

 Tel: 01676 525880

Report Verification

Report Version	Date	Completed by:	Checked & Approved by:
Final	25/10/2023	Duncan Smith BSc (Hons) MArborA Arboricultural Manager	Luke Webb BSc (Hons) MArborA Senior Arboricultural Consultant
Rev A	23/12/2025	Andrew Hastings FdSc MArborA Senior Arboricultural Consultant	Stefan Harrison BSc (Hons) MArborA Senior Arboricultural Consultant
Rev B	25/03/2025	Andrew Hastings FdSc MArborA Senior Arboricultural Consultant	Stefan Harrison 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

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. 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.

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 Method Statement has been produced following a review of a fixed approved development layout for the site, based on data provided by the client. The methods of work described herein will be a requirement of all relevant contractors associated with the development proposals.

On Site Monitoring Regime & Contact Details

All operations detailed within this AMS will be monitored by the Principal Contractor. The Principal Contractor will ensure that specifications within this document are followed (this will be built into the contract specification) and that the suitably qualified Project Arboriculturist will be contacted for advice in relation to works near to retained trees.

The Principal Contractor for the project is:

Henry Brothers Ltd

Henry Brothers key personnel: Stuart Rowles – Senior Project Manager, Joel Henry – Site Engineer, Darren Wallace – Senior Design Manager, Kubra Agar – Design Coordinator, Ben Stockley – Commercial Manager

Tree Protection Measures responsibility: Henry Brothers Ltd

Tree Works Contractor: Greg Long tree Care & Landscape Contractors

The Project Arboriculturist for the site is:

Name: Andrew Hastings FdSc MArborA

Position: Senior Arboricultural Consultant

Mobile: 07485 903943

Email: andrew.hastings@middlemarch.eco

Action	Project Arboriculturist Attendance Required
	✓ ✗
Pre-commencement site meeting / toolbox talk / induction	✓
Audit timetable	✓
RIBA Stage 5 - Enabling Works (Demolition)	
Tree Surgery	✓
Site set up and logistics	✓
Establishment of Demolition Exclusion Zone	✓
Topsoil Stripping / Subsoil Regrading	✗
Demolition of Structures and Removal of Hard Surfaces	✓
RIBA Stage 5 - Main Works (Construction)	
Establishment of Construction Exclusion Zone	✓
Permanent and Temporary Ground Protection Measures	✓

Construction of Structures within the RPA / Construction Exclusion Zone	✓
Working space to construct new buildings within RPAs	✓
Installation of utilities within RPAs	✓
RIBA Stage 6 – Handover and Close Out	
Removal of tree protection measures	✓
Tree Safety Assessment for handover	✓

Responsibilities & Delegated Powers

To comply with any potential variable incidents in relation to works in proximity to trees, it is the responsibility of the Principal Contractor to ensure that the planning conditions attached to the planning consent are always adhered to and that a monitoring regime regarding tree protection is adopted on site by appointing the suitably qualified Project Arboriculturist to provide the management and monitoring of all works in proximity to trees as outlined in this method statement.

If pruning works to trees beyond the agreed scope within this Method Statement are required at any time, then permission must be sought from the Local Planning Authority prior to commencement. All tree surgery works must be carried out in accordance with BS3998.

The Principal Contractor will ensure the build sequence is appropriate to ensure that no damage occurs to retained trees during the construction processes. Protective measures will remain in position until completion of the construction phase of development and will only be removed to allow the commencement of soft landscaping works.

The protection measures and signs will always be maintained in position and checked daily by a designated person on site under the responsibility of the Principal Contractor.

Where any unforeseen works are required in proximity to trees outside of the works within this AMS, it is the responsibility of the Principal Contractor to contact the Project Arboriculturist and request Project Arboriculturist's attendance to site for advice regarding the unexpected works likely to affect retained trees. The Project Arboriculturist is the responsible person for liaising with the LA tree officer to report and inform on any required additional works likely to affect retained trees not covered in this AMS.

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1. Introduction

1.1 Project Background

This Arboricultural Method Statement was commissioned by Baker Mallet LLP to accompany a planning application for commercial development at Twycross Zoo near Atherstone. A survey of the trees on site and within influencing distance of the boundaries was undertaken on the 11th November 2022 as part of a Preliminary Arboricultural Assessment to aid design and avoid unnecessary tree removal.

An Arboricultural Impact Assessment (AIA) was subsequently undertaken to identify the potential impact of the development on the existing trees surveyed during the PAA in accordance with British Standard 5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter referred to as BS5837).

This Arboricultural Method Statement has been compiled to provide the information necessary to satisfy RIBA Stage 5 including:

- Audit schedule
- Specific tree protection measures
- Specific tree-friendly construction operations
- Arboricultural Clerk of Works (ACoW) supervision

1.2 Site Description, Drawings and Appendices

Attribute	Description
National Grid Reference	SK 31935 06217
Topography	Generally flat.
Tree Cover	High, medium and low quality - Individual trees and groups of trees which have been planted to act as screening.
Drawings attached	Tree Survey Plan – C159277-01-01_Rev A Tree Retention Plan – C159277-02-01_Rev A Tree Protection Plan – C159277-03-01_Rev A
Appendices	Appendix A: Tree Schedule Appendix B: Tree Protection Fencing Sign

Table 1.1: Summary of Site and Surroundings

1.3 Approved Development

The approved development of the site includes the demolition of the lemur house, removal of several animal enclosures and clearance of trees and vegetation to make way for the construction of a National Science Conservation Centre.

