

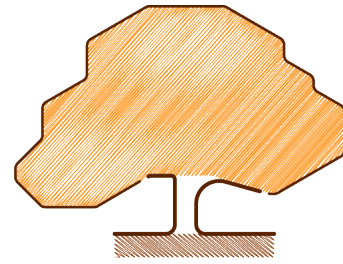
S529-J3-IA-3

REPORT

regarding the impact on trees of proposals for development at
23 Daleham Gardens, London NW3 5BY



View of site from the east



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1 Instructions

I am instructed by Xul Architecture on behalf of clients to make an assessment of tree amenity value and condition of trees at 23 Daleham Gardens, London NW3 5BY and of the impact of a proposal for development (a garden office) on such trees, and to supply an arboricultural methods statement and tree protection plan. The design and access statement / design summary submitted by Xul Architecture describes the scheme further.

2 Executive summary

The impact on trees of the extension and refurbishment scheme proposed, will require a couple of low-quality trees to be removed, and will overall be negligible. All retained trees 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 a modern democracy. 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

This is abbreviated to 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. S529-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.
- S529-J3-P2 and S529-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 on 16th March 2021 in order to carry out an inspection. Weather conditions were fair; they permitted adequate inspection.

4.2 Survey method

I used a tree mallet, spade, diameter tape, laser range-finder, 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

The site is located in a Conservation Area in the London Borough of Camden (Fitzjohns/Netherhall). The only tree that is visible from Daleham Gardens proper is tree 2, hybrid black poplar. It is also visible from the rear elevations of certain properties in Fitzjohns Avenue.

One tree listed is of significant general public amenity value. No other trees actually on the site are of any significant general public amenity value, but some of these are of limited and strictly local amenity value to owners / users of the site, and to those of adjoining properties. (See cover photo / image left).

4.5 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.

4.6 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.

4.7 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.

Tree number	Tree type	Height	Stem diameters	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
1	domestic pear	6	253	3036	29.0	Heavily reduced to around 2.5m approximately 15 years ago	10+	C1
2	hybrid black poplar	21	1000	12000	452.4	High pollarded to around 16m around 2017. The tree stands in the garden adjoining to the west, which lies on Fitzjohns Avenue.	20+	B1
3	silver lime	13	290	3480	38.0	Of rather poor form, dominated by the hybrid black poplar. Pollarded to a height of about 7m probably around 2005.	20+	C1
4	domestic apple	8	330	3960	49.3	The tree has historically taken a lean to the east and has been heavily reduced presumably in order to address this. Growth from the trunk dating from perhaps around 2005 indicates that the tree has more less settled to this position but it remains of very poor form, and low life expectancy.	<10	U
5	common holly	6	150	1800	10.2	No access	40+	C1

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. 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.

This factor is of some relevance in connection with this site. Hybrid black poplars are known to be very deep rooted on, and capable of obtaining water from very deep in, clay soils. This has significance in connection with proposed site features and proposed tree retention.

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. I discussed with the architect certain features of the scheme in this case.

The scheme was fairly extensively amended to remove significant conflicts with trees. 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.

5.4 Assessment of SRP/RPA encroachment

No encroachment on the (below-ground) SRP of any retained tree is entailed. (The terrace and light timber store are constructed above ground level). Some encroachment on the RPA of three retained trees (2, 3 and 5) is entailed, as analysed in the table below:

Tree no.	Tree	RPA area (m ²)	Area affected (m ²)	% affected	Notes
2	hybrid black poplar	452.39	31.39	6.94%	Excavation for proposed structure
2	hybrid black poplar	452.39	25.21	5.57%	Suspended proposed terrace and store
3	silver lime	38.05	0.02	0.05%	Excavation for proposed structure
3	silver lime	38.05	6.48	17.03%	Suspended proposed terrace and store
5	common holly	10.18	0.63	6.19%	Excavation for proposed structure

The excavation proposed is well within tolerances of the trees. Where most of the proposed reduction in levels is proposed, in connection with tree 2, its specific and rather unusual characteristics assist. It is important to note that the concept of root protection area (RPA) as

it exists within the Standard (5837:2012), whilst *prima facie* of a two-dimensional nature, on closer reading, a three-dimensional component, which is clearly more in accord with reality, is recognized in the Standard. For example:

7.6.1 Where it is proposed to form subterranean structures, e.g. basement extensions, within the RPA, it is essential to avoid excavating down through rootable soil if trees are to be retained. In some cases, it might be technically possible to form the excavation by undermining the soil beneath the RPA.

