

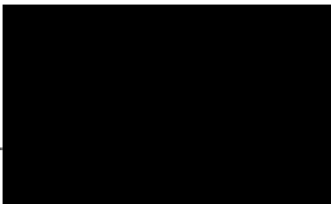


Outline Trees, Arboricultural Consultancy
Report Reference: JH0923ALTARSTONES
September 2023



**British Standards 5837:2012 Tree Survey,
Arboricultural Impact Assessment &
Arboricultural Method Statement
(including Tree Protection Plan)**

at
Altar Stones Lane, Markfield, Leicester

QUALITY ASSURANCE			
Client:	Hilmoren		
Project:	Altar Stones Lane, Markfield, Leicester LE67 9PX		
Project Ref:	JH0923ALTARSTONES		
Report Content:	British Standards 5837:2012 Tree Survey, Arboricultural Impact Assessment & Arboricultural Method Statement including a Tree Protection Plan		
Written, Checked & Issued by:	Jason Humphreys FdSc (Arb) MArborA		13 th September 2023

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1 Executive Summary

1.1 The Project, Purpose and Scope of this Report

The primary purpose of this report is to provide site-specific arboricultural detail, which will enable the arboricultural determination of a planning application, associated with the 'Demolition of existing buildings and erection of buildings to be used for the purposes of car sales with associated landscaping and access works'.

An existing topographical survey in AutoCAD format was provided as a base for the Tree Survey Plan, whilst a full suite of plans, drawings and elevations provided by the client's planning consultancy, have been used to ascertain the impact of the proposals and subsequently produce the following documents:

- BS 5837:2012 Tree Survey Schedule (TSS) - Appendix A
- Current Tree Survey Plan (TSP) - Appendix B
- Proposed Layout & Tree Protection Plan (TPP) - Appendix C
- Site-Specific Arboricultural Impact Assessment (AIA) - Section 5
- Site-Specific Arboricultural Method Statement (AMS) - Section 6
- Auditable Site Monitoring Records – Appendix J

1.2 Findings and Recommendations

The Tree Survey Schedule at Appendix A, has recorded the details of 37 individual trees, 15 tree groups, 3 wooded areas (woodlands), 1 hedgerow and a shrub group.

Upon completion, the site will benefit from a Landscape Framework Strategy, which includes the planting of UK native trees and shrubs, which will improve the current species diversity, provide flowering species for pollinating insects, provide habitat for wildlife and an improved structure for the surrounding wooded areas, enhance the current level of arboricultural interest that currently exists whilst being of an appropriate ultimate size, shape and form for their locations and will also mitigate the loss of perceived amenity associated with the tree removals.

It is considered that the tree works considered necessary to either directly implement, or facilitate the delivery of the project are detailed in Table 5.1, will have no discernible impact on any perceived amenity value, that the trees might provide, when viewed from outside of the site.

Tree Protection Measures (specifically, the use of protective fencing) have been recommended in order to minimise the potential for any foreseeable detrimental impact occurring to the retained trees.

It is recommended that a Site Arboriculturist (SA) is appointed and retained for the duration of the project; they will be available to provide guidance on and if necessary, oversee the supervision of those key aspects, and activities, which are detailed within sections 5 & 6.

Anticipated construction activities associated with the project have been assigned a 'Development Stage' (DS) number (see Section 6). An auditable record of these key activities will be maintained and kept at the site. Appendix J has an appropriate template for this specific purpose.

Tool box talks and briefing sessions are encouraged and where appropriate, will be delivered by the Client/Project Manager and/or the Site Arboriculturist. All documents referred to in this report, including the Tree Survey Schedule, Tree Survey Plan and the Tree Protection Plan, will be kept on site throughout the duration of the project and made available for any contractors, as necessary.

It is considered that provided the recommendations, measures and guidance detailed within this report are followed and adhered to throughout the duration of the project, there will be no foreseeable, adverse effect on the longevity, or condition of the retained trees and that consequently, there is no arboricultural reason as to why this project cannot be implemented.

2 Limitations, Regulations & Location

2.1 Tree Survey & Report Limitations

Recommendations included within this report are the professional opinion of an experienced Arboriculturist¹ and are the view of the Author (see Section 3.2). This is based on a review of the information provided by The Client, the brief and a survey of the site. This report pertains to these results only. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information.

Whilst not definitive, the findings and any associated recommendations detailed within this report are considered to be reasonable, practicable and in the interests of promoting sensible arboricultural management.

No liability can be accepted by the Author in respect of the trees, unless the recommendations of this report are carried out under his supervision and within his timescale. Acceptance of this report represents an agreement to adopt the recommendations and guiding principles detailed within.

The findings and recommendations contained within this report are, assuming its recommendations are observed, valid for a period of twelve months from the date of survey. Trees are living organisms and their condition can change significantly over a relatively short period of time – good practice dictates they are inspected on a regular basis for reasons of safety.

The report relates only to the trees referred to in this report, which are recorded in the attached tree survey schedule (Appendix A) and shown on the annotated plans at Appendices B & C.

Where trees were extensively ivy clad, this was recorded in the tree survey schedule. It is not possible to ascertain the presence of cavities or other defects beneath the ivy and, therefore, ivy should be removed and a re-inspection carried out.

