

# LAND EAST OF STANSTEAD AIRPORT ESSEX

## Tree Survey Report and Arboricultural Impact Assessment



JSL3353\_771  
Tree Survey and  
Arboricultural Impact  
Assessment  
-  
24 January 2022

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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## Contents

|   |                                       |    |
|---|---------------------------------------|----|
| 1 | INTRODUCTION.....                     | 1  |
| 2 | SITE LOCATION .....                   | 2  |
| 3 | SURVEY METHODOLOGY.....               | 3  |
| 4 | APPRAISAL AND RECOMMENDATIONS.....    | 6  |
| 5 | ARBORICULTURAL IMPACT ASSESSMENT..... | 9  |
| 6 | TREE WORKS.....                       | 12 |
| 7 | TREE PROTECTION MEASURES .....        | 13 |
| 8 | CONCLUSION .....                      | 15 |

## Appendices

- Appendix A Tree Constraints Plan JSL3353\_701-703A
- Appendix B Tree Survey Schedule JSL3353\_750A
- Appendix C Tree Protection Plan JSL3353\_710A
- Appendix D Arboricultural site register
- Appendix E Email Reponse From Uttlesford District Council - TPO/Cons
- Appendix F Tree Protection Fencing
- Appendix H Construction Exclusion Zone (CEZ) Signage
- Appendix I Site Photographs
- Appendix J Arboricultural Glossary

# 1 INTRODUCTION

- 1.1 This Tree Survey and Arboricultural Impact Assessment (AIA) has been prepared by RPS on behalf of MAG London Stansted Airport to support the application for proposed development of land south of Stanstead Airport, Stansted Mountfitchet, Essex, CM24 1QW.
- 1.2 A tree survey of the application area was carried out by RPS in accordance with the requirements of BS5837:2012<sup>1</sup>. Refer to Tree Constraints Plan JSL3353\_701-703A (Appendix A).
- 1.3 The purpose of this report is to:
- Provide an assessment of the quality of the surveyed trees with reference to the categories and sub-categories listed within Table 1 - BS5837:2012.
  - Assess and quantify the arboricultural impact of the proposed development within the survey area, based on the proposed development layout.
  - Provide additional arboricultural information and advice in relation to the protection of trees throughout the development of the site.
  - Provide a Tree Protection and Removal Plan to detail the proposed protective measures to be taken in respect of the trees during development of the site.
- 1.4 The Tree Protection Plan JSL3353\_710A included at Appendix C identifies the following:
- Trees to be retained;
  - Alignment and design of protective fence;
  - Root Protection Area (RPA) of trees;
- 1.5 The Tree Protection Plan shall be made available to all relevant site operatives prior to and throughout the construction process, so they understand the scope and importance of the tree protection measures.
- 1.6 To minimise the potential for harm to occur to retained trees all works shall be carried out with regard to the Tree Protection Measures and construction techniques detailed within this report.
- 1.7 In particular the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

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<sup>1</sup> British Standards Institute. British Standard (BS5837) Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

## 2 SITE LOCATION

- 2.1 The survey covered an area of land located south of Stanstead Airport, Stansted Mountfitchet, Essex, CM24 1QW. Stansted Mountfitchet is a village located near the Hertfordshire border, approximately 35 miles to the north-east of Central London. The land is roughly centred on OS grid reference TL55932311.<sup>2</sup>
- 2.2 The survey site currently comprises a number of open fields with a number of trees within. The wider environs consist of residential housing, woodland and open fields. Elsenham railway station is located approximately 4.5 miles to the north-west of the site, whilst Farm Fitness is located approximately 4.2 miles to the south-east.
- 2.3 The soilscape of the area typically consists of 'Lime-rich, loamy and clayey soils, with impeded drainage.'<sup>2</sup>

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<sup>2</sup> *Magic.gov.uk* – 24.01.2022

### 3 SURVEY METHODOLOGY

- 3.1 This report was completed by Alice Brown of RPS group and an associate member of the Arboricultural Association and authorised by Stefan Kowalczyk NDArbL4, TechArborA, and a Senior Consultant Arborist of RPS.
- 3.2 The report and survey were carried out in general accordance with the requirements set out in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”.
- 3.3 The tree survey involved a visual inspection from the ground of individual specimens and groups of trees in order to record their amenity value, management recommendations and dimensions. Where observed, the general condition of all the trees has been noted. The survey does not constitute a full arboricultural condition assessment involving the detailed inspection of trees in relation to their structural condition, decay, and any other physical and pathogenic defects.
- 3.4 The locations of the trees were based upon topographic survey (JKK10624\_03A) produced by RPS in October 2019.
- 3.5 The survey assesses individual trees and groups of trees for quality and benefits within the context of proposed development. The quality of each tree or group of trees has been recorded by allocating it to one of four categories as described in table 3.1. These categories have been differentiated on the Tree Constraints plan (JSL3353\_701-703 Appendix A) by colours.
- 3.6 The survey information was recorded on the attached schedule (Appendix B) in general accordance with the guidance contained within Section 4 of BS 5837:2012 “Trees in relation to design, demolition and construction - Recommendations”.
- 3.7 The information recorded includes the following-

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

**Table 3.1 Tree characteristics recorded during survey**

|   |   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|---|---|---|--|---------------|---|---------------|---|----|--|---|-----------|--|----|----------------|---|--------|--|---|----------|--|--|
| <b>Tree Ref No:</b>   | Sequential reference number of trees or groups of trees. Avenues, woodlands and hedgerows were also recorded on the tree constraints plan.<br># - denotes inaccessible trees (best estimates are made about the location, physical dimensions and characteristics.)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Species</b>  | Species listed by common name, with scientific names ( <i>italic lettering</i> ).   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Height (m)</b>   | Estimated height of canopy to nearest metre.  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Branch Spread</b>  | branch spread, taken as a minimum at the four cardinal points, to derive an accurate representation of the crown  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Stem diameter @ 1.5 m (m)</b>  | Estimated diameter of trunk at 1.5 m above ground level in metres unless otherwise indicated, multi-stemmed trees being measured in accordance with Annex C: BS5837   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Existing height above ground level</b>   | To inform on ground clearance, crown/stem ratio and shading the estimated height of the first significant branch and direction of growth and canopy above ground level.   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Stem No.</b>   | Number of stems (if necessary) of individual tree.  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Life Stage</b>   | <table border="0"> <tr> <td></td> <td>Y</td> <td>(Young)</td> <td>OM</td> <td>(Over-mature)</td> </tr> <tr> <td>Expressed as:-</td> <td>SM</td> <td>(Semi-mature)</td> <td>V</td> <td>(Veteran)</td> </tr> <tr> <td></td> <td>EM</td> <td>(Early-mature)</td> <td>D</td> <td>(Dead)</td> </tr> <tr> <td></td> <td>M</td> <td>(Mature)</td> <td></td> <td></td> </tr> </table>   |   | Y  | (Young)       | OM  | (Over-mature) | Expressed as:-  | SM | (Semi-mature)  | V | (Veteran) |  | EM | (Early-mature) | D | (Dead) |  | M | (Mature) |  |  |
|   | Y   | (Young)   | OM   | (Over-mature) |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| Expressed as:-  | SM  | (Semi-mature)   | V  | (Veteran)     |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | EM  | (Early-mature)  | D  | (Dead)        |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | M   | (Mature)  |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Physical Condition</b>   | <table border="0"> <tr> <td>Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:-</td> <td>Good</td> </tr> <tr> <td></td> <td>Fair</td> </tr> <tr> <td></td> <td>Poor</td> </tr> <tr> <td></td> <td>Dead</td> </tr> </table>  | Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:- | Good   |               | Fair  |               | Poor  |    | Dead   |   |           |  |    |                |   |        |  |   |          |  |  |
| Apparent condition expressed as the following categories, based upon a brief visual inspection from the ground only:- | Good  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | Fair  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | Poor  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | Dead  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Comments / Management Recommendations</b>  | General observations, particularly of structural and/or physiological condition (e.g. the presence of any decay and physical defect), and/or preliminary management recommendations and potential for wildlife habitats (not exhaustive).   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Estimated remaining contribution (years)</b>   | Estimated remaining contribution, in years (<10, 10+,20+,40+)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Tree Quality Assessment Value: <u>Category</u></b>   | <table border="0"> <tr> <td>Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-</td> <td><b>A</b> (Trees/Vegetation of high quality and value)</td> </tr> <tr> <td></td> <td><b>B</b> (Vegetation of moderate quality and value)</td> </tr> <tr> <td></td> <td><b>C</b> (Trees/Vegetation of low quality and value)</td> </tr> <tr> <td></td> <td><b>U*</b> (Those 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)</td> </tr> </table> | Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-  | <b>A</b> (Trees/Vegetation of high quality and value)    |               | <b>B</b> (Vegetation of moderate quality and value) |               | <b>C</b> (Trees/Vegetation of low quality and value)              |    | <b>U*</b> (Those 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) |   |           |  |    |                |   |        |  |   |          |  |  |
| Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-  | <b>A</b> (Trees/Vegetation of high quality and value)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | <b>B</b> (Vegetation of moderate quality and value)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | <b>C</b> (Trees/Vegetation of low quality and value)  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | <b>U*</b> (Those 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)  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | * Category U trees can have existing or potential conservation value which might be desirable to preserve.  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| <b>Tree Quality Assessment Value: <u>Sub - Category</u></b>   | <table border="0"> <tr> <td>Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-</td> <td><b>1</b> (Trees with mainly <i>arboricultural</i> value)</td> </tr> <tr> <td></td> <td><b>2</b> (Trees with mainly <i>landscape</i> value)</td> </tr> <tr> <td></td> <td><b>3</b> (Trees with mainly <i>cultural / conservation</i> value)</td> </tr> </table>  | Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-  | <b>1</b> (Trees with mainly <i>arboricultural</i> value) |               | <b>2</b> (Trees with mainly <i>landscape</i> value) |               | <b>3</b> (Trees with mainly <i>cultural / conservation</i> value) |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
| Criteria grading with regards to Table 1: BS 5837:2012, expressed as:-  | <b>1</b> (Trees with mainly <i>arboricultural</i> value)  |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | <b>2</b> (Trees with mainly <i>landscape</i> value)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |
|   | <b>3</b> (Trees with mainly <i>cultural / conservation</i> value)   |   |  |               |   |               |   |    |  |   |           |  |    |                |   |        |  |   |          |  |  |

## Limitations

- 3.8 The findings of this survey are not valid following adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events.
- 3.9 Trees were not climbed or inspected below ground level and inaccessible trees will have best estimates made about the location, physical dimensions and characteristics.
- 3.10 Where the locations of trees were not highlighted in the provided topographical survey – JKK10624\_03A by RPS, they were estimated on site and highlighted within the supporting plan/s with a hashtag "#".
- 3.11 Trees and woody vegetation were not assessed for their potential impact upon future construction issues such as foundation designs (re: NHBC chapter 4.2)<sup>3</sup>. Whilst this report may assist in assessing likely future impacts, it should not be classed as a comprehensive vegetation survey in relation to impact upon future designs.
- 3.12 It is recommended that further arboricultural assessments be undertaken in order to assess the full health and safety of all trees which may possess structural or pathological conditions.

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<sup>3</sup> NHBC. 'Chapter 4.2- Building Near Trees'. NHBC Standards 2016. 2016.

## 4 APPRAISAL AND RECOMMENDATIONS

### Generally

- 4.1 In general, trees onsite appear to be good structural and physiological condition with age ranging between young and over-mature. **104 nr.** individual trees, **11nr.** tree groups, **4nr.** woodlands and **14nr.** hedges were recorded.
- 4.2 Two of the woodlands recorded – W1 & W2 - were considered to be of high retention value (Category A). Both of these were offsite and provided much landscape value to the area.
- 4.3 There was some variation in species, with Pedunculate Oak and Field Maple being abundant.

### Planning considerations

- 4.4 Trees can offer many benefits, including the provision of visual amenity, softening or complementing the effect of the built environment, and adding maturity to new developments by making places more comfortable in tangible ways e.g. contributing screening and shade, reducing wind speed and turbulence, intercepting snow and rainfall, and reducing glare.
- 4.5 New tree planting opportunities should be considered as part of any potential redevelopment; this will help to broaden the age diversity of the tree cover within the area. Sufficient space should be provided for species with significant stature to grow out into maturity.
- 4.6 Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications.
- 4.7 This scheme proposes a lot of new tree planting onsite, which currently contains no trees. These new trees will be beneficial to the area, adding much amenity and landscape value.
- 4.8 Trees covered by a Tree Preservation Order are protected under the Town and Country Planning Act 1990 (Trees Regulation 2012) and the local authority must be consulted and permission sought for any works that may affect them.
- 4.9 TPOs: An email enquiry was made in October 2019 to Uttlesford District Council to attain whether there are any trees covered by an order – an email response confirmed that no TPOs were present at the time of the enquiry. (Refer to appendix E). A further email request has been sent to Uttlesford District Council in Feb 2022 to confirm that the case remains the same.
- 4.10 Conservation Areas: An email enquiry was made in October 2019 to Uttlesford District Council to attain whether the site is within a conservation area – an email response confirmed that the site was not within a conservation area at the time in which the request was sent – October 2019. A further request has been sent in Feb 2022 to confirm that the case remains the same.

