

Jacobs Douwe Egberts, Banbury

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



Client:

ADI Total Engineered Solutions

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Project Details

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| Project: | Jacobs Douwe Egberts, Banbury |
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| Report Title | BS 5837:2012 Tree Survey, Arboricultural Impact Assessment (AIA), Arboricultural Method Statement (AMS) & Tree Protection Plan (TPP) |

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Document Control

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1 EXECUTIVE SUMMARY

- i RammSanderson Ecology Ltd was instructed by ADI (Total Engineered Solutions) to carry out a British Standards 5837:2012 Tree Survey, in order to enable the submission, validation and the determination of (in respect of the arboricultural impact), a planning application by the Local Planning Authority 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.
- ii A current topographical survey of the site in AutoCAD format has been provided and this formed the basis for the Tree Survey Plan. A provided copy of the proposed site plan (Dwg. C101-2 Rev J) has been used to produce the Arboricultural Impact Assessment and Tree Protection Plan.
- iii 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

1.1 Findings and Recommendations

- i The survey assessed 4 individual trees and 1 group of trees adjacent to an area proposed for development to improve car parking facilities on the site. None of the surveyed trees or groups attained a Category 'A' (trees of high quality) assessment value. Overall, the condition of trees was at best Category 'B' (trees of moderate quality).
- ii 3 individual trees were considered to be Category 'U' (trees unsuitable for retention) due to their condition being such that they require removal in the interests of reasonable arboricultural management, irrespective of any proposed development.
- iii It is considered that the associated loss of amenity that the above trees provide, will not have a significant detrimental impact on the wider area or the immediate street scene and that their removal should not preclude the proposed development of the site.
- iv The proposed parking area extends into the recommended root protection area (RPA) for one Category 'B' tree (T1). However, as this is an area of existing hard standing which has evidently been previously used for storage and parking, the intrusion into the RPA is therefore not considered inappropriate on the condition that the existing surface is retained undisturbed as a base for the new parking area and that adequate tree protection and mitigation measures are implemented, as recommended within the main report.
- v Any tree works detailed in the Tree Survey Schedule at Appendix A have been identified solely in the context of the current use of the site and should be considered in the interests of good arboricultural management irrespective of any development proposals. It should not be inferred that any tree works are recommended as necessary to directly implement any future development.

CONTENTS

| | | |
|----------|--|-----------|
| 1 | EXECUTIVE SUMMARY | 3 |
| 1.1 | FINDINGS AND RECOMMENDATIONS | 3 |
| 2 | INTRODUCTION AND BACKGROUND | 6 |
| 2.1 | PURPOSE AND SCOPE OF THIS REPORT | 6 |
| 2.2 | REGULATORY AND POLICY FRAMEWORK | 6 |
| 2.3 | SITE LOCATION AND CONTEXT | 6 |
| | FIGURE 1: SITE LOCATION PLAN | 7 |
| 3 | SURVEY METHODOLOGY | 8 |
| 3.1 | SURVEY METHODS | 8 |
| 3.2 | SURVEY PERSONNEL | 8 |
| 4 | LIMITATIONS | 9 |
| 4.1 | SURVEY | 9 |
| 5 | RESULTS | 10 |
| 5.1 | SURVEYORS | 10 |
| 5.2 | STATUTORY TREE PROTECTION | 10 |
| 5.3 | TREE SURVEY | 10 |
| 6 | ARBORICULTURAL IMPACT ASSESSMENT | 12 |
| 6.1 | TREE SURVEY | 12 |
| 6.2 | TREES SUITABLE FOR RETENTION | 12 |
| 6.3 | SHADING | 12 |
| 6.4 | DIRECT DAMAGE | 12 |
| 6.5 | ROOT PROTECTION AREAS (RPAs) | 13 |
| 6.6 | EXCAVATION/GROUND WORKS | 14 |
| 6.7 | HARD SURFACING WITHIN THE ROOT PROTECTION AREA | 14 |
| 6.8 | CONSTRUCTION ACTIVITY | 15 |
| 6.9 | FUTURE PRESSURE FOR TREE PRUNING/REMOVAL | 15 |
| 6.10 | SEASONAL NUISANCE | 16 |
| 6.11 | INFRASTRUCTURE | 16 |
| 6.12 | TREES TO BE REMOVED | 17 |
| 6.13 | TREES TO BE PRUNED | 17 |
| 6.14 | LANDSCAPING | 17 |
| 6.15 | TREE LOSS EVALUATION | 17 |
| 6.16 | ISSUES TO BE ADDRESSED BY AN ARBORICULTURAL METHOD STATEMENT | 17 |
| 6.17 | TREE PROTECTION PLAN (TPP) | 17 |

7 ARBORICULTURAL METHOD STATEMENT **18**

| | | |
|------|--|----|
| 7.1 | FACILITATION TREE WORKS/REMOVALS | 18 |
| 7.2 | SUMMARY OF MITIGATION | 18 |
| 7.3 | ERECTION OF PROTECTIVE FENCING | 19 |
| 7.4 | GROUND WORKS & DEMOLITION | 20 |
| 7.5 | SOIL COMPACTION AND REMEDIATION MEASURES | 20 |
| 7.6 | CONSTRUCTION WORKS | 20 |
| 7.7 | CONTRACTORS STORAGE, PARKING & ACCESS | 20 |
| 7.8 | COMPLETION | 20 |
| 7.9 | TREE PLANTING & AFTER CARE | 21 |
| 7.10 | CONTACTS | 21 |

FIGURES

| | | |
|-----------|--|----|
| FIGURE 1: | SITE LOCATION PLAN | 7 |
| FIGURE 2: | SITE CONTEXT PLAN | 7 |
| FIGURE 3: | MINIMUM DISTANCE BETWEEN YOUNG TREES OR NEW PLANTING AND STRUCTURE TO AVOID DIRECT DAMAGE TO A STRUCTURE FROM FUTURE TREE GROWTH | 13 |
| FIGURE 4: | COMPOSITION OF THE CELLWEB™ THREE-DIMENSIONAL CONFINEMENT SYSTEM | 15 |
| FIGURE 5: | CROSS SECTION ILLUSTRATING A PERMEABLE TARMAC SURFACE FINISH | 15 |
| FIGURE 6: | TRENCHLESS SOLUTIONS FOR DIFFERING UTILITY APPARATUS INSTALLATION REQUIREMENTS | 16 |
| FIGURE 7: | DEFAULT SPECIFICATION FOR PROTECTIVE BARRIER © BRITISH STANDARDS INSTITUTE | 19 |