2.2 Regulatory and Policy Framework

Tree Preservation Orders (TPOs) and Conservation Areas place various statutory restrictions on the felling, pruning or damaging of trees, subject to various exemptions (Department for Communities and Local Government, 2014). See section 4.1 for site-specific information.

Tree felling on non-residential land is also controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than 5m³ of timber in any calendar quarter, subject to various exemptions and variations (Forestry Commission, 2007).

There is an overriding exemption for the above statutory controls for tree felling and pruning for works where it has been deemed necessary to implement development that has already received full planning permission.

Whilst outside of the remit of the intended purpose of this report, if considered necessary, additional authoritative information on designations, land classifications, geography and the natural environment can be explored in greater detail by using the interactive map which is managed by Natural England <https://magic.defra.gov.uk/magicmap.aspx>

¹ As per the Terms and Definitions detailed in British Standards 5837:2012-Trees in relation to design, demolition and construction – Recommendations.

2.3 Site Location

The application site is Halls Farm, Altar Stones Lane, Markfield, Leicester LE67 9PX.

Approximate OS Grid reference SK 481 111.

<https://w3w.co/removals.bound.incisions>

The location of the site is shown in Figure 2.1 below, with the approximate extent of the tree survey area, indicated by a red line.

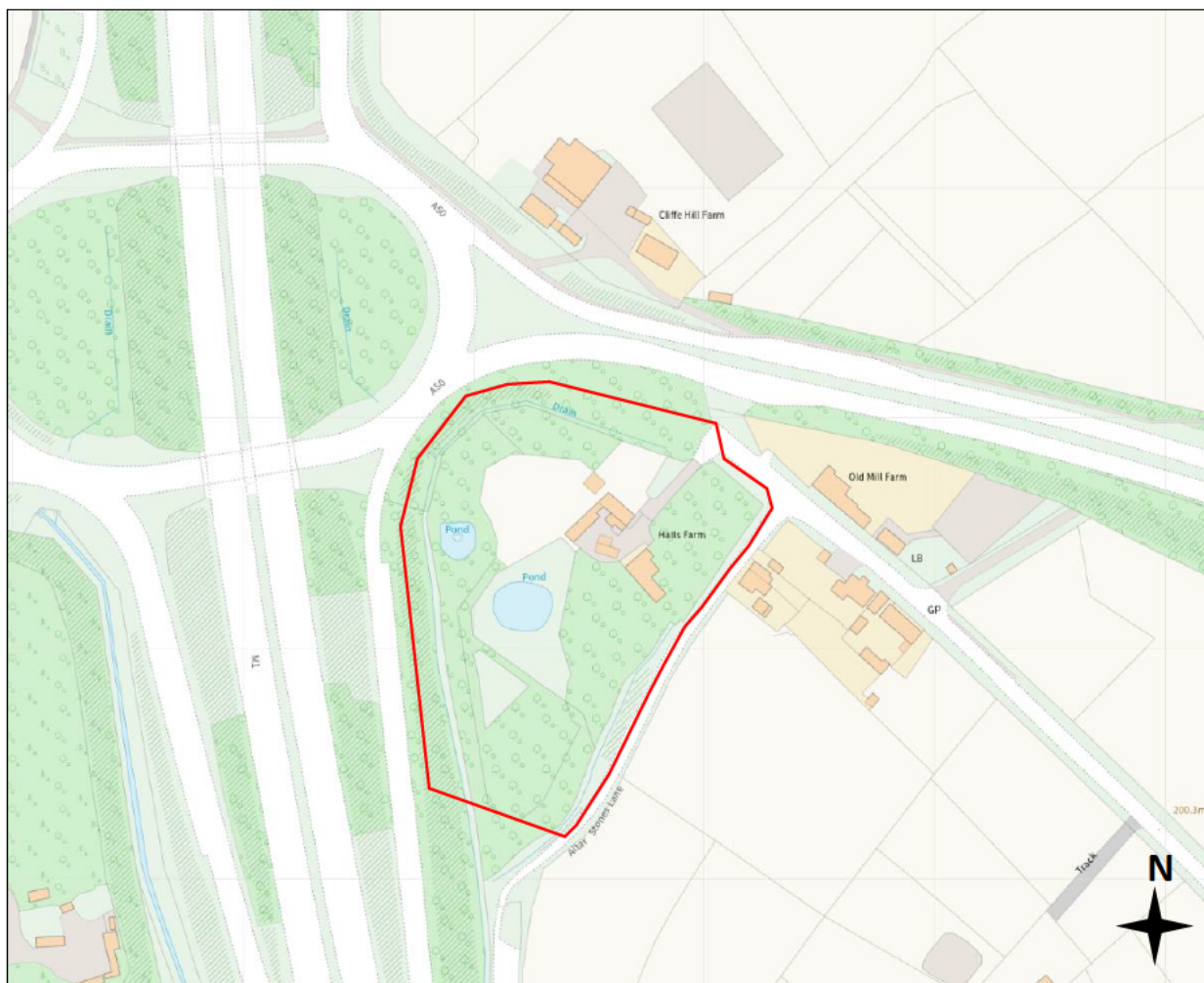


Figure 2.1: Map view of the Site © Crown Copyright and Database rights 2023 Ordnance Survey

3 Survey Methodology

3.1 Tree Survey Methods

The site was visited on Thursday 13th July 2023, to carry out an assessment of the relevant trees in accordance with BS 5837:2012 – Trees in relation to Design, Demolition and Construction - Recommendations.