This clearly is based on the concept of the root-bearing soil of the RPA having a certain depth. Thus the RPA is, here, conceptually, rather than a 2-dimensional plate, more like a discus, puck, or traditional round cake. In the case of hybrid black poplar this zone can easily be 2.5m-3m in depth on clay soils. The proposal thus equates to very little overall root loss in the limited reduction in levels as proposed. (See methods in the AMS below for detail).

It is also of note, from the Standard :

7.2.1 To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ. However, limited manual excavation within the RPA might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.

In view of all the above I conclude that both limited excavation and piled footings are permissible from the arboricultural perspective. In this case, thus, 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 change to the RPA around tree 2 is proposed, but these involve suspended decking rather than hard surfacing in contact with the soil. They are lightweight structures, with an air-gap below them. I propose the RPAs are 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 the changes to surfacing entail suspended structures, do not involve significant root cutting, and porous material allowing roots to respire is specified in methods 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 west of the proposed structure. The proposed building / structure is not continuously habited.

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 minor conflicts with pedestrians or construction traffic, nor end-user vehicles will occur.

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 mainly 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 locations:

A = domestic apple 14-16cm girth 85L pot

B = domestic pear 14-16cm girth 85L pot

5.11 Policy compliance

No specific tree policy or supplementary planning guidance (SPG) of the LPA is to hand. No trees are proposed removed and tree protection in accordance with the principles of British Standard 5837:2012 are proposed. It is considered highly likely that the proposals in this report if observed, will facilitate compliance with any such 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 require no trees to be removed, and 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.

7 Sources and relevant documents used

- Ground-level inspection
- Supplied plans:
 - Survey and Engineering Services Ltd. drg. no.: 070321/TOPO
 - XUL Architecture drg. no.: 21011-PA-01 rev. 1
 - Halstead Associates drg. no.: 18423/01

8 Copyright

Copyright is retained by the writer. This is a report for the sole use of the client(s) named above. It may be copied and used by the client 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.

Any schedule of tree work, and the plan or plans, may be reproduced to contractors for the purpose of tendering, or in the case of plans, for setting out 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.

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	Maria Steimberg	XUL Architecture Limited	M.Steimberg@xularchitecture.co.uk	TBC	0207 431 9014
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 S529-J3-P1 v1, S529-J3-P2 v1, S529-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.

There are 14no. methods in this set, to be implemented in the order given unless stated otherwise.

DEMOLITION / PREPARATION

Please read with tree protection plan reference S529-J3-P2, appended.

Method 1: 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.

Tree number	Tree type	Height	Stem diameters	Comments
1	domestic pear	6	253	Remove including stumps
4	domestic apple	8	330	

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 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: DEMOLITION

This method shall apply generally. Demolition of the existing dilapidated garden shed and slab shall be carried out with hand tools or hand-held power tools only. Arisings shall be removed by hand barrow / hand for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

Method 3: TREE PROTECTION FENCING

Tree protection fencing shall be erected, directly after removal of the dilapidated shed and slab, consisting of 'Heras' type fencing (weld-mesh panels), each section securely attached to uprights driven at least 0.6m into ground, as per the layout as shown on the plan (pink lines). No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines. The standard rubber supports ('elephant's feet') shall if used, be as per BS 5837:2012 section 6, figure 3, right, that is, pinned to the substrate with re-bar. The fencing shall include, as indicated on plan, the protection of an area where planting is proposed.

Where required to infill odd sections, tree protection fencing may be varied to >1.8m high hoarding of >11mm thick manufactured board and timber uprights >50mm x 100mm, no part of any of which is to be attached to any tree.

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. No breaching or moving of the protective fences shall take place without the approval of an arboriculturist.

Method 4: GROUND SURFACE HANDLING and PROTECTION

This method shall apply in the zone cross 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.

