S87-J3-IA-3

REPORT

regarding the impact on trees of proposals for development
at
42 Elsworthy Road, London, NW3 3DL

JOHN CROMAR'S
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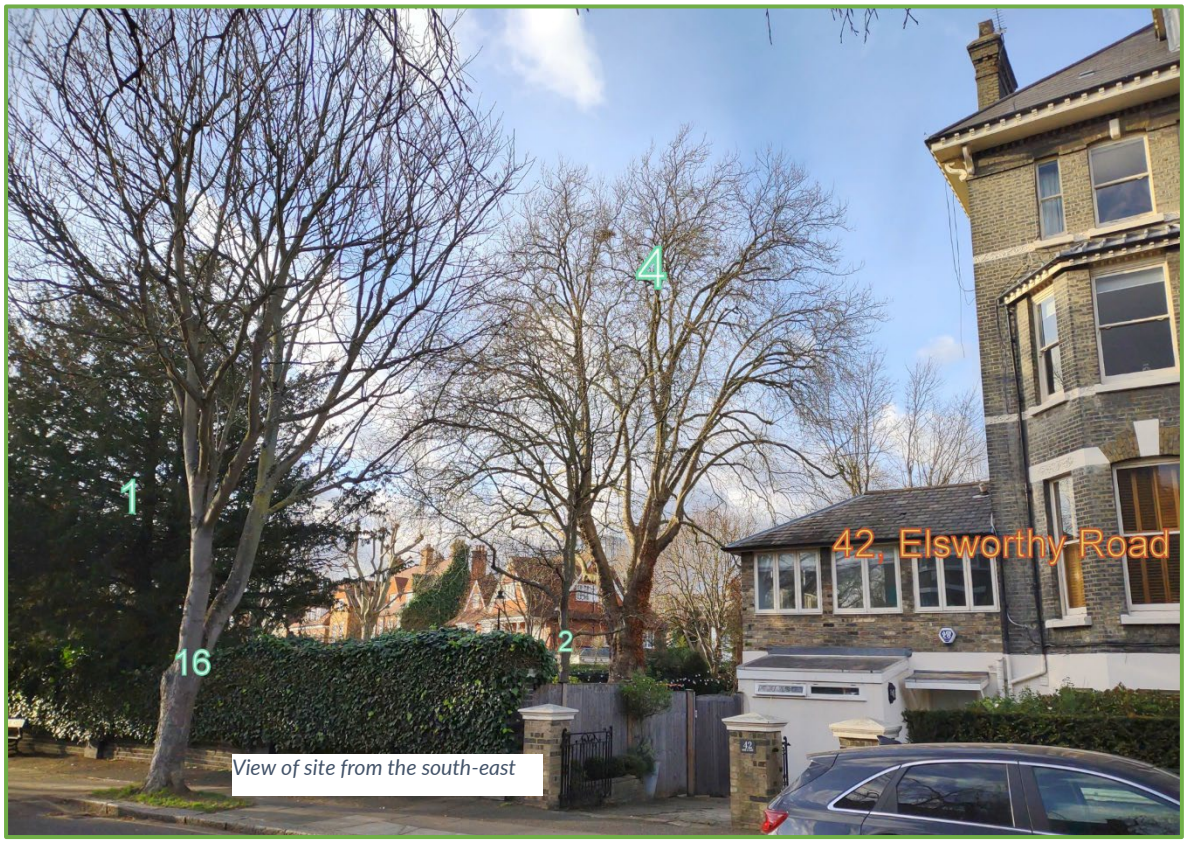

View of site from the south-east

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Contents

1 Instructions

I am instructed by Wolff Architects Ltd on behalf of clients to make an assessment of tree amenity value and condition of trees at 42 Elsworthy Road, London, NW3 3DL and of the impact of a proposal for development (new proposal) on such trees, and to supply an arboricultural methods statement and tree protection plan. The design and access statement / design summary submitted by Wolff Architects Ltd describes the scheme. I am aware of consent 2019/0149/P, which pertains to this site, and for which scheme I produced an impact assessment report (ref: 1-38-4325/3, dated 13th August 2019), tree protection plan and arboricultural method statement.

2 Executive summary

The impact on trees of the scheme proposed, will require a few trees to be removed but the impact on public amenity will overall be negligible. 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

Local planning authorities (LPAs below) 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. S87-J3-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.

- S87-J3-P2 and S87-J3-P3 are the 'tree protection plans' 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 initially on 1st May 2018. Most recently I attended site on 1st February 2022 in order to carry out a further 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

Several trees are visible from Elsworthy Road and Lower Merton Rise.

