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HALLAM LAND MANAGEMENT LIMITED

NEWARK ROAD, SUTTON IN ASHFIELD

ARBORICULTURAL IMPACT ASSESSMENT

JULY 2022

DATE ISSUED: 15/07/2022
JOB NUMBER: ST19319
REPORT NUMBER: 002
VERSION: V2.0
STATUS: FINAL

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ARBORICULTURAL IMPACT ASSESSMENT

JUNE 2022

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DRAWINGS	TITLE	SCALE
ST19319 - 001 Rev. B	Tree Protection Plan Sheets 1 & 2	1:500@A0

1 INTRODUCTION

1.1 Brief

- 1.1.1 Wardell Armstrong LLP (WA) was commissioned by Hallam Land Management Limited to undertake a BS 5837 tree survey and to assess and report on the impacts on the trees and hedgerows in connection with a proposed housing development at land to the south of Newark Road, Sutton in Ashfield (Ordnance Survey grid reference SK 51511 58537. For the purpose of this report, this will be referred to as the 'Site' hereafter.
- 1.1.2 This report supersedes the Land off Kirby in Ashfield Arboricultural Constraints Report (Wardell Armstrong 2017) that was prepared to accompany the 2017 outline planning application (planning reference number V/2017/0565). This is required as the time sensitive baseline information obtained to inform the 2017 is (at the time of writing) five years old and out of date. In addition to updating the baseline conditions, this report also reflects changes to planning policy and guidance that have occurred since the original report was prepared.
- 1.1.3 The purpose of this report is to provide an Arboricultural Impact Assessment (AIA), in order to evaluate the direct and indirect effects of the proposed development layout design on the trees and hedgerows surveyed. These include trees and hedgerows identified within the Site, as well as those located off-site but within influencing distance of the Site. Where there are impacts from the proposed development, this report recommends, where feasible, mitigation measures to be taken to ensure that important trees and hedgerows are adequately considered during the design and construction process. Where trees and hedgerows must be removed to enable the development, potential compensation measures are proposed, where feasible.
- 1.1.4 The BS5837 tree survey was undertaken by Jenna Young, Arboriculturist with WA, on 16th March 2022. This, in combination with the proposed layout, supporting documents/drawing and any liaison we have had with the design team and the LPA, forms the basis of our assessment.
- 1.1.5 If planning permission is granted for the development assessed in this report, it is usual for the Local Planning Authority (LPA) to condition an Arboricultural Method Statement (AMS). An AMS would set out the specifications and methodologies for the implementation of tree protection measures and would also provide a methodology for any proposed works that either encroach within the Root Protection Areas (RPAs)

of retained trees and/ or that have the potential to result in loss or damage to those trees.

- 1.1.6 This AIA report and attached Tree Protection Plan (TPP) accords with the methodologies and guidance set out in British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (The British Standards Institution, 2012).

1.2 **Site Context**

- 1.2.1 The Site, which consists of agricultural land, is located on the south-eastern boundary of the town of Sutton in Ashfield. To the north, the Site is bounded by Newark Road with industrial premises beyond. To the east, the Site is bordered by Coxmoor Road (B6139) with open agricultural land and Sherwood Way South (B6139) beyond. To the south, the Site is bordered by open agricultural land and residential properties. To the west the Site is bordered by existing dwellings on Searby Road, and open agricultural land to the south-west. The Site is currently open fields, bounded with woody vegetation.

1.3 **Development Proposal**

- 1.3.1 Planning consent is sought for a housing development with public open spaces.
- 1.3.2 In order to assess the impacts of the proposed developments the following plan(s) have been overlaid to produce the Tree Protection Plan:
- Masterplan Ref. EMS2254_102F by the Pegasus Group.

1.4 **Trees and the Planning Process**

- 1.4.1 Under s197 of the Town & Country Planning Act 1990, LPAs have a legal duty to consider the protection of trees and the planting of new trees on development sites when granting planning permission. LPAs must also consider the potential effects, whether detrimental or positive, that proposed developments will have on retained trees, and the effect that these trees will have on the users of the development.
- 1.4.2 The Site is within Ashfield District Council's (ADC) administrative area. ADC's Local Plan Review which was adopted in 2002 includes the following relevant saved policy:

Trees & Woodlands Policy EV8

'Development which adversely affects trees worthy of retention, including woodland and individual trees, will not be permitted. Where trees are lost as a result of development, replacement or mitigating planting will be required'.

- 1.4.3 National Planning Policy in England is detailed in the National Planning Policy Framework (NPPF). The last revised version of the NPPF (July 2021) includes the following three paragraphs on trees and development, with paragraph 131 giving weight to the retention and planting of trees on development site and paragraph 180 giving specific protection to Ancient Woodland, Veteran and Ancient trees:

'NPPF Para. 131: Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users'.

'NPPF Para. 174: Planning policies and decisions should contribute to and enhance the natural and local environment by:

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland'.

'NPPF Para 180: When determining planning applications, local planning authorities should apply the following principles:

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists'

- 1.4.4 Table B.1 taken from British Standard BS 5837:2012 gives guidance on the level of information required by LPAs in order to make an informed decision on the impact of

development on trees. The production of an Arboricultural Constraints Report and Plan is the first stage of assessment in the context of the planning process.

1.4.5 An Arboricultural Constraints Report and Plan was completed for the client to assist in the layout design process. When the tree constraints have been considered and a layout designed, specific impacts on the trees proposed to be retained are considered in an AIA and TPP. This report fulfils the requirement to present the impacts of the proposed layout on the trees on and immediately adjacent to the Site.

1.4.6 If the proposed scheme is approved, it is common for the LPA to condition the protection of the retained trees and hedgerows on Site during the proposed development. This will usually take the form of an AMS and an updated TPP. These will show how the trees and hedgerows will be protected and will provide a methodology for any works within the RPAs of retained vegetation. These steps accord with the recommendations in BS 5837:2012 as detailed in Table B.1 as shown in Figure 1.

Table B.1 Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
Reserved matters/ planning conditions	Arboricultural impact assessment	
	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	

Figure 1: BS 5837:2012 Table B. 1

1.5 Statutory Legal Protection

1.5.1 The two main sources of protection afforded to trees are i) Conservation Area (CA) control and ii) Tree Preservation Orders (TPO).

- 1.5.2 Trees within Conservation Areas are protected under the Town & Country Planning Act 1990 (as amended), which affords blanket¹ protection to trees with a stem diameter of 75 mm and above when measured at 1.5 m from ground level.
- 1.5.3 Trees may also be protected by a TPO under the Town & Country Planning Act 1990 (as amended) and The Town and Country Planning (Tree Preservation) (England) Regulations 2012.
- 1.5.4 It is a criminal offence to carry out any unauthorised works to trees that are either protected by a TPO or located within a CA, including:
- Cutting down, uprooting or wilfully destroying a tree, or wilfully damaging, topping or lopping a tree in such a manner as to be likely to destroy it;
 - Any works that contravene the provisions of a TPO; and/or
 - Any works in contravention to the regulations.
- 1.5.5 Penalties for non-compliance of a TPO and/or CA can be unlimited, if tried in a County Court, and up to £20,000 if tried in a Magistrate's Court. Note, if the Local Planning Authority decides to also prosecute under the Proceeds of Crime Act 2002 in addition to prosecuting under the Town and Country Planning Act 1990, the fine can be unlimited in a Magistrate's court.
- 1.5.6 It should be noted that the felling of trees prior to receiving full planning permission may also require a felling licence under the Forestry Act 1967. This requires that any persons wishing to fell 5 m³ of trees within any three-month period (i.e. January to March, April to June, July to September and October to December) apply for a felling licence from the Forestry Commission. There are a number of exemptions to this requirement, with some of the more relevant exemptions including:
- Pruning trees;
 - Felling fruit trees or trees growing in a garden, orchard, churchyard or designated public open space;
 - Felling trees that, when measured at a height of 1.3 m from the ground, have a diameter of 8 cm or less;
 - Felling trees immediately required for the purpose of carrying out development authorised by full planning permission;

¹ Protection is similar to that afforded to trees protected by TPO.

