



Arboricultural Impact Assessment

Land off Rothwell Road, Desborough

On behalf of

Bellway

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Report Status	Rev A
Date of Issue	02-03-23

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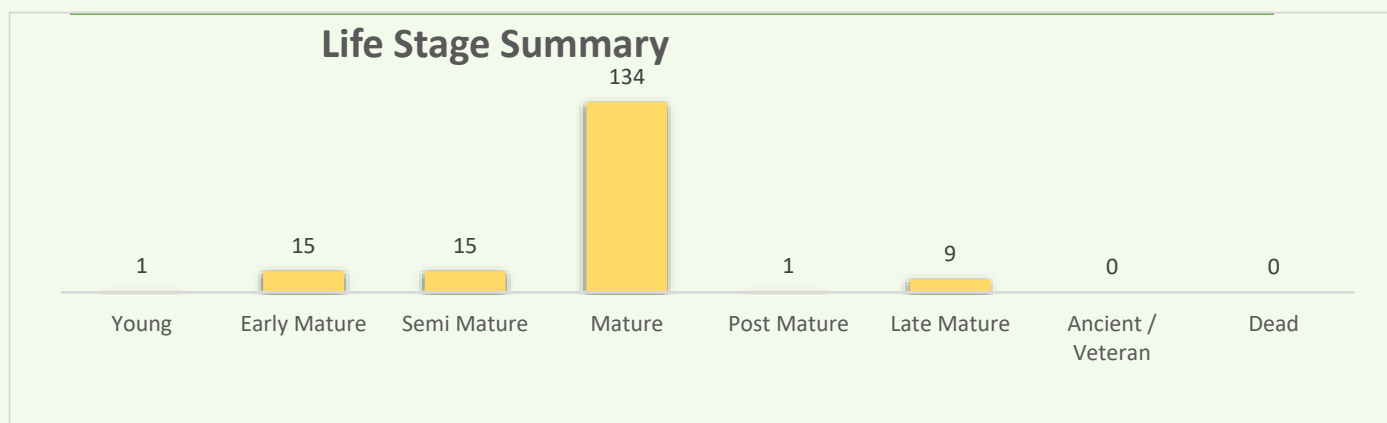
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Executive summary

An arboricultural survey has been carried out, and this report prepared to support a planning application at Land off Rothwell Road, Desborough.

1. Details of all trees forming the survey can be found in Appendix 3, including specific comments in relation to their condition and quality.
2. The area subject to survey includes 116 individual trees, 17 groups of trees and 42 hedges.
3. The proposed layout will require the removal of 8 individual trees, 2 groups of trees and 5 hedges. The proposed layout will require the part removal of 8 hedges.
4. The Root Protection Areas of trees T27, T31, T32, T39, T40, T41, T43, T46, T49, T58, T59, T73, T75, T85, T95, T112, T114 and T115 will be incurred into by the design layout. Root investigations will be carried out under arboricultural supervision before the commencement of works in order to confirm if roots are present at these locations, with a view to minor root pruning, if necessary. If significant roots are identified at this location, then alternative 'no-dig' design solutions such as a cellular confinement system will be required (see Appendix 6 for methods of work close to trees).
5. Provided precautions to protect the retained trees are specified and implemented through the measures included in this report, the development proposal will have minimal impact on the retained trees or their wider contribution to amenity and character.
6. If the recommendations made within this report are followed, the development will be achievable in arboricultural terms and should be acceptable to the Local Planning Authority.

<u>Tree Survey Summary</u>	A	B	C	U	TOTAL
Trees	4	40	59	13	116
Groups	0	4	13	0	17
Woodlands	0	0	0	0	0
Hedges	0	13	29	0	42
Scrub/Shrubs	0	0	0	0	0
TOTAL	4	57	101	13	175



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1.0 Introduction

1.1 Instruction

Southern Ecological Solutions Ltd. has been instructed to produce an Arboricultural Impact Assessment in support of a planning application at Land off Rothwell Road, Desborough. It has been produced in accordance with the principles of British Standard *BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations* and includes the following information to accompany a planning application:

- *details of significant trees including an assessment of condition using BS 5837 categorisation;*
- *a plan showing tree survey information, retention categorisation and root protection areas;*
- *an assessment of the impact of the proposal on trees, any wider impact on the local amenity and any impact trees may have on the proposed development;*
- *a preliminary arboricultural method statement dealing with the protection and management of the trees to be retained;*
- *a schedule of tree works to facilitate construction.*

1.2 Scope and purpose of this report

This report covers trees within the site boundary and its immediate proximity. It is concerned with the impact the development may have on trees, and the effect retained trees may have on the development. Its purpose is to allow the Local Planning Authority to assess the tree information as part of the planning submission.

2.0 Site Visit and Observations

2.1 Site visit

A site visit was undertaken on the 27th March 2021 by Phil Barwell of Southern Ecological Solutions. The weather conditions were clear and dry.

2.2 The subject trees

The area subject to survey includes 116 individual trees, 17 groups of trees and 42 hedges.

All trees were categorised in accordance with Section 4.5 and Table 1 of BS5837.

Table 1 BS5837 Categorisation Summary

	A	B	C	U	TOTAL
Trees	4	40	59	13	116
Groups	0	4	13	0	17
Woodlands	0	0	0	0	0
Hedges	0	13	29	0	42
Scrub/Shrubs	0	0	0	0	0
TOTAL	4	57	101	13	175

3.0 Arboricultural Impact Assessment

3.1 Summary of the impact on trees

Development can adversely impact on trees by causing them to be removed to facilitate the development, or in the future, by adversely affecting their potential for retention through a disturbance in Root Protection Areas (RPAs)¹ or through post development pressures to prune or remove.

At the design stage, disturbance within the RPA should be avoided. If unavoidable, (which may need demonstrating), consideration must be given to any construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs, as well as new surfaces and structures.

Construction of hard surfaces and other construction may be acceptable within RPAs providing specialist methods of design and construction are used. This will often result in the use of minimal or no-dig methods which result in higher finished levels which must be allowed for during design due to the effect on access thresholds and structure heights etc.

The ability of trees to tolerate some disturbance depends on individual circumstances including prevailing site conditions, tree species, age and condition and this will be assessed by the project arboriculturist.

Protection measures, usually a combination of barriers and ground protection, must be in place before any works (including site clearance) begin, and stay in place for as long as a risk of damage remains (please refer to the Tree Protection Plan - TPP). The protection of trees must take account of the buildability of the proposal, including services, and ensure that all activities, such as storage of materials, parking and the use of plant and vehicles, can be accommodated outside of RPAs. Particular care and planning are necessary for the operation of excavators, lifting machinery and cranes to ensure all vehicle movement and lifting operations will not impact on retained trees.

¹ *Root Protection Area (RPA) - A layout design tool indicating the minimum area surrounding the tree that contains sufficient rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. Assessed according to the recommendations set out in clause 4.6 of BS 5837. It is calculated by multiplying the radius squared by 3.142. Clause 4.6.2 of BS 5837 states that the RPA may be changed in shape, considering local site factors, species tolerance, condition and root morphology.*

3.2 Tree protection plan (TPP)

Trees to be retained are coloured coded based on their tree category, whilst trees required for removal to facilitate the development have red hatch lines inside a red circle representing the tree crown spread. Tree protection is shown as barriers and/or ground protection defining the Construction Exclusion Zone (CEZ)², and any areas requiring non-standard methods of demolition or construction are shown.

3.3 Trees to be removed

The proposed layout will require the removal of 8 individual trees, 2 groups of trees and 5 hedges. The proposed layout will require the part removal of 8 hedges.

Table 2 Tree removal summary

Removal		TOTAL	Part removal		TOTAL
Trees	T47, T50, T53, T57, T62, T86, T91 and T92,	8	Trees		0
Groups	G44G88	2	Groups		0
Woodlands		0	Woodlands		0
Hedges	H36, H90, H98, H107 and H135	5	Hedges	H45, H52, H55, H64, H84, H87, H113 and H123	8
Shrubs		0	Shrubs		0

3.4 Trees to be pruned

Facilitation crown cutback pruning works will be required for G30, T33, T39, T40, H42, T43, T95, T99 and H128

Opportunities for remedial pruning works to low crowns etc. can be identified at later stages in the development process where deemed appropriate. A full Arboricultural Method Statement (AMS) can be produced detailing any pruning works required to accommodate the proposed design layout and/or for access around the site from canopy obstruction. All tree pruning/felling work to facilitate the development can be found in Appendix 7.

² Construction Exclusion Zone. An area based on the RPA in m² identified by an arboriculturist, to be protected during development, including demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

3.5 Root protection area incursions

The Root Protection Areas of trees T27, T31, T32, T39, T40, T41, T43, T46, T49, T58, T59, T73, T75, T85, T95, T112, T114 and T115 will be incurred into by the design layout. Root investigations will be carried out under arboricultural supervision before the commencement of works in order to confirm if roots are present at these locations, with a view to minor root pruning, if necessary. If significant roots are identified at this location, then alternative 'no-dig' design solutions such as a cellular confinement system will be required (see Appendix 6 for methods of work close to trees).

4.0 Preliminary Arboricultural Method Statement

4.1 Introduction

This section is a preliminary arboricultural method statement specifying the methodology to be used for the protection of trees and works close to trees that have the potential to result in the loss of or damage to a tree. It includes details of site management and supervision required for successful tree retention.

4.2 Site clearance

Damage can easily be caused to trees to be retained during initial site clearance. Therefore, tree protection barriers must be in place before site clearance to protect retained trees identified in Appendix 3.

4.3 Site and fuel storage, cement mixing and washing points

All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage must be outside RPAs. No discharge of potential contaminants will occur within 10 m of a retained tree stem or where there is a risk of run-off into RPAs.

4.4 Tree protection barriers

Appendix 5 includes guidance for protective barriers based on BS 5837:2012. The approximate location of the barriers and the CEZs is shown on the TPP. The precise location of the barriers and other protective measures will be confirmed at the pre-commencement meeting before any demolition or construction activities (including site clearance) start.

4.5 Ground protection

In areas where it is not possible to erect protective barriers, ground protection must be used to protect the RPAs of retained trees. Where it has been agreed during the design stage that vehicular or pedestrian access for the construction operation may take place within the CEZ, the possible effects of construction activity should be addressed by a combination of barriers and ground protection. The position of the barrier may be within the CEZ at the edge of the agreed working zone, but the soil structure beyond the barrier to the edge of the CEZ shall be protected with ground protection.

4.6 Precautions when working in CEZs

Only work agreed with the Local Planning Authority can be carried out within CEZs. Any works must be carried out in accordance with the details as set out in Appendix 6 which are summarised below.

4.7 Installation of new surfacing

Full details of the new surfacing proposed within the RPAs of trees to be retained is not known at the time of writing. However, if resurfacing is required within the RPAs of any trees it will be necessary to use non-standard methods of construction. Ideally, new substrates and finished surfaces should be of a porous design to allow water and an air passage in and out.

4.8 Installation of new services

The exact location of services is often difficult to establish until construction is in progress. Where existing services within RPAs require upgrading or new services have to be installed in RPAs, conventional excavation techniques are unacceptable, and great care must be taken to minimise any disturbance. Trenchless installation should be the preferred option, but if that is not feasible, any excavation must be carried out by hand or using a compressed air lance. The methodology must comply with *NJUG Volume 4: Guidelines for the Planning, installation and Maintenance of Utility Apparatus in Proximity to Trees*.

4.9 Tree works

Recommendations for tree works can be found in the tree works schedule in Appendix 7. All works shall be in accordance with *BS 3998:2010*, or in accordance with current best practice. The use of a competent tree surgery contractor is necessary to comply with this (follow the link for a list of Arboricultural Association approved contractors [Directory of Tree Surgeons - Arboricultural Association](#)). The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the Local Planning Authority regarding planning constraints in regard to trees and that no protected species or habitats are harmed whilst carrying out site clearance or tree surgery works.