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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- 4.11 Ancient woodlands: A desktop investigation using the Magic Maps application<sup>4</sup> confirmed that the site does not form part of an ancient woodland.

### Design and Site Layout Considerations

- 4.12 A tree constraints plan defines the Root Protection Area (RPA) for each tree shown as a circle. This area may be adjusted should physical constraints or topographical features limit root activity in a particular area, however the total area should remain the same. Prior to any adjustment of the trees RPA zones the changes should be assessed by an arboriculturalist. During any site planning exercises the current and future growth potential of the trees should be considered.
- 4.13 The RPA for single stem trees broadly equates to a radius 12 times the stem diameter of the tree at 1.5m above ground level or the extent of canopy spread, whichever is the greater. For multi-stemmed, low branching trees or those with trunks with an irregular girth the point of stem diameter measurement is adjusted in consideration of these factors and in accordance with the illustrations in BS5837:2012 (Annex C).
- 4.14 The RPA should become an exclusion zone during construction works and for any development. It should be fenced-off and protected in accordance with BS5837:2012. The canopy is likewise susceptible to damage during construction work and requires similar protection.
- 4.15 No activities that result in excavations, changes in level or soil compaction should take place within the RPA of any retained trees, especially older mature trees. This would include the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.
- 4.16 If some form of construction has to take place within the RPA then certain measures need to be adopted to avoid disturbance or damage to the roots and to maintain moisture infiltration and gaseous diffusion into the soil.
- 4.17 The location and siting of new services near trees should consider the potential impact on and conflict with both tree roots and canopy. This should take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree on the activities should also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

### Services

- 4.18 Services likewise should be routed outside the existing or potential root zone of trees. Where it is unavoidable, then certain measures should be employed to avoid damage to the trees larger roots.
- 4.19 The location and siting of new facilities near trees should consider the potential impact on and conflict with both tree roots and canopy. This should take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree on the activities should also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.

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<sup>4</sup> <https://magic.defra.gov.uk/MagicMap.aspx>

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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- 4.20 Any new services should avoid the RPAs of any retained tree. Where it is unavoidable, then the route of the services must be designed by an Engineer in consultation with an Arboriculturist.
- 4.21 For further advice, read in full - NJUG Volume 4- "Guidance for the planning, installation and maintenance of utility services in proximity of trees". (The National Joint Utilities Group. *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees*. 2007).<sup>5</sup>

### **Trees and Management of Health and Safety**

- 4.22 It is recommended that a programme of periodic arboricultural assessments be undertaken in order to regularly assess the full health and safety of all trees both in full leaf and bare stemmed. The assessments should prioritize areas based on levels of access and presence of target (i.e. exposure of people to hazard) and accord with arboricultural advice, taking account of relevant factors (where known) that affect safety such as the age class, condition, size and species of the trees.

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<sup>5</sup> N.J.U.G. 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. 2007

## 5 ARBORICULTURAL IMPACT ASSESSMENT

### Introduction

- 5.1 Trees have finite energy reserves, developed each year throughout the growing season, which are utilised for biological processes such as growth and defence against pests or diseases throughout the following year.
- 5.2 Any development in proximity to trees has the potential to cause harm to those trees unless control measures are identified and acted upon; as such it is essential to consider the relationship between the proposed development and the retained trees to identify what precautions are necessary, proportionate and appropriate.
- 5.3 Development has the potential to impact upon the above ground and below ground parts of trees. Whilst some damage that can occur, such as physical damage to the trees stems and branches from machinery movements, is clearly visible the impact from other aspects of work common on development sites which can have a significant effect upon the continued health of trees are not always immediately evident.
- 5.4 Damage that is not immediately evident, but which can cause long term harm to retained trees includes things such as damage to the soil structure by compaction causing root damage and levels changes altering the water table and affecting moisture availability.
- 5.5 To minimise the potential for harm to occur to retained trees all works must be carried out with regard to the Tree Protection measures detailed within this report.
- 5.6 In general, it can be seen that, by adopting appropriate methods of working, precautionary and protective measures, significant harm to retained trees can be avoided.
- 5.7 In particular the establishment of a Construction Exclusion Zone (CEZ) by erection of Tree Protection Fencing will minimise the potential for harm to occur to retained trees.

### Brief Description of Proposed Development

- 5.8 The proposed development would comprise the installation of free-standing, static solar photovoltaic ('PV') panels for the purposes of generating electricity solely for the use of the airport. As such, on-site battery units would retain surplus energy for use outside of the peak production hours, including at night. The proposed development would include the following elements:
- Solar panels;
  - Inverter substation(s) (with approximate dimensions of 6m x 3.2m x 3.4m) connecting the PV panels;
  - Electricity substation building (centrally located with approximate dimensions 7m x 2.5m x 3m);
  - Battery storage units; and
  - A circular trackway to access the infrastructure, together with security fencing, landscape planting and seeding, CCTV and motion-activated security lighting.
- 5.9 The solar panels would be attached to a metal framework which would be supported either by pile driven or screw foundations, or pre-moulded concrete blocks (shoes). The facility is

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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likely to employ Polycrystalline Silicon PV panels as these are widely considered to be the most suitable technology for applications of this nature. The size and configuration of the solar panels will be chosen based on the most appropriate technology available at the time. However, the maximum height of the panels will be 3.2m and they will be configured to provide access for cleaning and maintenance.

- 5.10 The preferred point of connection is at 'Substation 100' - a 33 / 11kV primary substation within the boundary of Stansted Airport. The connection would be achieved through a single radial circuit from Substation 100 to the Solar Farm; this would be a private cable installed within the verge adjacent to the existing highway and then entering the proposed development at its north-east corner.
- 5.11 The solar park would be enclosed by 2-3m high deer fencing comprising timber post and wire mesh.

### Identified Tree Removal and Specific Works

- 5.12 In order for this development to be realised it is recommended the T1 is removed to facilitate the access road into the site from the west.
- 5.13 T1 is a small roadside Ash tree with no particular merit. Its removal will have negligible impact to the wider setting and therefore is deemed to be a reasonable loss.
- 5.14 No other tree works are recommended or foreseen in order to realise the proposed development.

### Future Planting

- 5.15 Any future tree planting associated with the landscaping proposals for the site should be undertaken in accordance with the guidelines detailed in BS8545 Young Trees: From Nursery to Independence in the Landscape.<sup>6</sup>
- 5.16 Further details of proposed planting can be found in the Landscape Master Plan by RPS – JSL3353\_100 as amended.

### Above Ground Constraints

- 5.17 It is not foreseen that any tree pruning will be required in order to facilitate the proposed development. However, if the proposal is granted permission and site work commences and the requirement for tree works is encountered, correspondence with the Project Arboricultural Consultant or Local Authority Tree Officer is recommended prior to undertaking any trees works.

### Root Protection Areas

- 5.18 Root Protection Areas for each tree, group of trees and hedgerows surveyed have been determined in accordance with BS5837:2012.
- 5.19 Following the erection of tree protective fencing, the majority of the proposed development will take place outside the RPAs of retained trees.

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<sup>6</sup> British Standards Institute. *British Standard (BS8545) Young Trees: From Nursery to Independence in the Landscape*

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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- 5.20 Where the proposed solar panels overlap with the RPAs of T17, T32 & T45, post holes must be dug by hand and lined with a non-permeable layer or, by implementing a screw pile foundation or similar. Care should be taken when installing foundations to avoid large roots.
- 5.21 The proposed extent of encroachment within T17, T32 & T45 and, low impact nature of solar panel installation does not raise concern with regard to the long-term life expectancy of the trees. I.e., the proposed works are not seen to have a detrimental effect on the trees noted above.

### Outline methodology within Root Protection Areas

- 5.22 All new (and existing re-routed) services shall be routed outside the existing or potential RPA of retained trees. Where it is unavoidable, then hand excavation shall be employed to avoid damage to the larger roots and the services slid through or below the root system. Ducting shall be used to carry cables. Reference shall be made to the recommendations included within Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (NJUG 4)<sup>7</sup>.
- 5.23 Details of Tree Protection Fencing and ground protection are detailed in the following section of this document.
- 5.24 The RPA should become an exclusion zone during construction works and for any development. It should be fenced-off and protected in accordance with BS5837:2012. The canopy is likewise susceptible to damage during construction work and requires similar protection.
- 5.25 No activities that result in excavations, changes in level or soil compaction should take place within the RPA of any retained trees, especially older mature trees. This would include the storage of materials, any construction work, trafficking by vehicles or even excessive trafficking by pedestrians.
- 5.26 The location and siting of new facilities near trees should consider the potential impact on and conflict with both tree roots and canopy. This should take into account the ultimate size of existing young and middle-aged trees at maturity. Conversely the impact of the tree/s on end user activities should also be considered with regard to obstruction, shading, leaf fall and root action. These are problems that can be managed provided sufficient space is allowed for.
- 5.27 Where works within the RPA are unavoidable works must be undertaken by hand and the soil levels should be carefully reduced by hand to avoid damage to the bark of larger roots directly beneath and adjacent to the excavation. Where these become exposed, they should be further protected from drying out. Where root pruning is unavoidable it should be made at a suitable place within the root system, avoiding damage to surrounding tissue in accordance with BS 3998:2010<sup>8</sup>. Final pruning cuts shall be made at right angles to the axis of the root and the final cut wound should be smooth and as small as possible, free from ragged torn ends.

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<sup>7</sup> <http://streetworks.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf>

<sup>8</sup> British Standards Institute. British Standard (BS3998) Trees Work - Recommendations. 2010.

## 6 TREE WORKS

### Standard of Work (If required)

- 6.1 All tree works shall be carried out in accordance with BS3998:2010 and latest arboricultural best practice.
- 6.2 All tree work shall be carried out by suitably qualified, competent and insured arboricultural contractors in accordance with Arboricultural Association Standard Conditions of Contract and Specifications for Tree Works (2008) Edition and BS 3998:2010 Tree Work.
- 6.3 All green and woody waste generated by the tree works shall be removed from site and disposed of in an environmentally sustainable manner.
- 6.4 When a branch is removed at its point of attachment, injury of the wood and bark of the parent stem or branch above the cut shall be avoided. If a branch collar is visible, the final cut shall be just outside it and care shall be taken to avoid tearing retained wood and bark when the cut is made. Preliminary cuts shall be made, if necessary, so as to remove weight, before a final cut is made. Care shall be taken to prevent falling branches from harming other parts of the tree (including its roots), its surroundings, people or property. Heavy branches shall be removed in sections and, where necessary, shall be lowered with ropes.
- 6.5 Prior to the commencement of any tree works an appropriate risk assessment shall be produced to describe the measures required to fulfil the statutory safety obligations. It shall aim to identify and prioritise the necessary control measures and precautions.
- 6.6 Following the works, it is recommended that the trees are monitored on a regular basis to ensure their ongoing vitality and health. These inspections shall be completed by a suitably qualified and experienced person.

### Timing of Works

- 6.7 Any tree works required shall be completed prior to any construction and enabling works on the site.

## 7 TREE PROTECTION MEASURES

### Construction Exclusion Zone

- 7.1 The protective fence line defines the Construction Exclusion Zone (CEZ) and the fencing shall not be moved or taken down at any time. Within the Construction Exclusion Zone there must be no mechanical digging or scraping; no alteration to existing ground levels including soil stripping; no earthworks; and no handling or discharge of any chemical substance, concrete washings or of any fuels.
- 7.2 Furthermore, vehicular, or pedestrian access and the storage of any materials is prohibited within the Construction Exclusion Zone.
- 7.3 Additionally, no materials that may contaminate the soil such as concrete mixings, diesel oil and vehicle washings shall be discharged within 10m of the stem of any tree and no fires shall be lit within 10m of the maximum extent of a trees crown.