- Felling necessary for the prevention of danger or the prevention or abatement of a nuisance² (e.g. threat/danger to a third party); and
- Felling necessary to prevent the spread of a quarantine pest or disease.

1.5.7 Other legislation that affords a lesser or indirect level of protection to trees includes the following:

- The Wildlife & Countryside Act 1981 (as amended);
- Conservation of Habitats and Species (amendment) Regulations 2019; and
- Hedgerow Regulations (1997).

1.5.8 All of the above provide for the identification and safeguarding of flora and fauna that may be found in association with trees and woodlands.

1.6 Protected Species

1.6.1 Trees can contain features such as cavities, cracks, splits and loose bark which can offer potential habitat to species such as bats. Bats and their roosts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as the Conservation of Habitats and Species Regulations 2019 (as amended) and are also listed under Section 41 of the Natural Environment and Rural Communities Act 2006.

1.6.2 Trees provide potential nesting habitat for birds and all UK birds and their active nests are protected under the Wildlife & Countryside Act 1981 (as amended). Bird species that are listed on Schedule 1 of The Act are also protected against disturbance of their active nest(s).

1.6.3 The UK government has advised that following the exit of the UK from the EU, the EU Withdrawal Act 2018 will ensure that all existing EU environmental law will continue to operate in UK law³. The UK government and devolved administrations will “amend current legislation to correct references to EU legislation [...] and ensure we meet international agreement obligations”.

² NB - This only applies when a real and/or immediate danger is present.

³ DEFRA (2018) Upholding Environmental Standards if there's no Brexit Deal [online]. Accessed

12.04.2019. Available at: <https://www.gov.uk/government/publications/upholding-environmental-standards-if-theres-no-brexit-deal/upholding-environmental-standards-if-theres-no-brexit-deal>

2 THE SURVEY

2.1 Desk Study – Legal Constraints

2.1.1 WA used ADC’s online mapping tool⁴ on 20th April 2022 to ascertain whether any trees within and/or immediately adjacent to the Site are currently protected by TPO and/or CA status.

2.1.2 The Council’s online mapping revealed that there are no TPOs or CAs present on or immediately adjacent to the Site at this time. However, it should be noted that this situation can change as LPA’s can serve TPOs at any time. Therefore, it is advisable to check the protected status of these trees again prior to undertaking any planned works.

2.1.3 WA undertook a search using the Woodland Trust’s Ancient Tree Inventory⁵ and DEFRA’s Magic Map Application⁶ on 4th April 2022 to ascertain whether any recorded ancient or veteran trees or ancient woodland, woodpasture and parkland and traditional orchard priority habitats are located within influencing distance of the Site.

2.1.4 The Ancient Tree Inventory does not currently contain any records of ancient or veteran trees within the Site or outside the Site but within influencing distance of the Site. However, the Ancient Tree Inventory is a record of trees found by professionals and enthusiasts and submitted to the Woodland Trust for inclusion on the database and therefore is not a complete record and cannot be used to rule out the presence of veteran trees on Sites.

2.1.5 DEFRA’s Magic Map listed no ancient woodland, woodpasture and parkland or traditional orchard priority habitats within the Site or outside the Site but within influencing distance of the Site.

2.2 Field Survey

2.2.1 The arboricultural survey was undertaken using the methodology set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (see Appendices 2 and 3).

2.2.2 Weather conditions during the survey were overcast with rain.

2.2.3 The trees were surveyed in accordance with the methodology outlined in Appendix 2.

⁴ <https://adc.dynamicmaps.co.uk/mapthatpublic/Default.aspx>

⁵ <https://ati.woodlandtrust.org.uk/>

⁶ <https://magic.defra.gov.uk/magicmap.aspx>

- 2.2.4 Each individual surveyed tree (T), tree group (G) and hedgerow (H) was given a sequential reference number.
- 2.2.5 The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories 'A', 'B', 'C' and 'U' (see category criteria and grading within Appendix 3). 'A' and 'B' category trees are considered as 'high' and 'moderate' quality, respectively, and are considered as a constraint to development. As such, these trees should be retained and afforded appropriate protection during development. 'C' category trees are considered to be of 'lower' quality due to their condition or 'lower' amenity value and are, therefore not usually considered a constraint to development. 'U' category trees are those in such a 'poor' condition that they cannot usually be retained within the current Site context for longer than ten years. It should be noted that in some cases, category 'U' trees may have valuable habitat/ecological value despite being in poor arboricultural condition. In such cases, where it is safe to do so, these trees may be recommended for retention and/or pruning works. Where relevant, we will bring such trees to your attention. Where trees are located outside of the red and blue line Site boundaries, irrespective of their BS 5837 categorisation, these should be considered as a constraint during the Site layout design process and protected during construction, as such trees are not within the control of the Site owner.
- 2.2.6 Root Protection Areas (RPAs) are calculated for individual trees utilising the methodology set out in BS 5837:2012, which is calculated by multiplying the stem diameter (measured at 1.5 m from ground level) by 12 for single-stemmed trees and a variant on this for multi-stemmed trees. For surveys in England (and outside England where it is a Local Planning Policy requirement), individual veteran trees are given a standard BS 5837 RPA and also a secondary veteran tree RPA, to accord with government's standing advice 'Ancient woodland, ancient trees and veteran trees: advice for making planning decisions'⁷ and local planning policy, which is based on a calculation of fifteen times the stem diameter or five metres beyond the crown spread, whichever is greater.
- 2.2.7 For tree groups and hedgerows, the calculated RPAs are based on a set distance from the canopy edge of the tree groups and hedgerows. This calculation is based on the largest stem diameter of the trees on the edge of the tree groups and the crown spread measurement for these edge trees. A variant of the tree group and woodland

⁷ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-advice-for-making-planning-decisions>

RPA calculation is used to calculate hedgerow RPAs, with the calculation based on the largest stem diameter of the hedgerow woody plants and the hedgerow width.

- 2.2.8 Further details for each tree, and the groups of trees surveyed are set out in the Arboricultural Survey Schedule (see Appendix 1) and on the Tree Protection Plan Ref. No. ST19319-001 Rev. B.

3 SURVEY RESULTS AND EVALUATION

3.1 Tree Population

3.1.1 The trees assessed and surveyed, which were located on and immediately adjacent to the Site, included twenty-three individual trees, twelve tree groups and sixteen hedgerows.

3.1.2 The survey revealed that, 4% of the individual tree population was classified as category 'A' quality, 57% were classified as category 'B' quality, 35% were classified as category 'C' quality and 4% were classified as category 'U' quality.

3.1.3 The survey revealed that 58% of the tree groups were classified as 'B' quality and 48% as 'C' quality. No category 'A' or 'U' tree groups were found during the survey.

3.1.4 A detailed description of all trees and groups of trees surveyed and recommended works can be found in the Tree Survey Schedule in Appendix 1. Tables 1 and 2 below summarises the BS 5837 quality grading of the trees found on Site, with these figures represented in graph format in Figures 2 and 3.

Table 1: Individual Trees Quality Assessment Summary				
Tree quality	A	B	C	U
Individual Trees Identification	T23	T3, T4, T5, T6, T7, T9, T10, T11, T12, T13, T19, T20, T22	T1, T2, T8, T15, T16, T17, T18, T21	T14
Totals	1	13	8	1

Table 2: Tree Groups & Woodlands Quality Assessment Summary				
Tree quality	A	B	C	U
Tree Groups and Woodland Identification	None	G2, G3, G7, G8, G9, G10, G11	G1, G4, G5, G6, G12	None
Totals	0	7	5	0