5.0 Conclusions

- 5.1** The proposed layout will require the removal of 8 individual trees, 2 groups of trees and 5 hedges. The proposed layout will require the part removal of 8 hedges.
- 5.2** The Root Protection Areas of trees T27, T31, T32, T39, T40, T41, T43, T46, T49, T58, T59, T73, T75, T85, T95, T112, T114 and T115 will be incurred into by the design layout. Root investigations will be carried out under arboricultural supervision before the commencement of works in order to confirm if roots are present at these locations, with a view to minor root pruning, if necessary. If significant roots are identified at this location, then alternative 'no-dig' design solutions such as a cellular confinement system will be required (see Appendix 6 for methods of work close to trees).
- 5.3** Provided precautions to protect the retained trees are specified and implemented through the measures included in this report, the development proposal will have minimal impact on the retained trees or their wider contribution to amenity and character.
- 5.4** If the recommendations made within this report are followed, the development will be achievable in arboricultural terms and should be acceptable to the Local Planning Authority.

Appendix 1: Survey and Background Information

1.1 Limitations

A detailed topographical plan showing the locations of individual trees was provided by the client and used for the tree survey, so the positions of the trees were understood to be accurate, and SES Ltd accepts no liability for the accuracy of any tree survey drawings based on the topographical plan supplied by the client.

Trees are living organisms whose health and the condition can change rapidly and all trees, even healthy ones, are at risk from unpredictable climatic and manmade events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk and preferably on an annual basis.

1.2 Methods

The trees were surveyed from ground level without detailed investigations. All trees with a trunk diameter of 75 mm or above³ were surveyed. All dimensions were estimated unless otherwise indicated. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in *Subsection 4.4.2.5 of BS 5837:2012* and includes species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C) to reflect its suitability as a material constraint on development.

1.3 Documents and information received

- *Topographical plan*
- *Proposed plan*

1.4 Contact

Name	Company/organisation	Tel. no.
Tom Izod	SES Arboriculture Ltd	+44 (0)1268 711021

³ *BS 5837 recommends that in most circumstances all trees over 75mm stem diameter should be included in a pre-planning land and tree survey*

1.5 Reference documents

- *British Standards Institution (2012) BS 5837: Trees in relation to design, demolition and construction – Recommendations;*
- *British Standards Institute (2010) BS 3998: Tree work – Recommendations;*
- *DETR Tree Preservation Orders – A Guide to the Law and Good Practice;*
- *National Joint Utilities Group (2007) Volume 4, Issue 2: Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees;*
- *DTLR (2001) Principles of Tree Hazard Assessment and Management - David Lonsdale.*

1.6 Legal Constraints and Liabilities

1.6.1 Occupiers Liability 1957 and 1984

The Occupiers Liability Act places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report includes recommendations within the tree tables for work required for safety reasons. ‘Common sense risk management of trees (National Tree Safety Group 2012)’ states that *‘the owner of the land on which a tree stands, together with any party who has control over the tree’s management, owes a duty of care at common law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property.’*

1.6.2 Common Law

This enables pruning back of the crown and roots of trees on adjacent land where they overhang neighbouring property, providing the work is reasonable and does not cause harm. This right does not override TPO and CA legislation.

1.6.3 Ecological Constraints

The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees. These could impose significant constraints on the use and timing of access to the site. It is the responsibility of the main contractor and tree surgery contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works. Unless competent to do so, the advice of an ecologist must be sought.

Appendix 2: Key to Tree Survey Sheet and Summary

Measurements	Life Stage	Structural and physiological condition	Root Protection Area (RPA)
Height - Measured using a digital laser clinometer (m)	Young trees up to ten years of age	Good: Trees with only a few minor defects and in good overall health needing little, if any attention	<ul style="list-style-type: none"> • The RPA Radius column provides the extent of an equivalent circle from the center of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected.
Stem diameter – DBH. Diameter measured (mm) in accordance with Annex C of the BS5837	Semi-mature trees less than 1/3 life expectancy	Fair: Trees with minor rectifiable defects or in the early stages of stress from which it may recover	
Crown Spread - Measured using a digital laser clinometer radially from the main stem (m)	Early mature trees 1/3 – 2/3 life expectancy	Poor: Trees with major structural and/or physiological defects such that it is unlikely the tree will recover in the long term	
	Mature trees over 2/3 life expectancy	Dead: This could also apply to trees in an advanced state of decline and unlikely to recover	
	Over mature declining or moribund trees of low vigor Veteran tree possessing certain attributes relating to veteran trees	The BS category particular consideration has been given to the following <ul style="list-style-type: none"> • The health, vigor and condition of each tree • The presence of any structural defects in each tree/group and its future life expectancy • The size and form of each tree/group 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 and life expectancy 	

Abbreviations		BS cat: Category in accordance with Table 1 and section 4.5 of BS 5837.	
T – Tree	Feature surveyed as individual tree. Included multi stem trees	Category A	High quality and value (non-fiscal) with at least 40 years remaining life expectancy.
G – Group of trees	Land under a stand of trees with a maximum size of 0.25 hectare.	Category B	Moderate quality and value with at least 20 years remaining life expectancy.
W – Woodland	Land under a stand of trees with, or the potential to achieve, tree canopy cover of 20% or more. The minimum size of woodland Forestry Commission Scotland can grant-aid is 0.25 hectare.	Category C	Low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150 mm
H - Hedge	A hedgerow is a boundary line of bushes which can include trees and is protected if it's: more than 20m long with gaps of 20m or less in its length.	Category U	Unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which it might be desirable to preserve.
# - Estimated value.	See observation for further information	Subcategories	(1) - Mainly arboricultural values (2) - Mainly landscape values (3) - Mainly cultural values including conservation.
VTA – Visual Tree Assessment	Non-invasive method of examining the health and structural condition of individual trees.		

2.1 Appendix Summary

Table 3 BS5837 category summary with tree numbers

SUMMARY	Individual Trees	Total	Groups of Trees, Woodlands, Hedges & Shrubs.	Total
Category U - Unsuitable	T12, T14, T26, T27, T50, T57, T73, T86, T165, T166, T167, T168, T169	13		0
Category A (High Quality / Value)	T97, T156, T157, T159	4		0
Category B (Moderate Quality / Value)	T3, T4, T5, T6, T7, T8, T9, T10, T11, T15, T16, T17, T18, T19, T20, T22, T23, T33, T35, T46, T54, T75, T76, T94, T95, T96, T100, T101, T102, T104, T112, T117, T120, T126, T129, T151, T152, T158, T161, T173	40	H65, H67, H69, H71, H72, H74, H80, H82, H84, H87, G122, H130, H131, H132, G146, G149, G162	17
Category C (Low Quality / Value)	T13, T21, T25, T29, T31, T32, T34, T37, T38, T39, T40, T41, T43, T47, T49, T51, T53, T58, T59, T60, T62, T63, T66, T68, T70, T77, T78, T79, T83, T85, T91, T92, T99, T109, T110, T111, T114, T115, T116, T118, T119, T124, T125, T133, T134, T136, T137, T138, T139, T140, T142, T144, T147, T154, T160, T163, T164, T170, T172	59	H1, H2, H24, G28, G30, H36, H42, G44, H45, H48, H52, H55, H56, H61, H64, H81, G88, H89, H90, H93, H98, H103, H105, H106, H107, H108, H113, H121, H123, H127, H128, H135, G141, G143, H145, G148, G150, G153, G155, G171, G174, G175	42

Table 4 Life stage and BS5837 category summary

SUMMARY	A	B	C	U	TOTAL
Young	0	0	1	0	1
Early Mature	0	5	9	1	15
Semi Mature	0	2	12	1	15
Mature	4	47	76	7	134
Post Mature	0	0	0	1	1
Late Mature	0	3	3	3	9
Ancient / Veteran	0	0	0	0	0
Dead	0	0	0	0	0
TOTAL	4	57	101	13	175

Appendix 3: Tree Survey Schedule

Client: Bellway
 Site: Land off Rothwell Road, Desborough

Surveyed by Phil Barwell of Southern Ecological Solutions
 Survey Date: 27th March 2021

Weather: clear and dry

Abbreviations	
# - Estimated value.	See observation for further information
com - Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
H1	Hawthorn hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Ivy clad Hawthorn hedge Average height 4m Estimated stem 220mm Outside redline boundary	20+	C2	See Tree Survey Plan	See Tree Survey Plan
H2	Hawthorn hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Ivy clad Hawthorn hedge Average height 4m Estimated stem 220mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T3	Tilia cordata (Small Leaved Lime)	Mature	1	550 #	14	5.0		5.0		5.0		5.0		Good	Good	Offsite tree data estimated	40+	B2	6.6	136.8
T4	Tilia cordata (Small Leaved Lime)	Mature	1	450 #	14	4.0		4.0		4.0		4.0		Good	Good	Offsite tree data estimated	40+	B2	5.4	91.6
T5	Pinus sylvestris (Scots Pine)	Early Mature	1	230	8	3.0		3.0		3.0		3.0		Good	Good	Offsite tree not in topo data estimated	20+	B2	2.8	23.9
T6	Chamaecyparis sp. (False Cypress)	Mature	1	300	12	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.6	40.7
T7	Chamaecyparis sp. (False Cypress)	Mature	1	300	12	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.6	40.7
T8	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	450 #	14	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	5.4	91.6
T9	Chamaecyparis sp. (False Cypress)	Mature	1	320	12	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.8	46.3
T10	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	350 #	10	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	4.2	55.4
T11	Chamaecyparis sp. (False Cypress)	Mature	1	260	8	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.1	30.6
T12	Eucalyptus sp. (Eucalyptus Tree)	Early Mature	1	260 #	10	4.0		4.0		4.0		4.0		Poor	Poor	Offsite tree Decay at base	40+	U	3.1	30.6
T13	Pyrus sp. (Pear sp.)	Mature	5	680 com	8	3.0		3.0		3.0		3.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	8.2	210.5
T14	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	500 #	14	6.0		6.0		6.0		6.0		Poor	Fair	Offsite tree Cavity at base Minor Lean	10+	U	6.0	113.1
T15	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	360 #	10	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	4.3	58.6
T16	Chamaecyparis sp. (False Cypress)	Mature	1	300	12	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.6	40.7
T17	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	450 #	10	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	5.4	91.6
T18	Chamaecyparis sp. (False Cypress)	Mature	1	320	8	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.8	46.3

