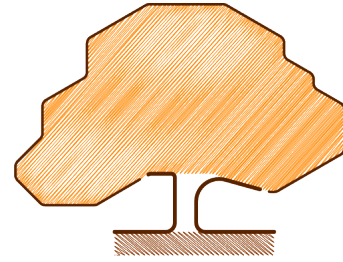


S111-J4-IA-1

REPORT

regarding the impact on trees of proposals for development
at
St Peters Church, 70 St Peters Street, St Albans, AL1 3HG



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View of approach to church from the south

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

Contents

1	Instructions.....	1
2	Executive summary.....	1
3	Introduction.....	1
4	Observations	3
5	Arboricultural impact assessment (AIA).....	8
6	Conclusion	11
7	Sources and relevant documents used.....	11
8	Copyright.....	11
9	Arboricultural method statement (AMS)	12
10	Case Study	22
11	Plans	25

1 Instructions

I am instructed by Michael Dales Partnership Limited on behalf of clients to make an assessment of tree amenity value and condition of trees at St Peters Church, 70 St Peters Street, St Albans, AL1 3HG and of the impact of a proposal for development (alterations to the car park and access) on such trees, and to supply an arboricultural methods statement and tree protection plan. This report is in support of a revised application following a refusal of planning consent. The heritage asset impact statement and planning statement submitted by Stuart Cunliffe describes the new scheme and comments on areas previously of concern to the Council's officers.

2 Executive summary

The impact on public amenity connected to how trees will be affected by the scheme is found to be slight to negligible. The scheme proposed will require one tree, a sycamore, to be removed, but the impact on public amenity will overall be negligible. All retained trees will be easily protected from harm during the project. Tree planting (4no. trees proposed indicatively) will mitigate such losses.

3 Introduction

3.1 The environmental role of Local Planning Authorities

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

3.2 British Standards

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

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

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

3.4 How the Standard is used by an arboriculturist

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

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

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

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

3.5 How the arboriculturist prepares tree protection methods

In practice, as advances in materials and techniques are rapid, the arboriculturist does not necessarily specify a precise commercial product, but defines the essential components of methods of demolition and construction which often make use of specialized materials.

These may be termed 'tree-friendly' methods, meaning that they have as their focus the well-being of the tree. These appear on the tree protection plan(s) appended, typically titled: 'Tree Retention and Tree Protection Measures', and within the text below.

3.6 Classification of trees

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

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

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

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

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

3.7 Root protection area

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

3.8 Use of appended plans

The appended plans have different applications:

- Plan reference no. S111-J4-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.
- S111-J4-P2 and S111-J4-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 14th May 2020 in order to carry out an inspection. Weather conditions were good; they permitted adequate inspection.

4.2 Survey method

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

4.3 Appraisal identification

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

4.4 Amenity / Screening by trees and shrubs

Most of the trees in the cohort are visible from St. Peter's Street, and from the heavily-used footpaths leading through the churchyard. Some trees may also be glimpse or partial / skyline features as viewed from more distant public viewpoints.

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

4.5 Statutory constraints

The site is in the administrative area of St Albans City and District Council. The site stands within the St Albans 3 Three Parish Churches Conservation Area.

4.6 Soil assessment

The British Geological Survey (BGS) information for the area indicates that the underlying sub-soil is sand and gravel.

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 were estimated by scaling pole.

Tree diameters were measured as per the Standard, Annex C, unless stated otherwise below.

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' 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

