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GLADMAN DEVELOPMENTS LIMITED

HEMPSTED LANE

ARBORICULTURAL IMPACT ASSESSMENT

AUGUST 2022

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GLADMAN DEVELOPMENTS LIMITED

LAND AT HEMPSTED LANE

ARBORICULTURAL IMPACT ASSESSMENT

JULY 2022

[redacted]

CONTENTS

APPENDICES

DRAWINGS	**TITLE**	**SCALE**
GM10710 – 041 Rev. A	Tree Protection Plan	1:1000@ A1

1 INTRODUCTION

1.1 Brief

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Gladman Developments Limited to undertake a BS 5837 tree survey on the site and to assess and report on the impacts on the trees and hedgerows in connection with the proposed development at Land at Hempsted Lane, Gloucester (Ordnance Survey grid reference SO 815165). For the purpose of this report this will be referred to as the 'Site' hereafter.

1.1.2 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 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 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.

1.1.3 The BS5837 tree survey was undertaken by Jenna Young, Arboriculturist with WA on 5th July 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.

1.1.4 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.

1.1.5 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 is located off Hempsted Lane, Gloucester. The Site is comprised of arable fields, bordered by hedgerows. To the north is Hempsted Lane and dwellings. To the south-east is the A430 highway and to the south-west and west are agricultural fields.

1.3 Development Proposal

1.3.1 Detailed development proposals are not currently available however, we understand that approximately 245 residential dwellings and associated infrastructure and areas of public open space are proposed.

1.3.2 In order to assess the impacts of the proposed developments the following plans have been overlaid to produce the Tree Protection Plan:

- Development Framework Plan 2022 Ref. CSA/6030/103 Rev. C, dated April 2022 and last revised 07/07/2022 by CSA Environmental.

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 located within the administrative boundaries of Gloucester City Council (GCC). The following relevant saved policy from the Council's Core Strategy is reproduced below:

Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011-2031

'***Policy INF3: Green Infrastructure***

3. Existing green infrastructure will be protected in a manner that reflects its contribution to ecosystem services (including biodiversity, landscape / townscape quality, the historic environment, public access, recreation and play) and the connectivity of the green infrastructure network. Development proposals that will have an impact on woodlands, hedges and trees will need to include a justification for why this impact cannot be avoided and should incorporate measures acceptable to the Local Planning Authority to mitigate the loss. Mitigation should be provided on-site or, where this is not possible, in the immediate environs of the site'.

1.4.1 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'.

1.4.2 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.

1.4.3 Even though we have not produced a standalone Arboricultural Constraints Report and Plan, WA have undertaken a tree survey in accordance with BS5837:2012, with this data and plan being supplied to the client to enable them to consider the

arboricultural constraints for the Site. Additionally, this is the second BS 5837 survey undertaken on Site in recent years, with the client being supplied with the arboricultural survey data to assist with the development design. We have plotted the trees on the proposed layout so that the specific impacts on the trees can be assessed, with this informing this report and the associated TPP, which fulfils the requirement to present the impacts of the proposed layout on the trees that are located on and immediately adjacent to the Site.

1.4.4 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
	Arboricultural impact assessment	
Reserved matters/ planning conditions	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 blanket[1] 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.

1.5.1 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.

1.5.2 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 m^3 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 nuisance[2] (e.g. threat/danger to a third party); and
- Felling necessary to prevent the spread of a quarantine pest or disease.

1.5.3 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).

1.5.4 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 law[3]. 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 contacted GCC by email on 18th September 2019 to ascertain whether any trees within and/or immediately adjacent to the Site are protected by TPO and/or CA status.

2.1.2 GCC confirmed by email on 18th September 2019 that no TPOs or CAs were present on/immediately adjacent to the Site at this time.

2.1.3 WA contacted GCC by email on 19th July 2022 for updated information on the above matter.

2.1.4 We have not received a response to our July 2022 query at the time of writing. Therefore, we strongly advise the client not to undertake any works to the trees until full planning permission has been gained which includes those works. Until that time, we will update the client as soon as we receive confirmation from the LPA.