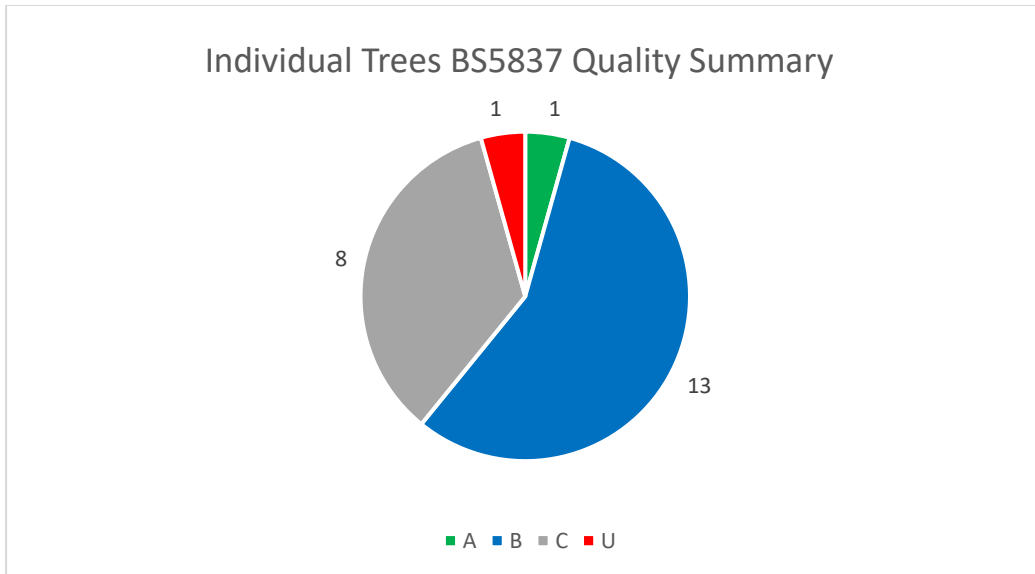


Figure 2: Overview of the BS 5837 quality of individual trees found on Site

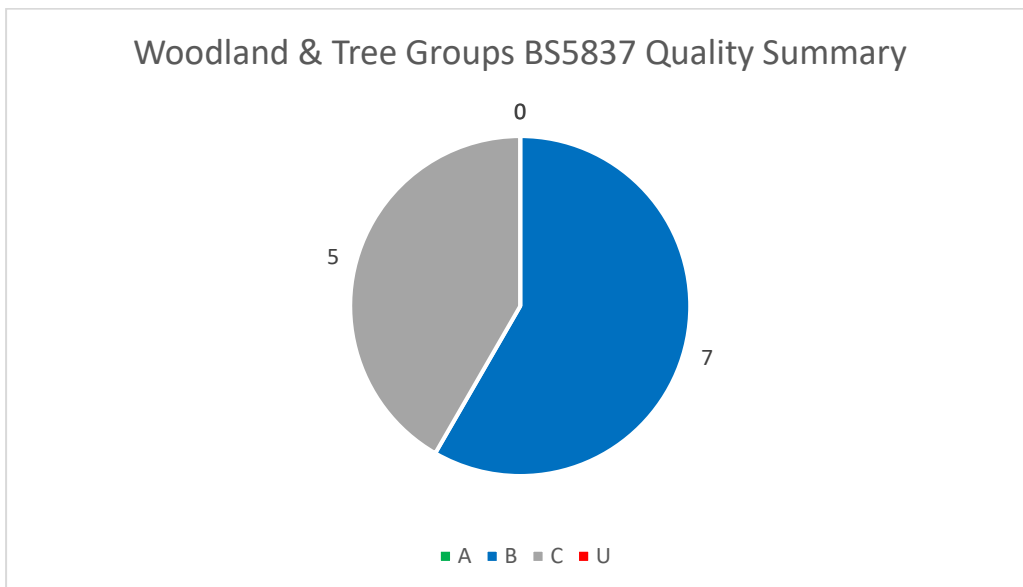


Figure 3: Overview of the BS 5837 quality of tree groups found on Site

- 3.1.5 The surveyed hedgerows were not allocated a quality category, as BS 5837 does not include a methodology for the categorisation of hedgerows. However, the extent of the canopy spread and RPAs for hedges is shown on the Tree Protection Plan ST19319-001 Rev B.
- 3.1.6 The Category 'A' quality Tree T23, is a veteran ash. This tree will be retained and will have its veteran buffer zone (15 x stem diameter at 1.5m) protected, which accords with the requirements of the NPPF.

3.1.7 An assessment of the age class of the individual tree population on Site, reveals that the population is predominantly made up of early-mature trees, with these accounting for 59% of the population. The remaining individual tree population is made of semi-mature trees, accounting for 23% of the population, mature trees at 9% and late-mature trees at 4%. Veteran trees make up the remaining 5% of the individual tree population. A summary of the age class assessment for individual trees is shown in the graph below in Figure 4.

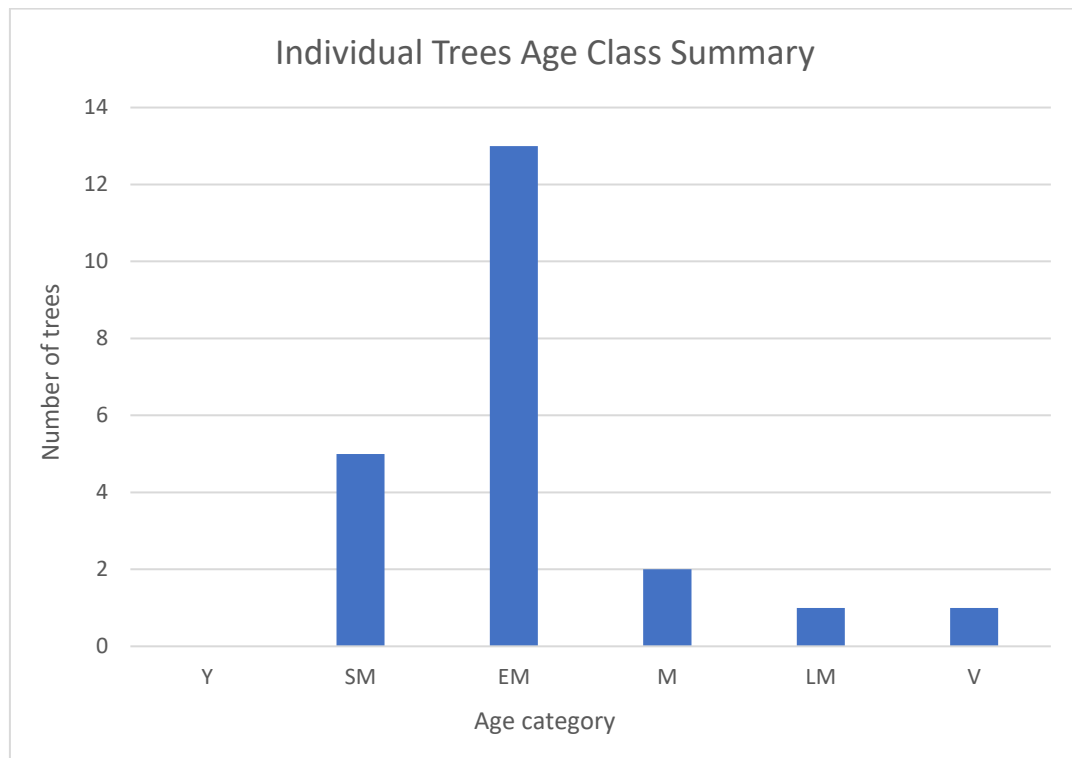


Figure 4: Individual trees age class assessment summary.

4 DEVELOPMENT IMPACT TO RETAINED TREES

- 4.1.1 Implementation of the proposed scheme will necessitate the removal of ten individual trees, three tree groups, one hedge and the partial removal of a further two hedges as detailed in full in Table 3.
- 4.1.2 In assessing the impacts of the proposed development on the trees on and adjacent to the Site and in proposing mitigation for these impacts, the planning application for development of the Site accords with the requirements of British Standard 5837:2012 and Local and National planning policies for trees and development.