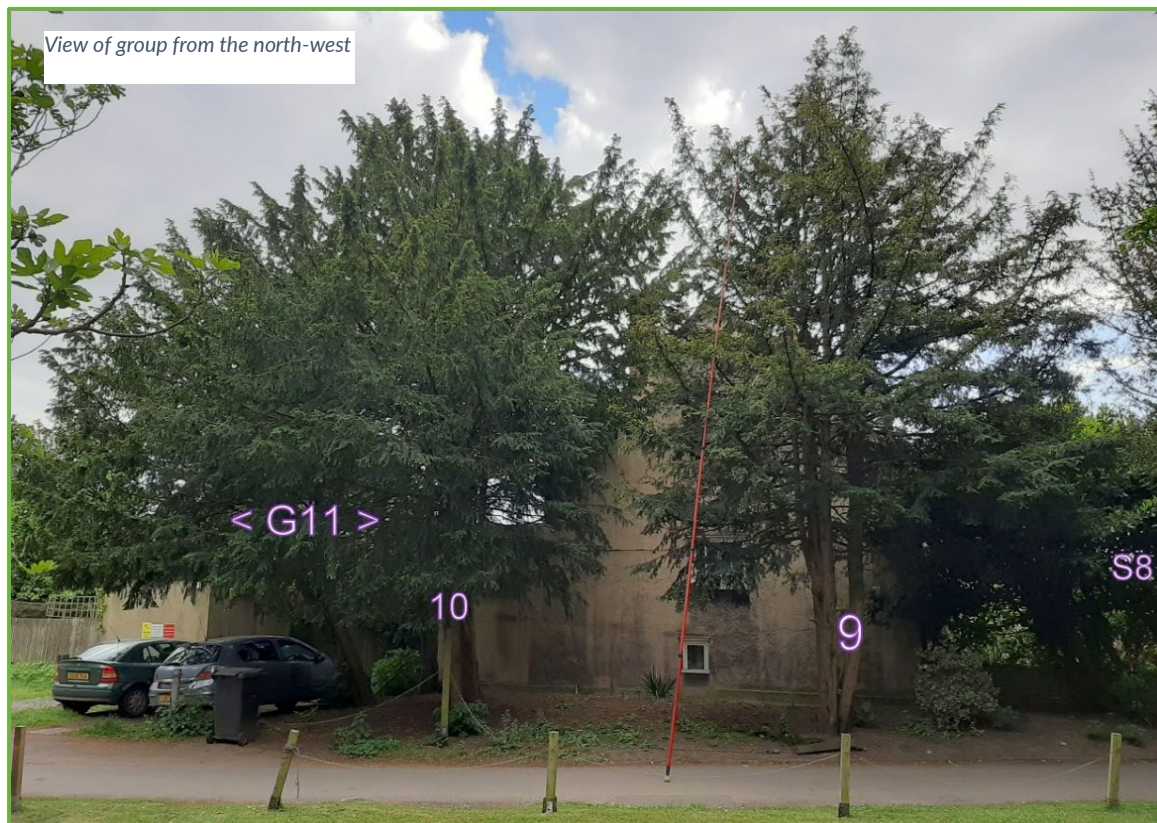
appears completely irrelevant to planning determination. The matter of clearance above ground level is presented under the individual tree entries if this is relevant to planning determination. (For information on other data in the columns, see section 3 above.)