Certain trees listed are of some significant general public amenity value. (See cover photo / photos below).

4.5 Statutory constraints

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

Trees on or adjacent to the site enjoy the benefit of Tree Preservation Orders (TPO) ref: C1165 and 32H.

The site stands within the Elsworthy Conservation Area.

4.6 Soil assessment

The British Geological Survey (BGS) information for the area indicates that the underlying sub-soil is London clay.

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

The figures in columns 5 and 6 below indicate the RPA. The edge of this is typically the basic tree protection fence position.

In all cases, in the absence of negative comment on health/vitality and structure, normal physiological (health) and structural condition applies. Dependent on time of year of survey, deciduous trees may not have been in leaf at the time of inspection. This may have limited precise identification. Unless stated otherwise, no signs of protected species were noted; for example, trees were of an age and/or of simplicity of structure rendering them very unlikely to have features or defects amendable to bat occupation or bird nesting.

Tree number	Tree type	Height	Stem diameters	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value
1	English yew	11.5	602	7224	163.9	Ivy infested. Branches pruned back on north side	40+	B1
2	*Gleditsia triacanthos*	11.5	274	3288	34.0	Reduced circa 2013 to about 7m in height. Some public view.	40+	B1
3	common lime	10	406	4872	74.6	Outside site; tree under local authority control. Some screening value	40+	B1
4	London plane	21	1404	15000	706.9	Large and highly visible tree. Noted to have been cut back historically on the south (building) side.	40+	A2
5	false acacia	16	1000	12000	452.4	Tap test very abnormal; ivy infested; history of pollarding to around 10 or 11m; not pollarded for at least 7 or 8 years	<10	U
6	snakebark maple	11	213	2556	20.5	Attractive locally; some screening function.	20+	C1
7	red beech (*Nothofagus fusca*)	8	155	1860	10.9	Small and unimportant	20+	C1
8	Himalayan birch	15	224	2688	22.7	One of group of three; locally attractive.	20+	B2
9	Himalayan birch	15	239	2868	25.8	One of group of three; locally attractive.	20+	B2
10	Himalayan birch	15	268	3216	32.5	One of group of three; locally attractive.	20+	B2
11	common walnut	7	240, 180	3600	40.7	Locally ornamental; shrub form	20+	C1
12	winter flowering cherry	5	100	1200	4.5	Strong lean	10+	C1
13	Scots pine	2.5	55	660	1.4	Tiny distorted tree	10+	C1
14	English yew	3	120	1440	6.5	Clipped as shrub	40+	C1

Tree number	Tree type	Height	Stem diameters	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value
15	sycamore	12	300	3600	40.7	Outside site; heavily reduced; a little screening value	10+	C1
16	sycamore	10	435	5220	85.6	Outside site; tree under local authority control. Rather heavily reduced; a little screening value.	20+	C1
17	variegated holly	2	55	660	1.4	Very close to front boundary wall and unsuitably sited for growth to maturity. Tiny survivor of understorey of false acacia removed by reason of consent 2017/2568/T.	40+	C1
18	false acacia	4	70, 60	1106	3.8	Relict growth from felled tree. Cut and treat with herbicide	40+	C1

4.9 Photos

View of site from the south-west

View of trees 8,9 and 10 from within the rear garden; from the west.

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 location of various structures, the internal support mechanisms of various trees, etc., are taken into account in determining the likely position of roots. Adjoining structures 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 clay.

Adjoining structures have likely affected the RPAs, as indicated on plans. This has some significance in connection with proposed tree protection.

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. We discussed with the architect certain features of the scheme in this case. The outcome of these discussions (very minor modifications) is incorporated in the proposal considered here.

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. No encroachment on the RPA (or SRP) of any retained tree is entailed.

5.4 Assessment of SRP/RPA encroachment

No encroachment on the SRP of any retained tree is entailed. Minor encroachment on the RPA of certain retained trees is entailed, as analysed in the table below:

PREVIOUS 2019 REPORT

Tree no.	Tree	RPA area (m^2)	Area affected (m^2)	% affected	Notes
1	English yew	146.98	0.11	0.07	Proposed LGF
4	London plane	706.86	10.82	1.53	Proposed basement + PFT
4	London plane	706.86	18.29	2.59	Proposed LGF

