S1060-J1-R-1

REPORT

regarding the impact on trees of proposals for development
at
4 Morford Close, Ruislip HA4 8SW

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View of site from the south

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Contents

1 Instructions

I am instructed by Afshana Ali of The Market Design and Build on behalf of clients to make an assessment of tree amenity value and condition of trees at 4 Morford Close, Ruislip HA4 8SW and of the impact of a proposal for development (side and rear extensions) on such trees, and to supply an arboricultural methods statement and tree protection plan for use in supporting an application for local planning authority (LPA below) consent. The design and access statement / design summary submitted by The Market Design and Build describes the scheme.

2 Executive summary

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

The scheme will require no trees to be removed.

All retained trees will be easily protected from harm during the project.

3 Introduction

3.1 The environmental role of Local Planning Authorities

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

3.2 British Standards

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

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

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

3.4 How the Standard is used by an arboriculturist

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

a) to assess the value, in terms of amenity, of the trees on and adjoining a particular site, whether such trees are formally protected or not, for example by reason of being in a Conservation Area or because they are scheduled within a Tree Preservation Order.

(Both of these provisions are part of the Town and Country Planning Act 1990, part VIII.);

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

3.5 How the arboriculturist prepares tree protection methods

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

3.6 Classification of trees

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

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

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

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

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

3.7 Root protection area

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

3.8 Use of appended plans

The appended plans have different applications:

- Plan reference no. S1060-J1-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.

- S1060-J1-P2 is the 'tree protection plan' (TPP) referred to in the Standard (section 3.11). It is 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 2023 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 rangefinder, pocket retractable tape, binoculars, scaling pole, tree data recording software, pen, pencil and paper. No trees were climbed: inspection was from ground level.

4.3 Appraisal identification

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

4.4 Amenity / Screening by trees and shrubs

Some trees listed are visible from Morford Close.

Certain trees listed are of some general public amenity value. Items in or adjacent to the rear garden are not of any significant general public amenity value, but some of these and some hedges are of strictly local amenity value to owners / users of the site, and to those of adjoining properties. (See cover photo / photos below).

4.5 Statutory constraints

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

The site stands within the Eastcote Conservation Area.

There are no Tree Preservation Orders on / adjoining the site.

4.6 Soil assessment

The British Geological Survey (BGS) information for the area indicates that the underlying sub-soil is London Clay Formation - Clay, silt and sand.

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

4.7 Measurements on site

Tree heights estimated by scaling pole.

Tree diameters measured as per the Standard, Annex C.

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

4.8 Tree data table

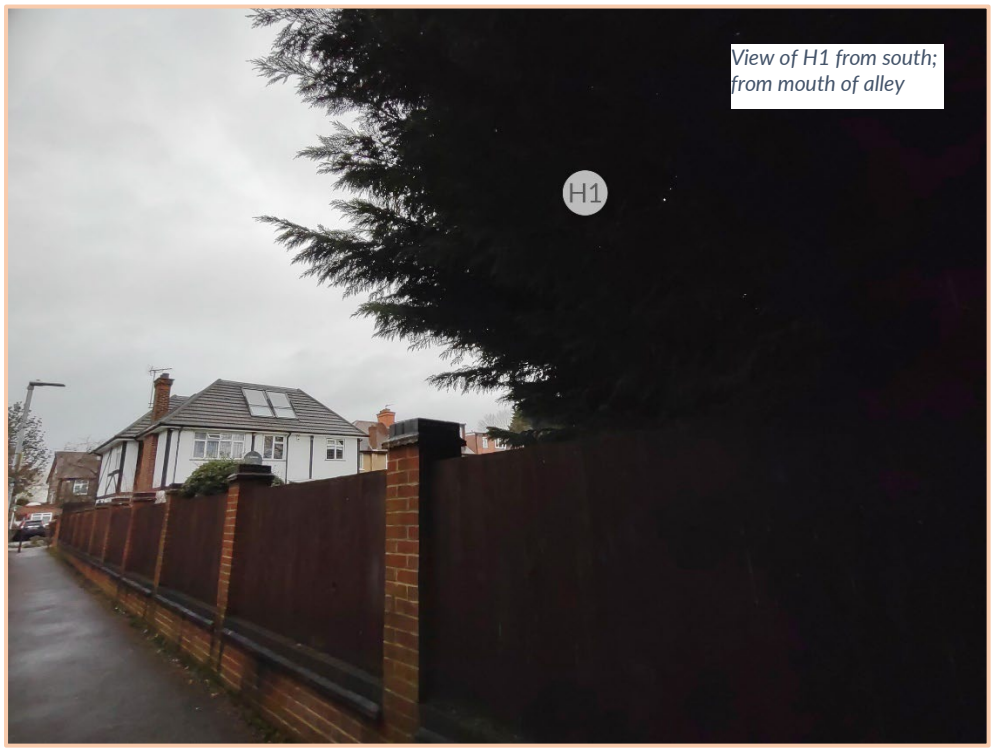
This is the core of the report in terms of site observations. In all cases, in the absence of negative comment below on health/vitality and structure of trees, normal physiological condition (health) and structural condition applies. Unless stated otherwise, 'tap tests' on the trunk-bases, etc., for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