Table 1: Overview of Arboricultural Impacts and Proposed Mitigation

Tree/ Group No.	Proposed Works	Impact	Mitigation/Compensation	BS 5837 Quality Categorisation
T12, T13, T14, T15, T16, T17, T18, T19, T20, T22, G3, G4, G5, H8, H9 (partial), H13 (partial)	The removal of trees and hedgerows to facilitate the proposed development	<p><u>Low Impact</u></p> <p>In order to facilitate the proposed scheme, a number of trees will require removal. These include five category 'B' trees (T12, T13, T19, T20, T22), four category 'C' trees (T15, T16, T17, T18) and one category 'U' tree (T14). Two category 'C' quality groups G4, G5) and one category 'B' quality group (G3) will require removal.</p> <p>In addition to these, the following hedgerows are to be removed/ partially removed:</p> <p>H8: Removed completely (129 m length); H9: Partially removed (108 m length); H13: Partially removed (20 m length).</p> <p>No veteran trees or category 'A' quality trees are proposed for removal. The proposed removals will have a low impact on local amenity, primarily due to the proposed planting scheme, which is extensive and which will more than adequately compensate for the loss of trees and hedgerows.</p>	New extensive tree planting forms part of the proposals and this will help to compensate for the losses of trees to development.	B, C, U
T23	New permanent hard surfaces proposed within Veteran buffer zone	<p><u>Low Impact</u></p> <p>As part of the proposed scheme, new hard surfacing is located within the RPA of T23 a veteran ash. The area of encroachment measures 1.4m² from the tree's total buffer zone of 547m², equating to 0.26% of the total buffer zone, which is a negligible impact. It is highly unlikely that roots of the tree will be found in this very minor buffer zone encroachment. Heras fencing will protect the rest of the buffer zone and RPA.</p>	RPA and buffer zone protected with Heras fencing, to be erected prior to development commencing on site, including ground works and to be retained until all construction activities have been completed.	A
H5	Pruning to facilitate development	<p><u>Low Impact</u></p> <p>H5 may require pruning for clearance from the proposed footprint of the development area.</p>	Pruning works are to be undertaken by a suitably qualified and insured tree work contractor, working in	N/A

Table 1: Overview of Arboricultural Impacts and Proposed Mitigation

Tree/ Group No.	Proposed Works	Impact	Mitigation/Compensation	BS 5837 Quality Categorisation
		The pruning work, if required, will have a low impact on the amenity value and health of the hedgerow and thus will not affect its long-term survival.	accordance with BS3998:2010 – Tree work. Recommendations and industry best practice.	

5 SUMMARY AND RECOMMENDATIONS

- 5.1.1 The requirements of BS 5837:2012 have been complied with in assessing the arboricultural impacts arising from the proposed residential housing development scheme in this report.
- 5.1.2 The Site is not within or adjacent to a Conservation Area and there are no trees on or immediately adjacent to the Site currently protected by TPO.
- 5.1.3 Tree T23, a veteran ash will have its veteran buffer zone (15 x stem diameter at 1.5m) protected, which accords with the requirements of the NPPF. There is a 0.26% encroachment into the tree's veteran buffer zone, this is, however, considered to be negligible, with no impacts arising from this encroachment.
- 5.1.4 Overall impacts to the trees on the Site will be relatively low, as although some trees will require removal to facilitate the proposed development, an extensive landscape planting scheme is proposed. This is proposed in extensive areas of public open space, with pedestrian links, adding amenity value to an area that is currently private land with no public rights of access.
- 5.1.5 The trees that are to be retained on the Site will be protected during the proposed works with tree protection fencing. Unless otherwise stated in an Arboricultural Method Statement (AMS), the protective fencing will comprise the default barrier described in BS5837:2012. An example of this is included at Appendix 6, with the location of the protective barrier shown on the Tree Protection Plan ST19319-001 Rev B. Signage on the fencing will also be required and an example of this is included at Appendix 7.
- 5.1.6 The majority of the hedgerows around the Site perimeter are at such a distance from the proposed areas of construction, that they do not need protection with fencing from the construction activities. It would be impractical to install protective fencing for every hedgerow on Site, however, where the hedgerows are located close to the construction zones, these hedgerows will be protected with Heras fencing.
- 5.1.7 An AMS and an updated TPP may be required by the LPA prior to commencement of the proposed development, to ensure tree and hedgerow protection measures are fully specified and implemented. This can be conditioned by the LPA, if required.

6 REFERENCES

- British Standard, BS 3998:2010 Tree work. Recommendations. (The British Standards Institution, 2010).
- British Standard, BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. (The British Standards Institution, 2012).
- NJUG Volume 4 - Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees (Issue 2:16th November 2007).
- Quantified Tree Risk Assessment User Manual, (QTRA User_Manual_V5.1.4_2015_01). (Incorporating extracts).
- Ministry of Housing, Communities and Local Government (2014) Tree Preservation Orders and Trees in Conservation Areas.
<https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas>
- Forestry Commission (2007) Tree Felling – Getting Permission.
- Claus Mattheck (2007) Updated field guide for Visual Tree Assessment.
- Forestry Commission & Natural England (Updated 4th January 2018) Ancient Woodland and Veteran Trees: Protecting them from Development – Guidance.
<https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences#veteran-trees>

Appendix 1
Tree Survey Schedule

Location: Newark Road, Kirkby in Ashfield (Job. No.: ST19319)
 Estimated Stem Diameters & Other Measurements highlighted in this colour

Surveyor: Jenna Young
 Weather: Overcast, rain later on
 Survey Date: 16th March 2022



Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)				Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading		Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West							Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)		B	Sub Category						
T	1	Lawson Cypress	10	3	3	3	3	3	200	150	75	100	4	EM	F	G	10+	C	1	Tree in domestic garden. Very low foliage density north east side of crown.	None required	U	35	3.4	N/A
T	2	Holly	8	1.5 S	4	3	2	3	170				1	SM	G	G	40+	C	2	Good form, although crown suppressed by adjacent tree.	None required	U	13	2.0	N/A
T	3	Douglas Fir	12	1.5 S	5	6	6.5	6	300				1	EM	G	G	40+	B	2	Tree in domestic garden.	None required	U	41	3.6	N/A
T	4	Lawson Cypress	14	0	4	4	3	4	250	200	200	200	4	M	G	G	40+	B	2	Tree in domestic garden.	None required	U	83	5.1	N/A
T	5	Norway Spruce	13.5	2	5	4	4	4	350				1	EM	G	G	40+	B	2	Tree in domestic garden.	None required	U	55	4.2	N/A
T	6	Common Juniper	7.5	3	5	5	4	2	300				1	M	G	G	40+	B	2	Tree in domestic garden.	None required	U	41	3.6	N/A
T	7	Italian Cypress	6.5	0	0.5	0.5	0.5	0.5	120				1	SM	G	G	40+	B	2	Tree in domestic garden.	None required	U	6.5	1.4	N/A
T	8	Silver Birch	13	2 S	5	4	3	5	300				1	EM	P	F	20+	C	2	Tree in domestic garden.	None required	U	41	3.6	N/A
T	9	Apple	10	1.5 E	3	3	3	3	200				1	SM	G	G	40+	B	2	Tree in domestic garden	None required	U	18	2.4	N/A
T	10	Norway Spruce	11	0	3	3	3	3	200				1	SM	G	G	40+	B	2	Tree in domestic garden.	None required	U	18	2.4	N/A

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition			Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BSS837 Categorisation Grading Sub Category	Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)				
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)													
T	11	Swedish Birch	11	2 W	3.5	3.5	3.5	3.5	250					1	EM	G	G	40+	B	2	Tree in domestic garden	None required	U	28	3.0	N/A
T	12	Ash	8	4 N	5	4	5	4	300					1	EM	G	G	20+	B	1	Road side of boundary.	None required	U	41	3.6	N/A
T	13	Sycamore	8	4 S	5	3.5	6	4.5	300					1	EM	G	G	40+	B	2	Tree on roadside verge.	None required	U	41	3.6	N/A
T	14	Elm	17	1.5 N	3	3	3	3	250					1	0	D	P		U		Dead Tree. Signs of bark beetle activity, thus very likely killed by Dutch Elm Disease.	Remove if land use intensifies near the tree, prior to land use intensification.	U	28	3.0	N/A
T	15	English Elm	18	0	8	8	8	8	350					9	EM	G	G	<10	C	1	Multistemmed tree, poorly formed.	None required	U	55	4.2	N/A
T	16	English Elm	14	0	6	3	2	3	250					1	EM	F	G	<10	C	1	Tree within boundary hedge.	None required	U	28	3.0	N/A
T	17	English Elm	12.5	0	7	8.5	2	5	400					1	EM	F	G	<10	C	1	Tree has north-easterly lean.	None required	U	72	4.8	N/A
T	18	English Elm	13	4N	6	2	2	4.5	450					1	EM	G	F	<10	C	1	Roadside tree. Previous branch removals for clearance, wounds partially occluded. Stem damage/bark necrosis. Sapwood exposed.	None required	U	92	5.4	N/A