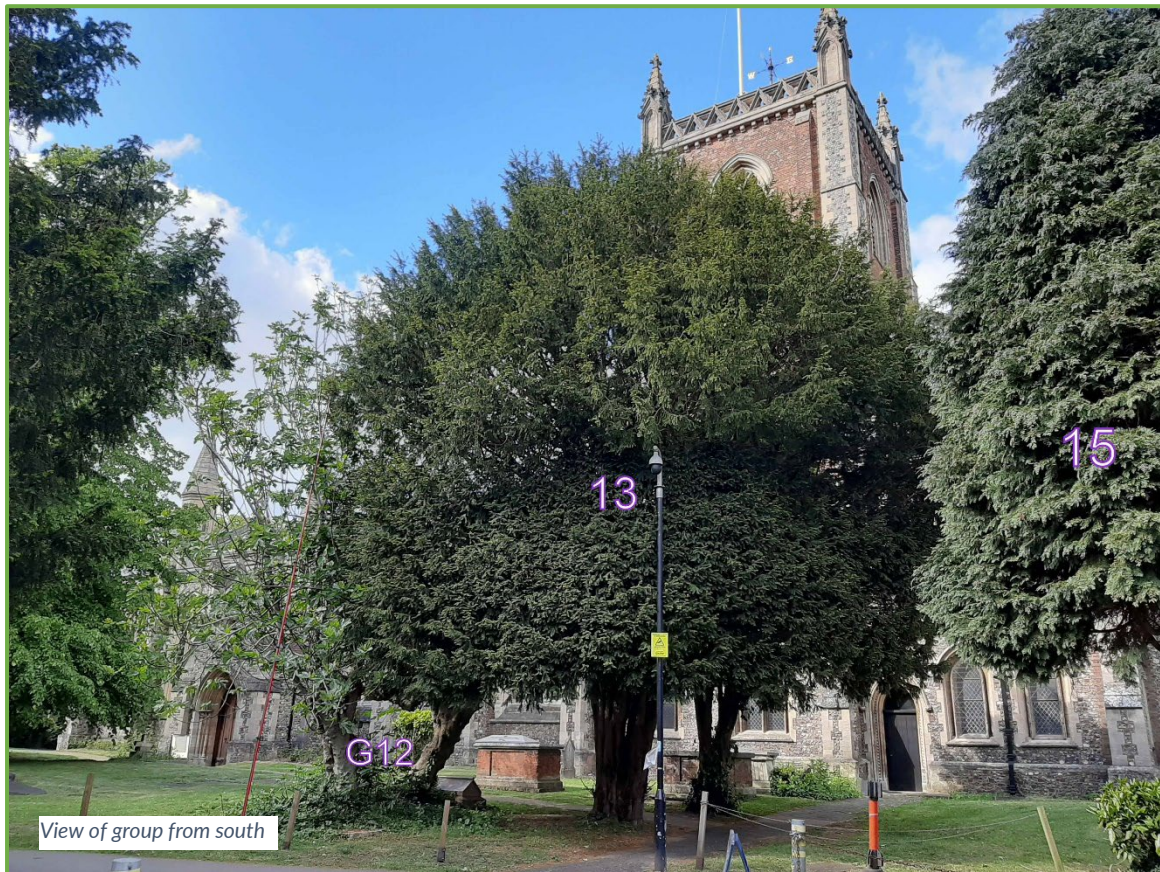
Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
1	English yew	12		550	6600	136.8	Measured low. Below normal in terms of vitality.	10+	C1
2	English yew	12		800	9600	289.5	Noted to be rather sparse in the crown with scattered dead foliage noted.	<10	U
3	silver lime	11		270	3240	33	Relatively young trees; established well	40+	B1
4	silver lime	12		270	3240	33		40+	B1
5	silver lime	15		725	8700	237.8	Epicormic and basal shoots prevented full inspection of whole crown. Removal of all epicormic and basal shoots to a height of about 5m above ground level would admit considerably more light to the path. Crown clean : there is major dead wood in the upper crowns.	40+	B1
6	silver lime	16		725	8700	237.8		40+	B1

Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
7	sycamore	14		677	8124	207.3	Pollarded to a height of about 5m but long neglected and now has substantial crown. Major dead wood exists. Crown clean	40+	B1
S8	common laurel	4		240, 240, 170	4555	65.2	Important screen. A shrub. *No classification under the Standard is strictly required, but is included here for guidance.	*20+	*B2
9	English yew	9.5	1.7	326, 224	4746	70.8	Important component of the group.	40+	B1
10	English yew	7.5	1.7	130, 110	2043	13.1	Important component of the group.	40+	B1
G11	English yew	9	1.7				Important group. Trunk diameters and RPAs as plan.	40+	B1
G12	fig	9.5					Trunk diameters and RPAs as plan. Characterful contributor to churchyard	20+	B1
13	English yew	10		890	10680	358.3	Important contributor to churchyard and probably one of the oldest yews in it.	40+	B2

Tree number	Tree type	Height (m)	Height to lowest branch (m)	Stem diameters (mm)	Radius of RPA if circle (mm)	RPA (m ²)	Comments	Life expectancy (years)	Assessed BS5837 value category
14	English yew	9	1.7	300, 260	4763	71.3	Important component of the group	40+	B1
15	Lawson cypress	12	2.2	549	6588	136.4	An important contributor to the churchyard.	20+	B1
16	English yew	7.5	0.1	600	7200	162.9	Important component of the group. No access to base. Hedged basal perimeter.	40+	B1
17	sycamore	14.5	1.5	550	6600	136.8	Ivy infested. Poor form – some boundary contribution but not important in screen.	40+	C1
18	English oak	15	2	720	8640	234.5	Important contributor to churchyard.	40+	B1