2.1.5 WA conducted a search using the Woodland Trust's Ancient Tree Inventory[4] and DEFRA's Magic Map Application[5] on 18th July 2022 to ascertain whether any veteran or ancient trees or ancient woodland, traditional orchard or woodpasture and parkland priority habitats are located within influencing distance of the Site.

2.1.6 No veteran or ancient trees or ancient woodland, traditional orchard and woodpasture and parkland priority habitats were recorded on either of these two websites on or near the Site.

2.1.7 **Field Survey**

2.1.8 The arboricultural survey was undertaken by Jenna Young on 5th July 2022, using the methodology set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (see Appendices 2 and 3).

2.1.9 Weather conditions during the survey were dry and sunny.

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

2.1.11 Each individual surveyed tree (T), tree group (G), woodland (W) and hedgerow (H) was given a sequential reference number.

2.1.12 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

[4] https://ati.woodlandtrust.org.uk/
[5] https://magic.defra.gov.uk/magicmap.aspx

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.

2.1.13 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' [6] 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.

2.1.14 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 woodlands and the crown spread measurement for these edge trees. A variant of the tree group and woodland 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.

[6] https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-advice-for-making-planning-decisions

2.1.15 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. GM10710-041 Rev. A.

3 SURVEY RESULTS AND EVALUATION

3.1 Tree Population

3.1.1 Nine individual trees, ten tree groups and nine hedgerows which are located on and immediately adjacent to the Site were assessed and surveyed.

3.1.2 The survey revealed that 11% of the individual trees were classified as category 'B' quality, 78% were classified as category 'C' quality and 11% were classified as category 'U' quality.

3.1.3 Sixty percent of the tree groups were categorised as 'B' quality and 40% were classed as 'C' quality.

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	None	T5	T1, T2, T3, T4, T6, T7, T9	T8
Total	**0**	**1**	**7**	**1**

Table 2: Tree Groups Quality Assessment Summary

Tree Quality	A	B	C	U
Tree Groups Identification	None.	G1, G2, G3, G4, G6, G7.	G5, G8, G9, G10.	None
Total	**0**	**6**	**4**	**0**

