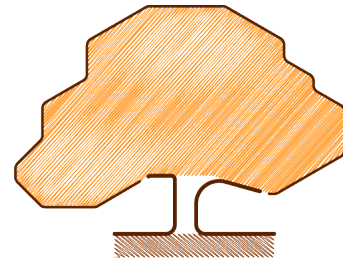


S940-J2-R-3

REPORT

regarding the impact on trees of proposals for development at
50 Maresfield Gardens, London, NW3 5RX



JOHN CROMAR'S
ARBORICULTURAL
COMPANY LTD

www.treescan.co.uk
admin@treescan.co.uk

01582 808020
07860453072



View of front boundary of site from Maresfield Gardens; from the north-west

John Cromar, Dip. Arb. (RFS), F. Arbor A.



Contents

1	Instructions.....	1
2	Executive summary.....	1
3	Introduction.....	1
4	Observations.....	3
5	Arboricultural impact assessment (AIA).....	9
6	Conclusion	12
7	Sources and relevant documents used.....	12
8	Copyright	12
9	Arboricultural method statement (AMS)	13
10	Plans	24

1 Instructions

I am instructed by Marek Wojciechowski Architects Ltd on behalf of clients to make an assessment of tree amenity value and condition of trees at 50 Maresfield Gardens, London, NW3 5RX and of the impact of a proposal for development (basement extension, replacement side extension, re-landscaping) on such trees, and to supply an arboricultural methods statement and tree protection plan for use in supporting an application for local planning authority (LPA below) consent. The design and access statement / design summary submitted by Marek Wojciechowski Architects Ltd describes the scheme.

2 Executive summary

The impact on public amenity connected to how trees will be affected by the scheme is found to be negligible.

The scheme will require a couple of low value trees to be removed. All retained trees will be easily protected from harm during the project.

Tree planting (proposed indicatively) will mitigate such losses.

3 Introduction

3.1 The environmental role of Local Planning Authorities

LPAs play an important part in the almost continual balancing act that is part and parcel of contemporary democratic government. They regulate development in the interests of the community. Increasingly, the environment plays a role in our lives, and strongly affects our health, both mental and physical. This is typically recognised in planning policy determined by LPAs, and the formal planning guidance published by them. LPAs process planning applications in line with this policy and guidance.

3.2 British Standards

These continue to play a significant role in the quality of our lives in the UK, by defining minimum standards for many products, and making recommendations where precise, exhaustive specifications are not absolutely possible, for example with services.

3.3 British Standard 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'

BS 5837:2012 (the Standard, below) is the fourth version in a series, the first being in 1980. This Standard provides a framework for the valuation, in ornamental terms, of trees, and gives recommendations for their protection on building sites.

3.4 How the Standard is used by an arboriculturist

It is used as a tool by an arboriculturist, who for the purposes of this type of professional activity, is someone who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction. This is the profession which is concerned, in a wider sense, with the care and cultivation of trees for amenity (all the benefits). An arboriculturist, then, uses the Standard:

- a) to assess the value, in terms of amenity, of the trees on and adjoining a particular site, whether such trees are formally protected or not, for example by reason of being in a

Conservation Area or because they are scheduled within a Tree Preservation Order. (Both of these provisions are part of the Town and Country Planning Act 1990, part VIII.);

- b) secondly, to help assess the impact upon the trees of the proposal for development;
- c) lastly, to give ways of protecting retained trees during construction, should the proposal receive planning consent.

3.5 How the arboriculturist prepares tree protection methods

In practice, as advances in materials and techniques are rapid, the arboriculturist does not necessarily specify a precise commercial product, but defines the essential components of methods of demolition and construction which often make use of specialized materials. These may be termed 'tree-friendly' methods, meaning that they have as their focus the well-being of the tree. These appear on the tree protection plan(s) appended, typically titled: 'Tree Retention and Tree Protection Measures', and within the text below.

3.6 Classification of trees

The Standard recommends a way of classifying trees when assessing their potential value in relation to proposed development. Value means (mainly) *visual* value to the general public. It also allows for other values to be considered such as historic or conservation value. Some surveys may not find any trees of one or more categories.

Table 1 describes, as: 'U', a low-value tree; denoted by a **dark red** outline on plans, the shape of the edge of the tree's crown typically more or less concentric to the trunk position.

It also shows 'A', 'B' and 'C', in descending merit:

- 'A' category, **green** crown outline, are trees of high vitality or good form, or of particular visual importance.
- 'B' category, **blue** crown outline, are good trees but may be of slightly poorer form or be not sited as importantly as 'A' category trees.
- 'C' category, **grey** crown outline are trees of no particular merit, but in adequate condition for retention.

A minimum expected safe useful life is also assessed. Please note that a low value tree may have a very long life expectancy. The two factors are only linked in that, for example, a very high value tree cannot also have a very low life expectancy.

3.7 Root protection area

'RPA' below. The RPA is a zone around the trunk of the tree, in which protective measures must be used in order to prevent significant damage to trees.

3.8 Use of appended plans

The appended plans have different applications:

- Plan reference no. S940-J2-P1, shows the spread of the crowns (the upper, leaf-bearing part of trees), and is intended to indicate the relationship of any neighbouring trees to each other. This plan gives a quick reference assessment of value as per section 4, table 1, page 9 of the Standard.
- S940-J2-P2 and S940-J2-P3 are the 'tree protection plans' (TPPs) referred to in the Standard (section 3.11). They are colour-coded to indicate where tree-friendly methods are proposed during the overall construction process, which may involve demolition, main construction and landscaping phases.

4 Observations

4.1 Site visit

I visited the property on 10th August 2022 in order to carry out an inspection. Weather conditions were good; they permitted adequate inspection.

4.2 Survey method

I used a tree mallet, spade, diameter tape, laser rangefinder, pocket retractable tape, binoculars, scaling pole, tree data recording software, pen, pencil and paper. No trees were climbed: inspection was from ground level.

4.3 Appraisal identification

My appraisals of observations, discussions and other data are italicised below, in each relevant section and paragraph. This emphasises the clear separation between data and opinion to assist the end-users: client, architect and LPA case and tree officers.



4.4 Amenity / Screening by trees and shrubs

Some trees (1-4) listed are visible from Maresfield Gardens, and other adjoining public viewpoints.

Certain trees listed are of significant general public amenity value, as well as local amenity value to owners / users of the site, and to those of adjoining properties (See cover photo / image left, and photos below).

4.5 Statutory constraints

The site is in the administrative area of The London Borough of Camden.

The site stands within the Fitzjohns/Netherhall Conservation Area.

No information on TPOs is available on the local authority website.

4.6 Soil assessment

The British Geological Survey (BGS) information for the area indicates that the underlying sub-soil is the Claygate Member - clay, silt and sand.

Topsoil within the site appears to derive from the underlying subsoil. I saw no evidence of soil-stripping, trenching, or level-alteration in the recent past, nor did I observe any apparent compaction or drainage problems.

4.7 Measurements on site

Tree heights estimated by scaling pole.

Tree diameters measured as per the Standard, Annex C.

Tree spreads on the plans below are approximately to scale, determined on site, typically by laser rangefinder, direct measurement, pacing, sighting in relation to site features and architect-supplied plan data.

4.8 Tree data table

This is the core of the report in terms of site observations. In all cases, in the absence of negative comment below on health/vitality and structure of trees, normal physiological condition (health) and structural condition applies. Unless stated otherwise, 'tap tests' on the trunk-bases, etc., for the sonority typically associated with decay in trees were found to be normal. Unless stated otherwise, no signs of protected species were noted; for example, potential bat roost features (PRFs below). Where no height to lowest branch figure is given, the information appears completely irrelevant to planning determination. The matter of clearance above ground level is discussed under the individual tree entries if this is relevant to planning determination. (For information on other data in the columns, see section 3 above.)

Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
1	London plane	12		1150	13800	598.3	Heavily reduced. Prominent boundary feature, some screening value	40+	B1
2	London plane	24		925	11100	387.1	Highly prominent. Trunk inaccessible	40+	A2
3	London plane	24		637	7644	183.6	Highly prominent.	40+	A2
4	London plane	24		600	7200	162.9	Highly prominent. No access	40+	A2
5	Lawson cypress	9		250, 130	3381	35.9	Dominated by adjoining plane trees and laurel shrub	10+	C1
6	acacia	22		600	7200	162.9	Good form. Outside the site	20+	B1
7	sycamore	17	4.0	530	6360	127.1	Contributes to partial screen between the properties; although few lower branches are present they are quite important as there are windows in the side elevation of the adjoining property no. 52 to the north. Of local rather than public amenity value	20+	B1
8	common pear	16		600	7200	162.9	Good vitality for a tree of its presumed age; possibly 120 years	20+	B1
9	sycamore	17	8.0	460	5520	95.7	Strong lean, rather one-sided crown	20+	C1

