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

Whitley Common Pavilion,
The Park Paling,
Coventry
for
Lambert Smith Hampton

Report Reference: JH1014WHITLEYLSH
Outline Trees Arboricultural Consultancy
November 2014
QUALITY ASSURANCE

<table>
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<tr>
<th>Client:</th>
<th>Lambert Smith Hampton</th>
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<td>Report Content:</td>
<td>BS 5837:2012 Tree Survey, Arboricultural Impact Assessment (AIA), Arboricultural Method Statement (AMS) &amp; Tree Protection Plan (TPP)</td>
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<td>Report Approved for Issue</td>
<td>Jason Humphreys</td>
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1 Executive Summary

1.1 The Project and Commissioned Work

1.1.1 Outline Trees was instructed by Michael Askew of Lambert Smith Hampton, to carry out a British Standards 5837:2012 Tree Survey, in order to enable the validation and the determination of (in respect of the arboricultural impact), a planning application by the Local Planning Authority (Coventry City Council) whilst also providing guidance on how the proposed development can be achieved by minimising the potential for any detrimental impact to any of the retained trees on site.

1.1.2 A current plan of the site in AutoCAD format has formed the basis for the Tree Survey Plan, whilst an AutoCAD file of the proposed development (Dwg. No. P01.B Proposed Layout Plan) has been used to produce the Arboricultural Impact Assessment & Tree Protection Plan.

1.1.3 The content and scope of this report is listed below:

- BS 5837:2012 Tree Survey and Categorisation
- Arboricultural Impact Assessment
- Arboricultural Method Statement
- Tree Protection Plan

1.2 Findings and Recommendations

1.2.1 The survey assessed 8 individual trees and 1 section of hedgerow with 5 individual trees, attaining a Category ‘B’ assessment value. In the context of the sites current use, the Tree Survey Schedule at Appendix A, details appropriate arboricultural works that should be considered irrespective of any development proposals.

1.2.2 It is recommended that the existing car park surfacing, within the RPAs of those trees likely to be affected (specifically Tree Ref. No’s T1, T2 & T5), is retained in its current state and form and that any excavation, necessary to resurface the car park area, is excluded from those areas where the RPAs extend to.

1.2.3 Where necessary, adopting hand dig methods and working to the practices described in NJUG Volume 4 will likely prove to be necessary for the installation of the concrete edging stones to the edge of the car park area, within the RPAs of Tree ref No’s T1, T2 & T5, in order to minimise any detrimental impact on the above trees.

1.2.4 Where necessary, adopting hand dig methods and working to the practices described in NJUG Volume 4 may prove necessary for the installation of any new bollards at the edge of the car park area, within the RPAs of the surveyed trees, in order to minimise any detrimental impact on the above trees.

1.2.5 An element of relatively minor branch pruning, detailed in Table 7.1, is considered to be a likely requirement in order to, reduce the likelihood of unnecessary damage occurring to Tree Ref. T2 and to provide a reasonable working space, beneath its crown to implement and facilitate the anticipated construction techniques required.

1.2.6 No surveyed trees are proposed for removal with the result that there will be no loss of public amenity value or any detrimental impact to the wider area or immediate street scene.

1.2.7 It is considered that provided the recommended protective measures and construction methodology, detailed within sections 6 & 7 of this report, are adopted prior to and during the construction there is no arboricultural reason as to why this development cannot be implemented.
or that any significant arboricultural constraints exist, which might preclude the proposed development of the site.

1.2.8 The report provides information on the trees, their category ratings and their Root Protection Areas and it is considered unlikely that further arboricultural input will be required in order to implement the current proposals, provided that the advice in sections 6 & 7 of this report, is followed.
<table>
<thead>
<tr>
<th>Item</th>
<th>Findings</th>
<th>Recommendations</th>
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<tr>
<td>BS 5837:2012 Tree Survey</td>
<td>The survey assessed 8 individual trees and 1 section of hedgerow with 5 individual trees, attaining a Category ‘B’ assessment value.</td>
<td>The tree survey schedule at appendix A details appropriate arboricultural works solely in the context of the site’s current and should not be interpreted as being necessary in respect of the proposed development.</td>
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| Arboricultural Implication Assessment          | No tree removals are required in order to implement the proposals. Localised constraints are anticipated on the working space available.  
Incursions into the RPAs of retained trees are considered likely.                                                                                      | Carry out minor facilitation tree pruning works to Tree Ref. T5 as detailed in Table 7.1.  
Adopt the use of ground protection measures, no-dig zones and hand dig methods where conflict occurs within the RPA of retained trees.  
Retain existing hard surfacing within RPAs of Tree Ref. No’s T1, T2 & T5.                                                                 |
| Arboricultural Method Statement                | Construction and ground works in the proximity of retained trees have the potential to cause a detrimental impact.                                                                 | Construction and ground works should take place using the sequence, methodology and guidance detailed in sections 6 & 7 of this report.  
Protective fencing and/or ground protection measures to be in place prior to commencement of construction  
Appoint a project Arboriculturalist to liaise with contractors engaged in construction associated activities that might prove harmful to the retained trees.  
Any tree works should be carried out using the principles and practices described in British Standards 3998:2010 Tree Work - Recommendations.  
Site operatives engaged in the construction and ground works should ensure that any works in the proximity of retained trees are carried out in accordance with the advice detailed in sections 6 & 7 of this report. |
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2 Introduction and Background

