FLEET STREET, HOLBEACH

PRELIMINARY ARBORICULTURAL ASSESSMENT

A Report to: Stoas Architects

Report No: RT-MME-157409-01-01-REV A

Date: October 2022

MIDDLEMARCH

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REPORT VERIFICATION

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

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DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. 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 Environmental Ltd 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.

The document is designed to identify the existing trees and hedgerows on the site to aid design and avoid unnecessary tree removal. An Arboricultural Impact Assessment which identifies the relationship between the existing, retained trees and future proposed development will be required to accompany the planning application.

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1. INTRODUCTION

1.1 PROJECT BRIEF AND SITE DESCRIPTION

Middlemarch Environmental Ltd were commissioned by Stoas Architects to undertake a Preliminary Arboricultural Assessment of trees and hedgerows as part of a planning application for commercial development at Fleet Street in Holbeach. The site is located at Ordnance Survey Grid Reference TF 36418 24725. The location of the trees surveyed can be found on Middlemarch Environmental Ltd Drawing Number C157409-01-01-REV A-01, provided in Section 8 of this report.

A survey of the trees and hedgerows on site and within influencing distance of the boundaries was undertaken on the 11th March 2022. This survey was completed to aid design and avoid unnecessary tree removal.

The tree survey and assessment of existing trees has been carried out in accordance with British Standard 5837:2012 *'Trees in Relation to Design, Demolition and Construction - Recommendations'* (hereafter referred to as BS5837). BS5837 sets out a structured assessment methodology to assist in determining which trees would be considered suitable or unsuitable for retention in the context of the proposed development.

The purpose of this report is to:

- Record the current condition of the trees found during the survey and categorise them using criteria outlined in BS5837:2012 "*Trees in Relation to Design, Demolition and Construction - Recommendations*".
- Provide a Tree Survey Plan that identifies the opportunities and constraints to development presented by the trees to include Root Protection Areas (RPA) for the retained trees as described in BS5837:2012.
- Provide guidance detailing arboricultural opportunities and constraints to development and factors to be considered during the design of the proposed development.

2. METHODOLOGY

2.1 DESK STUDY

A desk-based study was undertaken to identify if any of the trees present within or near the site are protected by Tree Preservation Orders (TPOs) or if the site is situated within a Conservation Area.

An online search using the Multi Agency Geographical Information for the Countryside (*MAGIC)* website for statutory conservation sites was also undertaken (where appropriate) to determine the presence of Ancient Woodland within 15.0 metres of the site boundary.

2.2 SURVEY SCOPE

To determine the status of the trees and hedgerows within the site, a full arboricultural survey has been undertaken, assessing the species and status of all trees and hedgerows present. This survey has been carried out in accordance with British Standard 5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations'*.

All trees and hedgerows have been assigned a unique reference number. Individual trees above 75 mm in diameter (at 1.5 m above ground level) have had their position plotted to the Tree Survey Plan. Trees, and hedgerows were visually assessed and a schedule prepared listing:

- Tree number,
- Species,
- Tree height,
- Stem diameter at 1.5 m above ground level (or in accordance with Annex C of BS5837:2012),
- Crown spread (cardinal points where necessary),
- Minimum crown clearance,
- Age class,
- Condition and;
- Preliminary management recommendations (where required).

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 or management recommendations were also noted. All observations and measurements are included in Appendix A Tree Schedule.

Trees and hedgerows 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:

1: Mainly arboricultural qualities.
2: Mainly landscape qualities.
3: Mainly cultural values, including conservation.

N.B. Certain category U trees 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).

2.3 ROOT PROTECTION AREA (RPA)

In order 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. This is a minimum area

around a tree which is deemed to contain sufficient roots and rooting volume to maintain the tree's viability. 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 British Standard 5837:2012.

2.4 TREE SCHEDULE

Appendix A details the individual trees, groups and hedgerows found during the assessment 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. Preliminary management recommendations have also been recorded where appropriate.

2.5 HEDGEROWS

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 or from an ecological perspective.

2.6 ASSESSMENT LIMITATIONS

This survey has been undertaken in accordance with BS5837 recommendations only. Trees under 75mm in diameter 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*.