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
# - Estimated value.	See observation for further information
VTA - Visual Tree Assessment	Non-invasive method of examining the health and structural condition of individual trees.
com - Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
T19	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	560 #	15	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	6.7	141.9
T20	Chamaecyparis sp. (False Cypress)	Mature	1	270	11	3.0		3.0		3.0		3.0		Good	Good	Off site data estimated	40+	B2	3.2	33.0
T21	Eucalyptus nicholii (Nichol's Willow-leaf Peppermint)	Mature	1	560 #	15	4.0		4.0		4.0		4.0		Fair	Good	Offsite tree Tearout wounds in croen	40+	C2	6.7	141.9
T22	Chamaecyparis sp. (False Cypress)	Mature	1	290	12	4.0		4.0		4.0		4.0		Good	Good	Off site data estimated	40+	B2	3.5	38.0
T23	Chamaecyparis sp. (False Cypress)	Semi Mature	1	200	6	4.0		4.0		4.0		4.0		Good	Good	Off site data estimated	40+	B2	2.4	18.1
H24	Hawthorn hedge	Early Mature		See Observations	3.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Offsite 75mm stem diameter Height 3.5	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T25	Fraxinus excelsior (Ash)	Mature	2	530 # com	15	8.0		8.0		8.0		8.0		Fair	Fair	Large tearout on stem East Side at 4m Offsite tree	10+	C2	6.4	127.1
T26	Fraxinus excelsior (Ash)	Mature	1	450 #	15	6.0		6.0		6.0		6.0		Poor	Poor	Old Innotus bracket on stem Trunk cavity at 5m	10+	U	5.4	91.6
T27	Fraxinus excelsior (Ash)	Mature	2	910 # com	15	8.0		8.0		8.0		8.0		Poor	Poor	Large tearout on stem East Side at 4.8m Failed limb hung up in adjacent tree Offsite tree	10+	U	11.0	382.3
G28	Fraxinus excelsior (Ash)	Mature		See Observations	14	See Tree Survey Plan								Fair	Fair	Ash x6 Fair condition dead wood throughout the crowns Offsite trees Average height 14m Average stem diameter 450mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T29	Fraxinus excelsior (Ash)	Mature	2	770 # com	15	8.0		8.0		8.0		8.0		Fair	Fair	Minor deadwood through out the crown	10+	C2	9.3	273.7
G30	Fraxinus excelsior (Ash)	Mature		See Observations	12	See Tree Survey Plan								Fair	Fair	Group of ivy clad ash Set 5m back from from redline boundary Height 12 Stem diameter 320mm One tree appears to have partially failed at the footplate and is leaning into site	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T31	Fraxinus excelsior (Ash)	Mature	1	450 #	15	6.0		6.0		6.0		6.0		Fair	Fair	Trees appears to be in decline	10+	C2	5.4	91.6
T32	Fraxinus excelsior (Ash)	Mature	1	350 #	14	5.0		5.0		5.0		5.0		Fair	Fair	n/a	10+	C2	4.2	55.4
T33	Tilia cordata (Small Leaved Lime)	Mature	1	650	15	6.0		6.0		6.0		6.0		Good	Good	Offsite tree data estimated	40+	B2	7.8	191.1

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

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Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
T34	Fraxinus excelsior (Ash)	Mature	1	450	10	5.0		5.0		5.0		5.0		Good	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	5.4	91.6
T35	Tilia cordata (Small Leaved Lime)	Mature	1	550	10	5.0		5.0		5.0		5.0		Good	Good	Offsite tree data estimated	40+	B2	6.6	136.8
H36	Bramble hedgerow with occasional blackthorn	Mature		See Observations	2	See Tree Survey Plan								Fair	Fair	Dense bramble hedgerow with occasional prunus spinosa Height 2 m 75mm diameter	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T37	Fraxinus excelsior (Ash)	Mature	1	650 #	10	5.0		5.0		5.0		5.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree (located outside survey boundary).	40+	C2	7.8	191.1
T38	Fraxinus excelsior (Ash)	Mature	1	650 #	10	5.0		5.0		5.0		5.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree (located outside survey boundary).	40+	C2	7.8	191.1
T39	Fraxinus excelsior (Ash)	Mature	1	650 #	10	5.0		5.0		5.0		5.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree (located outside survey boundary).	40+	C2	7.8	191.1
T40	Fraxinus excelsior (Ash)	Mature	1	650 #	10	5.0		5.0		5.0		5.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree (located outside survey boundary).	40+	C2	7.8	191.1
T41	Fraxinus excelsior (Ash)	Mature	1	450 #	10	6.0		6.0		6.0		6.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree	40+	C2	5.4	91.6
H42	Bramble and blackthorn	Mature		See Observations <small>com</small>	2	See Tree Survey Plan								Fair	Fair	Dense bramble and prunus spinosa hedge Height 2 m 100mm stem diameter	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T43	Fraxinus excelsior (Ash)	Mature	2	510 #	8	5.0		5.0		5.0		5.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Offsite tree (located outside survey boundary).	10+	C2	6.2	120.7

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

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						N	NE	E	SE	S	SW	W	NW							
G44	Blackthorn, bramble and salix caprea group including offsite roadside ash	Mature		See Observations	5	See Tree Survey Plan								Fair	Fair	Blackthorn,bramble and salix caprea Group including offsite roadside Ash Average height 5m Average stem 230mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
H45	Hawthorn, blackthorn and bramble hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Hawthorn,Blackthorn and bramble field boundary hedge Average height 4m Average stem 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T46	Fraxinus excelsior (Ash)	Late Mature	1	990	15	9.0		9.0		9.0		9.0		Good	Fair	Ivy on stem. Some deadwood present consistent with age Growing in ditch line	40+	B2	11.9	443.4
T47	Fraxinus excelsior (Ash)	Late Mature	1	450	9	6.0		6.0		6.0		6.0		Good	Fair	Ivy on stem Ivy encroaching into and competing with crown of tree.	40+	C2	5.4	91.6
H48	Hawthorn, blackthorn, holly and elder hedge	Mature		See Observations	4.5	See Tree Survey Plan								Fair	Fair	Hawthorn Blackthorn Holly and elder hedge Height 4.5m Ivy clad in places	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T49	Fraxinus excelsior (Ash)	Mature	1	650	12	6.0		6.0		6.0		6.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	7.8	191.1
T50	Salix fragilis (Crack Willow)	Mature	1	850	8	4.0		4.0		8.0		4.0		Poor	Poor	Tree has failed at rootplate but is still growing	10+	U	10.2	326.9
T51	Salix caprea (Goat Willow/Great Sallow)	Mature	1	450	8	4.0		4.0		4.0		4.0		Fair	Fair	Congested stems at crown break	40+	C2	5.4	91.6
H52	Hawthorn hedge	Mature		See Observations	4	See Tree Survey Plan								Fair	Fair	Ivy clad Hawthorn hedge row Height 4m Average stem diameter 250mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T53	Fraxinus excelsior (Ash)	Early Mature	1	250	6	4.0		4.0		4.0		4.0		Fair	Fair	Wounding to stem	20+	C2	3.0	28.3
T54	Chamaecyparis sp. (False Cypress)	Mature	1	250 #	4	4.0		4.0		4.0		4.0		Good	Good	Off site data estimated	40+	B2	3.0	28.3
H55	Hawthorn, bramble hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Hawthorn / bramble hedge Ivy clad in places Height 4m Average stem diameter 130mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

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Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
H56	Hawthorn hedge with occasional elder	Mature		See Observations	4	See Tree Survey Plan								Fair	Fair	Hawthorn hedge with occasional elder Average height 4m Average stem 120mm Densely ivy clad in places	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T57	Salix fragilis (Crack Willow)	Late Mature	1	950	8	8.0		8.0		8.0		8.0		Poor	Poor	Extensive trunk decay Tree has partially failed	>10	U	11.4	408.3
T58	Fraxinus excelsior (Ash)	Mature	1	350	9	4.0		4.0		4.0		4.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	4.2	55.4
T59	Fraxinus excelsior (Ash)	Mature	1	550	9	4.0		4.0		4.0		4.0		Fair	Fair	Historically Coppiced ash Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	6.6	136.8
T60	Fraxinus excelsior (Ash)	Mature	1	650	9	4.0		4.0		4.0		4.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	7.8	191.1
H61	Hawthorn hedge with occasional elder	Mature		See Observations com	4	See Tree Survey Plan								Fair	Fair	Hawthorn hedge with occasional elder Average height 4m Average stem 120mm Densely ivy clad in places	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T62	Fraxinus excelsior (Ash)	Mature	3	350 com	5	5.0		5.0		5.0		5.0		Fair	Fair	Dense Ivy encroaching into and competing with crown of tree. Dense ivy on stems.	20+	C2	4.3	58.1
T63	Salix fragilis (Crack Willow)	Early Mature	4	250	6	2.5		2.5		2.5		2.5		Fair	Good	Congested stems at base	20+	C2	3.0	28.6
H64	Hawthorn hedge with occasional willow	Mature		See Observations	3.5	See Tree Survey Plan								Fair	Fair	Hawthorn hedge with occasional willow, lots of gaps scrappy Height 3.5m Average stem diameter 200mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
H65	Hawthorn hedge with occasional willow	Mature		See Observations com	4.5	See Tree Survey Plan								Good	Good	Hawthorn hedge with occasional willow Height 4.5m Average stem diameter 160mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
T66	Fraxinus excelsior (Ash)	Mature	2	530	9	4.0		4.0		4.0		4.0		Fair	Fair	Dense Ivy encroaching into and competing with crown of tree. Dense Ivy on stem.	40+	C2	6.4	127.8
H67	Hawthorn hedge with occasional willow	Mature		See Observations com	4.5	See Tree Survey Plan								Good	Good	Hawthorn hedge with occasional willow Height 4.5m Average stem diameter 160mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
T68	Acer campestre (Field Maple)	Mature	5	470	8	5.0		2.5		4.0		3.0		Fair	Good	Congested stems Week fork	40+	C2	5.7	101.1

Tree Survey Schedule

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Site: Land off Rothwell Road, Desborough

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Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
H69	Hawthorn hedge with occasional willow	Mature		See Observations <small>com</small>	4.5	See Tree Survey Plan								Good	Good	Hawthorn hedge with occasional willow Height 4.5m Average stem diameter 170mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
T70	Fraxinus excelsior (Ash)	Mature	2	410	9.5	2.0		4.0		8.0		4.0		Fair	Good	Congested stems at base Historic lean to south	20+	C2	4.9	76.2
H71	Hawthorn hedge	Mature		See Observations	4.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Height 4.5m Average stem diameter 230mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
H72	Hawthorn hedge	Mature		See Observations	4.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Height 4.5m Average stem diameter 230mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
T73	Fraxinus excelsior (Ash)	Mature	1	900	10	7.0		7.0		7.0		7.0		Poor	Good	Twin stemmed from 1.8m Congested stems Longitudinal Split along trunk Possible closed cavity present	10+	U	10.8	366.4
H74	Hawthorn hedge	Mature		See Observations	3.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Height 3.5m Average stem diameter 240mm	20+	B2	See Tree Survey Plan	See Tree Survey Plan
T75	Fraxinus excelsior (Ash)	Late Mature	1	920	12	5.0		5.0		6.0		6.0		Fair	Fair	Notable Ash Trunk at one metre Deadwood in crown approx 50mm	20+	B2	11.0	382.9
T76	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	330 <small>com</small>	5	3.5		3.5		3.5		3.5		Good	Good	n/a	40+	B2	4.0	49.3
T77	Fraxinus excelsior (Ash)	Mature	3	270 <small>com</small>	8	3.0		3.0		3.0		3.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	3.3	34.8
T78	Fraxinus excelsior (Ash)	Mature	2	190	8	3.0		3.0		3.0		3.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	20+	C2	2.3	16.5
T79	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	280 #	5	3.5		3.5		3.5		3.5		Good	Good	Ivy on stem.	40+	C2	3.4	35.5
H80	Hawthorn hedge	Mature		See Observations	3.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Some gaps with bramble Average height 3.5m Average stem 200mm	40+	B2	See Tree Survey Plan	See Tree Survey Plan