1.4 Documentation Provided

This statement 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
HLM Architects	Proposed Soft Landscape Plan_P01	TWZ-HLM-00-00-DR-L-45002
HLM Architects	Proposed Soft Landscape Strategy_P07	TWZ-HLM-00-00-DR-L-45001
HLM Architects	Proposed Site Outline Levels_P07	TWZ-HLM-00-00-DR-L-00004
HLM Architects	Proposed Hard Landscape Plan_P01	TWZ-HLM-00-00-DR-L-30801
HLM Architects	Proposed Hard Landscape Strategy_P06	TWZ-HLM-00-00-DR-L-30800
HLM Architects	Proposed Site Plan_P12	TWZ-HLM-00-00-DR-L-00001
DEARADH ZU	Masterplan (Including TZ Deliverables)	TWZ-DZU-00-00-DR-L-00110-P09

Table 1.2: Documentation Provided

2. Statutory Designation

2.1 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	✗	Local Authority website – Hinckley and Bosworth Borough Council	N/A
Conservation Area	✗	Local Authority website – Hinckley and Bosworth Borough Council	N/A
Ancient Woodland	✗	Multi Agency Geographical Information for the Countryside (MAGIC)	N/A

Table 2.1: 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.

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)¹. They receive further legal protection under the

¹ 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) 1981², 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.

² HM Government – The National Archives 2017. *Wildlife and Countryside Act 1981*. [online] Available at: <http://www.legislation.gov.uk/ukpga/1981/69/contents>

3. Arboricultural Method Statement

3.1 Introduction

The following sections of this report detail the specific protection measures, working methodologies and pruning requirements to be adopted as part of the demolition and construction phases of the project.

The principal contractor must ensure that they read and understand all of the following sections prior to commencement of site occupation.

Pre-commencement site meeting and site inductions

A pre-commencement site meeting involving the Project Arboriculturist and Principal Contractor will be undertaken at the beginning of the Enabling Works Phase, Main Construction Phase, Post Construction Phase.

Details of tree protection and methods of working around trees will be included within site inductions to new members of site staff. A copy of this document and the related Tree Protection Plan will be kept on site and referred to by operatives working near retained trees.

Monitoring/Audits

An inspection audit will be implemented by the suitably qualified Project Arboriculturist once the protective measures have been installed and prior to site occupation to ensure they provide the level of protection required for retained trees. Feedback will be provided to the Local Planning Authority Arboricultural Officer on completion of this visit and monthly audits of the tree protection measures will be undertaken by the Project Arboriculturist to ensure they remain in position and fit for purpose.

Use of Subcontractors

The Principal Contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any retained tree. If any issues arise in relation to the retained trees the Project Arboriculturist will be contacted for advice.

3.2 Enabling Works (Demolition)

Tree Work

All tree work should conform to BS3998:2010 and pruning should be undertaken by removing/reducing secondary or tertiary growth where feasible and minimising pruning cuts and should coincide with the seasons to allow nesting birds to fledge in accordance with the Wildlife and Countryside Act WCA 1981 (as amended).

All tree works including tree removals are recommended to be completed prior to the installation of the tree protection measures and site occupation by contractors.

Tree Removals

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

Tree/ Group/ Hedgerow Reference	Species	BS5837 Category	Retained ✓ ✗	Comments
T1	Hornbeam	C	✗	Within footprint of proposed building
T16	Red Oak	B	✗	Within car park
T18	Red Oak	B	✗	To allow construction of a new wall
T21	Ash	U	✗	Unsuitable for retention due to its declining form and hazardous structure
T24	Field Maple	C	✗	Relandscaping to reflect site layout changes
T25	Hybrid Black Poplar	C	✗	Within proposed access footpath and the construction footprint of a new shelter.
G1	Hornbeam	B	✗	Within footprint of proposed buildings and hardstanding Relandscaping to reflect site layout changes
G11	Blackthorn Hawthorn Hazel Holly Elder Sycamore Wild Service Tree	C	✗	Removal to make way for new buildings and new landscaping.
G13	English Oak Sycamore	B	✗	Removal to make way for new buildings
G14	Cherry Scots Pine	B	✗	Within footprint of proposed buildings and hardstanding Relandscaping to reflect site layout changes
G15	Hybrid Black Poplar	B	✗	Within footprint of proposed buildings and hardstanding Relandscaping to reflect site layout changes Unsuitable species for retention in busy publicly accessible area

Tree/ Group/ Hedgerow Reference	Species	BS5837 Category	Retained ✓ ✗	Comments
H2	Beech Holly	C	✗	To be removed to make way for relandscaping to reflect site layout changes

Table 3.1: Trees to be Removed

Tree Pruning – Branch Tie Back

Table 3.2: Tree Pruning – branch Tie Back; below details the pruning specification and / or recommendation of branch tie back for trees retained across the development.

