1-38-4894

R E P O R T

on the impact on trees

of proposals for development

at

21 The Drive, Ickenham, UB10 8AF

(30th December 2019)

JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

The Old School
Titley
HR5 3RN
at Wheatley, Oxford & Harpenden, Herts.

TEL 01582 80 80 20
FAX 01544 231 006
MOB 07860 453 072

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

Registered Consultant of the Arboricultural Association
John Cromar, Dip. Arb. (RFS), F.Arbor A.

AA Registered CONSULTANT trees.org.uk

01
Introduction and Instructions

I am instructed by Ten Point Five Architecture on behalf of clients to make an assessment of tree amenity value and condition of trees at 21 The Drive, Ickenham, UB10 8AF and of the impact of a proposal for development (a replacement dwelling) on such trees. Accordingly, I visited the property on 21st October, 2019 in order to carry out an inspection.

02
Copyright

02.01

03
Notes

03.01
PLANS

1-38-4894/P1 gives an approximate representation (in plan) of actual crown form, and is intended to indicate the relationship of neighbouring trees to each other, and should be read with the comments on crown shape and tree value in TREE DETAILS appended. The plan gives a quick reference assessment of value as per section 4, table 1, of BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'. Assessment of value in the TREE DETAILS table appended is, in accordance with this British Standard related mainly but not exclusively to the criterion of *visual value to the general public*. The Standard recommends a way of classifying trees when assessing their potential value in relation to proposed development. Some surveys may not include any trees of one or more categories. Table 1 suggests categories 'U', 'C', 'B' and 'A' , in ascending merit. 'U' (RED crown outline on plan) category trees are dangerous \ low value trees that could require removal for safety or arboricultural reasons. 'C' (GREY or black/uncoloured crown outline on plan) category trees are of no particular merit, but in adequate condition for retention. 'A' category trees (GREEN crown outline on plan) are trees of high vitality or good form, or of particular visual importance: 'B' (BLUE crown outline on plan) category are good trees but may be of slightly poorer form or be not sited as importantly as 'A' category trees. See TREE DETAILS appended. Category Assessment appears in column 10. This standard also provides a way of determining an area (see TREE DETAILS column 7) – the RPA – root protection area - around the trunk of the tree in which protective measures should be used in order to prevent significant damage to trees. There are various ways of achieving this. A simple way is to use exclusion fencing, but other methods have been shown by established use to be very effective.

03.02
1-38-4894/P2 and 1-38-4894/P3 are colour-coded to indicate where arboricentric methods are proposed during the demolition and construction processes.

04
Sources and Documents

Ground level inspection.
Supplied plans :
SV Surveying Ltd. drg. no.: 19218-19-01
Ten Point Five Architecture drg. no.: C314-10 rev. B2, C314-12 rev. B2

05
Appraisal

05.01
AMENITY / SCREENING BY TREES AND SHRUBS
Certain trees are of significant general public amenity value, as they are visible from The Drive, a private road to the east of the site. Some trees may be visible as partial / skyline features from more distant public viewpoints. Certain trees are of considerable strictly local amenity value as screening / softening features to owners / users of the site, and to those of adjoining properties.

05.02
TREES AND LAYOUT - POTENTIAL FOR CONFLICT WITH ROOTS
(Details appear in the tree detail table appended.) The figures in columns 5 and 6 in the Tree data table appended indicate the root protection area ('RPA' below), and typically the basic exclusion fence position. 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 BS 5837:2012 (section 7.4.2) supports 'up and over' methods of construction where appropriate. The design principle of this method is outlined within Arboricultural Practice Note 12 (Through the Trees to Development, - a revision of APN 1, 1996, published originally by AAIS / Tree Advice Trust). This method has been used for many years on the recommendation of John Cromar's Arboricultural Co. Ltd. and has successfully allowed the retention of mature trees very close to construction activities.

05.03
RPA is an abbreviation used in BS5837:2012, signifying the *root protection area*. An assessment as per BS5837:2012 section 4.6.2 has been carried out in connection with the plotting of all RPAs of all trees. (This section requires that site conditions such as location of structures, tree mechanics, etc., are taken into account in determining the likely position of roots.)

05.04
ROOTS and DESIGN
SRP is an abbreviation for *static root plate*, (after *Mattheck*, 1991, etc.) a radial dimension derived from trunk diameter based on studies of wind-thrown trees and thus a guide to where *structurally* significant roots are likely to be located. The RPA is a guide to where *systemically* significant roots are likely to be located.