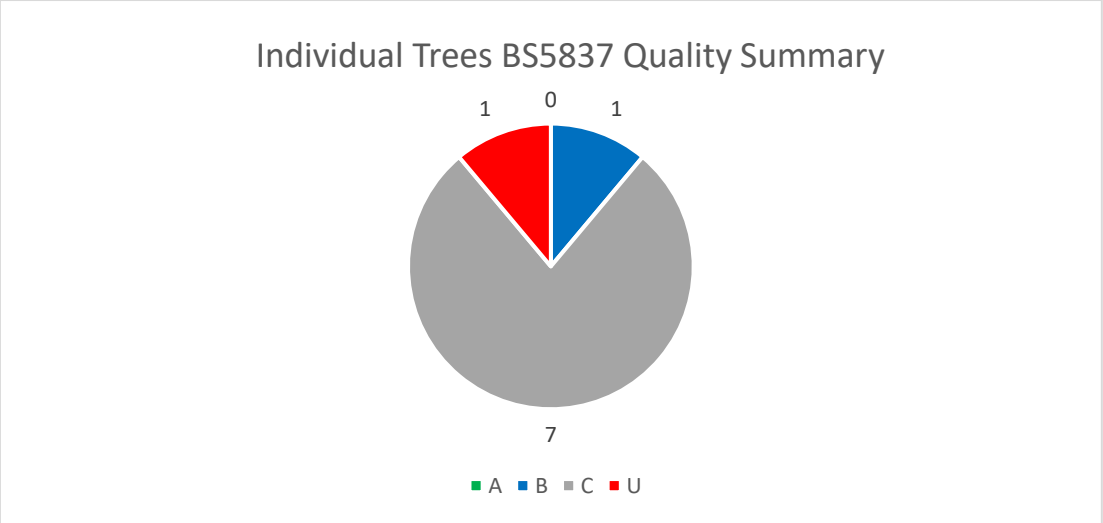


Figure 2: Overview of the BS 5837 quality of individual trees found on Site

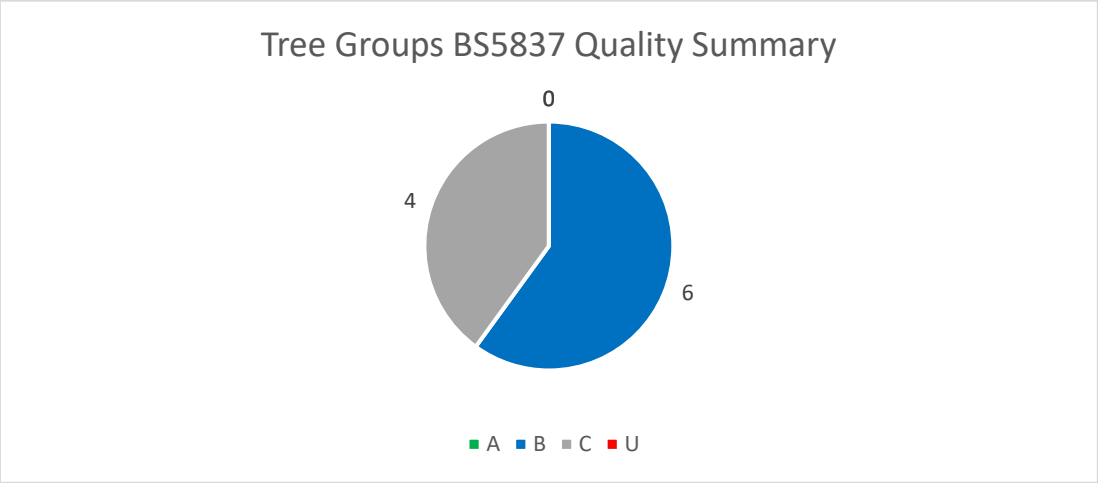


Figure 3: Overview of the BS 5837 quality of tree groups found on Site

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 GM10710-041 Rev. A.

3.1.6 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 56% of the population. The remaining individual tree population is made of semi-mature trees, accounting for 44% of the 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 partial removal of four hedgerows, 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 3: Overview of Arboricultural Impacts and Proposed Mitigation				
Tree/ Group No.	**Proposed Works**	**Impact**	**Mitigation/Compensation**	**BS 5837 Quality Categorisation**
H1, H4,H7, H8,	The partial removal of hedgerows to facilitate the proposed development	Low Impact In order to facilitate the proposed scheme, four sections of hedgerow are proposed to be removed. H1: A 49m section of this hedgerow is to be removed to facilitate the construction of the Site entrance; H4: A 4m section is to be removed for pedestrian access; H7: A 4m section is to be removed for pedestrian access; H8: Approximately a 38m section of this hedgerow is to be removed to enable the internal spine road to be constructed. The proposed removals will have a low impact on local amenity values, as no trees are to be removed and new planting on Site will more than compensate for the loss of sections of hedgerow.	New tree planting forms part of the proposals and this will help to compensate for the losses of hedgerow to the development. Removals to be done outside of the bird nesting season, preferably. If undertaken in the season, an ecologist will check the sections of hedgerow to be removed prior to the removal.	**N/A**
H1	Pruning of hedgerow for visibility splays	Low Impact In addition to the partial removal of H1, some additional pruning of this hedgerow is to be undertaken to enable the highway Site entrance visibility splays to be kept free of obstructions. The pruning will consist of side pruning the eastern part of the hedgerow at the locations shown by pruning hatching on the Tree Protection Plan Ref. GM10710-041 Rev. A, to achieve clearance for the visibility splays.	Pruning to be done outside of the bird nesting season, preferably. If undertaken in the season, an ecologist will check the section of hedgerow to be pruned prior to the pruning.	**N/A**
N/A	Ground level changes	N/A No information is available regarding proposed site levels. This should be assessed in relation to trees and hedgerows as part of the Reserved	Assess impacts on retained trees as part of the Reserved Matters	**N/A**