Tree number	Tree type	Height (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value category
H1	Leyland cypress hedge	9				Some value as a screen between dwelling and rear elevation of the house to which they belong. Trunk diameters and RPAs as per plan. It should be noted that the hedge is of considerable thickness and even without extensive branch-overhang above the site, would still provide an adequate screen visually. Please note that British Standard 5837:2012 does not require categorisation of hedges. It is accepted that this hedge has some screening function.	20+	C2
2	hawthorn	9	250, 150, 100	3698	43.0	No access. Provides (in large part by reason of the ivy infestation) some screen between the site and adjoining dwelling.	20+	C1
G3	common ash	14				Some local ornamental value but not important in the landscape. Trunk diameters and RPAs as per plan.	20+	B2
H4	Leyland cypress hedge	12				Some value as a screen. Trunk diameters and RPAs as per plan. This hedge has considerable screening function.	20+	B2
5	Leyland cypress	6	450	5400	91.6	Very poor form.	20+	C1
6	domestic pear	5	150, 150	2545	20.4	Very low vitality.	<10	U
7	domestic apple	2	70, 70	1187	4.4	Dominated by 5.	10+	C1

Tree number	Tree type	Height (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value category
8	domestic apple	4.5	190	2280	16.3	Small; not significant in landscape.	10+	C1
9	Lawson cypress	8	275	3300	34.2	Locally ornamental.	20+	C1

4.9 Photos

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



View of H1 from south; from mouth of alley

View of H1 from the south

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Views of trees from within rear garden

5 Arboricultural impact assessment (AIA)

5.1 RPAs – modifications to shape

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

This factor is of some relevance in connection with this site. A nearby structure (garage) has likely affected the RPAs, as indicated on plans. The proximity of the garage to H1; the lack of any subsidence damage experienced during the owners' occupation; the lack of any report of such damage all indicate strongly that no significant roots of H1 exist below it. Most of the roots of H1 have probably been diverted by the existing footings of the garage. The shapes of the root systems of trees have probably not been unusually affected by subsoil type. The factor or factors above have some significance in connection with proposed tree protection, and are reflected in the TPP provided. The presence of shrinkable soil will be a design consideration in terms of type and/or depth of footings near trees.

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.

No need arose in this case to discuss, as I found no significant conflicts with trees worthy of retention, q.v. below.

5.3 The static root plate (SRP) compared with RPA

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

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

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

Tree no.	Tree	RPA area (m^2)	Area affected (m^2)	% affected	Notes
1	Leyland cypress hedge	40.72	7.00	17.19%	Proposed extension (expressed as single figure related to single 300mm stem).
2	hawthorn	42.98	8.10	18.85%	Proposed extension
3	common ash	55.42	0.65	1.17%	Proposed extension (bottom 350mm stem)

In view of the above I conclude that no special footings are needed from the arboricultural perspective. No significant effect on the screening function of hedge H1 is assessed as likely. Design of footings should take account of the need to address the potential for soil drying by H1 near the structure. 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 Perception of trees by building users

The majority of the significantly-sized retained trees are located to the general north of the proposed extended dwelling. This is an essentially favourable orientation: it means that the dwelling is typically very well lit by both direct sunlight and sky factor during all of the year. The proposed extended dwelling is in an almost identical position in relation to the trees as is the existing structure.

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

5.6 Superstructure and tree appraisal – tree pruning

In accordance with the Standard, section 4.4.2.5 (f), I note from my site visit and the drawings supplied that no significant encroachment by the superstructure on the crowns of retained trees will occur.