TABLES

| | | |
|----------|-------------------------------------|----|
| TABLE 1: | SUMMARY OF CONDITIONS DURING SURVEY | 10 |
| TABLE 2: | SURVEY RESULTS | 11 |
| TABLE 3: | SUMMARY OF RECOMMENDED TREE WORKS | 18 |
| TABLE 4: | SUMMARY OF MITIGATION REQUIREMENTS | 18 |

APPENDICES

| | | |
|-------------|-----------------------|----|
| APPENDIX A: | TREE SCHEDULE | 22 |
| APPENDIX B: | TREE CONSTRAINTS PLAN | 23 |
| APPENDIX C: | TREE PROTECTION PLAN | 24 |

2 INTRODUCTION AND BACKGROUND

2.1 Purpose and Scope of this Report

- i The purpose of the report is to identify the arboricultural constraints and impact upon a proposal to reconfigure the provision for car parking utilised by the Client at the Jacobs Douwe Egberts site in Banbury (OX16 2QU).
- ii This report has been prepared following the guidance within BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' Its purpose is to assess the likely arboricultural implications to the development proposals for the site and to be submitted in support of a planning application to the Local Planning Authority seeking consent for these proposals. It also provides arboricultural guidance on how the proposed development can be achieved while minimising any potential detrimental impacts to retained trees.
- iii In preparing this report, consideration has been given to the proposed layout, the condition of the trees and the final use of the site with a focus on providing a harmonious, balanced environment between the trees, buildings and end users of the site.
- iv Whilst not definitive, the findings and any associated recommendations detailed within this report are considered reasonable, practicable, sustainable and in the interests of promoting good arboricultural management.
- v Recommendations included within this report are the professional opinion of an experienced Arboriculturist and are the view of RammSanderson Ecology Ltd. 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.
- vi This report and the survey(s) on which it depends have been carried out by a competent Arboriculturist.

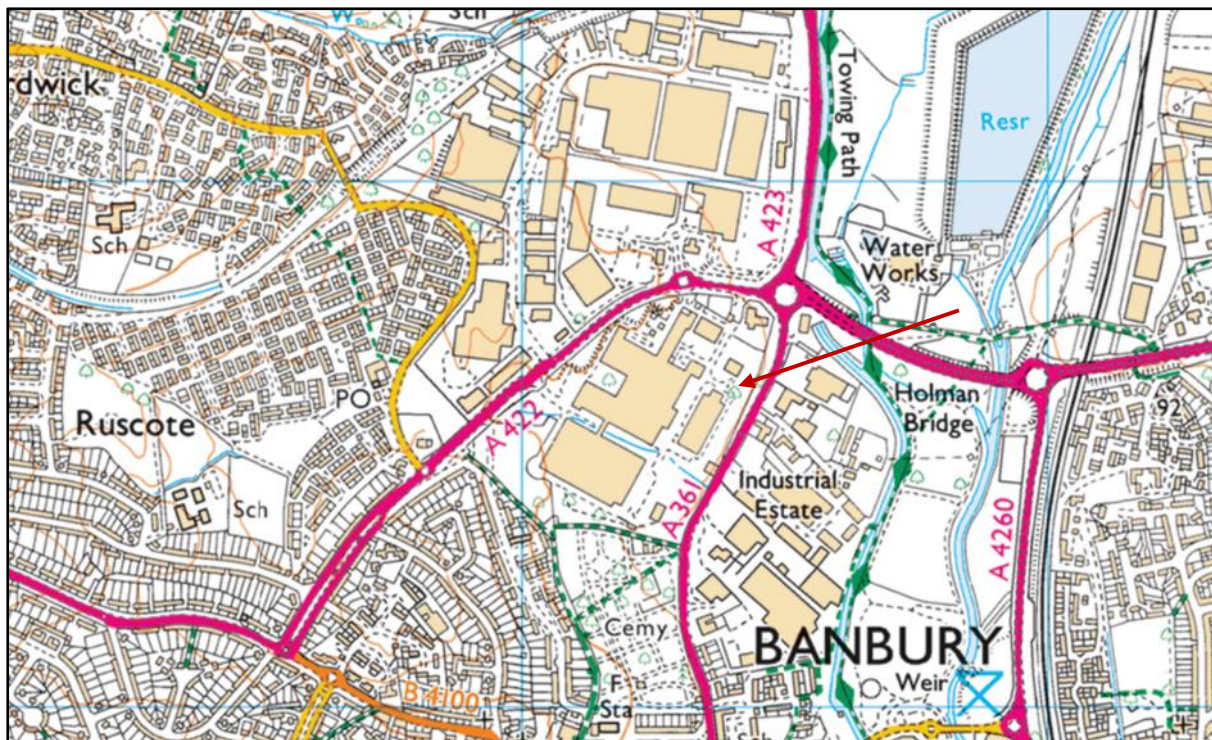
2.2 Regulatory and Policy Framework

- i 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).
- ii 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).
- iii 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.