Minor encroachment on the RPA of one item is entailed, as analysed in the table below :

Tree no.	Tree	RPA area (m^2)	Area affected (m^2)	% affected	Notes
9	hazel	39.30	3.62	9.21	Proposed structure

In the writer's now extensive experience gained over more than a third of a century in arboriculture, controlled, limited-extent, vertical root cutting of this kind is of little or no significance to tree health. The actually damaging operations are those that degrade or compact the ground surface within the RPA, for example by uncontrolled access by mechanical excavators, dumpers, etc.

It should be noted that the very limited root cutting entailed in this proposal is, by an order of magnitude, far less than that entailed in the commercial moving of maturing and even mature trees, which has been practised successfully for centuries.

In view of the above I conclude that no special footings are needed from the arboricultural perspective. In this case all trees to be retained can be adequately protected by exclusion fencing and arboricentric methods as proposed below to reduce impacts on root systems of retained trees.

05.05
PERCEPTION OF TREES
The majority of the significantly-sized retained trees are located well to the SE and NW of the proposed dwelling building. The proposed replacement 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 has been considered (as sections 5.3.4 and 5.6.2.6 of BS 5837:2012 recommend) and appear not to be negative factors.

05.06
SUPERSTRUCTURE AND TREE APPRAISAL - TREE PRUNING
I note from the drawings supplied that some minor encroachment on G7 (effectively a hedge) will occur. It is of note however that the form of the trees is such that the defining branch structure is well above or clear of the proposed building line. The minor pruning required is of no importance to the health or appearance of the retained items, and can easily be addressed by tree surgery in

accordance with BS5837:2012 5.3.4 (c) NOTE 2, 7.7.3, etc., and is within the bounds of good arboricultural practice / British Standard 3998:2010 'Tree work – Recommendations'. A schedule for the use of a contractor appears below.

05.07
TREE REMOVAL APPRAISAL and REPLACEMENT PLANTING
Please see section 08 for comments on the individual trees proposed for removal. Tree 10 is in poor mechanical condition (see image left). Appropriate replacement tree planting will play some role in providing for future, mainly local, amenity. The British Geological Survey information for the area indicates that the underlying sub-soil is sand and gravel. This places no significant constraint on species selection for tree and other planting. See plan for location:

A= Judas tree – (*Cercis siliquastrum)* 12-14cm girth, 85 L pot

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

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

05.08
PUBLISHED GUIDANCE IN RELATION TO TREES AND DEVELOPMENT
In conserving trees on development sites, expected best practice is as in B.S. 5837 : 2012. Section 5.1.1 notes :

"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."

05.09
The above advice appears to have been considered in formulating proposals for development.

05.10
CONCLUSION
I conclude that the construction proposed, subject to precautionary measures as outlined above and as per the recommendations outlined below, will not be injurious to trees to be retained, nor will require any trees of significant public amenity value to be removed. Any tree losses will be satisfactorily addressed by proposed planting.

06
TREE PROTECTION

06.01
OVERVIEW

It is highly important to tree health and vitality that construction activities are carried out strictly in accordance with the tree protection methods specified below. It is widely not understood that a **single** traverse of a root protection area by a mechanical excavator can cause SIGNIFICANT and PERMANENT (albeit temporarily invisible) damage to trees.

Any such machinery, including, for example, tracked piling rigs, shall be kept at ALL times outside the root protection areas (RPAs) as indicated in the **Tree data** table appended, and/or shall be subject to ARBORICENTRIC METHODS below.

Fences to protect trees shall be respected as TOTAL EXCLUSION fences. Hence, before any site activity, **including demolition**, the fence lines shall be complete.