Each of the surveyed trees and/or groups has been plotted and recorded as an individual tree or a tree group, in accordance with the criteria detailed in section 4.4.2.5 of BS 5837:2012. Where significant and relevant trees were not shown on the topographical survey, their locations were accurately plotted using a Leica Disto X4 laser measure, which is designed for providing accurate measurements in an outdoor environment.

Any survey work undertaken will have been subject to limitations, including seasonal and phenological aspects.

Trees were assessed from ground level using the Visual Tree Assessment (VTA) method (Mattheck 2007). No climbed inspection, removal of ivy or detailed investigation of decay, beyond the use of any methodology described in the Tree Survey Schedule, was made.

The weather on the day of the survey was clear, still and adequate for conducting the survey during which, the following information was collected for each tree/group:

- Sequential reference number;
- Species;
- Height;
- Stem diameter @ 1.5m height;
- Branch/Canopy spread (North, East, South & West);
- Lowest recorded crown height;
- Existing height above ground level of the first significant branch (FSB) and its direction of growth (e.g. 3 NW);
- Life stage (See Key at Appendix F):
 - **Y** – Young,
 - **SM** – Semi Mature,
 - **EM** – Early Mature,
 - **M** – Mature,
 - **OM** – Over Mature;
- General observations, particularly of structural and physiological condition (See Key at Appendix F);
- Estimated remaining contribution;
- Retention category 'U' or 'A' to 'C' grading with the subcategory 1, 2 or 3 reflecting arboricultural, landscape or cultural values, respectively (See Table at Appendix H).

3.2 Survey Personnel

The Author, Jason Humphreys FdSc (Arb) MArborA is a former Local Planning Authority Arboricultural Officer and experienced Arboriculturalist with over 21 years of experience in the Horticultural and Arboricultural Industry.

He is a professional member of the Arboricultural Association (MArborA), and holds a Foundation Degree in Science (Arboriculture), the Technician's Certificate in Arboriculture and the LANTRA Professional Tree Inspection certificate.

4 Results

4.1 Statutory Tree Protection

No formal attempt was made to establish whether or not any of the surveyed trees were afforded any degree of Statutory Tree Protection *i.e.*, *whether or not they were protected by a Tree Preservation Order (TPO) or located within a Conservation Area*.

An informal check (11th September 2023) using Hinckley & Bosworth Borough Council's interactive TPO map <https://www.hinckley-bosworth.gov.uk/tpomap> did not appear to indicate that any of the surveyed trees are afforded statutory protection from a TPO.

Regardless of any potentially protected status, or any perceived contribution that the trees might make to the immediate streetscene, or the character of the area, in this instance, it is the Author's understanding that the proposed tree works clearly detailed in Table 5.1 and shown on Appendix C, will be determined as part of the planning application process, regardless of their status and that subject to receiving subsequent planning consent, which may detail specific conditions, the proposed tree works can be carried out without any further recourse to the LPA.

The LPA may however, subsequently consider that there is expediency for making some of the surveyed trees the subject of a TPO.

The site does not appear to be located in a Conservation Area.

It is the Author's understanding that all tree works detailed in Table 5.1, will be determined by the LPA as part of the planning application and subject to receiving planning consent which may detail specific conditions, no further recourse to the LPA, is considered necessary.

4.2 Tree Survey

The tree survey recorded the details of 37 individual trees, 15 tree groups, 3 wooded areas (woodlands), 1 hedgerow and a shrub group; full details are provided in the Tree Survey Schedule (Appendix A).

The surveyed trees are growing on, or immediately adjacent to the site, which does not show any obvious signs that the trees were proactively managed. The diversity of species recorded was relatively low and the site was dominated by evergreen and coniferous species, creating a light-competitive environment, where selective thinning as part of a tree management plan, would clearly have been beneficial.

The overall condition of the trees can overall at best, be described as fair (see Life Stage & Condition Key at Appendix F) and whilst the any tree works detailed in the Tree Survey Schedule, at Appendix A, have been identified **solely** in the context of the sites current use, they should be considered irrespective of any development proposals.

No trees, of high quality and value (Category 'A'), were recorded during the survey. Trees assigned to this category would include attractive trees with high visibility and no significant defects, which are able to make a substantial contribution for a minimum of 40 years.

Five trees and 1 wooded area (woodland), of moderate quality and value category (Category 'B'), were identified during the survey. Trees assigned to this category include healthy attractive trees with remediable defects that are in a condition as to be able to make a significant contribution for a minimum of 20 years.

Thirty individual trees, 15 tree groups, 2 wooded areas (woodlands) and 1 hedgerow of low quality and value category (Category 'C'), were identified during the survey. Trees in this category include unremarkable trees of limited merit that are easily replaced, small-growing, young species which have a relatively low potential amenity value, and low landscape benefits. Trees assigned to this category

typically also include self-seeded trees of limited life span, small and young trees and trees of poor form and limited amenity value. The shrub group (Sh51) was also assigned to this category.