CURRENT PROPOSAL

Tree no.	Tree	RPA area (m^2)	Area affected (m^2)	% affected	Notes
1	English yew	163.95	0.17	0.10%	wall
1	English yew	163.95	0.73	0.45%	bins
4	London plane	706.86	25.50	3.61%	side extension, level reduction, retaining wall
4	London plane	706.86	3.36	0.48%	car park / wall / soft landscaping in area
4	London plane	706.86	10.41	1.47%	rear patio / steps
4	London plane	706.86	12.59	1.78%	external plant acoustic enclosure
6	snakebark maple	20.52	1.18	5.75%	external plant acoustic enclosure

In view of the above I conclude that no special footings are needed from the arboricultural perspective. In this case 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 Hard surfacing

The Standard (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. Some surface change to the RPA around various trees, such as 1 and 4 is proposed. I propose the RPA is managed during demolition and construction and any changes controlled by methods proposed below. New materials and methods have been developed and continue to be developed that assist in promoting the successful retention of trees in association with constructed features. It should be noted that the Standard (section 7.4.2) supports 'up and over' methods of construction where appropriate. The principle and practice of this method is outlined in 'The Use of Cellular Confinement Systems Near Trees: A Guide To Good Practice', Arboricultural Association Guidance Note 12 (September 2020). I have developed and used similar methods for many years within my company, engaging with the manufacturers and designers of the materials as these became available. This has facilitated the retention of mature trees very close to construction activities.

As specific tree protection methods are proposed 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 majority of the significantly-sized retained trees are located mainly to the general west of the proposed extended dwelling. This means that the dwelling and its garden may be shaded from both direct sunlight and experience reduced sky factor (the light that emanates from the sky) during all or much of the year. 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 has 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. A schedule for the use of a contractor 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. Overall, appropriate replacement tree planting will play some role in providing for future local amenity.

The soil type indicated by BGS data and soil condition as appraised places no significant constraint on species selection for tree and other planting. See plan for location:

A= cypress oak (Quercus robur 'Koster') 14-16cm girth 85 L pot

B= dawn redwood (Metasequoia glyptostroboides) 16-18cm girth 85L pot

It is typical for landscaping to be a reserved matter consequent to any grant of consent and for a full landscaping scheme to detail tree, shrub and herbaceous planting etc.

In this case it is proposed that the strategic tree planting in terms of precise species and cultivar is adopted in any such scheme.

5.11 Policy compliance

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

- The Camden Local Plan
- Camden Planning Guidance - Trees
- Elsworthy Road Conservation Area Appraisal and Management Strategy

I submit that the proposals in this report if observed, and the tree protection methods, if implemented, will facilitate fair compliance with any such relevant policies.

6 Conclusion

6.1 Summary

I conclude that the impact on trees of the scheme proposed, 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, specifying in a Condition that a Construction Management Plan is approved by the LPA and that it shall incorporate all of the **Arboricultural method statement** below. Such measures are likely to maximise tree protection.

7 Sources and relevant documents used

- Ground-level inspection
- Supplied plans:
    - Mobile CAD Surveying drg. no.: 1851 – 01 Lower Ground Floor Plan
    - Wolff Architects drg. no.: 2164-PL-202-0

8 Copyright

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	David Wolff	Wolff Architects Ltd	dwolff@wolffarchitects.co.uk	07860 594 812	020 7229 3125
arboriculturist	John Cromar	JCAC 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) 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 inspection 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 will be copied to the LPA within 5 days of site visit.* These reports will 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, copied to all parties and timescales for remediation completion 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

(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 S87-J3-P1 v2, S87-J3-P2 v1, S87-J3-P3 v1, 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. Section 9.4 including all the methods below should be printed out; the plans to full scale, and kept readily to hand on site.

There are 15no. methods in this set, to be implemented in the order given unless stated otherwise.

PREPARATION / DEMOLITION

Please read with tree protection plan reference S87-J3-P2, appended.

Method 1: *SCHEDULE OF TREE WORK*
Tree work shall be in accordance with the schedule below, and to BS 3998:2010 'Tree Work - Recommendations', and in accord with spread line marked on plan. Heights are in metres; diameters are in millimetres.

Tree number	Tree type	Height	Stem diameters	Comments
2	*Gleditsia triacanthos*	11.5	274	Remove; grind stumps to 250mm below ground level.
5	false acacia	16	1000	Remove for safety reasons. Grind stump to 250mm below ground level.
10	Himalayan birch	15	268	Remove; grind stumps to 250mm below ground level.
12	winter flowering cherry	5	100	
13	Scots pine	2.5	55	
17	variegated holly	2	55	
18	false acacia	4	70, 60	(Tiny relict growth from felled tree.) Cut to ground level and treat with approved herbicide to prevent growth.

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 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.