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)				Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition			Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West							Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)										
T	19	Ash	20	4E	7.5	12	11	9	1200				1	LM	F	F	20+	B	3	Stem covered by ivy. Crown dieback. Extensive deadwood. Branch holes from partially occluded pruning wounds.	Recommend undertaking a full safety/ risk management inspection of stem and crown if land use intensifies near the tree, prior to land use intensification.	L	226	12.0	N/A	
T	20	Plum	11	0	3.5	3	3	3.5	220				1	SM	G	G	20+	B	2	Tree on roadside verge.	None required	U	22	2.6	N/A	
T	21	Ash	11.5	0	6	6	4	6	200	250	200	250	4	EM	G	G	20+	C	1	Inspection restricted by ivy covering stems.	None required	U	93	5.4	N/A	
T	22	Ash	12	0	6	6.5	7	7	400	225	175		3	EM	F	F	20+	B	1	Poorly formed multistemmed tree. Dead branches <700mm in crown .	Remove or shorten dead branches if land use intensifies near the tree, prior to land use intensification.	U	109	5.9	N/A	

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition			Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)										
T	23	Ash	17.5	4 N	7	9	12	8	880	1	V	F	F	20+	A	3;2	Crown retrenchment dieback (which may be ash dieback disease) and deadwood in crown. Old wounds from previous scaffold limb failures. Large partially occluded cavity on northwestern side of stem 450mm x 660mm 550mm diameter. Stems sounds hollow up to 4m+ (near crown break) from stem base. Various branch hole cavities < 150mm diameter. Innonotus hispidus decay fungi bracket on main scaffold limb centre of crown circa 10m southern side. Sufficient veteran features to be classed as a veteran tree.	Re-inspect for ash dieback disease during the summer of 2022/2023.	L	226	10.6	10605	
G	1	Hawthorn	6.5	0	Plotted with topographical mapping and GPS				250	1	EM	F	F	40+	C	2	Trees located by culvert and marsh area, rubble and soil piled in rooting area.	Remove rubble and soil piles ASAP if trees are going to be retained.	U	To canopy edge	N/A		
G	2	Beech	14	4 S	Plotted with topographical mapping and aerial photography				400	1	EM	G	G	40+	B	2	In domestic garden.	None required.	U	To canopy edge	N/A		
G	3	Goat willow, birch, hawthorn	15	0	Plotted with topographical mapping and GPS				450	1	EM-M	G	F	40+	B	2	Inspection restricted due to limited access and ivy.	None required.	U	To canopy edge	N/A		
G	4	Ash, hawthorn, elm	15	0	Plotted with topographical mapping and GPS				400	1	EM-M	G	F	40+	C	1	Mixed group. Unmanaged. RPA from centre of group	None required.	U	To canopy edge	N/A		

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading		Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)			
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)		Category	Sub Category									
G	5	Ash, hawthorn	8	0	Plotted with topographical mapping and GPS				350					1	EM-M	G	G	40+	C	1	Mixed group on edge of boundary.	None required.	U	To canopy edge	N/A
G	6	Hawthorn, sycamore, silver birch, goat willow	11	0	Plotted with topographical mapping and GPS				350					1	EM-M	G	G	40+	C	2	Group in area previously used for refuse deposal, large amounts of tyres and rubbish amongst ground vegetation.	Removal of rubbish within six months if trees are to be retained.	U	To canopy edge	N/A
G	7	Silver birch, black pine	17	0	Plotted with topographical mapping and aerial photography				400					1	M	G	G	40+	B	1	Trees outside site boundary.	None required.	U	To canopy edge	N/A
G	8	Silver birch, goat willow	12	0	Plotted with topographical mapping and GPS				400					1	M	G	F	40+	B	1	Trees within site approximately 3m from boundary.	None required.	U	To canopy edge	N/A
G	9	Beech, birch, sycamore	15	0	Plotted with topographical mapping and GPS				450					1	M	G	G	40+	B	1	Trees off site.	None required.	U	To canopy edge	N/A
G	10	Silver birch	18		Plotted with topographical mapping and GPS				500					1	M	G	F	40+	B	1	Top of stem snapped out from tree near northern edge of group. Rope and cable wrapped around limbs 2m from ground in another tree near northern edge of group. Culvert runs along western edge.	Remove ropes and cable from tree within 12 months.	U	To canopy edge	N/A
G	11	Pine, leylandii, sycamore	18	0	Plotted with topographical mapping and GPS				450					1	EM	G	G	40+	B	1	Mixed group, off site.	None required.	U	To canopy edge	N/A
G	12	Leylandii	4	0	Plotted with topographical mapping and GPS				350					1	EM	G	G	40+	C	1	In domestic garden.	None required.	U	To canopy edge	N/A
H	1	Hawthorn	2	0	Plotted with topographical mapping and GPS				75					1	EM	G	G	40+	N/A		Well managed hedge.	None required.	U	To canopy edge	N/A

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)			
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)												
H	3	Lawsons cypress, leylandii	4.5	0	Plotted with topographical mapping and GPS				300					1	M	G	G	40+	N/A		Hedge in domestic garden.	None required.	U	To canopy edge	N/A
H	4	Hawthorn, elder	8	0	Plotted with topographical mapping and GPS				200					1	EM- M	F	F	40+	N/A		Unmanaged hedgerow.	None required.	U	To canopy edge	N/A
H	5	Hawthorn , elder, willow	5	0	Plotted with topographical mapping and GPS				200					1	M-LM	F	F	40+	N/A		Unmanaged boundary hedgerow.	None required.	U	To canopy edge	N/A
H	6	Hawthorn	3	0	Plotted with topographical mapping and GPS				150					1	M	G	G	40+	N/A		Unmanaged hedgerow.	None required.	U	To canopy edge	N/A
H	7	Hawthorn	5	0	Plotted with topographical mapping and GPS				150					1	EM	G	G	40+	N/A		Partially managed hedge.	None required.	U	To canopy edge	N/A
H	8	Hawthorn, sycamore, elm	7.5	0	Plotted with topographical mapping and GPS				200					1	EM-M	G	G	40+	N/A		Unmanaged hedge, some dead elms within hedge. RPA to edge of hedge.	None required.	U	To canopy edge	N/A
H	9	Hawthorn, elm, ash	10	0	Plotted with topographical mapping and GPS				350					1	EM-M	F	F	40+	N/A		Unmanaged hedge with some gaps. Some dead elms in hedge.	Remove dead trees if land use intensifies.	U	To canopy edge	N/A
H	10	Hawthorn, elder	8	0	Plotted with topographical mapping and GPS				300					1	EM-M	G	G	40+	N/A		Unmanaged hedge.	None required.	U	To canopy edge	N/A
H	11	Hawthorn, elder	2	0	Plotted with topographical mapping and GPS				200					1	M	G	G	40+	N/A		Managed hedgrow.	None required.	U	To canopy edge	N/A
H	12	Hawthorn, elder	2	0	Plotted with topographical mapping and GPS				200					1	M	G	G	40+	N/A		Managed hedgrow.	None required.	U	To canopy edge	N/A
H	13	Hawthorn, elder	2	0	Plotted with topographical mapping and GPS				200					1	M	G	G	40+	N/A		Managed hedge.	None required.	U	To canopy edge	N/A
H	14	Hawthorn, elder	2	0	Plotted with topographical mapping and GPS				150					1	M	G	G	40+	N/A		Managed hedgerow. Some dead elder in hedge.	None required.	U	To canopy edge	N/A

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition			Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BS5837 Categorisation Grading Sub Category	Comments	Preliminary management recommendations/ further works	Bat potential: L (Likely) U (Unlikely)	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)			
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)												
H	15	Hawthorn, elder	2	0	Plotted with topographical mapping and GPS				200					1	M	G	G	40+	N/A		Managed hedgerow. Some dead elder in hedge.	None required.	U	To canopy edge	N/A
H	16	Hawthorn elder	4	0	Plotted with topographical mapping and GPS				250					1	M	G	G	40+	N/A		Unmanaged gappy hedge.	None required. If retained, consider planting up gaps with local providence hedging plants.	U	To canopy edge	N/A