2.3 Site Location and Context

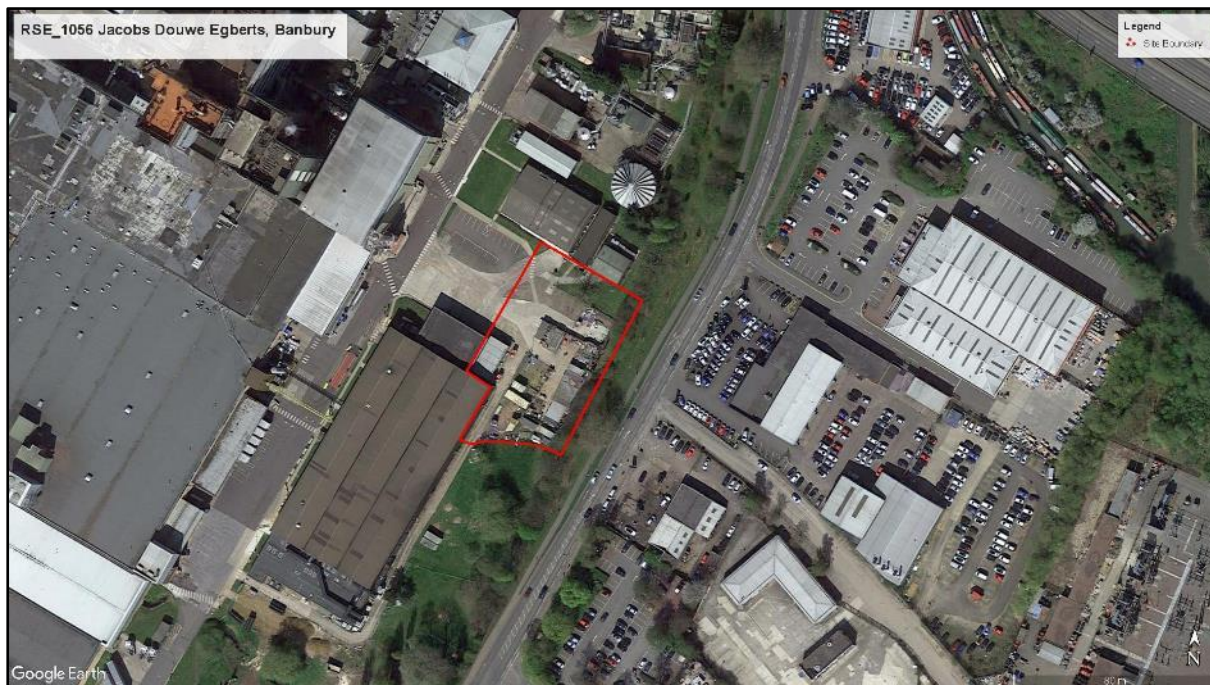
- i The market town of Banbury on the River Cherwell in Oxfordshire, is 38 miles southeast of Birmingham, 27 miles south of Coventry and 21 miles north-by-northwest of the county town of Oxford. Banbury is a significant commercial and retail centre for the surrounding area, which is predominantly rural. Banbury is home to the world's largest coffee-processing facility (Jacobs Douwe Egberts), built in 1964.
- ii The site is along the eastern aspect of the Douwe Egberts coffee factory, running alongside the A361. The immediate surrounding land use is predominantly business/industrial.

Figure 1: Site Location Plan



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Figure 2: Site Context Plan



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3 SURVEY METHODOLOGY

3.1 Survey Methods

- i The site was visited on Thursday 20th July 2017 to carry out an assessment in accordance with BS 5837:2012 – Trees in relation to Design, Demolition and Construction - Recommendations.
- ii The weather at the time was dry enough, bright enough, clear enough and still and considered to be 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:
 - First significant branch and direction of growth (e.g. 3 NW);
 - Canopy;
 - Life stage;
 - iii **Y** – Young,
 - iv **SM** – Semi Mature,
 - v **EM** – Early Mature,
 - vi **M** – Mature,
 - vii **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 Survey Personnel

- i The survey was carried out by:
 - Ross Coverdale Pearson HND Arb MArborA. Ross is a professional member of the Arboricultural Association with 25 years of experience as an arboriculturist.
 - Jake Mellor BA (Hons) is experienced within the arboricultural sector with experience as a Climbing Arborist and extensive training within this field. He has also completed the LANTRA Professional Tree Inspection course, working towards qualifying for the professional grade membership with the Arboriculture Association.

4 LIMITATIONS

4.1 Survey

- i Each of the surveyed trees 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.
- ii The information contained within this report is based on the author's knowledge and experience in respect of tree related issues. Whilst the appropriate level of skill and care have been used, no investigative method can completely eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information.
- iii Any survey work undertaken will have been subject to natural limitations, including seasonal and phenological aspects.
- iv Trees were assessed from ground level using the Visual Tree Assessment (VTA) method (Mattheck 2007). The trees included in the survey were not climbed, no samples were removed and no detailed internal investigation of decay was made.
- v Where other vegetation (e.g. ivy or dense ground cover) prevented full access to any tree, this is noted in the tree survey schedule (Appendix A). Dense ivy cover can prevent full access to a tree and so obscure the presence of cavities or other defects. Any such situations are noted in the tree survey schedule with, where appropriate, recommendations for the ivy to be removed and a re-inspection carried out. No ivy was removed from any tree during the survey.
- vi No liability can be accepted by RammSanderson Ecology Ltd. in respect of the trees unless the recommendations of this report are carried out under their supervision and within their recommended timescales. Acceptance of this report represents an agreement with the guiding principles and the terms listed.
- vii 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.
- viii Tree rooting characteristics and soils are both enormously variable as are their interactions. This makes any attempts to quantify tree related subsidence risk assessment impossible. No attempt has been made to assess subsidence risk potential nor should any be construed.
- ix The report relates only to the trees shown on the attached tree survey schedule (Appendix A).

5 RESULTS

5.1 Surveyors

- i The survey was carried out by:
- Ross Coverdale Pearson HND Arb MArborA. Ross is a professional member of the Arboricultural Association with 25 years of experience as an arboriculturist.
 - Jake Mellor BA (Hons) is experienced within the arboricultural sector with experience as a Climbing Arborist and extensive training within this field. He has also completed the LANTRA Professional Tree Inspection course, working towards qualifying for the professional grade membership with the Arboriculture Association.
- ii The survey was completed during suitable conditions as detailed in Table1 below:

Table 1: Summary of conditions during survey

| Abiotic Factor | Survey 1 |
|-----------------------------|--------------------------|
| Survey type | BS 5837:2012 Tree Survey |
| Date completed | 20/07/2017 |
| Temperature | 16 °C |
| Wind speed (Beaufort Scale) | 1 |
| Cloud cover | 70% |
| Precipitation | 0 |

5.2 Statutory Tree Protection

- i A phone discussion with the Tree Officer at Cherwell District Council (North Oxfordshire) on 24/07/2017 at 1300hrs, ascertained that none of the trees on or immediately adjacent to the site are subject to any statutory protection from Tree Preservation Orders (TPOs) or within any Conservation Areas.
- ii In the event that future TPOs are made which might subsequently afford any of the surveyed trees 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:
- The submission of a 6 weeks notification period to carry out works to trees (Trees in Conservation Areas)
 - or the submission of a 5-day notice under section 198(6)(a) of the Town and Country Planning Act 1990.
- iii Pruning works can also be carried out if the works are considered necessary to implement full planning consent.

5.3 Tree Survey

- i The survey assessed 4 individual trees and 1 groups of trees, the quality and value of which are summarised in the table below whilst full results of the tree survey are provided in the Tree Survey Schedule at Appendix A.