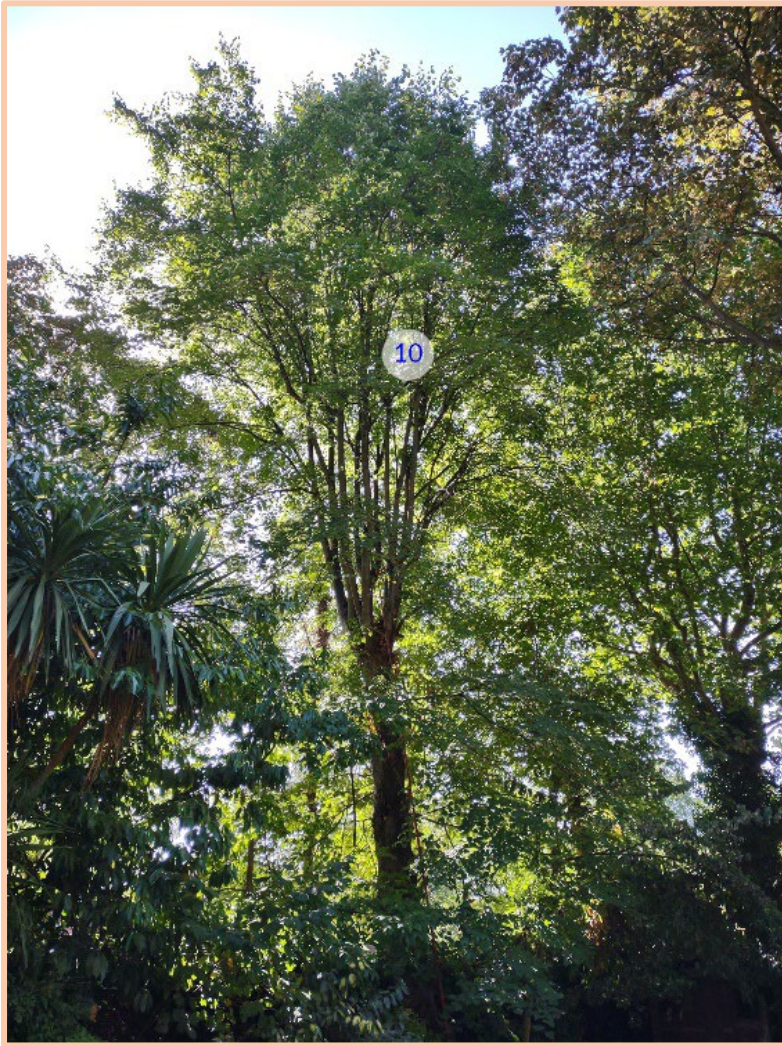
Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
10	common lime	15		552	6624	137.8	Once pollarded to a height of about 7m, last more than 25 years ago. Contributes to screen between the site and adjoining properties	20+	B1
11	common lime	11		430	5160	83.6	Once pollarded to a height of about 6m, last c. 2015. Contributes only marginally to screen between the site and adjoining properties. Dominated by adjoining London plane (12)	20+	B1
12	London plane	18		980	11760	434.5	Heavily reduced. Pollarded to around 8m in height more than 25 years ago. Since then trimmed regularly on southern side where it overhangs no. 48. Boundary feature; some screening value	40+	B1
13	common lime	12		470	5640	99.9	Once pollarded to a height of about 4m, last c. 2010. Contributes only marginally to screen between the site and adjoining properties. Dominated by adjoining London plane 12	20+	B1
14	olive	4.5		170	2040	13.1	Poor form.	40+	C1

4.9 Photos

Note on photo labelling- the colour of the numeral identifying trees matches that used for the four BS 5837:2012 tree value categories (see 3.6 above)







5 Arboricultural impact assessment (AIA)

5.1 RPAs – modifications to shape

I carried out an assessment as per the Standard (section 4.6.2) in connection with the plotting of the RPAs of all trees. This section requires that site conditions such as the locations of various structures, the internal support mechanisms of various trees, etc., are taken into account in determining the likely position of roots. Adjoining structures and features have been noted in this respect. Where applicable, the modified-shape RPA, of equivalent area, has been plotted on the plans appended (shown as shapes bounded by an orange line). The subsoil is likely to be silty, sandy clay, typically a low-shrinkage medium.

In this case, some modification from the orthodox shape of RPAs (circular in plan) has been identified as necessary. For example, the foundations of adjoining houses to north and south have probably excluded the roots of trees. This may also be tentatively inferred from the lack of reported damage to the structure of no.50 via vegetation-related subsidence damage. The Claygate beds are typically much less shrinkable than London clay, which outcrops further down Maresfield Gardens (to the south) but London planes of the size of 1 and 2 are of sufficient crown-mass to generate soil suctions capable of altering the volume of even such material. The lack of such damage suggests that they probably have not developed roots below the structures. This factor has some significance in connection with proposed tree protection, and is reflected in the TPP provided.

5.2 Roots and the design

It is usual for discussions between the arboriculturist and architect to take place at an early stage following the arboriculturist's site survey. Modifications, minor or major, to the proposals as first received are typically discussed, with a view to promoting tree retention and health.

A tree constraints study was supplied to the design team by the writer. Subsequently, no need arose in this case to discuss substantial design alterations, as I found no significant conflicts with trees worthy of retention, q.v. below.

5.3 The static root plate (SRP) compared with RPA

SRP is an abbreviation for static root plate, (Mattheck, 1991, etc.) and means the structurally significant roots nearest the trunk: the principal roots that hold the tree upright. This is derived from a radial dimension based on trunk diameter near ground level. The RPA is a guide to where physiologically significant roots, those necessary for, primarily, water uptake, are likely to be located.

5.4 Assessment of SRP/RPA encroachment by dwelling/structure footprint

Some encroachment on the RPA of certain retained trees is entailed, as analysed in the table below:

Tree no.	Tree	RPA area (m ²)	Area affected (m ²)	% affected	Notes
1	London plane	598.28	22.80	3.81%	basement + PFT
2	London plane	387.08	0.08	0.02%	basement + PFT
6	acacia	162.86	4.81	2.95%	basement + PFT
6	acacia	162.86	13.70	8.41%	ASHP + cycle store; <i>NB no cut involved.</i>
7	sycamore	127.08	8.87	6.98%	basement + PFT
12	London plane	434.47	3.58	0.82%	basement + PFT
13	common lime	99.93	3.46	3.46%	basement + PFT

In view of the above I conclude that all trees to be retained can be adequately protected by exclusion fencing and tree-friendly methods as proposed below to reduce impacts on root systems of retained trees.

5.5 Assessment of superficial/suspended encroachment

Some superficial change to the RPA around various trees is proposed. The matter of above-surface-only installation in RPAs requires careful consideration. The Standard currently (in section 7.4.2.3) restricts permanent hard surfacing of any existing unsurfaced ground within the RPA of trees to be retained to 20% of the unsurfaced portion of the RPA. This percentage stipulation is, unfortunately, quite arbitrary, and is not supported by any published research. It is necessary to draw on the now-considerable body of professional experience in this matter. The proposals (see Methods below) entail a suspended structure only. Additionally, in this case, the amount of soft landscaping near trees 1, 2 and 3 is proposed increased as compared with current conditions.

As the changes do not involve root cutting, and materials and methods promoting root retention and respiration are specified below, I see no basis to conclude that the trees will suffer harm, if these methods are followed carefully.

5.6 Perception of trees by building users

The proposed (extended) dwelling is in an almost identical position in relation to the trees as is the existing structure. It is typical for internal layouts to be designed to minimise shading inconvenience. Gardens that are part shaded by trees provide typically welcome flexibility in terms of use.

The existing structure's position in relation to the existing trees has not generated any obvious or reported requirement to prune trees inappropriately. In view of the above I conclude that shading by and perception of trees have been considered (as the Standard (sections 5.3.4 and 5.6.2.6) recommends) and appear not to be negative factors.

5.7 Superstructure and tree appraisal – tree pruning

In accordance with the Standard, section 4.4.2.5 (f), I note from the drawings supplied that no encroachment by the superstructure on the crowns of retained trees will occur. (See British Standard 3998:2010 'Tree work – Recommendations'.) A schedule for the use of a contractor (two tree removals) appears within the AMS below.

5.8 Access clearance

I note from my site visit and the plans received that no retained tree conflicts with pedestrians, construction traffic, nor end-user vehicles.

5.9 Tree removal considerations in the Standard

In conserving trees on development sites, expected best practice is as in the Standard (section 5.1.1):

“Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification: attempts to retain too many or unsuitable trees on a site can result in excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal.”

Thus, implicit in the process are decisions about tree removal. This is often perfectly reasonable and provides space for new trees.

The above advice appears to have been considered in formulating proposals for development in this case.

5.10 Replacement planting – mitigation for proposed tree loss

Please see tree data table above for comments on the individual trees proposed for removal. See plan S940-J2-P3 for the locations of proposed planting:

A = Mediterranean crab apple (*Malus trilobata*) 10-12cm girth 35L pot

B = Japanese maple (*Acer palmatum* ‘Osakazuki’) 2-2.5m 45L pot

It is typical for a full landscaping scheme to detail tree, shrub and herbaceous planting etc. The LPA may wish to stipulate that precise species and cultivars are adopted in any such scheme.

The soil type indicated by BGS data and soil condition as appraised places no significant constraint on species selection for tree and other planting. Overall, appropriate replacement tree planting will play a minor role in providing for future local amenity.

5.11 Policy compliance

The LPA website was searched for relevant policy documents and supplementary planning documents (SPDs). I am aware of

[Camden Local Plan 2017](#)

[Camden Planning Guidance \(Trees\)](#)

[Fitzjohns/Netherhall Conservation Area Appraisal 2022](#)

It is of course ultimately for planners to determine compliance with planning policy.

I submit that the proposals in this report, encompassing tree protection methods in accordance with the principles of British Standard 5837:2012, and new planting, will, if implemented, facilitate fair compliance with relevant policies relating to trees.

6 Conclusion

6.1 Summary

I conclude that the impact by the scheme proposed on the amenity provided by trees, subject to implementation of the arboricultural method statement's contents, will, overall be negligible.

6.2 Note to LPA

I invite the LPA to consider, if it is minded to grant consent, the incorporation of the specific *order of implementation* of the **Arboricultural method statement** below into any Conditions applied. Such measures are likely to maximise tree protection. Finalised details of tree-handling on site during construction is typically a matter requiring the input of a main contractor within CDM regulations, and these matters in practice almost always follow planning consent, as it is typical for no contractor to have been appointed prior. The writer is willing to prepare a Construction Issue version of the AMS in due course.