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

Figure 3 Examples of above-ground stabilizing systems

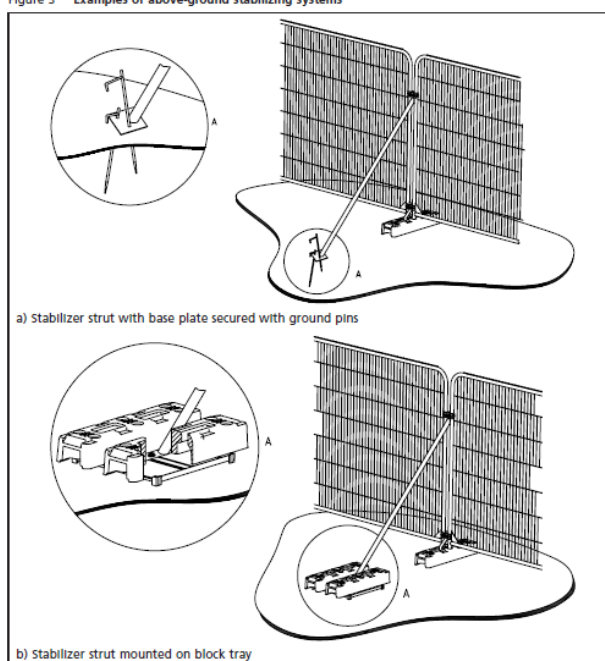


Figure 1 BS 5837:2012 section 6, figure 3

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 5: ROOT PRUNING

This method shall apply within the zone of **brown** crosses. 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.

Method 6: REMEDIAL ROOT TREATMENT

This method shall apply in the zone of **brown** crosses. 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.

CONSTRUCTION

Please read with tree protection plan reference S529-J3-P3, appended.

Method 7: TREE PROTECTION FENCING

Tree protection fencing (**pink** lines on plan) shall be maintained/adjusted, as per Method above.

Method 8: GROUND SURFACE HANDLING and PROTECTION

Ground protection (**blue** cross hatch on plan) shall be maintained/adjusted as per Method above.

Method 9: 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.

Method 10: SUSPENDED TIMBER SUPERSTRUCTURE- MAIN OUTBUILDING, DECKING and GARDEN EQUIPMENT STORE

This method shall apply in the zone of **green crosses** on plan. Reduction of ground level shall take place according to the levels shown on the plan appended and as per Method 5. The trial pits to determine pile locations shall be dug with hand tools only. N.b. The precise location of piles is flexible within a dimension determined by the retained engineer, namely not less than 300mm in any direction in plan. 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 hole is dug. It shall be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent completion of trial pit, as this would be sufficient reason to terminate the operation and consider its purpose complete or would entail the moving of the trial pit to a different location. If a root > 20mm diameter is inadvertently damaged, it shall be retained *in situ* for appraisal by the arboriculturist. Trial pits to determine suitable pile locations shall be taken to 0.6m below ground level. When trial pits are complete and pile locations have been fixed, the whole area shall be treated as per Method 4 above, except where each of the pile locations lies, where an opening 400mm square centred on the trial pit may be left. The upper 3m of conventional piles shall be sleeved within root protection areas to prevent contact with wet concrete and roots. Movements of piling rigs and any other wheeled or tracked plant within RPAs shall be restricted to areas protected as per Method 4. Any delay between trial pit finishing and pile and superstructure work SHALL instigate the COMPLETE coverage of the entire zone on plan as per Method 4 above. A void-former shall be laid after piling is complete. (Any services shall be laid within this space.) The slab shall be cast. The superstructure shall be constructed.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 11: GROUND PREPARATION FOR 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. 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. 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 12: 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 shall be composed of biochar (such as <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 by hand-barrow: no mechanical plant shall over-run the loose-tipped material. All growing medium handling 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 shall be placed 150mm below ground level at 5m intervals in all soil build-up areas.

Method 13: 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 14: 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.....

End of main body of report – plans appended.

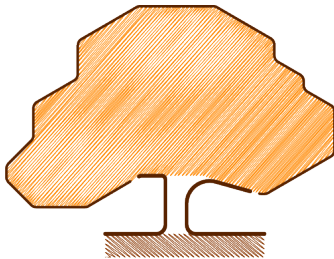
Dated: 25th January 2022

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

A handwritten signature in black ink, appearing to read 'John Cromar', with a long, sweeping horizontal stroke extending to the right.

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.

S529-J3-P1 v1

S529-J3-P2 v1

S529-J3-P3 v1

1

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.

DEMOLITION / PREPARATION

Method 1: TREE WORK

Tree work shall be in accordance with the schedule in report, and to BS 3998:2010 'Tree Work - Recommendations', and in accord with spread line marked on plan.