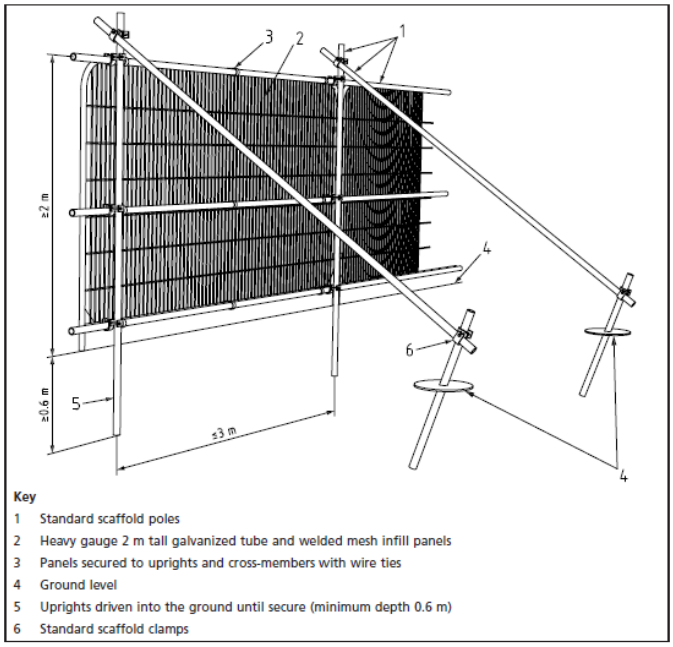
Method 2: *TREE PROTECTION FENCING*

This method shall apply where indicated by double 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**



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

Method 3: *GROUND SURFACE HANDLING and PROTECTION*
This method shall apply in the zone 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.

OR

To handle loads exceeding 2 tonnes the ground surface shall be covered (in sequence) by a 2D geotextile membrane, such as 'Ekotex'; 100mm of green-source woodchip; 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: *SITE ACCOMMODATION*
This method shall apply in the red cross zone. Timber baulks such as railway sleepers shall be laid to support temporary modular structures. Any craneage shall be from outside RPAs. No below-ground service connections shall be made, e.g. to toilets: all such piping / ducting / cables shall lie above ground.

Method 5: *DEMOLITION*
This method shall apply generally. Arisings shall be removed for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

CONSTRUCTION

Method 6: *SERVICE TRENCHES*
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: *ROOT PRUNING*
This method shall apply within only the RPA (orange shape) of tree no. 4.

The excavation shall be made with hand tools only. Any roots encountered shall be trimmed to the edge of excavation using a sharp edge tool such as handsaw or secateurs; the cuts shall be made at right angles to the long axis of the root, and in accordance with BS3998:2010, 8.6. An HDPE membrane shall be placed between any root-bearing soil and any wet concrete to be poured. Impermeable sheeting (to exclude wet concrete) shall be laid and secured locally by temporary weighting / taping as required. Concrete casting shall take place without disturbing this protective layer.

Method 8: *EXISTING HARD SURFACES TO BE SUPERCEDED BY REPLACEMENT HARD SURFACING*
This method shall apply in the purple fill zone on plan. No 'scraping up' with a mechanical excavator shall be carried out. The existing hard surface shall be lifted by hand tools or hand-held power tools only. The underlying sub-base shall be left undisturbed if levels allow and if the sub-base is competent to support the loads envisaged. Otherwise no excavation below the underside of the existing sub-base shall take place. Any such excavation in the existing sub-base shall be by hand tools or hand-held power tools only. The sub-base shall remain intact during demolition phase. The replacement wearing course shall be laid.

LATE CONSTRUCTION and LANDSCAPING PHASE

Please read with plan reference S87-J3-P3, appended.

Method 9: *SLEEPER WALLS with TRELLIS or FENCING TOP*
This method shall apply in zones of brown fill on plan. The planter walls shall be formed from modern railway sleepers (1200mm x 200mm x 100mm or similar) laid flat, to required height, drilled at approx. 1.5m intervals and pinned to substrate with 25mm dia. re-bar or similar. Levelling shall be via minimal excavation (max. 60mm below existing levels), cutting no root greater in diameter than 20mm OR by chocking on hardwood slips / packers, and/or cutting base layer to fit step-wise into any slope. The re-bar shall be driven below the upper face of the topmost sleeper and the hole sealed with timber dowel or other hardwood peg and glued and trimmed flush.

Method 10: *CYCLE SHED / BIN STORE/ ACOUSTIC 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.