Tree/ Group/ Hedgerow Reference	Species	BS5837 Category	Comments
T4	Field maple	C	Potential minimal branch tips tie back to the eastern crown for contractor access working space for the new footpath construction. (minimum crown height is already at 3 metres)
T5	Field maple	C	Potential minimal branch tips tie back to the eastern crown for contractor access working space for the new footpath construction. (minimum crown height is already at 3 metres)
T6	Field maple		Potential minimal branch tips tie back to the eastern crown for contractor access working space for the new footpath construction. (minimum crown height is already at 3 metres)
T7	Field maple	C	Potential minimal branch tips tie back to the eastern crown for contractor access working space for the new footpath construction. (minimum crown height is already at 3 metres)
T8	Field maple	C	Potential minimal branch tips tie back to the eastern crown for contractor access working space for the new footpath construction. (minimum crown height is already at 3 metres)
T13	English oak	A	1 metre crown lift to the southern crown to provide contractor working space for the drainage works.
G5	Mixed species	C	0.5 metre lateral crown pruning to the eastern crown to provide contractor working space for the new footpath.
G10	Cherry	C	0.5 metre crown lift or branch tie back for contractor access to the eastern and western crowns of the two trees adjacent to the new footpath.

Table 3.2: Tree Pruning – Branch Tie Back

Demolition Exclusion Zone

Protective barriers will define the Demolition Exclusion Zone (DEZ) and will be erected prior to site occupation. Signs will be installed on the barriers to inform site contractors of the importance of the tree protection measures and no works that cause physical damage to retained trees, compaction of the soil or severance of tree roots will occur within any exclusion zone. The extent of the DEZ encompasses the Root Protection Area (RPA) and / or tree canopy, whichever is the greatest.

No works, including storage of demolition materials shall take place within the Demolition Exclusion Zone as defined by the protective barriers.

The proposed location of the protective barriers surrounding the DEZ is identified on the Tree Protection Plan attached. The barriers will remain in place until completion of the demolition phase and will be adjusted as required to form the Construction Exclusion Zone (CEZ) prior to the next phase.

Site Setup, Compound, Materials Storage and Vehicle Parking

At the time of writing, the location of the site compound had not been formally identified, however, sufficient space is present within the site to accommodate the compound outside of Construction Exclusion Zones and its establishment is unlikely to result in harm to retained trees.

The site compound is to be located outside of the RPAs of retained trees and its establishment is unlikely to result in harm to retained trees.

Topsoil Stripping / Subsoil Regrading

Topsoil stripping and regrading of subsoils will not occur within the DEZ of any retained tree. Stored soil created from topsoil stripping will not be stored within any Demolition or Construction Exclusion Zone.

Where regrading works are to be carried out within the RPAs of retained trees, these must be supervised by the Project Arboriculturist. No machinery must be located or stored within the RPAs of retained trees and all work must be carried out from the perimeter of RPA, working towards the trees where necessary in a precautionary manner. The spoil created from these works will not be stored within the RPA. Uncovered roots need to be assessed by the Project Arboriculturist. If deemed necessary, minor roots (<25 mm in diameter) uncovered by the works shall be pruned using clean, sterilised pruning saw or secateurs, leaving as small a pruning wound as possible. If a major root (>25 mm in diameter) is found, then works will be redesigned to accommodate any large roots found.

Demolition of Structures and Removal of Hard Surfaces

There are no structures or hard surfaces that require demolition or removal within Demolition Exclusion Zones and no impact upon the existing trees is therefore anticipated.

3.3 Main Works (Construction)

Construction Exclusion Zone

Protective barriers will be positioned to define the Construction Exclusion Zone (CEZ). Signs will be installed on the barriers to inform site contractors of the importance of the tree protection

measures and no works that cause physical damage to retained trees, compaction of the soil or severance of tree roots will occur within any exclusion zone. The extent of the CEZ encompasses the Root Protection Area (RPA) and / or tree canopy, whichever is the greatest.

No works, including storage of construction materials shall take place within the Construction Exclusion Zone as defined by the protective barriers.

The proposed location of the protective barriers surrounding the CEZ is identified on the Tree Protection Plan attached. The barriers will remain in place until completion of the demolition phase and will be adjusted as required to form the Construction Exclusion Zone (CEZ) prior to the next phase.

Permanent and Temporary Ground Protection Measures

Temporary ground protection will be utilised whilst the fencing installation is completed through the RPAs T12, T13, T22, G6, G7 and G12, all temporary ground protection shall support the expected loads of any plant and machinery likely to be required and in accordance with Structural Engineers recommendations to avoid permanent compaction of the soil.

Construction of Fencing within RPAs

The following details will be adhered to for the erection of fencing within the Root Protection Areas of retained trees.