7 Sources and relevant documents used

- Ground-level inspection
- Supplied plans:
 - PointBIM drg. no.: 22.027 000 rev. A
 - Marek Wojciechowski Architects drg. no.: 22022 P1399
 - Marek Wojciechowski Architects drg. no.: 22022 P1400

8 Copyright

Copyright of the report above is retained by the writer. It is a report for the sole use of the client(s) named above. It and associated plans may be copied and used by the client and the LPA in connection with the above instruction only. Its reproduction or use in whole or in part by anyone else without the written consent of the writer is expressly forbidden. The AMS below, including schedule of tree work and the plan or plans, may be reproduced to contractors for the purpose of tendering, and for setting out and maintaining tree protection measures on site.

9 Arboricultural method statement (AMS)

9.1 Overview

The methods required involve not only physical arrangements on site but effective administration prior to implementation. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development. If conflicts between any part of a tree and the building(s) arise in the course of building works these can often be resolved quickly and at little cost if an arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can wreck design aims. It can of course also affect saleability, and reflects poorly on the construction and design personnel involved.

I propose that arboricultural administration takes place as outlined below. Needless to state the MC must fully comply with these proposals for them to be effective. This involves proper initial contact with the retained arboricultural consultant, followed by persisting contact, throughout the contract, until at least late landscaping stage.

9.2 Administration

A. Identification of key personnel in order of responsibility for tree protection on site

Role	Name	Company	E-mail	Mobile	Landline
site manager	TBC	TBC	TBC	TBC	TBC
main contractor	TBC	TBC	TBC	TBC	TBC
architect	Sophie Grabiner	Marek Wojciechowski Architects Ltd	sophie@mw-a.co.uk	TBC	020 7580 9336
arboriculturist	John Cromar	John Cromar's Arboricultural Co. Ltd.	johncromar@treescan.co.uk	07860 453072	01582 808020

B. Induction and personnel awareness of arboricultural matters

Prior to commencement a meeting will be held on site between the arboriculturist and the site manager (who will be required to sign the awareness document 9.4 below) and during which meeting all the tree protection methods, materials, order and integration with the build programme will be considered. This document, confirming awareness on the part of personnel of the various items, will be retained for the LPA.

C. Inspection of and supervision schedule for tree protection measures, frequency and methods of site visiting and record keeping

At site possession, the tree protection measures applicable to the works, as detailed in this report will be inspected by the arboriculturist and signed off if compliant. An initial inspection will take place; a monthly inspection will take place routinely; unannounced site inspections may also be carried out. Additionally, the arboriculturist shall attend site as required by architect, or site agent, or the LPA. *All reports on site visits to be copied to the LPA within 5 days of site visit.* These reports to be compiled, and an end of project summary produced, together with any recommendations for future action.

D. Procedures for dealing with variations and incidents

As C above. Additionally, the architect shall inform the arboriculturist of any design variations or variation intention of tree protection; also, the site manager shall inform the arboriculturist if he intends to vary or deviate from the agreed tree protection methods or timing. Action in response to incidents will be commensurate with and appropriate to the nature of any such incident.

E. The order of work on the site, including demolition, clearance and building

As per tree protection methods below.

F. How problems will be reported and solved

Any breaches of tree protection measures shall constitute a Tree-Related Incident ('TRI'), a report on which will be copied to architect, client and LPA. A remedial action notice will be served by the arboriculturist and copied to all parties. Timescales for remediation completion shall be monitored. *All reports on site visits will be copied to the LPA within 5 days of site visit.* Action in response to incidents will be commensurate with and appropriate to the nature of any such incident. Any breach of the stipulated timescale for remediation will trigger a further TRI report.

G. How accidents and emergencies involving trees will be dealt with

Dependent on nature of incident; as above; an e-mail with photographic inclusion will be sent by the site agent. The arboriculturist or staff will attend site to appraise the situation and determine remedial action. A TRI report will be issued, as above.

9.3 Implementation on site

It is proposed that the methods specified below are followed in their entirety. Please note that the methods are referenced by various colours, lines and hatches on the tree protection plans appended. The scale of the plans is dependent on the paper size on which any hardcopy is produced.

It is highly important to tree health and vitality that construction activities are carried out strictly in accordance with the tree-friendly construction methods below. It is widely not understood outside the arboricultural profession, for example, that a single traverse of a root protection area by a mechanical excavator can cause significant and permanent damage to trees, even if this is not visible immediately afterward.

N.b. The methods below are intended to be read not only by the instructing client, but also by all others concerned with processing and determining of the application. Following planning approval, the methods are finally intended for full implementation on site by the main contractor or in some cases by a DIY builder. A degree of familiarity with the language of basic building techniques is assumed. I will of course explain any unfamiliar term – see contact details on cover page, and at the end of the report.

9.4 Tree-friendly construction methods and awareness document

Section 9.4 including all the methods below should be printed out; the plans to full scale, and kept readily to hand on site. (To be read and duly completed:) I the undersigned builder / site agent / main contractor have been given a copy of the tree protection measures reproduced below and the plans S940-J2-P1 v1, S940-J2-P2 v2 and S940-J2-P3 v2 with which they are to be read. I have studied these tree protection measures on site with the arboriculturist. I have asked questions if I have been unsure about the practicability or safety of any measure. Any queries arising have been resolved. I see no reason why the tree protection should not be implemented as outlined below and undertake to take all reasonable steps within my remit to promote their installation and retention for the duration required, as outlined below.

There are 18no. methods in this set, to be implemented in the order given unless stated otherwise.

PREPARATION / DEMOLITION

Please read with tree protection plan, S940-J2 P2, appended.

Method 1: SCHEDULE OF TREE WORK (Aim of method: to ensure only appropriate tree work is carried out) Tree work shall be in accordance with the schedule below, and to BS 3998:2010 'Tree Work - Recommendations'. Heights are in metres; diameters are in millimetres.

Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Comments
1	London plane	12		1150	Crown clean.
2	London plane	24		925	
3	London plane	24		637	
7	sycamore	17	4.0	530	
9	sycamore	17	8.0	460	Remove; grind stump to 300mm below ground level.
12	London plane	18		980	Crown clean.
14	olive	4.5		170	Remove; grub out or grind stump to 300mm below ground level.

NOTES:

- In Conservation Areas, in accordance with TCP Act 1990 Section 211, a formal notification to the LPA is required of intention to prune or remove any trees, the removal of which is not strictly required for the construction proposed to take place. 42 days after formal notification should be allowed before proceeding with the

notified work, during which time (and after) the LPA may place a Tree Preservation Order (TPO) on the tree, thus requiring a formal application for any works to living wood.

- If a tree is the subject of a TPO a formal application must be made to the LPA for consent for any work to the living wood of trees, if that work is not strictly required for the construction proposed to take place.
- All tree work should be carried out to BS 3998:2010 'Tree Work - Recommendations'.
- The Wildlife and Countryside Act 1981 protects with certain exceptions all birds and their nests. It is an offence to destroy such nests or take or injure such birds in the course of tree works operations.
- If a tree is a bat-roost, a licence to work on the tree must first be obtained from the relevant Statutory Nature Conservation Organization (in England: Natural England 0845 601 4523.) Acting without a licence is likely to be justifiable only in acute emergencies threatening human life and where all other legally available option such as footpath diversion, fencing and warning signs cannot be applied.
- 'Crown cleaning' – an umbrella term now covered by several separate sections in BS3998:2010 – should be understood to mean: removal of foreign objects (section 7.13); removal of ivy to the extent needed to facilitate inspection (section 7.12), typically trimming back (e.g. with a hedge cutter or secateurs) to near the line of the trunk or branches; and/or removing selected stems so that the structure of the tree can be seen sufficiently. Dead wood can be an important ecological feature. Treatment of dead wood under 'crown cleaning' shall mean (section 7.3.2) shorten and retain if safe to do so, thus retaining some resource for invertebrates, etc.

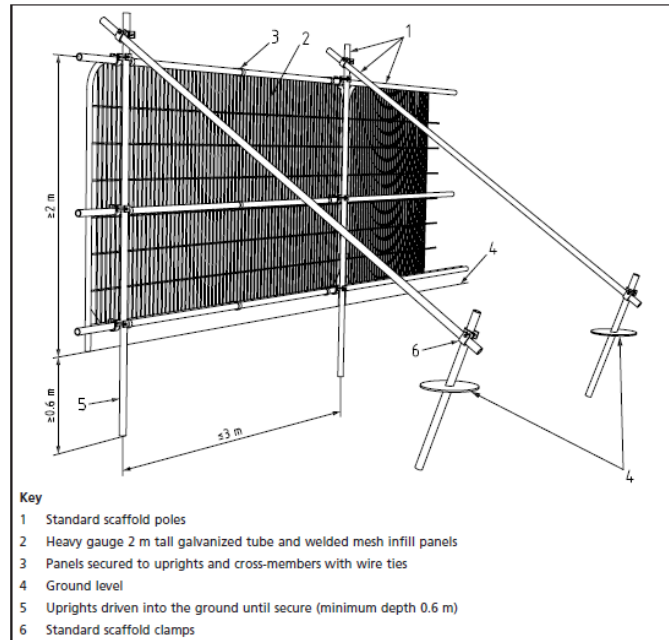
Arisings shall be chipped and removed from site, or stockpiled outside RPAs for possible later use as mulch at landscape phase. No vehicles shall stand or operate in any of the RPAs of retained trees. Any traversing of RPAs shall be preceded by laying of temporary trackway, such as TuffTrak® Euromat ground guards or similar appropriate temporary trackway sections. The temporary trackways shall be fixed together with manufacturers' approved fixings. This protective layer shall stay in place throughout arboricultural site preparation phase.

Method 2: TREE PROTECTION FENCING (Aim of method: to provide protection for trunks, branches and roots during demolition operations and construction)

This method shall apply where indicated by pink lines. Tree protection fencing shall be erected, in accordance with the heavy-duty specification - BS5837:2012 section 6.2.2., Figure 2.