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

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						N	NE	E	SE	S	SW	W	NW							
H81	Hawthorn hedge	Mature		See Observations	3.5	See Tree Survey Plan								Fair	Fair	Hawthorn hedge Some gaps with ivy through out Average height 3.5m Average stem 200mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
H82	Hawthorn and elder hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Hawthorn and elder hedge Average height 4m Average stem diameter 200mm Has been historically cut and laid	40+	B2	See Tree Survey Plan	See Tree Survey Plan
T83	Fraxinus excelsior (Ash)	Early Mature	1	230	6	4.0		4.0		4.0		4.0		Fair	Good	Congested stems at crown break	20+	C2	2.8	23.9
H84	Hawthorn and elder hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Hawthorn and elder hedge Average height 4m Average stem diameter 200mm Has been historically cut and laid	40+	B2	See Tree Survey Plan	See Tree Survey Plan
T85	Fraxinus excelsior (Ash)	Late Mature	1	1200 com	10	4.0		4.0		4.0		4.0		Fair	Good	Historic loss of central leader Trunk cavity commencing at approx 7m extending to 8m	20+	C2	14.4	651.4
T86	Robinia pseudoacacia (False Acacia sp./Black Locust)	Semi Mature	2	250	4	1.8		1.8		1.8		1.8		Poor	Dead	Tree is hung up in secondary stem which has suckered from rootstock	10+	U	3.1	30.4
H87	Hawthorn and elder hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Hawthorn and elder hedge Average height 4m Average stem diameter 200mm Has been historically cut and laid	40+	B2	See Tree Survey Plan	See Tree Survey Plan
G88	Fraxinus excelsior (Ash)	Young		See Observations	5	See Tree Survey Plan								Good	Good	10 no self seeded and 1 williw Ash along centre of ballcourt Height 5m 50mm in diameter	20+	C2	See Tree Survey Plan	See Tree Survey Plan
H89	Hawthorn elder and bramble hedge	Mature		See Observations	3	See Tree Survey Plan								Good	Good	Hawthorn elder and brambke hedge Average height 4m Average stem diameter 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
H90	Hawthorn elder and bramble hedge	Mature		See Observations com	3	See Tree Survey Plan								Good	Good	Hawthorn elder and brambke hedge,scrappy with Young self seeded ash Average height 3m Average stem diameter 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T91	Pinus sylvestris (Scots Pine)	Semi Mature	2	170 com	8	2.0		2.0		2.0		2.0		Good	Good	n/a	40+	C2	2.1	14.2
T92	Pinus sylvestris (Scots Pine)	Early Mature	2	330	9	4.0		4.0		4.0		4.0		Good	Good	n/a	40+	C2	4.1	52.1

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

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						N	NE	E	SE	S	SW	W	NW							
H93	Hawthorn elder and bramble hedge	Mature		See Observations	3	See Tree Survey Plan								Good	Good	Hawthorn elder and bramble hedge Occasional young ash Average height 4m Average stem diameter 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T94	Fraxinus excelsior (Ash)	Early Mature	1	260 #	6	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	3.1	30.6
T95	Fraxinus excelsior (Ash)	Early Mature	1	260 # com	6	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	3.1	30.6
T96	Salix sp. (Willow sp.)	Mature	5	400 #	5	5.0		5.0		5.0		5.0		Good	Good	Offsite tree	40+	B2	4.9	75.5
T97	Chamaecyparis sp. (False Cypress)	Mature	1	350	12	5.0		5.0		5.0		5.0		Good	Good	Offsite tree	40+	A2	4.2	55.4
H98	Hawthorn hedge	Early Mature		See Observations	1.5	See Tree Survey Plan								Fair	Fair	Hawthorn hedge 1.5m 75mm diameter Covered in Russian vine	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T99	Chamaecyparis sp. (False Cypress)	Mature	1	350	14	5.0		5.0		5.0		5.0		Good	Good	Offsite tree Covered in Russian vine	40+	C2	4.2	55.4
T100	Tilia cordata (Small Leaved Lime)	Mature	1	550	15	7.0		7.0		7.0		7.0		Good	Good	Offsite tree	20+	B2	6.6	136.8
T101	Tilia cordata (Small Leaved Lime)	Mature	1	550	15	7.0		7.0		7.0		7.0		Good	Good	Offsite tree	20+	B2	6.6	136.8
T102	Abies koreana (Korean Fir)	Early Mature	1	230	5	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	2.8	23.9
H103	Leylandii, hawthorn and holly hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Leylandii, Hawthorn and holly hedge Height 1.5m Average stem 100mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T104	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	350	12	6.0		6.0		6.0		6.0		Good	Good	n/a	20+	B2	4.2	55.4
H105	Hawthorn hedge	Mature		See Observations	3	See Tree Survey Plan								Fair	Fair	Hawthorn hedge Ivy clad Height 3m Stem diameter 100mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan

Tree Survey Schedule

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Surveyed by Phil Barwell

Weather: clear and dry

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						N	NE	E	SE	S	SW	W	NW							
H106	Hawthorn hedge	Mature		See Observations	3	See Tree Survey Plan								Fair	Fair	Hawthorn hedg Ivy clad Height 3m Stem diameter 100mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
H107	Yew and juniper hedge	Early Mature		See Observations	2	See Tree Survey Plan								Fair	Fair	Yew and juniper hedge Dense bramble in places Height 2m Stem diameter 50mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
H108	Hawthorn and holly hedge	Mature		See Observations	3	See Tree Survey Plan								Good	Good	Hawthorn and holly hedge Height 1.5m Average stem 100mm Dense ivy in places	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T109	Acer platanoides (Norway Maple)	Semi Mature	1	150 #	4	3.0		3.0		3.0		3.0		Good	Good	Offsite tree	40+	C2	1.8	10.2
T110	Fraxinus excelsior (Ash)	Mature	1	450	15	1.0		3.0		5.0		2.0		Fair	Fair	Northern section of tree has been topped at 10m	40+	C2	5.4	91.6
T111	Picea abies (Norway Spruce)	Semi Mature	1	50	4	2.0		2.0		2.0		2.0		Good	Good	Offsite tree	40+	C2	0.6	1.1
T112	Fraxinus excelsior (Ash)	Mature	1	980 #	16	8.0		8.0		8.0		8.0		Good	Good	Offsite tree Recently crown reduced Possible trunk cavity present	40+	B2	11.8	434.5
H113	Hawthorn and elder hedge	Mature		See Observations <small>com</small>	1.5	See Tree Survey Plan								Good	Good	Hawthorn and elder hedge Average height 4m Average stem diameter 150mm Has been historically cut and laid	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T114	Fraxinus excelsior (Ash)	Mature	5	580 <small>com</small>	10	6.0		6.0		6.0		6.0		Good	Good	Ivy encroaching into and competing with crown of tree. Ivy on stem. Deadwood through out the crown upto 50mm in diameter	20+	C2	7.1	156.8
T115	Fraxinus excelsior (Ash)	Mature	2	490	9	6.0		6.0		6.0		6.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem. Deadwood through out the crown upto 30mm in diameter	20+	C2	5.9	109.5
T116	Cedrus atlantica (Atlas Cedar)	Semi Mature	1	150	4	1.5		1.5		1.5		1.5		Good	Good	Offsite tree	40+	C2	1.8	10.2

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
# - Estimated value.	See observation for further information
VTA - Visual Tree Assessment	Non-invasive method of examining the health and structural condition of individual trees.
com - Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
T117	Prunus sp. (Cherry sp.)	Early Mature	1	230 com	4	3.0		3.0		3.0		3.0		Good	Good	Offsite tree	20+	B2	2.8	23.9
T118	Salix matsudana 'Tortuosa' (Corkscrew Willow)	Semi Mature	2	70	3	1.0		1.0		1.0		1.0		Good	Good	Offsite tree	40+	C2	0.8	2.3
T119	Acer campestre (Field Maple)	Semi Mature	1	120 #	4	2.0		2.0		2.0		2.0		Good	Good	Offsite tree	40+	C2	1.4	6.5
T120	Chamaecyparis sp. (False Cypress)	Mature	1	550	4	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	6.6	136.8
H121	Hawthorn hedge	Mature		See Observations	1.5	See Tree Survey Plan								Good	Good	Hawthorn hedge Average height 1.5m Average stem 80mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
G122	Offsite mixed species group 5 conifers 1 birch	Mature		See Observations	6	See Tree Survey Plan								Good	Good	Offsite mixed species group of 5 conifers and 1 birch Average height 6m Average stem diameter 230mm	40+	B2	See Tree Survey Plan	See Tree Survey Plan
H123	Hawthorn hedge	Mature		See Observations com	3.5	See Tree Survey Plan								Fair	Fair	Hawthorn hedge with occasional, rkd lots of gaps scrappy Height 3.5m Average stem diameter 200mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T124	Cerasus avium (Wild Cherry)	Mature	2	260 #	5	2.0		2.0		2.0		2.0		Fair	Good	Offsite tree	40+	C2	3.1	30.6
T125	Betula pendula (Silver Birch)	Semi Mature	1	100	5	2.5		2.5		2.5		2.5		Good	Good	Offsite tree	40+	C2	1.2	4.5
T126	Fraxinus excelsior (Ash)	Semi Mature	1	230 #	8	3.0		3.0		3.0		3.0		Good	Good	Offsite tree	40+	B2	2.8	23.9
H127	Hawthorn hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Offsite Hawthorn hedge 150mm stem Height 4m	40+	C2	See Tree Survey Plan	See Tree Survey Plan
H128	Hawthorn and pyracantha hedge	Mature		See Observations	4	See Tree Survey Plan								Good	Good	Offsite Hawthorn and pyracantha hedge 150mm stem Height 4m	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T129	Chamaecyparis sp. (False Cypress)	Mature	1	230	9	5.0		5.0		5.0		5.0		Good	Good	Offsite tree	40+	B2	2.8	23.9

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
# - Estimated value.	See observation for further information
VTA - Visual Tree Assessment	Non-invasive method of examining the health and structural condition of individual trees.
com - Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
H130	Leylandii hedge	Mature		See Observations	n/a	See Tree Survey Plan								Good	Good	Offsite leylandii hedge 2.5m height 230mm stem diameter	40+	B2	See Tree Survey Plan	See Tree Survey Plan
H131	Leylandii hedge	Mature		See Observations	3	See Tree Survey Plan								Good	Good	Offsite leylandii hedge 3m height 230mm stem diameter	40+	B2	See Tree Survey Plan	See Tree Survey Plan
H132	Leylandii hedge	Mature		See Observations	2	See Tree Survey Plan								Good	Good	Offsite leylandii hedge 2m height 200mm stem diameter	40+	B2	See Tree Survey Plan	See Tree Survey Plan
T133	Fraxinus excelsior (Ash)	Mature	1	350	4	2.0		2.0		2.0		2.0		Poor	Fair	Offsite tree Poorly pruned	20+	C2	4.2	55.4
T134	Carpinus betulus (Hornbeam)	Early Mature	1	250	4	2.0		2.0		2.0		2.0		Poor	Fair	Offsite tree Poorly pruned	20+	C2	3.0	28.3
H135	Hawthorn and bramble hedge	Mature		See Observations <small>com</small>	4	See Tree Survey Plan								Fair	Good	Hawthorn and bramble hedge Average height 4m Average stem diameter 130mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T136	Fraxinus excelsior (Ash)	Mature	4	530	6	5.0		5.0		5.0		5.0		Fair	Good	Dense Ivy encroaching into and competing with crown of tree. Dense Ivy on stem.	20+	C2	6.4	127.3
T137	Fraxinus excelsior (Ash)	Mature	1	340	4.5	4.0		4.0		4.0		4.0		Good	Fair	Densely encroaching into and competing with crown of tree. Dense Ivy on stem.	20+	C2	4.1	52.3
T138	Crataegus monogyna (Common Hawthorn/Quick/May)	Semi Mature	1	150	5	1.0		1.0		1.0		1.0		Good	Good	Ivy on stem.	40+	C2	1.8	10.2
T139	Crataegus monogyna (Common Hawthorn/Quick/May)	Semi Mature	1	150	5	1.0		1.0		1.0		1.0		Good	Good	Ivy on stem.	40+	C2	1.8	10.2
T140	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	240 #	4	1.5		1.5		1.5		1.5		Good	Good	Congested stems Pruned into dome shape Offsite tree	40+	C2	2.9	26.1