The following guidance will be adhered to for any fencing works undertaken within the site:

1. The exact route of the proposed fencing shall be marked out in conjunction with the Project Arboriculturist avoiding all significant trees on note.
2. The location of fence posts will be carefully considered, to ensure the potential for root damage to the adjacent trees is minimised. Particular attention will be given to the location of all fence posts to ensure that no fence posts are sited within 2.0 m of the stem of any retained tree.
3. Excavation for the fence post holes within the RPA of any retained tree will be completed manually using handheld tools. Care should be taken not to damage tree roots that may be present to avoid ingress of decay.
4. If large roots (>25 mm) are identified, then the fence post location will be relocated where possible to avoid damage and / or severance of roots. Special construction techniques may be used where fence posts are likely to sever significant roots to 'bridge' these areas and avoid severance of any significant roots.
5. If any roots are damaged during the excavation for the fence posts, they will be cut using sharp cutting tools such as bypass secateurs or handsaws to leave a clean wound with as small a surface area as possible. No roots of greater than 25 mm in diameter will be cut without the agreement of the Project Arboriculturist.
6. The holes excavated for the fence posts shall be lined with an impermeable membrane to prevent concrete leaching into the surrounding soil.
7. The fence posts and panels shall be installed, and the post holes backfilled with concrete. All fence posts and other materials will be brought to the working area by hand.

All works to install new fencing within the RPAs of retained trees should be carried out under supervision of the Project Arboriculturist.

Installation of utilities within RPAs

The installation of new subterranean utilities will require works at the periphery of the RPA for the westernmost tree of G6. The proposed excavation works near to this tree will be completed under supervision of the Project Arboriculturist.

Works near to roots will not occur where the ambient air temperature is less than +4 °C. Any exposed roots shall be temporarily recovered with soil where the ambient temperature exceeds 14 °C or completion of the works is not foreseen within 24 hours of the finished excavation.

Foundations within RPAs

There are no foundations for any of the new building's construction affecting the RPAs of retained trees.

3.4 Post Construction Works

Removal of Protective Barriers

Protective barriers will be removed once all external main construction works have been completed to allow the completion of hard and soft landscaping. Barriers shall be removed carefully to ensure no damage to retained trees occurs.

Hard Landscaping

Hard landscaping works that have the potential to cause physical damage to retained trees, compaction of the soil or severance of tree roots shall not occur within the precautionary zones (RPA / canopy) unless under supervision of the Project Arboriculturist. Any hard landscaping works taking place within the precautionary zones surrounding retained trees should be completed in accordance with this AMS following advice from the Project Arboriculturist.

New footpath and maintenance access road construction through the RPAs of T2, T4, T22 and G10 shall be completed by means of a no dig cellular containment system (CCS) and the works carried out under the supervision of the Project Arboriculturist.

No unsupervised works or storage of hard landscaping construction materials shall occur within the Precautionary Zones (former CEZ).

Soft Landscaping

All soft landscaping within the exclusion zone will be undertaken by hand and in accordance with BS8545³.

A 500 mm radius from any tree stem will remain uncovered by turf or other planting to allow penetration of water and air into the soil. A propriety mulch will be applied to a depth of 100mm to inhibit weed and growth, reduce groundwater evaporation, resist and mitigate soil compaction, reduce maintenance requirements and act as a slow-release fertilizer.