Table 2: Survey Results

| Category | Trees | Groups | Total |
|---|----------|----------|----------|
| A Trees of high quality which are healthy and attractive with high visibility and no significant defects, and which can make a substantial contribution for a minimum of 40 years | 0 | 0 | 0 |
| B Trees of moderate quality which are healthy and attractive but with some remediable defects such that they are in a condition to be able to make a significant contribution for a minimum of 20 years | 1 | 1 | 2 |
| C Trees of low quality which are unremarkable, of limited merit and that are easily replaced, small-growing, young species which have a relatively low potential amenity value, and low landscape benefits. These trees typically include self-seeded trees of limited life span, small (below 150mm stem diameter) and young trees and trees of poor form and limited amenity value. | 3 | 0 | 3 |
| U Trees which 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 dwellings or areas of public open space. | 0 | 0 | 0 |
| Total | 4 | 1 | 5 |

6 ARBORICULTURAL IMPACT ASSESSMENT

6.1 Tree Survey

- i General tree works detailed 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 the proposed development.

6.2 Trees Suitable for Retention

- i 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 and therefore should not be considered to be a constraint to development.
- ii In assessing the potential impacts to the trees that may result from 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
 - Demolition/Ground Works
 - Construction Activity

6.3 Shading

- i 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.
- ii 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.
- iii Upon consideration of the above points, no further investigation, illustration or mitigation is considered necessary due to the generally favourable layout orientation and the nature of the development i.e. non-residential.

6.4 Direct Damage

- i 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.
- ii The implementation of the recommended tree works associated with the proposals (Table 3) will reduce the likelihood of direct damage occurring in the manner described above, in respect of retained trees.
- iii Figure 3 below, taken from Annex A of BS 5837:2012, provides distances that are advised as minimum distances of trees from new structures for new plantings.

Figure 3: Minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth

| Type of structure | Minimum distance between young trees or new planting and structure, in metres (m) | | |
|---|---|--|---------------------------------|
| | Stem dia. <300 mm ^{A)} | Stem dia. 300 mm to 600 mm ^{A)} | Stem dia. >600 mm ^{A)} |
| Buildings and heavily loaded structures | — | 0.5 | 1.2 |
| Lightly loaded structures such as garages, porches etc. | — | 0.7 | 1.5 |
| Services | | | |
| <1 m deep | 0.5 | 1.5 | 3.0 |
| >1 m deep | — | 1.0 | 2.0 |
| Masonry boundary walls | — | 1.0 | 2.0 |
| In-situ concrete paths and drives | 0.5 | 1.0 | 2.5 |
| Paths and drives with flexible surfaces or paving slabs | 0.7 | 1.5 | 3.0 |

^{A)} Diameter of stem at 1.5 m above ground level at maturity

6.5 Root Protection Areas (RPAs)

- i The erection of protective fencing as per the Tree Protection Plan (TPP) prior to the commencement of any works on site will protect the RPA of retained trees.
- ii Existing ground levels should be retained within the RPAs. Intrusions into soil within the RPAs is generally not acceptable and topsoil within it should remain in situ.
- iii The erection of protective fencing, in this instance, is considered likely to place minor localised constraints on elements of the construction and its associated activities and/or possibly limit the working space available, with the subsequent result that incursions into the RPAs of some of the retained trees, may prove likely.
- iv In this instance it is considered that, if the existing hard surfacing within the RPAs of the above trees is retained during the construction (See 6.5.6 below), any incursions into the RPAs of the trees, which are necessary to facilitate the construction and any other related activities, can be carried out without the need for additional ground protection measures and that the protective fencing specification shown in figure 7 will be appropriate, in this instance.
- v Guidance is provided below, which upon adoption, will help to minimise the potential for any detrimental effect that associated ground works and construction might have in respect of retained trees.
- vi Suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during the construction and, development rather than being removed.
- vii British Standards 5837:2012 advises that 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:

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.

- viii Final on-site measurements should be taken to ascertain the extent of any tree protection measures and provide an indication of whether incursions, which have not been anticipated, into the RPAs of retained trees might prove necessary.

6.6 Excavation/Ground Works

- i The erection of protective fencing and/or use of ground protection, if necessary (section 6.5.7), prior to the commencement of any works on site, will allow excavations and ground works to take place whilst minimising any anticipated adverse effect and/or impact on the retained trees.
- ii All plant and vehicles engaged in ground works should either operate outside the RPAs, or run on appropriate ground protection, if necessary, in the proximity of retained trees.
- iii Where trees stand adjacent to hard surfaces and/or buildings to be removed, excavation should be undertaken inwards, from within the footprint of the existing hard surfacing or outside of the RPAs.

6.7 Hard Surfacing Within the Root Protection Area

- i It is not anticipated that the installation of a 'no-dig' type surface will be necessary, general guidance on 'no-dig' surfacing is however, provided below in the event that a subsequent need transpires.
- ii Suitable existing hard surfacing within RPA's is proposed to be retained.
- iii Arboricultural Practice Note No. 12 describes in detail the requirements of no-dig type installation whilst BS 5837:2012 recommends that three-dimensional cellular confinement systems, incorporating geotextile or impermeable barriers as necessary, are appropriate sub-base options for new hard surfacing within the RPA.
- iv The design should not require excavation into the soil other than the removal, using hand tools, of any turf layer or other surface vegetation. The structure of the hard surface should be designed to avoid localised compaction and in all cases, the advice of a structural engineer should be sought to ensure that the design is suitable for the anticipated vehicle loads it will be subjected to.
- v An assessment should be made to establish whether the existing site topography lends itself to the installation of a three-dimensional cellular confinement system. Final on-site measurements should be taken to ascertain the extent of any incursions into the RPA and provide subsequent guidance on the extent of any 'no-dig' installation.
- vi The new hard surfacing should be resistant to deformation by tree roots and should be set back from the tree's stem and above ground buttresses by a minimum distance of 500mm to allow for growth and movement. Where no-dig installations are proposed to be located particularly close to the main stems of retained trees then it is recommended that consideration is given to realigning the hard surfacing in order to reduce the total area (m²) of RPAs affected in order to reduce the likelihood for future pruning pressure and minimise the potential for any detrimental impact on the retained trees.
- vii Indicative cross-sectional drawings of a suitable three-dimensional cellular confinement system (CellWeb™) can be seen below (figures 3 & 4)

