotoneaster.	Fell to ground level.	Average form, shape and condition.	C1
T11	Rhododendron.	Fell to ground level.	Poor form (Asymmetric canopy), shape and condition. In close proximity to building, multiple pruning wounds on main stem, low quality landscape tree.	C2
T12	Lilac.	Fell to ground level.	Poor form (Asymmetric canopy), shape and condition.	C1
T13	Japanese Maple.	Fell to ground level.	Poor form (Asymmetric canopy), shape and condition. Young newly established tree.	C1
H1	Yew	Remove part of hedge see TPP.	Average form, shape and condition. Maintained Hedgerow.	C2

Appendix 6 – Site Inspection & Monitoring Schedule

In order to ensure that the principals of tree protection set out in the statement are adhered to, it is important to set out communication details for key individuals and tasks that require supervision. These details should be retained by all relevant parties and available on site at all times. Relevant parties will be advised of any changes in personnel or contractor during the development process.

To ensure that the construction process is undertaken with minimal disturbance to the retained tree stock, we recommend that an experienced Environmental Services arboricultural consultant be appointed to undertake regular inspections of the site according to a site inspection / supervision schedule below.

It is our experience that a mix of scheduled and unannounced site visits are appropriate; these unannounced inspections will serve to identify any damage to the Tree Protection Fencing, poor working practices, potential problems and points of conflict between the construction process and the health of the trees. These reports will include recommendations for remedial action.

During these visits any changes to the proposed works will be discussed, their impact assessed and recommendations for best practice will be outlined. After each of these visits a copy of the report should be sent to the Site Agent, Local Authority Tree Officer and Client. The remedial action undertaken will be recorded on the next visit.

It should be noted that these visits will only be undertaken if a written instruction is received from the client prior to commencement of works on site.

With reference to relevant published guidance, the methodology of this statement follows a logical sequence essential to the efficacy of the protection measures. References may include: British Standard 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'; British Standard 3998:2010 'Tree Work - Recommendations' and National Joint Utilities Group 'Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees, Volume 4' 2007.

It is essential to the successful implementation of the principals set out in this document that effective supervision and enforcement are implemented from the outset as detailed in the following construction phases.

Constraints Item	Site Supervision required	Number of Visits Expected	Timing of Site Visits	Actual Visit Date
Tree works operations	Optional	Visit -	Prior to construction	NA
Pre-commencement meeting between relevant parties informing Council of development start date	Yes	Visit 1	Prior to site clearance	TBC
Establishment & protection of Root Protection Areas (RPA) for retained trees to 'sign off' installed tree protection fencing and temporary ground protection	Yes	Visit 1	Prior to site clearance	TBC
Changes in soil levels in close proximity to retained trees – retaining walls	Yes	Visit 2	During site clearance phase	TBC
Protection and prevention of damage to retained tree canopies during construction	Yes	Visit 2	During construction phase	TBC
Installation of 'Reduced / No-dig' special surfacing within / through retained tree RPAs	Yes	Visit 2	During construction phase	TBC
Excavation of services trenches in close proximity to retained trees	Possible	Visit 2	During construction phase	TBC
Generic construction site constraints: **1 Site office / Welfare unit location** **2 Temporary toilets** **3 Siting of bonfires** **4 Location of contaminant storage and washout areas** **5 Location of stripped topsoil**	Yes	Visit 2	During construction phase	TBC
Post construction site assessment for any required remedial treeworks operations recommendations.	Yes	Visit 3	Post construction	TBC

Appendix 7 – BS5837: 2012 Tree Constraints & Protection Methods

Phase 1 Pre-Construction Meeting

Prior to commencement of the works an onsite meeting will be held with all relevant parties including the site agent and appointed Environmental Services arboricultural consultant of works. The purpose of this meeting is to record site features including tree condition, agree tree works (See Tree Works Schedule), location of site storage and welfare facilities and the location of tree protection measures.