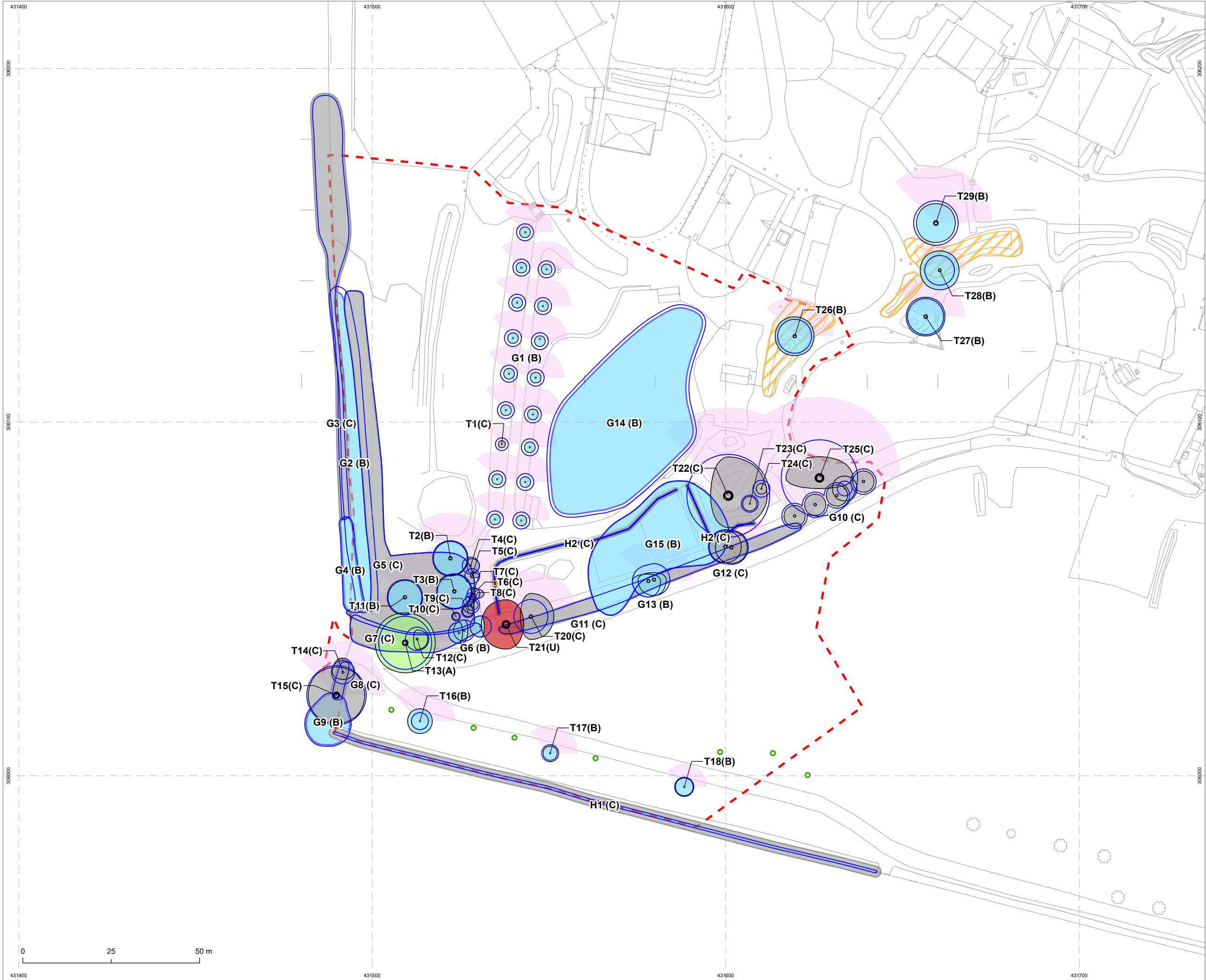
³ British Standards Institution. (2014). *British Standard 8545:2014, Trees: from nursery to independence in the landscape – Recommendations*. British Standards Institution, London.

3.5 Handover and Close Out

Tree Safety Assessment

A tree safety assessment will be required prior to handing over the site to the client for final site use to ensure all retained trees are in good condition and any potential hazards are mitigated sufficiently. All retained trees should positively contribute to the new development and should be included as part of a management plan to ensure the long-term safety of site users.

This BS5837:2012 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.



C159277-01-01-RevA

Legend

●

Tree location and stem diameter

Category A

Category B

Category C

Category U

Current canopy extent

Root Protection Area

Indicative tree shadow

○

Newly planted tree

●

Self-set tree

Area of newly planted trees

Site boundary

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) 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 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

Twycross Zoo, Burton Rd, Atherstone

Drawing

Tree Survey Plan

Client

Twycross Zoo

Drawing Number

C159277-01-01-RevA

Revision

RevA

Scale @ A3

1:1,000

Date

October 2023

Approved By

DS

Drawn By

VO

MIDDLEMARCH

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ

T:01676 525880

E:admin@middlemarch-environmental.com

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C159277-02-01-RevA

Legend

Tree location and stem diameter

Category A

Category B

Category B to be removed

Category C

Category C to be removed

Category U to be removed

Current canopy - tree to be removed

Current canopy - tree to be retained

Root Protection Area

Newly planted tree to be removed

Self-set tree to be removed

Area of newly planted trees

Indicative tree shadow

Site boundary

NOTES

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Project

Twycross Zoo, Burton Rd, Atherstone

Drawing

Tree Retention Plan

Client

Twycross Zoo

Drawing Number

C159277-02-01-RevA

Revision

Rev A

Scale @ A3

1:1,000

Date

December 2024

Approved By

AH

Drawn By

BD

MIDDLEMARCH

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
T:01676 525880
E:admin@middlemarch-environmental.com

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C159277-03-01-RevA

Legend

Tree location and stem diameter

Category A

Category B

Category C

Current canopy - tree to be retained

Root Protection Area

Area of newly planted trees

Tree protection barrier subject to BS5837

Area of no dig cellular confinement system completed under arboricultural supervision

Site boundary

NOTES

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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