For the acoustic enclosure all ducting or services to or from the installation shall be clipped to the existing masonry boundary walls, where within RPAs. In this case this means the RPAs of trees 4, 6, 7, 8, 9. The ducts or services shall not be installed below ground level.

Method 11: *REMEDIAL ROOT TREATMENT*
This method shall apply in the zone of green roundels. Holes in the ground shall be made on a 1m x 1m spacing with a 50mm auger to a depth of 600mm BGL. Screened topsoil (to BS3882:2015 topsoil) mixed with biochar (such as https://www.soilfixer.co.uk/biochar-article) - 5% of the topsoil volume (this equates to about 20 kgs of product per cubic metre of topsoil) shall be backfilled into the augered holes. Earthworm Inoculation Units shall be placed 150mm below ground level at 3m intervals.

Method 12: *TREE PLANTING AREAS*
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 13: ***LANDSCAPING PREPARATION IN ROOT PROTECTION AREAS***
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 150mm below ground level at 5m intervals in all soil build-up areas.

Method 14: ***MAINTENANCE***
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 15: ***REPLACEMENT***
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.

(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……

S87-J3-IA-1

End of main body of report – plans appended.

Dated: 1 April 2022

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

John Cromar

Dip. Arb. (RFS), FArborA, RCArborA

John Cromar's
Arboricultural
Company Ltd.