Phase 2 Tree Protection Measures

Subject to planning the Tree Protection Measures outlined in this report will be revisited in detail based on the working drawings, construction programme and method statement to be prepared.

Tree protection fencing should be installed prior to any demolition or ground-works commencing, remain in place throughout construction, and be removed only after completion.

The provision of tree protection and light tree surgery will reduce the risk of direct damage to the retained trees. The demolition and construction process should not be commenced until the tree surgery works has been completed and the protective areas have been fenced off.

Tree protection will be installed as per the Tree Protection Plan which will be agreed with the Local Authority Tree Officer and with reference to the British Standard 5837 2012 'Trees in relation to design, demolition and construction – Recommendations'. Prior to commencing any demolition or construction works, the fencing will be inspected by the appointed Environmental Services Arboricultural consultant.

Within the fenced zone, no materials or chemicals should be stored at any time, no fires should be lit, no pedestrian or vehicle traffic, and level changes within these areas should be kept to an absolute minimum. Every effort should be taken to protect a maximum possible area of the root system.

Within the Root Protection Area no level changes or excavation within the RPA should be undertaken without the consent of the LPA Tree Officer.

Clear notices are to be fixed to the outside of the fencing with words such as 'TREE PROTECTION AREA – NO ACCESS OR WORKING WITHIN THIS AREA'. See Appendix 8.

The site agent, all contractors and other relevant personnel are to be informed of the role of the Tree Protection Fencing and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction.

Phase 3 Demolition and Enabling Works

Prior to any works commencing on site the Tree Protection Fencing will be erected. During demolition programme and enabling works the existing front access will be in use. Any plant or vehicles engaged in the demolition works will operate outside the fenced off No-Dig / Root Protection Areas.

Phase 4 Locations of Site Offices Compound and Storage Area

The site office, welfare facilities, storage yard and contractors parking area need to be located within an area of the site that is outside the Root Protection Area (RPA). The compound will remain at least 1 metre outside the RPA with access from the main access road.

All fuel storage and loose cement / sand to be batched and stored in the compound area.

Phase 5 Groundworks, Level Changes, Foundations and Services

All spoil, including excavated soil and demolition material will be removed from site or stored in a location remote from any tree protection barriers.

With regard to the drawings provided, the construction of foundations for the new build is located beyond the Root Protection Area (RPA) of retained trees, therefore with regard to the health of the retained trees no specialised foundation design is required. If the subsoil is found to be plastic, the foundations will be specified to take into account the potential influence of the vegetation on the moisture content and volume of the subsoil.

We recommend that all drainage and underground service routes are located beyond the RPA of all the retained trees. If the service runs are to be located within the RPA, we recommend that this matter is dealt with by method statement secured by planning condition. If services are located within the RPA special implementation techniques such as moleing, airspade, or hand digging may be required by the LPA. In the majority of cases, however, careful excavation with a low tonnage mechanical excavator supervised by the Environmental Services consultant arboriculturist can adequately undertake services excavations. When tree roots are encountered, hand digging and root protection can then be undertaken as and when they are observed.

Phase 6 Dismantling Protection Barriers

Dismantling the protection barriers around retained trees may be required to allow completion of final surface treatments and landscaping. Supervision of this exercise and control of the landscaping thereafter will be administered by the appointed Environmental Services arboricultural consultant. The removal of the Tree Protection Fencing is not an opportunity for machinery to access the previously fenced off area.

No further excavation will be carried out during this process and soils levels will not be raised above that existing by greater than 100mm and not within 2m of the trunk. Any removal of existing structures within the Root Protection Area including gardens type walls or paths will be carried out by hand.