### Tree Protection Fencing

- 7.4 The tree protection fence shall be erected as shown on the Tree Protection Plan (JSL3353\_710A) included with is report.
- 7.5 The fence line shown is the minimum required and the length of the fence shall be extended or adjusted on site as agreed with the Arboricultural Consultant to ensure satisfactory protection of all retained trees and RPAs.
- 7.6 Where proposed (permanent) construction site-boarding provides the same level of protection to the retained trees and RPAs as the proposed tree protection fence, subject to agreement with the Arboricultural Consultant, the boarding may serve as the tree protection fence. Notwithstanding, depending on the form and alignment of the construction site-boarding it may be necessary to provide additional tree protection fence to ensure adequate protection of retained trees and RPAs as shown on the Tree Protection and Removal Plan.
- 7.7 Unless otherwise agreed in writing with the Arboricultural Consultant and/or LPA Tree Officer, the fencing system to be utilised shall be in accordance with Appendix F and compliant with BS5837:2012.
- 7.8 Once the protective barrier is in place it must remain in situ throughout the course of the development until the completion of development, other than to facilitate agreed tree removal; see below.
- 7.9 Where necessary, tree protection fencing may be temporarily re-aligned in order to facilitate tree removal. Fencing is to be re-instated immediately following removal in a manner that encompasses the remaining trees and their respective RPAs. During tree removal, no
- 7.10 Wheeled or tracked machinery is to enter the area previously encompassed by tree protective fencing as shown in the Tree Protection and Removal Plan.
- 7.11 Copies of the Tree Protection and Removal Plan shall be placed in the site office for reference by all site staff.
- 7.12 Signs detailing the purpose of the protective barrier shall be attached to the barriers at 10m intervals. Such signs should be weatherproof and shall be substantially in the form of the

## TREE SURVEY AND ARBORICULTURAL IMPACT ASSESSMENT

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specimen provided at Appendix H. Signs must be replaced as necessary should they be removed or become illegible.

- 7.13 It can be noted that two types of fencing will be utilised, dependent on the tree to be protected-Refer to Appendix F.

### Installation of Solar Panels Within RPAs

- 7.14 The solar panels are to be installed using a pile or screw pile type foundation. These types of foundation are known for their low impact nature to below ground constraints. So much that they require only a small footprint of ground when compared to a traditional strip footing type foundation. As such, harm to trees from foundation installation is not anticipated.
- 7.15 Nonetheless, precaution is advised when in close proximity, or within RPAs of trees. Pile foundation locations should be adjusted if underground obstructions, such as roots, are encountered.
- 7.16 Vehicular movements are not permitted within the RPA, as such, where machinery is required, it shall be located outside of RPAs.
- 7.17 Where access into the RPA is required, the tree protective fencing can be set back, and ground protection measures put in place.
- 7.18 Temporary ground protection shall be sufficient in design to support the proposed construction movement within the RPA. Different level of ground protection may compromise one of the following designs as referenced from BS5837:2012;
- 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. 100mm depth of woodchip), laid onto a geotextile membrane;
  - For pedestrian-operated plant up to a gross weight of 2t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;
  - For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g. proprietary system 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.

### Site Compounds and Materials Stores

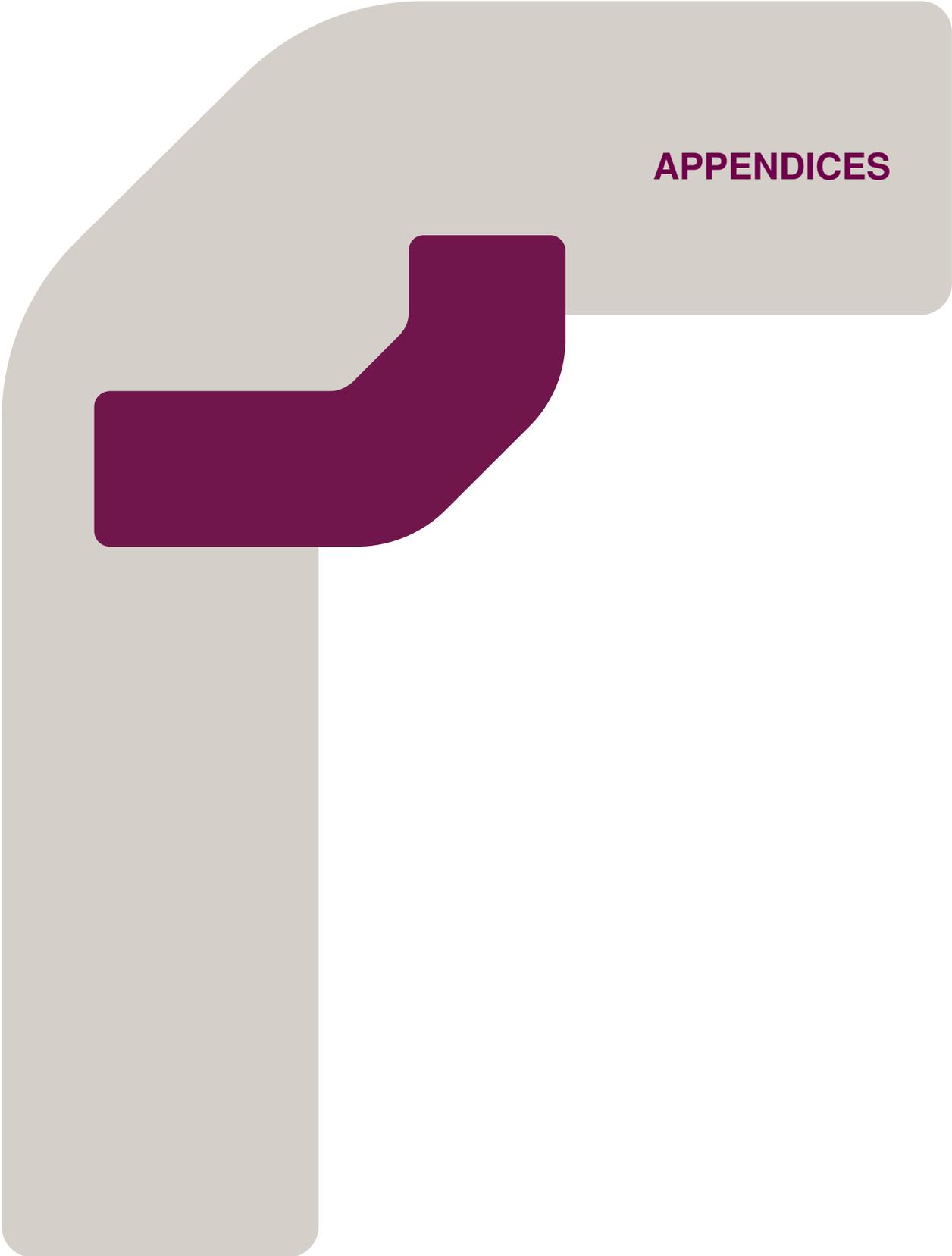
- 7.19 Activities related to the establishment of a temporary site compound have the potential to impact upon retained trees by various means. In particular the storage and mixing of chemicals and materials such as concrete can have a damaging effect on tree health if precautions are not taken.
- 7.20 To prevent harm occurring to trees, provision for materials storage, deliveries and other related activities shall be made available in areas away from retained trees.
- 7.21 Under no circumstances shall materials or plant be stored beneath the canopy or within or abutting the Root Protection Zone of any retained trees/hedges, whether fenced or not.

## Reporting

- 7.22 Should any arboricultural issues become apparent during the works the site manager should immediately contact the Arboricultural Consultant or the Council's Tree Officer for advice upon how to proceed.

## 8 CONCLUSION

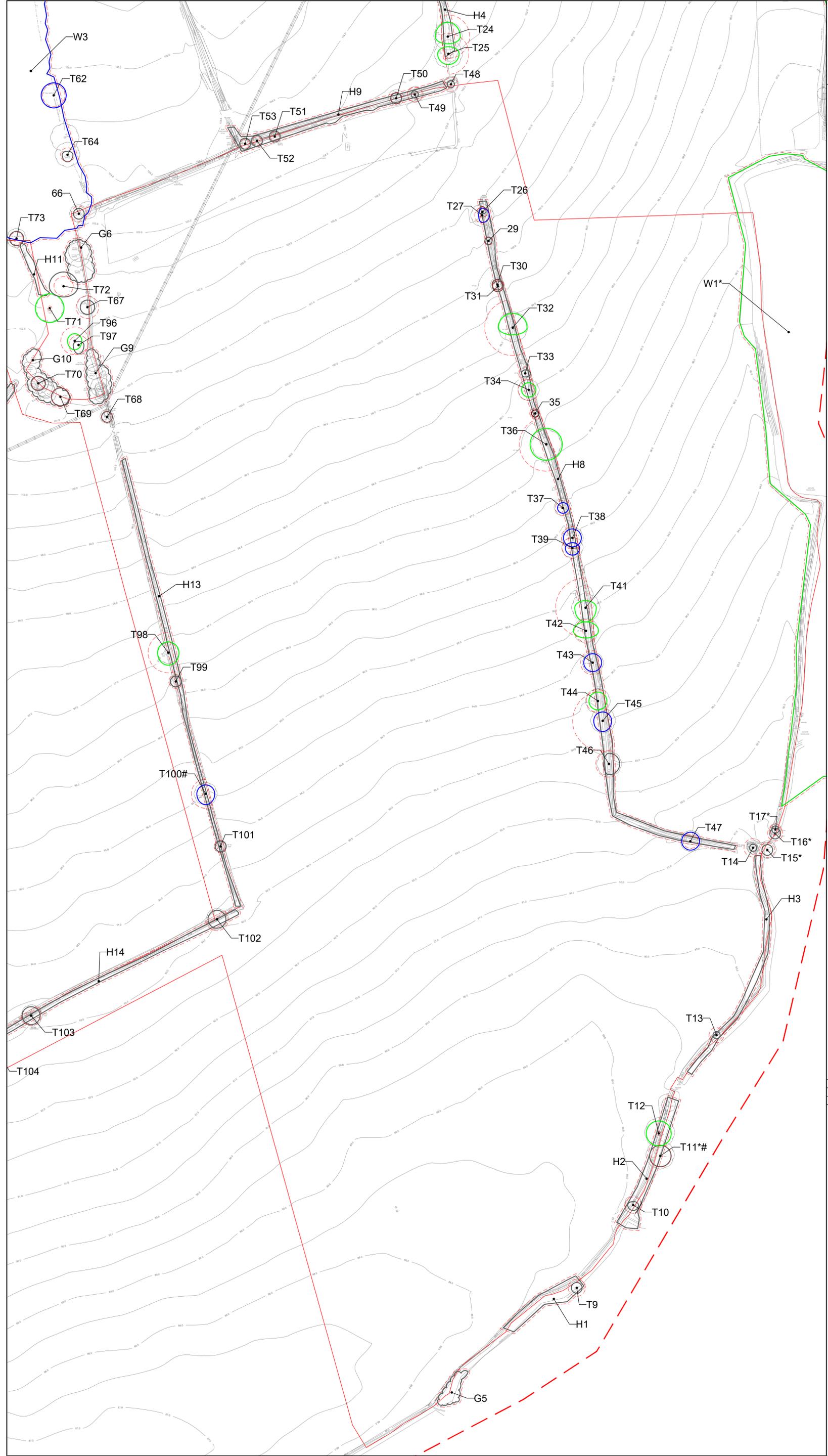
- 8.1 A comprehensive tree survey has been completed on the site and its immediate surroundings. The survey was completed in accordance with BS5837:2012.
- 8.2 The proposed development will require the removal of only one small roadside Ash tree (T1) of no particular merit – Cat C.
- 8.3 Below ground impact to RPS is restricted to T17, T32 & T45 and is deemed to have little to no detrimental impact to the impacted trees.
- 8.4 Tree Protection Fencing will be required to ensure retained trees are protected from construction activity.
- 8.5 The vast majority of Arboreal features on site can be retained safely without undue impact or the requirement for further protection measures other than the ones detailed within this report.



## APPENDICES

## Appendix A

### Tree Constraints Plan JSL3353\_701-703A



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**Key**

- Survey boundary.
- Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
- Tree (location estimated) with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- Tree off-site with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- Vegetation group with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
- Woodland with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
- Hedge with numbered reference. Width and BS5837:2012 tree quality category as shown below.