Table 3: Overview of Arboricultural Impacts and Proposed Mitigation				
Tree/ Group No.	**Proposed Works**	**Impact**	**Mitigation/Compensation**	**BS 5837 Quality Categorisation**
		Matters application.	application.	
N/A	Drainage scheme	N/A No detailed information is available regarding the proposed drainage strategy for the development, apart from the positions of surface water drainage swales and attenuation basins. Where swales and attenuation basins are to be implemented, adjacent hedgerows and trees are to be protected by protective fencing. When the detailed drainage strategy/ plans are developed at the reserved matters application stage, these will be assessed in relation to trees and hedgerows to determine whether there are any impacts. As the retained trees are around the edge of the site, it is likely that the impacts of the drainage strategy will be minimal.	Prior to the ground works for the surface water drainage swales and basins, tree and hedgerow protection fencing is to be installed to ensure that these are not damaged when the works are undertaken. Assess impacts of the drainage scheme as part of the reserved matters application.	**N/A**

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 development in this report.

5.1.2 We have yet to receive confirmation from the LPA on whether there are any new TPO or CA constraints on the Site, following our email to the Council requesting this information on the 19th July. When checked in 2019, there were no TPO or CA constraints on or immediately adjacent to the Site.

5.1.3 There are no veteran or ancient trees or ancient woodland, traditional orchard or woodpasture and parkland priority habitats within or immediately adjacent to the Site.

5.1.4 No trees are to be removed to enable the development; however, four sections of hedgerow will need to be removed to create the proposed vehicular and pedestrian access into and within the Site. The impacts of the removals on local amenity is considered to be low. The removals for the two pedestrian access points totals 8m in length, with the removals for the road access into the Site and for the internal spine road totalling 87 m.

5.1.5 The trees and hedgerows that are to be retained on the Site will be protected during the proposed access and drainage works with protection fencing. Where the aforementioned development works are not anywhere near trees (>30m away) and hedgerows, these will not require protection with fencing. Following the Reserved Matters approval and the detailed design is implemented, all trees and hedgerows near to the development will be protected during the active construction phase. 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 GM10710-041 Rev. A. Signage on the fencing will also be required and an example of this is included at Appendix 7.

5.1.6 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: Hempstead Lane **(Job. No.** GM10710**)**

Estimated Stem Diameters & Other Measurements highlighted in this colour

Surveyor: Jenna Young

Weather: Dry and sunny

Survey Date: 5th July 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), **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	1	Ash	12	3 E	4.5	5.5	4	4	300					1	EM	F	G	20+	C	C1,2	Hedgerow tree with limited access. Slightly low foliage density. Possible ash dieback disease. Ivy cover to main stem and branches.	Re-inspect for ash dieback disease within 12 months for signs of decline. Note ash dieback surveys must be undertaken when the tree is full leaf.	U	41	3.6	N/A
T	2	Lawson cypress 'Ellwoodii'	7.5	1 N/A	1	1	1	1	60	50	70			3	SM	F	F	20+	C	C1	Typical garden tree located in adjacent domestic property. Shaded crown to south, causing some dieback.	None required	U	5.0	1.3	N/A
T	3	Ash	10.7	2 S	6.3	6.4	5.7	2.4	550					1	EM	F	G	20+	C	C1	Tree within hedgerow. Tree previously topped to the main stem crown break. Dead branches in crown < 90mm diameter, with slightly low foliage density. Areas of small foliage in crown, too. Possible ash dieback disease.	If land use intensifies near tree, re-inspect tree for safety/risk purposes due to possible ash dieback disease decline in 12 months. Note ash dieback surveys must be undertaken when the tree is full leaf.	L	137	6.6	N/A