4.9 Photos





5 Arboricultural impact assessment (AIA)

5.1 RPAs – modifications to shape

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

Adjoining structures have likely affected the RPAs of trees 7 and G11, as indicated on plans. This factor is of little overall relevance in connection with this site. The shapes of the root systems of trees have probably been affected (shallower rooting) to some minor degree by subsoil type, but this has no particular significance in connection with proposed tree protection.

5.2 Roots and the design

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

Levels, falls and build-up were discussed. The outcome is encapsulated in the detailed proposals here presented.

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 Hard surfacing - assessment of SRP/RPA encroachment

No new encroachment on the SRP of any retained tree is entailed: existing paths, drive and car parking lie within these zones in some cases. Minor new encroachment on the RPA of one tree is entailed, near oak tree 18, and there are additionally areas that are 'handed back' to soft landscaping elsewhere on the site.

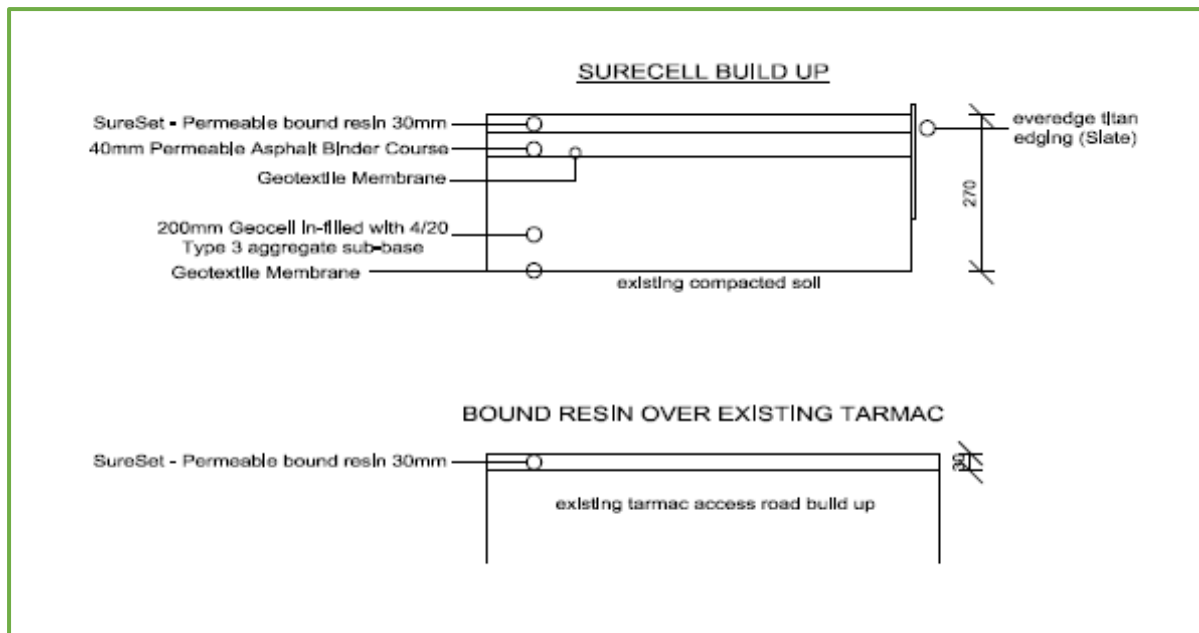
No.	Tree	RPA in sq.m.	Area sq.m affected	% affected	Notes
18	English oak	234.52	20.99	8.95	Proposed parking area, N.b., up and over existing ground level.

The key factor here is not precise percentages of RPAs that are proposed changed, but how the surface finishes are changed.