5.7 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.

5.8 Policy compliance

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

Hillingdon Local Plan

Planning Obligations SPD

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

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

6 Conclusion

6.1 Summary

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

6.2 Note to LPA

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

7 Sources and relevant documents used

- Ground-level inspection
- Supplied plans:
    - The Market Design & Build drg. no.: A102B
    - The Market Design & Build drg. no.: A202

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	Afshana Ali	The Market Design and Build	afshana@themarketdesignbuild.com	TBC	0203 715 5892
arboriculturist	John Cromar	John Cromar's Arboricultural Co. Ltd.	johncromar@treescan.co.uk	07860 453072	01582 808020

B. Induction and personnel awareness of arboricultural matters

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

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

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

D. Procedures for dealing with variations and incidents

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

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

As per tree protection methods below.

F. How problems will be reported and solved

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

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

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

9.3 Implementation on site

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

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

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

9.4 Tree-friendly construction methods and awareness document

Section 9.4 including all the methods below should be printed out; the plans to full scale, and kept readily to hand on site. (To be read and duly completed:) I the undersigned builder / site agent / main contractor have been given a copy of the tree protection measures reproduced below and the plans S1060-J1-P1 v1 and S1060-J1-P2 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 8no. methods in this set, to be implemented in the order given unless stated otherwise.

PREPARATION / DEMOLITION

Please read with tree protection plan reference S1060-J1-P2, appended.

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

Tree number	Tree type	Height (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m^2)	Comments
H1	Leyland cypress hedge	9				Reduce overhang on south side as indicated on plan
2	hawthorn	9	250, 150, 100	3698	43.0	

NOTES:

- In Conservation Areas, in accordance with TCP Act 1990 Section 211, a formal notification to the LPA is required of intention to prune or remove any trees, the removal of which is not strictly required for the construction proposed to take place. 42 days after formal notification should be allowed before proceeding with the notified work, during which time (and after) the LPA may place a Tree Preservation Order (TPO) on the tree, thus requiring a formal application for any works to living wood. N.B. No notification required in this case; the items in question are not within a Conservation Area.

- 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.

Method 2: ***TREE PROTECTION FENCING (Aim of method: to provide protection for trunks, branches and roots during demolition operations and construction)***
Tree protection fencing shall be erected, 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 6.2.2, figure 3, below; that is, pinned to the substrate with re-bar.

Below the crowns of trees with branches extending to less than 2m above ground level, in order to avoid unnecessary pruning, it is permissible to replace sections with manufactured boards at least 11mm thick (hoarding), attached securely to timber uprights driven at least 0.6m into the ground, providing the finished fence stands at least 1.5m above ground level.

Figure 3 Examples of above-ground stabilizing systems

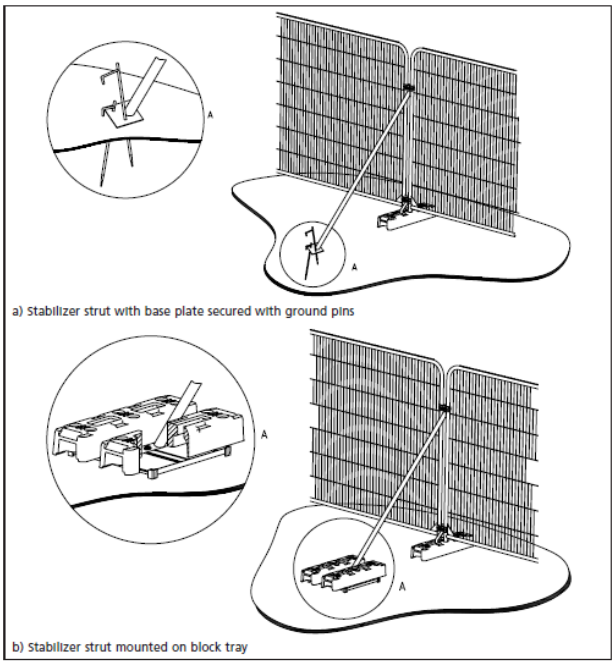

Figure 1 BS 5837:2012 section 6, figure 3

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.

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

OR

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

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

Method 4: *DEMOLITION (Aim of method: to prevent asphyxiation and contamination of roots during demolition operations)*
This method shall apply generally. Demolition, which shall be by 'top down, sides in' method, shall be carried out with hand tools or hand-held power tools only. Arisings shall be removed for disposal off site. None shall be spread in root protection areas (orange shapes/circles).