Twycross Zoo, Burton Rd, Atherstone

Drawing

Tree Protection Plan

Client

Twycross Zoo

Drawing Number

C159277-03-01-RevA

Revision

Rev A

Scale @ A3

1:1,000

Date

December 2024

Approved By

AH

Drawn By

VO/CD/BD

MIDDLEMARCH

Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ

T:01676 525880

E:admin@middlemarch-environmental.com

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Appendix A - Tree Schedule

Measurements	Age Class	Overall Condition	Root Protection Area (RPA)
Height - measured from ground level at base of stem/s (m).	YNG: Juvenile trees that have been recently planted.	G - Good: Trees with only a few minor defects and in good overall health needing little, if any attention.	- 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.
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837.	SM: Semi-mature, trees upto 1/3 life expectancy.	F - Fair: Trees with minor, but rectifiable, defects or in the early stages of stress from which it may recover.	
Crown - crown spread estimated radially from the main stem (m).	EM: Early mature, trees 1/3 – 2/3 life expectancy.	P - Poor: Trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term.	
Abbreviations Est - Estimated stem diameter Avg - Average stem diameter Max - Maximum stem diameter	M: Mature trees, upto 2/3 life expectancy.	D - Dead: Trees no longer alive. This could also apply to trees that are dying and unlikely to recover.	
	OM: Over mature, declining or moribund trees of low vigour.	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	
	V: Veteran, tree possessing certain attributes relating to veteran trees.	- Age class - Life expectancy	

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.

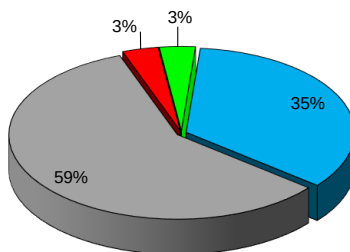
Category A - Trees of high quality with an estimated remaining life expectancy of at least 40 years.

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.

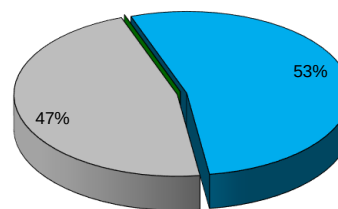
Sub-categories: (i) - Mainly arboricultural value
(ii) - Mainly landscape value
(iii) - Mainly cultural or conservation value

BS5837 category: Individuals



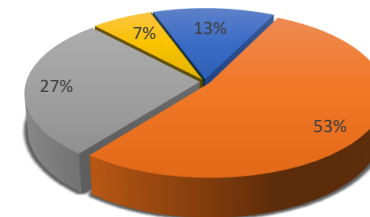
■ Category U ■ Category A
■ Category B ■ Category C

BS5837 category: Groups of trees



■ Category B ■ Category C

Age distribution of tree stock



■ Young ■ Semi Mature ■ Early Mature ■ Mature

Appendix A - Summary

	Individual Trees	Totals	Tree Groups	Totals
Category U	T21	1		0
Category A	T13	1		0
Category B	T2, T3, T11, T16, T17, T18, T26, T27, T28, T29	10	G1, G2, G4, G6, G9, G13, G14, G15	8
Category C	T1, T4, T5, T6, T7, T8, T9, T10, T12, T14, T15, T19, T20, T22, T23, T24, T25	17	G3, G5, G7, G8, G10, G11, G12	7
	Total	29	Total	15

