MIDDLEMARCH

Arboricultural Impact Assessment

RIBA Stage 4

Castle Sports Complex, Albion St, Spalding

A Report To: Willmott Dixon Construction Limited
Report Number: RT-MME-160845-02 Rev B
Date: May 2024



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Report Verification

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Rev A	16/05/2024	Stefan Harrison BSc (Hons) MArborA Senior Arboricultural Consultant	Luke Webb BSc (Hons) MArborA Senior Arboricultural Consultant
Rev B	20/05/2024	Stefan Harrison BSc (Hons) MArborA Senior Arboricultural Consultant	Luke Webb BSc (Hons) MArborA Senior Arboricultural Consultant

Declaration of Compliance

This study has been undertaken in accordance with British Standard 5837:*2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'.*

Disclaimer

The contents of this report are the responsibility of Middlemarch. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Validity of Data

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified and experienced arboriculturist to assess any changes to the trees, groups, and hedgerows on site and to inform a review of the conclusions and recommendations made.

It should be noted that trees are dynamic living organisms that are subject to natural changes as they age or are influenced by changes in their environment. As such, following any significant meteorological event or changes in the growing environment of the trees they should be re-assessed by a suitably qualified and experienced arboriculturist.

This Arboricultural Impact Assessment has been produced following a review of a proposed development layout for the site based on data provided by the client. Should the development proposals change, this report will need to be updated to assess the impact of the amended development.

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1. Introduction

1.1 Project Background

This Arboricultural Impact Assessment was commissioned by Willmott Dixon Construction Limited as part of a planning application for site development at Castle Sports Centre, Albion Street in Spalding, Lincolnshire. A survey of the trees on site and within influencing distance of the boundaries was undertaken on the 18th August 2023 as part of a Preliminary Arboricultural Assessment to aid design and avoid unnecessary tree removal.

This Arboricultural Impact Assessment has been carried out in accordance with British Standard 5837:2012 *'Trees in Relation to Design, Demolition and Construction - Recommendations'*[1] (hereafter referred to as BS5837).

The purpose of this report is to:

- Review the relationship between the proposed development and the existing trees and hedgerows identified during the Preliminary Arboricultural Assessment.
- Provide a Tree Retention Plan to determine trees and hedgerows to be retained and removed in the context of the proposed development.
- Identify mitigation to offset any tree or hedgerow loss as part of the development proposals.
- Identify all areas where specific working methods are required to ensure protection of retained trees and hedgerows as part of an Arboricultural Method Statement.

1.2 Site Description, Drawings and Appendices

Attribute	Description
National Grid Reference	TF 24985 23167
Topography	Flat with minor undulations
Tree Cover	The trees recorded during the survey were predominantly of moderate quality and were mainly situated adjacent to the boundaries of the site.
Drawings attached	Tree Survey Plan – C160845-01-01-RevA Tree Retention Plan – C160845-02-01
Appendices	Appendix A – Tree Schedule

Table 1.1: Summary of Site and Surroundings

[1] British Standards Institution. (2012). *British Standard 5837:2012, Trees in relation to design, demolition, and construction – Recommendations.* British Standards Institution, London.

1.3 Development Proposals

The proposed development of the site includes the construction of a 91 x 55m artificial turf pitch (ATP), an informal outdoor games area, a health and wellbeing garden and an extension to the existing leisure centre as well as drainage and landscaping revisions to alter and add access roads, parking and pedestrian footpaths.

1.4 Documentation Provided

This assessment is based upon the information provided by the client in addition to information collected by Middlemarch during the Preliminary Arboricultural Assessment, as detailed below.

Author	Document	Drawing Number	Date
One-Environments	Proposed Site Plan	N1365-ONE-ZZ-XX-D-L-0002	02.05.2024
Engenuiti	Proposed Below Ground Drainage	M00514-ENG-ZZ-ZZ-DR-C-3000 P1	02.05.2024

Table 1.2: Documentation Provided

2. Survey Methodology

2.1 Survey Scope

To determine the status of the trees within the site, a full arboricultural survey has been undertaken, assessing the species and status of all trees present. This survey has been carried out in accordance with BS5837.

All individual trees with a stem diameter greater than 75 mm are shown on the Tree Survey Plan and have been assigned a unique reference number. Trees were visually assessed and a schedule prepared listing:

- Tree number
- Species
- Tree height
- Minimum crown clearance
- Stem diameter
- Crown spread
- Age class
- Vigour
- Structural condition

Measurements for tree height, minimum crown clearance and crown spread were taken to an accuracy of 0.5 m. Stem diameter measurements were recorded to the nearest 10 mm. Any specific observations were also noted. All observations and measurements are included in Appendix A Tree Schedule.

Trees were assessed and assigned one of the following categories:

Category U:
Trees 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 A:
Trees of high quality with an estimated remaining life expectancy of at least 40 years.

Category B:
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

Category C:
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.

Categories A, B and C have further sub-categories with regards to the reasons for tree retention:

- Mainly arboricultural qualities.
- Mainly landscape qualities.
- Mainly cultural values, including conservation.

N.B. Certain trees considered unsuitable to retain in their current context (Retention Category U) may possess existing or potential conservation value which make them desirable to preserve in the context of wildlife habitat (e.g. areas with limited public access).

2.2 Root Protection Area (RPA)

To avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the Category A, B and C trees in accordance with section 4.6 of BS5837. BS5837 recommends this as the minimum area around a tree that contains sufficient roots and rooting volume to maintain viable tree vigour and structure. Where groups of trees have been assessed, the Root Protection Area has been shown based on the maximum sized tree stem in each group and so may exceed the Root Protection Area required for some of the individual specimens within the group. Further detailed inspection of the individual trees forming a group may be required where development impacts upon individual trees forming the combined group.

Protection of the roots and soil structure within the RPA should be treated as a priority. These figures have been calculated utilising the formulas within Section 4.6 and Annex D of BS5837.

2.3 Tree Schedule

Appendix A details the individual trees, groups, hedgerows, and woodlands (where present) and includes the relevant information for each at the time of inspection. General observations of any structural and physiological condition and the presence of any decay or physical defects have also been included.