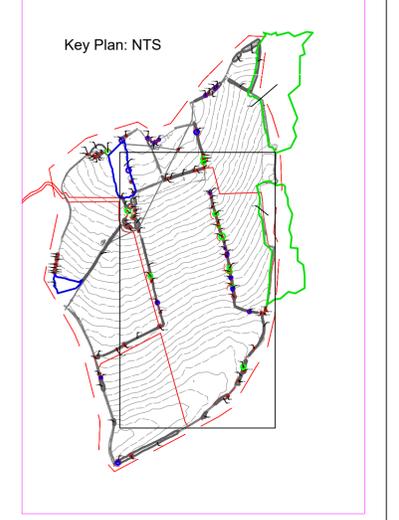
BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

Root protection area (RPA)  
 Calculated in accordance with Section 4.6 - BS5837:2012

**NOTES:**

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period, generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by RPS in October 2019.



| Rev | Description | By | CB | Date |
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Client **London Stansted Airport**

Project **Land East of Stansted Airport**

Title **Tree Constraints Plan**

Status **For Planning** Drawn By **AB** PM/Checked by **SK**

Job Ref **JSL3353** Scale @ **A1** Date Created **January 2020**  
 1:1000

RPS Drawing / Figure Number **701** Rev **A**

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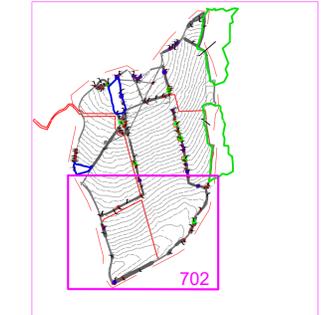
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### Key

-  Survey boundary.
  -  Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
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  -  Tree off-site with numbered reference. Canopy spread and BS5837:2012 tree quality category.
  -  Vegetation group with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
  -  Woodland with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
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- BS 5837:2012 Tree Quality Categories - Table 1
-  Category A - High quality
  -  Category B - Moderate quality
  -  Category C - Low quality
  -  Category U - Unsuitable for retention
-  Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period, generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by RPS in October 2019.



### Key Plan: NTS

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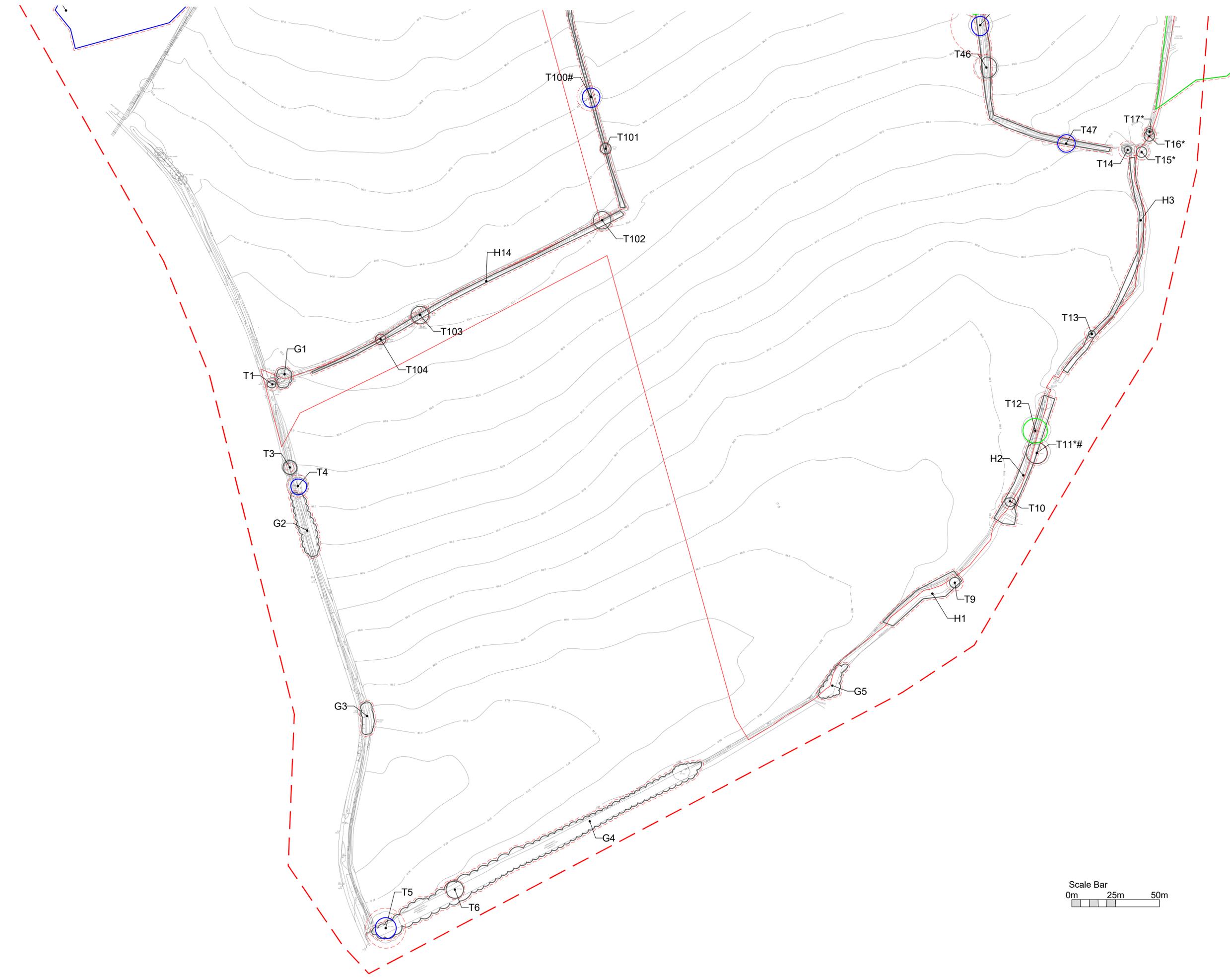
Title **Tree Constraints Plan**

Status **For Planning** Drawn By **AB** PM/Checked by **SK**

Job Ref **JSL3353** Scale @ A1 **1:1000** Date Created **January 2020**

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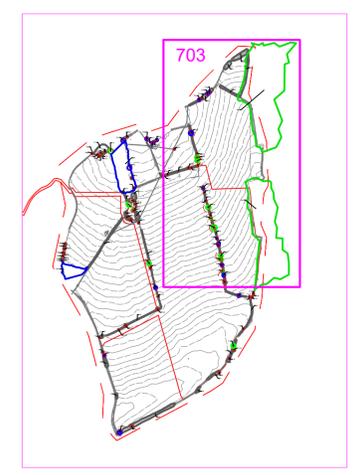
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Calculated in accordance with Section 4.6 - BS5837:2012

- NOTES:
- Refer to RPS Tree Survey Report & Schedule for further details.
  - Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
  - Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
  - Due to the legal protection afforded to breeding birds, vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
  - Survey based upon topographic survey produced by RPS in October 2019.



Key Plan: NTS



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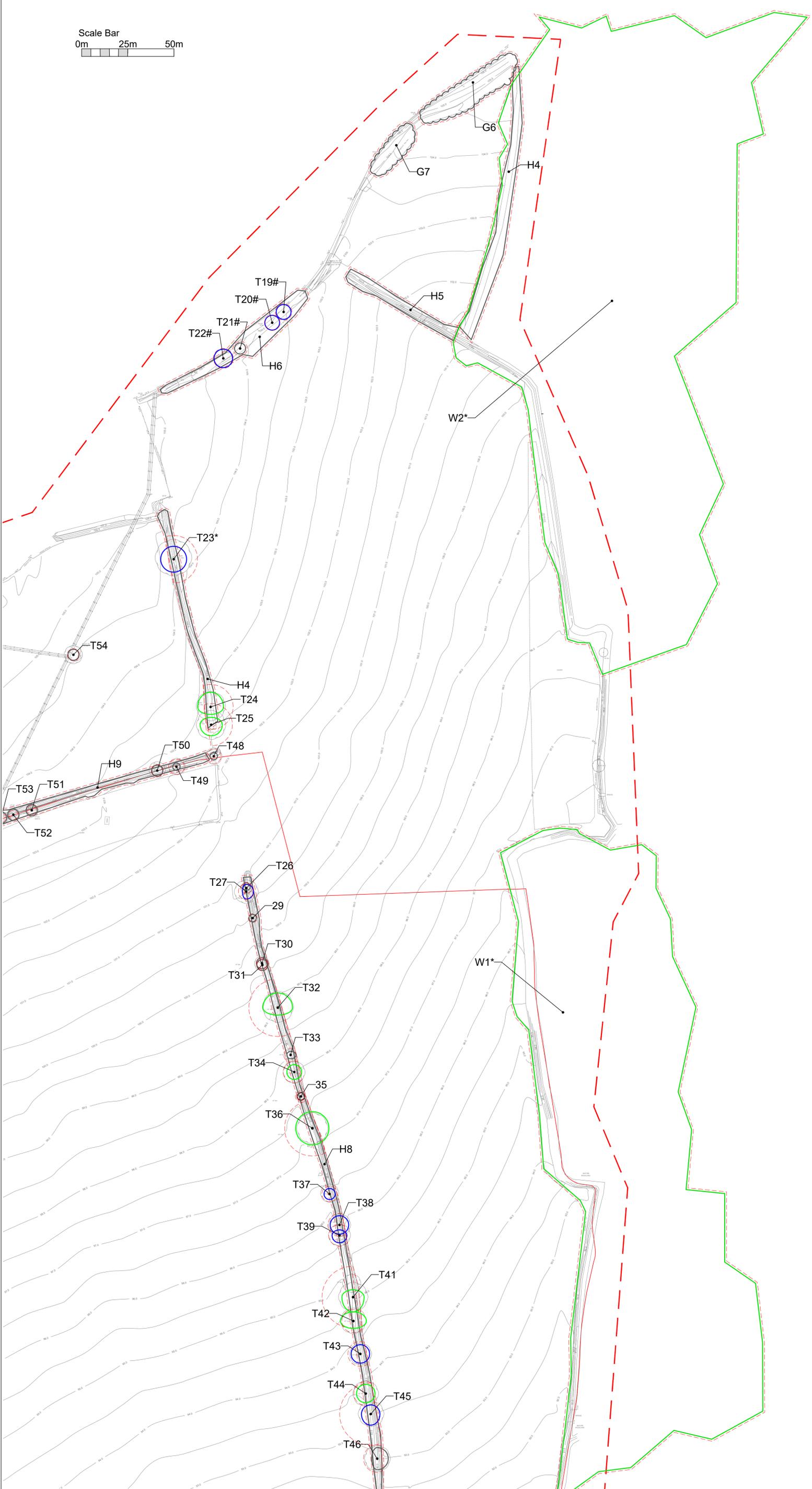
Title **Tree Constraints Plan**

Status **For Planning** Drawn By **AB** PM/Checked by **SK**

Job Ref **JSL3353** Scale @ A1 **1:1000** Date Created **January 2020**

RPS Drawing / Figure Number **703** Rev **A**

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## Appendix B

### Tree Survey Schedule JSL3353\_750A

**TREE SURVEY SCHEDULE**

Site: Land East of Stansted Airport  
 Project Schedule Ref: JSL3353\_750A  
 Drawing Reference: JSL3353\_701, 702, 703  
 Survey date: 10/12/19 & 11/12/19

Surveyor: Stefan kowalczyk  
 Status: For Planning  
 Revision: A  
 Notes: Stem dia. (mm) for trees with 6 or more stems are estimated averages.