2.1 Purpose and Scope of this Report

2.1.1 The purpose of the report is to enable the validation and determination (in respect of the arboricultural impact) of a planning application by the Local Planning Authority whilst providing site specific guidance and recommendations on how the proposed development can be achieved by minimising the potential for any detrimental impact to any of the retained trees on site.

2.1.2 In preparing the report, consideration has been given to the proposed layout, the condition and assessment categories of the trees, their protected status and the final use of the site with an additional focus of providing a desirable, balanced, juxtaposition between the trees, built structures, the infrastructure and end users of the site.

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

2.1.4 Recommendations included within this report are the professional opinion of an experienced Arboriculturist and are the view of Outline Trees. 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.

2.1.5 This report and the survey(s) on which it depends have been carried out by a competent Arboriculturist.

2.2 Regulatory and Policy Framework

2.2.1 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, 2000).

2.2.2 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).

2.2.3 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.

2.2.4 The Occupiers Liability Act 1984 (S2) states that the occupier owes a ‘common law duty of care’ to visitors and those who enter his land or premises, which extends to trespassers.

2.2.5 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.

2.2.6 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).

2.2.7 If your trees are protected, either subject to a tree preservation order or by virtue of growing in a conservation area, obtaining consent from the Local Planning Authority (LPA) will not override your responsibilities under the above wildlife acts.

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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**

2.3.1 The application site is a car parking area at Whitley Common Pavilion, The Park Paling, Coventry (approximate OS Grid reference SP 345 769), vehicular access to the site was made directly from the Park Paling.

2.3.2 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 2014 Ordnance Survey](image-url)
3 Survey Methodology

3.1 Survey Methods

3.1.1 The site was visited on Tuesday 21st October 2014 to carry out a Tree Survey and an assessment in accordance with BS 5837:2012 – *Trees in relation to Design, Demolition and Construction - Recommendations*. The weather at the time was dry, windy but adequate for conducting the survey during which, the following information was collected for each tree:

- Sequential reference number;
- Species;
- Height;
- Stem diameter @1.5m height;
- Branch spread;
- Existing height above ground level of:
  1. First significant branch and direction of growth (e.g. 3 NW);
  2. Canopy;
- Life stage;
  Y – Young,
  SM – Semi Mature,
  EM – Early Mature,
  M – Mature,
  OM – Over Mature;
- General observations, particularly of structural and/or physiological condition;
- Estimated remaining contribution;
- Category ‘U’ or ‘A’ to ‘C’ grading with the subcategory 1, 2 or 3 reflecting arboricultural, landscape or cultural values, respectively.

3.2 About the Author

3.2.1 Jason Humphreys (The Author) is a former Local Planning Authority Arboricultural Officer and experienced Arboriculturalist with approximately 13 years of experience in the Arboricultural Industry.

3.2.2 He is a Technician grade Member of the Arboricultural Association (Tech Arbor. A), a Professional member of the Consulting Arborist Society and holds the Technician’s Certificate in Arboriculture and the LANTRA Professional Tree Inspection certificate.
4 Limitations

4.1 Survey

4.1.1 The information contained within this report is based on the author’s knowledge and experience of dealing with tree related issues. Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information.

4.1.2 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 was made.

4.1.3 No liability can be accepted by the consultant 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 with the guiding principles and the terms listed.

4.1.4 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.

4.1.5 Tree rooting characteristics and soils are both enormously variable as are their interactions. This makes attempts to quantify subsidence risk assessment impossible. No effort has been made to assess subsidence risk potential nor should any be construed.

4.1.6 The report relates only to the trees shown on the attached tree survey schedule.

4.1.7 Where trees were extensively ivy clad this was recorded in the 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.
5 Results

5.1 Statutory Tree Protection

5.1.1 No attempt has been made to establish whether any of the trees on site are afforded any degree of statutory protection from Tree Preservation Orders or Conservation Areas.