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

2.7 CONDITIONS OF TREE SURVEY

The survey was completed by a suitably qualified and experienced Arboriculturist from ground level only 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.

2.8 TREE SURVEY PLAN

The Tree Survey Plan seeks to act as a design tool that shows potential opportunities for inclusion of the existing trees and hedgerows across the site as well as the above and below ground constraints which should be considered during the design process.

The positions of trees and hedgerows and their current crown spread, root protection area and shade pattern (where appropriate) have been 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 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.

3. STATUTORY PROTECTION

3.1 TREE PRESERVATION ORDER AND CONSERVATION AREA DESIGNATIONS

No direct consultation with South Holland District Council, has taken place, however, the Local Planning Authority website shows that there are Tree Preservation Orders that would apply to trees present on the assessment site and therefore statutory constraints would apply to the development in respect of trees. Prior to any tree works being undertaken, confirmation of the online information should be sought from the Local Authority.

Statutory Constraint	Present ✓ ✘	Source	Trees Affected	Details
TPO	✓	Local Authority Website	Covers several trees potentially including T2, T3, T4, T5, T10 and G1 (Confirmation required from Local Authority)	HOLBEACH TPO No08 1977 TPO/009/08/1977 Tree Preservation Order made in respect of trees at Mattimore House – Town and Country Planning Act 1971 Section S60
Conservation Area	✘	Local Authority Website	None	None Present
Ancient Woodland	✘	MAGIC	None	None Present

Table 3.1: Summary of Statutory Constraints that Affect the Site

No works must be undertaken on the trees protected by Tree Preservation Order number 08 (1977) 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. If works are not included within the planning application, a separate TPO application should be submitted to the Local Authority for permission to undertake any works (approximately an 8-week process).

Reference to the Multi Agency Geographical Information for the Countryside (MAGIC) website indicates that no ancient woodland is present within a 15.0 m buffer of the survey area.

2.2 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). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, 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 and hedgerows 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.

4. RESULTS SUMMARY

4.1 PRELIMINARY ARBORICULTURAL ASSESSMENT

Fourteen individual trees, eight groups of trees and a hedgerow were surveyed as part of the Preliminary Arboricultural Assessment. Trees assessed during the survey are listed as individual trees and groups of trees in the Tree Schedule (Appendix A) in accordance with BS5837:2012 recommendations. Table 4.1 provides a summary of the survey results in terms of categorisation.

BS5837:2012 Category	Tree/ Group/ Hedgerow Reference
U	T1, T3, T4, T7, T8, T9, T12.
A	T11.
B	T10, T14.
C	T2, T5, T6, T13, G1, G2, G3, G4, G5, G6, G7, G8, H1.

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

The site was situated off of Fleet Street in Holbeach and comprised of a disused commercial site and a waste disposal site. The trees recorded during the survey were typically of low quality and were primarily situated adjacent around the boundaries of the site.

The highest value specimen recorded during the survey was a mature English oak (T11) which was situated adjacent to the eastern site boundary and was considered to be of high retention value. T11 tree was in good condition and stood out on site as one of the largest specimens, however, a *Ganoderma* sp. fruiting body was observed at the base of the tree which will need to be monitored over future years. *Ganoderma* spp. are wood decay fungi which feed on the wood of the host tree and overtime degrade the structural integrity of the tree. However, English oak is a decay resistant species and the tree was showing no signs of decline related to the fungi, nevertheless, as part of due diligence it is recommended that a hazard assessment is undertaken to ensure that the tree is in a safe condition.

Another English oak (T10) and a field maple (T14) identified during survey were considered to be of moderate retention value. T10 was in good condition, however, both its crown and stem were clad in dense ivy, and epicormic growth was observed on its stem which is generally considered to indicate stress. T14 was in good condition with a good crown form and structure.