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
# - Estimated value.	See observation for further information
VTA - Visual Tree Assessment	Non-invasive method of examining the health and structural condition of individual trees.
com - Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
G141	Hawthorn,occasional Ash	Semi Mature		See Observations	5	See Tree Survey Plan								Fair	Good	Offsite tree group Predominantly hawthorn,occasional Ash Average height 5m Average stem diameter 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T142	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	150 #	5	3.0		3.0		3.0		3.0		Good	Good	Offsite tree Ivy on stem. Dense Ivy encroaching into and competing with crown of tree.	40+	C2	1.8	10.2
G143	Hawthorn	Mature		See Observations	4.5	See Tree Survey Plan								Fair	Fair	Group of offsite hawthorn Ivyclad Average height 4.5 Average stem 240mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T144	Salix sp. (Willow sp.)	Semi Mature	1	270 #	7	4.0		4.0		4.0		4.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	3.2	33.0
H145	Hawthorn hedge	Mature		See Observations	4.5	See Tree Survey Plan								Fair	Fair	ffsite hawthorn hedgerow Ivyclad Average height 4.5 Average stem 260mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
G146	Group of offsite conifers 1x Picea and cupressus visible but more trees beyond within influential distance	Mature		See Observations	14	See Tree Survey Plan								Good	Good	Group of offsite conifers 1x Picea and cupressus visible but more trees beyond within influential distance Average height 14m Estimated stem 300mm	40+	B2	See Tree Survey Plan	See Tree Survey Plan
T147	Fraxinus excelsior (Ash)	Mature	1	600 #	12	7.0		7.0		7.0		7.0		Fair	Fair	Offsite tree. Ivy on stem. Ivy encroaching into and competing with crown of tree.	40+	C2	7.2	162.9
G148	Hawthorn hedge	Mature		See Observations	5	See Tree Survey Plan								Fair	Fair	Scrubby Hawthorn hedge with gaps Densely ivy clad Average height 5m Average stem diameter 180mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
# - Estimated value.	See observation for further information
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com – Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
G149	Group of offsite conifers 1x Picea and cupressus visible but more trees beyond within influential distance	Mature		See Observations	14	See Tree Survey Plan								Good	Good	Group of offsite conifers 1x Picea and cupressus Average height 14m Estimated stem 300mm	40+	B2	See Tree Survey Plan	See Tree Survey Plan
G150	Hawthorn hedge	Mature		See Observations	5	See Tree Survey Plan								Fair	Fair	Scrubby Hawthorn hedge with gaps Densely ivy clad Average height 5m Average stem diameter 180mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T151	Eucalyptus sp. (Eucalyptus Tree)	Mature	1	350	15	5.0		5.0		5.0		5.0		Good	Good	Offsite tree	40+	B2	4.2	55.4
T152	Fraxinus excelsior (Ash)	Mature	1	300	10	4.0		4.0		4.0		4.0		Good	Good	Offsite tree	40+	B2	3.6	40.7
G153	0	Semi Mature		See Observations <small>com</small>	2	See Tree Survey Plan								Good	Good	Low level scrub Prunus ,Hawthorn ,occasional willow Height 2m 50mm stem diameter	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T154	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	2	290	8	4.0		4.0		4.0		4.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	3.5	38.6
G155	Elder Hawthorn and bramble	Early Mature		See Observations	4	See Tree Survey Plan								Fair	Fair	Dense low level scrub Elder Hawthorn and bramble Height 4m Average stem 150mm	40+	C2	See Tree Survey Plan	See Tree Survey Plan
T156	Fagus sp. (Beech sp.)	Mature	1	1500	15	9.0		9.0		9.0		9.0		Good	Good	n/a	40+	A2	15.0	706.9
T157	Pinus sylvestris (Scots Pine)	Mature	1	900	15	8.0		8.0		8.0		8.0		Good	Good	Offsite tree Ivy on stem.	40+	A2	10.8	366.4
T158	Larix decidua (European Larch/Common Larch)	Mature	1	580	9	4.0		6.0		3.0		2.0		Fair	Good	Leaning to west Historic loss of central leader	40+	B2	7.0	152.2
T159	Tilia cordata (Small Leaved Lime)	Mature	1	600	10	6.0		6.0		6.0		6.0		Good	Good	n/a	40+	A2	7.2	162.9

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

Survey Date: 27th March 2021

Abbreviations	
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Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
T160	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	260	5	3.5		3.5		3.5		3.5		Fair	Fair	Ivy on stem. Ivy encroaching into and competing with crown of tree.	40+	C2	3.1	30.6
T161	Tilia cordata (Small Leaved Lime)	Mature	1	900	12	6.0		6.0		6.0		6.0		Fair	Good	Partially occluded wound on Eastern side	20+	B2	10.8	366.4
G162	Mixed broadleaves including alder, birch and conifers	Mature		See Observations	14	See Tree Survey Plan								Good	Good	Group of mixed broadleaves including alder, birch and conifers Unaccessible offsite trees Est height 14m Estimated stem diameter 450mm	40+	B2	See Tree Survey Plan	See Tree Survey Plan
T163	Crataegus monogyna (Common Hawthorn/Quick/May)	Mature	1	290	4	2.5		2.5		2.5		2.5		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	3.5	38.0
T164	Salix sp. (Willow sp.)	Mature	1	1500 com	10	8.0		8.0		8.0		8.0		Fair	Fair	Ivy on stem. Ivy encroaching into and competing with crown of tree.	20+	C2	15.0	706.9
T165	Salix sp. (Willow sp.)	Post Mature	3	1860	10	8.0		12.0		8.0		8.0		Poor	Poor	One stem has failed but is regrowing Major trunk decay Ivy on stem. Ivy encroaching into and competing with crown of tree.	20+	U	15.0	706.9
T166	Salix sp. (Willow sp.)	Mature	1	890	10	8.0		8.0		8.0		8.0		Poor	Poor	One stem has failed Major trunk decay Ivy on stem. Ivy encroaching into and competing with crown of tree.	20+	U	10.7	358.3
T167	Salix sp. (Willow sp.)	Late Mature	1	890 com	10	8.0		8.0		8.0		8.0		Poor	Poor	Central leader has failed Major trunk decay present	20+	U	10.7	358.3
T168	Salix sp. (Willow sp.)	Late Mature	2	1740 com	10	8.0		8.0		8.0		8.0		Poor	Poor	Central leader has failed Major trunk decay present in both stems, Southern stem being held up by Ash tree	20+	U	15.0	706.9
T169	Fraxinus excelsior (Ash)	Mature	3	490	4	4.0		4.0		4.0		4.0		Poor	Poor	Major trunk decay	10+	U	6.0	112.0

Tree Survey Schedule

Client: Bellway

Surveyed by Phil Barwell

Weather: clear and dry

Site: Land off Rothwell Road, Desborough

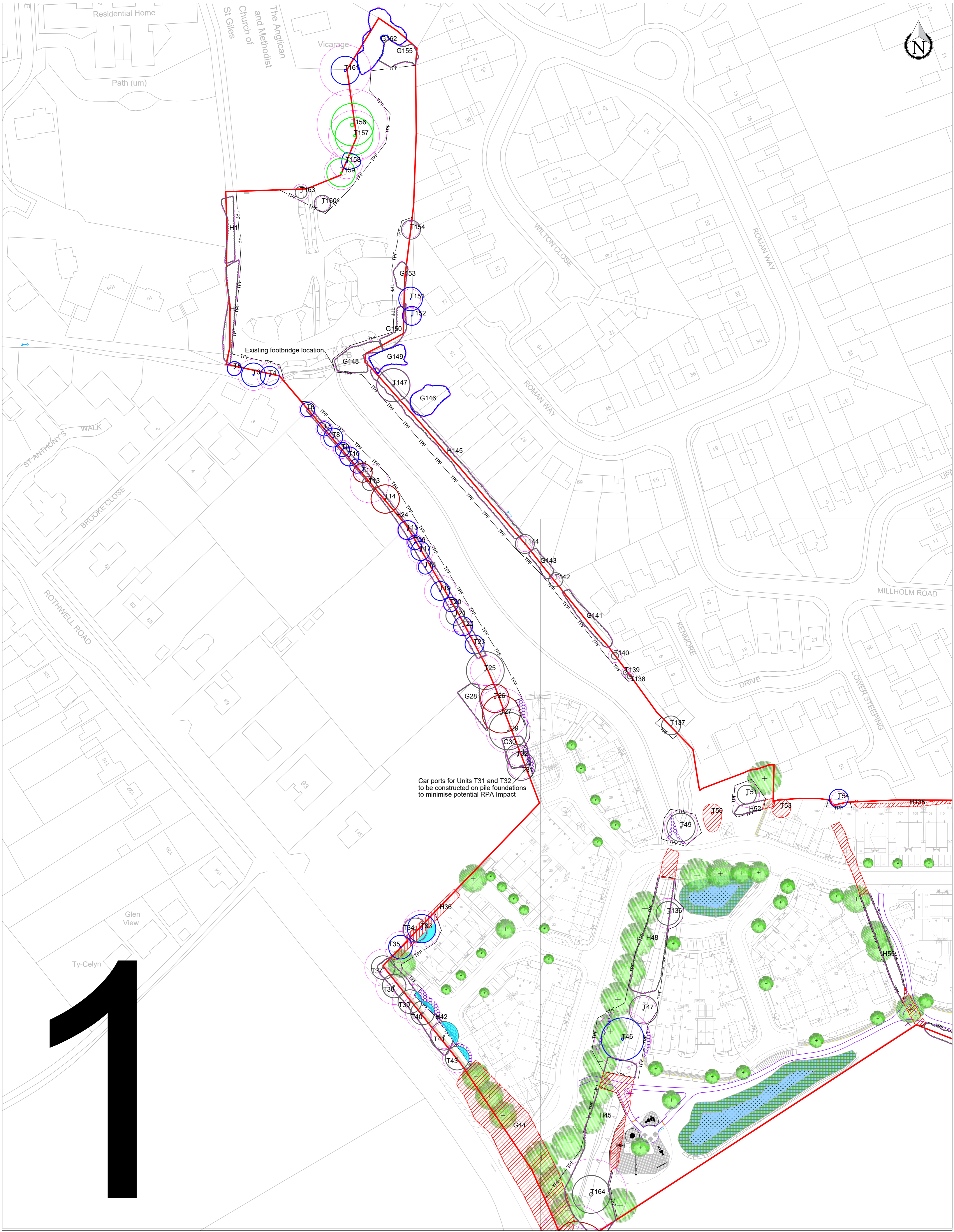
Survey Date: 27th March 2021

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com – Combined stem diameter	In accordance with BS5837:2012

Tree No.	Species	Life Stage	No of Stems	Stem Diameter - DBH (mm)	Height (m)	Crown Spread (m)								Structural Condition	Physiological Condition	Observations	Life Expectancy	BS5837 Category	RPA Radius (m)	RPA Area (m2)
						N	NE	E	SE	S	SW	W	NW							
T170	Fraxinus excelsior (Ash)	Mature	1	650	10	7.0		7.0		7.0		7.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	7.8	191.1
G171	Salix sp. (Willow sp.)	Mature		See Observations	12	See Tree Survey Plan								Fair	Fair	Group of Riverside willows Densely ivy clad Some collapsed stems Average stem diameter 430mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
T172	Salix sp. (Willow sp.)	Late Mature	1	860	14	8.0		8.0		8.0		8.0		Fair	Fair	Ivy encroaching into and competing with crown of tree. Ivy on stem.	40+	C2	10.3	334.6
T173	Salix sp. (Willow sp.)	Late Mature	1	2100	14	8.0		8.0		8.0		8.0		Good	Good	Veteran willow	40+	B2	15.0	706.9
G174	Salix sp. (Willow sp.)	Mature		See Observations	12	See Tree Survey Plan								Fair	Fair	Group of Riverside willows Some collapsed stems Average stem diameter 530mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan
G175	Salix sp. (Willow sp.)	Mature		See Observations	12	See Tree Survey Plan								Fair	Fair	Group of Riverside willows Some collapsed stems Average stem diameter 530mm	20+	C2	See Tree Survey Plan	See Tree Survey Plan