Appendix 2

Survey Methodology

Appendix 2: Survey Methodology

The following process has been followed and the features of each tree, group of trees or woodland have been recorded in the Arboricultural Data Sheets (See Appendix 1):

- Each individual surveyed tree (T), tree group (G), woodland (W) and hedgerow (H) was given a sequential reference number.
- Where a number of surveyed trees formed a cohesive feature, such as groups, woodland compartments or whole woodlands, they were recorded, assessed and plotted as groups (G) or as woodland (W). Whilst not every tree within groups are surveyed, a representative sample of the largest edge trees were measured in order to be able to plot the group or woodlands crown spreads and RPAs. Where detailed plans show development proposed within a group or woodland, all trees within influencing distance of the development proposals are usually recorded, plotted and assessed.
- The surveyed trees and hedgerows were then identified by their common and/or Latin name.
- Tree height measured in metres from the stem base using a TruPulse 200L laser. Where the ground has a significant slope, the higher ground is selected. This informs crown/stem ratio and shading.
- Crown height/ height of lowest branches is measured in metres above ground level using a TruPulse 200L laser and is an indication of the average height at which the main crown begins.
- Stem diameter is measured in millimetres at 1.5m above the adjacent ground level (upslope on sloping ground) with a standard diameter measuring tape to enable RPAs to be calculated.
- Crown spread is measured in metres using a TruPulse 200L laser and taken at the four-cardinal compass points to derive an accurate representation of the crown to be plotted on the TPP.
- Age class of the tree is described as:
 - Young – Newly planted trees and self-seeded trees;
 - Semi-mature – Large nursery stock that can be newly planted or self-seeded trees still in the early stages of establishment;
 - Early mature – Trees in the first third of their life cycle which is characterised by their quickness of growth and subsequently significant increase in size;

- Mature – Trees in the second third of their life cycle, characterised by reaching their ultimate size and slowing of annual incremental growth;
- Late mature – Trees in the final third of their life cycle, often characterised by showing signs of decline; and
- Veteran – Trees that show ancient tree characteristics irrespective of their age, such as crown retrenchment and decaying wood habitat.
- Physiological condition is assessed and classed as G (good), F (fair), P (poor) or D (dead). This is an indication of the health of the tree and takes into account vitality, presence of disease and dieback.
- Structural condition is assessed and classed as G (good), F (fair) or P (poor). This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.
- Life expectancy is classed as: less than 10 years (<10), at least 10 years (10+), at least twenty years (20+) or at least 40 years (40+). This is an indication of the number of years before the removal of the tree is likely to be required.
- The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories 'A', 'B', 'C' and 'U' (see category criteria and grading within Appendix 3).
- Comments include a brief description of the tree with comments on the form, vitality, health and any significant defects that may be present.
- Recommendations for work are based on the existing land use.

Appendix 3

Tree Categorisation Method

Appendix 3: Tree Categorisation Method

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
Category U 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	<ul style="list-style-type: none"> Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities
		3 Mainly cultural values, including conservation
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees with no material conservation or other cultural value
		Trees with material conservation or other cultural value
		Trees with significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
		Trees with material conservation or other cultural value
		Trees with no material conservation or other cultural value
		Trees with no material conservation or other cultural value

A single tree, group or woodland can come under one or more sub-headings. This does not confer on it a higher value than a tree with a single value. For the purposes of this report.

Appendix 4
General Tree Constraints

Appendix 4: General Tree Constraints

- Trees impose a constraint to development in a variety of ways. These principally include their rooting areas, referred to as Root Protection Areas (RPAs), their current and future crown spread, and their species characteristics (e.g. branch and fruit drop, production of ‘honey dew’, density of foliage etc). Where located on shrinkable clay soils, trees can also contribute to subsidence damage to buildings.
- Consideration should be given during the design stage to any incompatibilities between the design and tree retention. These include (but are not limited to) the effects on the amenity value provided by existing trees, working space required during construction, infrastructure/utility requirements, highway visibility requirements and foundation design to prevent the effects of subsidence.
- The RPA is calculated using the tree’s diameter at 1.5m and represents the minimum area which should be left undisturbed around each retained tree to enable its survival following development.
- Tree root morphology is influenced by many factors including, but not limited to; past land use, the presence of roads, structures and underground services, drainage and soils. Any of these factors may result in non-uniform root growth and therefore result in an RPA represented as a polygon RPA that reflects suitable protection of the root system.
- The majority of tree roots are generally found within the top 600mm of soil, depending on soil types and profiles. Any disturbance or sudden changes to the rooting environment can result in damage being caused to roots and alterations to the roots physiological ability to absorb water, nutrients and undertake gaseous exchange.
- Where alterations have been made within the trees’ rooting environment, the damage can often be observed within the crown of the trees, reduced vitality and increased deadwood production. Trees are likely to decline progressively, or in some circumstances may become a hazard where stability and structural integrity has been compromised by Site operations.
- The RPA must be protected by the installation of tree protection fencing prior to the commencement of development work on Site. The fencing provides a physical barrier that is secured, to prohibit activities considered detrimental to the retention of healthy trees (e.g. excavations, soil stripping, discharge of substances harmful to trees, storage of materials, fires). In addition to this, it may be necessary to install specialist temporary

ground protection which enables access within the RPA, without causing long-term detriment to the health of the tree/s.

- No traditional construction works should take place within the RPA of retained trees. However, in some circumstances and where there is an overriding requirement for construction and the retention of trees, it may be appropriate to employ techniques and use materials that allow trees to be retained, whilst enabling the construction. For hard surfacing, such as drives, roads and footways, utilising no-dig construction techniques and using three-dimensional geogrids and permeable wearing course materials may be appropriate. For built structures within RPAs, the use of pile and above ground level beam foundations and/or cantilevered engineering solutions can enable structures to be constructed within RPAs. The project arboriculturist should be consulted on the appropriateness of building within retained tree RPAs, as this is not appropriate for all trees and soil types.
- Where aerial parts of the tree crowns extend beyond the edge of the RPA, consideration should be given to protection of these parts, allowing for protection during development processes including working space. It may be appropriate to consider pruning of aerial parts to allow construction clearances and future nuisance abatement, this however must be considered by the project arboriculturist and the LPA. Where development proposals identify a need for working within the RPA/crown spread of retained trees and it can be demonstrated that retained trees remain viable, then it is important that the project arboriculturist is contacted to advise and prepare an AMS and identify appropriate stages of supervision.