Seven trees (see Table 4.1) identified during the survey were considered to have very limited retention value (Retention Category U) due to the presence of defects which led their useful remaining life expectancy to be less than ten years. T1, a cherry, had exposed heartwood on a wound on its main stem and had poor vigour. T3 and T4 were both elder trees which were densely ivy clad and were in decline with large quantities of deadwood and poor vigour. T7, a purple leaved plum, had poor vigour and a *Ganoderma* sp. fruiting body was observed on the stem at the base and the fruiting bodies of *Chondrostereum purpureum* were also observed on the stem. T8, another purple leaved plum, had poor vigour and structure with multiple wounds in the canopy with exposed heartwood, *Phellinus pomaceus* fruiting bodies observed in the crown and structurally weak unions with bark inclusions observed in the crown.

T9, an apple, had poor vigour with apical dieback observed in the crown and multiple bark inclusions observed at the unions in the crown. T12, a Lombardy poplar, had three stems from ground level with the eastern most stem swaying visibly in the wind down to the base with a suspected crack at the base. The western most stem of T12 was functionally dead. T12 is considered a health and safety hazard and its immediate removal is recommended.

The remaining trees, groups of trees and hedgerow identified during the survey (see Table 4.1) were all considered to be of low retention value. These specimens were typically in fair condition; however, they were either too juvenile to be considered higher value or had defects which limited their likely future potential.

5. ARBORICULTURAL DESIGN GUIDANCE

5.1 OPPORTUNITIES AND CONSTRAINTS

The presence of existing trees and hedgerows provides the opportunity to enhance the site and offer a mature, feature landscape to the final development. The removal of trees and hedgerows across the site should be minimised and new tree planting should be provided to adequately mitigate any essential tree loss. Any retained trees must therefore be protected, and sufficient offsets provided during the development to ensure they positively contribute to the new site use.

The information provided within this section of the report aims to inform designers, architects, builders, landscape architects and engineers of the opportunities and constraints posed by the trees to ensure that those trees selected for retention can be successfully integrated within the proposed development. The objective is to achieve a harmonious and sustainable relationship between trees and structures for the future.

5.2 ABOVE GROUND CONSTRAINTS

Existing Canopy Spreads

The existing canopy spreads and indicative shade patterns of the assessed trees and hedgerows are shown on the Tree Survey Plan (C157409-01-01-REV A-01). Whilst larger, more mature trees offer significant value in term of their contribution to the future site use and are unlikely to grow much larger, the future crown spreads of younger trees will need to be fully considered when designing any built development nearby.

Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow construction access (typically 2.5m for scaffolding).

Where development is proposed in close proximity to the existing canopy spread of a tree the likelihood of leaf or fruit fall or an accumulation of tree sap or aphid honeydew causing nuisance must be considered.

An indicative shade pattern for each tree has been shown on the Tree Survey Plan. The shade from trees can be considered both a constraint and opportunity and therefore its effect upon the new development should be fully considered to ensure a harmonious and sustainable relationship can be achieved. When considering the position and orientation of new buildings in relation to existing trees, primary living areas should receive the largest proportion of natural sunlight. BRE guidelines recommends *"at least half of the garden or open space should receive at least two hours sunlight on March 21 (Spring Equinox)"*.

5.3 BELOW GROUND CONSTRAINTS

Root Protection Areas (RPAs)

Root Protection Areas for each tree and group of trees have been determined in accordance with BS5837:2012 - recommendations and is detailed within Appendix A Tree Schedule.

Initial Root Protection Areas (RPAs) for the trees have been plotted onto the Tree Survey Plan as circles, with the tree located centrally on the main stem, extending to encompass the area of ground, and thus the root-able soil volume, required for protection.

There are areas on site where, due to the presence of existing structures and hard surfaces, tree root development may have been restricted as a result of reduced nutrient or moisture availability and a lack of provision for gaseous exchange. In such areas it may be appropriate to modify the shape of the RPAs, whilst not reducing their area, to consider the likely root morphology and distribution of the affected trees.

Determining the extent of a tree's root system is not a simple process and whilst roots can generally be considered absent beneath substantial buildings, they may be present beneath lighter structures and areas of hard surfacing. Where possible all development, including new hard landscaping, should be situated outside of the designated Root Protection Areas of retained trees.

If accurate root mapping is required, further assessment using ground penetrating radar can be provided as an additional service to better inform design processes.