5.1.1 If it subsequently transpires that any trees are subject to Statutory Protection then it should be understood that no pruning works are to be carried out to those trees unless the works are considered exempt or prior consent for tree works has first been granted by the respective LPA following either:

- a formal tree works application (Trees protected by a TPO),
- or the submission of a 5-day notice under section 198(6)(a) of the Town and Country Planning Act 1990 where works are considered exempt.

5.1.2 Pruning works can also be carried out if the works are considered necessary to implement full planning consent.

5.2 Tree Survey

5.2.1 The survey assessed 8 individual trees and 1 section of managed hedgerow; the quality and value of the surveyed trees is summarised below.

5.2.2 No individually assessed trees of high quality and value (Category ‘A’) were recorded during the survey.

5.2.3 Trees assigned to this category include attractive trees with high visibility and no significant defects, which are able to make a substantial contribution for a minimum of 40 years.

5.2.4 5 individually assessed trees of moderate quality and value category (Category ‘B’) were identified during the survey.

5.2.5 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.

5.2.6 3 individually assessed trees and 1 section of hedgerow of low quality and value category (Category ‘C’) were identified during the survey.

5.2.7 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.

5.2.8 Trees assigned to this category typically include self-seeded trees of limited life span, small and young trees and trees of poor form and limited amenity value.

5.2.9 No individually assessed trees were identified as being unsuitable for retention (Category ‘U’).

5.2.10 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 proved unsuitable for retention in the proximity of built structures due to their poor structure and form.

5.2.11 Full results of the tree survey are provided in the Tree Survey Schedule whilst a chart summarising the Individual Tree Assessment Categories for the trees can be viewed below (Figures 5.1).
Figure 5.1: Summary of Individual Tree Assessment Categories
6 Arboricultural Impact Assessment

6.1 Tree Survey
6.1.1 General tree works detailed in the Tree Survey 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 the proposed development.

6.2 Trees Suitable for Retention
6.2.1 Where possible, it is generally considered desirable for Category ‘A’ and Category ‘B’ trees to be retained and incorporated into new developments and layouts; this proposed development has sought to retain Category ‘B’ trees, where possible.
6.2.2 Category ‘U’ trees are not considered to be appropriate for retention and no attempt should be made to retain any.
6.2.3 In assessing the suitability of tree 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
   - Demolition/Ground Works
   - Construction Activity

6.3 Shading
6.3.1 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 based on advisory comments detailed in section 5.22, Note 1 of BS 5837:2012.
6.3.2 Shading of by trees can be a problem, particularly where there are areas which require natural light. Proposed layouts should be designed to take account of existing trees, their ultimate size and density of foliage, and the effect that these will have on the availability of light (BS 5837:2012).
6.3.3 Upon consideration of the above, no further investigation or mitigation is considered necessary due to the layout orientation and the nature of the proposals i.e. non-residential.

6.4 Direct Damage
6.4.1 Any proposed layout should consider the likelihood of direct damage occurring from incremental root and stem growth and the possibility of the fabric of any new structure being damaged by the whipping of branches against it.
6.4.2 In respect of the above, direct damage by the retained trees is not anticipated.
6.4.3 Table 6.1, taken from Annex A of BS 5837:2012 provides distances that are advised as minimum distances of trees from new structures for new plantings.

Table 6.1, Minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth

<table>
<thead>
<tr>
<th>Type of structure</th>
<th>Minimum distance between young trees or new planting and structure, in metres (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stem dia. &lt;300 mm A)</td>
</tr>
<tr>
<td>Buildings and heavily loaded structures</td>
<td>—</td>
</tr>
<tr>
<td>Lightly loaded structures such as garages, porches etc.</td>
<td>—</td>
</tr>
<tr>
<td>Services</td>
<td>&lt;1 m deep</td>
</tr>
<tr>
<td></td>
<td>&gt;1 m deep</td>
</tr>
<tr>
<td>Masonry boundary walls</td>
<td>—</td>
</tr>
<tr>
<td>In-situ concrete paths and drives</td>
<td>0.5</td>
</tr>
<tr>
<td>Paths and drives with flexible surfaces or paving slabs</td>
<td>0.7</td>
</tr>
</tbody>
</table>

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6.5  **Root Protection Areas (RPAs)**

6.5.1 Final on-site measurements should be taken to establish the linear distances associated with the respective RPAs of the retained trees and to ascertain the extent of the tree protection measures and any anticipated incursions into the RPAs.

6.5.2 The erection of protective fencing and the installation of ground protection measures, if necessary, as per the Tree Protection Plan (TPP) prior to the commencement of any works on site will protect the RPAs of the retained trees.