Figure 4: Composition of the CellWeb™ three-dimensional confinement system

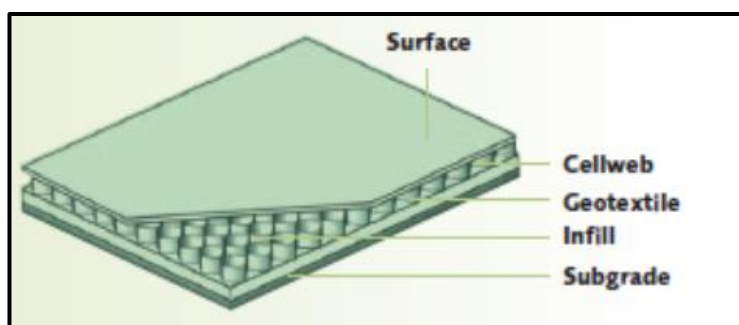
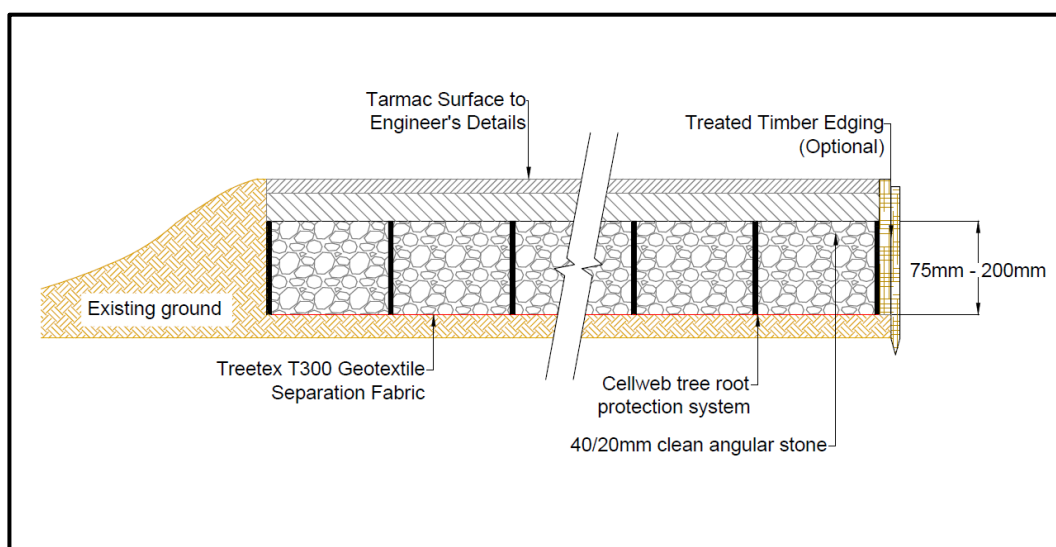


Figure 5: Cross section illustrating a permeable tarmac surface finish



6.8 Construction Activity

- i The installation of any protective mitigation measures, if necessary, prior to the commencement of any works on site will allow the development to take place whilst minimising any anticipated adverse effect and/or impact on the retained trees.
- ii All plant and vehicles engaged in construction works should either operate outside the RPA, and/or run on ground protection, if necessary.

6.9 Future Pressure for Tree Pruning/Removal

- i 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.
- ii The tree works detailed in Table 3 are considered, in this instance, to provide an environment and layout juxtaposition that will allow for the future growth of the retained trees whilst minimising any immediate future pruning pressures.

6.10 Seasonal Nuisance

- i 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.
- ii Providing a suitable juxtaposition when considering new layouts will help in minimising issues experienced by people living in close proximity to trees.
- iii A degree of Autumnal leaf fall will be evident due to the generally deciduous nature of the retained trees on the site; it is however, considered to be acceptable to a reasonable level.

6.11 Infrastructure

- i 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.
- ii Where the installation of any underground apparatus and drainage is considered necessary then particular care should be taken in its routeing and methods of installation and wherever possible be routed outside RPAs.
- iii Where routeing services outside RPAs is not possible then detailed plans showing the proposed routeing should be drawn up in conjunction with the project Arboriculturist. Trenchless insertion methods are considered appropriate for this purpose and British Standards 5837:2012 details solutions for differing utility apparatus requirements (see table 2 below).
- iv 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. The National Joint Utilities Group's publication 'NJUG Volume 4' contains further guidelines on the installation of new underground services in proximity to trees.

Figure 6: Trenchless solutions for differing utility apparatus installation requirements

| Method | Accuracy | Bore dia. ^{A)} | Max. sub. ^{B)} length | Applications | Not suitable for |
|---------------------------------------|-------------------|-------------------------|--------------------------------|---|--|
| | mm | mm | m | | |
| Microtunnelling | <20 | 100 to 300 | 40 | Gravity-fall pipes, deep apparatus, watercourse/ roadway undercrossings | Low-cost projects due to relative expense |
| Surface-launched directional drilling | ≈100 | 25 to 1 200 | 150 | Pressure pipes, cables including fibre optic | Gravity-fall pipes, e.g. drains and sewers ^{C)} |
| Pipe ramming | ≈150 | 150 to 2 000 | 70 | Any large-bore pipes and ducts | Rocky and other heavily obstructed soils |
| Impact moling ^{D)} | ≈50 ^{E)} | 30 to 180 ^{F)} | 40 | Gas, water and cable connections, e.g. from street to property | Any application that requires accuracy over distances in excess of 5 m |

^{A)} Dependent on strata encountered.
^{B)} Maximum subterranean length.
^{C)} Pit-launched directional drilling can be used for gravity fall pipes up to 20 m subterranean length.
^{D)} Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.
^{E)} Substantial inverse relationship between accuracy and distance.
^{F)} Figures given relate to single pass: up to 300 mm bore achievable with multiple passes.

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6.12 Trees to be removed

- i The survey identified the tree removals detailed within table 3 as being in the interests of reasonable arboricultural management.

6.13 Trees to be pruned

- i The complete Tree Survey Schedule (Appendix A) details pruning works **solely** in the context of the sites current use that should be considered to facilitate future inspection regimes and to promote the development of retained trees and should not be considered as being necessary to implement or facilitate the proposed development.

6.14 Landscaping

- i 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.
- ii Consideration should also be given to the advice detailed in respect of distances of newly planted trees in relation to new structures.
- iii For all new tree planting, the guidance within BS 8545:2014 'Trees: from nursery to independence in the landscape – Recommendations' should be followed.
- iv No details of any proposed landscaping have been provided.