CONSTRUCTION

Method 5: *SERVICE TRENCHES (Aim of method: to limit and control root damage during services installation close to tree roots)*
N.b. This applies to ALL services: Electricity, gas, water, etc. Existing services shall be utilised wherever possible.

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

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

Method 6: ***ROOT PRUNING (Aim of method: to limit and control root cutting during below-ground installation/construction)***
This method shall apply within only the RPAs (orange shapes/circles) of H1, 2 and G3. 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 (i.e., within the RPAs) 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.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 7: ***FOOTPATH, DRIVEWAY (various finishes possible)***
This method shall apply in zones hatched red on plan. No 'scraping up' with a mechanical excavator shall take place. No wheeled or tracked machinery shall be used: construction shall be by means of hand tools/hand-held power tools. No reduction of levels shall take place, except to remove any wearing surface where a competent sub-base is to be retained and utilized. Edge restraint shall be formed from tanalised timber pinned to substrate with tanalised timber pegs or similar.

'NIDAGRAVEL' - allows a gravel finish where a firm walkover experience is required

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

OR

POROUS TARMAC

A fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Then a 3D pocket type geotextile 75mm or 100mm deep, dependant on envisaged loads, backfilled with 20-40mm CLEAN STONE – NO FINES (typically sold as 'track ballast'). A further fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the tarmac to be laid. The porous tarmac layer shall then be applied. Total thickness over existing ground level can thus be as little as 100-120mm.

OR

SLABS

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

Method 8: *WELFARE FACILITY*

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

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

Name [print]:

For construction company:

Date:

Signature……

S1060-J1-R-1

End of section 9.4 document

End of main body of report – plans appended.

Dated: 20 March 2023

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

John Cromar

Dip. Arb. (RFS), FArborA

JOHN CROMAR'S
ARBORICULTURAL
COMPANY LTD

www.treescan.co.uk
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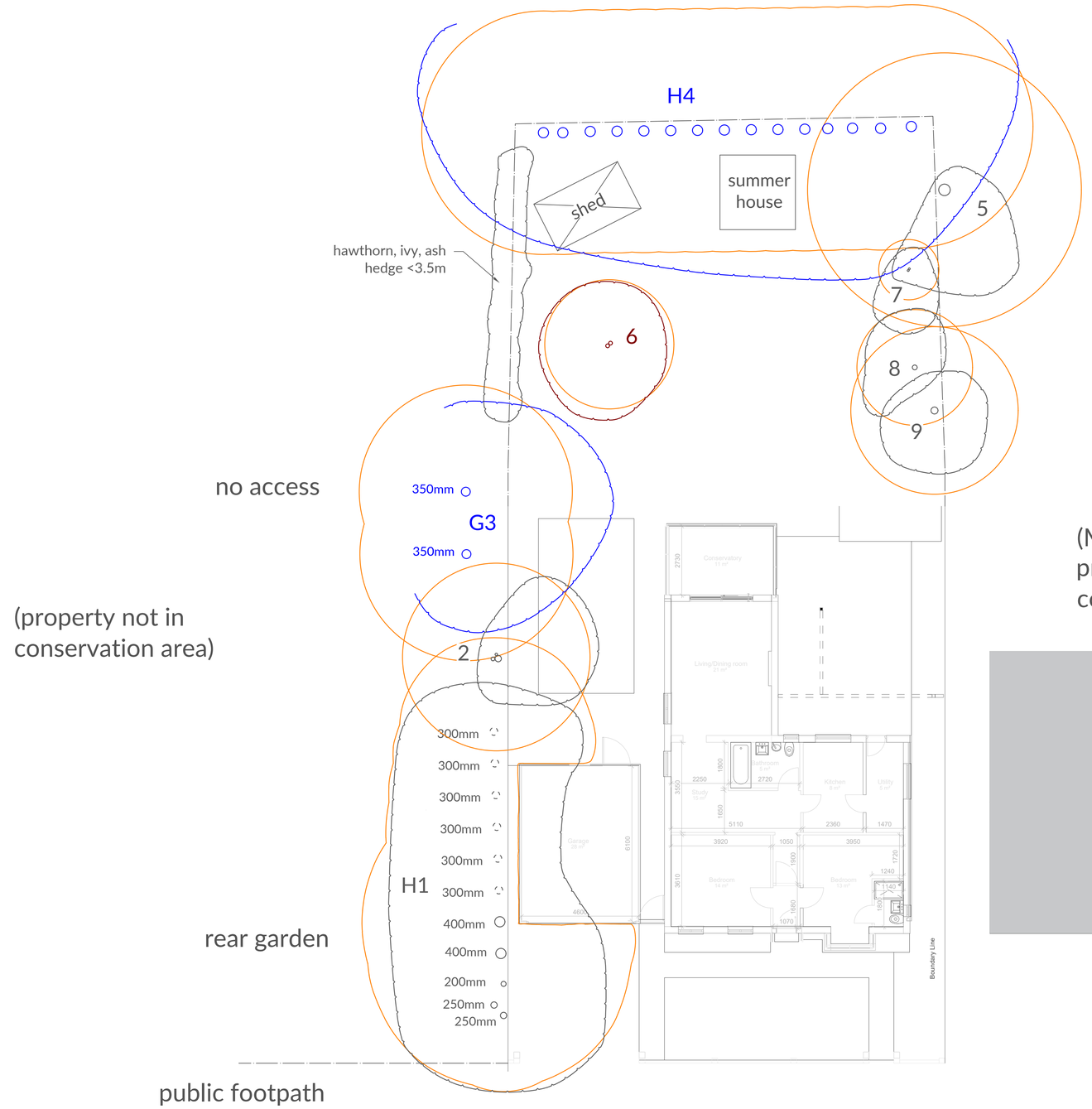
01582 808020
07860453072