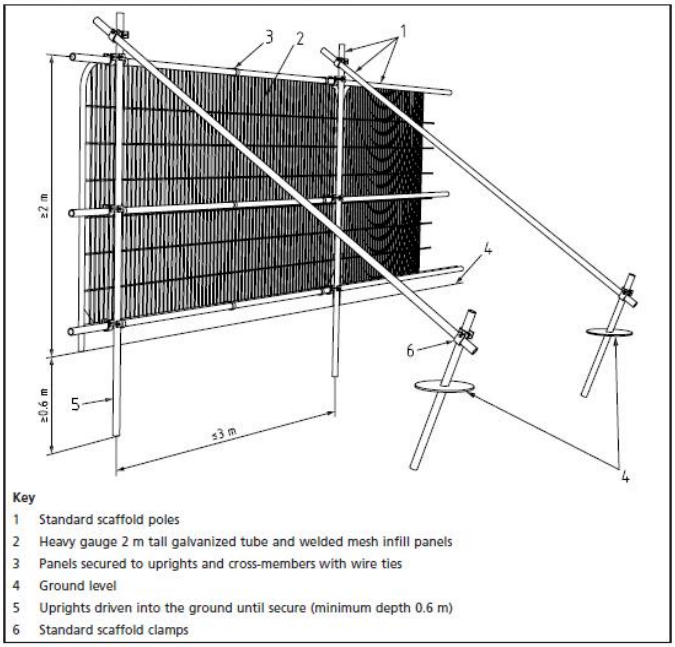
Protective fencing and any temporary protection of ground surfaces will have to be removed in due course to allow finishing of landscaping, paving, etc., but this shall not take place until all need for vehicular access to the site has passed, and shall be agreed with arboriculturist / planners on site during progress of works.

PREPARATION / DEMOLITION

PLEASE READ WITH PLAN REFERENCE 1-38-4894/P2, APPENDED.
The Methods shall be implemented in the order given unless it is stated to the contrary.

Method 1 : TREE WORK
Tree work shall be in accordance with the provided specification and good arboricultural practice, and to BS 3998:2010 'Tree Work - Recommendations' and in accord with spread line marked on plan. Branches shall be pruned to clear 5m above ground level. Dead wood shall be removed where overhanging the site. The stumps of certain trees (see SCHEDULE appended) shall be removed by mechanical stump grinder, not by mechanical excavator.

Figure 2 **Default specification for protective barrier**



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

Method 2 : TREE PROTECTION FENCING
This method shall apply where indicated by pink lines. Tree protection fencing shall be erected, in accordance with the heavy-duty specification - BS5837:2012 section 6.2.2.2., Figure 2 : No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines.
No fires shall be made on any part of the site, or within 20m of any tree to be retained. No storage of materials shall be made within the protective fences.

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

If loads exceed that of pedestrians, a 2D geotextile membrane, such as 'Ekotex' shall be laid; 150mm of green-source woodchip; continuously

abutted scaffold boards and a layer of manufactured board at least 25mm thick screwed to the underlying scaffold board so as to completely cover this area This area may be used for pedestrian-operated plant up to 2 tonnes in weight.

OR

To handle loads exceeding 2 tonnes the ground surface shall be covered (in sequence) by a 2D geotextile membrane, such as 'Ekotex' ; 100mm of green-source woodchip ; TuffTrak^{R} Euromat ground guards or similar appropriate temporary trackway sections. The temporary trackways shall be fixed together with manufacturers' approved fixings. On completion of build phase the ground guards shall be lifted by hand or by plant standing outside the zone.

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

Method 4 : DEMOLITION
This method shall apply generally. Demolition 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

PLEASE READ WITH PLAN REFERENCE 1-38-4894/P3, APPENDED.
The Methods shall be implemented in the order given unless it is stated to the contrary.

Method 5 : 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 circles).

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

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

Method 6 : ROOT PRUNING
This method shall apply within only the RPAs (orange circles) of items G7 and 9. The excavation shall be made with hand tools only. Any roots encountered shall be trimmed to the edge of excavation using a sharp edge tool such as handsaw or secateurs; the cuts shall be made at right angles to the long axis of the root, and in accordance with BS3998:2010, 8.6. An HDPE membrane shall be placed between any root-bearing soil and any wet concrete to be poured. Impermeable sheeting (to exclude wet concrete) shall be laid and secured locally by temporary weighting / taping as required. Concrete casting shall take place without disturbing this protective layer.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 7 : GATE PIER EXCAVATIONS - ROOT SLEEVING THROUGH PADS
This method shall apply in the zone of cyan fill (at each pad location). Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Where roots more than 20mm diameter are unearthed in the pad locations they shall be wrapped in bubble wrap, which shall not be wound tightly against the root. All edges shall be sealed with insulating or gutter tape (not packing tape). This sleeving both protects the root and forms a compressible layer when wet concrete is poured. The sleeving shall be chased into the sides of the pit (where the root enters the soil face) for a distance of about 50mm and the entry point ring-sealed with expanding foam. A 25mm minimum thickness of wrap shall be fixed around the roots to be preserved. This protection shall be carried out progressively as the pad pit is dug, so as to protect roots from casual damage during excavation. The pit shall be lined with an impermeable membrane to prevent contact between wet concrete and root-bearing soil. The concrete pad shall be cast and the gate pier constructed above.