6.5.3 Existing ground levels and surfacing should be retained within the RPAs. Intrusion into soil within the RPAs is generally not acceptable and the soil and existing surfacing within it should remain in situ.

6.5.4 The erection of protective fencing, in this instance, is considered likely to place only minor localised constraints on elements of the construction and its associated activities and possibly limit the working space available, with the subsequent result that incursions into the RPAs of some of the retained trees will likely prove necessary (specifically Tree Ref. No’s T1, T2 & T5).

6.5.5 In the event that ground protection measures are considered necessary, then the following general guidance is provided below, which if adopted will help to minimise the potential for any detrimental effect that associated ground works and construction might have.

6.5.6 British Standards 5837:2012 advises that new temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction to underlying soil and further provides the following note:
NOTE The ground protection might comprise one of the following:

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.

6.6 Excavation & Ground Works

6.6.1 The erection of protective fencing and use of ground protection measures, if necessary (see 6.5.6), as per the TPP prior to the commencement of any works on site, will allow excavations and ground works to take place whilst minimising the potential for any detrimental impact to any of the retained trees on site.

6.6.2 All plant and vehicles engaged in the above works should either operate outside the RPAs, or run on ground protection, if necessary.

6.6.3 Where trees stand adjacent to hard surfaces to be removed, excavation should be undertaken inwards, from outside of the RPAs.

6.6.4 Where necessary, adopting hand dig methods and working to the practices described in NJUG Volume 4 (Appendix G) will likely be necessary for the installation of the concrete edging stones to the edge of the car park area, within the RPAs of Tree ref No’s T1, T2 & T5, in order to minimise any detrimental impact on the above trees.

6.6.5 Where necessary, adopting hand dig methods and working to the practices described in NJUG Volume 4 may prove necessary for the installation of any new bollards at the edge of the car park area, within the RPAs of the surveyed trees, in order to minimise any detrimental impact on the above trees.

6.7 Hard Surfacing Within the Root Protection Area

6.7.1 It is understood, through discussion following the site visit, that the existing surfacing throughout the car park and within the RPAs of the retained trees will remain in-situ and any new surfacing will be laid directly above. Consequently the installation of a ‘no-dig’ type surface within the RPAs of retained trees is not anticipated.

6.8 Construction Activity

6.8.1 The erection of protective fencing and use of ground protection, if necessary as per the TPP and section 6.5.6 prior to the commencement of any works on site will allow the development to take place whilst minimising the potential for any detrimental impact to any of the retained trees on site.

6.8.2 All plant and vehicles engaged in construction works should either operate outside the RPA, or run on ground protection, if necessary (see section 6.5.6).
6.9  **Future Pressure for Tree Pruning/Removal**

6.9.1 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.

6.9.2 No additional pruning pressures to that which currently exist are anticipated as a result of implementing the proposals.

6.10  **Seasonal Nuisance**

6.10.1 Foliage, 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.

6.10.2 Autumnal leaf and fruit fall will be evident due to the deciduous nature of the retained trees on the site. No additional pressures to those which currently exist are anticipated as a result of implementing the proposals.

6.11  **Infrastructure**

6.11.1 Infrastructure requirements have been considered and there is/no evidence to suggest that retained trees will have an impact on lighting, signage, CCTV sightlines or visibility splays.

6.12  **Trees to be removed**

6.12.1 The proposed layout does not require the removal of any surveyed trees in order to implement the proposals, provide a suitable, balanced and desirable layout juxtaposition or to reduce any risks associated with their condition and/or position.

6.12.2 The complete Tree Survey Schedule details no further tree removals in the context of the site’s current use that need to be considered to promote the development of retained trees and reduce any risks present associated with their condition, regardless of any development proposals.

6.13  **Trees to be pruned**

6.13.1 It is considered likely that an element of relatively minor branch pruning, detailed in Table 7.1, is likely to be required in order to, reduce the likelihood of unnecessary damage occurring to Lime tree T2 and to provide a reasonable working space to implement and facilitate the anticipated construction techniques required.

6.13.2 The complete Tree Survey Schedule details pruning works solely in the context of the site’s current use that should be considered to facilitate future inspection regimes and to promote the development of retained trees, irrespective of any development proposals.

6.14  **Landscaping**

6.14.1 BS 5837:2012 advises that any new tree planting and associated landscaping proposals should consider the ultimate height and spread, form, habit and colour, density of foliage and maintenance implications, in relation to both the built form of the new development, and the retained landscape features.