Appendix 4: Tree Protection Plan (TPP)

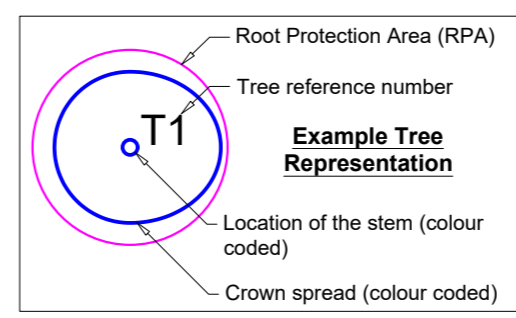
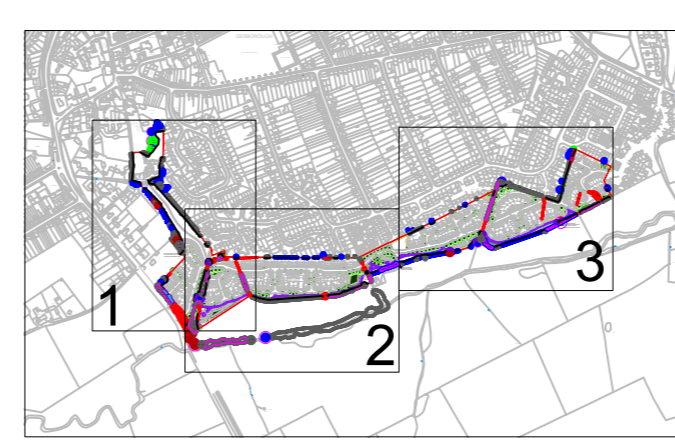
See attached plan on the following page



Legend

- 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
- Category U - Trees unsuitable for retention**
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years
- Group of trees (G) / hedgerows (H) / woodlands (W) / shrubs (S) - Colour coded according to categories above**
- Root Protection Area (RPA)**
- Survey boundary line**
- Trees to be removed**
- TPF** - Tree Protective Fencing (TPF)
- Facilitation crown pruning/cutback**

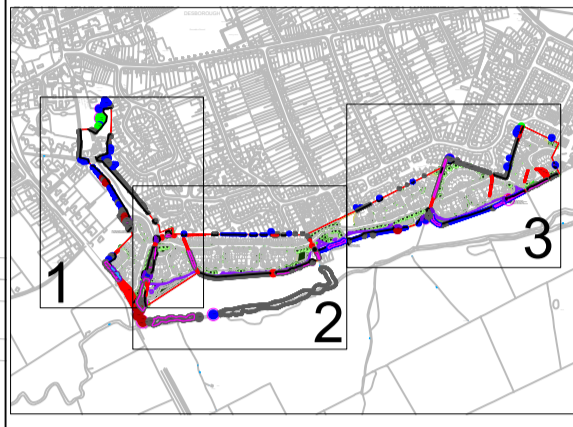
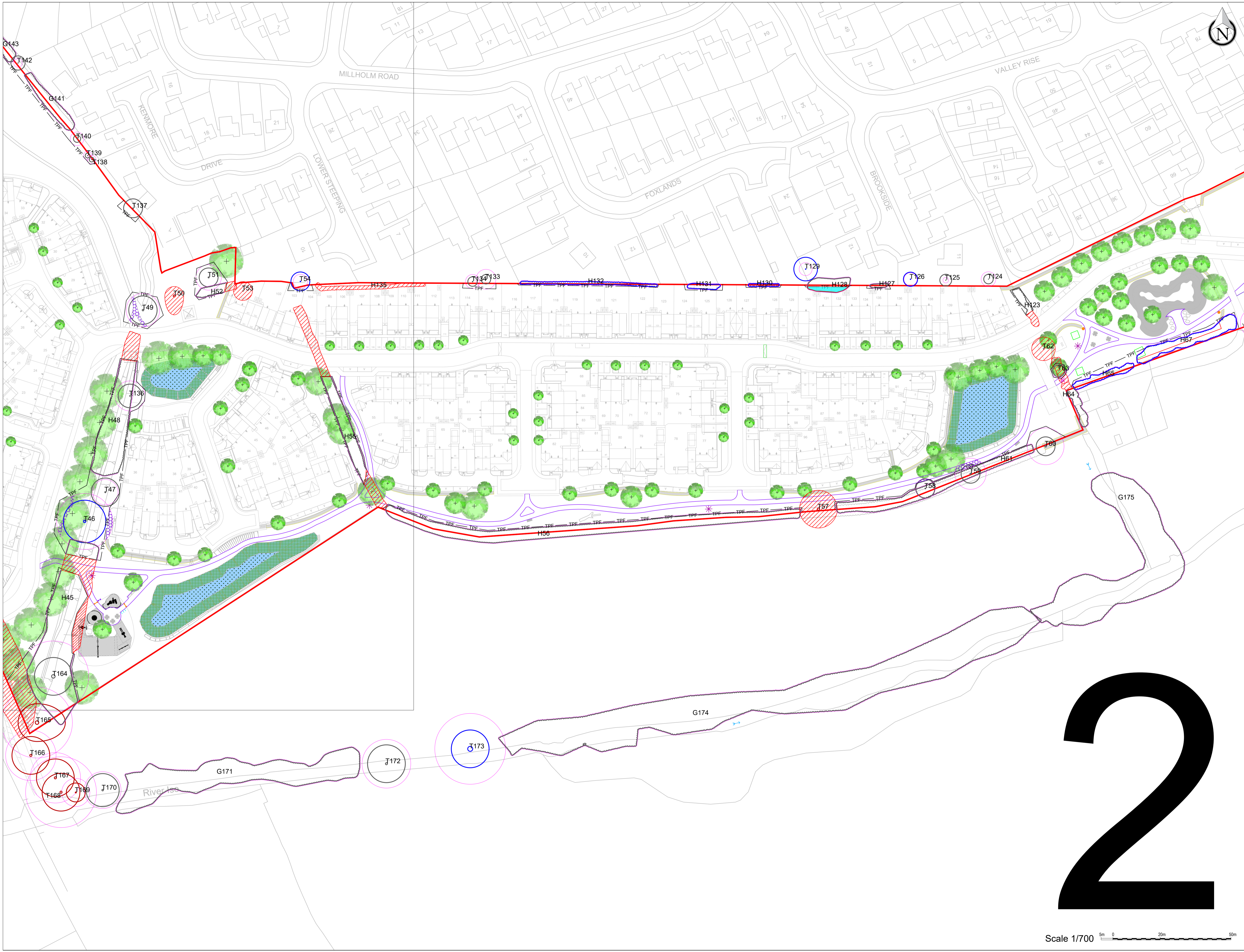
RPA Incursions -
(Root investigations will be carried out under arboricultural supervision before the commencement of works in order to confirm if roots are present at these locations, with a view to minor root pruning, if necessary. If significant roots are identified at this location, then alternative 'no-dig' design solutions such as a cellular confinement system will be required)



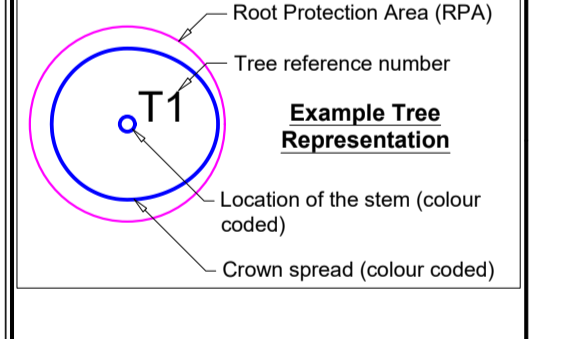
This drawing was produced in colour - a monochrome copy should not be relied upon. Contractors must check all dimensions on site. Any discrepancies must be reported to the arboricultural consultant before proceeding.



Rev	Update	Date
A	Layout DR-A-0220-S2-PS	01/02/23
Site		
Land off Rothwell Road, Desborough		
Client		
Bellway		
Drawing title		
Drawing 1 of 3 Tree Protection Plan		
Drawing no.	Scale	Date
TPP/Desborough Kett/02-03-23	1/700@A1	02/03/23
Revision	Drawn by	Checked by
A	TI	GM



- Legend**
- 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
 - Category U - Trees unsuitable for retention. Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years
 - G Group of trees (G) / hedges (H) / woodlands (W) / shrub (S) - Colour coded according to categories above
 - Root Protection Area (RPA)
 - Survey boundary line
 - Trees to be removed
 - TPF Tree Protective Fencing (TPF)
 - Facilitation crown pruning/cutback
 - RPA Incursions - (Root investigations will be carried out under arboricultural supervision before the commencement of works in order to confirm if roots are present at these locations, with a view to minor root pruning, if necessary. If significant roots are identified at this location, then alternative 'no-dig' design solutions such as a cellular confinement system will be required)



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SES Southern Ecological Solutions, Sudbury Stables Downham, Essex CM11 1LB
 Phone: 01268 71021
 Website: www.ses-eco.co.uk

Rev	Update	Date
A	Layout DR-A-0220-S2-PS	01/02/23

Site: Land off Rothwell Road, Desborough

Client: Bellway

Drawing title: Drawing 2 of 3
Tree Protection Plan

Drawing no.	Scale	Date
TPP/Desborough Kett/02-03-23	1/700@A1	02/03/23

Revision	Drawn by	Checked by
A	TI	GM

Scale 1/700 5m 0 20m 50m

Appendix 5: Tree Protection Barriers & Ground Protection Design

Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place. The default specification will be in accordance with *Section 6.2.2.2 of BS 5837:2012*, as set out below.

5.1 Specifications

Barrier shall be a minimum 2 m high. It shall consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated below. The vertical tubes should be spaced at a minimum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. See Figure 2 overleaf.

Where site circumstances and the associated risk of damaging incursions into the RPA do not necessitate the default level of protection, an alternative specification may be used if agreed with the local authority. An example would be 'Heras' type welded mesh panels on rubber or concrete feet. The panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabiliser struts. See Figure 3 overleaf. All-weather notices should be attached to the barrier with words such as 'TREE PROTECTION ZONE - NO ACCESS'.

5.2 Location

Barriers shall be positioned on the perimeter of the Root Protection Area to define the Construction Exclusion Zone or as specified in the Tree Protection Plan.

The Tree Protective Fencing is represented on the Tree Protection Plan by a black linetype containing the letters 'TPF'.