Two trees were identified as being unsuitable for retention (Category 'U'). Trees assigned to this category are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years and/or are considered to be unsuitable for retention in the proximity of new development or areas of public open space.

5 Arboricultural Impact Assessment

5.1 Tree Survey Schedule & Management Recommendations

Preliminary management recommendations shown in bold text, in the Tree Schedule (Appendix A) have been identified **solely** in the context of the current layout and existing site use and should not be interpreted as being necessary to implement any proposed development.

Anticipated tree works, which have been recommended to directly implement or facilitate the the proposals, are detailed in Section 5.12, Table 5.1 and are shown clearly on Appendix C.

5.2 Trees Suitable for Retention

Where possible, it is generally considered desirable for Category 'A' and Category 'B' trees to be retained and incorporated into new developments and layouts. Category 'U' trees are not considered to be appropriate for retention.

In assessing the arboricultural Impact on the trees of the proposed development and which trees might be suitable for retention in the context of the proposed layout, the following factors have all been considered:

- Shading
- Future Pressure for Tree Removal and Pruning
- Seasonal Nuisance
- Infrastructure
- Direct Damage
- Root Protection Areas
- Future Management
- Anticipated Demolition, Excavation, Ground Works & Construction Activities

5.3 Shading

Shading can be represented using drawn segments, with radii equivalent of the current tree height, taken from the centres of those surveyed tree stems that are considered to be relevant, drawn from due north-west to due-east. These segments, represent a basic illustration of the shade pattern through the main part of the day and are based on advisory comments detailed in section 5.22, Note 1 of BS 5837:2012.

Recommended tree works to the tree group G41, detailed in Section 5.12 Table 5.1, have considered this specific issue and following consideration of the above, the subject of shading is not considered to be a constraint and no further investigation or consideration has been made.

5.4 Direct Damage

Any proposed layout should consider the likelihood of direct damage occurring from incremental root and stem growth, from both retained trees and any new trees, or shrubs by having regard to their locations and their ultimate, size shape, form and management requirements.

Upon consideration of this aspect and following completion of the tree works detailed in Table 5.1, the likelihood of direct damage occurring in the manner described above, is not considered to be significant.

5.5 Root Protection Areas (RPAs)

The projected RPAs of the surveyed trees shown in the Tree Survey Plan (Appendix B), were drawn as circles, with their diameters calculated as per section 4.6 of BS5837:2012 and are shown clearly on the Tree Survey Plan at Appendix B.

Following consideration of their immediate growing environments and notwithstanding the competitive growing environment that exists for the majority of the trees, the projected RPAs, are considered to be a relatively useful guide of anticipated root morphology and distribution and for the purpose of assessing the arboricultural impact, they have been considered at their full extents.

Following completion of the project, the Eucalyptus tree T32, will benefit from the removal of existing hard surfacing and the subsequent landscaping and creation of an environment, which is considered to be more conducive to root growth and development, than that which currently exists. It is recommended that any demolition and landscaping works in this area are carried out by hand and in accordance with Section DS7 and Appendix G.

Upon consideration of the proposed layout, the demolition, construction and its associated activities, the adoption of Tree Protection Measures (TPM) has been recommended, specifically the use of protective fencing (see Appendix C & Section DS6).

Following the erection of the protective fencing, it is the Author's considered opinion that the proposals can be achieved by using traditional construction techniques, without impacting the structural integrity of either of the surveyed trees.

5.6 Demolition, Excavation, Ground Works & Construction Activities

The use of any plant and machinery, to carry out any of the above aspects and any demolition, ground works, excavation or construction activity will generally take place in areas, outside the projected RPAs of the retained trees.

Whilst its use is not anticipated, should the use of temporary ground protection prove necessary to facilitate access within the projected RPAs, an appropriate specification (dependent on the anticipated nature of the necessary incursions), will need to be adopted (Section 6 - DS5).

During any excavation works, should tree roots be exposed and if their severance proves **absolutely necessary** to implement the proposals, then any root pruning to the exposed, or damaged roots on those trees that can be safely retained, should be cut so that the final wound is as small as possible and free from ragged torn ends, as per Section 8.6 of BS3998:2010 and strictly in accordance with the principles and guidance, detailed in NJUG4, which is provided as an operative's handout at Appendix G and should therefore be made available to the contractors prior to work commencing.

Where necessary, any unplanned pruning works, to either branches or roots, will be limited **only** to the extents, which are **absolutely** necessary to implement full planning consent and then carried out in the presence and/or under the supervision of the appointed Site Arboriculturalist, who will be able to assess the impact.

The template provided in Appendix J will be used to record any results of unplanned pruning and to record the diameters of branches, or the diameter, density and frequency of any roots pruned. It will also be used to record any other events or details, that might have an effect on the retained trees *e.g. incursions within the RPAs*. The Site Arboriculturalist will provide further guidance on this aspect.

5.7 Hard Surfacing Within the Root Protection Area

Any areas of new hard surfacing *e.g., parking bays, access drive, etc...* are located outside of the projected RPAs of the retained trees. The use of a 3-dimensional, cellular confinement type of 'no-dig' surfacing has been considered but its use is not required and no recommendations for its use have been made.