Method 8 : HARD SURFACING (various finishes possible)
This method shall apply in zones hatched red on plan. No reduction of levels shall take place. No wheeled or tracked machinery shall be used : construction shall be by means of hand tools. NO reduction in existing ground levels shall take place – no 'scraping up' with or without a mechanical excavator.

SLABS
A 2D geotextile such as 'Treetex' type, shall be laid directly on the ground surface. Levels can be corrected by use of granite chippings NO

FINES. Paving shall be laid open-jointed and the joints rammed with granite chippings.

RESIN-BOUND GRAVEL DRIVEWAY
Edge restraint shall be formed from tanalised timber pinned to substrate with tanalised timber pegs or similar. Levels can be corrected by use of granite chippings NO FINES. A separating layer of non-woven geotextile such as 'Ekotex' shall be laid over the level correction layer, then a proprietary resin-bound gravel system.

Method 9 : GROUND PREPARATION FOR TREE PLANTING AREAS
This method shall apply after completion of main build only. Ground preparation for tree planting area 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 10 : 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. Mulch shall be topped up when depleted to a maximum depth of 100mm.

Method 11 : 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).

07
General

If conflicts between any part of a tree and the building(s) arise in the course of development these can often be resolved quickly and at little cost if a qualified arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can spoil design aims and can of course affect saleability, and reflect poorly on the construction and design personnel involved. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development.

2nd January 2020
Signed:

John C. M. Cromar, **Dip.Arb.(RFS) F.Arbor A.** **01582 808020 / 07860 453072**

APPENDICES

08
Tree Data

Tree number	Tree type	Height	Height to lowest branch	Stem diameters	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value
1	deodar	14	3.5	680	8160	209.2	Probably the most important tree from the amenity perspective in the cohort surveyed; stands on presumably on private communal land but outside the site curtilage. It is proposed that tree protective measures extend during any construction period to this zone to prevent potential damage by construction vehicles.	40+	A2
2	sumac	3		110, 90	1705	9.1	Shrubby items	20+	C1
3	sumac	3		110, 70	1564	7.7		20+	C1
4	Lawson cypress	14	2.8	497	5964	111.7	Rather unthrifty tree with evidence of minor chronic fungal infection and affecting older foliage; crown density about 50% below normal. Damaged roots.	10+	C1
G5	holly, yew, laurel	10					Hedged group. Diameters and RPA as plan	20+	B2
H6	beech hedge	5					Useful screen hedge.	20+	B2

Tree number	Tree type	Height	Height to lowest branch	Stem diameters	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value
G7	Lawson cypress 'Golden Wonder'	9		<150 *			* see plan for RPA. No access. Unthrifty especially close to neighbours garage which it appears has damaged roots.	10+	C2
H8	common laurel	2					Hedge. Potential for greater height and screening.	20+	C2
9	hazel	7		140, 140, 140, 100, 100, 80, 80	3537	39.3	Shrub-form	20+	C1
10	sycamore	12.5		280, 250, 290	5692	101.8	Ivy-infested ; very poor form; tight forks developing. A problematic tree in terms of patio use, owing to aphid secretions.	40+	C1
11	privet	6					Hedge. Some screening function.	10+	C2
12	Scots pine	9.5		425	5100	81.7	Moribund	<10	U
13	turkey oak	16		700	8400	221.7	Large, possible minor landscape component from more distant viewpoints	40+	B1
14	Lawson cypress	8		170, 170	2884	26.1	Poor form ; snow damaged	20+	C1
G15	Lawson cypress	7		<160	1920	11.6	Likely planted with the intention of forming a hedge. Dominated by 13	20+	C2
G16	Lawson cypress	10		<180, <180	3054	29.3	Likely planted with the intention of forming a hedge.	20+	C2

Tree number	Tree type	Height	Height to lowest branch	Stem diameters	Radius of RPA if circle (mm)	RPA (m^2)	Comments	Life expectancy (years)	Assessed BS5837 value
17	purple beech	10		490	5880	108.6	Possible minor landscape component from more distant viewpoints	40+	B1
18	beech hedge	10					Neglected hedge	40+	C2

In all cases, in the absence of negative comment on vitality and structure, normal systemic and physiological condition should be considered to apply.

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.

09
Schedule

Trees at 21 The Drive, Ickenham, UB10 8AF

Please read in conjunction with plan 1-38-4894/P2. Boundaries where marked should always be treated as notional, and no statement either implied or explicit as to the ownership of trees should be taken as definitive or precise.