| Ref. no | Species                         | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations<br>Management Recommendations   | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|---------------------------------|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|--|--|--------------------------------|
|         |                                 |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |  |  |                                |
| T1      | Fraxinus excelsior - Common Ash | 5          | 2                | 2 | 2 | 3 | 200, 200       | 2                | 4                             | West        | SM        | Fair                 | Fair                    | Roadside ash, ivy clad, no merit - Remove tree to facilitate access  | 10-20                                  | C2                             |
| T2      | Ulmus procera - English Elm     | 5          | 3                | 2 | 2 | 3 | 200            | 1                | 3                             | NW          | SM        | Fair                 | Fair                    | Roadside Elm, no long term life expectancy, likely to succumb to Dutch Elm Disease   | 10-20                                  | C2                             |
| T3      | Fraxinus excelsior - Common Ash | 7          | 4                | 4 | 4 | 4 | Ave 250        | 6                | 1                             | NW          | SM        | Fair                 | Fair                    | Roadside, multi stemmed from ground level, growing within ditch  | 10-20                                  | C2                             |
| T4      | Quercus robur - Pedunculate Oak | 7          | 4                | 5 | 5 | 4 | 300, 300, 300  | 3                | 2                             | South       | SM        | Good                 | Good                    | Roadside multi stemmed from ground level growing within ditch  | 20-40                                  | B2                             |
| T5      | Quercus robur - Pedunculate Oak | 10         | 6                | 6 | 6 | 6 | 950            | 1                | 2                             | South       | M         | Good                 | Good                    | Growing southwards from edge of ditch, soil erosion from beneath root plate, buttressing/roots exposed as a result. Lapsed pollard head at 2m. | 20-40                                  | B2                             |
| T6      | Acer campestre - Field Maple    | 10         | 5                | 5 | 5 | 5 | 250, 300, 250  | 3                | 4                             | North       | EM        | Good                 | Good                    | On north edge of ditch, small cluster of stems within long linier group of similar trees.  | 10-20                                  | C2                             |
| T7      | Acer campestre - Field Maple    | 10         | 3                | 3 | 3 | 3 | Ave 150        | 6                | 3                             | North       | EM        | Good                 | Good                    | Dense cluster of small diameter stems growing on south side of ditch   | 10-20                                  | C2                             |
| T8      | Salix alba - White Willow       | 10         | 3                | 3 | 3 | 3 | 250            | 1                | 3                             | North       | EM        | Fair                 | Fair                    | On south edge of ditch, no particular merit  | 10-20                                  | C2                             |
| T9      | Salix alba - White Willow       | 10         | 3                | 3 | 3 | 3 | 400            | 1                | 2                             | North       | EM        | Fair                 | Fair                    | On south edge of ditch, no particular merit  | 10-20                                  | C2                             |
| T10     | Acer campestre - Field Maple    | 10         | 2                | 3 | 3 | 3 | 250, 200, 200  | 3                |                               | South       | EM        | Good                 | Good                    | On north edge of ditch, small cluster of stems forming one canopy  | 10-20                                  | C2                             |
| T11*#   | Salix alba - White Willow       | 10         | 6                | 6 | 6 | 6 | 500            | 1                | 5                             | North       | M         | Good                 | Good                    | On south edge of ditch, lean to south, offsite, estimated dimensions   | 10-20                                  | C2                             |
| T12     | Quercus robur - Pedunculate Oak | 15         | 7                | 7 | 7 | 7 | 100            | 1                | 4                             | North       | M         | Good                 | Good                    | On north edge of ditch, Good individual specimen   | 40+                                    | A2                             |
| T13     | Salix fragilis - Crack Willow   | 5          | 2                | 2 | 2 | 2 | 350            | 1                |                               | South       | M         | Fair                 | Fair                    | On north edge of ditch, lean to south, lapsed pollard head at 1.5  | 10-20                                  | C2                             |
| T14     | Acer campestre - Field Maple    | 7          | 2                | 2 | 2 | 2 | 250, 250, 250  | 3                | 4                             | North       | EM        | Good                 | Good                    | Small tree on edge of hedgerow   | 10-20                                  | C2                             |
| T15*    | Acer campestre - Field Maple    | 7          | 3                | 3 | 3 | 3 | 250, 250       | 2                | 4                             | North       | EM        | Good                 | Good                    | Small tree on edge of hedgerow. Offsite  | 10-20                                  | C2                             |

Note: This survey is based on a brief visual inspection from the ground.  
 It is not intended as a full arboricultural inspection.  
 # - indicates estimated measurement/location. \* indicated offsite tree

| Ref. no | Species                         | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm)          | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations Management Recommendations   | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|---------------------------------|------------|------------------|---|---|---|-------------------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|---|--|--------------------------------|
|         |                                 |            | N                | S | E | W |                         |                  |                               |             |           |                      |                         |   |  |                                |
| T16*    | Acer campestre - Field Maple    | 7          | 3                | 3 | 3 | 3 | 250, 250                | 2                | 2                             | North       | EM        | Good                 | Good                    | Small tree on edge of hedgerow. Offsite   | 10-20                                  | C2                             |
| T17*    | Acer campestre - Field Maple    | 7          | 2                | 2 | 2 | 2 | 250, 100                | 2                | 1                             | North       | EM        | Good                 | Good                    | Small tree on edge of hedgerow. Offsite   | 10-20                                  | C2                             |
| T18     | Acer campestre - Field Maple    | 10         | 3                | 3 | 3 | 3 | 250, 300, 200, 200, 200 | 5                | 2                             | North       | EM        | Good                 | Good                    | One canopy of approx. 5 stems on road side within hedge, location estimated   | 20-40                                  | B2                             |
| T19#    | Fraxinus excelsior - Common Ash | 10         | 4                | 4 | 4 | 4 | 200                     | 1                | 3                             | East        | EM        | Good                 | Good                    | One canopy of 3 stems on road side within hedge, location estimated   | 20-40                                  | B2                             |
| T20#    | Acer campestre - Field Maple    | 10         | 4                | 4 | 4 | 4 | 200, 200, 200, 200, 200 | 5                | 0                             | East        | EM        | Good                 | Good                    | One canopy of approx. 5 stems on road side within hedge, location estimated   | 20-40                                  | B2                             |
| T21#    | Acer campestre - Field Maple    | 10         | 3                | 3 | 3 | 3 | 200, 250                | 2                | 4                             | North       | EM        | Good                 | Good                    | One canopy of 2 stems on road side within hedge, location estimated   | 10-20                                  | C2                             |
| T22#    | Quercus robur - Pedunculate Oak | 10         | 5                | 5 | 5 | 5 | 350, 300                | 2                | 3                             | North       | EM        | Good                 | Good                    | One canopy of 2 stems on road side within hedge, location estimated, ivy clad   | 20-40                                  | B2                             |
| T23*    | Quercus robur - Pedunculate Oak | 12         | 7                | 7 | 7 | 7 | 850                     | 1                | 4                             | North       | M         | Good                 | Fair                    | Growing on north east side of 1m deep ditch, rooting restricted to south east as consequence, some dieback evident with large deadwood in places, ivy on canopy, measurements estimated | 20-40                                  | B2                             |
| T24     | Quercus robur - Pedunculate Oak | 12         | 8                | 4 | 7 | 7 | 820                     | 1                | 3                             | North       | M         | Good                 | Good                    | Growing on north east side of 1m deep ditch, rooting restricted to south as consequence,  | 40+                                    | A2                             |
| T25     | Quercus robur - Pedunculate Oak | 12         | 4                | 6 | 6 | 6 | 750                     | 1                | 4                             | East        | M         | Good                 | Good                    | Growing on end of hedge line, dense epicormics sprouting from stem, no obvious major defects  | 40+                                    | A2                             |
| T26     | Quercus robur - Pedunculate Oak | 5          | 3                | 1 | 2 | 2 | 250                     | 1                | 2                             | West        | Y         | Fair                 | Good                    | Growing within hedge line, on west side of ditch  | 10-20                                  | C2                             |
| T27     | Quercus robur - Pedunculate Oak | 7          | 4                | 4 | 4 | 2 | 200, 200, 200, 200, 200 | 5                | 4                             | North       | EM        | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence, old lapsed pollard head at 4m with regrowth of approx. five large stems                            | 20-40                                  | B2                             |
| T28     | Quercus robur - Pedunculate Oak | 7          | 2                | 2 | 2 | 2 | 200                     | 1                | 1                             | West        | SM        | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence, suppressed tree  | 10-20                                  | C2                             |
| T29     | Acer campestre - Field Maple    | 7          | 2                | 2 | 2 | 2 | 200                     | 1                | 0                             | West        | SM        | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence   | 10-20                                  | C2                             |
| T30     | Quercus robur - Pedunculate Oak | 5          | 3                | 3 | 3 | 3 | 250                     | 1                | 4                             | West        | SM        | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence   | 10-20                                  | C2                             |
| T31     | Quercus robur - Pedunculate Oak | 5          | 3                | 3 | 3 | 3 | 250                     | 1                | 4                             | West        | SM        | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence   | 10-20                                  | C2                             |

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| Ref. no | Species                         | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations Management Recommendations   | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|---------------------------------|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|---|--|--------------------------------|
|         |                                 |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |   |  |                                |
| T32     | Quercus robur - Pedunculate Oak | 15         | 8                | 4 | 8 | 8 | 1000           | 1                | 2                             | North       | M         | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence, lost large limb on south side of canopy, failure point showing good signs of regrowth  | 40+                                    | A2                             |
| T33     | Quercus robur - Pedunculate Oak | 5          | 2                | 2 | 3 | 2 | 300            | 1                | 3                             | North       | EM        | Fair                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence, no particular merit  | 10-20                                  | C2                             |
| T34     | Quercus robur - Pedunculate Oak | 5          | 4                | 4 | 4 | 4 | 450            | 1                | 3                             | North       | M         | Good                 | Good                    | Growing within hedge line, on west side of ditch, rooting restricted as consequence, good tree with long term potential   | 40+                                    | A2                             |
| T35     | Ulmus procera - English Elm     | 5          | 2                | 2 | 2 | 2 | 250            | 1                | 0                             | North       | OM        | Poor                 | Poor                    | Mostly dead, ivy clad, no long term potential   | <10                                    | U                              |
| T36     | Quercus robur - Pedunculate Oak | 15         | 9                | 9 | 9 | 9 | 980            | 1                | 3                             | North       | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, old pollard head at 4m with 3 large stems, fine specimen tree                                   | 40+                                    | A2                             |
| T37     | Quercus robur - Pedunculate Oak | 10         | 3                | 3 | 3 | 3 | 350            | 1                | 4                             | North       | EM        | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, Ivy clad  | 20-40                                  | B2                             |
| T38     | Quercus robur - Pedunculate Oak | 10         | 5                | 5 | 5 | 5 | 450            | 1                | 4                             | North       | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, Ivy clad  | 20-40                                  | B2                             |
| T39     | Quercus robur - Pedunculate Oak | 10         | 3                | 4 | 4 | 4 | 450            | 1                | 2                             | West        | EM        | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence  | 20-40                                  | B2                             |
| T40     | Quercus robur - Pedunculate Oak | 7          | 4                | 4 | 4 | 4 | 350            | 1                | 3                             | West        | EM        | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence  | 20-40                                  | B2                             |
| T41     | Quercus robur - Pedunculate Oak | 7          | 4                | 8 | 6 | 6 | 1100           | 1                | 3                             | West        | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, old pollard head at 4m leading to regrowth of approx. 6 large stems, broad wide spreading habit | 40+                                    | A2                             |
| T42     | Quercus robur - Pedunculate Oak | 12         | 5                | 4 | 7 | 7 | 500            | 1                | 4                             | West        | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, old pollard head at 4m leading to regrowth of large stems                                       | 40+                                    | A2                             |
| T43     | Quercus robur - Pedunculate Oak | 12         | 5                | 5 | 5 | 5 | 500            | 1                | 3                             | South       | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, large deadwood in canopy typical of dieback   | 20-40                                  | B2                             |
| T44     | Quercus robur - Pedunculate Oak | 12         | 5                | 5 | 5 | 5 | 500            | 1                | 4                             | South       | M         | Good                 | Good                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, fine specimen with good long term potential   | 40+                                    | A2                             |
| T45     | Quercus robur - Pedunculate Oak | 10         | 5                | 6 | 5 | 5 | 1100           | 1                | 3                             | West        | OM        | Good                 | Fair                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, old burr oak, lapsed pollard, cavities and exposed decay throughout old pollard head            | 20-40                                  | B2                             |
| T46     | Quercus robur - Pedunculate Oak | 10         | 6                | 6 | 6 | 3 | 520            | 1                | 3                             | East        | OM        | Fair                 | Poor                    | Growing on west side of 1.5m deep ditch, rooting restricted as consequence, significant dieback evident in canopy, no long term potential                                   | 10-20                                  | C2                             |
| T47     | Quercus robur - Pedunculate Oak | 5          | 5                | 5 | 5 | 5 | 320            | 1                | 2                             | NW          | EM        | Fair                 | Poor                    | Growing on south west side of 1.5m deep ditch, rooting restricted as consequence, fine tree with long term potential  | 20-40                                  | B2                             |