					Crown Spread (m)												Condition									
Item type: T (tree), **G** (group), **H** (hedge), **W** (woodland)	**Tree/ Group Ref. No.**	**Botanical Name**	**Height(m)**	**Crown Clearance (m) & compass direction**	**North**	**East**	**South**	**West**	**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)	**Physiological Condition: G** (Good), **F** (Fair), **P** (Poor), **D** (Dead)	**Structural Condition: G** (Good), **F** (Fair), **P** (Poor)	**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 (m²)**	**BS 5837 Root Protection Radius (m)**	**Veteran Tree Root Protection Radius (m)**
T	4	Hawthorn	5	2 N/A	2.5	2.5	2.5	3	60	130	70			3	SM	F	F	20+	C	C1	Tree within hedge limiting access. Area of crown thinning on western side.	None required	U	11	1.9	N/A
T	5	English oak	11.5	2 N/A	6	7	5	7	500					1	EM	G	G	40+	B	B1	Tree within boundary hedgerow limiting access. Open drainage ditch filled with water to southern side. Some minor dead branches in crown.	None required	L	113	6.0	N/A
T	6	Ash	13	2.5 NW	5.5	6	5	5.5	400					1	EM	F	G	20+	C	C1	Tree within boundary hedge limiting access. Water filled open drainage ditch to south of boundary.	None required	U	72	4.8	N/A
T	7	Ash	13	3 N/A	5.8	6	5	5	408					1	EM	G	G	20+	C	C1,2	Tree within hedgerow. Ivy covers stem to 7.5m some minor dead branches in crown. Slightly low peripheral foliage density.	None required	L	75	4.9	N/A
T	8	English elm	6.5	0	1.3	1.5	1	2.5	150					1	SM	P	F	<10	U	U1	Elm tree within hedgerow. Ivy covers stem and branches. Less than 50% foliage coverage, which is likely due to Dutch elm disease.	Re-inspect for further decline in 12 months.	U	10	1.8	N/A
T	9	Sycamore	8	3 SE	3	4.5	3.5	4	250					1	SM	G	G	40+	C	C1,2	Off-site tree, possibly within influencing distance of the site. Limited access.	None required	U	28	3.0	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)									
G	1	Silver birch	12	3	Plotted with topographical mapping and GPS				220					1	EM	G	G	40+	B	B1,2	Group in domestic garden. Two trees forming one canopy which overhangs the site. Ivy on stems. No major defects observed .	None required	U	0.6 from canopy edge		N/A
G	2	Walnut, lime, field maple & sycamore	13	4	Plotted with topographical mapping and GPS				250	150				2	EM	G	G	40+	B	B1,2	Small group of off-site trees overhanging the site. Located in adjacent gardens. Offer screening to/from property's. Flailed over field side to 4m.	None required	U	To canopy edge		N/A
G	3	Ash, blackthorn, hawthorn, dogwood, hazel, field maple & English oak.	10	0	Plotted with topographical mapping and GPS				120					1	SM	G	G	40+	B	2	Large cohesive shelter screening belt along boundary between site and main road. Provides a useful screening function.	None required	U	To canopy edge		N/A
G	4	Apple	5	1.5	Plotted with topographical mapping and GPS				150					1	SM	G	G	40+	B	B1,2	Small trees located in domestic garden.	None required	U	0.3 from canopy edge		N/A
G	5	Plum & ash.	10.5	2.5	Plotted with topographical mapping and GPS				200					1	SM	G	G	40+	C	C1	Off site plum trees and one ash to north of group overhanging boundary. Utility cable runs through canopy. Limited access to stems.	If within client control, prune for clearance from utility cables - within 12 months	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)									
G	6	Field maple, holm oak, hawthorn, silver birch, Norway maple 'Crimson king'	13	0	Plotted with topographical mapping and GPS				250					1	SM-EM	G	G	40+	B	B1,2	Large linear group of trees. Located in domestic gardens and slightly overhanging boundary. Lower crowns have been flailed over the field side.	None required	U	To canopy edge		N/A
G	7	Himalayan birch & silver birch	9	3	Plotted with topographical mapping and GPS				200					1	EM	G	G	40+	B	B1,2	Four off site birch trees, potentially within influencing distance of development. All located within nearby gardens. Limited access but they appear to be in good condition when viewed from the site.	None required	U	1.4 from canopy edge		N/A