2.4 Assessment Limitations

This survey has been undertaken in accordance with BS5837 and trees with a stem diameter of less than 75mm and the specific location of species within a hedgerow have not been identified in accordance with the guidance. It may therefore be necessary during detailed design to undertake further assessment and accurate positioning of juvenile trees or woody species within hedgerows and tree groups to assist structural calculations for foundation design of structures in accordance with current building regulations and NHBC Chapter 4.2 *Building near Trees*[2].

This survey is not a full or thorough assessment of the health and safety of the trees on or adjacent to the site; and therefore, it is recommended that detailed tree inspections are undertaken on a regular basis with the express purpose of complying with the landowner's duty of care to satisfy health and safety requirements.

For the purposes of this assessment, a hedgerow is described as a line of trees or shrubs with canopies less than 5m wide which is regularly managed through pruning. Where trees are present within a hedgerow that are significantly different in character from the remainder, these have been identified and recorded separately. A tree survey in accordance with BS5837 does not assess hedgerows against the Hedgerow Regulations 1997[3] or from an ecological perspective.

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[2] National House Building Council. (2022). *NHBC Standards 2022: Chapter 4.2 - Building Near Trees*. NHBC, Milton Keynes.

[3] Department of the Environment, Transport, and the Regions: London. (1997). *The Hedgerows Regulations 1997: A Guide to the Law and Good Practice.*

The exact position of individual trees or species included as part of a tree group, hedgerow or woodland should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken.

2.5 Conditions of Tree Survey

The survey was completed by a suitably qualified and experienced Arboriculturist from ground level and from within the boundary of the site. Aerial tree inspections or the internal condition of the stem/s or branches was not undertaken at this stage. Evaluation of tree condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

All survey data is based on a topographical survey where possible, supplied by the client. Where topographical information has not identified tree positions or Ordnance Survey mapping has been utilised, trees and hedgerows have been positioned using GPS and aerial photography to provide approximate locations in relation to existing surrounding features. Further confirmation of tree and hedgerow locations through a topographical survey of the site is recommended to ensure future design accuracy.

2.6 Tree Survey Plan

The Tree Survey Plan identifies the existing trees including above and below ground constraints which should be considered during the design process.

2.7 Tree Retention Plan

The Tree Retention Plan identifies which trees and hedgerows are to be retained and incorporated as part of the site development and which are to be removed.

3. Statutory Protection

3.1 Tree Preservation Order and Conservation Area Protection

A desk-based study was undertaken to identify if any of the trees present within or near the site are affected by statutory constraints as detailed below.

Statutory Constraint	Present ✓ ✗	Source	Details
TPO	✗	South Holland District Council website	None present
Conservation Area	✓	South Holland District Council website	The site is partially situated within the Spalding Conservation Area (as shown on the Tree Survey Plan). The affected trees and groups include T2, T8, G1, G2, G3, G8, G15 and G18.
Ancient Woodland	✗	Multi Agency Geographical Information for the Countryside (MAGIC)	Not present

Table 3.1: Summary of Statutory Constraints that Affect the Site

Where a tree preservation order, conservation area or ancient woodland applies to trees within the assessment area, statutory constraints will apply to the development in respect of trees.

No works must be undertaken on the protected trees without prior permission from the Local Authority unless authorised as part of an approved planning application. Works include pruning, topping, lopping, uprooting or wilful damage or wilful destruction of these trees. Any proposed pruning works not currently approved will need to be fully specified and agreed within a future planning application.

3.2 Protected Species

Bats

Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2017)[4]. They receive further legal protection under the

[4] HM Government – The National Archives (2017) [online] *The Conservation of Habitats and Species Regulations 2017*. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made

Wildlife and Countryside Act (WCA) 1981[5], as amended. Consequently, causing damage to a bat roost constitutes an offence.

Generally, should the presence of a bat roost be suspected whilst completing works on any trees on site then an appropriately licensed bat worker should be consulted for advice.

Birds

Trees offer potential habitat for nesting birds which are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties. This legislation makes it an offence to intentionally or recklessly damage or destroy an active bird nest or part thereof.

As the trees on, and adjacent, to the site provide potential habitat for nesting birds all tree work should ideally be completed outside the nesting bird season (Generally March to September).

If this is not possible then the vegetation should be subject to a nesting bird inspection by a suitably experienced ecologist prior to commencement of works. If any active nests are identified then the vegetation, and a defined buffer zone, will need to remain in place until the young have naturally fledged.

[5] HM Government – The National Archives 2017. *Wildlife and Countryside Act 1981*. [online] Available at: http://www.legislation.gov.uk/ukpga/1981/69/contents

4. Results Summary

4.1 Preliminary Arboricultural Assessment

The assessment identified twenty-one individual trees, twenty-two groups of trees and two hedgerows as detailed below and in Appendix A Tree Schedule.

BS5837:2012 Category	Tree/ Group/ Hedgerow Reference
U	T11, T16.
A	T15.
B	T1, T2, T5, T6, T7, T8, T9, T10, T14, T19, T20, T21, G1, G6, G7, G8, G9, G10, G11, G12, G14, G16, G17, G18, G20.
C	T3, T4, T12, T13, T17, T18, G2, G3, G4, G5, G13, G15, G19, G21, G22, H1, H2.

Table 4.1: Summary of Trees, Groups and Hedgerows in BS5837:2012 Categories

The assessment area comprised the grounds of Castle Sports Centre in Spalding. The trees recorded during the survey were predominantly of moderate quality and were primarily situated adjacent to the boundaries of the site.

Two trees (T11 & T16) identified during the survey were considered to be unsuitable for retention (Retention Category U) because of the presence of defects which meant that the trees' remaining life expectancies were unlikely to exceed ten years. T11, a purple leaved plum tree, had two *Ganoderma* sp. fruiting bodies on its stem, with one located at 1m above ground level and the other at the base. Purple leaved plum is not a decay resistant species and *Ganoderma* spp. are commonly associated with this tree species and are known to cause structural failure as the decay progresses.

T16, a Lombardy poplar tree, was in severe decline with very poor crown vigour and the majority of its crown was missing due to pruning and previous failure. The tree's stem was clad in dense ivy which restricted inspection, however, despite this, multiple *Ganoderma* sp. fruiting bodies were observed on the stem with potentially more present which were concealed by the ivy.

The highest value specimen identified during the survey was an English oak tree (T15) which was considered to be of high retention value (Retention Category A). The tree was in good condition with no notable defects observed and it exhibited healthy crown vigour.