5.4 TREE CATEGORISATION

Trees assessed as retention category A, B or C are a material consideration in the planning process and provide future value to the new site use, however, the prioritisation for tree retention should be based upon the guidance contained within BS5837:2012.

Retention Category U
Trees found unsuitable to retain (retention category U) have limited, transient retention value due to their current condition and, in most circumstances, such specimens will not be considered for retention within new development unless they offer wildlife habitat potential and are situated in areas with limited pedestrian access. Trees found to be unsuitable for retention 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)". They receive further legal protection under the "Wildlife and Countryside Act (WCA) 1981, as amended". Consequently, causing damage to a bat roost constitutes an offence. As such prior to undertaking works to trees, a check to see if they are being used for bat roosting should be undertaken by a suitably qualified and experienced ecologist.

Retention Category A
Trees found to be high quality during the Preliminary Arboricultural Assessment should be given the highest priority when making decisions of which trees should be retained and incorporated during the evolution of proposed development layouts. These trees offer the opportunity to significantly contribute to the future of the site in arboricultural and landscape terms and their loss should be avoided.

Retention Category B
Moderate quality trees should be retained and incorporated into development proposals as they offer the potential to provide medium to long term arboricultural and landscape benefits to the site. These trees are typically found to have remediable defects that may improve over time. The removal of Retention Category B trees should generally be avoided.

Retention Category C
When considering which Retention Category C trees to retain in the new development, priority should be given to those trees that have been included within this category solely due to their young age and limited proportions (stem diameters of less than 150 mm at 1.5 m above ground level). These specimens are normally relatively young trees with future potential which can be translocated to areas away from potential development to avoid their loss. The remaining trees in this category would provide only temporary or transient landscape benefits until new tree planting becomes established and therefore, should not constrain the development of a site.

5.5 CONSTRUCTION WITHIN ROOT PROTECTION AREAS

Construction near to trees has the potential to cause soil compaction, root damage and a reduction in nutrient and moisture availability to roots and should therefore be avoided. To minimise harm occurring as a result of such works, specialist construction methods will be required to ensure any potential impact is fully considered.

Should new construction be proposed within the RPA of an existing tree it will be necessary to take steps to minimise the potential impact to the tree to allow construction. The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within RPAs may be justified if this enables the retention of a good quality tree that would otherwise be lost (usually Categories A or B). Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finished levels and cross-sectional details. In order to arrive at a suitable solution, site-specific and specialist advice regarding foundation design should be sought from the Project Arboriculturist and Structural Engineer. In shrinkable soils, foundation design should consider the risk of indirect damage through subsidence and heave.

5.6 BUILDING FOUNDATIONS

Any structures built on the site should comply with the current building regulations and *NHBC Chapter 4.2 building near trees (2020)*. 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 (see *NHBC Chapter 4.2, 2020*).

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

5.7 SUBTERRANEAN UTILITIES AND SERVICE EASEMENTS

All new below-ground service runs, utilities and similar infrastructure should consider trees and hedgerows and RPAs should be avoided to ensure potential impacts are minimised and future conflicts are avoided. Service easements should also be considered when designing new infrastructure to ensure retained trees are not adversely impacted upon.

5.8 FUTURE TREE GROWTH

All trees have the potential for future growth. Where trees are to be retained, their ultimate crown spread and height should be fully considered as future branch growth may result in conflict with the proposed development, damage to branches and the need for a long-term tree pruning regime. In addition, it is important to consider the likelihood of damage to trees or structures that may be caused by continuous whipping of branches in windy conditions. In such circumstances, branches may require continuous pruning which causes open wounds and may spoil the form or shape of the crown.

As trees grow, they absorb carbon dioxide from the atmosphere and store it in the form of roots, branches, and leaves. Loss of the woody parts of trees and hedgerows should therefore be avoided if possible.

6. STANDARD RECOMMENDATIONS

The following standard recommendations are made:

- The retention of the Category A and B trees across the site should be considered as a priority as these specimens are likely to make a future contribution as part of the development of the site.