No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines. No fires shall be made on any part of the site, or within 20m of any tree to be retained. No storage of materials shall be made within the protective fences.

Figure 2 Default specification for protective barrier



Method 3: GROUND SURFACE HANDLING and PROTECTION (Aim of method: to provide protection for roots during demolition operations and construction)

This method shall apply in the zones hatched blue on plan. NO levels reduction shall take place. This includes no 'scraping up' with a mechanical excavator or otherwise. Any existing hard surfacing, any existing surface debris, light vegetation, etc., that lies within the zone shall be removed using hand tools only. A 2D geotextile membrane, such as 'Ekotex' shall be laid; 100mm of green-source woodchip; continuously abutted scaffold boards or manufactured boards so as to completely cover this area. This area shall be used for pedestrian access only.

OR

To handle loads imposed by pedestrian-operated plant up to 1 tonne gross weight, a 2D geotextile membrane, such as 'Ekotex' shall be laid, and in sequence; 100mm of green-source woodchip; continuously abutted scaffold boards and a layer of manufactured board at least 25mm thick screwed to the underlying scaffold boards.

This method shall apply in the cross-hatched blue on plan. NO levels reduction shall take place. This includes no 'scraping up' with a mechanical excavator or otherwise. To handle loads exceeding 2 tonnes the ground surface shall be covered with TuffTrak® Euromat ground guards or similar appropriate temporary trackway sections. The temporary trackways shall be fixed together with manufacturers' approved fixings. On completion of build phase the ground guards shall be lifted by hand or by plant standing outside the zone.

Any scaffold erection shall take its bearing directly off the ground surface via spreader plates/scaffold boards.

Method 4: TEMPORARY ACCESS - INTENSIVE SITE (Aim of method: to provide heavy-duty protection for roots during demolition operations and construction)

This method shall apply in zone gridded green on plan. No reduction of levels shall take place. No wheeled or tracked machinery shall be used, except if standing on completed formation

as outlined below. An HDPE impermeable membrane shall be laid over the surface; 100mm depth sharp sand shall be laid over membrane; edge restraint shall be of timber formwork around the entire perimeter of the zone; such edge restraint shall stand 50mm above finished concrete-pour level to prevent concrete leaching into the soil; concrete shall be poured to a depth of 100mm over sharp sand layer. On completion of construction phase or when all need for vehicular access to the zone has ceased, slab / sand / membrane shall be removed using only hand-held tools or hand-held power tools. Any subsequent works in this zone shall be carried out as per Method 8 below.

Method 5: DEMOLITION (Aim of method: to prevent asphyxiation and contamination of roots during demolition operations)

This method shall apply generally. Demolition shall be carried out with hand tools or hand-held power tools only. Arisings shall be removed for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

CONSTRUCTION

Method 6: SERVICE TRENCHES (Aim of method: to limit and control root damage during services installation close to tree roots)

N.b. This applies to ALL services: Electricity, gas, water, etc. Existing services shall be utilised wherever possible.

These methods shall apply generally within any RPA (orange shapes/circles).

- 1) The trench shall be opened with an air-spade to required depth. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of trench is dug. Services shall be worked under/over/around/between roots so as not to cut or damage any larger than 20mm diameter.
OR
- 2) The trench shall be dug with hand tools only. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of trench is dug. Services shall be worked under/over/around/between roots so as not to cut or damage any larger than 20mm diameter.
OR
- 3) Services shall be thrust-bored using trenchless techniques (compressed air-driven 'mole') at a depth of 700mm or more below ground level, entailing no surface excavation. Starter pits for rams shall be outside any RPA, or reception/starter pits shall be opened according to 1) or 2) above.

Method 7: CONTIGUOUS PILE WALL - FACILITATION TRENCH

This method shall apply in the zone of cyan fill on plan. An access trench shall be opened with hand tools only (in the position indicated on plan), to a depth of 600mm below ground level. Roots shall be trimmed to the side of the trench closest to the tree with a sharp edge tool or sharp hand saw. Chainsaws shall not be used. The roots shall be trimmed at right angles to the long axis of the root. No paint or other treatment shall be applied to the cut ends. An HDPE membrane shall be applied vertically to the exposed soil face closest to the tree,

retained in position by vertically placed manufactured board extending the full depth and width of the vertical face of the trench. The boards shall be 22mm thickness and shall be retained in position during the piling operations by timber pegs or held with wing nuts on tie rods passed diagonally through the sheeting into the soil face.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 8: TREE PROTECTION FENCING

Tree protection fencing (pink lines on plan) shall be adjusted, specification as per Method 2 above. The fencing shall include, as indicated on plan, the protection of an area where planting is proposed.

Method 9: TRANSITION FROM TEMPORARY ACCESS TO PERMANENT POROUS DRIVEWAY / CAR PARKING (Aim of method: to provide continuous protection for roots through to handover)

This method shall apply in zone gridded green on plan. On completion of construction phase or when all need for construction-related access to the zone has ceased, the formwork shall be removed and any new edge restraint required shall be formed of permanent tanalised timber such as modern railway sleepers pegged or pinned through, e.g. with re-bar, to the substrate. The re-bar shall be driven below the upper face of the timber and the hole sealed with a hardwood peg and glued and trimmed flush. If edge restraints are required to be flush with adjacent ground levels, topsoil shall be loose-tipped and graded by hand to slope to existing levels.

On completion of construction phase or when all need for construction-related access to the zone has ceased, the temporary slab / sand / membrane shall be removed using only hand-held tools or hand-held power tools. The underlying sub-base shall be left undisturbed if it is competent to support the domestic-use loads envisaged. If it is, A is proposed. If it is not, B is proposed.

- A.** No excavation below the underside of the existing sub-base shall take place. A geogrid such as Tensar 'TriAx' shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Slabs shall be laid open-jointed and the joints rammed with granite chippings. Paving blocks shall be open-jointed type.
- B.** The underlying sub-base shall be removed using only hand-held tools or hand-held power tools. A geogrid such as Tensar 'TriAx' shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the stone layer 'no fines', granite or other hard stone, such as 'track ballast' to be laid in the geotextile layer above. This shall be a 3D pocket geotextile type 100 or 150mm deep, depending on envisaged loads, backfilled with 40-60mm clean stone – no fines, granite or other hard stone, such as 'track ballast', and may also be augmented where required to function as a SUDS feature. A further fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Slabs shall be laid open-jointed and the joints rammed with granite chippings. Paving blocks shall be open-jointed type. For a resin-bound open-pore gravel finish a further fine-mesh geogrid or needle-punched 2D geotextile may be required (to manufacturer's specification) over the level-correction layer.

Method 10: GATE PIER EXCAVATIONS - ROOT SLEEVING THROUGH PADS

This method shall apply in the zone of **magenta fill** (at each pad location). Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Where roots more than 20mm diameter are unearthed in the pad locations they shall be wrapped in bubble wrap, which shall not be wound tightly against the root. All edges shall be sealed with insulating or gutter tape (not packing tape). This sleeving both protects the root and forms a compressible layer when wet concrete is poured. The sleeving shall be chased into the sides of the pit (where the root enters the soil face) for a distance of about 50mm and the entry point ring-sealed with expanding foam. It is important to ensure that a 25mm minimum thickness of wrap is fixed around the roots to be preserved. This protection shall be carried out progressively as the pad pit is dug, so as to protect roots from casual damage during excavation. The pit shall be lined with an impermeable membrane to prevent contact between wet concrete and root-bearing soil. The concrete pad shall be cast, and the gate pier constructed above.

Method 11: FOOTPATHS / PATIO AREAS (various finishes possible)

This method shall apply in zones hatched **red** on plan. No 'scraping up' with a mechanical excavator shall take place. No wheeled or tracked machinery shall be used: construction shall be by means of hand tools/hand-held power tools. No reduction of levels shall take place, except to remove any wearing surface where a competent sub-base is to be retained and utilized. Edge restraint shall be formed from tanalised timber pinned to substrate with tanalised timber pegs or similar.

'NIDAGRAVEL'

Levels can be corrected by use of granite chippings NO FINES. A 3D pocket geotextile system, such as the 'Nidagravel' tray system 40mm deep backfilled with 40mm+, clean stone or gravel – NO FINES can be laid directly over the level correction layer. This system provides a wheelchair-friendly finish.

OR

SLABS

A fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid: granite chippings, NO FINES. Paving shall be laid open-jointed and the joints rammed with granite chippings.

Method 12: CYCLE SHED / BIN STORE / AIR SOURCE HEAT PUMP ENCLOSURE

This method shall apply in the zone of **yellow fill** on plan. Edge restraint shall be formed from timber baulks (e.g. modern railway sleepers) or lighter section tanalised timber pegged or pinned to substrate with 25mm dia. re-bar or similar. A geogrid such as Tensar 'TriAx' type, with a grid size sufficient to retain the size of aggregate shall be laid directly on the ground surface within the timber edges, then a sub-base 75mm deep of 20-40mm clean stone -NO FINES- (typically sold as 'track ballast'), then a further fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the layer above, such as coarse shingle; or for a slab finish, granite chippings, no fines shall be laid to correct levels, then the slabs. The slabs shall not be bedded on mortar or lean mix.

The enclosure shall be of timber and uprights. Post holes shall be dug with hand tools only. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead

of digging shall be used. The work shall proceed cautiously. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of hole is dug. It should be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent the completion of the post hole, and typically shall require terminating the dig and moving the post hole to a different location.

The timber superstructure may be placed directly on and affixed to the timber edging or may alternatively be attached to posts placed according to the method outlined.