Appendix 5
Report Limitations

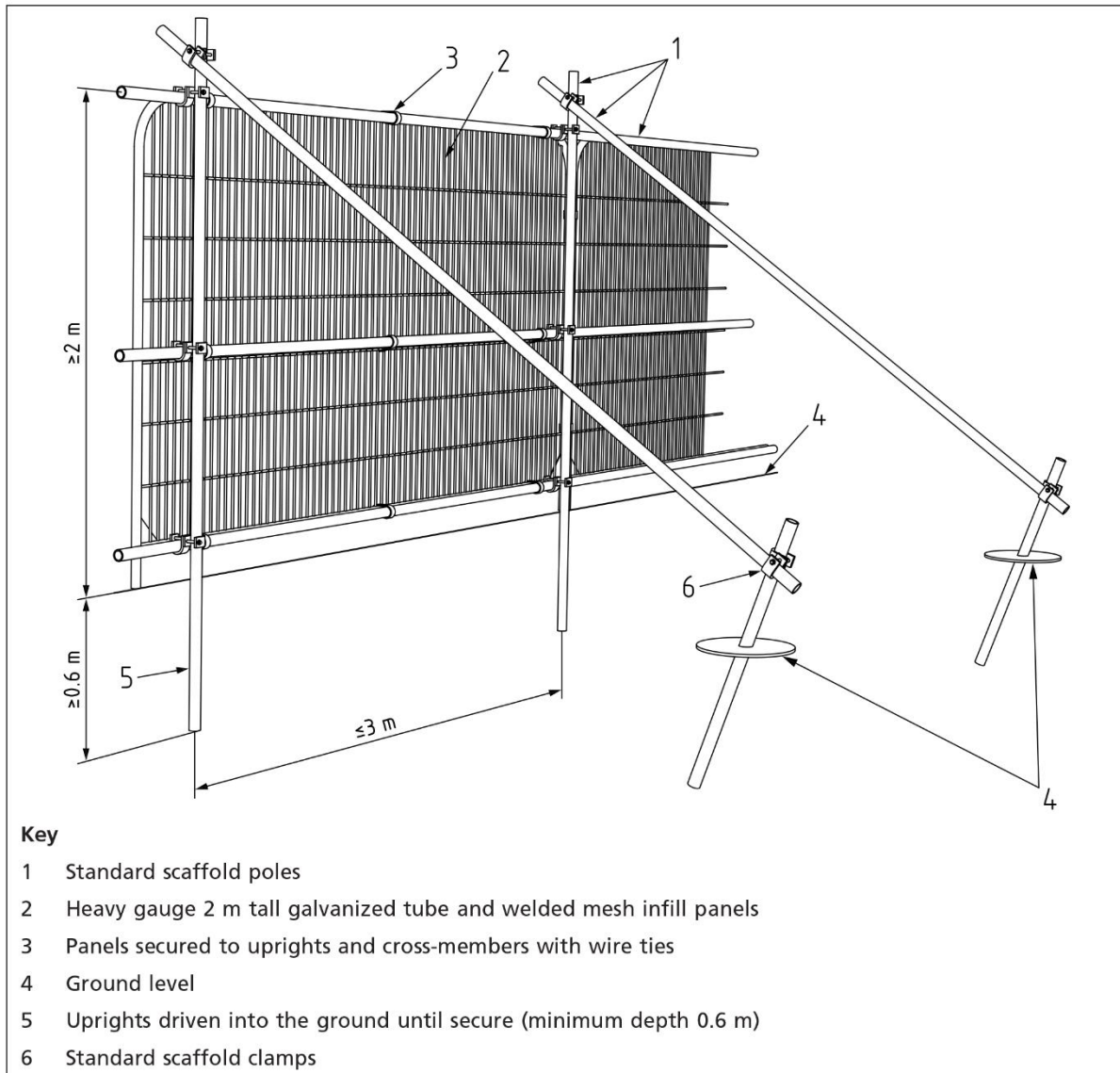
Appendix 5: Report Limitations

- Trees are influenced by a variety of environmental variables, which can affect the health of trees causing biomechanical and physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Due to the changeable nature of trees and other site/environmental conditions, which may influence trees, the preliminary management recommendations/ further works for the surveyed trees undertaken, which can be found in Appendix 1 of this report, are only valid for a period of 12 months from the date of the Site survey (16th March 2022). These recommendations relate specifically to the general maintenance of tree health and safety and do not affect the implications of this Arboricultural Impact Assessment and therefore, the results of the survey remain valid beyond (16th March 2023.)
- This AIA report and the associated TPP is based on a topographical survey plan supplied by the client. Where tree stem locations are not shown on the topographical survey, these are plotted using GPS plotting and/ or the utilisation of site features to manually plot the tree stem locations and canopy spreads for tree groups. Aerial photography is also utilised to plot tree group canopy spreads, where utilisation of GPS is not feasible. These methods provide a good representation of the surveyed trees; however, please note that the GPS used is not sub-metre accurate. WA cannot be held responsible for inaccurate tree locations, where we are not supplied with a topographical plan showing tree locations or where trees are not shown on the topographical survey plan supplied to us by the client.
- Although comments and recommendations on the safety of particular trees may have been made, this survey is not a Tree Risk Management Survey and thus should not be treated as such. All trees were surveyed from ground level only and in a solely visual nature. However, where trees have been identified as presenting an imminent safety risk due to structural defects, this has been brought to the attention of the client and treated as a separate matter. Should trees require further detailed assessment (decay detection, aerial inspections) and do not present an imminent safety risk, the information will be detailed within the survey schedules.
- Any management recommendations have been made in accordance with BS3998: 2010 Tree Works – Recommendations; and/or industry best practice. Works have been recommended in accordance with any statutory obligations on the landowners or occupiers.

- This survey did not include an ecological survey of vegetation or habitat areas. Any ecological issues incidentally observed during the survey are reported on in the tree schedule.
- For the purpose of this report no samples were obtained from Site for analysis or any other reason.
- The survey did not include soil sampling to determine whether the soil is shrinkable. Such analysis should be carried out by a specialist to ensure building foundations are adequate in accordance with current National House Building Council Guidelines (NHBC).

Appendix 6
Tree Protection Fencing

Appendix 6: Tree Protection Fencing



Appendix 7
Tree Protection Signage

Appendix 7: Tree Protection Signage



Appendix 8
Glossary of Common Terms Used in Arboriculture

Appendix 8: Glossary of Common Terms Used in Arboriculture

Abscission. The shedding of a leaf or other short-lived part of a woody plant.
Abiotic. Pertaining to non-living agent's e.g. environmental factors.
Absorptive Roots. Non-woody short-lived roots, generally having a diameter less than one millimetre, the primary function of which is the uptake of water and nutrients.
Access Facilitation Pruning. One off pruning operation to provide access for development operation. Pruning that will not be detrimental to trees health or amenity.
Arboricultural Method Statement (AMS). A methodology for the implementation of development where encroachment within the RPA has the potential to cause damage or loss of retained trees.
Arboriculturist. Someone who through relevant training and experience has gained knowledge in the expertise of trees.
Adaptive Growth. The process by where wood formation rates increasing in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium.
Adaptive Roots. The adaptation of existing roots; or a production of new roots in response to damage or decay.
Adventitious Buds, Roots, Shoots. Which grow in other than primary apical control.
Anchorage. The process in which a tree uses its roots system to support itself within the soil structure.
Ancient: A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.
Arisings. Parts of the tree that has been removed for disposal, branches, leaves, roots etc.
Canker. Area of dead cambium killed by overlying pathogenic tissues.
Cavity. A hole in the woody structure of the tree; often caused through decay.
Cleaning Out. The removal of dead, diseased crossing branches, damaged branches and alien structures.
Competent Person. Person with training and experience in accordance with the proposed matter being addressed, having an understanding of a particular matter being approached.
Condition. An indication of the physiological vitality of a tree, but not the stability of a tree.
Construction. A Site based operation that has the potential to affect retained trees.
Construction Exclusion Zone. An area based on the RPA from which construction activity is prohibited.
Coppicing. Removal of all aerial parts of the tree leaving a stump for regeneration of new shoot.
Crown/Canopy. The parts of the tree that supports the leaves.
Crown Lifting. The removal of limbs and small branches to a specified height above ground level.
Crown Thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density well balanced crown structure.
Crown Reduction/Reshaping. Removal in the height to a specified description to maintain a flowing crown structure.
Deadwood. Non-functional branches which no longer support natural growing conditions of the tree but may be beneficial for the support of habitats and species, possibly including rare saproxylic invertebrates. Thus, may also be referred to as 'Decaying Wood Habitat' or 'Dysfunctional wood'. Size ranges for deadwood referred to in this report and/or Appendix 1: - Small (<75 mm diameter), Medium (76 – 150 mm), Large (151-300) mm and Very large >301 mm. For some species such as oak etc, the risk of deadwood falling from the tree can be lesser than for other species, due to the variety of wood strengths of different tree species.