Appendix 8 – Tree and Ground Protection Specification

on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

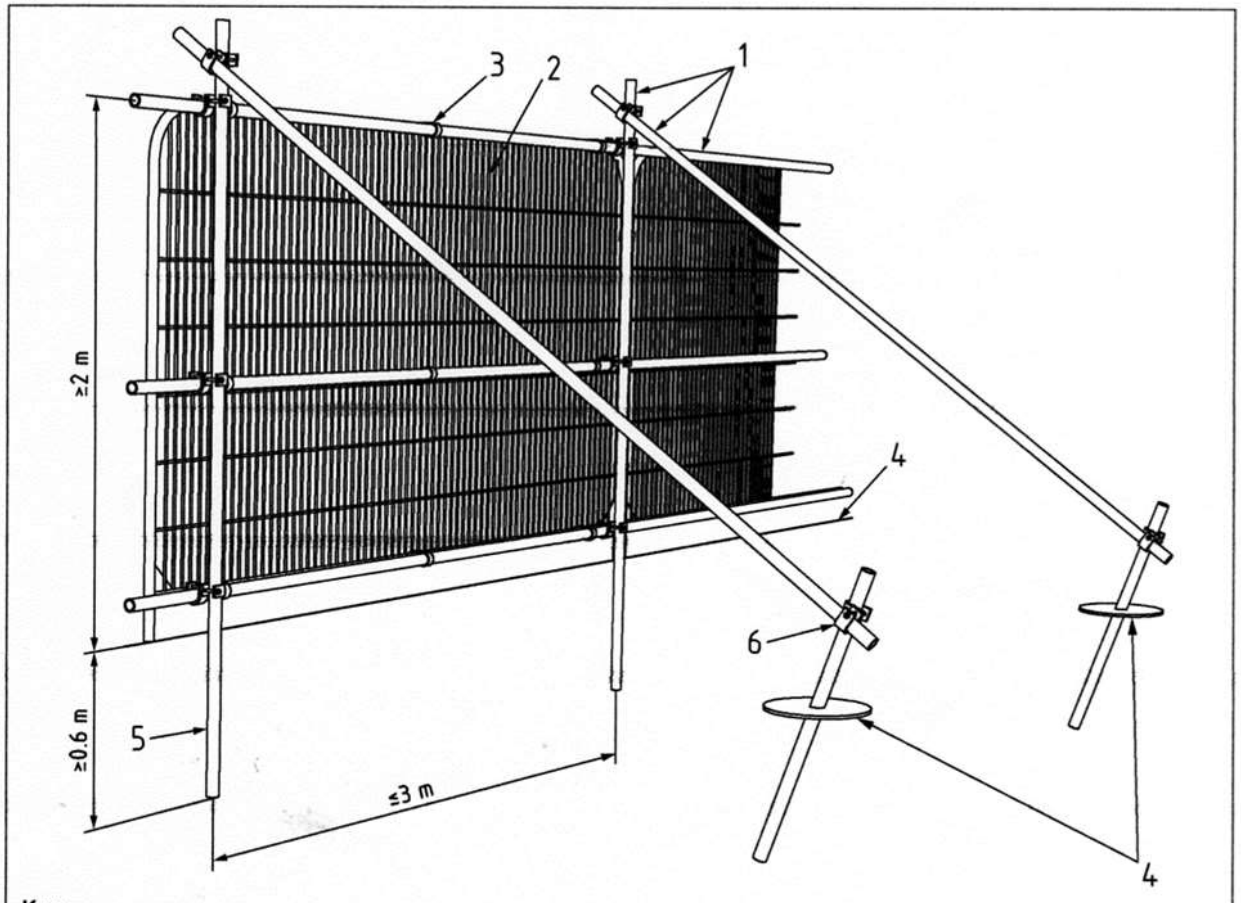
NOTE 1 Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

NOTE 2 It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

6.2.2.4 All-weather notices should be attached to the barrier with words such as:

"CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 **Default specification for protective barrier**