5.8 Future Pressure for Tree Pruning/Removal

Whilst the presence of retained trees can often enhance the immediate environment upon completion, any proposed layout should provide sufficient space that will allow for future tree growth and to provide a subsequently reduced need for future, frequent remedial pruning.

Upon consideration of the above aspect, no significant pruning pressures from the retained trees, are anticipated.

By having regard to the ultimate, size, shape, form and the future management requirements of any new tree and shrub planting, either as part of the Landscape Framework Strategy, or specifically for the creation of the new access drive avenue, foreseeable pruning pressures can be avoided.

5.9 Seasonal Nuisance

Foliage, seed, fruit and cone fall can be considered by some to be a nuisance and requests to Local Planning Authorities to carry out pruning works to negate these issues are often refused, due in part to their brief, seasonal nature of the problem.

Seasonal leaf and seed fall from the trees will likely be evident, but will have no discernible impact on the proposals, or on the anticipated levels of use that the client, or visitors to the site, might reasonably come to expect, following completion of the project.

5.10 Infrastructure

No new drainage runs or service runs are anticipated within the RPAs of the retained trees.

British Standards 5837:2012, Section 7.7.2 suggests that, in the event roots can be retained and appropriately protected during exposure, then excavation using hand-held tools might be acceptable for shallow service runs. It is not considered unreasonable that, if necessary, this aspect will be confirmed as a subsequent planning condition.

Upon consideration of the proposed layout and following completion of the works detailed in Table 5.1, there is no evidence to suggest that there will be an impact on lighting or visibility splays from the retained trees.

5.11 Miscellaneous

Construction access into the site has been considered and it is the Author's opinion that there will be no impact on the retained trees, which might require any facilitation pruning. This will be confirmed at the pre-construction site meeting (see Section DS2).

5.12 Recommended tree works

Table 5.1 below, provides a detailed summary of the tree works, which are anticipated as being necessary to either directly implement the proposals, or facilitate the demolition, construction and activities associated with the delivery of the project.

Table 5.1: Summary of Tree Works

Tree Ref. No's.	Species	BS Category	Nature of tree works and reason.
T1	Sycamore	C	Remove tree to implement creation of improved access.
T2	Goat Willow	C	Remove tree to facilitate creation of improved access.
G4	Silver Birch, Sycamore, Horse Chestnut, Cherry, Butterfly Bush, Holly & Hawthorn	C	Remove approx. 94m ² of group tree to implement creation of improved access.
G5	Norway Spruce, Silver Birch & Common Alder	C	Remove tree group to implement creation of improved access road, creation of parking bays and allow unobstructed development of retained horse chestnut T6.

Tree Ref. No's.	Species	BS Category	Nature of tree works and reason.
T7	Crab Apple	C	Remove tree to facilitate unobstructed grounds maintenance of currently neglected area.
T8	Crab Apple	C	Remove tree to facilitate unobstructed grounds maintenance of currently neglected area.
G12	Cherry Laurel, Redflower Current & Elder	C	Remove shrub group to implement creation parking bays and allow unobstructed development of retained <i>Tsuga</i> tree T10.
T13	Hazel	C	Remove tree to implement creation of improved access road & creation of parking bays.
T14	Hazel	C	Remove tree to implement creation of improved access road & creation of parking bays.
T15	Silver Birch	C	Remove tree to implement creation of improved access road.
T16	Field Maple	C	Remove tree to implement creation of improved access road.
T17	Horse Chestnut	C	Remove tree to implement creation of improved access road.
T18	Horse Chestnut	C	Remove tree to implement creation of improved access road.
T19	Wild Cherry	C	Remove tree to implement creation of improved access road.
T20	Ash	C	Remove tree to implement creation of improved access road.
T21	Cypress	C	Remove tree to implement creation of improved access road.
G22	Hazel & Cherry Laurel	C	Remove group to implement new layout.
G23	Norway Spruce & Cypress	C	Remove tree group to facilitate/implement construction of building A.
G24	Norway Spruce, Cypress, Atlas cedar & Pine	C	Remove tree group to facilitate/implement construction of building A.
T27	Rowan	U	Remove Cat U tree; unsuitable for retention.
T28	Silver Birch	C	Remove tree to allow unobstructed development of retained tree T32.
T29	Norway Spruce	C	Remove tree to allow unobstructed development of retained tree T32.
T30	Norway Spruce	C	Remove tree to allow unobstructed development of retained tree T32.
T33	Atlas cedar	C	Remove tree to allow unobstructed development of retained tree T32.
G34	Norway Spruce & Honey Locust	C	Remove group to implement new layout.
T35	Norway Spruce	C	Remove tree to implement new layout.
T36	Honey Locust	C	Remove tree to implement new layout.
W37	Lime, Beech, Scots Pine, Larch, Oak, Ash, Hemlock, Hornbeam, Field Maple, Hazel, Willow & Alder	B	Selective removal of trees necessary (approx. 1280m ²) to implement construction of building A and facilitate new woodland edge planting.
T39	Hawthorn	C	Remove tree to implement new layout.
G41	Beech, Cherry Laurel, Norway Spruce, Silver Birch & Norway Maple	C	Selective removal of trees (primarily spruce) to implement construction of building B and lessen any potential shading cast by southern section of the group.
G42	Beech	C	Remove tree group to facilitate/implement construction of building B.
G43	Norway Spruce	C	Remove tree group to facilitate/implement construction of building B.
T44	Crack Willow	C	Pollard tree to promote longevity, manage spread and provide more desirable layout juxtaposition.
T45	Common Alder	C	Remove tree to implement construction of building B.
T46	Flowering Cherry	C	Remove tree to implement construction of building B.
T47	Wild Cherry	C	Remove tree to implement construction of building B.
T48	Crab Apple	U	Remove tree to implement construction of building B.
T49	Horse Chestnut	B	Remove tree to implement construction of building B.
T50	Yew	C	Remove tree to implement construction of building B.
Sh51	Cherry Laurel	C	Remove shrub to facilitate construction of building B.
G52	Larch & Scots Pine	C	Remove shrub to facilitate construction of building B.