	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	Hornbeam	5.5	2.0	3	60 50 100	1.0	1.0	1.0	1.0	SM	F	F	10	1.8	C 1	Branch stubs observed Exposed heartwood Included unions observed Minor deadwood in the crown Pruning wounds observed
T2	White poplar	13.0	3.0	1	400	5.0	5.0	5.0	5.0	EM	F	G	72	4.8	B 1	Dense ivy on the stem Light ivy in the crown Limited inspection due to ivy Limited inspection due to dense vegetation Minor deadwood in the crown No obvious defects observed
T3	White poplar	14.0	3.0	1	380	5.0	5.0	5.0	5.0	SM	F	G	72	4.8	B 1	Branch stubs observed Light ivy on stem Limited inspection due to dense vegetation Minor deadwood in the crown No obvious defects observed
T4	Field maple	7.5	2.0	1	200	2.0	2.5	2.0	1.0	SM	F	F	18	2.4	C 1	Dense ivy on the stem Branch stubs observed Limited inspection due to ivy Minor deadwood in the crown Pruning wounds observed Generally poor specimen
T5	Field maple	6.0	2.0	1	160	1.0	2.0	0.5	0.5	SM	F	F	14	2.1	C 1	Branch stubs observed Epicormic growth on the main stem Limited inspection due to dense vegetation Pruning wounds observed Generally a poor specimen
T6	Field maple	7.5	2.0	1	150	1.5	3.0	1.5	0.5	SM	F	F	10	1.8	C 1	Branch stubs observed Limited inspection due to dense vegetation Pruning wounds observed
T7	Field maple	6.0	2.0	1	110	1.0	1.0	1.0	0.5	SM	F	F	7	1.5	C 1	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							
T8	Field maple	8.0	3.0	2	120 160	1.5	2.0	1.5	1.0	SM	F	F	18	2.4	C 1	Dense ivy on the stem Pruning wounds observed Limited inspection due to dense vegetation Limited inspection due to ivy
T9	Field maple	7.5	3.0	1	140	1.5	1.5	1.5	1.5	SM	F	F	10	1.8	C 1	Branch stubs observed Minor deadwood in the crown Pruning wounds observed
T10	Field maple	6.0	3.0	1	100	1.0	1.0	1.0	1.0	SM	F	F	5	1.2	C 1	Dense ivy in the crown Dense ivy on the stem Limited inspection due to ivy
T11	White poplar	12.0	3.0	1	380	5.0	5.0	5.0	5.0	EM	F	G	72	4.8	B 1	Branch stubs observed Limited inspection due to dense vegetation No obvious defects observed
T12	Field maple	7.0	2.0	2	180 200	2.5	3.0	3.0	1.0	SM	F	F	34	3.3	C 1	Dense ivy in the crown Dense ivy on the stem Lateral dieback observed Limited inspection due to dense vegetation Limited inspection due to ivy Minor deadwood in the crown Generally a poor specimen
T13	English oak	15.0	2.0	1	610	8.5	8.5	8.5	8.5	EM	G	G	177	7.5	A 1	Branch stubs observed Dense ivy in the crown Dense ivy on the stem Epicormic growth observed in the crown Hard surfaces within the rooting area Limited inspection due to dense vegetation Limited inspection due to ivy Minor deadwood in the crown No obvious defects observed Pruning wounds 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							
T14	Cherry	9.0	2.0	1	260	4.0	3.0	2.0	3.0	SM	F	F	34	3.3	C 1	Branch stubs observed Dense ivy on the stem Estimated dimensions Limited inspection due to dense vegetation Limited inspection due to ivy
T15	Ash	14.0	3.0	1	700	8.0	8.0	8.0	8.0	M	P	P	222	8.4	C 3	Branch stubs observed Conservation value Dense ivy in the crown Dense ivy on the stem Estimated dimensions Large hanging branches in the crown Lateral dieback observed Apical dieback Limited inspection due to dense vegetation Major deadwood in the crown Minor deadwood in the crown Tree is showing signs of decline Innotus present Tree requires tree safety assessment to determine future viability
T16	Red oak	10.0	3.0	1	200	3.5	3.5	3.5	3.5	SM	G	G	18	2.4	B 1	Branch stubs observed No obvious defects observed Pruning wounds observed
T17	Red oak	8.0	2.2	1	190	2.0	2.0	2.0	2.0	SM	F	G	18	2.4	B 1	Branch stubs observed No obvious defects observed Pruning wounds observed
T18	Red oak	6.5	2.0	1	210	2.5	2.5	2.5	2.5	SM	F	G	23	2.7	B 1	Branch stubs observed No obvious defects observed Pruning wounds observed
T19	Hawthorn	6.0	8.0	4	80 100 90 40	3.5	3.5	3.5	3.5	EM	F	F	14	2.1	C 1,3	Branch stubs observed Estimated dimensions Limited inspection due to dense vegetation Minor deadwood in the crown