6.14.2 No details of any proposed landscaping have been provided.
6.15 Tree loss evaluation
6.15.1 The proposed layout does not require the removal of any surveyed trees in order to implement the proposals with the consequence that the proposed development should not affect the level of amenity value that the trees on the site provide to the current street scene or the wider area.

6.16 Issues to be addressed by an Arboricultural Method Statement
6.16.1 The Arboricultural Method Statement (Section 7) details the methodology for the implementation of those aspects, considered in this section of the report that have the potential to result in loss or damage to retained trees.

6.17 Tree Protection Plan (TPP)
6.17.1 The TPP (Appendix C), when read in conjunction with this report, will inform on and describe the required tree protection measures for the retained trees in the context of the proposed layout.
6.17.2 The TPP should be read in conjunction with the Tree Survey Schedule in order to establish the linear radial distances for the erection of the protective fencing and/or installation of ground protection from the retained trees.
7 Arboricultural Method Statement

7.1 Facilitation Tree Works/Removals

7.1.1 Tree works tabled below (Table 7.1) have been identified to facilitate the implementation and construction of the proposals,

7.1.2 Any tree works should be carried out using the principles and practices described in British Standards 3998:2010 – Tree Work - Recommendations

Table 7.1: Summary of Facilitation Tree Works

<table>
<thead>
<tr>
<th>Tree Ref. No’s.</th>
<th>Species</th>
<th>BS 5837:2012 Category</th>
<th>Nature of Works and Necessity</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>Lime</td>
<td>B</td>
<td>Raise current crown height clearance to approx. 2-3m by selective removal and reduction of lower secondary branches (to the west) to facilitate the implementation and construction of the proposed development – (to facilitate the anticipated movement of plant and machinery directly beneath crown spread to the west).</td>
</tr>
</tbody>
</table>

7.1.3 Any tree works subsequently identified should be carried out using the principles and practices described in British Standards 3998:2010 – Tree Work - Recommendations

7.2 Erection of Protective Fencing

7.2.1 Protective fencing should be erected as per the TPP at the linear distances specified in the Tree Survey Schedule prior to the commencement of any works on site.

7.2.2 The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 7.1 (see below).
7.2.3 All-weather notices should be attached to the fencing; a suitable example for use has been attached at Appendix D.

7.2.4 Once erected, the protected area should be regarded as sacrosanct and should not be removed or altered without prior recommendation by the project Arboriculturist (7.3.1) and, where necessary, approval from the local planning authority.

7.2.5 Where the site circumstances, use of ground protection and associated risk of damaging incursion into the RPAs do not necessitate the default level of protection, an alternative specification should be prepared by the project Arboriculturist. For example, 2m tall welded mesh panels on rubber or concrete feet as illustrated in Figure 7.2 (see below).
7.3 Site Monitoring

7.3.1 It is recommended that a Project Arboriculturist is appointed prior to the commencement of any works and retained for the duration of the project.

7.3.2 The appointed person can assist in monitoring Arboricultural site activity using an auditable system.

7.3.3 The appointed person should be consulted in the event that additional ground protection measures are considered necessary, root pruning is required or unexpected incursions into the RPAs are considered necessary.

7.4 Ground Works

7.4.1 The erection of protective fencing and the installation of any necessary ground protection measures as per the TPP and section 6.5.6, if necessary, prior to the commencement of any works on site will allow the ground works to take place without any adverse effect and/or impact on the retained trees.

7.4.2 All plant and vehicles engaged in ground works should either operate outside the RPA, or run on ground protection.

7.5 Soil Compaction and Remediation Measures

7.5.1 Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites.

7.5.2 Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth.

7.5.3 Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed.

7.6 Construction

7.6.1 Protective fencing and the installation of any necessary ground protection measures as per the TPP and section 6.5.6, if necessary, should be erected prior to the commencement of any works on site.
7.6.2 All plant and vehicles engaged in construction activity should either operate outside the RPAS, or run on ground protection.

7.6.3 Where necessary, adopting hand dig methods and practices described in NJUG Volume 4 (Appendix G) will likely be necessary for the installation of the concrete edging stones to the edge of the car park area, within the RPAs of Tree ref No’s T1, T2 & T5, in order to minimise any detrimental impact on the above trees.

7.7 **Contractors Storage, Parking & Access**

7.7.1 Provision should be made for welfare facilities, the site office, contractor parking, storage for materials, plant and spoil and space for mixing outside of the RPAs of retained trees.

7.8 **No-Dig Surfacing**

7.8.1 It is not anticipated that the use of no-dig surfacing e.g. a three-dimensional cellular confinement system, will be required for use in this development; generic guidance is however, given below in respect of its installation methodology.