- The retention of the Category C trees should be considered, where possible, though it must be noted that these specimens have a low retention value and are likely to only offer a temporary contribution to the future site use.

- The retention of Category U trees should not be considered within new development unless they offer wildlife habitat potential and are situated in areas with limited pedestrian access and pose limited potential risk.

- All new development shall be located outside of the RPA or canopy spread of any retained tree.

- Where any new development is proposed within the RPA or canopy spread of a retained tree it must be constructed in such a way that damage of the tree root system or crown can be avoided.

- Should new development require works within the RPA of any retained tree an Arboricultural Method Statement should be prepared to set out what steps are to be taken to protect the trees during the course of development.

- Any proposed new planting should consist of a mix of ornamental, native and wildlife attracting species with a robust management plan to assist with the development proposal and to offer mitigation for any tree loss.

- This Arboricultural Survey is valid for a period of 12 months. If works are not commenced within this time, then it is advised that the trees are re-inspected to ensure no significant defects have developed since the original survey.

- If works take place during the bird breeding season, usually from March to September inclusive, trees and hedgerows should be checked for nesting birds. Should any tree removal be required works should be completed outside the breeding season or in the presence of a suitably qualified ecologist.

7. REFERENCES AND BIBLIOGRAPHY

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

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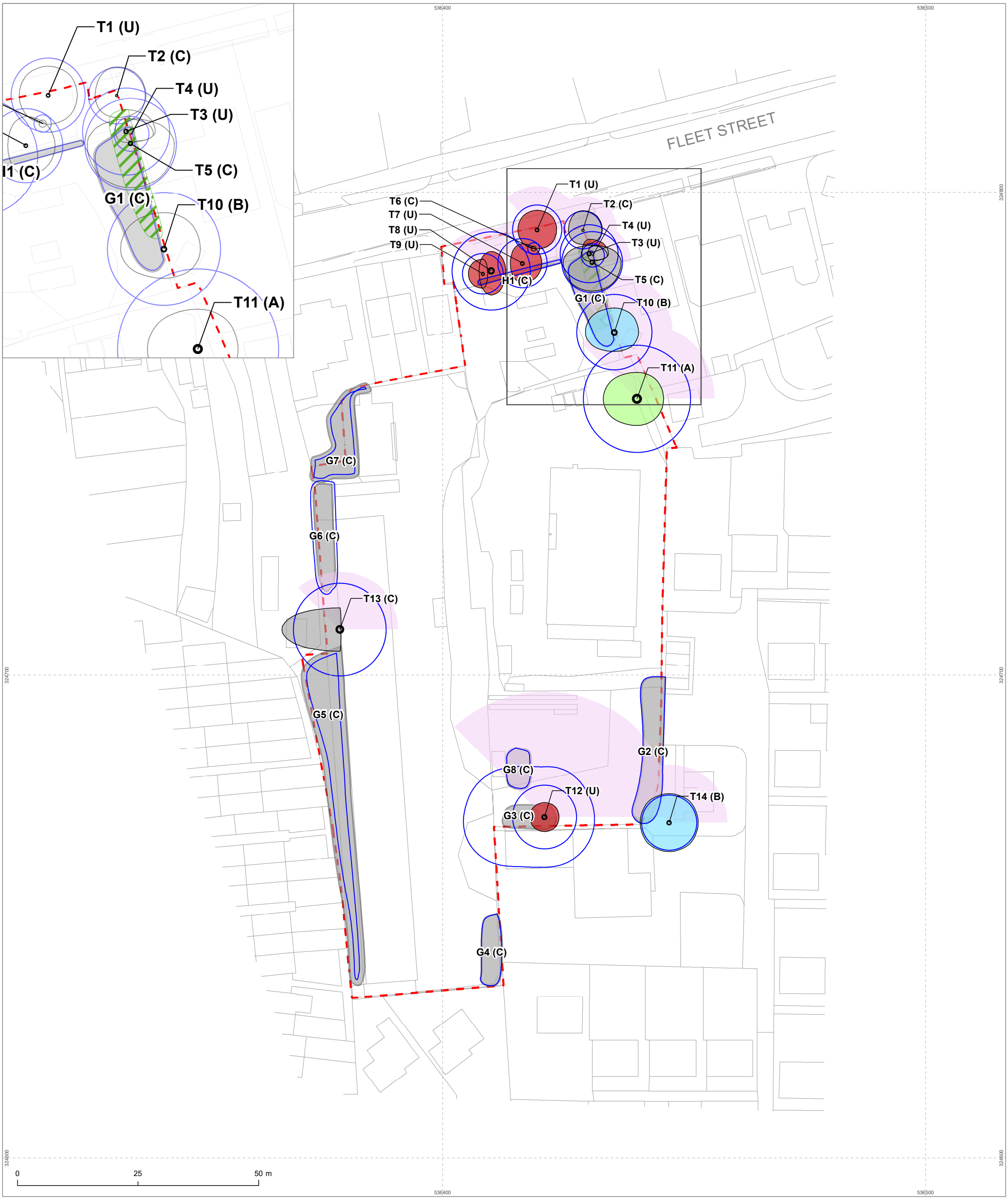
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National House Building Council. (2020). *NHBC Standards 2020: Chapter 4.2 - Building Near Trees*. NHBC, Milton Keynes.