G	8	Plum, hawthorn & goat willow	7	0	Plotted with topographical mapping and GPS				100					1	Y-SM	F	F	20+	C	C1	A small cluster of scrubby trees which have not been flailed as per the hedgerow and left to grow tall.	None required	U	0.2 from canopy edge		N/A
G	9	Hornbeam, silver birch, black pine & sycamore.	10	3	Plotted with topographical mapping and GPS				160					1	Y-SM	G	G	40+	C	C1,2	A group of off-site hedgerow trees set back from the boundary but still potentially within influencing distance of the site.	None required	U	0.9 from 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)									
G	10	Field maple, elm, dogwood, hawthorn	7.5	0	Plotted with topographical mapping and GPS				150					1	Y-SM	G	G	40+	C	C1,2	Mixed roadside boundary group which helps to screen the site. Three dead elms north east end of group by roadside.	Remove dead elms within 12months.	U	0.8 from canopy edge		N/A
H	1	Hawthorn, blackthorn, English elm, field maple & wild privet.	3	0	Plotted with topographical mapping and GPS				80					1	Y-SM	G	G	40+	N/A		Large field boundary hedge. Well maintained on site side.	None required	U	To canopy edge		N/A
H	2	Hawthorn, field maple, hazel, walnut.	6.5	0	Plotted with topographical mapping and GPS				75					1	Y-SM	G	G	40+	N/A		Large hedgerow, with bramble growing through. Provides very effective screening to/from adjacent properties.	None required	U	To canopy edge		N/A
H	3	Hawthorn & blackthorn	2	0	Plotted with topographical mapping and GPS				50					1	Y-SM	G	G	40+	N/A		Fairly insignificant hedgerow. Not well maintained to the north and returning to bramble scrub.	Recommend planting up gaps with native local provenance hedging planting stock.	U	To canopy edge		N/A
H	4	Hawthorn, English elm	2.5	0	Plotted with topographical mapping and GPS				70					1	Y-SM	G	G	40+	N/A		Small section of mixed hedge. Unmaintained.	None required	U	To canopy edge		N/A
H	5	Blackthorn, hawthorn & English elm.	2.5	0	Plotted with topographical mapping and GPS				60					1	Y-SM	G	G	40+	N/A		Well maintained boundary 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		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)			Sub Category						
H	6	English elm, blackthorn, hawthorn, elder & bramble.	2.5	0	Plotted with topographical mapping and GPS				60					1	Y-SM	G	G	40+	N/A		Large and generally consistent boundary hedge. Gappy in places but overall well maintained.	Recommend planting up gaps with native local provenance hedging planting stock.	U	To canopy edge		N/A
H	7	Hawthorn, blackthorn, plum, elder, English elm, ash & beech.	3	0	Plotted with topographical mapping and GPS				70					1	Y-SM	G	G	40+	N/A		Large hedge running along northern boundary. Intact sections well maintained with some sections reverting to brambles, particularly to the east.	Recommend planting up gaps with native local provenance hedging planting stock.	U	To canopy edge		N/A
H	8	Elder, English elm & blackthorn	2.5	0	Plotted with topographical mapping and GPS				60					1	Y-SM	G	G	40+	N/A		Section of boundary hedge with brambles growing throughout.	None required	U	To canopy edge		N/A
H	9	Hawthorn, blackthorn, hazel, bramble & English elm.	3.5	0	Plotted with topographical mapping and GPS				50					1	Y-SM	G	G	40+	N/A		Scrubby mixed hedgerow formed from garden species and original field boundary hedgerow, all flailed as a single unit. Provides effective screening to/from adjacent properties.	None required	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	• 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			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	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
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	Trees with material conservation or other cultural value	See Table 2
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 present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