7.8.2 Existing hard surfacing should be retained as temporary ground protection within the RPA for the duration of the construction and then only removed when ready, by hand tools, immediately prior to the installation of the No-Dig surfacing.

7.8.3 Once the RPA beneath the existing hard surfacing has been exposed it should be treated as sacrosanct and excavation, skimming or scraping should not take place within it.

7.8.4 Manufacturer’s installation guidelines specific to the product used should be adhered to.

7.9 **Completion**

7.9.1 Upon completion of the project, advice of the project Arboriculturist should be sought in coordination of the removal of the protective fencing and ground protection if necessary, to survey the retained trees for signs or symptoms of damage and/or stress that the construction might have had.

7.9.2 The protective fencing and ground protection measures should remain in situ until their use is considered unnecessary 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.

7.10 **Contacts**

   Jason Humphreys, Outline Trees, 60 Normanton Lane, Littleover, Derby DE23 6GQ
   Email: info@outlinetrees.co.uk
Appendix A  Tree Survey Schedule
<table>
<thead>
<tr>
<th>Tree Ref. No.</th>
<th>Species</th>
<th>Height (m)</th>
<th>Stem Ø (mm)</th>
<th>Protective Linear Radius (m)</th>
<th>Root Protection Area (m²)</th>
<th>Branch Spread (m)</th>
<th>Height (m)</th>
<th>General Observations and Preliminary Management Recommendations (In bold).</th>
<th>Estimated Remaining Contribution</th>
<th>Life Stage</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Lime (Tilia spp.)</td>
<td>11</td>
<td>440</td>
<td>5.3</td>
<td>88</td>
<td>7     3    5    6</td>
<td>2.5 W</td>
<td>Fair condition. Crown development slightly suppressed to the east by adjacent lime tree. Some minor dead wood present and broken branch resting in crown to the south east at approximately 4m height. <strong>Remove broken/hanging branches.</strong></td>
<td>20+</td>
<td>M</td>
<td>B2</td>
</tr>
<tr>
<td>T2</td>
<td>Lime</td>
<td>12</td>
<td>540</td>
<td>6.5</td>
<td>132</td>
<td>5.5   5.5   5.5   5.5</td>
<td>5.5</td>
<td>Fair condition. Attractive, broad spreading crown shape with dense canopy and some crossing rubbing branches within. <strong>No works necessary.</strong></td>
<td>20+</td>
<td>M</td>
<td>B2</td>
</tr>
<tr>
<td>T3</td>
<td>Lime</td>
<td>9</td>
<td>310</td>
<td>3.7</td>
<td>43</td>
<td>4     4     4     5</td>
<td>1.7 W</td>
<td>Fair condition. Crown development slightly suppressed to the north by adjacent lime tree T2. Evidence of included bark at union of first significant branch to the west. <strong>No works necessary.</strong></td>
<td>20+</td>
<td>M</td>
<td>B2</td>
</tr>
<tr>
<td>Tree Ref. No.</td>
<td>Species</td>
<td>Height (m)</td>
<td>Stem Ø (mm)</td>
<td>Protective Linear Radius (m)</td>
<td>Root Protection Area (m²)</td>
<td>Branch Spread (m)</td>
<td>Height (m)</td>
<td>1st Significant Branch &amp; Direction</td>
<td>Canopy</td>
<td>Life Stage</td>
<td>General Observations and Preliminary Management Recommendations (In bold).</td>
</tr>
<tr>
<td>--------------</td>
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<td>---------------------------------</td>
</tr>
<tr>
<td>T4</td>
<td>Lime</td>
<td>12</td>
<td>420</td>
<td>5</td>
<td>80</td>
<td>5, 5, 4, 4.5, 2 S</td>
<td>1.5</td>
<td>M</td>
<td></td>
<td></td>
<td>Fair condition. Main stem bifurcates at approximately 2.3m height. Densely foliated canopy. No works necessary.</td>
</tr>
<tr>
<td>T5</td>
<td>Lime</td>
<td>12</td>
<td>535</td>
<td>6.4</td>
<td>129</td>
<td>4, 6, 6, 5.5, 2 W</td>
<td>1.5</td>
<td>M</td>
<td></td>
<td></td>
<td>Fair condition. Minor occluding wound on main stem to the east at approximately 0.5m height. Some cambial dysfunction and bark damage on main stem to the north at approximately 1m height. Densely foliated canopy. No works necessary.</td>
</tr>
<tr>
<td>Tree Ref. No.</td>
<td>Species</td>
<td>Height (m)</td>
<td>Stem Ø (mm)</td>
<td>Protective Linear Radius (m)</td>
<td>Root Protection Area (m²)</td>
<td>Branch Spread (m)</td>
<td>Height (m)</td>
<td>Life Stage</td>
<td>General Observations and Preliminary Management Recommendations (In bold).</td>
<td>Estimated Remaining Contribution</td>
<td>Category</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
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<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| T6           | Common Alder (*Alnus glutinosa*) | 9          | 370         | 4.4                         | 62                        | 2.5 4 3 3.5      | 2 NW       | 1.5       | M  
Fair condition.  
Notable amount of bark damage with exposed heartwood around approximately 50% of circumference of main stem.  
Main stem exhibits slight leans to the east by approximately 10 degrees.  
**No works necessary.** | 10+               | C2        |
| T7           | Wild Cherry (*Prunus avium*)     | 5          | 170         | 2                           | 13                        | 4 4 2 2         | 2 N        | 3 EM      | M  
Fair condition.  
Unremarkable tree with unbalanced crown shape and form.  
**No works necessary.** | 10+               | C2        |
| T8           | Wild Cherry                       | 5          | 170         | 2                           | 13                        | 2 4 3 2         | 2 N        | 3 EM      | M  
Fair condition.  
Unremarkable tree with unbalanced crown shape and form.  
**No works necessary.** | 10+               | C2        |
<table>
<thead>
<tr>
<th>Tree Ref. No.</th>
<th>Species</th>
<th>Height (m)</th>
<th>Stem Ø (mm)</th>
<th>Protective Linear Radius (m)</th>
<th>Root Protection Area (m²)</th>
<th>Branch Spread (m)</th>
<th>Height (m)</th>
<th>Canopy</th>
<th>Life Stage</th>
<th>General Observations and Preliminary Management Recommendations (In bold).</th>
<th>Estimated Remaining Contribution</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Hawthorn, Elder &amp; Blackthorn</td>
<td>1.5</td>
<td>75</td>
<td>0.9</td>
<td>-</td>
<td>45</td>
<td>1</td>
<td>45</td>
<td>1</td>
<td>Fair condition. Section of dense, compact and regularly managed hawthorn hedge. No works necessary.</td>
<td>20+</td>
<td>C2</td>
</tr>
</tbody>
</table>
Appendix B  Existing Layout and Tree Survey Plan
Appendix C  Proposed Layout & Tree Protection Plan
Crown lift to achieve approximately 2-3m crown height clearance by selective removal and reduction of lower secondary branches to the west.