The Standard (section 7.4.2.3) recommends that hard surfacing of any existing unsurfaced ground within the RPA of trees to be retained is limited to 20% of the unsurfaced portion of the RPA. The major difficulty with this stipulation is that it is not supported by any research; it appears entirely arbitrary. Please see section 10 Case Study appended.

Some to the RPA around various trees is proposed. The surface changes within all RPAs are proposed managed during site preparation 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). The writer has developed and used similar methods for many years, engaging with the manufacturers and designers of the materials as these became available. This has facilitated the successful retention of mature trees very close to construction activities.

In this case, the architect and the writer have given careful consideration to how the existing surfaces will be superseded and upgraded, and to falls to provide proper drainage without cutting into the root protection area of oak tree 18. See extract below from section drg 1089/7-1B5E :



As the changes do not involve root cutting, and porous material allowing roots to respire is specified in methods below, I see no basis to conclude that any of the trees will suffer harm, if these methods are followed carefully.

5.5 Access clearance

I note that the form of the trees/items is such that only minor branches require pruning for access. If this is in accordance with the schedule, it will have no significant effect on the form or public amenity value of the trees/items.

5.6 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. Tree 17 is not sited in such a way that it is of importance in the landscape. It is part of a linear group between the adjoining Alban City School car park to the south-east and the churchyard to the north-west. It has no residential screening function.

5.7 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 an important role in providing for future public and 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 = mulberry (*Morus nigra* 'Wellington') 10-12cm girth 85 L pot

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

C = variegated sweet chestnut (*Castanea sativa* 'Albomarginata') 12-14cm girth 85L pot

D = English yew (*Taxus baccata*) 1.5-1.8m 65L pot

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

5.8 Policy compliance

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

- [St Albans District Local Plan Review 1994](#)
- [Character Area 3 - Three Parish Churches](#)

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

6 Conclusion

6.1 Summary

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

6.2 Note to LPA

I invite the LPA to consider, if it is minded to grant consent, 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: (Michael Dales Partnership Ltd.) 1089-7-1B2A, 1089-7-1B6B, 1089-7-1B5E, 1089-7-1B7H

8 Copyright

Copyright of the report above is retained by the writer. It is a report for the sole use of the client(s) named above. It 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. The AMS below, including schedule of tree work and the plan or plans, may be reproduced to contractors for the purpose of tendering, and for setting out and maintaining tree protection measures on site.

9 Arboricultural method statement (AMS)

9.1 Overview

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

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

9.2 Administration

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

<i>Role</i>	<i>Name</i>	<i>Company</i>	<i>E-mail</i>	<i>Mobile</i>	<i>Landline</i>
site manager	TBC	TBC	TBC	TBC	TBC
main contractor	TBC	TBC	TBC	TBC	TBC
architect	Helena Dean	Michael Dales Partnership Limited	helena@mdales.uk	TBC	01582 881210 / 881693
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 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, 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 S111-J4-P1 v1, S111-J4-P2 v1, and S111-J4-P3 v1 with which they are to be read. I have studied these tree protection measures on site with the arboriculturist. I have asked questions if I have been unsure about the practicability or safety of any measure. Any queries arising have been resolved. I see no reason why the tree protection should not be implemented as outlined below and undertake to take all reasonable steps within my remit to promote their installation and retention for the duration required, as outlined below. Section 9.4 including all the methods below should be printed out; the plans to full scale, and kept readily to hand on site.

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

PREPARATION / DEMOLITION

Please read with tree protection plan reference S111-J4-P2, appended.

Method 1: *SCHEDULE OF TREE WORK*

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

Tree number	Tree type	Height	Stem diameters	Comments
1	English yew	12	550	Prune to clear 3m+GL (ground level) on south side only as indicated by spread line on plan. N.b. this pruning does not involve cutting back to the full height of the tree; simply the lower branches.
2	English yew	12	800	
5	silver lime	15	725	Remove epicormic and basal shoots to a height of about 5m above ground level. Crown clean.
6	silver lime	16	725	
7	sycamore	14	677	Crown clean.
9	English yew	9.5	326, 224	Prune to clear 3m+GL on north/ north-east sides only as indicated by spread lines on plan.
10	English yew	7.5	130, 110	
G11	English yew	9		

Tree number	Tree type	Height	Stem diameters	Comments
15	Lawson cypress	12	549	Prune to clear 3m+GL on south south-west side only, as indicated by spread line on plan.
17	sycamore	14.5	550	Remove; grind out stump to 300mm below ground level.