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 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: DEMOLITION

This method shall apply generally. Demolition of the existing dilapidated garden shed and slab shall be carried out with hand tools or hand-held power tools only. Arisings shall be removed by hand barrow / hand for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

Method 3: TREE PROTECTION FENCING

Tree protection fencing shall be erected, directly after removal of the dilapidated shed and slab, consisting of 'Heras' type fencing (weld-mesh panels), each section securely attached to uprights driven at least 0.6m into ground, as per the layout as shown on the plan (pink lines). No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines. The standard rubber supports ('elephant's feet') shall if used, be as per BS 5837:2012 section 6, figure 3, that is, pinned to the substrate with re-bar. The fencing shall include, as indicated on plan, the protection of an area where planting is proposed.

Where required to infill odd sections, tree protection fencing may be varied to >1.8m high hoarding of >11mm thick manufactured board and timber uprights >50mm x 100mm, no part of any of which is to be attached to any tree.

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. No breaching or moving of the protective fences shall take place without the approval of an arboriculturist.

Method 4: GROUND SURFACE HANDLING and PROTECTION

This method shall apply in the zone cross 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.

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.

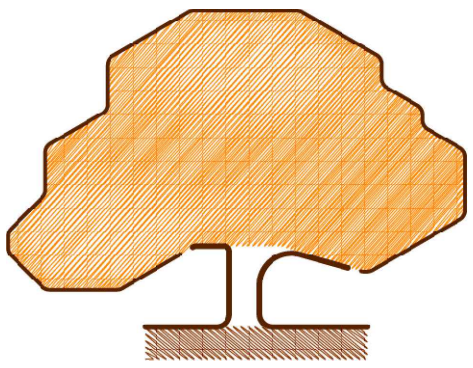
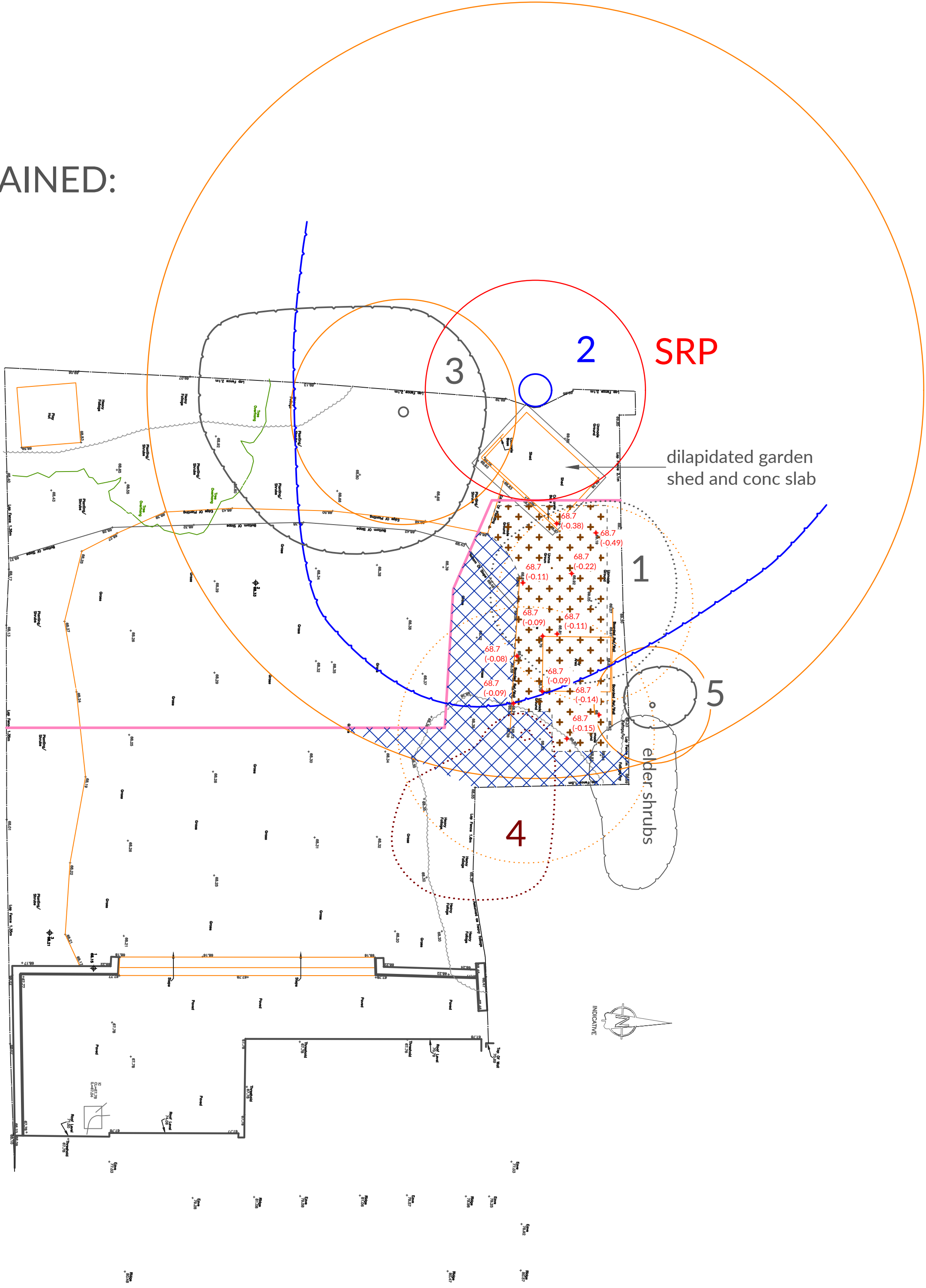
Method 5: ROOT PRUNING