Twelve individual trees and thirteen groups of trees were considered to be of moderate retention value (Retention Category B). These specimens were typically in good condition and exhibited healthy crown vigour. The presence of defects such as areas of included bark at branch unions and branch socket cavities prevented the trees from being considered higher value. It should be noted that the trees situated adjacent to the boundaries of the site contributed to the screening of the site. T5 was notable due to it being a fig tree which is a rarer species to find within the UK and was also unusually large in stature, 10m tall with a stem diameter of 490mm.

The remaining six individual trees, nine groups of trees and two hedgerows recorded during the survey were all considered to be of low retention value (Retention Category C). These

specimens were typically in fair condition with some specimens in poor condition present within the groups. These specimens were prevented from being considered higher value due to the presence of defects which meant their remaining life expectancies were unlikely to exceed twenty years or because they had stem diameters below 150mm.
Similarly to T5, T3 was notable due to it being a fig tree which is a rarer species to find within the UK and was also unusually large in stature, 12m tall with two stems (500mm diameter and 560mm diameter). Nevertheless, T3 was still considered to be of low retention value because it had been topped in the past and had not reacted well to the pruning.

5. Arboricultural Impact Assessment

5.1 Introduction

This section of the report details the potential impacts that the proposed development may have upon the site's tree stock. The assessment has been based upon the documents detailed in Table 1.1 with reference to the results of the Preliminary Arboricultural Assessment.

5.2 Tree Retention and Removal

The trees to be removed are detailed below and are identified on the Tree Retention Plan. All trees, groups and hedgerows not featured within the table below, are to be retained within the proposed development.

Tree Group / Hedgerow Reference	Species	Retention Category	Reason for Removal
G2*	Mixed	C	Within footprint of proposed access road.
H1*	Beech	C	Within footprint of proposed parking, access road and soft landscaping.
H2*	Cherry laurel	C	Within footprint of proposed parking.
Key *: Partial removal of trees within group or hedgerow			

Table 5.1: Tree Removal

The proposed development will ensure the retention and incorporation of the vast majority of trees across the site alongside new tree planting as part of the wider landscape strategy. However, the proposed development will require the partial removal of a tree group and two hedgerows.

The group of trees and two hedgerows that are to be partially removed were considered to be of low retention value (Retention Category C) during the Preliminary Arboricultural Assessment. The proposed removal of these trees should be considered acceptable as new tree planting of higher quality trees more suited to the new development will make a lasting contribution to the visual amenity value and canopy coverage of the site.

5.3 Works within Root Protection Areas (RPA)

Some aspects of the proposed development will require works within the RPAs of retained trees as detailed below.

Tree/ Tree Group/ Hedgerow Reference	Species	Retention Category	Proposed Works
T1	Sycamore	B	Proposed parking, access road and drainage (perforated pipes).

Tree/ Tree Group/ Hedgerow Reference	Species	Retention Category	Proposed Works
T2	Weeping willow	B	Proposed foul water drainage pipe.
T6	Weeping willow	B	Proposed footpath.
T7	Field maple	B	Proposed footpath.
G1	Mixed	B	Proposed parking and access road
G2	Mixed	C	Proposed foul water drainage pipe.
G6	Mixed	B	Proposed footpath.
G8	Mixed	B	Proposed footpath and surface water drainage pipes.
G9	Mixed	B	Proposed footpath.
G11	Mixed	B	Proposed hard surfacing.

Table 5.2: Works in RPAs

The proposed footpath will require works within the RPAs of T6, T7, G6, G8 and G9. To minimise the likelihood of the trees being harmed by the footpath construction, the footpath should be installed according to a no-dig methodology utilising a cellular confinement system or a similar system. The exact methodology for the installation of the footpath within the RPAs of retained trees should be included as part of an Arboricultural Method Statement.

The construction of the proposed parking and access road within the RPAs of T1 and G1 will require a no-dig methodology utilising a cellular confinement system or a similar system. The specific methodologies for the installation of the parking and access road within the RPAs of retained trees should be included as part of an Arboricultural Method Statement.

The proposed foul water drainage within the RPAs of T2 and G2 is to be installed with a trenchless method such as directional drilling which is unlikely to significantly impact the trees. The surface water drainage pipes to be installed within the RPA of G8 will require a similar methodology. The exact methodology will need to be specified as part of an Arboricultural Method Statement.

The perforated drainage pipes to be installed within the RPA of G1 will require a specialist methodology to minimise the likelihood of harm to the trees. Due to the number of sections of pipe in close proximity to each other, it is unlikely that directional drilling will be viable. As such, it is likely that the trenches for the pipes will have to be hand dug or vacuum excavated and the methodologies should be outlined as part of an Arboricultural Method Statement.

It should be noted that the new hard surfacing within the RPA of G11 will be located at the periphery of the RPA and will affect a comparatively small area. As such, the proposed works are unlikely to cause significant harm.

All works within the RPAs or beneath the canopies of retained trees should be detailed as part of an Arboricultural Method Statement to ensure the method of construction is suitably considered.

5.4 Trees and Foundations

Any structures built on the site should comply with current building regulations and NHBC Chapter 4.2 - *Building near Trees* (2022)[6]. Foundation depths for buildings near or adjacent to trees should consider the potential size of the trees at maturity and their subsequent water demand. The soil types throughout the site should be fully investigated and appropriate measures taken. If trees are removed across the site, the potential for soil heave should be assessed and foundations designed accordingly.

This survey has been undertaken in accordance with BS5837 and further assessment in accordance with current building regulations will be required to inform foundation design.

5.5 Tree Pruning

Pruning of mature trees should only be undertaken where essential, to prevent open wounds that allow the ingress of decay and provide opportunity for fungal spores to infect the tree. Pruning works should ideally be undertaken during the winter months when the tree is dormant or during the summer months when the tree is fully active. Autumn pruning (when fungal spores are abundant in the surrounding atmosphere) should be avoided if possible. Juvenile trees should be formatively pruned in their early years to reduce the presence of potential defects into maturity that would reduce their lifespan.

All tree pruning works should be detailed as part of an Arboricultural Method Statement and completed in accordance with the current best practice guidance set out within BS3998:2010 *"Tree Work – Recommendations"*[7] by suitably competent, qualified, and insured arboricultural contractors. The extent of pruning should be identified to contractors in a pre-commencement site meeting as part of enabling works.