Key

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

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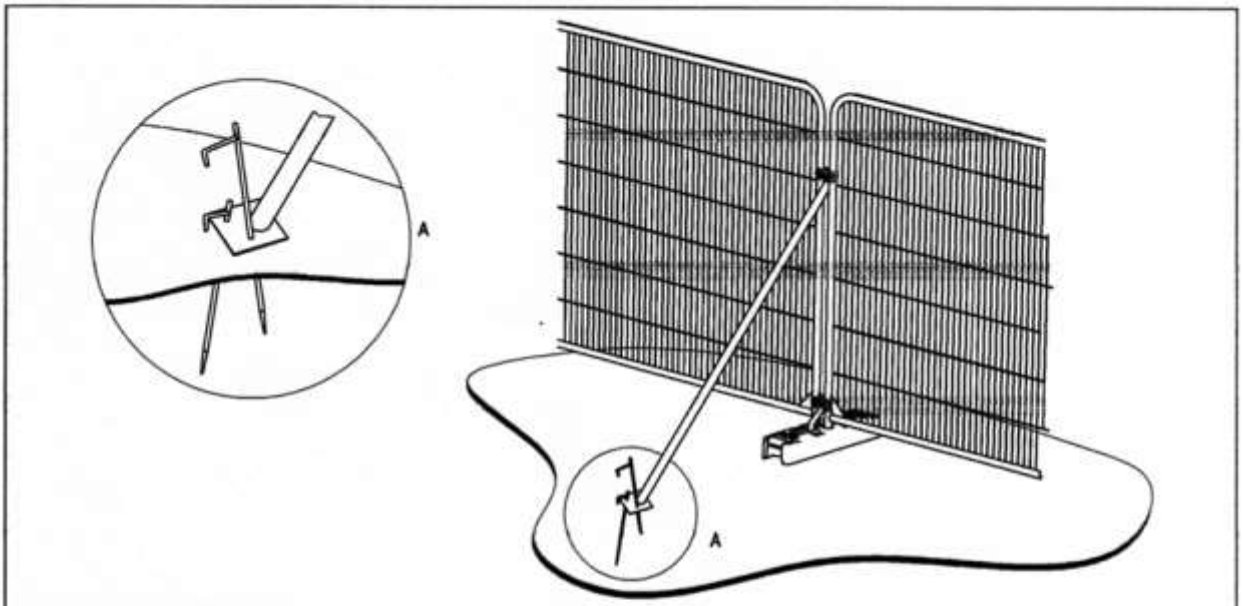
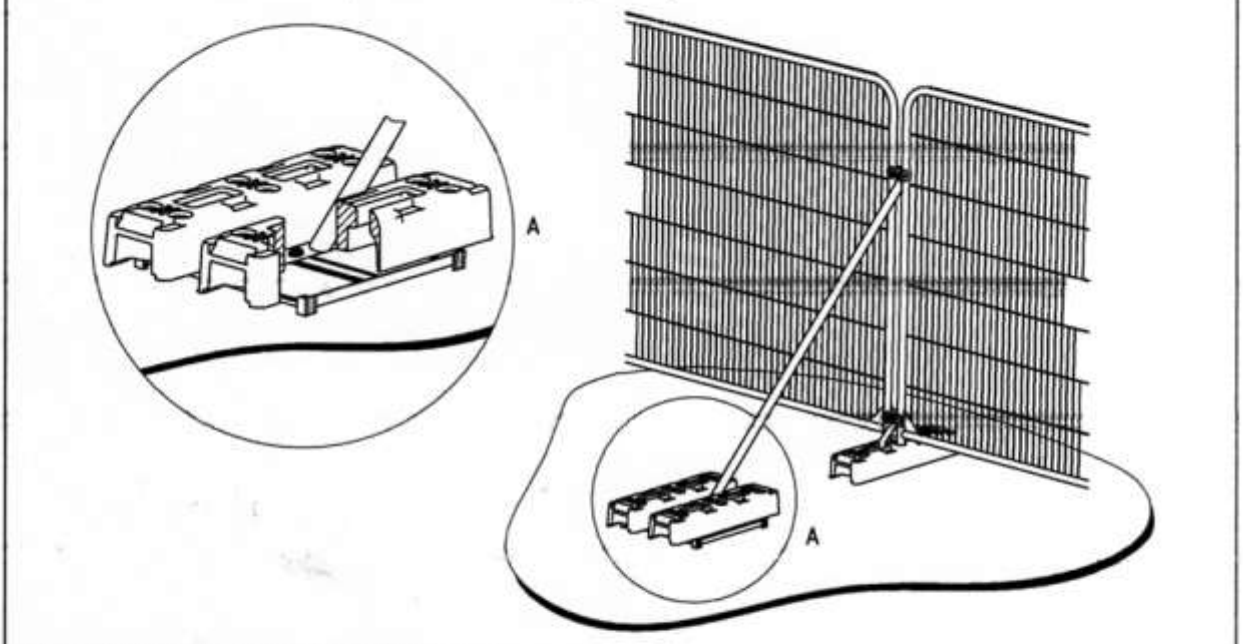
Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