admin@treescan.co.uk

01582 808020
07860453072

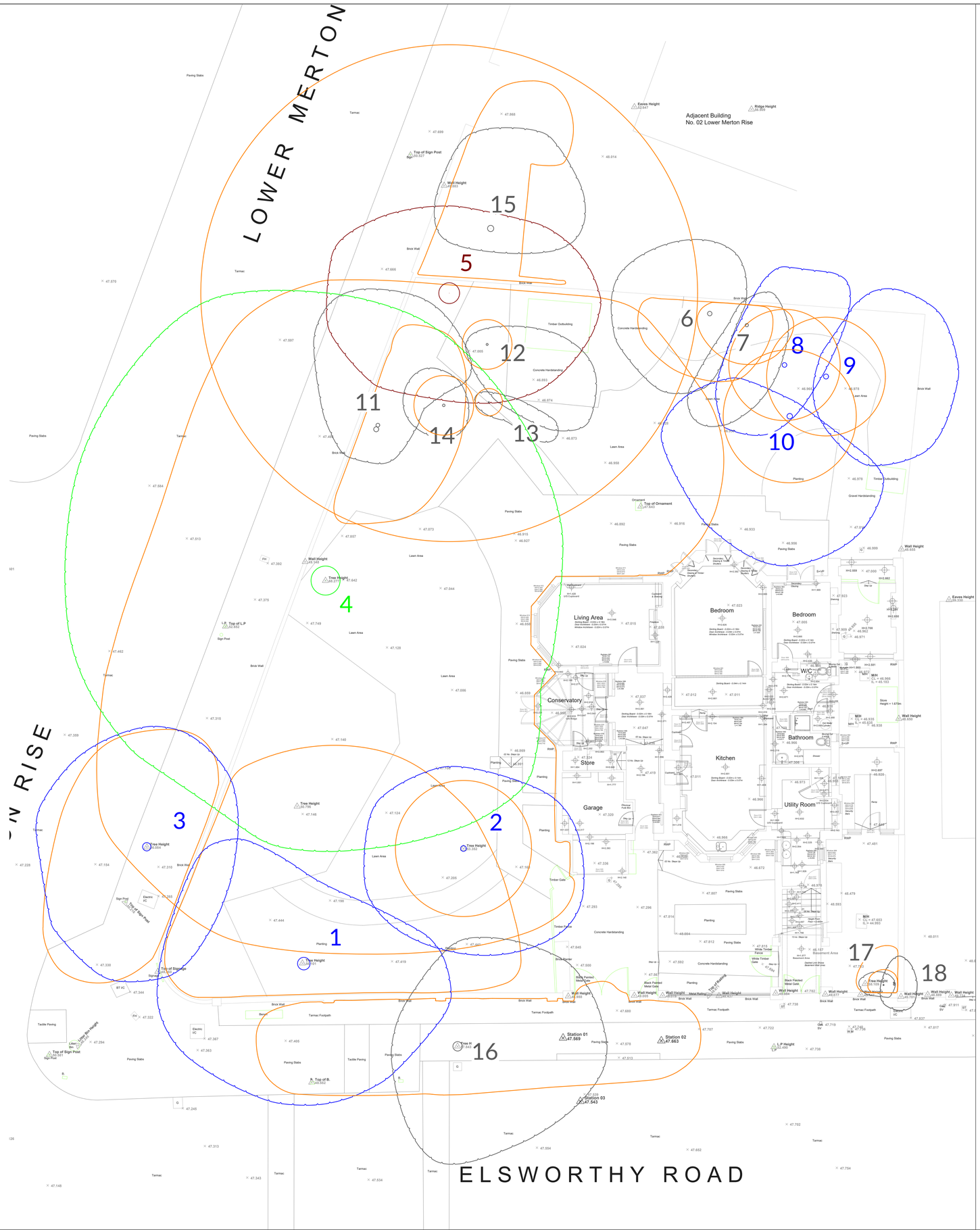
10 Plans

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

S87-J3-P1 v2

S87-J3-P2 v1

S87-J3-P3 v1



JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

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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.
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1:100 scale 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
MOBILE CAD SURVEYING DRG. NO.: 1851 - 01 Lower Ground Floor Plan SUPPLIED

SITE ADDRESS
42 Elsworthy Road, London, NW3 3DL

DRG. REF.	REV. NO.
S87-J3-P1	v2
SCALE & SIZE	DATE
1:100 @ A1	1-Apr-22

0 5

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 S87-J3-IA-2 and to BS 3998:2010 'Tree Work - Recommendations', and in accord with spread line(s) marked on plan.

Method 2: ***TREE PROTECTION FENCING***

This method shall apply where indicated by double 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***

This method shall apply in the zone 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.

OR

To handle loads exceeding 2 tonnes the ground surface shall be covered (in sequence) by a 2D geotextile membrane, such as 'Ekotex'; 100mm of green-source woodchip; 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: ***SITE ACCOMMODATION***

This method shall apply in the red cross zone. Timber baulks such as railway sleepers shall be laid to support temporary modular structures. Any craneage shall be from outside RPAs. No below-ground service connections shall be made, e.g. to toilets: all such piping / ducting / cables shall lie above ground.

Method 5: ***DEMOLITION***

This method shall apply generally. Arisings shall be removed for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

CONSTRUCTION

Method 6: ***SERVICE TRENCHES***

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.

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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.