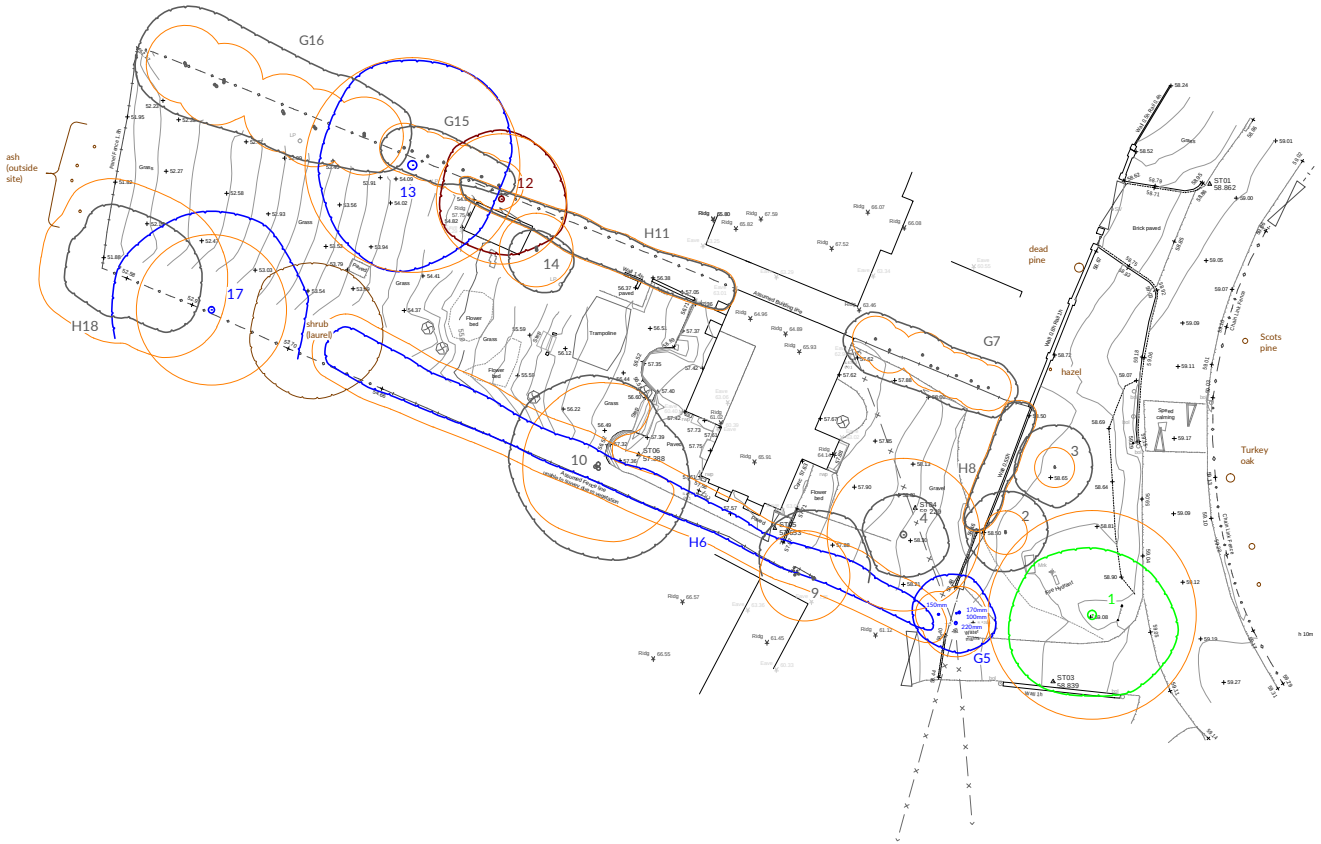
Tree number	Tree type	Height	Height to lowest branch	Stem diameters	Comments
4	Lawson cypress	14	2.8	497	Remove including stump.
H6	beech hedge	5			Reduce in spread on NE side only as indicated on plan.
G7	Lawson cypress 'Golden Wonder'	9		<150*	Reduce in spread to boundary line at NW extremity only and on SW side only.
9	hazel	7		140, 140, 140, 100, 100, 80, 80	Reduce in spread to boundary line on NE side only
10	sycamore	12.5		280, 250, 290	Remove : grind stump to 300mm below ground.
11	privet	6			Remove ESE extremity only as indicated on plan.