NOTES:

- In Conservation Areas, in accordance with TCP Act 1990 Section 211, a formal notification to the LPA is required of intention to prune or remove any trees, the removal of which is not strictly required for the construction proposed to take place. 42 days after formal notification should be allowed before proceeding with the notified work, during which time (and after) the LPA may place a Tree Preservation Order (TPO) on the tree, thus requiring a formal application for any works to living wood.
- If a tree is the subject of a TPO a formal application must be made to the LPA for consent for any work to the living wood of trees, if that work is not strictly required for the construction proposed to take place.
- All tree work should be carried out to BS 3998:2010 'Tree Work - Recommendations'.
- The Wildlife and Countryside Act 1981 protects with certain exceptions all birds and their nests. It is an offence to destroy such nests or take or injure such birds in the course of tree works operations.
- If a tree is a bat-roost, a licence to work on the tree must first be obtained from the relevant Statutory Nature Conservation Organization (in England: Natural England 0845 601 4523.) Acting without a licence is likely to be justifiable only in acute emergencies threatening human life and where all other legally available option such as footpath diversion, fencing and warning signs cannot be applied.
- 'Crown cleaning' – an umbrella term now covered by several separate sections in BS3998:2010 – should be understood to mean: removal of foreign objects (section 7.13); removal of ivy to the extent needed to facilitate inspection (section 7.12), typically trimming back (e.g. with a hedge cutter or secateurs) to near the line of the trunk or branches; and/or removing selected stems so that the structure of the tree can be seen sufficiently. Dead wood can be an important ecological feature. Treatment of dead wood under 'crown cleaning' shall mean (section 7.3.2) shorten and retain if safe to do so, thus retaining some resource for invertebrates, etc.

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

Method 2: TREE PROTECTION FENCING

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.

Pedestrian access 0.7m wide may be formed as indicated. 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.

Method 3: DEMOLITION - GENERAL

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

Method 4: EXISTING HARD SURFACES TO BE SUPERCEDED BY REPLACEMENT HARD SURFACING

This method shall apply in the purple honeycomb zone on plan. No 'scraping up' with a mechanical excavator shall be carried out. The zones of existing re-inforced concrete hard surface shall be lifted by hand tools or hand-held power tools only. Debris shall be removed by hand tools to disposal off-site. Any underlying sub-base shall be left undisturbed if the sub-base is competent to support the loads envisaged. Elsewhere, the existing 'Grasscrete' and tarmac zones may be left intact and in any case no excavation below the underside of the existing sub-base shall take place. Method 7 shall apply, which see below. Any excavation within the existing sub-base shall be by hand tools or hand-held power tools only. The sub-base shall remain intact during demolition phase.