6.15 Tree loss evaluation

- i In terms of the level of Public Amenity Value that the trees currently provide, the tree removals detailed in Table 3 are not considered to be detrimental to the wider area and that that their loss will have a relatively low impact on the immediate street scene.

6.16 Issues to be addressed by an Arboricultural Method Statement

- i The Arboricultural Method Statement (Section 7) details the general methodology for the implementation of those aspects that have the potential to result in loss or damage to retained trees.

6.17 Tree Protection Plan (TPP)

- i 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.
- ii The TPP should be read in conjunction with the Tree Survey Schedule (Appendix A) in order to establish the linear radial distances for the erection of the protective fencing and the extent of ground protection measures, if necessary, from the retained trees.

7 ARBORICULTURAL METHOD STATEMENT

7.1 Facilitation Tree Works/Removals

- i Tree works tabled below (Table 3) have been identified as a result of one or more of the following reasons:
- to directly implement the proposal,
 - to facilitate the implementation and construction of the proposals,
 - to assist in the creation of a balanced and desirable layout juxtaposition and
 - in the interests of reasonable arboricultural management.
- ii Any tree works should be carried out using the principles and practices described in British Standards 3998:2010 – *Tree Work – Recommendations*.

Table 3: Summary of Recommended Tree Works

| Tree Ref. No's. | Species | BS 5837:2012 Category | Nature of Works and Necessity |
|-----------------|--|-----------------------|--|
| T1 | Locust Tree (<i>Robinia pseudoacacia</i>) | B1 | Crown lift to 3m. Remove basal epicormic growth. Remove dead wood. |
| T2 | Weeping Willow (<i>Salix X chrysocoma</i>) | U | Remove tree |
| T3 | Weeping Willow (<i>Salix X chrysocoma</i>) | U | Remove tree |
| T4 | Weeping Willow (<i>Salix X chrysocoma</i>) | U | Remove tree |

7.2 Summary of Mitigation

- i The table below summaries the mitigation methods required for the site, specific to any trees where an RPA may be subject to an impact.
- ii Each specific requirement is detailed further in the subsequent sections of this report.

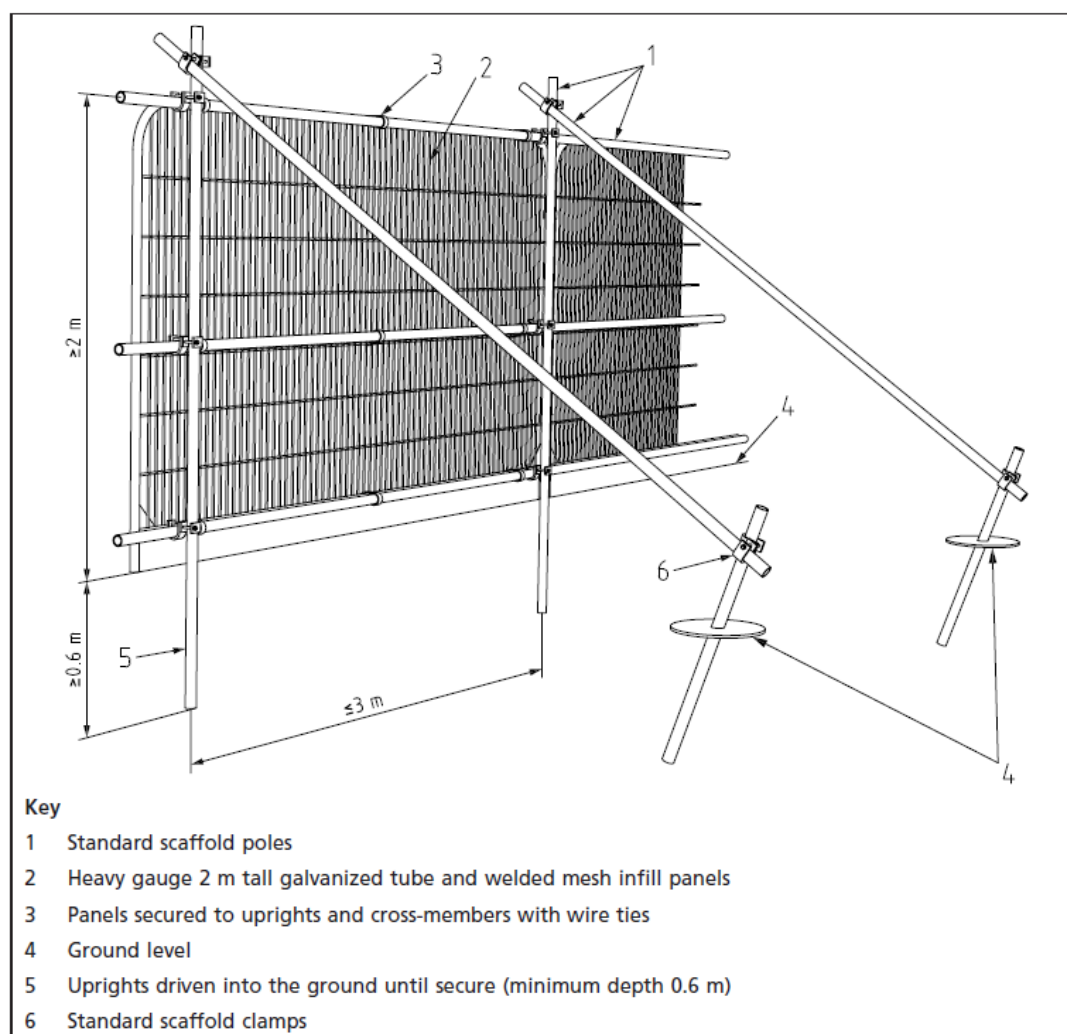
Table 4: Summary of Mitigation Requirements

| Tree Ref. No's. | Species | Works effecting | Mitigation to being put in to place |
|-----------------|---|---|---|
| T1 | Locust Tree (<i>Robinia pseudoacacia</i>) | The proposed car parking area extends into the RPA for this tree. However, this area has existing hard standing in the form of compacted stone. On the understanding that this surface is to be retained as a base for the new parking area and considering the remaining RPA for this tree is open ground which is good for root growth, the intrusion into the RPA is considered justified. | Temporary protective fencing should be installed at the edge of the existing hard surface and maintained in place throughout the construction works - as detailed on the Tree Protection Plan (Appendix C). No works (including storage of materials, excavations for new underground services or vehicle access) are permitted within the area excluded by the protective fencing. The existing surface should be retained undisturbed and used as base for the proposed parking area. Any new top surfacing should be porous to allow adequate water/air permeation down into the soil of the tree rooting zone. |