NOTES:
This schedule notifies the LPA, where such notification is required, of intention to prune or remove trees in accordance with TCP Act 1990 Section 211. 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 on the tree(s), thus requiring a formal application for any works to living wood.

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.

10
Plans

1-38-4894/P1 v2
1-38-4894/P2 v2
1-38-4894/P3 v5



JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

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

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

AA Registered CONSULTANT

KEY TO COLOURS/LINETYPES USED IN RELATION TO TREES

GREEN - High Value
BLUE - Moderate Value
BLACK - Low Value
RED - Remove/Very short life expectancy
ORANGE SHAPES: Root Protection Areas

TOOTHED LINE: Tree spread line

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

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

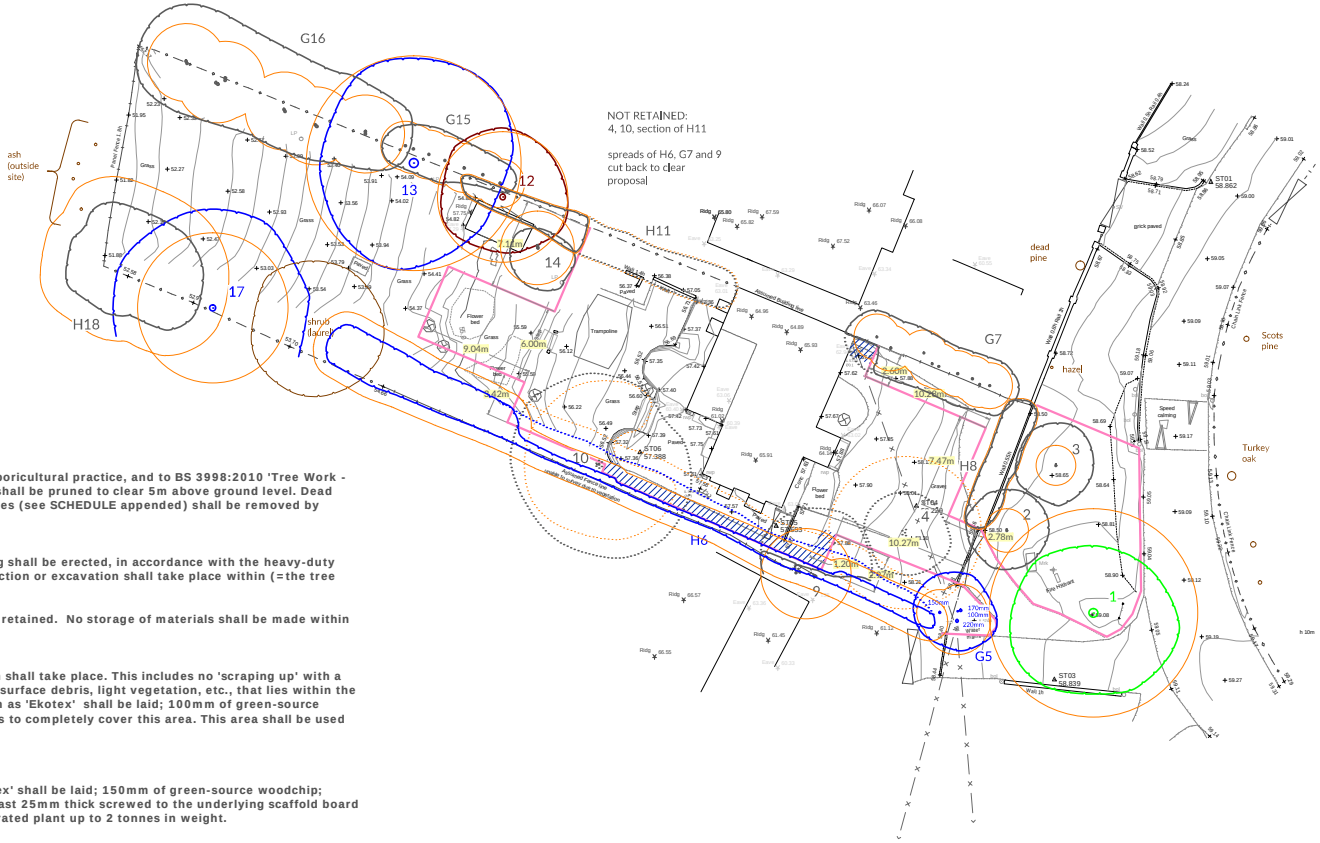
TEXT
FOR FULL DETAILS OF TREE VALUE PLEASE SEE REPORT

BASED ON
SV SURVEYING LTD DRG. NO.: 19218-19-01 SUPPLIED

SITE ADDRESS
21 The Drive, Ickenham, UB10 8AF

DRG. REF.	REV. NO.
1-38-4894/P1	v2
SCALE & SIZE	DATE
1:200 @ A1	25-Oct-19

0 5 10



PREPARATION / DEMOLITION

Method 1 : TREE WORK
Tree work shall be in accordance with the provided specification and good arboricultural practice, and to BS 3998:2010 'Tree Work - Recommendations' and in accord with spread line marked on plan. Branches shall be pruned to clear 5m above ground level. Dead wood shall be removed where overhanging the site. The stumps of certain trees (see SCHEDULE appended) shall be removed by mechanical stump grinder, not by mechanical excavator.

Method 2 : TREE PROTECTION FENCING
This method shall apply where indicated by pink lines. Tree protection fencing shall be erected, in accordance with the heavy-duty specification - BS5837:2012 section 6.2.2.2., Figure 2 : No ground levels reduction or excavation shall take place within (=the tree side of) the fence lines.