Figure 3 Examples of above-ground stabilizing systems

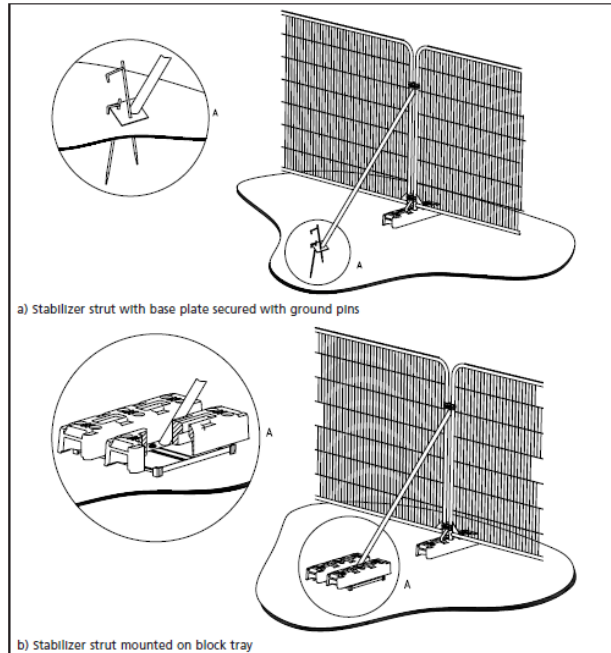


Figure 1 BS 5837:2012 section 6, figure 3

Method 5: EXISTING HARD SURFACES TO BE SUPERCEDED BY SOFT LANDSCAPING

This method shall apply in the **brown crosses** zones on plan. The existing hard surface shall be lifted by hand tools or hand-held power tools only. No 'scraping up' with a mechanical excavator shall be carried out. No excavation below the underside of the existing sub-base shall take place. From this point Method 12 shall apply.

CONSTRUCTION

Please read with tree protection plan reference S111-J4-P3, appended.

Method 6: TREE PROTECTION FENCING

Tree protection fencing (**pink** lines on plan) shall be maintained/adjusted, as per Method above. Pedestrian access 0.7m wide may be formed as indicated.

Method 7: ACCESS DRIVE and CAR PARKING - GROUND RE-INFORCEMENT AND FINISHES

This method shall apply in zone gridded **green** on plan. No conventional concrete kerb haunching shall be used. Edging shall be formed of pre-cast or stone sections, or timber such as modern railway sleepers drilled and pinned through to the substrate with 20-25mm dia. re-bar. A geogrid such as Tensar 'TriAx' shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the stone element of the next layer to be laid: a 3D pocket geotextile / 'Surecell' type, 200mm deep, backfilled with 4-20mm CLEAN STONE – NO FINES. N.b. to the immediate west of tree 15 the depth of the 3D pocket geotextile / 'Surecell' type, shall be 100mm deep, as indicated on plan.

A further geogrid (not a needle-punched geotextile), such as Tensar 'TriAx' shall be laid directly on the ground surface within the edge restraints. The grid size shall be sufficiently small to retain the stone element of the next layer, permeable asphalt, to be laid. Permeable bound resin shall be laid as wearing course. Where sound existing tarmac and or subbase lies, permeable bound resin shall be laid directly over as wearing course, all as indicated in received sections, extract above.

Method 8: SERVICE TRENCHES

(N.b. This applies to ALL services: Electricity, gas, water, etc. Existing services shall be utilised wherever possible. In this case the only service required is electricity to supply surface lights.

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.

LATE CONSTRUCTION and LANDSCAPING PHASE

Method 9: FOOTPATH TO SOUTH DOOR

This method shall apply in zone 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. Edge restraint shall be formed from, e.g. ‘Legacy’ steel edging, or similar, pinned in position to the substrate. The manufacturer’s fixing pins (solid mild steel 16mm dia., 400mm in length) shall be used. Alternatively tanalised timber pinned to substrate with tanalised timber pegs shall be used.

A fine-mesh geogrid such as Tensar ‘TriAx’ shall be laid, where the receiving zone is soft landscaping. The grid size shall be sufficiently small to retain the level correction/bedding layer stone to be laid. A 3D pocket type geotextile 75mm deep shall be laid, backfilled with 4-20mm clean stone – no fines. A further 2D geogrid such as Tensar ‘TriAx’ type, of a grid size sufficient to retain the size of aggregate above shall be laid. Levels can then be corrected by use of granite chippings 5-10mm NO FINES. Paving shall be laid open-jointed and the joints rammed with granite chippings.

Method 10: POSTS /BOLLARDS MARKING EDGE OF DRIVE

Post holes shall be dug with hand tools only. Probes such as screwdrivers or steel rod <10mm diameter to determine root presence ahead of digging shall be used. The work shall proceed cautiously. Roots 20mm or more in diameter unearthed shall be temporarily protected with bubble-wrap and insulating or gaffer tape while rest of hole is dug. It should be borne in mind that the presence of large numbers of roots >20mm in diameter may effectively prevent completion of post hole, and this would be sufficient reason to terminate the operation and move post hole to a different location. If a root >20mm is inadvertently damaged, it shall be retained *in situ* for appraisal by the arboriculturist.