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| Ref. no | Species                                       | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm)          | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations Management Recommendations  | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|---|------------|------------------|---|---|---|-------------------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|--|--|--------------------------------|
|         |   |            | N                | S | E | W |                         |                  |                               |             |           |                      |                         |  |  |                                |
| T48     | Acer campestre - Field Maple                  | 5          | 2                | 2 | 2 | 2 | 250, 200                | 2                | 0                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T49     | Acer campestre - Field Maple                  | 5          | 2                | 2 | 2 | 2 | 200, 200, 200, 200      | 4                | 3                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T50     | Acer campestre - Field Maple                  | 5          | 3                | 3 | 3 | 3 | 200, 200                | 2                | 3                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T51     | Acer campestre - Field Maple                  | 5          | 3                | 3 | 3 | 3 | 200                     | 1                | 3                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T52     | Acer campestre - Field Maple                  | 5          | 3                | 3 | 3 | 3 | 200                     | 1                | 3                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T53     | Acer campestre - Field Maple                  | 5          | 3                | 3 | 3 | 3 | 200                     | 1                | 2                             | North       | SM        | Good                 | Good                    | Growing on south side of shallow ditch, rooting restricted as consequence                          | 10-20                                  | C2                             |
| T54     | Sambucus nigra - Elder                        | 5          | 3                | 3 | 3 | 3 | 200, 150, 100, 150, 150 | 5                | 0                             | North       | M         | Fair                 | Fair                    | Old multi stemmed elder growing adjacent telegraph pole, no particular merit                       | 10-20                                  | C2                             |
| T55     | Betula pendula - Silver Birch                 | 10         | 4                | 4 | 4 | 4 | 300                     | 1                | 2                             | North       | M         | Good                 | Good                    | Offsite, good quality tree   | 20-40                                  | B2                             |
| T56#    | Cupressocyparis x leylandii - Leyland Cypress | 10         | 4                | 4 | 4 | 4 | 350                     | 1                | 0                             | North       | M         | Good                 | Good                    | Offsite, good quality tree, measurements estimated   | 10-20                                  | C2                             |
| T57#    | Cedrus deodara - Blue Atlas Cedar             | 12         | 4                | 4 | 4 | 4 | 350                     | 1                | 1                             | North       | M         | Good                 | Good                    | Offsite, good quality tree, measurements estimated   | 20-40                                  | B2                             |
| T58     | Cupressocyparis x leylandii - Leyland Cypress | 10         | 4                | 4 | 4 | 4 | 350                     | 1                | 0                             | North       | M         | Good                 | Good                    | Offsite, good quality tree, close to power line, measurements estimated                            | 10-20                                  | C2                             |
| T59#    | Fraxinus excelsior - Common Ash               | 10         | 5                | 5 | 5 | 5 | 450                     | 1                | 2                             | West        | M         | Good                 | Good                    | Offsite, good quality tree, measurements estimated   | 20-40                                  | B2                             |
| T60*    | Acer campestre - Field Maple                  | 7          | 3                | 3 | 3 | 5 | 300                     | 1                | 0                             | West        | M         | Good                 | Good                    | Location estimated, growing on south side of ditch, dense canopy, no particular merit              | 10-20                                  | C2                             |
| T61*    | Acer campestre - Field Maple                  | 10         | 7                | 7 | 7 | 7 | 300, 300, 300, 300, 300 | 5                | 2                             | East        | M         | Good                 | Good                    | Location estimated, growing on south side of ditch, dense canopy, heavily ivy clad on edge of site | 20-40                                  | B2                             |
| T62     | Acer campestre - Field Maple                  | 10         | 7                | 7 | 7 | 7 | 300, 350, 250, 300, 300 | 5                | 3                             | North       | M         | Good                 | Good                    | Multi stemmed habit growing on edge of wooded group.   | 20-40                                  | B2                             |
| T63     | Quercus robur - Pedunculate Oak               | 12         | 8                | 5 | 9 | 8 | 950                     | 1                | 4                             | North       | M         | Good                 | Good                    | Good quality tree, no obvious major defects noted, some ivy within canopy                          | 40+                                    | A2                             |
| T64     | Quercus robur - Pedunculate Oak               | 12         | 2                | 4 | 3 | 3 | 325                     | 1                | 4                             | North       | M         | Good                 | Good                    | Ivy clad from ground level measurement estimated, growing on edge of wooded group                  | 10-20                                  | C2                             |

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| Ref. no | Species                                 | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m   | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations Management Recommendations | Estimated remaining contribution (yrs)   | Tree Quality Category (BS5837) |    |
|---------|---|------------------|---|---|---|----------------|--------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|---|--|--------------------------------|----|
|         |   | Height (m)       | N | S | E |                |                    |                               |             |           |                      |                         |   |  |                                | W  |
| T65     | Malus sylvestris - Wild Apple           | 7                | 2 | 3 | 3 | 3              | 200, 150, 250      | 3                             | 4           | South     | M                    | Good                    | Good  | Growing on edge of group, no particular merit  | 10-20                          | C2 |
| T66     | Malus sylvestris - Wild Apple           | 7                | 3 | 3 | 3 | 3              | 200, 200, 200, 200 | 5                             | 2           | South     | M                    | Good                    | Good  | Multi stemmed from ground level, no particular merit   | 10-20                          | C2 |
| T67     | Salix fragilis - Crack Willow           | 7                | 4 | 4 | 4 | 4              | 350, 400           | 2                             | 0           | South     | M                    | Fair                    | Fair  | Ivy clad stem growing on west side bank of ditch, old pollard with 3-4yr old regrowth  | 10-20                          | C2 |
| T68     | Quercus robur - Pedunculate Oak         | 7                | 3 | 3 | 3 | 3              | 250                | 1                             | 2           | South     | SM                   | Good                    | Good  | Growing in close proximity to non insulated power line, unlikely to survive utility pruning treatment, no long term potential                  | 10-20                          | C2 |
| T69     | Acer campestre - Field Maple            | 7                | 5 | 5 | 5 | 5              | 250, 250, 250      | 3                             | 2           | South     | SM                   | Poor                    | Good  | Cluster of poorly formed stems on edge of group , ivy clad with dense understory growth  | 10-20                          | C2 |
| T70     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 2           | South     | SM                   | Poor                    | Good  | Tree within group of similar trees - grown out from old hedge typical hedge grown tree, ivy clad, no particular merit other than habitat value | 10-20                          | C2 |
| T71     | Quercus robur - Pedunculate Oak         | 12               | 8 | 8 | 8 | 8              | 100                | 1                             | 4           | South     | M                    | Good                    | Good  | Fine individual specimen, lapsed pollard point at 4m, good open canopy.  | 40+                            | A2 |
| T72     | Salix fragilis - Crack Willow           | 12               | 8 | 6 | 8 | 8              | 450                | 1                             | 5           | South     | M                    | Fair                    | Poor  | Sparse canopy, growing in unison with adjacent oak, location estimated   | 10-20                          | C2 |
| T73     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 2           | South     | M                    | Good                    | Good  | Woodland edge tree of no particular merit, typical of surrounding trees  | 10-20                          | C2 |
| T74     | Cupressus macrocarpa - Monterey Cypress | 15               | 8 | 8 | 8 | 8              | 700                | 1                             | 4           | South     | M                    | Good                    | Good  | Good quality individual on corner of woodland group  | 40+                            | A2 |
| T75     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Broad spreading habit, ivy clad, grown out from hedge line, dense understory.  | 10-20                          | C2 |
| T76     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Edge of woodland group, grown out from hedge, ivy clad, no particular merit  | 10-20                          | C2 |
| T77     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees  | 10-20                          | C2 |
| T78     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees  | 10-20                          | C2 |
| T79     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees  | 10-20                          | C2 |
| T80     | Acer campestre - Field Maple            | 7                | 4 | 4 | 4 | 4              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees  | 10-20                          | C2 |
| T81     | Malus sylvestris - Wild Apple           | 7                | 2 | 2 | 2 | 2              | 300                | 1                             | 0           | South     | M                    | Good                    | Good  | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees  | 10-20                          | C2 |

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|---------|--------------------------------------|------------|------------------|---|---|---|--------------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|--|--|--------------------------------|
|         |                                      |            | N                | S | E | W |                    |                  |                               |             |           |                      |                         |  |  |                                |
| T82     | Malus sylvestris - Wild Apple        | 7          | 2                | 2 | 2 | 2 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Woodland group edge tree of no particular merit, typical of surrounding woodland edge trees                              | 10-20                                  | C2                             |
| T83     | Crataegus monogyna - Common Hawthorn | 7          | 2                | 2 | 2 | 2 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside tree grown out from hedge   | 10-20                                  | C2                             |
| T84     | Crataegus monogyna - Common Hawthorn | 7          | 3                | 3 | 3 | 3 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside tree grown out from hedge   | 10-20                                  | C2                             |
| T85     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300, 300, 150, 150 | 4                | 0                             | South       | M         | Fair                 | Good                    | Roadside hedge grown trees with little merit other than screening and habitat  | 10-20                                  | C2                             |
| T86     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T87     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T88     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T89     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300, 300           | 2                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T90     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T91     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T92     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T93     | Acer campestre - Field Maple         | 7          | 4                | 4 | 4 | 4 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T94     | Crataegus monogyna - Common Hawthorn | 7          | 2                | 2 | 2 | 2 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T95     | Crataegus monogyna - Common Hawthorn | 7          | 2                | 2 | 2 | 2 | 300                | 1                | 0                             | South       | M         | Good                 | Good                    | Roadside grown trees out of hedge line with little merit other than screening and habitat                                | 10-20                                  | C2                             |
| T96     | Pinus nigra - Austrian Pine          | 15         | 4                | 5 | 4 | 4 | 650                | 1                | 3                             | South       | M         | Good                 | Good                    | Well established Pine showing good characteristics   | 40+                                    | A2                             |
| T97     | Malus sp. - Apple                    | 7          | 2                | 5 | 3 | 3 | 450                | 1                | 2                             | South       | M         | Good                 | Good                    | Growing beneath, adjacent Pine, suppressed crown form as a result, no particular merit                                   | 10-20                                  | C2                             |
| T98     | Quercus robur - Pedunculate Oak      | 7          | 6                | 7 | 6 | 6 | 750                | 1                | 4                             | South       | M         | Good                 | Good                    | Good quality tree growing on west side of ditch, rooting likely to be restricted as a result, no obvious major defects   | 40+                                    | A2                             |
| T99     | Quercus robur - Pedunculate Oak      | 7          | 3                | 3 | 3 | 3 | 300                | 1                | 2                             | South       | M         | Good                 | Good                    | Small tree growing on west side of ditch, rooting likely to be restricted as a result, reasonable tree with little merit | 10-20                                  | C2                             |

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|---------------|---|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|---|--|--------------------------------|
|               |   |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |   |  |                                |
| T100          | Quercus robur - Pedunculate Oak                                     | 10         | 5                | 6 | 5 | 5 | 550            | 1                | 3                             | South       | M         | Good                 | Good                    | Growing on west side of ditch, rooting likely to be restricted to the east as a result, heavily ivy clad, diameter measurements estimated                         | 20-40                                  | B2                             |
| T101          | Quercus robur - Pedunculate Oak                                     | 5          | 3                | 3 | 3 | 3 | 275            | 1                | 2                             | South       | M         | Good                 | Good                    | Growing on west side of ditch from within hedgerow, rooting likely to be restricted to the east as a result   | 10-20                                  | C2                             |
| T102          | Quercus robur - Pedunculate Oak                                     | 7          | 5                | 5 | 5 | 5 | 350, 200, 220  | 3                | 3                             | South       | M         | Good                 | Good                    | Three stems of Oak from ground level growing from within hedgerow, associated tight unions at trifurcation, broad spreading habit                                 | 10-20                                  | C2                             |
| T103          | Quercus robur - Pedunculate Oak                                     | 10         | 5                | 5 | 5 | 5 | 350, 250       | 2                | 3                             | South       | M         | Good                 | Good                    | Two stems of Oak from ground level growing from within hedgerow, associated tight unions at bifurcation, no particular merit                                      | 10-20                                  | C2                             |
| T104          | Quercus robur - Pedunculate Oak                                     | 10         | 3                | 3 | 3 | 3 | 250            | 1                | 3                             | South       | M         | Good                 | Good                    | Growing from within hedgerow, on south side of ditch, no particular merit   | 10-20                                  | C2                             |
| <b>Groups</b> |   |            |                  |   |   |   |                |                  |                               |             |           |                      |                         |   |  |                                |
| G1            | Fraxinus excelsior - Common Ash   Ulmus sp. - Elm                   | 7          | as shown.        |   |   |   | 150-250        | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Small group of leggy stems with two larger stems of elm within. No particular merit   | 10-20                                  | C2                             |
| G2            | Acer campestre - Field Maple  | 7          | as shown.        |   |   |   | 150-250        | -                | -                             | -           | Y-SM      | Good                 | Good                    | linear group of roadside sapling growth with understorey of bramble   | 10-20                                  | C2                             |
| G3            | Acer campestre - Field Maple  | 4          | as shown.        |   |   |   | 100-200        | -                | -                             | -           | Y-SM      | Good                 | Good                    | Roadside, growing on ditch  | 10-20                                  | C2                             |
| G4            | Acer campestre - Field Maple   Crataegus monogyna - Common Hawthorn | 7          | as shown.        |   |   |   | 100-300        | -                | -                             | -           | Y-SM      | Good                 | Good                    | Long linier group of larger field maple with understorey of hawthorn, growing on both sides of ditch but primarily on north side                                  | 10-20                                  | C2                             |
| G5            | Acer campestre - Field Maple  | 7          | as shown.        |   |   |   | 100-200        | -                | -                             | -           | Y-SM      | Good                 | Good                    | Small group of approx. 25 stems, growing on south side of ditch   | 10-20                                  | C2                             |
| G6            | Acer campestre - Field Maple   Crataegus monogyna - Common Hawthorn | 7          | as shown.        |   |   |   | 100-250        | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Roadside group with dense understorey, some larger trees within group, no particular merit, ownership unclear   | 10-20                                  | C2                             |
| G7            | Acer campestre - Field Maple   Crataegus monogyna - Common Hawthorn | 10         | as shown.        |   |   |   | 100-300        | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Roadside group of dense stems within understorey, ownership unclear, no particular merit for any trees other than limited screening provided from road            | 10-20                                  | C2                             |
| G8            | Acer campestre - Field Maple  | 10         | as shown.        |   |   |   | 150-300        | -                | -                             | -           | SM-EM     | Poor                 | Poor                    | Poor quality group of approx. 6 ivy clad stems, part of old hedge line, some collapsed, no merit other than habitat value   | 10-20                                  | C2                             |
| G9            | Acer campestre - Field Maple  | 5          | as shown.        |   |   |   | 100-300        | -                | -                             | -           | SM-EM     | Fair                 | Fair                    | Old hedge line with trees grown out to form one continues group canopy, no particular arboricultural merit other than habitat, growing on west side bank of ditch | 10-20                                  | C2                             |