5.6 New Tree Planting

As part of the development proposals, an adequate quantity of tree planting has been demonstrated in the Proposed Site Plan (Drawing Reference: N1365-ONE-ZZ-XX-D-L-0002). It is understood that ninety-four new trees are to be planted as part of the proposed landscaping. This is much greater than the proposed tree removal and will result in an increase in the tree cover on site.

It should be noted that the purpose and function of the new tree planting should be carefully considered so that key objectives from a wildlife habitat and landscape perspective can also be achieved.

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[6] National House Building Council. (2022). *NHBC Standards 2022: Chapter 4.2 - Building Near Trees*. NHBC, Milton Keynes.

[7] British Standards Institution. (2010). *British Standard 3998:2010, Tree Work – Recommendations*. British Standards Institution, London.

6. Conclusion

6.1 Summary of Impacts

The proposed development of the site is unlikely to significantly impact the visual amenity of the local area as a result of the proposed tree removal as minimal tree removal is to be undertaken and ninety-four new trees are to be planted which will result in an increase in site tree cover.

Whilst some works are to be undertaken within the RPAs of retained trees, the nature of those works are such that they can be completed without causing significant impact, subject to the adoption of appropriate working practices as detailed in a future Arboricultural Method Statement following approval of the current planning application.

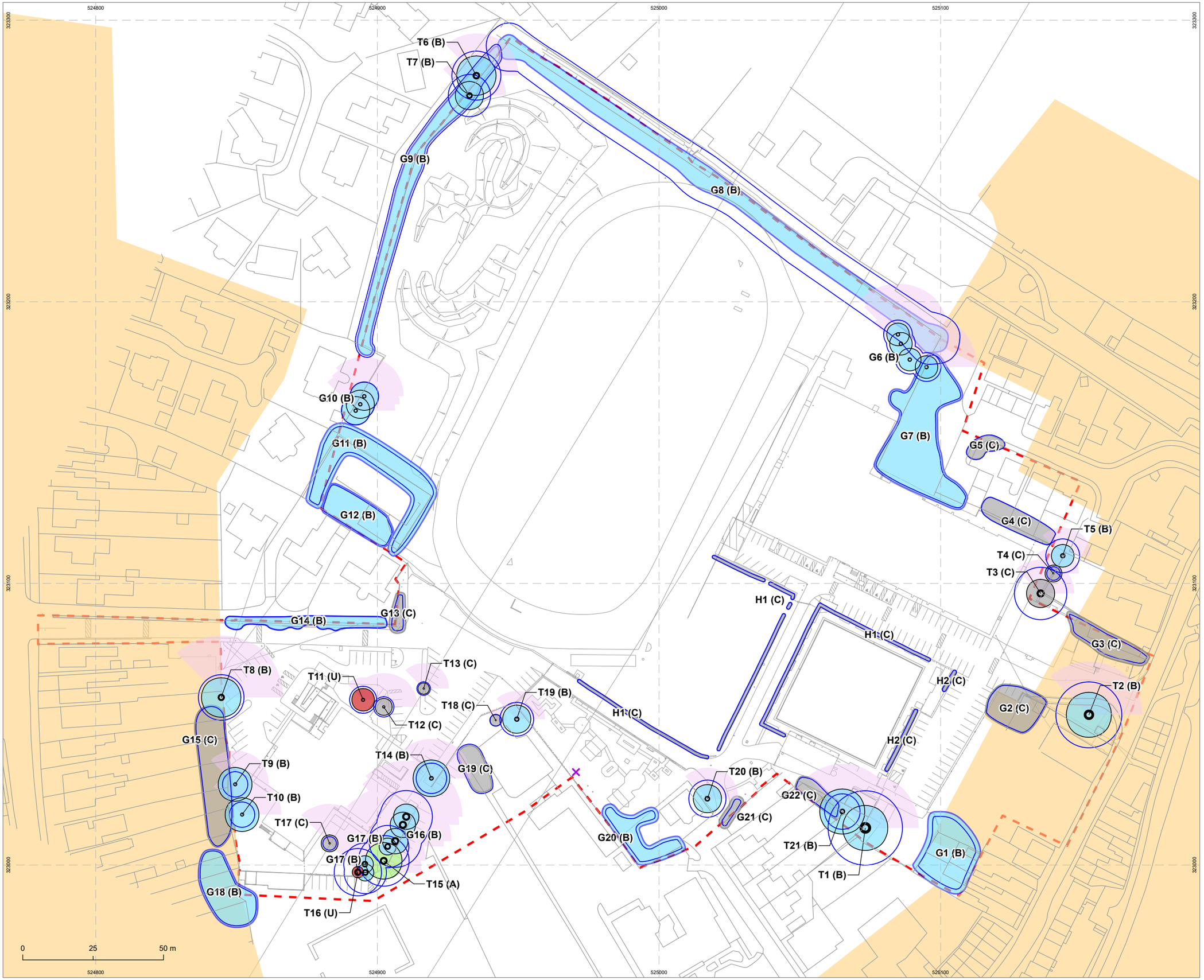
7. Further Arboricultural Works Recommendations

7.1 Arboricultural Method Statement

An Arboricultural Method Statement will be required for the site as various aspects of the proposed development affect retained trees. The purpose of an Arboricultural Method Statement is to ensure that all site operations occur with minimal risk of adverse impact upon trees that are to be retained.