Method 11: TREE PLANTING AREAS

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

Method 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 where additional planting medium is required shall be composed of biochar, see: <https://www.soilfixer.co.uk/biochar-article>

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

shall be placed 150mm below ground level at 5m intervals in all soil build-up areas.

Method 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. 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.....

S111-J4-IA-1

End of main body of report – plans appended.

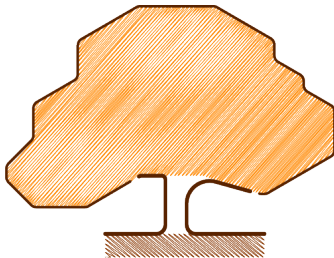
Dated: 25th July 2022

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

A handwritten signature in black ink, reading "John Cromar" with a stylized flourish at the end.

John Cromar

Dip. Arb. (RFS), FArborA



John Cromar's
Arboricultural
Company Ltd.

admin@treescan.co.uk

01582 808020
07860453072

10 Case Study

A recent study of the effect on underlying tree roots of the 3-D cellular confinement method of road construction was recently carried out by the writer in Essex. This entailed the removal of a construction site access road (specified and the installation supervised by the writer) and which had been used very heavily for a period of about four years during a construction project for a major national headquarters.

Images below indicate the general installation in 2016, and, the last image, the findings, four years later.





Detail of
installation
materials



Installation involved hand
placement of components

On lifting of the temporary site access road, it was of note that although the specification for infill of the cells had not been followed precisely, ('MOT Type 1' aggregate, which contains fines, had been used after an initial fill of clean stone, instead of purely clean stone), earthworm presence and activity and recent fine root growth was observed in the zone directly below the cells in what had been underlying pasture, and the adjoining trees in the root protection areas of which the road had been laid, were observed to be in very good condition with no sign of decline whatever. Some 35% of the RPA (root protection area) of each of the two trees flanking the road had been covered with the formation.



Concerns have been raised by tree officers in local planning authorities over the effectiveness of this method in protecting trees on development sites, and particularly have questioned whether this is a tree-friendly way of establishing driveways and parking close to trees.

This case study indicates that the general concept is sound and that there is, perhaps surprisingly, no particularly applicable insistence for clean stone to be used, although the writer supports this as providing best conditions for underlying soil and root health.

It also casts further doubt on the arbitrary '20% limit' in BS5837:2012, which has to the best knowledge of the writer, no research basis, and suggests that this be discarded in future revisions of the Standard.

In the view of the writer, the avoidance of any compaction and degradation of the soil structure prior to installation of the protective formation, as occurred on this site, is probably the most important factor in tree root protection via 3-D cellular confinement methods.

Copyright: John Cromar, June 2022

11 Plans

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

S111-J4-P1 v1

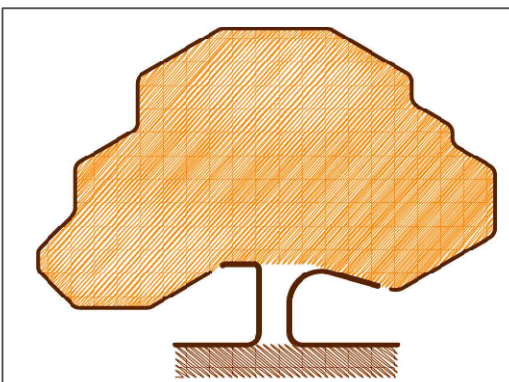
S111-J4-P2 v1

S111-J4-P3 v1

St Peters Street

WALL

WALL



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& Harpenden, Herts.

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admin@treescan.co.uk
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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
MDP LTD. DRG. NO.: 1089-7-1B2A
SUPPLIED

SITE ADDRESS
St Peters Church, 70 St Peters Street,
St Albans, AL1 3HG

DRG. REF.
S111-J4-P1
SCALE & SIZE
1:200 @ A1
0 5 10
REV. NO.
v1
DATE
25-Jul-22
10



DRG. REF. S111-J4-P3
SCALE & SIZE 1:200 @ A1
REV. NO. v1
DATE 25-Jul-22

0 5 10