Method 13: EXISTING HARD SURFACES TO BE SUPERCEDED BY SOFT LANDSCAPING

This method shall apply in the **brown crosses** zone on plan. The existing hard surface shall be lifted by hand tools or hand-held power tools only. No 'scraping up' with a mechanical excavator shall be carried out. No excavation below the underside of the existing sub-base shall take place.

Method 14: TREE PLANTING AREAS (Aim of method: to ensure thrift of new planting)

This method shall apply after completion of main build only. Ground preparation for tree planting areas shall entail removal of hard surfacing using hand tools or hand-held power tools only, the removal of degraded or compacted or contaminated soil to a depth of at least 0.45m below finished surrounding ground level. The base and sides of the pit shall be forked over to at least one hand fork's spit in depth. Screened topsoil (to BS3882: 2015 topsoil) with biochar (such as <https://www.soilfixer.co.uk/biochar-article>) - 5% of the topsoil volume shall be used as planting medium. This equates to about 20 kgs of product per cubic metre of topsoil (to BS3882: 2015 topsoil) to a maximum depth of 0.45m within 1.3m of the trunk location of each tree to be planted. Soil handling of any kind shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. Tree planting shall be in accordance with British Standard 8545:2014 'Trees: from nursery to independence in the landscape - Recommendations'. This enshrines good arboricultural practice: the tree shall be planted so that the root collar lies at finished ground level, shall be short-staked and tied with proprietary tree tie. Any whips shall similarly be planted so that the root collar lies at finished ground level, and shall be protected with proprietary growing tube (staked). The ground surface shall be mulched within 0.75m of the trunk location to a depth of 100mm with composted organic material or proprietary mulch mat.

Method 15: LANDSCAPING PREPARATION IN ROOT PROTECTION AREAS (Aim of method: to ensure thrift of topsoil)

This method shall apply after completion of main build only. Operations shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. Ground preparation within root protection areas shall entail use of hand tools only. The ground surface shall be thoroughly hand-forked over in vertical mode only to one spit's depth (250mm). Care shall be taken not to damage tree roots greater than 20mm diameter. Weed treatment if required shall be via BASIS qualified operatives. Surface debris shall be removed by hand to barrow and disposed of off-site. No wheeled or tracked plant shall be used: hand-held power tools may be used. (Outside root protection areas, mechanical cultivation shall be permitted.) The finishing soil horizon where additional planting medium is required shall be composed of biochar, see: <https://www.soilfixer.co.uk/biochar-article>

mixed with topsoil (to BS3882:2015 topsoil) - 5% by volume (equating to 20 kgs of product per cubic metre of topsoil), which shall be laid by hand-barrow: no mechanical plant shall

over-run the loose-tipped material. All handling of soils/soil-mix shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. The mix shall be laid to finish to required levels and allowed to settle via mist irrigation / watering-in / natural rainfall. The ground surface shall be worked to a fine tilth with hand tools prior to planting. No mechanical compaction whatever shall be used. Levelling and minimal consolidation shall be by hand tools / foot and board only, or naturally. Earthworm Inoculation Units, see: <https://www.wormsdirectuk.co.uk/product/worm-colonies-lawn-areas/> shall be placed with their tops 150mm below ground level at 5m intervals in all soil build-up areas. The units, which are typically cardboard, shall be earthed in and irrigated.

Method 16: MAINTENANCE (Aim of method: to prevent expensive losses soon after planting)

Maintenance shall consist of the regular moderate watering of any plant the subject of the planting proposal during the first season (April 15 to October 15) after planting and thereafter in the following four years if drought conditions occur. Hedges shall be trimmed twice yearly to a height of no less than 1.3m and no less than 0.5m thickness (cross sectional). Mulch shall be kept topped up to a maximum depth of 100mm. Grassed areas shall be cut weekly (April 15 to October 15).

Method 17: REPLACEMENT (Aim of method: to maintain treescape as planned and consented)

If within five years of issue of certificate of completion any plant the subject of the planting proposal dies or in the opinion of the LPA becomes seriously damaged or diseased, the same shall be replaced according to the above methods.

Method 18: WELFARE FACILITY

The placement in terms of whereabouts on site of the structure is flexible: no pruning of tree branches to accommodate the superstructure shall take place. No reduction whatever in existing ground levels shall take place in RPAs (orange shape/circles on plans). Timber bearers such as modern or re-purposed railway sleepers shall be laid directly on the ground surface. Alternatively the floor and superstructure supporting frame shall be supported by micro-piles such as StopDigging or Great British Screw Pile Company proprietary or similar micro-piles inserted with hand tools only. Trial pits to determine micro-pile locations shall be dug with hand tools only. N.B. The precise location of piles is flexible. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. No connection to services of any kind shall be made below ground level in RPAs (orange shape/circles on plans): all services in and out shall be above ground level.

(All design subject to engineering approval, but used on other sites and known to be practicable and reliable).

Name [print]:

For construction company:

Date:

Signature.....

S940-J2-R-3

End of section 9.4 document

End of main body of report – plans appended.

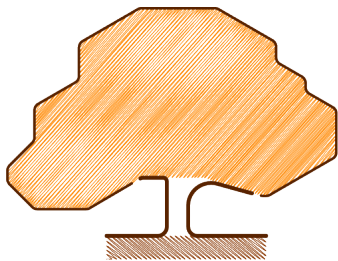
Dated: 30th June 2023

Signature (for John Cromar's Arboricultural Co. Ltd.)

A handwritten signature in black ink that reads "John Cromar". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

John Cromar

Dip. Arb. (RFS), FArborA



JOHN CROMAR'S
ARBORICULTURAL
COMPANY LTD

www.treescan.co.uk
admin@treescan.co.uk

01582 808020
07860453072

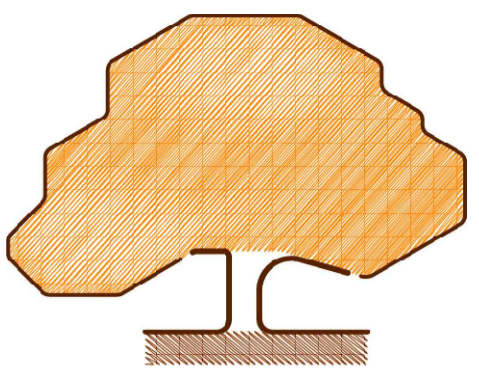
10 Plans

N.b. The scale of the plans is dependent on the paper size on which any hard copy is produced.

S940-J2-P1 v1

S940-J2-P2 v2

S940-J2-P3 v2



**JOHN CROMAR'S
ARBORICULTURAL
COMPANY
LIMITED**

THE OLD SCHOOL,
TITLEY, KINGTON,
HR5 3RN.
at Wheatley, Oxford
& Harpenden, Herts.

TEL 01582 808020
FAX 01544 231006
MOB 07860 453072
admin@treescan.co.uk
www.treescan.co.uk

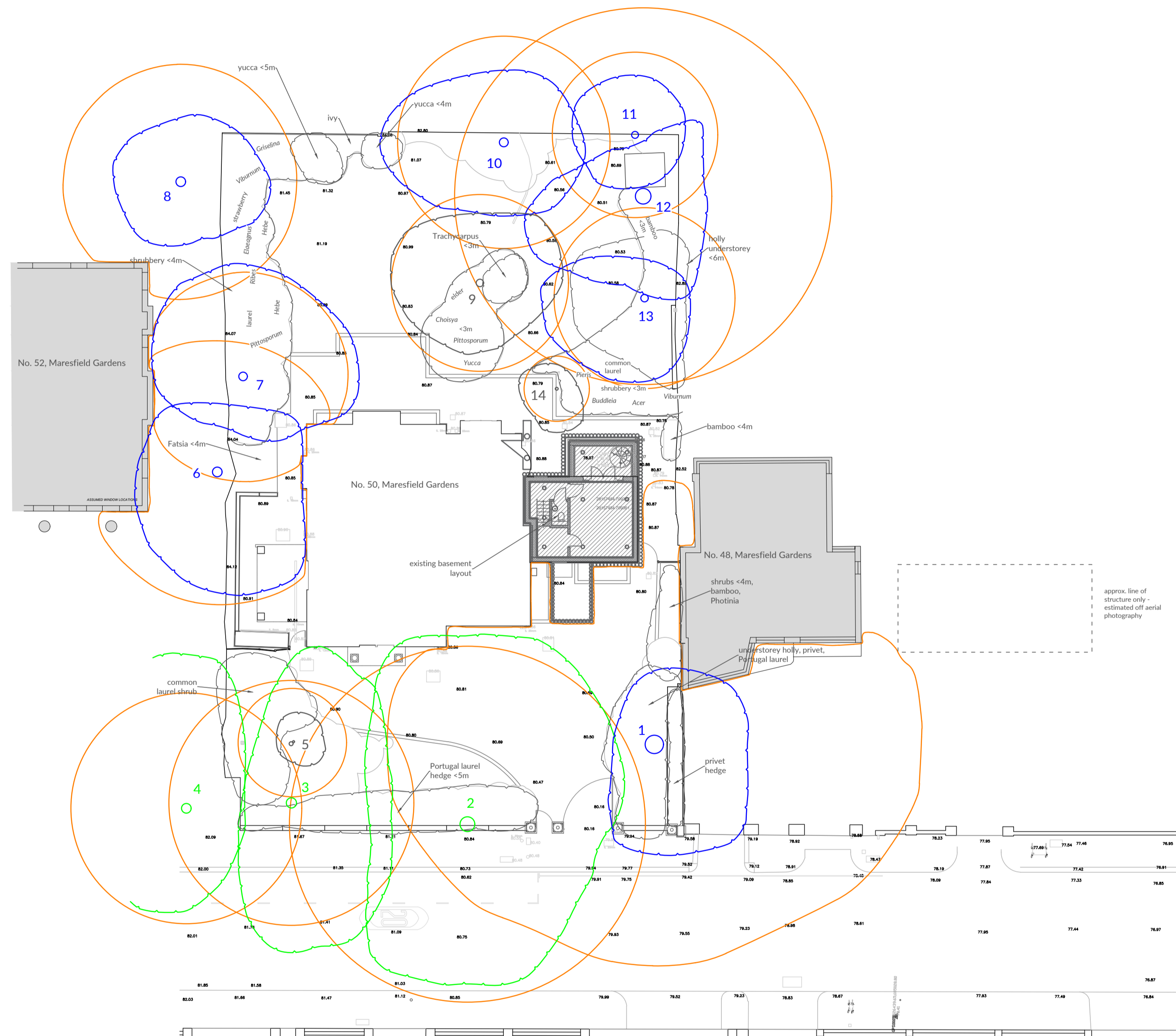


**KEY TO COLOURS /
LINETYPES USED IN
RELATION TO TREES**

- GREEN - High Value (A)
- BLUE - Moderate Value (B)
- BLACK - Low Value (C)
- RED - Very short life expectancy (U)
- ORANGE SHAPES: Root Protection Areas

Spread and trunk colours correspond directly to those used in British Standard 5837:2012, Table 2.