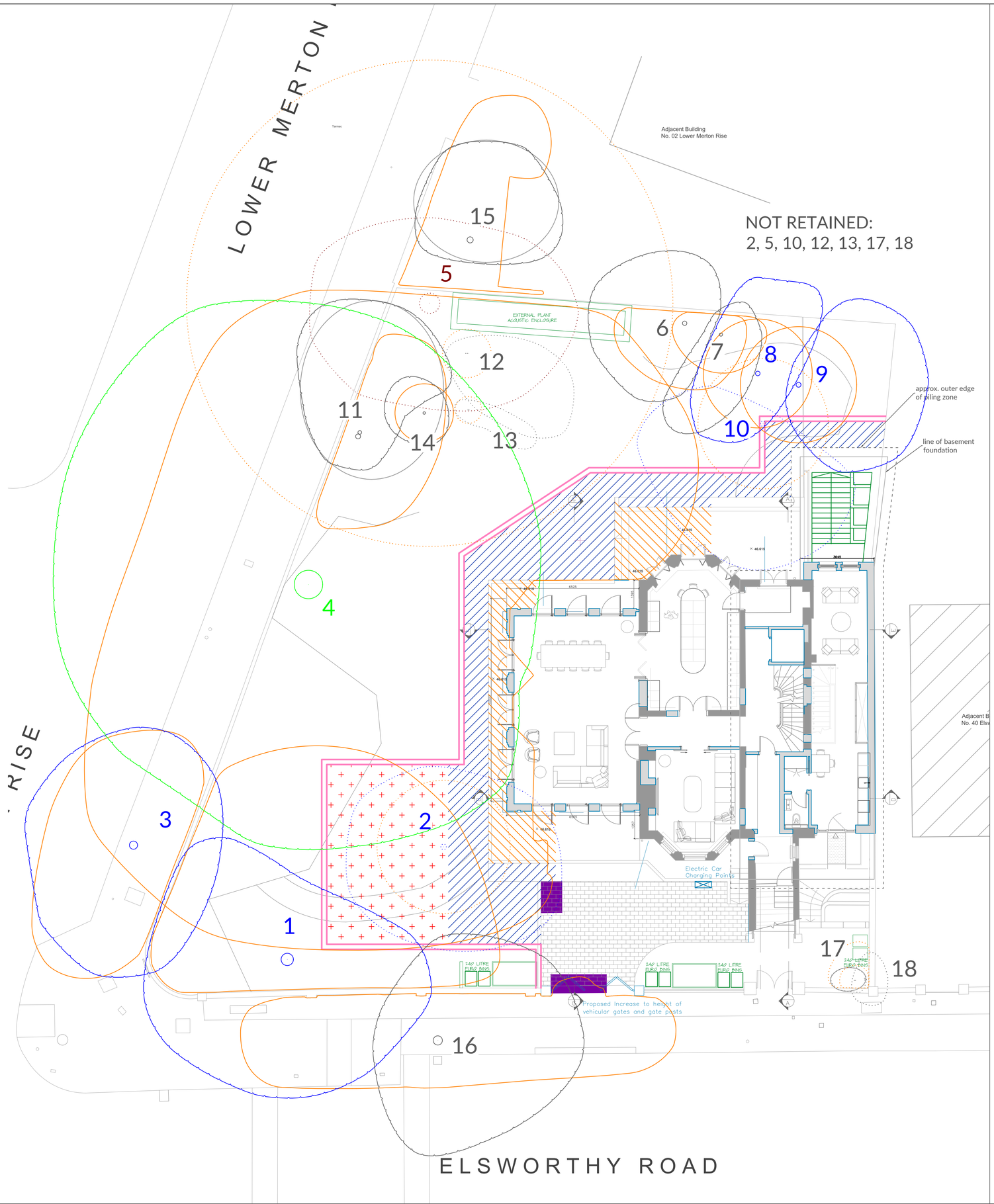
Method 7: ***ROOT PRUNING***

This method shall apply within only the RPA (orange shape) of tree no. 4.

The excavation shall be made with hand tools only. Any roots encountered shall be trimmed to the edge of excavation using a sharp edge tool such as handsaw or secateurs; the cuts shall be made at right angles to the long axis of the root, and in accordance with BS3998:2010, 8.6. An HDPE membrane shall be placed between any root-bearing soil and any wet concrete to be poured. Impermeable sheeting (to exclude wet concrete) shall be laid and secured locally by temporary weighting / taping as required. Concrete casting shall take place without disturbing this protective layer.

Method 8: ***EXISTING HARD SURFACES TO BE SUPERCEDED BY REPLACEMENT HARD SURFACING***

This method shall apply in the purple fill zone on plan. No 'scraping up' with a mechanical excavator shall be carried out. The existing hard surface shall be lifted by hand tools or hand-held power tools only. The underlying sub-base shall be left undisturbed if levels allow and if the sub-base is competent to support the loads envisaged. Otherwise no excavation below the underside of the existing sub-base shall take place. Any such excavation in the existing sub-base shall be by hand tools or hand-held power tools only. The sub-base shall remain intact during demolition phase. The replacement wearing course shall be laid.



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ORANGE SHAPES: Root Protection Areas

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

For planting key please see report.

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

NOTES
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1:100 scale applies **ONLY** when plan **printed at ISO A1 size.**

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TEXT
FOR FULL METHOD DETAILS PLEASE SEE REPORT

BASED ON
WOLFF ARCHITECTS DRG. NO.: 2164-PL-202-0

SITE ADDRESS
42 Elsworthy Road, London, NW3 3DL

DRG. REF.	REV. NO.
S87-J3-P2	v1
SCALE & SIZE	DATE
1:100 @ A1	24-Mar-22

0 5

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 9: ***SLEEPER WALLS with TRELLIS or FENCING TOP***

This method shall apply in zones of brown fill on plan. The planter walls shall be formed from modern railway sleepers (1200mm x 200mm x 100mm or similar) laid flat, to required height, drilled at approx. 1.5m intervals and pinned to substrate with 25mm dia. re-bar or similar. Levelling shall be via minimal excavation (max. 60mm below existing levels), cutting no root greater in diameter than 20mm OR by chocking on hardwood slips / packers, and/or cutting base layer to fit step-wise into any slope. The re-bar shall be driven below the upper face of the topmost sleeper and the hole sealed with timber dowel or other hardwood peg and glued and trimmed flush.

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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.

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Method 11: ***REMEDIAL ROOT TREATMENT***

This method shall apply in the zone of green roundels. Holes in the ground shall be made on a 1m x 1m spacing with a 50mm auger to a depth of 600mm BGL. Screened topsoil (to BS3882:2015 topsoil) mixed with biochar (such as https://www.soilfixer.co.uk/biochar-article) - 5% of the topsoil volume (this equates to about 20 kgs of product per cubic metre of topsoil) shall be backfilled into the augered holes. Earthworm Inoculation Units shall be placed 150mm below ground level at 3m intervals.