7.3 Erection of Protective Fencing

- i Due to the nature of the development and proposed distance from RPAs of retained specimens, it is considered necessary to implement temporary tree protective fencing in this instance. There is an existing chain link fence surrounding the proposed parking area. If this is to be retained, its construction and position is considered appropriate for it to be used at the tree protective fencing. If the existing fence is to be removed, the specification for protective fencing detailed below is recommended.
- ii The default specification for protective fencing should consist of a vertical and horizontal scaffold framework which is well braced to resist impacts as seen in Figure 5.
- iii This fencing should be implemented at the linear distances indicated by the Root Protection Radius around all retained trees/group to avoid any possible RPA infringements. Where this is not possible the guidance of the mitigation table (Table 4: Summary of Mitigation Requirements) should be followed.
- iv All-weather notices should be attached to the fencing.
- v Once erected, the protected area should be regarded as sacrosanct and should not be removed or altered without prior recommendation by the project Arboriculturist (7.3.2) and, where necessary, approval from the local planning authority.

Figure 7: Default specification for protective barrier © British Standards Institute



7.4 Ground Works & Demolition

- i The erection of any protective mitigation measures, if necessary, combined with the retention of existing hard surfacing within the RPAs of retained trees, prior to the commencement of any works on site will allow the ground works to take place whilst minimising any adverse effect and/or impact on the retained trees.
- ii All plant and vehicles engaged in ground works should either operate outside the RPA, or run on ground protection where appropriate.
- iii Suitable existing hard surfacing is proposed to be retained during the construction and development.

7.5 Soil Compaction and Remediation Measures

- i 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.
- ii Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth.
- iii Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed.
- iv Where soil compaction has occurred in the vicinity of existing trees, remedial works might include sub-soil aeration using compressed air, and the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure.
- v Heavy mechanical cultivation such as ploughing or rotavation should not occur within the RPA.
- vi Any cultivation operations should be undertaken carefully by hand in order to minimize damage to the tree, particularly the roots.
- vii Decompaction measures include forking, spiking, soil augering and tilled radial trenching. Care should be taken during such operations to minimize the risk of further damage to tree roots.

7.6 Construction Works

- i Any protective mitigation measures, if necessary, as per the Tree Protection Plan should be erected prior to the commencement of any works on site.
- ii All plant and vehicles engaged in construction activity should either operate outside the RPAS, or run on ground protection.

7.7 Contractors Storage, Parking & Access

- i 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.
- ii In this instance, it is considered that there is sufficient space for provision of the above, without placing significant constraints on the working space available for the construction and its associated activities.

7.8 Completion

- i Before removal of any of the tree protection measure at the completion of the project, it is recommended that the advice of the project Arboriculturist is sought regarding whether a re-survey of the retained trees is necessary for signs or symptoms of damage and/or stress that the construction may have had.
- ii The protective fencing and ground protection measures should remain in position until its 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 completely passed.

7.9 Tree Planting & After Care

- i When planning or implementing any new tree planting scheme, it is recommended that the guidance within BS 8545:2014 'Trees: from nursery to independence in the landscape – Recommendations' is followed.
- ii The following points summarise good after care for newly planted trees with an additional consideration to any necessary formative, corrective and maintenance pruning:
- iii Water immediately after planting and weekly throughout the first growing season by allowing 10 – 20 litres of water for each tree. This is especially important during prolonged periods of dry weather in which case the frequency of watering may need to be increased.
- iv Do not allow weeds or grass to grow within a 500mm radius of the stem.
- v Maintain an organic mulch (eg, composted woodchip or bark) to a minimum depth of 75mm for a radius of 500mm around the base of new trees.
- vi At the end of each growing season, check that tree-ties are not damaging the tree stems and loosen if necessary.
- vii Ensure that the tree stakes remain firm while the new planting becomes established and only remove when tree can support itself, usually after a period of 2 -3 years.
- viii Carry out formative pruning to the young trees by removing dead or crossing branches, suckers arising from the roots or weak shoots on the stems.

7.10 Contacts

- i RammSanderson Ltd. 0115 930 2493, info@rammsanderson.com

Appendix A: Tree Schedule





Appendix A: Tree Schedule

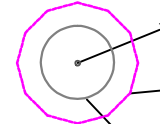


| Type | Name | Age | Life Exp | Height (m) | Diameter (mm) | North | East | South | West | Crown Hgt (m) | RPR (m) | RPA (m ²) | Category | Condition | Comments | Recommendations |
|------|---|-----|----------|----------------|---------------|-------|------|-------|------|---------------|---------|-----------------------|----------|-----------|--|--|
| T1 | Locust Tree <i>(Robinia pseudoacacia)</i> | M | 20+ | 10(0) | 610 | 4 | 7 | 6 | 6 | 0 | 7.32 | 168.36 | B1 | Fair | Basal epicormic growth, minor amount of dead wood within crown. | Crown lift to 3m. Remove basal epicormic growth. Remove dead wood. |
| T2 | Weeping Willow <i>(Salix X chrysocoma)</i> | SM | <10 | 8(0) | 570 | 1 | 1 | 1 | 1 | 0 | 6.84 | 147 | U | Poor | Tree has been previously 'topped' (removal of the entire live crown) to leave only the lower main stem. Some secondary branch regrowth is becoming established, but overall the tree is of negligible arboricultural merit and unsuitable for retention. | Remove tree. |
| T3 | Weeping Willow <i>(Salix X chrysocoma)</i> | EM | <10 | 6(0) | 480 | 3 | 1 | 1 | 1 | 0 | 5.76 | 104.24 | U | Poor | Tree has been previously 'topped' (removal of the entire live crown) to leave only the lower main stem. Some secondary branch regrowth is becoming established, but overall the tree is of negligible arboricultural merit and unsuitable for retention. | Remove tree. |
| T4 | Weeping Willow <i>(Salix X chrysocoma)</i> | M | <10 | 7(0) | 740 | 2 | 1 | 1 | 1 | 0 | 8.88 | 247.76 | U | Poor | Tree has been previously 'topped' (removal of the entire live crown) to leave only the lower main stem. Some secondary branch regrowth is becoming established, but overall the tree is of negligible arboricultural merit and unsuitable for retention. | Remove tree. |
| G1 | Common Lime <i>(Tilia X europaea)</i> | EM | 40+ | 12(0) (max) | 380 (max) | 3 | 5 | 3 | 5 | 0 | 4.56 | 65.33 | B2 | Fair | Linear group of trees situated within the site boundary hawthorn hedge. Growing at a lower ground level, approximately 1.5m below the level of the proposed parking area. Two trees have been previously suppressed in development by T2-T3. | No works required at present time. |