8. DRAWINGS & APPENDICES

Drawing Number C157409-01-01-REV A – Tree Survey Plan

Appendix A: Tree Schedule



Legend

- Tree location and stem diameter
- Category A
- Category B
- Category C
- Category U
- Current canopy extent
- Root Protection Area
- Indicative tree shadow
- Trees subject to TPO
- Site boundary

T - Tree
H - Hedgerow
G - Tree group

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

NOTES
All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with Project Arboriculturalist. Drawing to be read in conjunction with Preliminary Arboricultural Assessment and Tree Schedule. Drawing has been produced in colour and is based on digital informaton in .dwg format, aerial images and/or GPS location where appropriate. 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.
Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the Project Arboriculturalist should works commence 12 months after the date of this survey.
SOME TREES 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: Fleet Street, Holbeach
Drawing: Tree Survey Plan
Client: Stoas Architects

Drawing Number	Revision
C157409-01-01-RevA	Rev A
Scale @ A3	Date
1:750	October 2022
Approved By	Drawn By
SH	CD

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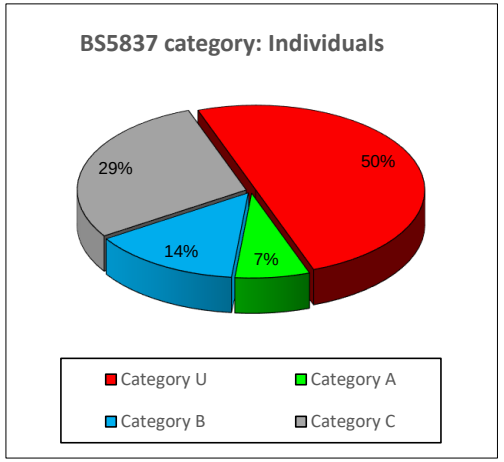
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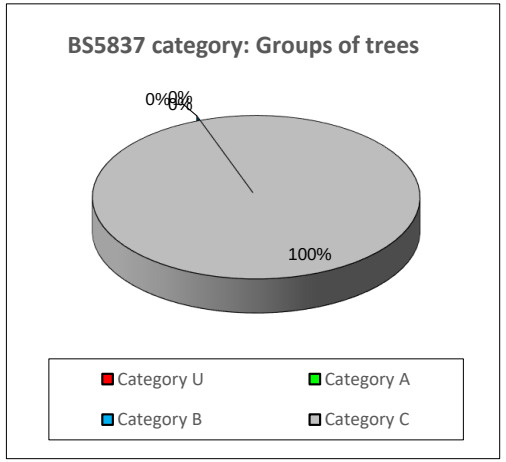
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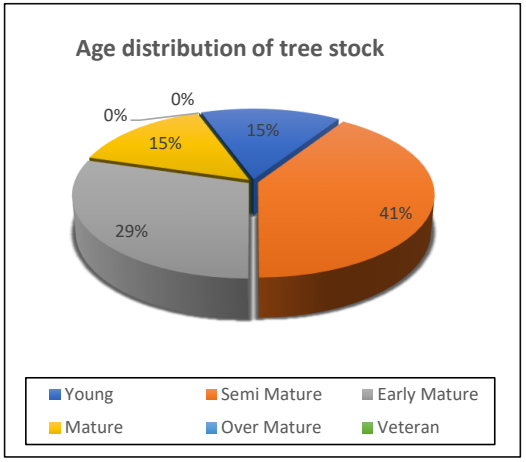
<table>
<tr><th>Measurements</th><th>Age Class</th><th>Overall Condition</th><th>Root Protection Area (RPA)</th></tr>
<tr><td>Height - estimated from ground level (m).</td><td>YNG: Young trees up to ten years of age.</td><td>G - Good: Trees with only a few minor defects and in good overall health needing 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 less than 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, over 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>