In relation to this development the Arboricultural Method Statement should address the following:

Action	Required
Tree Surgery	✓
Site set up and logistics	✓
Removal of hard surfaces within RPAs	✓
Working space to construct new buildings within RPAs	✗
Installation of utilities within RPAs	✓
Site access, material storage contractor's parking and site compound location	✓
Protective barrier and ground protection location and specification	✓
Pre-commencement site meeting	✓
Arboricultural Clerk of Works supervision	✓
Audit timetable	✓



C160845-01-01

Legend

- Tree location and stem diameter
- Category A
- Category B
- Category C
- Category U
- Current canopy extent
- Root Protection Area
- Indicative tree shadow
- Dead tree
- Spalding Conseravtion Area
- Survey area

N

NOTES
All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with Project Arboriculturist. Drawing to be read in conjunction with Preliminary Arboricultural Assessment and Tree Schedule.
The positions of trees and their current crown spread, root protection area and shade pattern (where appropriate) havenbeen shown on the Tree Survey Plan.
All survey data is based on a topographical survey where possible, supplied by the client.
Where topographical information has not identified tree positions or Ordnance Survey mapping has been utilised, trees have been positioned using GPS and aerial photography to provide approximate locations in relation to existing surrounding features. Further confirmation of tree and hedgerow locations through a topographical survey of the site is recommended to ensure future design accuracy.
The original of this drawing was produced in colour - a monochrome copy should not be relied upon.
The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken.
Further survey work would be required for calculating foundation depths in accordance with current Building Regulations requirements.
Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the Project Arboriculturist should works commence 12 months after the date of this survey.
TREES INCLUDED DURING THE ASSESSMENT MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.
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Project
Castle Sports Complex, Albion St, Spalding

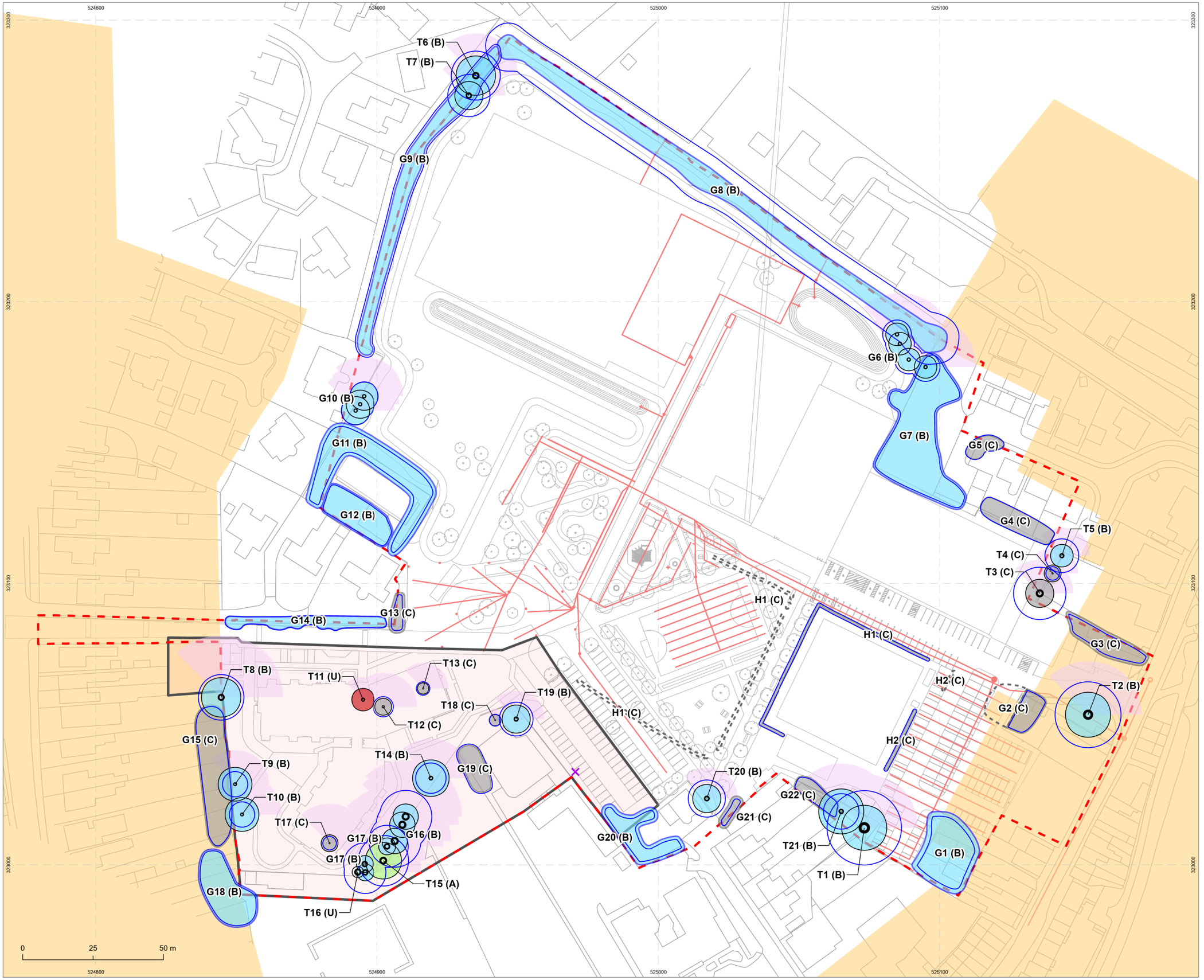
Drawing
Tree Survey Plan

Client
Willmott Dixon Construction Limited

Drawing Number	Revision
C160845-01-01	Rev A
Scale @ A3	Date
1:1,250	May 2024
Approved By	Drawn By
SH	RP

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C160845-02-01

Legend

- Tree location and stem diameter
- Category A
- Category B
- Category C
- Category U
- Current canopy - tree to be retained
- Current canopy - tree to be removed
- Root Protection Area
- Category C group to be removed
- Indicative tree shadow
- Dead tree
- Spalding Conseravtion Area
- Extra care proposal shown for information only
- Proposed drainage
- Survey area

N

NOTES
All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with Project Arboriculturist. Drawing to be read in conjunction with Preliminary Arboricultural Assessment and Tree Schedule.
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Project
Castle Sports Complex, Albion St, Spalding

Drawing
Tree Retention Plan

Client
Willmott Dixon Construction Limited

Drawing Number	Revision
C160845-02-01	00
Scale @ A3	Date
1:1,250	May 2024
Approved By	Drawn By
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MIDDLEMARCH
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Appendix A - Tree Schedule