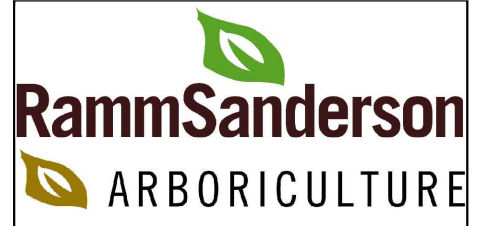
Appendix B: Tree Constraints Plan



LEGEND:

-  TX-A A Category Trees of High Retention Value
-  TX-B B Category Trees of Moderate Retention Value
-  TX-C C Category Trees of Low Retention Value
-  TX-U U Category Trees Unsuitable for Retention/Remove

-  Tree Trunk/Tree Retention Category
-  Root Protection Area
-  Canopy Spread



Client :
**Jacobs Douwe Egberts,
 Banbury**

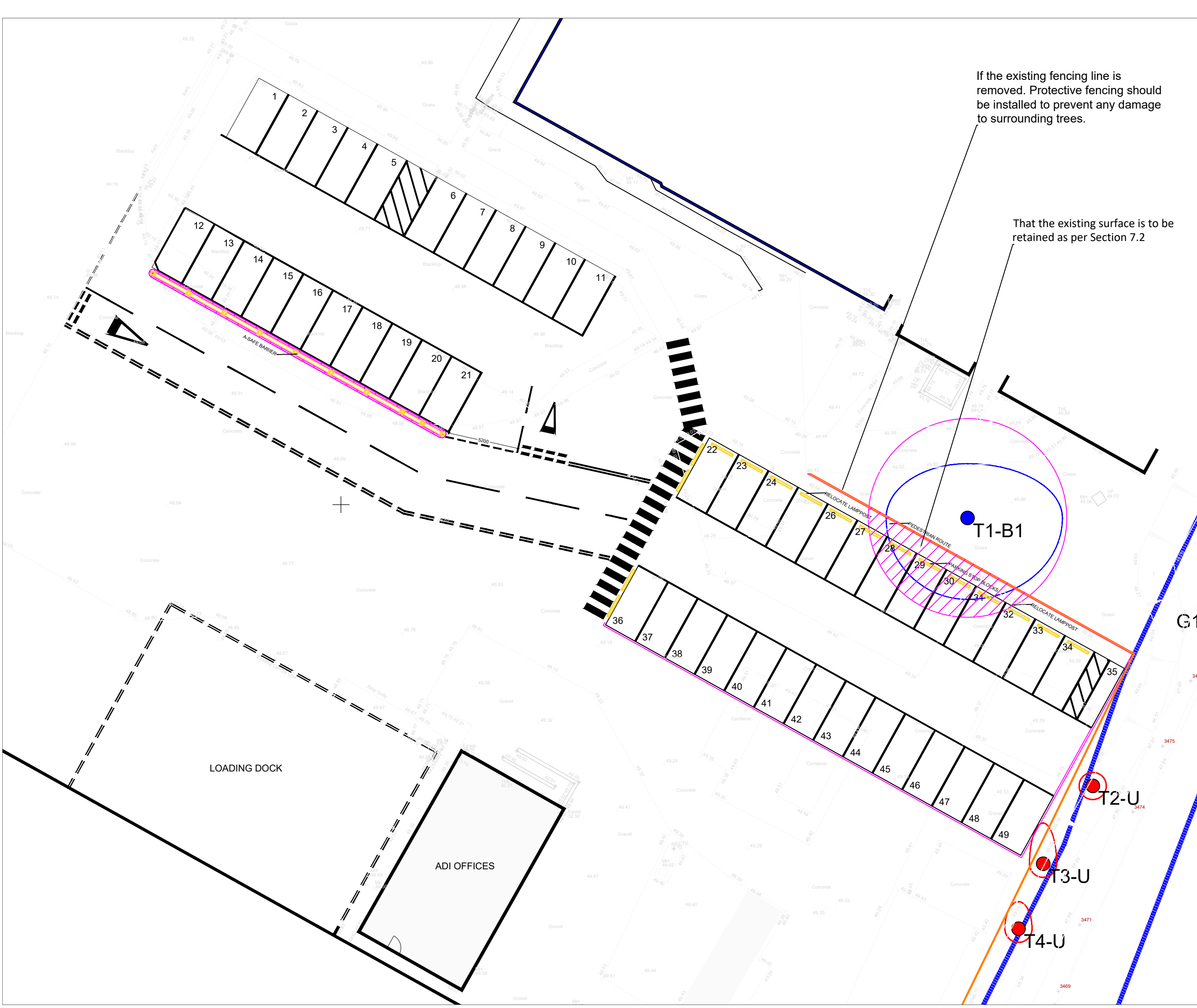
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Tree Constraints Plan

Drg No. RSE_1156_TCP Rev : V1

Drn By : JM Scale : 1:250@A3 Date : 20/07/2017

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Appendix C: Tree Protection Plan

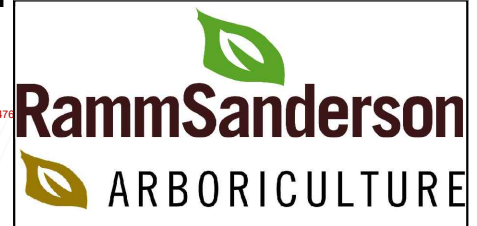


LEGEND:

- TX-A A Category Trees of High Retention Value
- TX-B B Category Trees of Moderate Retention Value
- TX-C C Category Trees of Low Retention Value
- TX-U U Category Trees Unsuitable for Retention/Remove

○ Tree Trunk/Tree Retention Category
○ Root Protection Area
○ Canopy Spread

— Tree Protection Fencing



Client :
 Jacobs Douwe Egberts,
 Banbury

Drawing Title :
 Tree Protection Plan

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|----------|--------------|---------|------------|
| Dwg No. | RSE_1156_TPP | Rev : | V1 |
| Drn By : | JM | Scale : | 1:250@A3 |
| Date : | | Date : | 21/07/2017 |