5.13 Trees to be pruned

No tree works, beyond those detailed in Table 5.1, are anticipated as being necessary to either directly implement, or facilitate the proposals. Any unforeseen facilitation pruning works will be identified at the pre-contractors site meeting (see Section 6, DS2).

5.14 Landscaping

Whilst not anticipated, where necessary, the landscaping of any areas within the projected RPAs of the retained trees will be carried out by hand (see Section DS11) and where practical, the existing ground levels will remain unchanged.

5.15 Tree loss evaluation

It is the Author's considered opinion that the tree works detailed in Table 5.1, will have no discernible impact on any perceived amenity value, that the trees might provide, when viewed from outside of the site.

The Landscape Framework Strategy provides an excellent opportunity to improve upon and enhance the wooded character of the site, through the positive management of individual trees, the formation of new areas of scrub edge and conservation grassland, with the reinstatement of ponds/water features on site.

The planting of new UK native trees and shrubs will enhance the existing level of species diversity and the level of arboricultural interest, that currently exists due largely to the extensive planting of laurel and spruce throughout the site.

5.16 Issues to be addressed by an Arboricultural Method Statement

The Arboricultural Method Statement (Section 6) is site-specific and details a recommended sequence and methodology for the implementation of those aspects of the project and its associated activities, that have the potential to result in loss or damage to the retained trees. By carefully following and adopting the detailed recommendations and guidance, foreseeable detriment to the retained trees will be minimised.

5.17 Tree Protection Plan

The TPP (Appendix C), when read in conjunction with Section 6 of this report, will inform on and describe the recommended tree protection and precautionary measures, recommended for this project in the context of the proposed layout.

Should the use of temporary ground protection prove necessary, an appropriate specification (dependent on the anticipated nature of the necessary incursions), will need to be adopted (Section 6 - DS5).

Adopting the recommendations detailed in section 6, will help to minimise the potential for any detrimental impact that the construction or demolition activities might foreseeably have on the retained trees.

6 Site Specific Arboricultural Method Statement (AMS)

6.1 AMS Content

This section of the report summarises, identifies and provides details on those roles, works and activities that are anticipated as being key to successful tree retention. The detailed steps are considered to have a relevant degree of arboricultural importance and connectivity and they have been set out in a logically, recommended sequence, which all contractors must follow.

Consequently, it is important that the client, who will fulfil the role of the Site/Project Manager (PM) and/or the Site Arboriculturalist (SA), communicates with any appointed contractors and their site operatives, the recommendations detailed within this report, specifically the potential extents of the RPAs and how tree roots could be damaged from incursions within them.

Tool box talks and briefing sessions are encouraged and will be delivered by the Site Manager and form part of a site induction for all contractors. Operative handouts will be made available for reference *i.e.*, *NJUG handout* (See Appendix G).

Other relevant plans and tables for reference including the Tree Survey Schedule (TSS), Tree Survey Plan (TSP) & Tree Protection Plan (TPP) will be kept on site and made available for all contractors, as necessary.

The following activities have been assigned a sequential 'Development Stage' (DS) number, to help enable an auditable record to be maintained and kept at the site. Appendix J has an appropriate template for this specific purpose.

DS1 – Appoint Site Arboriculturalist (SA)

It is recommended that the client confirms the appointment of a Site Arboriculturalist, whose role it will be to, if necessary, supervise and/or provide further guidance on, any aspects of the development, which have the potential to cause detrimental damage to the retained trees, either directly or indirectly.

DS2 – Pre-construction Site Meeting

This meeting is an opportunity to identify and discuss the constraints of the site and to determine whether or not additional TPMS, not anticipated by the Author, and/or necessary pruning works *e.g.*, *crown lifting or specific secondary branch removal to facilitate the access of plant and machinery into the site*, will prove necessary.

To establish approximate construction timescales to identify those key stages, where the presence of the SA will likely be required *e.g.*, *tree planting, or provide advice on how best to deal with any exposed tree roots*.

To ensure the provision of any information, handouts or specific details, considered necessary to facilitate the delivery of any appropriate tool box talks and the education/induction of ALL contractors and deliveries associated with the construction, on the subject of how their activities might affect the retained trees.

Copies of relevant operative handouts will be made available to the SM for distribution *i.e.*, *NJUG handout* (Appendix G).

Plans and tables for reference including the TSS, TSP & TPP will be kept on site throughout the duration of the project and be made readily available as hard copies, for contractors, if necessary.