<table>
<tr><th>Measurements</th><th>Age Class</th><th>Overall Condition</th><th>Root Protection Area (RPA)</th></tr>
<tr><td>Height - measured from ground level at base of stem/s (m).</td><td>YNG: Juvenile trees that have been recently planted.</td><td>G - Good: Trees with only a few minor defects and in good overall health needing little, if any attention.</td><td rowspan="5">• The RPA column gives the required area (m²).
• The RPA Radius column gives the radius (m) of an equivalent circle.
• The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the required rooting area in order for a tree to be retained.</td></tr>
<tr><td>Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837.</td><td>SM: Semi-mature, trees upto 1/3 life expectancy.</td><td>F - Fair: Trees with minor, but rectifiable, defects or in the early stages of stress from which it may recover.</td></tr>
<tr><td>Crown - crown spread estimated radially from the main stem (m).</td><td>EM: Early mature, trees 1/3 – 2/3 life expectancy.</td><td>P - Poor: Trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term.</td></tr>
<tr><td rowspan="2">Abbreviations
Est - Estimated stem diameter
Avg - Average stem diameter
Max - Maximum stem diameter</td><td>M: Mature trees, upto 2/3 life expectancy.</td><td>D - Dead: Trees no longer alive. This could also apply to trees that are dying and unlikely to recover.</td></tr>
<tr><td>OM: Over mature, declining or moribund trees of low vigour.</td><td colspan="2" rowspan="2">In the assessment, of the BS category, particular consideration has been given to the following
• The health, vigour and condition of each tree
• The presence of any structural defects in each tree and its future life expectancy
• The size and form of each tree and its suitability within the context of a proposed development
• The location of each tree relative to existing site features e.g. its screening value or landscape features
• Age class
• Life expectancy</td></tr>
<tr><td></td><td>V: Veteran, tree possessing certain attributes relating to veteran trees.</td></tr>
</table>

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Structural Condition

The following has been considered when inspecting structural condition:
• The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay.
• Soil cracks and any heaving of the soil around the base.
• Any abrupt bends in branches and limbs resulting from past pruning.
• Tight or weak 'V' shaped forks and co-dominant stems.
• Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994).
• Cavities as a result of limb losses or past pruning.
• Broken branches or storm damage.
• Canker formations.
• Loose or flaking bark.
• Damage to roots.
• Basal, stem or branch / limb cavities.
• Crown die-back or abnormal foliage size and colour.
• Any changes to the timing of normal leaf flush and leaf fall patterns.

Quality Assessment of Retention Category

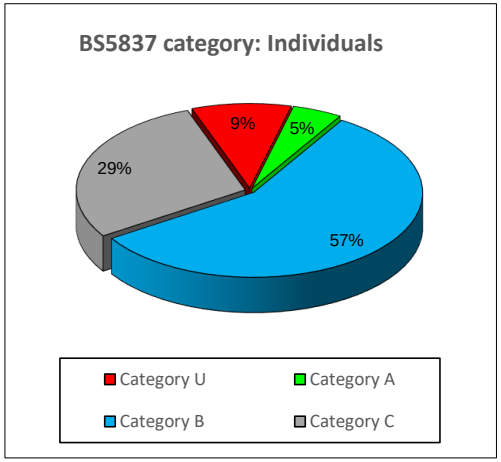
Category U - Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

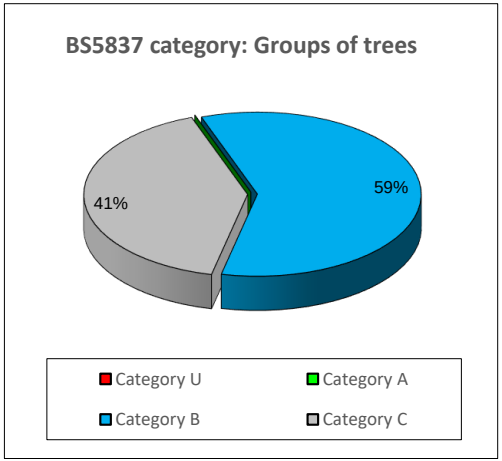
Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.

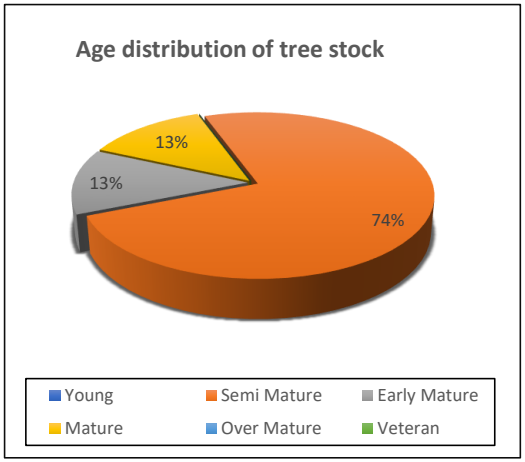
Category B - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

Category C - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Sub-categories: (i) - Mainly arboricultural value
(ii) - Mainly landscape value
(iii) - Mainly cultural or conservation value







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Appendix A - Summary

	Individual Trees	Totals	Tree Groups	Totals
Category U	T11, T16	2		0
Category A	T15	1		0
Category B	T1, T2, T5, T6, T7, T8, T9, T10, T14, T19, T20, T21	12	G1, G6, G7, G8, G9, G10, G11, G12, G14, G16, G17, G18, G20	13
Category C	T3, T4, T12, T13, T17, T18	6	G2, G3, G4, G5, G13, G15, G19, G21, G22	9
	Total	21	**Total**	22

	Hedgerows	Totals	Woodlands	Totals
Category U		0		0
Category A		0		0
Category B		0		0
Category C	H1, H2	2		0
	Total	2	**Total**	0

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
T1	Sycamore	19.0	2.0	1	1100	8.0	8.0	8.0	8.0	M	F	G	547	13.2	B 1	Branch stubs observed Included unions observed Limited inspection due to access Typical crown form Minor deadwood in the crown Hard surfaces within the rooting area Estimated dimensions
T2	Weeping willow	19.0	2.0	1	960	8.0	8.0	8.0	8.0	M	G	G	430	11.7	B 1	Branch stubs observed Included unions observed Hard surfaces within the rooting area Minor deadwood in the crown Typical crown form
T3	Fig	12.0	4.0	2	500 560	5.0	5.0	5.0	5.0	SM	F	F	272	9.3	C 1	Pruning wounds observed Topped tree Tree is showing signs of decline Typical crown form Branch stubs observed Branch socket cavity observed Included unions observed Dense ivy in the crown Limited inspection due to access Estimated dimensions Minor deadwood in the crown
T4	Holly	9.0	2.0	1	180	3.0	3.0	3.0	3.0	SM	F	F	18	2.4	C 1	Branch stubs observed Estimated dimensions Limited inspection due to access Typical crown form
T5	Fig	10.0	5.0	1	490	4.0	4.0	4.0	4.0	SM	F	G	113	6.0	B 1	Branch stubs observed Pruning wounds observed Typical crown form Included unions observed Hard surfaces within the rooting area Minor deadwood in the crown
T6	Weeping willow	15.0	2.0	1	720	7.0	7.0	7.0	7.0	M	F	G	238	8.7	B 1	Branch stubs observed Included unions observed Limited inspection due to access Estimated dimensions Minor deadwood in the crown Typical crown form Limited inspection due to ivy Dense ivy in the crown
T7	Field maple	13.0	2.0	1	610	5.0	5.0	5.0	5.0	M	F	G	177	7.5	B 1	Branch stubs observed Exposed heartwood Pruning wounds observed Typical crown form Included unions observed