10 Plans

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

S1060-J1-P1 v1

S1060-J1-P2 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.
All dimensions to be checked on site.

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

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

TEXT
FOR FULL DETAILS OF TREE VALUE PLEASE SEE REPORT

BASED ON
THE MARKET DESIGN & BUILD DRG. NO.: A102 GROUND FLOOR SUPPLIED

SITE ADDRESS
4 Morford Close, Ruislip, HA4 8SW

DRG. REF.	REV. NO.
S1060-J1-P1	v1
SCALE & SIZE	DATE
1:200 @ A1	20-Mar-23

0 5 10

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

PREPARATION / DEMOLITION

Method 1: ***SCHEDULE OF TREE WORK***
Tree work shall be in accordance with the schedule within report S1060-J1-IA-1 and to BS 3998:2010 'Tree Work - Recommendations', and in accord with spread line(s) marked on plan.

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

Tree protection fencing shall be erected, 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 6.2.2, figure 3; that is, pinned to the substrate with re-bar.

Below the crowns of trees with branches extending to less than 2m above ground level, in order to avoid unnecessary pruning, it is permissible to replace sections with manufactured boards at least 11mm thick (hoarding), attached securely to timber uprights driven at least 0.6m into the ground, providing the finished fence stands at least 1.5m above ground level.

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.

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

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

OR

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

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

Method 4: ***DEMOLITION (Aim of method: to prevent asphyxiation and contamination of roots during demolition operations)***

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

CONSTRUCTION

Method 5: ***SERVICE TRENCHES (Aim of method: to limit and control root damage during services installation close to tree roots)***

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

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

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

   OR

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

Method 6: ***ROOT PRUNING (Aim of method: to limit and control root cutting during below-ground installation/construction)***

This method shall apply within only the RPAs (orange shapes/circles) of H1, 2 and G3. 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 (i.e., within the RPAs) 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.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 7: ***FOOTPATH, DRIVEWAY (various finishes possible)***

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

'NIDAGRAVEL' - allows a gravel finish where a firm walkover experience is required

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

OR

POROUS TARMAC

A fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. This shall be 'no fines', granite or other hard stone, such as 'track ballast'. Then a 3D pocket type geotextile 75mm or 100mm deep, dependant on envisaged loads, backfilled with 20-40mm CLEAN STONE - NO FINES (typically sold as 'track ballast'). A further fine-mesh geogrid such as Tensar 'TriAx' shall be laid. The grid size shall be sufficiently small to retain the tarmac to be laid. The porous tarmac layer shall then be applied. Total thickness over existing ground level can thus be as little as 100-120mm.