Confirm the location and extent of any necessary contractor's compounds, which will house any necessary welfare facilities and be used for the storage for materials, plant and spoil and will provide space for mixing outside of the projected RPAs of the retained trees, without placing significant constraints on the working space available for any proposed excavation, construction and/or associated activities.

DS3 – Pre-construction Tree Works

An assessment of the site has been made and following consideration of the scale of the project, no tree works, beyond those detailed in Table 5.1 and shown in Appendix C, are anticipated as being necessary.

All scheduled tree works and any unforeseen access/facilitation pruning works, identified at the pre-construction site meeting, will be carried out by an appointed specialist Tree Works Contractor. The installation of temporary ground protection and/or protective fencing may prove necessary to facilitate access; see Section DS5 below.

All tree works will be carried out in accordance with and adherence to, the recommendations detailed in BS 3998:2010. Further considerations, including those which should be given to wildlife, are detailed in section 6.2.

DS4 – Identification & Marking out of RPAs and Tree Protection Measures (TPMs)

The SM and/or the SA, will communicate to the appointed contractors the projected extents of the RPAs of the retained trees. Hard copies of the TSP & TPP will be retained by the Project/Site Manager and used to help communicate this aspect.

If necessary, mark clearly on the ground, using a non-toxic line marking paint, the projected extents of the RPAs, as per the plans at Appendices B & C.

Following confirmation of the contractor's compound requirements and locations, unrestricted access can be made around the site, provided that the recommendations in Sections DS5 & DS6 below, are adhered to.

DS5 – Installation of Ground Protection Measures (GPM)

All plant, machinery and vehicles engaged in any demolition, ground works, excavation or construction activities will operate on any existing hard surfacing, until it can no longer be retained, and/or outside of the projected RPAs of the retained trees. If necessary, the use of temporary ground protection to facilitate access, within the projected RPAs of the retained trees, may prove necessary. Example specifications, as per BS 5837:2012, are detailed below.

The use of ground protection should ensure that any plant/vehicles using it will not damage any branches that extend beyond/above the ground protection.

a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g., 100 mm depth of woodchip), laid onto a geotextile membrane;

b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g., 150 mm depth of woodchip), laid onto a geotextile membrane;

c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g., proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

DS6 – Erection of Tree Protection Fencing (TPF)

The use of protective fencing to protect those trees considered to be most at risk from foreseeable and likely direct damage, has been recommended.

The locations for the protective fencing are clearly indicated on the TPP at Appendix C and will be erected prior to the commencement of any construction works on site; the default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts. A suggested specification, which will maximise the working space available whilst avoiding incursions into the RPAs of the trees beyond it, is illustrated in Figure 6.1 below.

Any variation to the suggested specification should ensure that the fencing is 'fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees' (Section 6.2.2. BS5837:2012) and will be agreed with the SA at the pre-construction site meeting (see DS2), prior to its erection.



Figure 6.1; Proposed specification for protective barrier.

All-weather notices will be attached to any fencing used; a suitable example for use has been attached at Appendix D.

Once the new fencing has been erected, the SA will confirm that it is fit for purpose and in accordance with the TPP. It will serve as tree protection throughout the remaining duration of the project and will not be moved or altered, without prior agreement from the SA.

DS7– Demolition, Excavation, Ground Works & Construction

The use of any plant and machinery, to carry out any of the above aspects, will be confined to areas outside of the projected RPAs of the retained trees. Any demolition work, ground works, excavation and construction will be undertaken from any existing hard surfacing and either take place outside of the projected RPAs, or if necessary, use temporary ground protection measures (see DS5) to facilitate access.

As a precautionary measure, it is recommended that the removal of existing hard surfacing and the subsequent landscaping within the projected RPA of tree T32, is carried out by hand and in accordance with Appendix G.

Should tree roots be exposed and if their severance proves **absolutely necessary** to implement the proposals, then any root pruning to the exposed roots on those trees that can be safely retained, should be cut so that the final wound is as small as possible and free from ragged torn ends, as per Section 8.6 of BS3998:2010 and strictly in accordance with the principles and guidance, detailed in NJUG4, which is

provided as an operative's handout at Appendix G, which will be made available to the contractors prior to work commencing.

The template provided in Appendix J will be used to record any results of planned, or unplanned pruning and to record the diameters of branches, or the diameter, density and frequency of any roots pruned. It will also be used to record any other events or details, that might have an effect on the retained trees *e.g., incursions within the RPAs*. The Site Arboriculturist will provide further guidance on this aspect.

Any variations to this anticipated construction methodology, will be discussed in detail by the SA and the SM, during the pre-works site meeting with any modifications made accordingly.

DS8 – No-Dig Surfacing

The installation of a 'no-dig' type surface, is not considered necessary and its use has not been recommended.

DS9 – Miscellaneous

No other aspects to consider.

DS10 – Tree Planting

Where new trees, or shrubs are to be planted, the species selection should have a bias for UK native species, which as well as being more beneficial for wildlife and pollinating insects (for flowering species), will provide a greater range of species and all-year arboricultural interest, than that which currently exists.