No fires shall be made on any part of the site, or within 20m of any tree to be retained. No storage of materials shall be made within the protective fences.

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

OR

If loads exceed that of pedestrians, a 2D geotextile membrane, such as 'Ekotex' shall be laid; 150mm of green-source woodchip; continuously abutted scaffold boards and a layer of manufactured board at least 25mm thick screwed to the underlying scaffold board so as to completely cover this area This area may be used for pedestrian-operated plant up to 2 tonnes in weight.

OR

To handle loads exceeding 2 tonnes the ground surface shall be covered (in sequence) by a 2D geotextile membrane, such as 'Ekotex' ; 100mm of green-source woodchip ; TuffTrakR Euromat ground guards or similar appropriate temporary trackway sections. The temporary trackways shall be fixed together with manufacturers' approved fixings. On completion of build phase the ground guards shall be lifted by hand or by plant standing outside the zone.

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

Method 4 : DEMOLITION
This method shall apply generally. Demolition 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).

JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

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

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

AA Registered CONSULTANT

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

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

TEXT
FOR FULL METHOD DETAILS PLEASE SEE REPORT

BASED ON
SV SURVEYING LTD DRG. NO.: 19218-19-01 SUPPLIED

SITE ADDRESS
21 The Drive, Ickenham, UB10 8AF

DRG. REF.	REV. NO.
1-38-4894/P2	v2
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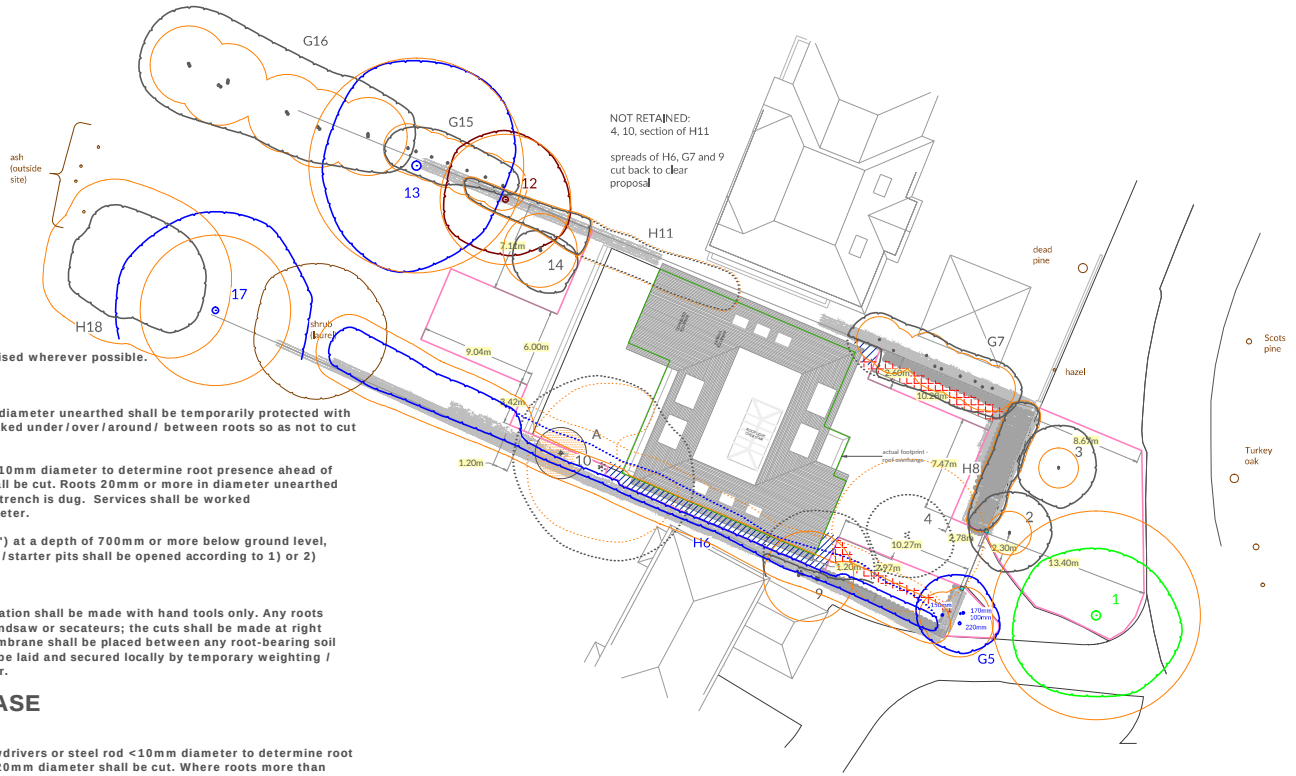
0 5 10