TOOTHED LINE: Tree spread line



**DRG. NAME
TREE VALUE
ASSESSMENT
(AS PER BS
5837:2012) &
ROOT
PROTECTION
AREAS**

NOTES
Do not use for setting out purposes.
All dimensions to be checked on site.

Any scale referenced below applies ONLY when plan printed at ISO A1 size.

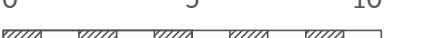
The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

TEXT
FOR FULL DETAILS OF TREE VALUE
PLEASE SEE REPORT

BASED ON
POINTBIM DRG. NO.: 22.027 000
rev. A SUPPLIED

SITE ADDRESS
50 Maresfield Gardens, London,
NW3 5RX

DRG. REF.	REV. NO.
S940-J2-P1	v1
SCALE & SIZE	DATE
1:200 @ A1	26-May-23
0	5
	10



The methods below typically each have a unique colour code and hatch or other reference to the plan, for example, pink lines indicate where fences to protect trees should be positioned.

PREPARATION / DEMOLITION

Method 1: SCHEDULE OF TREE WORK
Tree work shall be in accordance with the schedule within report and to BS 3998:2010 'Tree Work - Recommendations', and in accord with spread line(s) marked on plan.

Method 2: TREE PROTECTION FENCING (Aim of method: to provide protection for trunks, branches and roots during demolition operations and construction)
This method shall apply where indicated by pink lines. Tree protection fencing shall be erected, in accordance with the heavy-duty specification - BS5837:2012 section 6.2.2., Figure 2.
No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines. No fires shall be made on any part of the site, or within 20m of any tree to be retained. No storage of materials shall be made within the protective fences.

Method 3: GROUND SURFACE HANDLING and PROTECTION (Aim of method: to provide protection for roots during demolition operations and construction)
This method shall apply in the zones hatched blue on plan. NO levels reduction shall take place. This includes no 'scraping up' with a mechanical excavator or otherwise. Any existing hard surfacing, any existing surface debris, light vegetation, etc., that lies within the zone shall be removed using hand tools only. A 2D geotextile membrane, such as 'Ekotex' shall be laid; 100mm of green-source woodchip; continuously abutted scaffold boards or manufactured boards so as to completely cover this area. This area shall be used for pedestrian access only.

OR
To handle loads imposed by pedestrian-operated plant up to 1 tonne gross weight, a 2D geotextile membrane, such as 'Ekotex' shall be laid, and in sequence; 100mm of green-source woodchip; continuously abutted scaffold boards and a layer of manufactured board at least 25mm thick screwed to the underlying scaffold boards.

This method shall apply in the cross-hatched blue on plan. NO levels reduction shall take place. This includes no 'scraping up' with a mechanical excavator or otherwise. To handle loads exceeding 2 tonnes the ground surface shall be covered with TuTTak[®] EuroMat ground guards or similar appropriate temporary trackway sections. The temporary trackways shall be fixed together with manufacturers' approved fixings. On completion of build phase the ground guards shall be lifted by hand or by plant standing outside the zone.

Any scaffold erection shall take its bearing directly off the ground surface via spreader plates/scaffold boards.

Method 4: TEMPORARY ACCESS - INTENSIVE SITE (Aim of method: to provide heavy-duty protection for roots during demolition operations and construction)
This method shall apply in zone gridded green on plan. No reduction of levels shall take place. No wheeled or tracked machinery shall be used, except if standing on completed formation as outlined below. An HDPE impermeable membrane shall be laid over the surface; 100mm depth sharp sand shall be laid over membrane; edge restraint shall be of timber formwork around the entire perimeter of the zone; such edge restraint shall stand 50mm above finished concrete-pour level to prevent concrete leaching into the soil; concrete shall be poured to a depth of 100mm over sharp sand layer. On completion of construction phase or when all need for vehicular access to the zone has ceased, slab / sand / membrane shall be removed using only hand-held tools or hand-held power tools. Any subsequent works in this zone shall be carried out as per Method 8 below.

Method 5: DEMOLITION (Aim of method: to prevent asphyxiation and contamination of roots during demolition operations)
This method shall apply generally. Demolition shall be carried out with hand tools or hand-held power tools only. Arisings shall be removed for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

CONSTRUCTION

Method 6: SERVICE TRENCHES (Aim of method: to limit and control root damage during services installation close to tree roots)
N.b. This applies to ALL services: Electricity, gas, water, etc. Existing services shall be utilised wherever possible.

These methods shall apply generally within any RPA (orange shapes/circles).

1) The trench shall be opened with an air-spade to required depth. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of trench is dug. Services shall be worked under/over/around/between roots so as not to cut or damage any larger than 20mm diameter.

OR

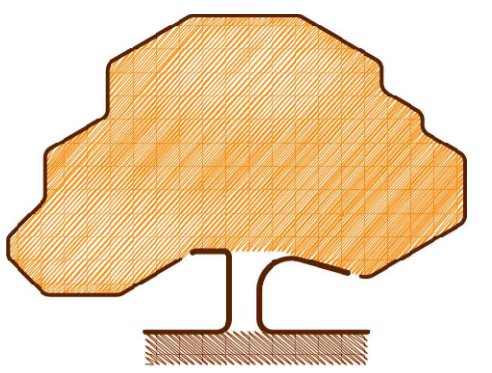
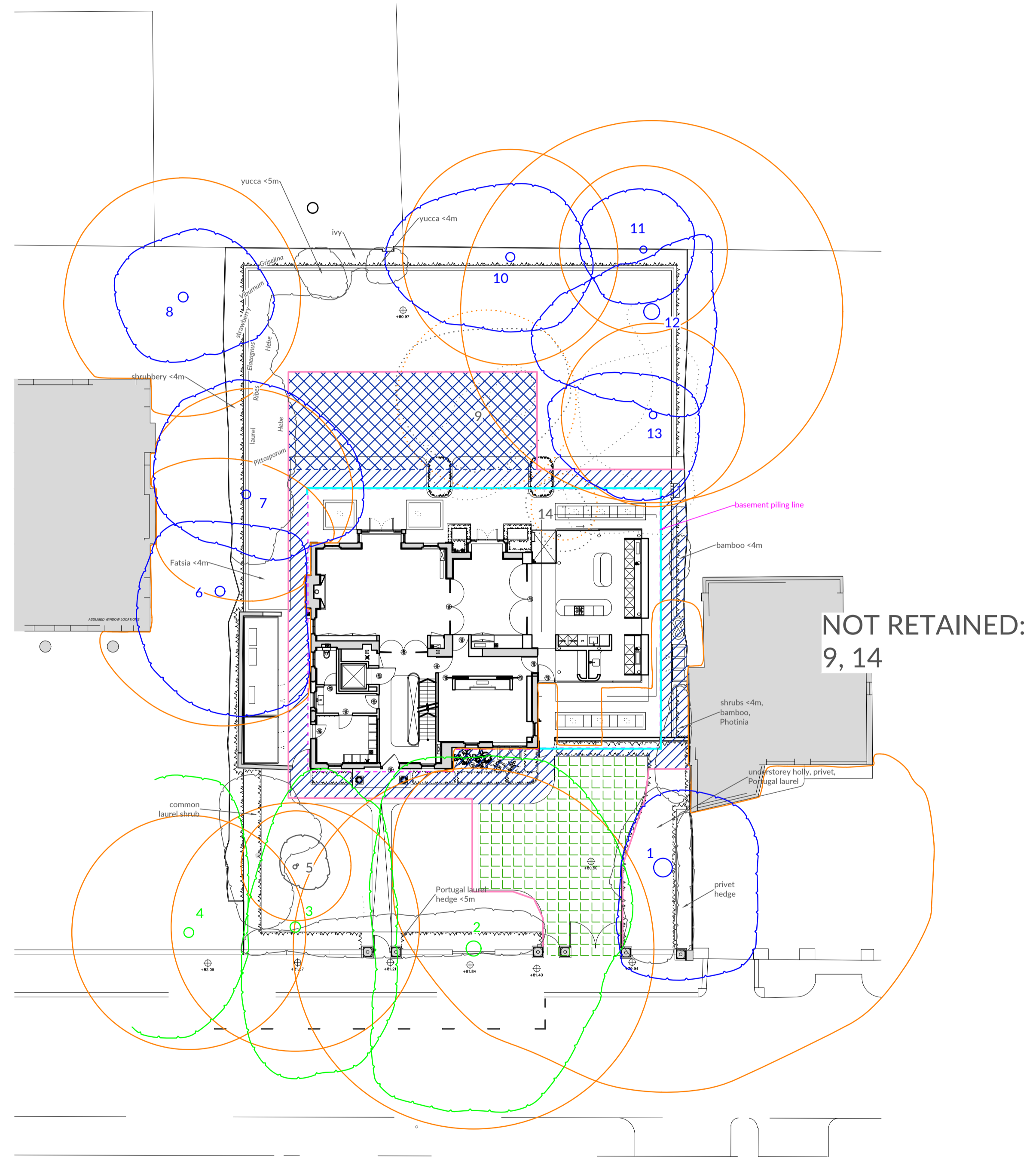
2) The trench shall be dug with hand tools only. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of trench is dug. Services shall be worked under/over/around/between roots so as not to cut or damage any larger than 20mm diameter.