This method shall apply within the zone of brown crosses. 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.

Method 6: REMEDIAL ROOT TREATMENT

This method shall apply in the zone of brown crosses. 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.

NOT RETAINED:
1, 4



JOHN CROMAR'S
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COMPANY
LIMITED

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HR5 3RN.
at Wheatley, Oxford
& Harpenden, Herts.

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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.

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

NOTES
Do not use for setting out purposes.
All dimensions to be checked on site.
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 METHOD DETAILS
PLEASE SEE REPORT

BASED ON
SURVEY AND ENGINEERING
SERVICES LTD. DRG. NO.:
070321/TOPO SUPPLIED
SITE ADDRESS
23 Daleham Gardens, London,
NW3 5BY

DRG. REF. S529-J3-P2	REV. NO. v1
SCALE & SIZE 1:100 @ A1	DATE 21-Jan-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.

CONSTRUCTION

Method 7: TREE PROTECTION FENCING

Tree protection fencing (**pink** lines on plan) shall be maintained/adjusted, as per Method above (see plan ref. S529-J3-P2v1).

Method 8: GROUND SURFACE HANDLING and PROTECTION

Ground protection (**blue** cross hatch on plan) shall be maintained/adjusted as per Method above (see plan ref. S529-J3-P2v1).

Method 9: 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.

Method 10: SUSPENDED TIMBER SUPERSTRUCTURE- MAIN OUTBUILDING, DECKING and GARDEN EQUIPMENT STORE

This method shall apply in the zone of **green crosses** on plan. Reduction of ground level shall take place according to the levels shown on the plan appended and as per Method 5 (see plan ref. S529-J3-P2v1). The trial pits to determine pile locations shall be dug with hand tools only. N.b. The precise location of piles is flexible within a dimension determined by the retained engineer, namely not less than 300mm in any direction in plan. 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 hole is dug. It shall be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent completion of trial pit, as this would be sufficient reason to terminate the operation and consider its purpose complete or would entail the moving of the trial pit to a different location. If a root > 20mm diameter is inadvertently damaged, it shall be retained *in situ* for appraisal by the arboriculturist. Trial pits to determine suitable pile locations shall be taken to 0.6m below ground level. When trial pits are complete and pile locations have been fixed, the whole area shall be treated as per Method 4 (see plan ref. S529-J3-P2v1), except where each of the pile locations lies, where an opening 400mm square centred on the trial pit may be left. The upper 3m of conventional piles shall be sleeved within root protection areas to prevent contact with wet concrete and roots. Movements of piling rigs and any other wheeled or tracked plant within RPAs shall be restricted to areas protected as per Method 4 (see plan ref. S529-J3-P2v1). Any delay between trial pit finishing and pile and superstructure work SHALL instigate the COMPLETE coverage of the entire zone on plan as per Method 4 (see plan ref. S529-J3-P2v1). A void-former shall be laid after piling is complete. (Any services shall be laid within this space.) The slab shall be cast. The superstructure shall be constructed.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 11: GROUND PREPARATION FOR TREE PLANTING AREAS