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							
T20	Ash	13.0	3.0	5	210 180 100 220 100	6.5	6.5	6.5	3.0	EM	F,P	F,P	72	4.8	C 1	Apical dieback Branch stubs observed Estimated dimensions Limited inspection due to dense vegetation Minor deadwood in the crown
T21	Ash	14.0	3.0	1	840	7.0	5.0	7.0	7.0	M	P	F	327	10.2	U	Apical dieback Branch stubs observed Conservation value Estimated dimensions Exposed heartwood Lateral dieback observed Tree is in decline Innotus hispidus everywhere, this tree offers a limited contribution
T22	Hybrid black poplar	25.0	3.0	1	960	11.0	11.0	9.0	5.0	M	F	F	430	11.7	C 1	Apical dieback Branch stubs observed Hard surfaces within the rooting area Minor deadwood in the crown Storm damage observed Tree is showing signs of decline
T23	Field maple	6.5	1.5	1	190	2.0	2.0	2.0	2.0	SM	F	F	18	2.4	C 1	Basal epicormic growth observed Branch stubs observed Minor deadwood in the crown
T24	Field maple	6.0	2.0	1	190	1.5	1.5	1.5	1.5	SM	F	F	18	2.4	C 1	Branch stubs observed Epicormic growth on the main 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							
T25	Hybrid black poplar	23.0	3.0	1	900	6.0	9.5	3.0	9.5	M	F	F	366	10.8	C 1	Apical dieback Branch stubs observed Epicormic growth observed in the crown Epicormic growth on the main stem Estimated dimensions Light ivy on stem Limited inspection due to access Limited inspection due to dense vegetation Minor deadwood in the crown Storm damage observed
T26	Beech	11.0	2.5	1	390	5.5	5.5	5.5	5.5	EM	F	G	72	4.8	B 1	Branch stubs observed Hard surfaces within the rooting area Pruning wounds observed
T27	Walnut	11.0	2.5	1	420	5.5	5.5	5.5	5.5	EM	G	G	81	5.1	B 1	Branch stubs observed Building within the rooting area Pruning wounds observed Tear wounds present
T28	Copper beech	7.5	2.5	1	330	5.5	5.5	5.5	5.5	SM	G	G	55	4.2	B 1	No obvious defects observed
T29	Sycamore	16.0	2.5	1	510	5.5	5.5	5.5	5.5	EM	G	G	124	6.3	B 1	No obvious defects 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							
G1	Hornbeam	8.0	2.0	-	180	1.5	1.5	1.5	1.5	SM	G,F	G,F	18	2.4	B 2,3	Group is sparse in areas Hard surfaces within the rooting area Included unions observed Pruning wounds observed Building within the rooting area
G2	Leyland cypress	13.0	0.0	-	340	2.5	2.5	2.5	2.5	SM EM	G,F	G,F	55	4.2	B 2,3	Conjoined canopy No obvious defects observed Provides screening
G3	Hawthorn Sycamore Holly Ash	5.0	0.0	-	80	1.5	1.5	1.5	1.5	Y SM	F	F	5	1.2	C 2,3	Hard surfaces within the rooting area Included unions observed Outgrown hedge
G4	Sycamore	13.0	3.0	-	320	3.5	3.5	3.5	3.5	SM EM	G,F	F,G	48	3.9	B 2,3	Branch stubs observed Group is located off site but overhangs the study area Hard surfaces within the rooting area Limited inspection due to access Limited inspection due to dense vegetation Minor deadwood in the crowns No obvious defects observed Provides screening
G5	Field maple Goat willow Hawthorn Hazel Holly	6.0	0.0	-	140	1.5	1.5	1.5	1.5	Y SM	G,F	G,F	10	1.8	C 2,3	Branch stubs observed Group is sparse in areas Included unions observed Limited inspection due to dense vegetation Minor deadwood in the crowns Pruning wounds 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							
G6	Field maple	11.0	2.0	-	250	3.0	1.0	3.0	3.0	SM EM	G,F	G,F	28	3.0	B 2,3	Branch stubs observed Dense ivy in the crowns Dense ivy on the stems Ivy restricts inspection Limited inspection due to dense vegetation Limited inspection due to ivy No obvious defects observed Provides screening
G7	Hawthorn Hazel Field maple	6.0	8.0	-	120	1.5	1.5	1.5	1.5	Y SM	F	F	7	1.5	C 3	Branch stubs observed Group is sparse in areas Ivy suppressing a number of trees Limited inspection due to dense vegetation Provides screening
G8	Blackthorn Cherry Hawthorn	5.0	0.0	-	80	1.5	1.5	1.5	1.5	Y SM	F	G	5	1.2	C 2,3	Branch stubs observed Conjoined canopy Ivy suppressing a number of trees Limited inspection due to dense vegetation Provides screening
G9	English oak	11.0	2.0	-	450	5.0	5.0	5.0	5.0	SM EM	G	G	92	5.4	B 1,2,3	Conjoined canopy Hard surfaces within the rooting area Ivy restricts inspection Ivy suppressing a number of trees Limited inspection due to dense vegetation Limited inspection due to ivy No obvious defects observed Provides screening
G10	Cherry	6.0	2.0	-	280	3.0	3.0	3.0	3.0	SM EM	F,P	F,P	41	3.6	C 2,3	Group is sparse in areas Limited inspection due to dense vegetation Cherry by sub box requires further investigation and so do the others

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							
G11	Blackthorn Elder Hawthorn Hazel Holly Sycamore Wild service tree	7.0	0.0	-	150	2.0	2.0	2.0	2.0	Y SM EM	G,F	G,F	10	1.8	C 2,3	Dead and dying trees present Group is sparse in areas Hard surfaces within the rooting area Limited inspection due to dense vegetation Provides screening
G12	Ash	11.0	2.0	-	380	4.5	4.5	4.5	4.5	SM EM	F	F,P	72	4.8	C 2,3	Branch stubs observed Conjoined canopy Included unions observed Light ivy in the crowns Light ivy on stems Limited inspection due to dense vegetation Minor deadwood in the crowns Provides screening
G13	English oak Sycamore	11.0	1.0	-	370	2.0	3.5	4.5	4.5	SM EM	G,F	G,F	64	4.5	B 2,3	Branch stubs observed Minor deadwood in the crowns Provides screening
G14	Cherry Scots pine	8.0	0.0	-	240	2.0	2.0	2.0	2.0	Y SM	G	G	28	3.0	B 2,3	Conjoined canopy Limited inspection due to access Estimated dimensions
G15	Hybrid black poplar	24.0	2.0	-	840	10.0	10.0	10.0	10.0	EM M	F	G	327	10.2	B 2,3	Conjoined canopy Limited inspection due to access No obvious defects observed Provides screening

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	Blackthorn Hawthorn Holly	4.5	0.0	-	30	1.5	1.5	1.5	1.5	Y SM	G	G	3	0.9	C 2,3	Managed Provides screening
H2	Beech Holly	1.0	0.0	-	10	0.5	0.5	0.5	0.5	Y SM	G	G	3	0.9	C 3	Managed



**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**



**TREE PROTECTION AREA
KEEP OUT !**

**(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION**

**ANY INCURSION INTO THE PROTECTED AREA MUST BE
WITH THE WRITTEN PERMISSION OF THE LOCAL
PLANNING AUTHORITY**