Retain existing surfacing within RPAs of Trees T1, T2 & T5 with any excavation (i.e. for the installation of the concrete kerb edgings) to be carried out by hand and adopting principles and practices in NJUG Volume 4.

On Site Dimensions
- T1: 5m from bollards (Linear Protective Radius = 5.3m)
- T2: 4.6m from bollards (Linear Protective Radius = 6.5m)

Root Protection Areas / Tree Protection Extents
Tree and Ground Protection measures, if necessary, to be adopted in accordance with specifications and recommendations detailed in sections 6 & 7 of Main Report Ref: JH1014WHITLEYLSH

Outline Trees
Arboricultural Consultancy
60 Normanton Lane
Littleover
Derby
www.outlinetrees.co.uk

Key & Notes
- Cat B Trees
- Cat C Trees
- Root Protection Areas / Tree Protection Extents
  - T1, T2, T3, T4 etc...
  - G1, G2, G3, G4 etc...
  - W1, W2, W3, W4 etc...
  - H1, H2, H3, H4 etc...
- Tree Tag
- Group Tag
- Woodland Tag
- Hedgerow Tag
Appendix D  Protective Fencing Signage
PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

TREE PROTECTION AREA KEEP OUT!
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER. CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY
Appendix E References


(BSi) BS 3998:2010, Tree Work - Recommendations.


Arboricultural Practice Note Number 12 (2007) Through the Trees to Development. Arboricultural Advisory and Information Service


Watson G. & Green T. (2011) Fungi on Trees; An Arborist’s Field Guide. Arboricultural Association
## Appendix F  Life Stage & Condition Key