CONSTRUCTION

Method 5 : 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 circles).

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

Method 6 : ROOT PRUNING
This method shall apply within only the RPAs (orange circles) of items G7 and 9. The excavation shall be made with hand tools only. Any roots encountered shall be trimmed to the edge of excavation using a sharp edge tool such as handsaw or secateurs; the cuts shall be made at right angles to the long axis of the root, and in accordance with BS3998:2010, 8.6. An HDPE membrane shall be placed between any root-bearing soil and any wet concrete to be poured. Impermeable sheeting (to exclude wet concrete) shall be laid and secured locally by temporary weighting / taping as required. Concrete casting shall take place without disturbing this protective layer.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 7 : GATE PIER EXCAVATIONS - ROOT SLEEVING THROUGH PADS
This method shall apply in the zone of cyan fill (at each pad location). Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. No roots over 20mm diameter shall be cut. Where roots more than 20mm diameter are unearthed in the pad locations they shall be wrapped in bubble wrap, which shall not be wound tightly against the root. All edges shall be sealed with insulating or gutter tape (not packing tape). This sleeving both protects the root and forms a compressible layer when wet concrete is poured. The sleeving shall be chased into the sides of the pit (where the root enters the soil face) for a distance of about 50mm and the entry point ring-sealed with expanding foam. A 25mm minimum thickness of wrap shall be fixed around the roots to be preserved. This protection shall be carried out progressively as the pad pit is dug, so as to protect roots from casual damage during excavation. The pit shall be lined with an impermeable membrane to prevent contact between wet concrete and root-bearing soil. The concrete pad shall be cast and the gate pier constructed above.

Method 8 : HARD SURFACING (various finishes possible)
This method shall apply in zones hatched red on plan. No reduction of levels shall take place. No wheeled or tracked machinery shall be used : construction shall be by means of hand tools. NO reduction in existing ground levels shall take place - no 'scraping up' with or without a mechanical excavator.

SLABS
A 2D geotextile such as 'Treetex' type, shall be laid directly on the ground surface. Levels can be corrected by use of granite chippings NO FINES. Paving shall be laid open-jointed and the joints rammed with granite chippings.

RESIN BOUND GRAVEL DRIVEWAY
Edge restraint shall be formed from tanalised timber pinned to substrate with tanalised timber pegs or similar. Levels can be corrected by use of granite chippings NO FINES. A separating layer of non-woven geotextile such as 'Ekotex' shall be laid over the level correction layer, then a proprietary resin-bound gravel system.

Method 9 : GROUND PREPARATION FOR TREE PLANTING AREAS
This method shall apply after completion of main build only. Ground preparation for tree planting area 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 10 : 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. Mulch shall be topped up when depleted to a maximum depth of 100mm.

Method 11 : 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).

JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

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

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

AA Registered CONSULTANT

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

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

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BASED ON
TENPOINTFIVE ARCHITECTURE DRG. NO.: C314-10 rev. B2 SUPPLIED

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21 The Drive, Ickenham, UB10 8AF

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