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







Appendix A - Summary

	Individual Trees	Totals	Tree Groups	Totals
Category U	T1, T3, T4, T7, T8, T9, T12	7		0
Category A	T11	1		0
Category B	T10, T14	2		0
Category C	T2, T5, T6, T13	4	G1, G2, G3, G4, G5, G6, G7, G8	8
	Total	14	**Total**	8

	Hedgerows	Totals	Woodlands	Totals
Category U		0		0
Category A		0		0
Category B		0		0
Category C	H1	1		0
	Total	1	**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	Cherry	9.0	2.5	1	410	4.0	4.0	4.0	4.0	M	P	P	81	5.1	U	Branch stubs observed Exposed heartwood Wound present on main stem Pruning wounds observed Tree is showing signs of decline Sap bleeding from pruning wounds
T2	Bay laurel	7.0	0.0	20	320	4.0	4.0	3.0	3.0	EM	F	G	48	3.9	C 1	Limited inspection due to dense vegetation Estimated dimensions Typical crown form Multi stemmed from base
T3	Elder	7.0	2.0	2	270 390	3.0	4.0	1.5	1.5	M	F	P	113	6.0	U	Dense ivy on the stem Dense ivy in the crown Included unions observed Limited inspection due to ivy Lateral dieback observed Tree is showing signs of decline Suppressed by ivy
T4	Elder	6.0	2.0	1	180	2.0	3.0	1.0	1.0	SM	F	P	18	2.4	U	Dense ivy in the crown Dense ivy on the stem Limited inspection due to ivy Tree is showing signs of decline Suppressed by ivy
T5	Yew	8.0	0.5	3	360 250 250	3.5	6.0	6.0	6.0	SM	F	F	124	6.3	C 1	Limited inspection due to dense vegetation Limited inspection due to ivy Dense ivy on the stem Dense ivy in the crown Branch stubs observed Minor deadwood in the crown Typical crown form
T6	Barberry	1.5	0.0	6	80	0.5	0.5	0.5	0.5	SM	F	F	5	1.2	C 1	Typical crown form
T7	Purple leaved plum	9.0	3.0	1	410	4.0	4.0	4.0	2.5	EM	P	P	81	5.1	U	Pruning wounds observed Typical crown form Branch stubs observed Tree is showing signs of decline Ganoderma sp. fruiting at base of stem Silver leaf fruiting bodies observed on 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							
T8	Purple leaved plum	9.0	2.0	1	660	4.0	3.0	5.0	2.5	M	P	F	206	8.1	U	Typical crown form Pruning wounds observed Exposed heartwood Epicormic growth on the main stem Tree is showing signs of decline Weak unions with included bark Multiple wounds in canopy with exposed heartwood Cushion bracket fruiting bodies observed in crown
T9	Apple	9.0	4.0	1	350	3.0	1.0	3.0	3.0	EM	P	P	55	4.2	U	Apical dieback Branch stubs observed Area of included bark observed Included unions observed Dense ivy on the stem Limited inspection due to ivy Tree is showing signs of decline Pruning wounds observed Minor deadwood in the crown
T10	English oak	12.0	2.0	1	650	5.0	5.0	4.0	6.0	EM	F	G	191	7.8	B 1	Dense ivy in the crown Dense ivy on the stem Estimated dimensions Epicormic growth on the main stem Limited inspection due to ivy Typical crown form
T11	English oak	16.0	3.0	1	910	5.5	5.5	5.5	7.0	M	G	G	387	11.1	A 1	Hard surfaces within the rooting area Epicormic growth observed in the crown Tear wounds present Typical crown form Pruning wounds observed Storm damage observed Branch stubs observed Ganoderma sp fruiting body observed at base Hazard assessment recommended
T12	Lombardy poplar	26.0	1.0	3	300 350 300	3.0	3.0	3.0	3.0	EM	P	P	137	6.6	U	Limited inspection due to dense vegetation Limited inspection due to ivy Limited inspection due to safety concerns Three stems from base Eastern most stem visibly swaying in wind with suspected crack at base Western most stem is functionally dead
T13	Crack willow	12.0	0.0	6	790	4.5	0.3	4.5	12.0	EM	F	G	290	9.6	C 1	Included unions observed Self seeded tree growing out from base of building Building within 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							
T14	Field maple	12.0	2.0	1	470	6.0	6.0	6.0	6.0	EM	F	G	102	5.7	B 1	Pruning wounds observed Hard surfaces within the rooting area Tree is located off site but overhangs the study area Typical crown form