Suggested protective fencing warning sign format

TREE PROTECTION AREA

KEEP OUT

(TOWN & COUNTRY PLANNING ACT 1990)

THE VEGETATION PROTECTED BY THIS FENCE IS PROTECTED BY PLANNING CONDITIONS AND/OR IS THE SUBJECT OF A TREE PRESERVATION ORDER.

IF YOU REQUIRE ACCESS INTO THIS AREA PLEASE CONTACT

planning@innovation-environmental.co.uk

T: +44 (0)330 380 1036

Appendix 9 – Temporary Ground Protection Specification

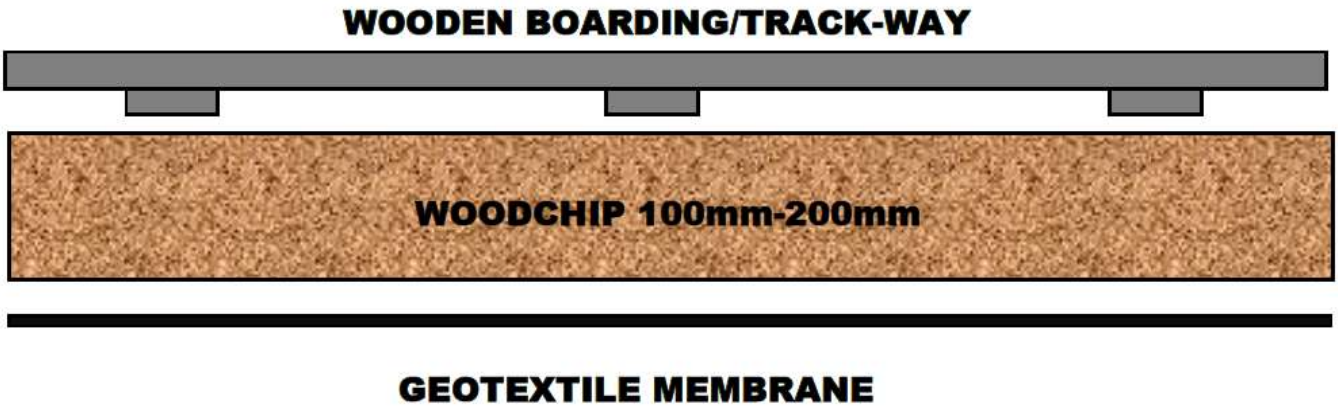
BS5837 recognizes that incursions in to the construction inclusion zones will be required at times during some developments.

The objective is to minimize soil compaction

Example 1 - *for pedestrian movements only, a single thickness of scaffold boards places either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g.) 100mm depth of woodchip), laid on to a geotextile membrane.*

Example 2 - *For pedestrian-operated plant up to a gross weight of 2 t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;*

Example 3 - *For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*



Appendix 10 – Photographs

Mews Access

T5 False acacia

T4 Cherry

T3 Ash

T1 Weeping Ash

T2 Magnolia

TG1 Hornbeam

T13 Japanese Maple

T11 Rhododendron

T11 Rhododendron

T12 Lilac