The final selection of any new tree or shrub species should have regard to the advice and recommendations detailed within Annex A of BS 5837:2012, which should influence the ultimate size, shape and form of which trees and shrubs are chosen and ensure that there is sufficient space for future tree growth, without any foreseeable need for future, frequent remedial pruning.

Any planting pits/holes will be dug by hand, where they are located within the projected RPAs of retained trees and should be prepared and cleared of vegetation, which might suppress the growth of the new trees.

In this instance the use of the Silva Cell [™] product is also recommended to provide the new avenue of trees on the main access drive, with a growing medium and environment that seeks to maximise the successful establishment of the new trees. The use of the Silva Cell [™] product along with the use of a permeable surface will provide an uncompacted tree rooting volume, which allows for larger and healthier trees than would otherwise be possible in urban areas with limited open space (DeepRoot 2015). This combination can also be used to provide sustainable storm water management by directing surface storm water to the soil volume (DeepRoot 2015).

Adopting the use of the Silva Cell [™] product, carrying out the necessary ground preparation and the associated use of uncompacted soil for the filling of the underground voids will provide the avenue of trees with a rooting environment and soil volume that is considered to be conducive to successful tree establishment.

Specific consideration should be given to the size and shape of these trees and consequently the use of trees with a compact and/or fastigate shape are recommended. The use of **Ornamental pear** (*Pyrus calleryana* 'Chanticleer'), is considered to be an appropriate choice and whilst it is not a UK native its prolific flowers will benefit pollinating insects.

Any necessary improvements to the soil should be made prior to planting *e.g., decompaction measures, adding organic matter etc...*

If soil compaction has occurred, amelioration and decompaction measures shall be carried out to a sufficient level to break any subsoil pan before cultivation. The use of the Air Ex™ tool should be used as part of this process in order to produce a loosely structured, friable soil, which will facilitate this aspect. Tree planting should be carried out under the supervision of the appointed project Arboriculturalist, having regard to the advice and recommendations detailed within section 10 and reference to Table 1 of BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations.

The following points summarise basic, fundamental after care for the newly planted trees:

- Prepare, the planting areas where new trees are shown for planting.
- The ground preparation and addition and specification of any new topsoil will be agreed with the SA prior to ordering.
- Water immediately after planting and weekly in first growing season (10 – 20 litres) if the weather is dry.
- Do not allow weeds or grass to grow within a 500mm radius of the stem. Maintain mulch to a depth of approximately 50mm.
- Ensure any tree-ties are not damaging the stems and loosen if necessary. Ensure tree stakes remains firm. Remove when a stem can support itself, usually after 1 -3 years.
- Remove dead or crossing branches, suckers arising from the roots or weak shoots on the stems.

DS11 – Landscaping

Any subsequent reinstatement and/or the landscaping of the areas within the projected RPAs of the retained trees will be carried out by hand whilst retaining existing and natural ground levels, following the removal of any hard landscaping, or man-made features.

The reinstatement of those areas, where hard surfacing currently exists, will be carried out by hand with any voids within it to be filled with good quality topsoil, which will be added sparingly and lightly tamped to appropriate points/levels which will allow a natural integration with the adjacent areas and if necessary, to facilitate grass seeding or the laying of turf by hand. The use of the Air Ex™ tool should be used as part of this process in order to produce a loosely structured, friable soil, which will facilitate this aspect. The addition of some organic, composted soil improver (not peat) will help improve the structure of the soil whilst the addition of some Mycorrhizal fungi might also be added, in an attempt to encourage secondary rooting development and to confer protection against root diseases.

Where practical, newly landscaped areas will be excluded from activity and access during the subsequent 6 – 8 weeks until successful establishment of those areas has taken place. For this reason, it is recommended that the landscaping is carried out following completion of all other works associated with the proposals. If soil compaction has occurred, amelioration and decompaction measures shall be carried out to a sufficient level to break any subsoil pan before cultivation.

DS12 – TPM Removal

All tree protection measures used will remain in situ throughout the duration of the project and removed only when their use is considered unnecessary by the SA and any risk of damage to the retained trees and/or their respective RPAs (*e.g., soil compaction from vehicular plant or machinery*), has passed.

DS13 – Tree Maintenance

The SA will survey the retained trees and any newly planted trees/shrubs for any obvious signs of ill health, damage *e.g., soil compaction*, stress or other physiological aspects that might be evident.

DS14 – Completion

Notification to LPA of completion, if necessary.

6.2 Tree Works

All tree works, will be carried out by an appointed Tree Works Contractor, in accordance with BS3998:2010.

The Wildlife and Countryside Act 1981 as amended, the Countryside and Rights of Way Act 2000 and the Conservation (Natural Habitats) Regulations 1994 protect ALL wild birds, their nests (whether in use or being built) and eggs and other wild animals including bats and their roosts in or adjacent to trees.

In simple terms, you should make sure that there are no wild birds nesting in or bats roosting in or adjacent to the tree[s] that you are proposing to work on. It is a criminal offence to recklessly or intentionally destroy any bird, its nest or its eggs or any bat or its roost (even if the roost is not occupied at the time). Even if your trees are protected, obtaining consent from the LPA will not override your responsibilities under the above wildlife acts.

6.3 Contacts

Site Arboriculturalist: To be appointed by the client.

Project Manager/Main Contractor: To be appointed by the client.