OR

3) Services shall be thrust-bored using trenchless techniques (compressed air-driven 'mole') at a depth of 700mm or more below ground level, entailing no surface excavation. Starter pits for rams shall be outside any RPA, or reception/starter pits shall be opened according to 1) or 2) above.

Method 7: CONTIGUOUS PILE WALL - FACILITATION TRENCH

This method shall apply in the zone of cyan fill on plan. An access trench shall be opened with hand tools only (in the position indicated on plan), to a depth of 600mm below ground level. Roots shall be trimmed to the side of the trench closest to the tree with a sharp edge tool or sharp hand saw. Chainsaws shall not be used. The roots shall be trimmed at right angles to the long axis of the root. No paint or other treatment shall be applied to the cut ends. An HDPE membrane shall be applied vertically to the exposed soil face closest to the tree, retained in position by vertically placed manufactured board extending the full depth and width of the vertical face of the trench. The boards shall be 22mm thickness and shall be retained in position during the piling operations by timber pegs or held with wing nuts on tie rods passed diagonally through the sheeting into the soil face.



**JOHN CROMAR'S
ARBORICULTURAL
COMPANY
LIMITED**

THE OLD SCHOOL,
TITLEY, KINGTON,
HR5 3RN.
at Wheatley, Oxford
& Harpenden, Herts.

TEL 01582 808020
FAX 01544 231006
MOB 07860 453072
admin@treescan.co.uk
www.treescan.co.uk



**KEY TO COLOURS /
LINETYPES USED IN
RELATION TO TREES**

- GREEN - High Value (A)
- BLUE - Moderate Value (B)
- BLACK - Low Value (C)
- RED - Very short life expectancy (U)
- ORANGE SHAPES: Root Protection Areas

Spread and trunk colours correspond directly to those used in British Standard 5837:2012, Table 2.

PROPOSED NEW PLANTING:
This is indicated by green stipple within roundels (trees) or other shapes, e.g., for hedges. For key to the letters designating locations, please see report.

**DRG. NAME
TREE RETENTION
& TREE
PROTECTION
MEASURES
(Construction
Phase)**

NOTES
Do not use for setting out purposes.
All dimensions to be checked on site.

Any scale referenced below applies ONLY when plan printed at ISO A1 size.

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

TEXT
FOR FULL METHOD DETAILS
PLEASE SEE REPORT

BASED ON
MAREK WOJCIECHOWSKI
ARCHITECTS DRG. NO.: 22022 P1399
and P1400 SUPPLIED

SITE ADDRESS
50 Maresfield Gardens, London,
NW3 5RX

DRG. REF.	REV. NO.
S940-J2-P2	v2
SCALE & SIZE	DATE
1:200 @ A1	30-Jun-23
0	5
	10

The methods below typically each have a unique colour code and hatch or other reference to the plan, for example, pink lines indicate where fences to protect trees should be positioned.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 8: TREE PROTECTION FENCING

Tree protection fencing (pink lines on plan) shall be adjusted, specification as per Method 2 (see plan ref.: 5940-J2-P2v1). The fencing shall include, as indicated on plan, the protection of an area where planting is proposed.

Method 9: TRANSITION FROM TEMPORARY ACCESS TO PERMANENT POROUS DRIVEWAY / CAR PARKING (Aim of method: to provide continuous protection for roots through to handover)

This method shall apply in zone gridded green on plan. On completion of construction phase or when all need for construction-related access to the zone has ceased, the formwork shall be removed and any new edge restraint required shall be formed of permanent tanalised timber such as modern railway sleepers pegged or pinned through, e.g. with re-bar, to the substrate. The re-bar shall be driven below the upper face of the timber and the hole sealed with a hardwood peg and glued and trimmed flush. If edge restraints are required to be flush with adjacent ground levels, topsoil shall be loose-tipped and graded by hand to slope to existing levels.

On completion of construction phase or when all need for construction-related access to the zone has ceased, the temporary slab / sand / membrane shall be removed using only hand-held tools or hand-held power tools. The underlying sub-base shall be left undisturbed if it is competent to support the domestic-use loads envisaged. If it is not, A is proposed. If it is not, B is proposed.

- A. No excavation below the underside of the existing sub-base shall take place. A geogrid such as Tensar TriAx shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Slabs shall be laid open-jointed and the joints rammed with granite chippings. Paving blocks shall be open-jointed type.
- B. The underlying sub-base shall be removed using only hand-held tools or hand-held power tools. A geogrid such as Tensar TriAx laid shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the stone layer 'no fines', granite or other hard stone, such as 'track ballast' to be laid in the geotextile layer above. This shall be a 3D pocket geotextile type 100 or 150mm deep, depending on envisaged loads, backfilled with 40-60mm clean stone - no fines, granite or other hard stone, such as 'track ballast', and may also be augmented where required to function as a SUDS feature. A further fine-mesh geogrid such as Tensar TriAx shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Slabs shall be laid open-jointed and the joints rammed with granite chippings. Paving blocks shall be open-jointed type. For a resin-bound open-pore gravel finish a further fine-mesh geogrid or needle-punched 2D geotextile may be required (to manufacturer's specification) over the level-correction layer.

Method 10: GATE PIER EXCAVATIONS - ROOT SLEEVING THROUGH PADS

This method shall apply in the zone of magenta fill (at each pad location). Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Where roots more than 20mm diameter are unearthed in the pad locations they shall be wrapped in bubble wrap, which shall not be wound tightly against the root. All edges shall be sealed with insulating or gutter tape (not packing tape). This sleeving both protects the root and forms a compressible layer when wet concrete is poured. The sleeving shall be chased into the sides of the pit (where the root enters the soil face) for a distance of about 50mm and the entry point ring-sealed with expanding foam. It is important to ensure that a 25mm minimum thickness of wrap is fixed around the roots to be preserved. This protection shall be carried out progressively as the pad pit is dug, so as to protect roots from casual damage during excavation. The pit shall be lined with an impermeable membrane to prevent contact between wet concrete and root-bearing soil. The concrete pad shall be cast, and the gate pier constructed above.

Method 11: FOOTPATHS / PATIO AREAS (various finishes possible)

This method shall apply in zones hatched red on plan. No 'scraping up' with a mechanical excavator shall take place. No wheeled or tracked machinery shall be used: construction shall be by means of hand tools/hand-held power tools. No reduction of levels shall take place, except to remove any wearing surface where a competent sub-base is to be retained and utilized. Edge restraint shall be formed from tanalised timber pinned to substrate with tanalised timber pegs or similar. 'NIDAGRAVEL'

Levels can be corrected by use of granite chippings NO FINES. A 3D pocket geotextile system, such as the 'Nidagravel' tray system 40mm deep backfilled with 40mm+, clean stone or gravel - NO FINES can be laid directly over the level correction layer. This system provides a wheelchair-friendly finish.

OR

SLABS

A fine-mesh geogrid such as Tensar TriAx shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid: granite chippings, NO FINES. Paving shall be laid open-jointed and the joints rammed with granite chippings.

Method 12: CYCLE SHED / BIN STORE / AIR SOURCE HEAT PUMP ENCLOSURE

This method shall apply in the zone of yellow fill on plan. Edge restraint shall be formed from timber baulks (e.g. modern railway sleepers) or lighter section tanalised timber pegged or pinned to substrate with 25mm dia. re-bar or similar. A geogrid such as Tensar TriAx type, with a grid size sufficient to retain the size of aggregate shall be laid directly on the ground surface within the timber edges, then a sub-base 75mm deep of 20-40mm clean stone -NO FINES- (typically sold as 'track ballast'), then a further fine-mesh geogrid such as Tensar TriAx shall be laid. The grid size shall be sufficiently small to retain the layer above, such as coarse shingle; or for a slab finish, granite chippings, no fines shall be laid to correct levels, then the slabs. The slabs shall not be bedded on mortar or lean mix.

The enclosure shall be of timber and uprights. Post holes shall be dug with hand tools only. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of hole is dug. It should be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent the completion of the post hole, and typically shall require terminating the dig and moving the post hole to a different location.

The timber superstructure may be placed directly on and affixed to the timber edging or may alternatively be attached to posts placed according to the method outlined.

Method 13: EXISTING HARD SURFACES TO BE SUPERCEDED BY SOFT LANDSCAPING

This method shall apply in the brown crosses zone on plan. The existing hard surface shall be lifted by hand tools or hand-held power tools only. No 'scraping up' with a mechanical excavator shall be carried out. No excavation below the underside of the existing sub-base shall take place.

Method 14: TREE PLANTING AREAS (Aim of method: to ensure thrift of new planting)

This method shall apply after completion of main build only. Ground preparation for tree planting areas shall entail removal of hard surfacing using hand tools or hand-held power tools only, the removal of degraded or compacted or contaminated soil to a depth of at least 0.45m below finished surrounding ground level. The base and sides of the pit shall be forked over to at least one hand fork's spit in depth. Screened topsoil (to BS3882: 2015 topsoil) with biochar (such as <https://www.soilfixer.co.uk/biochar-article/>) - 5% of the topsoil volume shall be used as planting medium. This equates to about 20 kgs of product per cubic metre of topsoil (to BS3882: 2015 topsoil) to a maximum depth of 0.45m within 1.3m of the trunk location of each tree to be planted. Soil handling of any kind shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. Tree planting shall be in accordance with British Standard 8545:2014 'Trees: from nursery to independence in the landscape - Recommendations'. This enshrines good arboricultural practice: the tree shall be planted so that the root collar lies at finished ground level, shall be short-staked and tied with proprietary tree tie. Any whips shall similarly be planted so that the root collar lies at finished ground level and shall be protected with proprietary growing tube (staked). The ground surface shall be mulched within 0.75m of the trunk location to a depth of 100mm with composted organic material or proprietary mulch mat.