<table>
<thead>
<tr>
<th>Condition</th>
<th>Life Stage *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Newly Planted</td>
</tr>
<tr>
<td></td>
<td>Those trees that are relatively free from defects and any visible signs of structural defects, which also exhibit normal signs of vitality and vigour when compared with trees of a similar species in a similar environment.</td>
</tr>
<tr>
<td>Fair</td>
<td>Young</td>
</tr>
<tr>
<td></td>
<td>Those trees that exhibit some minor/manageable defects or display evidence of minor remedial pruning, which also exhibit normal signs of vitality and vigour when compared with trees of a similar species in a similar environment.</td>
</tr>
<tr>
<td>Poor</td>
<td>Semi to Early Mature</td>
</tr>
<tr>
<td></td>
<td>Those trees that exhibit a high level of defects and/or significant past pruning works, which also exhibit relatively low signs of vitality and vigour when compared with trees of a similar species in a similar environment.</td>
</tr>
<tr>
<td>In Decline</td>
<td>Mature</td>
</tr>
<tr>
<td></td>
<td>Those trees that are close to the end of the useful life expectancy and displaying associated symptoms of branch die back and low vigour.</td>
</tr>
</tbody>
</table>

* Typical useful life expectancy of common trees. (Taken from Helliwell's Amenity Tree Valuation notes)

<table>
<thead>
<tr>
<th>Life Expectancy</th>
<th>Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>300+ years</td>
<td>Yew</td>
</tr>
<tr>
<td>200-300 years</td>
<td>Oak, Sweet Chestnut, Plane, Sycamore, Lime</td>
</tr>
<tr>
<td>150-200 years</td>
<td>Scots Pine, Hornbeam, Beech, Tulip tree, Norway Maple, Lebanon Cedar</td>
</tr>
<tr>
<td>100-150 years</td>
<td>Ash, Spruce, Walnut, Red Oak, Horse Chestnut, Field Maple, Monkey Puzzle, Mulberry, Pear</td>
</tr>
<tr>
<td>70-100 years</td>
<td>Rowan, Whitebeam, Apple, Wild Cherry, Catalpa, Robinia, Ailanthus</td>
</tr>
<tr>
<td>50-70 years</td>
<td>Poplars, Willows, Cherries, Alders, Birches</td>
</tr>
</tbody>
</table>
TREE PROTECTION ZONE

Key to Diagram

- Trunk of Tree
- Spread of canopy or branches

**PROHIBITED ZONE – 1m from trunk.** Excavations of any kind must not be undertaken within this zone unless full consultation with Local Authority Tree Officer is undertaken. Materials, plant and spoil must not be stored within this zone.

**PRECAUTIONARY ZONE – 4 x tree circumference.** Where excavations must be undertaken within this zone the use of mechanical excavation plant should be prohibited. Precautions should be undertaken to protect any exposed roots. Materials, plant and spoil should not be stored within this zone. Consult with Local Authority Tree Officer if in any doubt.

**PERMITTED ZONE – outside of precautionary zone.** Excavation works may be undertaken within this zone however caution must be applied and the use of mechanical plant limited. Any exposed roots should be protected.
DAMAGE TO TREES
Tree roots keep a tree healthy and upright. Most roots are found in the top 600mm of soil and often grow out further than the tree’s height. The majority of these roots are very fine; even close to a tree few will be thicker than a pencil. Most street tree roots grow under the footway but may also extend under the carriageway. If roots are damaged the tree may suffer irreversible harm and eventually die.

PROTECTING ROOTS - DO’S and DON’TS
There are three designated zones around a tree each of which has its own criteria for working practices.

THE PROHIBITED ZONE

Don't excavate within this zone.
Don't use any form of mechanical plant within this zone.
Don't store materials, plant or equipment within this zone.
Don't move plant or vehicles within this zone.
Don't lean materials against, or chain plant to, the trunk.
Do contact the local authority tree officer or owner of the tree if excavation within this zone is unavoidable.
Do protect any exposed roots uncovered within this zone with dry sacking.
Do backfill with a suitable inert granular and top soil material mix as soon as possible on completion of works.
Do notify the local authority tree officer or the tree’s owner of any damage.

THE PRECAUTIONARY ZONE

Don't excavate with machinery. Where excavation is unavoidable within this zone excavate only by hand or use trenchless techniques.
Don't cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.
Don't repeatedly move / use heavy mechanical plant except on hard standing.
Don't store spoil or building material, including chemicals and fuels, within this zone.
Do prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
Do backfill the trench with an inert granular material and top soil mix. Compact the backfill with care around the retained roots. On non highway sites backfill only with excavated soil.
Do protect any exposed roots with dry sacking ensuring this is removed before backfilling.
Do notify the local authority tree officer or the tree’s owner of any damage.

THE PERMITTED ZONE

Don't cut roots over 25mm in diameter, unless advice has been sought from the local authority tree officer.
Do use caution if it is absolutely necessary to operate mechanical plant within this zone.
Do prune roots which have to be removed using a sharp tool (e.g. secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
Do protect any exposed roots with dry sacking ensuring this is removed before backfilling.
Do notify the local authority tree officer or the tree’s owner of any damage.