Method 12: ***TREE PLANTING AREAS***

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.

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Method 14: ***MAINTENANCE***

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 15: ***REPLACEMENT***

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.

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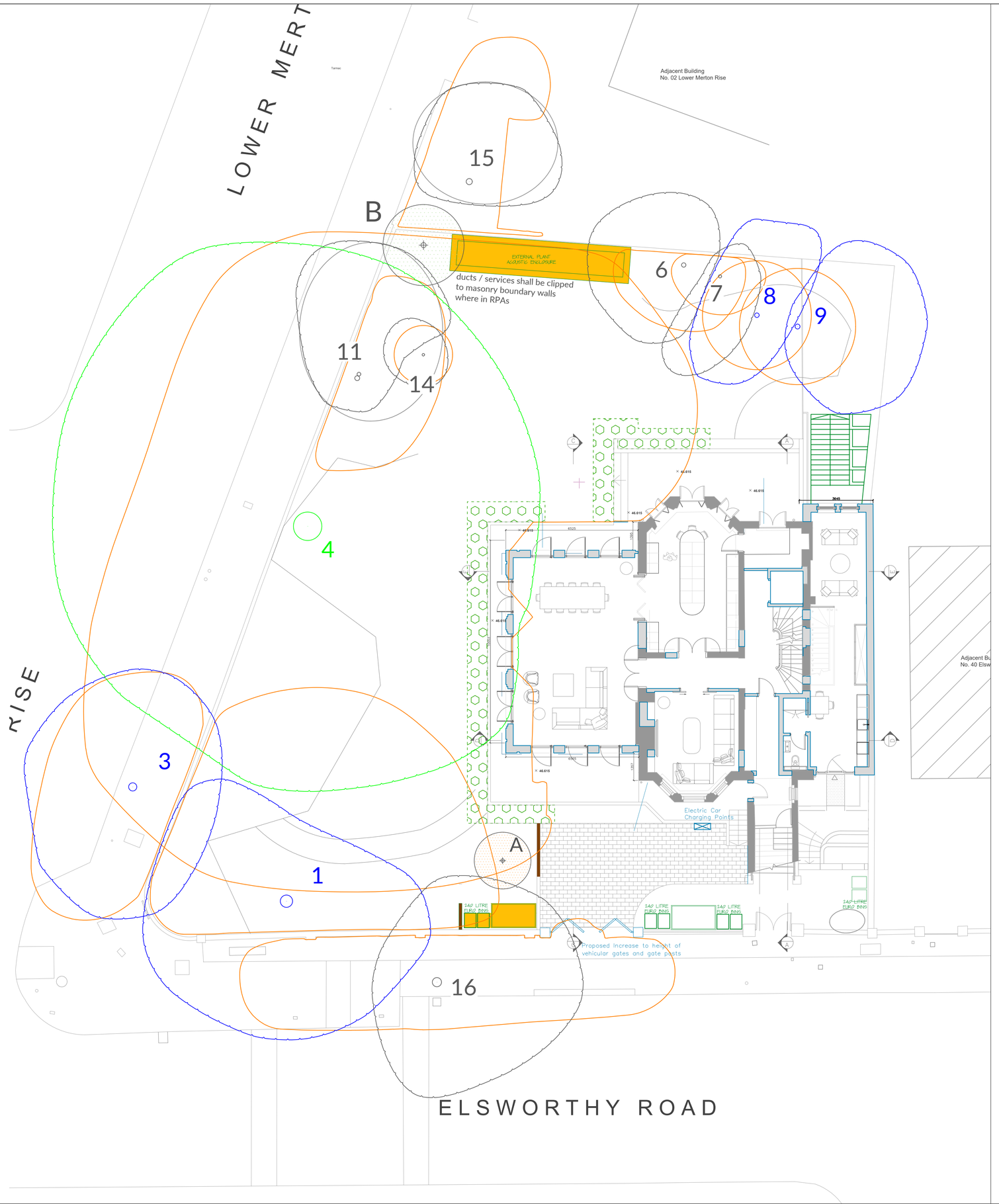

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For planting key please see report.

DRG. NAME
TREE RETENTION & TREE PROTECTION MEASURES (Landscaping Phase)

NOTES
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TEXT
FOR FULL METHOD DETAILS PLEASE SEE REPORT

BASED ON
WOLFF ARCHITECTS DRG. NO.: 2164-PL-202-0

SITE ADDRESS
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DRG. REF.	REV. NO.
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1:100 @ A1	24-Mar-22

0 5