Defect. Any area of the tree that no longer has an optimal mechanical uniformity of stress. Defects may or may not affect the long-term retention of the tree(s), depending upon severity, the likelihood of the defect(s) failing and the location of the tree(s) (Target).
Dieback. Death of woody parts of the tree starting at distal ends of the tree.
Disease. Damage occurring to living organisms as a result of pathenogenic micro-organisms.
Distal. Furthest distance away from the main body of the tree.
Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
Epicormic Growth. Growth from dormant or adventitious buds, not developing from the first shoot.
Girdling Roots. A circling root which constricts the stem or roots, with the potential to cause death and the restriction of flow within the phloem.
Heartwood. Dysfunctional xylem which no longer has conductive properties, but which has become an integral structural part of the tree.
Heave. The swelling of shrinkable clay soils, often when vegetation has been removed allowing soil rehydration to develop, with the potential for listing structures (e.g. walls).
Included Bark/Acute Forks. Face to face contact of bark usually at fork unions, or branch unions.
Lopping/Topping. A term used to describe the removal of large sized branches
Monolith. Removing some or most of the trees crown and sometimes the upper stem, in order to retain as much of the tree as standing deadwood habitat for ecological reasons.
Pathogen. A micro-organism that causes disease within another organism.
Phytotoxic. Toxic to plants.
Pollarding. The removal of the tree canopy to produce knuckles where new growth develops and is removed cyclically usually performed on young trees.
Pruning. Selective removal of parts of the tree to achieve a desired outcome.
Root Protection Area (RPA). An area around a tree identified by multiplying the stem diameter at 1.5 m from ground level by 12 to produce a radial area or rooting volume around a tree to be protected Ref. BS 5837: 2012.
Service. Any above and below ground structure or apparatus for utility provision.
Size of part. Relating to risk assessments, identifying the size of the hazard, or parts of a tree which may cause harm if failure occurs.
Stem(s). The main structure from the ground up supporting the crown.
Stress. In plants, the physiological depletion as a result of environmental influences.
Structure. A manufactured object, such as building, roads, path, wall or excavated structures.
Structural Roots. The primary larger diameter roots which hold and support the aerial parts of the tree.
Subsidence. The shrinkage of soil through the absorption of water via vegetation and the sinking effects on surrounding architectural structures.
Targets. In risk assessment, persons or property at risk of harm as a result of a hazard (falling tree, branch, etc.).
Transitioning Veteran Trees: Trees with some veteran features, but not sufficient veteran features to be considered full veteran trees. They contribute to the veteran tree resource and, through the ageing process are expected to become true veterans in time, before which they offer bridge and continuity habitat for important saproxylic invertebrates and fungi.

Tree Protection Plan (TPP). A scaled drawing informed by descriptive text where necessary, based upon finalised Site proposals, showing trees for retention and illustrating the tree and landscape protection measures.

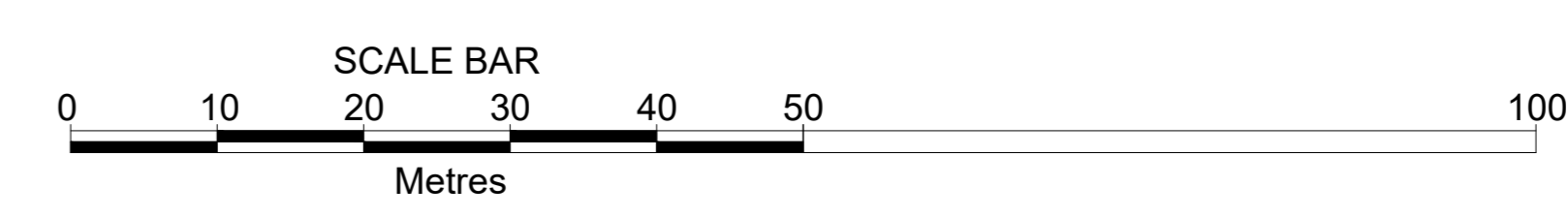
Veteran Tree. Tree that, by recognized criteria, shows features of biological, cultural or aesthetic characteristics of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Windthrow. The blowing over a tree at its roots.

DRAWING



- KEY**
- HEDGE
 - TREES REMOVED DUE TO CONDITION AND/OR TO ENABLE DEVELOPMENT
 - TREES AND HEDGEROWS THAT WILL REQUIRE PRUNING TO ENABLE THE PROPOSED DEVELOPMENT TO BE CONSTRUCTED.
 - LOCATION OF TREE PROTECTION FENCING
 - CATEGORY A CROWN SPREAD
 - CATEGORY B CROWN SPREAD
 - CATEGORY C CROWN SPREAD
 - CATEGORY U CROWN SPREAD
 - ROOT PROTECTION AREA
 - VETERAN BUFFER ZONE
 - T1/G1/
W1/H1 TREES/TREE GROUP/
WOODLAND/HEDGE NUMBER
 - POTENTIAL DIRECT OBSTRUCTION OF SUNLIGHT



TREES

QUALITY CATEGORIES BASED ON BS5837:2012 TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION - RECOMMENDATIONS RPA - ROOT PROTECTION AREA WHERE RPA IS NOT VISIBLE IT EXTENDS TO THE SAME DISTANCE AS THE CROWN OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.

KEY TO MASTERPLAN

- SITE BOUNDARY
- PUBLIC OPEN SPACE
- DEVELOPMENT AREA
- PRIMARY STREET
- SECONDARY STREET
- STREETS & LANES
- SHARED PRIVATE DRIVE
- FEATURE ROAD INFRASTRUCTURE
- EXISTING TREES AND VEGETATION
- PROPOSED BUFFER PLANTING
- PROPOSED STREET TREES
- DRAINAGE AREAS
- SWALES
- LEAP
- PEDESTRIAN CONNECTIVITY
- PEDESTRIAN LINKS
- PUBLIC RIGHT OF WAY

NOTES:
REFERENCED DRAWING:
EMV224 1007-01 MASTERPLAN

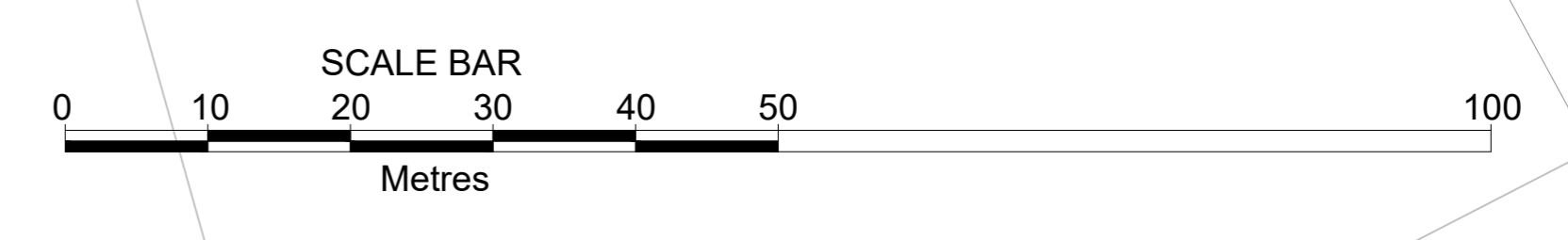
B	REPLACED MASTERPLAN BACK GROUND	REVISED	DATE	BY	APP
CLIENT					
HALLAM LAND MANAGEMENT LIMITED					
PROJECT					
LAND AT NEWARK RD SUTTON IN ASHFIELD					
DRAWING TITLE					
TREE PROTECTION PLAN SHEET 1 OF 2					
DRG No.	ST19319-001-Sheet 1	REV	B		
DRG SIZE	A0	SCALE	1:500	DATE	21/03/2022
DRAWN BY	BHAMAB	CHECKED BY	JY	APPROVED BY	MS



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 - VETERAN BUFFER ZONE
 - TREE/TREE GROUP/ WOODLAND/HEDGE NUMBER
 - POTENTIAL DIRECT OBSTRUCTION OF SUNLIGHT
- TREES**
 QUALITY CATEGORIES BASED ON BS5837:2012 TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION - RECOMMENDATIONS RPA - ROOT PROTECTION AREA WHERE RPA IS NOT VISIBLE IT EXTENDS TO THE SAME DISTANCE AS THE CANOPY. THE ORIGINAL OF THIS DRAWING WAS PRODUCED IN COLOUR - A MONOCHROME COPY SHOULD NOT BE RELIED UPON.

- KEY TO MASTERPLAN**
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NOTES:
 REFERENCED DRAWING: EMB-024-102-01 MASTERPLAN



B	REPLACED MASTERPLAN BACKGROUND	DATE	BY	APP
CLIENT				
HALLAM LAND MANAGEMENT LIMITED				
PROJECT				
LAND AT NEWARK RD SUTTON IN ASHFIELD				
DRAWING TITLE				
TREE PROTECTION PLAN SHEET 2 OF 2				
DRG No.	ST19319-001-Sheet 2	REV	B	
DRG SIZE	A0	SCALE	1:500	DATE
				21/03/2022
DRAWN BY	BHAMB	CHECKED BY	JY	APPROVED BY
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