OR

SLABS

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

Method 8: ***WELFARE FACILITY***

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

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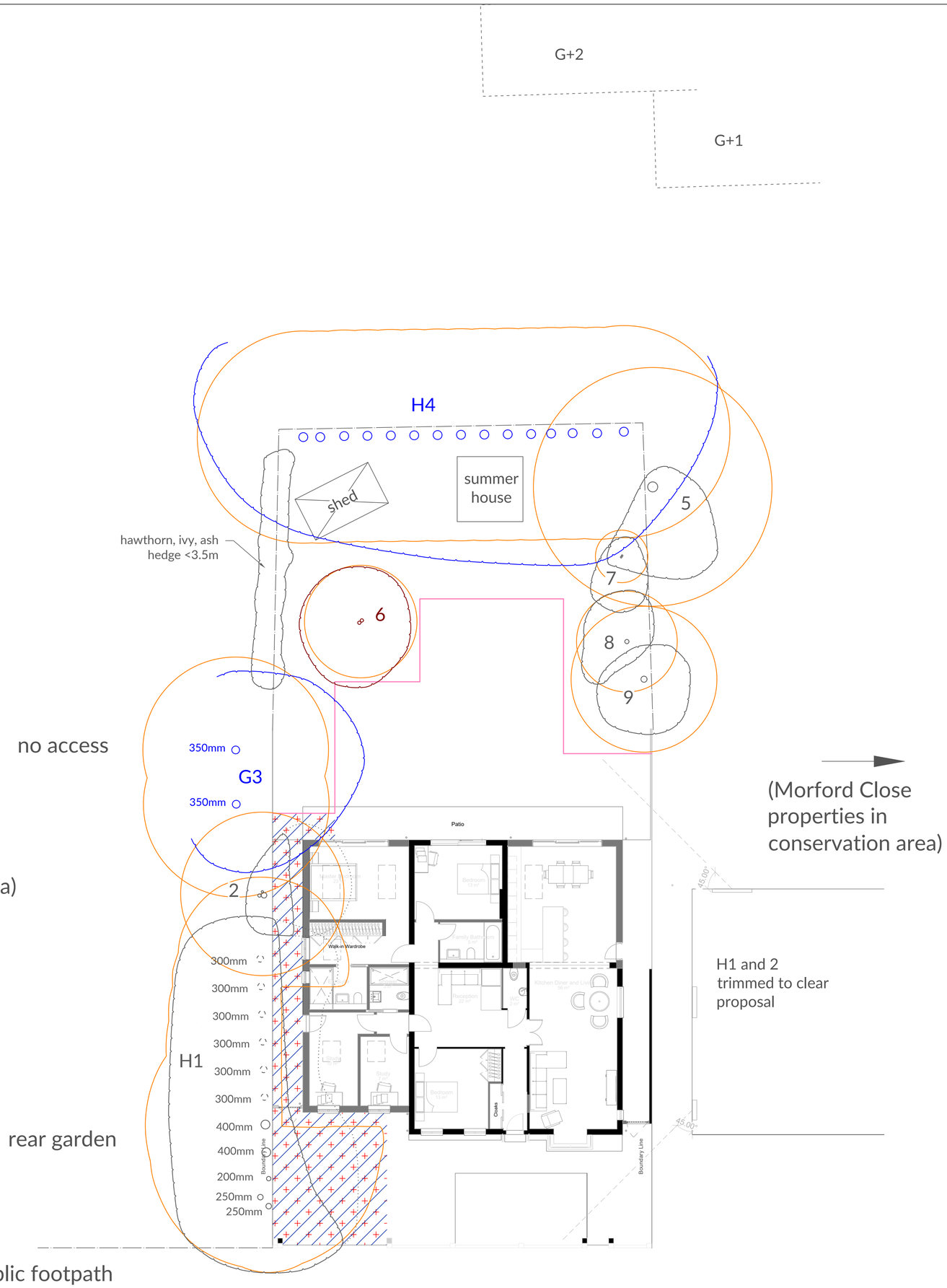

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DRG. NAME
TREE RETENTION & TREE PROTECTION MEASURES (Construction Phase)

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TEXT
FOR FULL METHOD DETAILS PLEASE SEE REPORT

BASED ON
THE MARKET DESIGN & BUILD DRG. NO.: A102B SUPPLIED

SITE ADDRESS
4 Morford Close, Ruislip, HA4 8SW

DRG. REF.	REV. NO.
S1060-J1-P2	v1
SCALE & SIZE	DATE
1:200 @ A1	20-Mar-23

0 5 10