Note: This survey is based on a brief visual inspection from the ground.  
It is not intended as a full arboricultural inspection.  
# - indicates estimated measurement/location. \* indicated offsite tree

| Ref. no         | Species   | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations<br>Management Recommendations   | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|-----------------|---|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|--|--|--------------------------------|
|                 |   |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |  |  |                                |
| G10             | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  | 6          | as shown.        |   |   |   | 100-250        | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Group of scrubby trees grown out from what was most likely an old hedge line, good habitat value, ivy clad in places                               | 10-20                                  | C2                             |
| G11             | Crataegus monogyna -<br>Common Hawthorn  Acer campestre -<br>Field Maple  | 7          | as shown.        |   |   |   | 50-250         | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Scrubby group with some established small trees, dense ivy and bramble   | 10-20                                  | C2                             |
| <b>Woodland</b> |   |            |                  |   |   |   |                |                  |                               |             |           |                      |                         |  |  |                                |
| W1*             | Pinus nigra -<br>Austrian Pine  Quercus robur -<br>Pedunculate Oak  Fraxinus excelsior -<br>Common Ash   Pseudotsuga menziesii -<br>Winter Flowering Cherry                     | 20         | as shown.        |   |   |   | 100-900        | -                | -                             | -           | Y-OM      | Good                 | Good                    | Offsite, separated from site by a ditch, some branches encroach onto land by approx. 5m  | 40+                                    | A2                             |
| W2*             | Quercus robur -<br>Pedunculate Oak  Pinus nigra -<br>Austrian Pine  Fraxinus excelsior -<br>Common Ash   Crataegus monogyna -<br>Common Hawthorn                                | 20         | as shown.        |   |   |   | 100-900        | -                | -                             | -           | Y-OM      | Good                 | Good                    | Offsite, well establish woodland with large specimen trees, land separated from site by ditch, branches encroach over site in places by approx. 5m | 40+                                    | A2                             |
| W3              | Quercus robur -<br>Pedunculate Oak  Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  Taxus baccata -<br>Common Yew  Corylus avellana -<br>Common Hazel | 10         | as shown.        |   |   |   | 100-450        | -                | -                             | -           | Y-M       | Fair                 | Good                    | Dense woodland group, some access routes internally from road to the north, lots of fallen deadwood and ivy growth                                 | 20-40                                  | B2                             |
| W4#             | Pinus nigra -<br>Austrian Pine  Betula pendula -<br>Silver Birch  Cupresses x laylandii -<br>Japanese Cedar  Cupressus macrocarpa -<br>Monterey Cypress                         | 15         | as shown.        |   |   |   | 100-400        | -                | -                             | -           | Y-M       | Good                 | Good                    | Offsite woodland group of mixed species, location estimated  | 20-40                                  | B2                             |
| <b>Hedges</b>   |   |            |                  |   |   |   |                |                  |                               |             |           |                      |                         |  |  |                                |

Note: This survey is based on a brief visual inspection from the ground.  
It is not intended as a full arboricultural inspection.  
# - indicates estimated measurement/location. \* indicated offsite tree

| Ref. no | Species   | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations<br>Management Recommendations   | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|---|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|--|--|--------------------------------|
|         |   |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |  |  |                                |
| H1      | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  | 5          | as shown.        |   |   |   | 100-200        | -                | -                             | -           | Y-SM      | Good                 | Good                    | Hedgerow on south side of ditch with some small trees growing out                                      | 10-20                                  | C2                             |
| H2      | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  | 5          | as shown.        |   |   |   | 100-250        | -                | -                             | -           | Y-EM      | Good                 | Good                    | Sparse hedgerow with gaps and some larger trees growing out.   | 10-20                                  | C2                             |
| H3*     | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  Salix fragalis -<br>Grey Willow  Quercus robur -<br>Pedunculate Oak   | 5          | as shown.        |   |   |   | 100-200        | -                | -                             | -           | Y-SM      | Fair                 | Fair                    | Hedgerow growing on south side of ditch, offsite   | 10-20                                  | C2                             |
| H4      | Crataegus monogyna -<br>Common Hawthorn  Acer<br>campestre -<br>Field Maple   | 4          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-SM      | Fair                 | Fair                    | Woodland edge hedge on north side of ditch, some larger tree specimens have grown out into small trees | 10-20                                  | C2                             |
| H5      | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  | 3          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-SM      | Good                 | Good                    | Clipped hedge at 1.5m growing within ditch   | 10-20                                  | C2                             |
| H6      | Acer campestre -<br>Field Maple  Crataegus monogyna -<br>Common Hawthorn  Corylus<br>avellana -<br>Common Hazel                                 | 5          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-EM      | Good                 | Good                    | Dense hedge line with mature tress growing out   | 10-20                                  | C2                             |
| H7      | Crataegus monogyna -<br>Common Hawthorn  Prunus spinosa<br>-<br>Blackthorn  | 2          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-M       | Good                 | Good                    | Dense closely clipped hedged line with some grown out trees  | 10-20                                  | C2                             |
| H8      | Corylus avellana -<br>Common Hazel  Quercus robur -<br>Pedunculate Oak  Fraxinus<br>excelsior -<br>Common Ash   Acer campestre -<br>Field Maple | 2          | as shown.        |   |   |   | 50-100         | -                | -                             | -           | Y-M       | Good                 | Good                    | Managed hedge line with some mature trees growing out  | 10-20                                  | C2                             |

Note: This survey is based on a brief visual inspection from the ground.  
It is not intended as a full arboricultural inspection.  
# - indicates estimated measurement/location. \* indicated offsite tree

| Ref. no | Species  | Height (m) | Crown spread (m) |   |   |   | Stem dia. (mm) | Stem no. at 1.5m | Height of crown clearance (m) | Dir/ height | Age class | Structural Condition | Physiological Condition | General Observations Management Recommendations               | Estimated remaining contribution (yrs) | Tree Quality Category (BS5837) |
|---------|--|------------|------------------|---|---|---|----------------|------------------|-------------------------------|-------------|-----------|----------------------|-------------------------|---|--|--------------------------------|
|         |  |            | N                | S | E | W |                |                  |                               |             |           |                      |                         |   |  |                                |
| H9      | Crataegus monogyna - Common Hawthorn  Prunus spinosa - Blackthorn  | 2          | as shown.        |   |   |   | 50-170         | -                | -                             | -           | Y-M       | Good                 | Good                    | Dense hedge with some small trees growing out                 | 10-20                                  | C2                             |
| H10     | Malus sylvestris - Wild Apple  Crataegus monogyna - Common Hawthorn  Prunus spinosa - Blackthorn                                 | 5          | as shown.        |   |   |   | 50-100         | -                | -                             | -           | Y-M       | Good                 | Good                    | Dense understory growth                                       | 10-20                                  | C2                             |
| H11     | Crataegus monogyna - Common Hawthorn  Corylus avellana - Common Hazel  Malus sylvestris - Wild Apple                             | 5          | as shown.        |   |   |   | 50-250         | -                | -                             | -           | Y-EM      | Fair                 | Fair                    | Dense understory hedge line with some established small trees | 10-20                                  | C2                             |
| H12     | Crataegus monogyna - Common Hawthorn  Acer campestre - Field Maple   | 4          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-M       | Good                 | Good                    | Hedgerow dividing two agricultural fields                     | 10-20                                  | C2                             |
| H13     | Crataegus monogyna - Common Hawthorn  Acer campestre - Field Maple  Corylus avellana - Common Hazel                              | 3          | as shown.        |   |   |   | 50-100         | -                | -                             | -           | Y-M       | Good                 | Good                    | Clipped hedgerow, gaps in places , dividing fields            | 10-20                                  | C2                             |
| H14     | Crataegus monogyna - Common Hawthorn  Cornus sp. - Common Dogwood  Corylus avellana - Common Hazel  Acer campestre - Field Maple | 3          | as shown.        |   |   |   | 50-150         | -                | -                             | -           | Y-M       | Good                 | Good                    | Clipped hedgerow, gaps in places                              | 10-20                                  | C2                             |

Note: This survey is based on a brief visual inspection from the ground.  
It is not intended as a full arboricultural inspection.  
# - indicates estimated measurement/location. \* indicated offsite tree

## Appendix C

### Tree Protection Plan JSL3353\_710A



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 Notes  
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 2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.  
 3. Where applicable Ordnance Survey (c) Crown Copyright 2019. All rights reserved. Licence number 0100031673

### Key

- Site boundary.
- Tree with numbered reference. Canopy spread and BS5837:2012 tree quality category as shown below.
- Tree (location estimated) with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- Tree off-site with numbered reference. Canopy spread and BS5837:2012 tree quality category.
- Vegetation group with numbered reference. Canopy extents and BS5837:2012 tree quality category as shown below.
- Woodland with numbered reference. Width and BS5837:2012 tree quality category as shown below.
- Hedge with numbered reference. Width and BS5837:2012 tree quality category as shown below.

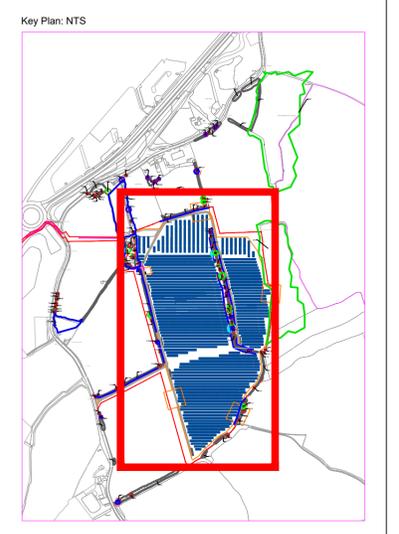
BS 5837:2012 Tree Quality Categories - Table 1

- Category A - High quality
- Category B - Moderate quality
- Category C - Low quality
- Category U - Unsuitable for retention

- Root protection area (RPA) Calculated in accordance with Section 4.6 - BS5837:2012
- Security fence.
- Cable route.
- Access route.
- Excavation to be completed by hand, any required root pruning to be in accordance with BS 3998. Pruning of roots over 25mmØ to be monitored by arboriculturalist, with ongoing monitoring of trees condition by an arboriculturalist being recommended.
- Temporary protective fencing in accordance with Section 6.2 - BS5837:2012. See inset details for example barriers.
- Tree proposed for removal to facilitate the development.