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	Holly Elder Plum English oak Sycamore	7.0	0.0	-	150	2.0	2.0	2.0	2.0	Y SM	F	F	10	1.8	C 2	Dead and dying trees present Branch stubs observed Included unions observed Conjoined canopy Limited inspection due to dense vegetation Self seeded trees present Typical crown forms
G2	Lawson cypress Elder English oak Hawthorn Cherry laurel	8.0	0.0	-	260	3.0	3.0	3.0	3.0	SM Y	F	F	34	3.3	C 2	Conjoined canopy Self seeded trees present Typical crown forms Provides screening Dense ivy on the stems Dense ivy in the crowns Branch stubs observed Limited inspection due to dense vegetation Limited inspection due to ivy
G3	Hawthorn Lombardy poplar	26.0	1.0	-	1000	4.0	4.0	4.0	4.0	M EM	P,F	F	452	12.0	C 2	Conjoined canopy Dead and dying trees present Dense ivy on the stems Dense ivy in the crowns Branch stubs observed Ivy restricts inspection Included unions observed Limited inspection due to safety concerns Limited inspection due to ivy Typical crown forms Hazard inspection recommended
G4	Elder	7.0	1.0	-	160	2.0	2.0	2.0	2.0	SM	F	F,P	14	2.1	C 2	Conjoined canopy Dense ivy in the crowns Dense ivy on the stems Dead and dying trees present Hard surfaces within the rooting area Typical crown forms Self seeded trees present Limited inspection due to ivy
G5	Holly Ash Elder	8.0	0.0	-	160	3.0	3.0	3.0	3.0	Y SM	F	F	14	2.1	C 2	Conjoined canopy Branch stubs observed Dense ivy on the stems Dense ivy in the crowns Limited inspection due to access Limited inspection due to dense vegetation Self seeded trees present Estimated dimensions due to limited inspection

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							
G6	Lawson cypress	8.0	0.0	-	300	3.0	3.0	3.0	3.0	SM	F	F	41	3.6	C 2	Conjoined canopy Typical crown forms Some trees off site and some on site as group runs along boundary fence
G7	Elder	6.0	0.0	-	180	3.0	3.0	3.0	3.0	SM	F	F	18	2.4	C 2	Conjoined canopy Dense ivy on the stems Dense ivy in the crowns Dead and dying trees present Ivy restricts inspection Limited inspection due to dense vegetation Typical crown forms Self seeded trees present Estimated dimensions due to limited inspection
G8	English elm	7.0	2.0	-	150	2.0	2.0	2.0	2.0	SM Y	F	F	10	1.8	C 2	Conjoined canopy Self seeded trees present Typical crown forms Limited inspection due to access Estimated dimensions due to limited inspection

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	Privet	1.0	0.0	-	40	0.5	0.5	0.5	0.5	SM	F	F	3	0.9	C 2	Managed