Figure 1 Example of welded mesh barriers in use

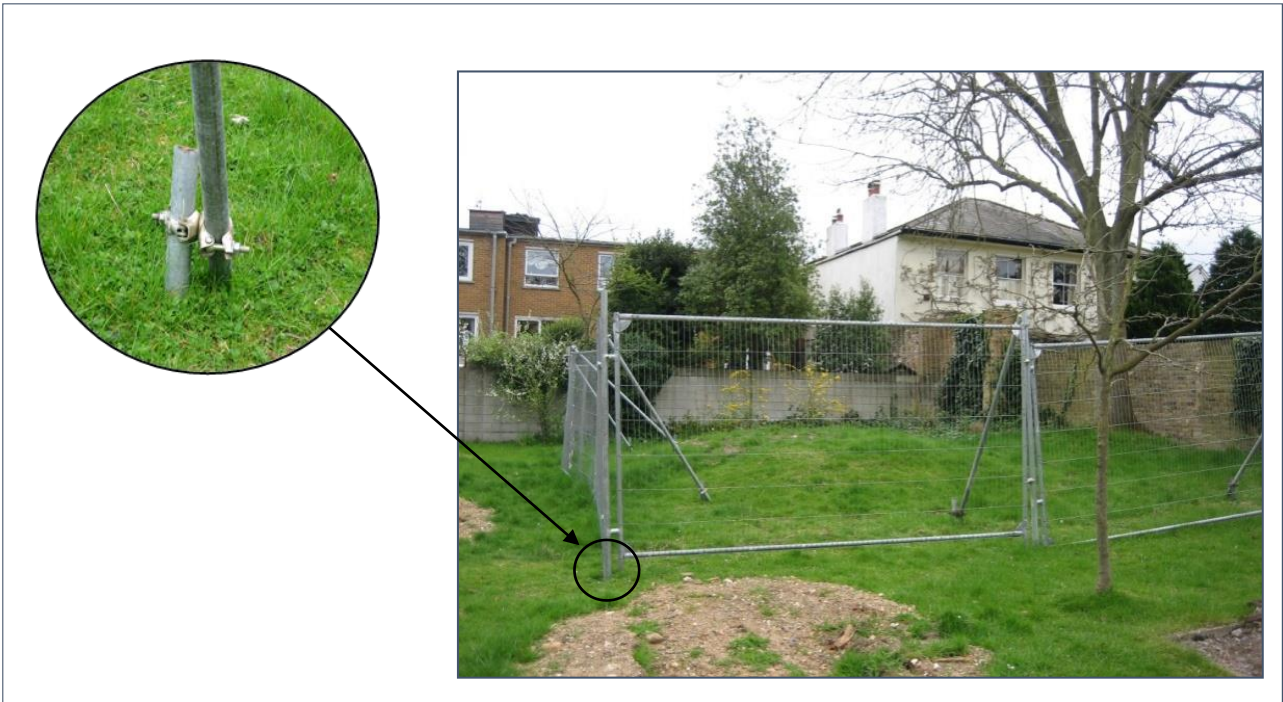


Figure 3 Default specification or protective barrier

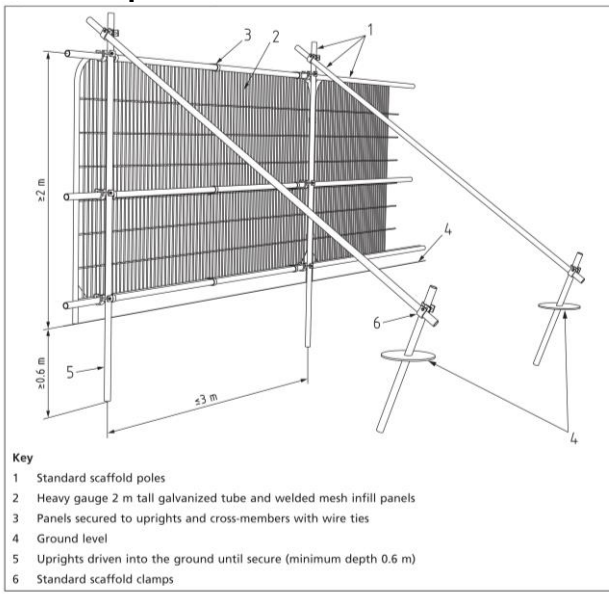
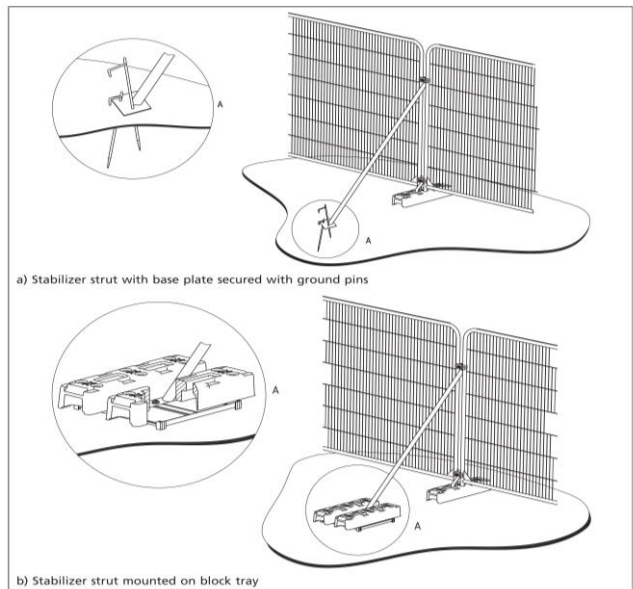


Figure 2 Examples of above-ground stabilizing system



Figures above are reproduced with the permission of the British Standards Institute.

5.3 Ground protection

In areas where it is not possible to erect protective fencing, ground protection must be used to protect the CEZ of trees. Where it has been agreed during the design stage, and as shown on the tree protection plan, that vehicular or pedestrian access for the construction operation may take place within the CEZ, the possible effects of construction activity should be addressed by a combination of barriers and ground protection. The position of the barrier may be within the CEZ at the edge of the agreed working zone, but the soil structure beyond the barrier to the edge of the CEZ should be protected with ground protection. This must be installed before any site activity takes place to protect soil structure and tree roots.

Ground protection must be fit for the purpose of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil. It might comprise one of the following:

- *“for pedestrian movements or the erection of scaffolding within the RPA the installation of ground protection in the form of a single thickness of scaffold boards either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip laid onto a geotextile;*
- *for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards or panels placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane; or for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*

The following is a list of suppliers of temporary ground protection including polymer, metal or wooden panels. Other companies supply similar products, and the following are given only as an example:

- www.ground-guards.co.uk
- www.trakmatseurope.com
- www.centriforce.com
- www.marwoodgroup.co.uk
- www.groundtrax.com

Cellular confinement no-dig systems can also be used.

Figure 4 Examples of proprietary ground protection panels



Appendix 6: Methods of Work Close to Trees

6.1.1 Guidance for working within RPAs

(This chapter sets out the general principles that must be followed when working in RPAs).

6.1.2 Removal of hard surfaces within RPAs

All structures including hard surfaces, walls and fences within CEZs must be removed following the methods detailed below to minimise damage to tree roots.

The use of conventional tracked and wheeled machinery causes damage to soil structure from compaction and damage to roots from excavation and must not be used within the CEZ. All areas of hard surfacing requiring removal within a CEZ will be broken up using a hand-held pneumatic drill or mounted hydraulic breaker attached to a digger located outside the CEZ. The broken rubble will then be removed by hand.

The only exception to this is where the hard surface is of such a size as not to be reachable from outside the CEZ. In this situation, a rubber tracked mini digger will be used. The maximum working height of the machine must be less than the lowest branch of any overhanging trees.

The mini digger will work from the existing hard surface pulling the debris away from the tree/s.

No excavation of existing soil beneath the hard surface will take place.

Immediately after removal of the hard surface, topsoil or sharp sand must be used to cover the soil surface and any roots to prevent drying out.

Upon completion, the protective fencing must be moved out to the edge of the CEZ or ground protection used if access is required.

6.1.3 Services

The location and direction of new services should be designed to allow for services to be routed away from the RPAs of retained trees.

If any services need to run through a CEZ, the main contractor must contact the project arboriculturist before any works are undertaken. The agreement will then be sought from the LPA tree officer on methodology. Works will only begin with the agreement of the LPA. The methodology used must comply with *NJUG Volume 4: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees*, which can be summarised as:

- *hand excavate only;*
- *work carefully around roots only cutting as a last resort;*
- *do not cut roots over 25 mm in diameter without referring to the project arboriculturist, and*
- *for roots, less than 25 mm in diameter use a sharp tool to make a clean cut leaving as small a wound as possible.” (BS5837:2012)*

6.1.4 New hard surfaces within RPAs

Where it has been agreed with the LPA that hard surfaces are acceptable within RPAs of retained trees, these will require designing to be of above ground, no-dig construction to minimise the impact on tree roots and soil structure. In addition, finished surfaces of the car parking and paved areas will need to be of a porous design to allow water and an air passage in and out.

An illustrative example of a cellular confinement no-dig system can be found below. The actual system will need to be designed by a structural engineer to accommodate the loadings anticipated

The principles to follow are:

- *“no excavation other than the removal of existing hard surfaces if required, or the removal of surface vegetation and no more than 50 mm of leaf litter, vegetation debris etc.;*
- *a method to spread and support the load of the hard surface and anticipated usage without causing compaction of the soil structure beneath;*
- *the use of a porous sub-base and finishing layer to allow water and air diffusion in and out of the soil;*
- *porosity must be designed to be long-term and not to block with fine particles in the short-term; therefore irregular, no-fines aggregate must be used; and*
- *the pH of the aggregate must be considered as many conventional road stones have very high pH values which can damage susceptible trees and therefore aggregates with a near neutral pH should be preferred.” (BS5837:2012)*

6.2 Examples of a Cellular Confinement System

Figure 5 Cellular Confinement System - Transition detail (Ramp)

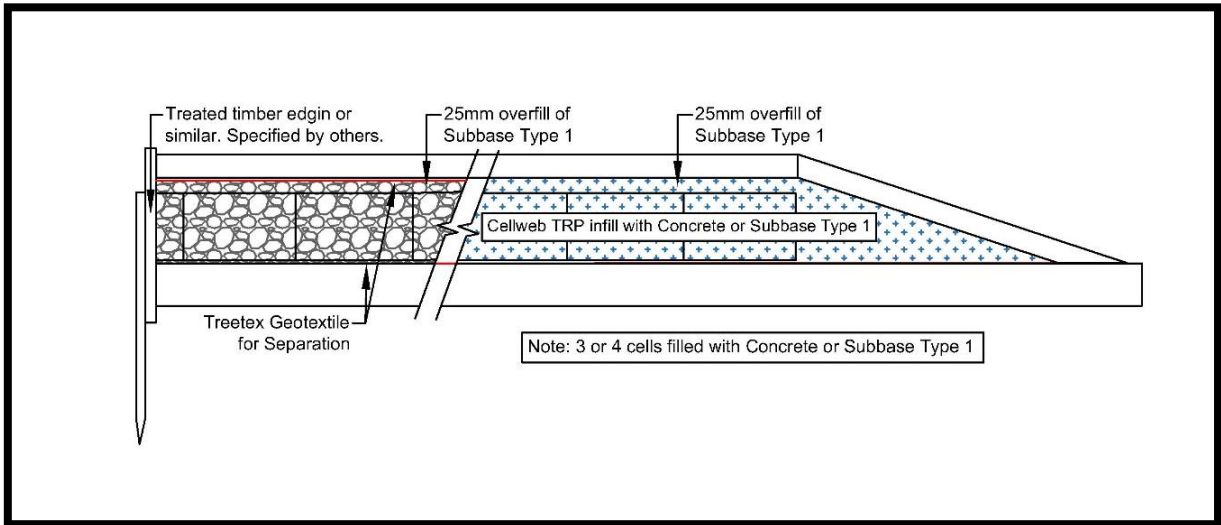


Figure 6 Cellular Confinement System - Transition detail (Flat)