NOTES:

- Refer to RPS Tree Survey Report & Schedule for further details.
- Survey based on a visual inspection from the ground and is not intended as a full arboricultural inspection.
- Plan produced in accordance with recommendations set out in BS 5837:2012 - 'Trees in Relation to design, demolition and construction'.
- Due to the legal protection afforded to breeding birds vegetation removal should not take place during the bird nesting period; generally, although not restricted to, March - August inclusive.
- Survey based upon topographic survey produced by RPS in October 2019.
- Pedestrian/vehicular emergency access routes to be maintained at all times.
- All protective fencing to be completed and approved by LPA / CA prior to commencement of any site works.
- All works to conform with requirements of:
  - BS 3998:2010 - Tree Works
  - BS 5837:2012 - Trees in relation to design, demolition and construction



| Rev | Description    | By  | SK | 09/02/2022 |
|-----|----------------|-----|----|------------|
| A   | Layout updated | JMB | SK | 09/02/2022 |

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Client **London Stansted Airport**

Project **Land East of Stansted Airport**

Title **Tree Protection & Removal Plan**

Status **For Planning** Drawn By **AB** PM/Checked by **SK**

Job Ref **JSL3353** Scale @ **A1** Date Created **January 2022**  
 1:1000

RPS Drawing / Figure Number **710** Rev **A**

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## Appendix D

### Arboricultural site register

(Example template only)

#### ARBORICULTURAL SITE REPORT

|  |                                       |                                 |
|--|---------------------------------------|---------------------------------|
| <b>PROJECT:</b><br><i>XXX, XX Street, XXX Town</i> | <b>SITE CONTACT:</b><br><i>Mr XXX</i> | <b>REPORT NO:</b><br><i>001</i> |
| <b>INSPECTION COMPLETED BY:</b><br><i>Mr XXX</i>   | <b>DATE AND TIME:</b><br><i>XXX</i>   | <b>SHEET:</b><br><i>X OF X</i>  |

| <b>1.1 IT EM</b> | <b>LOCATION</b>                                 | <b>NOTES / RECOMMENDATIONS</b>   | <b>ACTION</b>  |
|------------------|---|--|--|
| 1                | <i>E.g. Adjacent to T999, north of building</i> | <i>E.g. Damaged fence, materials spilled into RPA, further inspection requirements, damage to tree</i> | <i>E.g. Reinstate fencing, make good levels with topsoil</i> |
| 2                |   |  |  |
| 3                |   |  |  |

**CIRCULATION:**  
**Mr XXX**  
**Mr XXX**

## Appendix E

### Email response from Uttlesford District Council October 2019

RE: [External]..TPO search request



Planning <planning@uttlesford.gov.uk>

To [Redacted]

Reply Reply All Forward

Mon 23/12/2019 16:05

You replied to this message on 10/02/2022 12:07.

**CAUTION:** This email originated from outside of RPS.

Thank you for your email there are no TPO's in the area you describe and it is not in a Conservation Area

**From:** Stefan Kowalczyk [Redacted]  
**Sent:** 23 December 2019 15:56  
**To:** Planning <planning@uttlesford.gov.uk>  
**Subject:** [External]..TPO search request

Good afternoon,

I would like to establish whether there are any Tree Preservation Orders that affect a certain area of land east of Stansted Airport mid stay parking. I have looked on your interactive mapping system but it only allows to search within 100m meters of a certain property. The area for which we would like information on is approximately 800m west to east and 900m north to south so falls outside of the 100m proximity.

Could you please let us know if there are any TPOs within the area of land specified in the screen shot below please. The closest address is 1 Coopers Villas, Coopers End, Takeley, Bishops Stortford, CM22 6PT.



**Appendix F**

**Example Tree Protection Barriers (BS5837:2012 Figure 2 & 3)**

Figure 2 Default specification for protective barrier

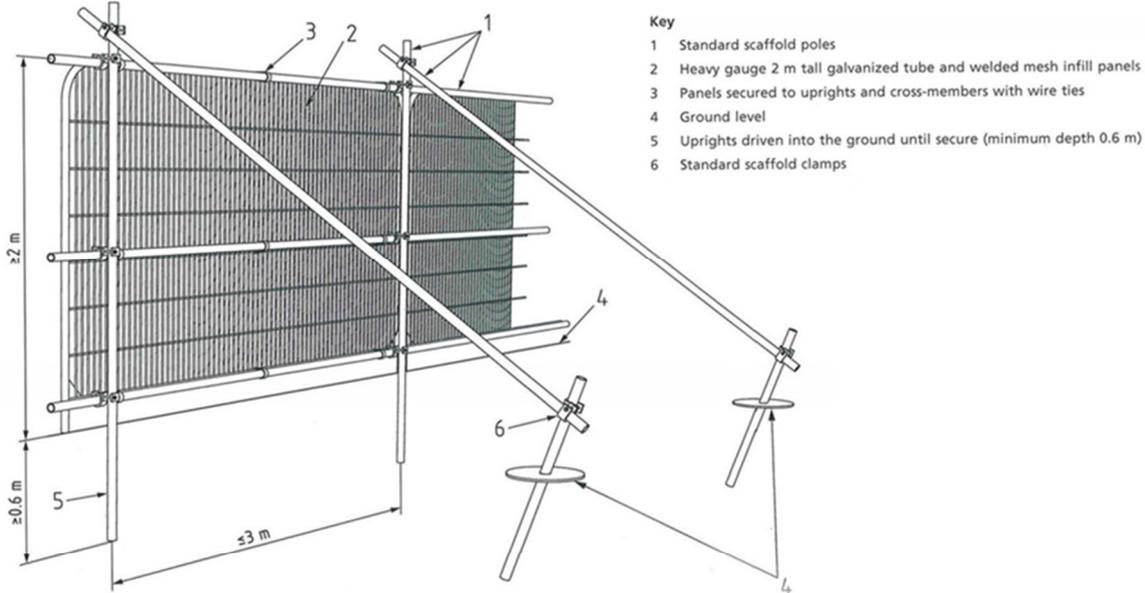
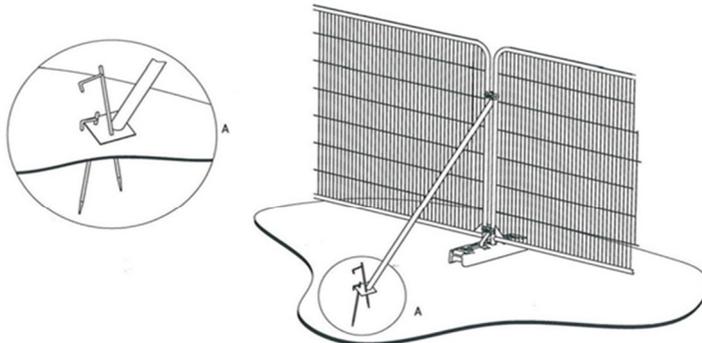
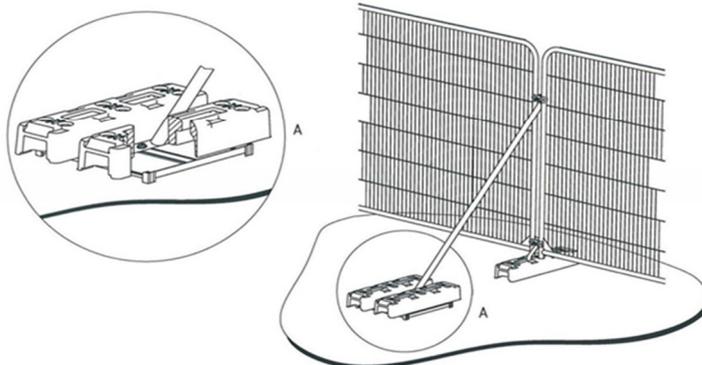


Figure 3 Examples of above-ground stabilizing systems

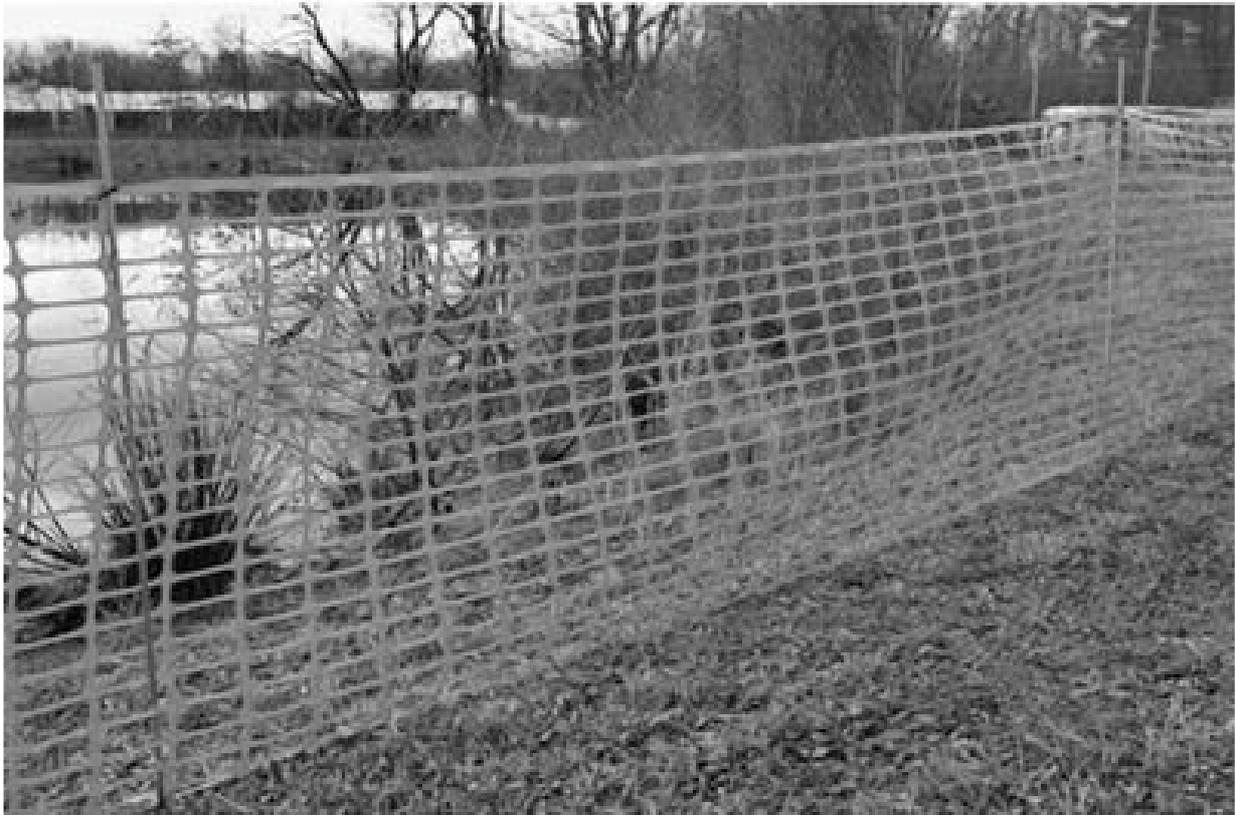


a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

## Example Tree Protection Barriers (Figure 4)



## Appendix H

### Construction Exclusion Zone (CEZ) Signage



## Appendix I

### Site Photographs





## Appendix J

### Arboricultural Glossary

**Age-class** - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

**Apical Bud/Shoot** – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

**Apical Dominance** – A singular, leading shoot remains dominant.

**Arboreal** - In connection with, or in relation to, trees.

**Arboriculturalist** – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

**Arboricultural Implications Assessment (AIA)** – Study, undertaken by an arboriculturalist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

**Arboricultural Method Statement (AMS)** – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AMS is likely to include details of an on-site tree protection monitoring regime.

**Asymmetric crown**- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance, but can also subject the tree to uneven wind- loading forces and potentially result in failure.

**Basal** – Referring to the bottom part of a tree's stem.

**Basifugal mortality** – A natural process seen in trees in an advanced life stage whereby the trees extremities die back and the inner crown expresses new growth, in order to conserve energy reserves.

**Bifurcated** - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

**Branch union/junction** - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

**Brown Rot**- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

**Buttress flares** – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

**Bifurcated**- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

**Cable braces** – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

**Canker** – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

**Central leader**- See apical dominance.

**Chalara ash dieback**- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

**Chlorosis**- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

**Compaction** - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange, and inhibits root growth.

**Companion shelter**- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

**Competent person** – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

**Condition** – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

**Conservation dead- wooding** - Removal of deadwood using 'coronet cuts' that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

**Coppice** - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

**Crown spread** - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

**Crown Reduction** – The removal of branch ends to reduce the extreme limits of a trees branch spread and height.

**Crown Thin** – The removal of selected branches within the crown to thin the internal branch structure.

**D.B.H.** - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

**Dieback** - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

**Epicormic growth** - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

**Form** - A general assessment of the shape and position of the tree within its environment.

**Hanger** – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

**Hazard Beam** – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure. .

**Included bark** – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

**Invertebrate tower** – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

**Occlusion/Occluded** – Normally used to describe the overgrowth of a wound. Also, immovable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

**Pathogen** - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

**Phototropic growth** – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

**Pollard** – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

**Reaction wood** - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

**Rhizosphere** - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the trees health.

**Ring barking/Girdling** – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

**Root Protection Area (RPA)** – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m<sup>2</sup>.

**Scaffold limbs** - The main structural branches within the crown.

**Tree protection plan** – scale drawing prepared by an arboriculturalist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the arboricultural method statement (AMS), which can be shown graphically.

**U.L.E** – ‘Useful Life Expectancy’ is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA ‘Estimated remaining contribution’.

**Veteran tree** – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

**Vigour** - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

**White Rot** - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.