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
T8	Ash	22.0	3.0	2	460 480	7.0	7.0	7.0	7.0	EM	F	G	206	8.1	B 1	Branch stubs observed Included unions observed Hard surfaces within the rooting area Minor deadwood in the crown Limited inspection due to access Limited inspection due to ivy Dense ivy on the stem Dense ivy in the crown Estimated dimensions Typical crown form
T9	Sycamore	12.0	2.0	1	360	6.0	6.0	6.0	6.0	SM	F	G	64	4.5	B 1	Branch stubs observed Minor deadwood in the crown Typical crown form Included unions observed
T10	Sycamore	14.0	2.0	1	370	6.0	6.0	6.0	6.0	SM	F	G	64	4.5	B 1	Branch stubs observed Included unions observed Typical crown form Minor deadwood in the crown
T11	Purple leaved plum	8.0	1.0	1	400	4.0	4.0	4.0	4.0	M	P	F	72	4.8	U	Branch stubs observed Included unions observed Minor deadwood in the crown Typical crown form Pruning wounds observed Ganoderma sp fruiting bodies observed on stem at 1m and at base
T12	Grey alder	12.0	2.0	1	300	3.0	3.0	3.0	3.0	SM	F	F	41	3.6	C 1	Branch stubs observed Minor deadwood in the crown Included unions observed Typical crown form Pruning wounds observed Dieback observed in crown
T13	Silver birch	9.0	1.0	1	200	2.0	2.0	2.0	2.0	SM	F	F	18	2.4	C 1	Branch stubs observed Included unions observed Minor deadwood in the crown Typical crown form
T14	English oak	14.0	2.0	1	450	6.5	6.5	6.5	6.5	SM	F	G	92	5.4	B 1	Branch stubs observed Hard surfaces within the rooting area Included unions observed Minor deadwood in the crown Typical crown form
T15	English oak	15.0	2.0	1	730	6.5	6.5	6.5	6.5	EM	F	G	255	9.0	A 1	Branch stubs observed Minor deadwood in the crown Typical crown form Hard surfaces within the rooting area Dense ivy on the stem

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
T16	Lombardy poplar	17.0	2.0	1	680	2.0	2.0	2.0	2.0	EM	P	P	222	8.4	U	Branch stubs observed Apical dieback Lateral dieback observed Tree is showing signs of decline Major deadwood in the crown Minor deadwood in the crown Hard surfaces within the rooting area Dense ivy on the stem Multiple Ganoderma sp fruiting bodies observed on stem
T17	Silver birch	14.0	2.0	1	200	3.0	3.0	3.0	3.0	SM	F	P	18	2.4	C 1	Tree is showing signs of decline Epicormic growth observed in the crown Epicormic growth on the main stem Branch stubs observed Minor deadwood in the crown
T18	Cherry	4.0	1.0	2	130 100	2.0	2.0	2.0	2.0	SM	F	F	14	2.1	C 1	Branch stubs observed Included unions observed Limited inspection due to access Estimated dimensions Typical crown form
T19	Norway maple	10.0	2.0	3	270 280 300	5.0	5.0	5.0	5.0	SM	F	G	113	6.0	B 1	Branch stubs observed Included unions observed Dense ivy on the stem Estimated dimensions Limited inspection due to access Typical crown form
T20	Willow	11.0	2.0	3	350 340 200	5.0	5.0	5.0	5.0	SM	F	G	137	6.6	B 1	Branch stubs observed Pruning wounds observed Typical crown form Pruning wound through pollarding responding well Minor deadwood in the crown Hard surfaces within the rooting area
T21	Sycamore	17.0	2.0	1	520	8.0	8.0	8.0	8.0	SM	F	G	124	6.3	B 1	Branch stubs observed Typical crown form Minor deadwood in the crown Included unions observed Estimated dimensions Hard surfaces within the rooting area Limited inspection due to access

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
G1	Alder Cherry Goat willow Lawson cypress Corkscrew willow	12.0	1.0	-	360	6.0	6.0	6.0	6.0	SM	F,D,P	G,F,D,P	64	4.5	B 2	Dead and dying trees present Conjoined canopy Branch stubs observed Included unions observed Limited inspection due to access Minor deadwood in the crowns Limited inspection due to dense vegetation Typical crown forms Hard surfaces within the rooting area Estimated dimensions
G2	Sycamore Laburnum Cherry laurel Elder Goat willow	13.0	1.0	-	300	4.0	4.0	4.0	4.0	SM	F	F	41	3.6	C 2	Conjoined canopy Branch stubs observed Limited inspection due to access Self seeded trees present Hard surfaces within the rooting area Included unions observed Typical crown forms Estimated dimensions
G3	Sycamore Blackthorn Yew	12.0	1.0	-	260	4.0	4.0	4.0	4.0	SM	F	F	34	3.3	C 2	Conjoined canopy Branch stubs observed Included unions observed Self seeded trees present Typical crown forms Hard surfaces within the rooting area Limited inspection due to dense vegetation Minor deadwood in the crowns Estimated dimensions
G4	Silver birch Cherry	7.0	1.0	-	170	2.0	2.0	2.0	2.0	SM	F	F	14	2.1	C 2	Conjoined canopy Limited inspection due to access Typical crown forms Estimated dimensions
G5	Cherry Whitebeam	3.5	1.0	-	180	2.0	2.0	2.0	2.0	SM	F	F	18	2.4	C 2	Conjoined canopy Branch stubs observed Included unions observed Hard surfaces within the rooting area Typical crown forms
G6	Field maple Hawthorn Lombardy poplar	18.0	2.0	-	420	4.0	4.0	4.0	4.0	SM	F	G	81	5.1	B 2	Conjoined canopy Branch stubs observed Included unions observed Minor deadwood in the crowns Typical crown forms
G7	Cherry Alder Sycamore Robinia Hawthorn Copper beech	13.0	1.0	-	320	4.5	4.5	4.5	4.5	SM	F	G	48	3.9	B 2	Conjoined canopy Branch stubs observed Included unions observed Typical crown forms Minor deadwood in the crowns Limited inspection due to access