Method 15: LANDSCAPING PREPARATION IN ROOT PROTECTION AREAS (Aim of method: to ensure thrift of topsoil)

This method shall apply after completion of main build only. Operations shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. Ground preparation within root protection areas shall entail use of hand tools only. The ground surface shall be thoroughly hand-forked over in vertical mode only to one spit's depth (250mm). Care shall be taken not to damage tree roots greater than 20mm diameter. Weed treatment if required shall be via BASIS qualified operatives. Surface debris shall be removed by hand to barrow and disposed of off-site. No wheeled or tracked plant shall be used: hand-held power tools may be used. (Outside root protection areas, mechanical cultivation shall be permitted.) The finishing soil horizon where additional planting medium is required shall be composed of biochar, see: <https://www.soilfixer.co.uk/biochar-article/>

mixed with topsoil (to BS3882:2015 topsoil) - 5% by volume (equating to 20 kgs of product per cubic metre of topsoil), which shall be laid by hand-barrow: no mechanical plant shall over-run the loose-tipped material. All handling of soils/soil-mix shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. The mix shall be laid to finish to required levels and allowed to settle via mist irrigation / watering-in / natural rainfall. The ground surface shall be worked to a fine tilth with hand tools prior to planting. No mechanical compaction whatever shall be used. Levelling and minimal consolidation shall be by hand tools / foot and board only, or naturally. Earthworm Inoculation Units, see: <https://www.wormsdirect.co.uk/product/worm-colonies-lawn-areas/>

shall be placed with their tops 150mm below ground level at 5m intervals in all soil build-up areas. The units, which are typically cardboard, shall be earthed in and irrigated.

Method 16: MAINTENANCE (Aim of method: to prevent expensive losses soon after planting)

Maintenance shall consist of the regular moderate watering of any plant the subject of the planting proposal during the first season (April 15 to October 15) after planting and thereafter in the following four years if drought conditions occur. Hedges shall be trimmed twice yearly to a height of no less than 1.3m and no less than 0.5m thickness (cross sectional). Mulch shall be kept topped up to a maximum depth of 100mm. Grassed areas shall be cut weekly (April 15 to October 15).

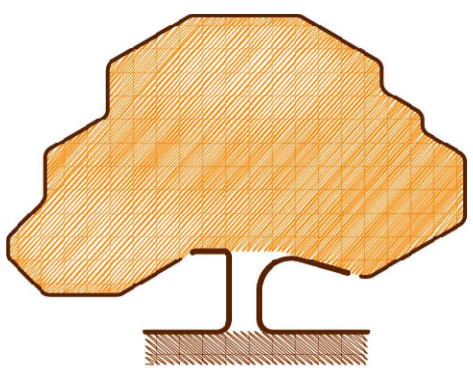
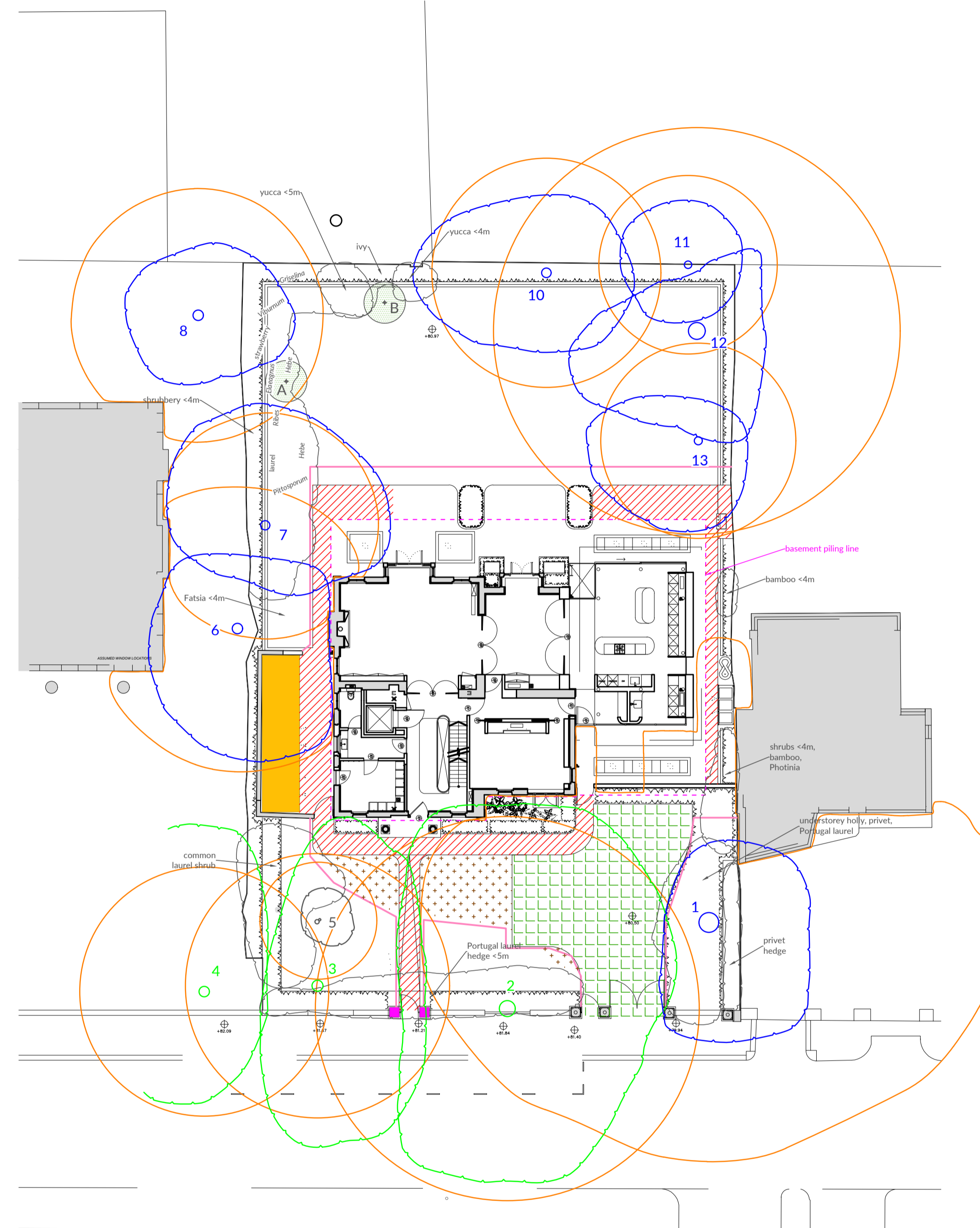
Method 17: REPLACEMENT (Aim of method: to maintain treescape as planned and consented)

If within five years of issue of certificate of completion any plant the subject of the planting proposal dies or in the opinion of the LPA becomes seriously damaged or diseased, the same shall be replaced according to the above methods.

Method 18: WELFARE FACILITY

The placement in terms of whereabouts on site of the structure is flexible: no pruning of tree branches to accommodate the superstructure shall take place. No reduction whatever in existing ground levels shall take place in RPAs (orange shape/circles on plans). Timber bearers such as modern or re-purposed railway sleepers shall be laid directly on the ground surface. Alternatively the floor and superstructure supporting frame shall be supported by micro-piles such as StopDigging or Great British Screw Pile Company proprietary or similar micro-piles inserted with hand tools only. Trial pits to determine micro-pile locations shall be dug with hand tools only. N.B. The precise location of piles is flexible. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. No connection to services of any kind shall be made below ground level in RPAs (orange shape/circles on plans): all services in and out shall be above ground level.

(All design subject to engineering approval, but used on other sites and known to be practicable and reliable).



JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

THE OLD SCHOOL,
TITLEY, KINGTON,
HR5 3RN.
at Wheatley, Oxford
& Harpenden, Herts.

TEL 01582 808020
FAX 01544 231006
MOB 07860 453072
admin@treescan.co.uk
www.treescan.co.uk



KEY TO COLOURS / LINETYPES USED IN RELATION TO TREES

GREEN - High Value (A)
BLUE - Moderate Value (B)
BLACK - Low Value (C)
RED - Very short life
expectancy (U)
ORANGE SHAPES: Root
Protection Areas

Spread and trunk colours
correspond directly to
those used in British
Standard 5837:2012,
Table 2.

PROPOSED NEW PLANTING:

This is indicated by green
stipple within roundels
(trees) or other shapes,
e.g., for hedges. For key to
the letters designating
locations, please see
report.

DRG. NAME

TREE RETENTION & TREE PROTECTION MEASURES (Late Construction / Landscape Phase)

NOTES

Do not use for setting out purposes.
All dimensions to be checked on site.

Any scale referenced below applies ONLY when plan
printed at ISO A1 size.

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

TEXT

FOR FULL METHOD DETAILS
PLEASE SEE REPORT

BASED ON

MAREK WOJCIECHOWSKI
ARCHITECTS DRG. NO.: 22022 P1399
and P1400 SUPPLIED

SITE ADDRESS
50 Maresfield Gardens, London,
NW3 5RX

DRG. REF.	REV. NO.	
5940-J2-P3	v2	
SCALE & SIZE	DATE	
1:200 @ A1	30-Jun-23	
0	5	10