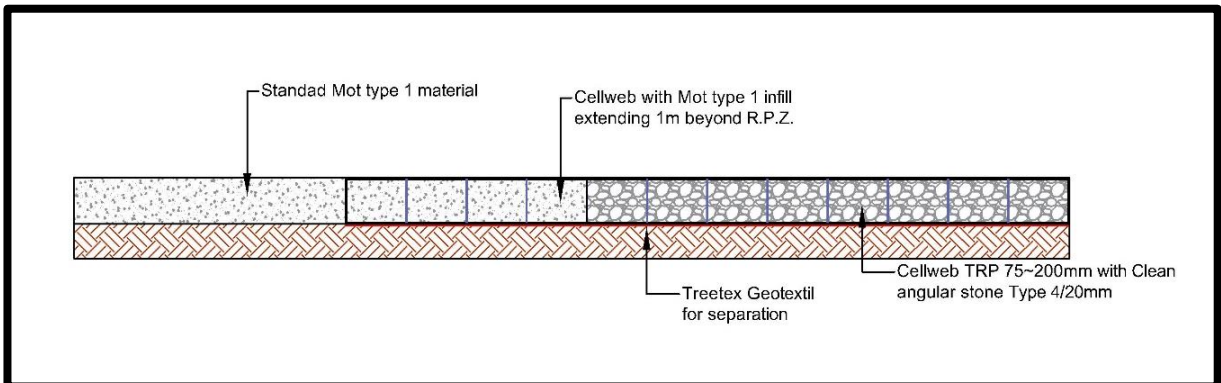


Figure 7 Cellular Confinement System - Kerb Edging

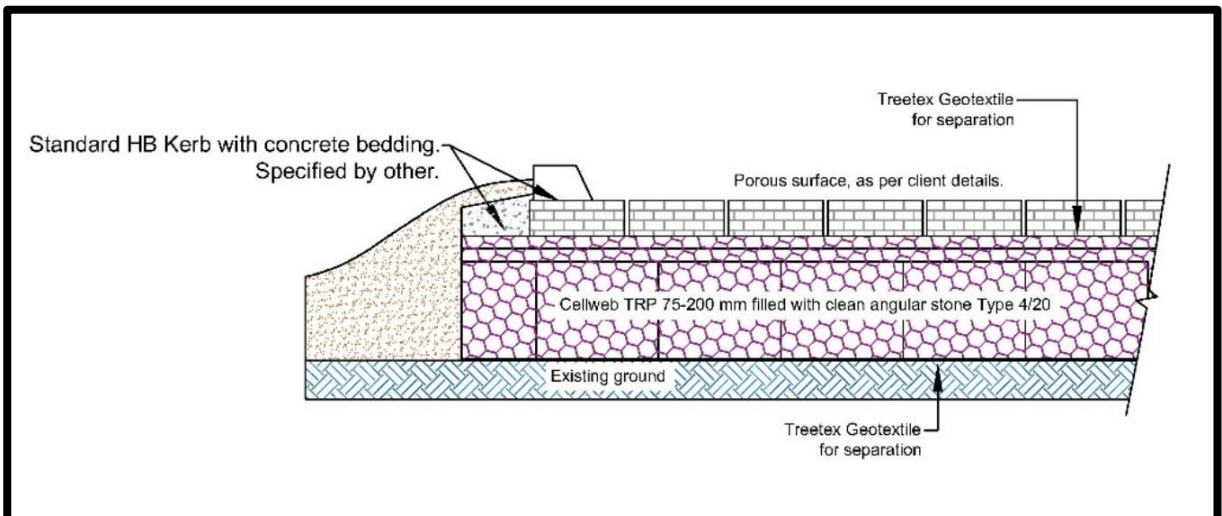


Figure 8 Cellular Confinement System - Timber Edging

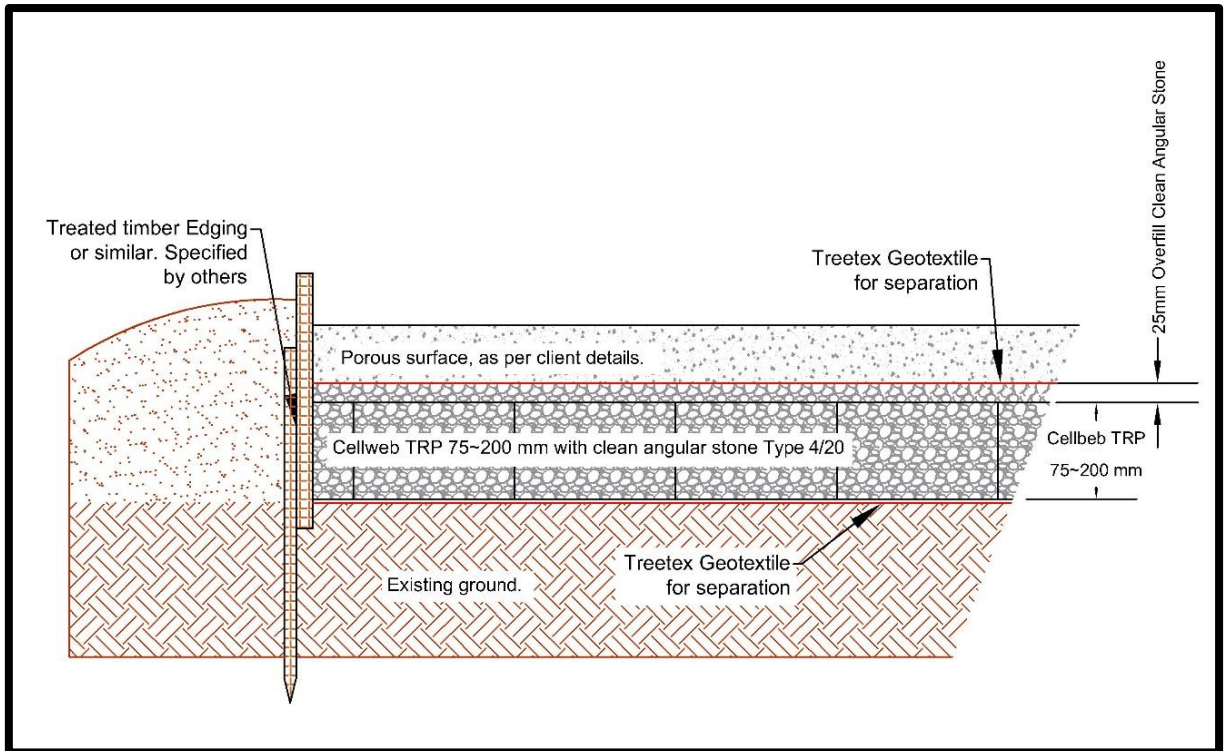


Figure 9 Examples of Cellweb filling with angular stone



6.3 Fencing within RPAs

Where posts are to be installed within RPAs, the holes must be dug carefully by hand. If roots with a diameter of 25 mm or greater are found, the position of the post must be moved. Roots smaller than 25 mm diameter can be cut with sharp tools leaving as small a wound as possible. The sides of the hole should be lined with an impermeable membrane such as plastic sheeting to prevent the caustic and toxic effects of wet cement in the concrete from damaging tree roots. In the event the of finding roots greater than 25 mm whereby the posts cannot be relocated, special construction methods will need to be used with onsite supervision. The detail of which will form part of the Arboricultural Method Statement.

6.4 Landscaping works within RPAs

Landscape operations within tree protection zones have the potential to damage trees if not carried out with care; in addition, the removal of protective fencing to carry out landscape operations may allow other contractors in previously protected areas.

If protective fencing is taken down to facilitate landscaping operations, the area of the CEZ must be delineated by pins and marker tape, spray paint, or some other method to clearly show the extent of the CEZ.

The preparation of soil for planting and turfing must be carried out by hand where within CEZs. Cultivation should be kept to a minimum and new topsoil added must not exceed 100mm in depth within 1m of the stem of any tree.

Topsoil and other materials must be transported by wheelbarrow on running boards when working within CEZs.

Appendix 7: Tree Work Schedule

Tree No.	Species	Proposed Works	Reason	BS5837 Category
G30	Fraxinus excelsior (Ash)	Facilitation Crown Pruning Cutback	To accommodate the layout	C2
T33	Tilia cordata (Small Leaved Lime)	Facilitation Crown Pruning Cutback	To accommodate the layout	B2
H36	Bramble hedgerow with occasional blackthorn	Removal	To accommodate the layout	C2
T39	Fraxinus excelsior (Ash)	Facilitation Crown Pruning Cutback	To accommodate the layout	C2
T40	Fraxinus excelsior (Ash)	Facilitation Crown Pruning Cutback	To accommodate the layout	C2
T43	Fraxinus excelsior (Ash)	Facilitation Crown Pruning Cutback	To accommodate the layout	C2
G44	Blackthorn, bramble and salix caprea group including offsite roadside ash	Removal	To accommodate the layout	C2
H45	Hawthorn, blackthorn and bramble hedge	Part removal	To accommodate the layout	C2
T47	Fraxinus excelsior (Ash)	Removal	To accommodate the layout	C2
T50	Salix fragilis (Crack Willow)	Removal	To accommodate the layout	U
H52	Hawthorn hedge	Part removal	To accommodate the layout	C2
T57	Salix fragilis (Crack Willow)	Removal	To accommodate the layout	U
T62	Fraxinus excelsior (Ash)	Removal	To accommodate the layout	C2
H64	Hawthorn hedge with occasional willow	Part removal	To accommodate the layout	C2
H84	Hawthorn and elder hedge	Part removal	To accommodate the layout	B2
T86	Robinia pseudoacacia (False Acacia sp./Black Locust)	Removal	To accommodate the layout	U
H87	Hawthorn and elder hedge	Part removal	To accommodate the layout	B2
G88	Fraxinus excelsior (Ash)	Removal	To accommodate the layout	C2
H90	Hawthorn elder and bramble hedge	Removal	To accommodate the layout	C2
T91	Pinus sylvestris (Scots Pine)	Removal	To accommodate the layout	C2
T92	Pinus sylvestris (Scots Pine)	Removal	To accommodate the layout	C2
T95	Fraxinus excelsior (Ash)	Facilitation Crown Pruning Cutback	To accommodate the layout	B2
H98	Hawthorn hedge	Removal	To accommodate the layout	C2
H107	Yew and juniper hedge	Removal	To accommodate the layout	C2
H113	Hawthorn and elder hedge	Part removal	To accommodate the layout	C2
H123	Hawthorn hedge	Part removal	To accommodate the layout	C2

Tree No.	Species	Proposed Works	Reason	BS5837 Category
H128	Hawthorn and pyracantha hedge	Facilitation Crown Pruning Cutback	To accommodate the layout	C2
H135	Hawthorn and bramble hedge	Removal	To accommodate the layout	C2

Appendix 8: Specific Report Caveat and References

- 8.1 The survey is concerned solely with arboricultural issues.
- 8.2 Trees are dynamic living organisms whose health and the condition can change rapidly. Any changes to the tree or conditions close to the tree may change the stability and condition of the tree and a further examination would be required and may affect the validity of this report.
- 8.3 Hedges and dense tree belts often contain more than one species of vegetation and in certain circumstances it may not be possible (due to density, size, time of year) to identify all species within a hedge or dense tree belt. In this eventuality the tree schedule will identify this as may contain high water demanding species and, in these cases, a further survey will be required ahead of the design process.
- 8.4 Vegetation can establish very quickly on and off site. It is the responsibility of the client to ensure that prior to the design of hard landscaped areas, infrastructure and foundations where trees need to be considered as part of the design process, a walkover survey is instructed and undertaken to identify any vegetation that may alter the designs as required by the NHBC Guidelines Chapter 4.2 and any other building standard or regulation relevant to the proximity of trees and development.
- 8.5 The arboriculturist must be involved at all stages throughout the development process to ensure that any impacts to trees and from trees have been considered and that any design or layout changes are checked as soon as possible to avoid delays and changes that may be necessary after review.
- 8.6 In order for SES to provide comment in respect of impacts to trees within the Arboricultural Impact Assessment and the Arboricultural Method Statement we will require the most up to date details of the design and, where known the drainage and utility runs as soon as possible. SES cannot be held responsible in the event of changes to a design or layout that may affect the impact to trees or a negative response from planning authorities where the most up to date information has not been provided or is not received by us where time permits that we can assess the layout changes and provide our view.
- 8.7 When working with the constraints of trees the design should follow a mitigation hierarchy and look to avoid all root protection areas where possible. Where this can't be achieved the arboriculturist will provide advice in respect of retention, loss or working within a Root Protection Area.
- 8.8 This report is valid for 12 months.

8.9 Copyright and non-disclosure

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