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
G8	Lombardy poplar Lawson cypress Scots pine Silver birch	18.0	1.0	-	640	3.5	3.5	3.5	3.5	EM SM	F	G	191	7.8	B 2	Conjoined canopy Branch stubs observed Included unions observed Minor deadwood in the crowns Typical crown forms
G9	Hawthorn Field maple Cherry Purple leaved plum Yew Elder Cherry laurel Silver birch Sycamore Ash Cotoneaster	12.0	0.0	-	310	3.0	3.0	3.0	3.0	SM	F	G,F	48	3.9	B 2	Conjoined canopy Branch stubs observed Dense ivy on the stems Dense ivy in the crowns Dead and dying trees present Light ivy on stems Light ivy in the crowns Limited inspection due to access Limited inspection due to dense vegetation Minor deadwood in the crowns Self seeded trees present Typical crown forms
G10	Lawson cypress Sycamore	14.0	1.0	-	410	5.0	5.0	5.0	5.0	SM	F	G	81	5.1	B 2	Conjoined canopy Branch stubs observed Included unions observed Minor deadwood in the crowns Typical crown forms
G11	Ash Sycamore Cherry	15.0	1.0	-	400	6.0	6.0	6.0	6.0	SM EM	F	G	72	4.8	B 2	Conjoined canopy Branch stubs observed Included unions observed Limited inspection due to access Limited inspection due to dense vegetation Minor deadwood in the crowns Self seeded trees present Typical crown forms
G12	London plane	16.0	2.0	-	540	7.0	7.0	7.0	7.0	SM	G	G	137	6.6	B 2	Conjoined canopy Branch stubs observed Hard surfaces within the rooting area Included unions observed Limited inspection due to access Typical crown forms
G13	Ash Cherry Lawson cypress Silk tree	12.0	0.0	-	260	4.0	4.0	4.0	4.0	SM	F	F	34	3.3	C 2	Conjoined canopy Branch stubs observed Hard surfaces within the rooting area Included unions observed Minor deadwood in the crowns Typical crown forms Self seeded trees present

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
G14	Ash Sycamore Cherry Lawson cypress	11.0	1.0	-	260	3.0	3.0	3.0	3.0	SM	F	G	34	3.3	B 2	Conjoined canopy Branch stubs observed Included unions observed Minor deadwood in the crowns Limited inspection due to access Typical crown forms Self seeded trees present Hard surfaces within the rooting area
G15	Ash Lawson cypress Sycamore	16.0	1.0	-	380	5.0	5.0	5.0	5.0	SM	F,P	F,P	72	4.8	C 2	Conjoined canopy Branch stubs observed Group is sparse in areas Dense ivy on the stems Dense ivy in the crowns Ash dieback observed Minor deadwood in the crowns Limited inspection due to access Limited inspection due to dense vegetation Limited inspection due to ivy Ivy restricts inspection Included unions observed Topped trees present. Estimated dimensions
G16	Lombardy poplar	20.0	1.0	-	770	4.5	4.5	4.5	4.5	M	F	G	272	9.3	B 2	Conjoined canopy Branch stubs observed Hard surfaces within the rooting area Included unions observed Minor deadwood in the crowns Dense ivy on the stems Limited inspection due to ivy Typical crown forms
G17	Lombardy poplar	20.0	1.0	-	620	3.0	3.0	3.0	3.0	EM	F	G	177	7.5	B 2	Included unions observed Minor deadwood in the crowns Dense ivy on the stems Typical crown forms
G18	Sycamore Honey locust Lawson cypress Box elder	17.0	1.0	-	450	6.0	6.0	6.0	6.0	SM	F	G	92	5.4	B 2	Conjoined canopy Branch stubs observed Limited inspection due to access Minor deadwood in the crowns Typical crown forms Hard surfaces within the rooting area Estimated dimensions
G19	Whitebeam	8.0	2.0	-	290	3.0	3.0	3.0	3.0	SM	F	F	41	3.6	C 2	Conjoined canopy Branch stubs observed Included unions observed Minor deadwood in the crowns Typical crown forms Hard surfaces within the rooting area

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
G20	Holly Plum Cherry laurel Elder Fir Cabbage palm	14.0	1.0	-	320	5.0	5.0	5.0	5.0	SM	F	G	48	3.9	B 2	Conjoined canopy Branch stubs observed Included unions observed Hard surfaces within the rooting area Limited inspection due to access Typical crown forms
G21	Ash Sycamore Apple	11.0	2.0	-	250	4.0	4.0	4.0	4.0	SM	F	F	28	3.0	C 2	Conjoined canopy Branch stubs observed Included unions observed Hard surfaces within the rooting area Minor deadwood in the crowns Limited inspection due to access Limited inspection due to dense vegetation Typical crown forms Dense ivy in the crowns Dense ivy on the stems Estimated dimensions
G22	Ash Hawthorn Sycamore	8.0	0.0	-	220	3.0	3.0	3.0	3.0	SM	F	F	23	2.7	C 2	Conjoined canopy Limited inspection due to access Self seeded trees present Typical crown forms Minor deadwood in the crowns Included unions observed Branch stubs observed Hard surfaces within the rooting area Limited inspection due to ivy Limited inspection due to dense vegetation Ivy suppressing a number of trees Estimated dimensions

Tree No	Species	Height (m)	Crown Clearance (m)	No. of Stems	Stem Dia. (mm)	Crown Radius				Age Class	Structure	Vigour	RPA (m)	RPA Radius (m)	Cat	Comments
						N	E	S	W							
H1	Beech	1.0	0.0	-	50	0.5	0.5	0.5	0.5	SM	F	F	3	0.9	C 2	Managed
H2	Cherry laurel	2.0	0.0	-	60	0.5	0.5	0.5	0.5	SM	F	F	3	0.9	C 2	Managed