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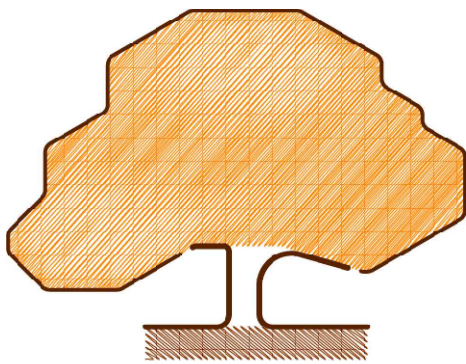
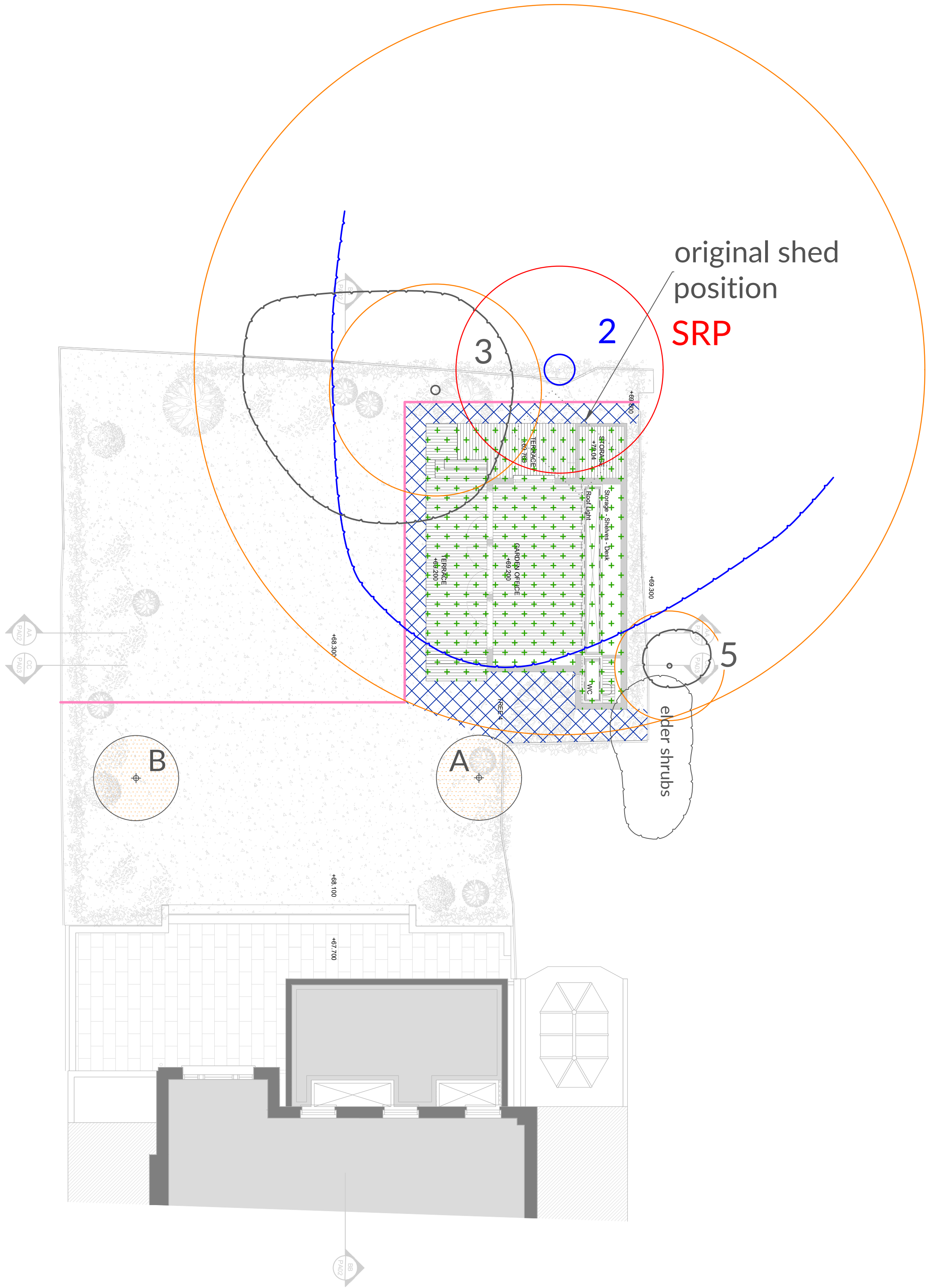
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Method 14: REPLACEMENT

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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TEXT
FOR FULL METHOD DETAILS
PLEASE SEE REPORT

BASED ON
XUL ARCHITECTURE DRG. NO.:
21011-PA-01 rev. 1 SUPPLIED

SITE ADDRESS
23 Daleham Gardens, London,
NW3 5BY

DRG. REF. S529-J3-P3	REV. NO. v1
SCALE & SIZE 1:100 @ A1	DATE 25-Jan-22
0	5