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

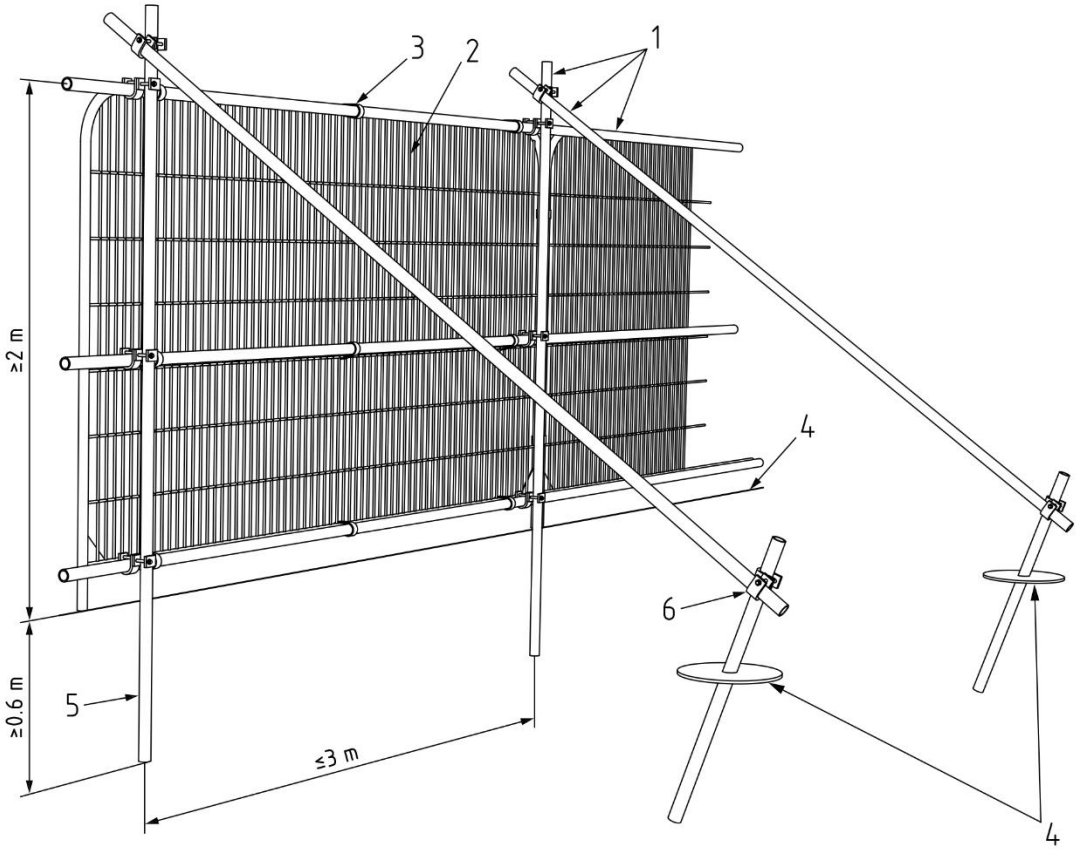
- Trees are influenced by a variety of environmental variables, which can affect the health of trees causing biomechanical and physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Due to the changeable nature of trees and other site/environmental 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 (5th July 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 (5th July 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 or assessment.

Appendix 6

Tree Protection Fencing

Appendix 6: Tree Protection Fencing



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Appendix 7

Tree Protection Signage

Appendix 7: Tree Protection Signage

Appendix 8

Glossary of Common Terms Used in Arboriculture

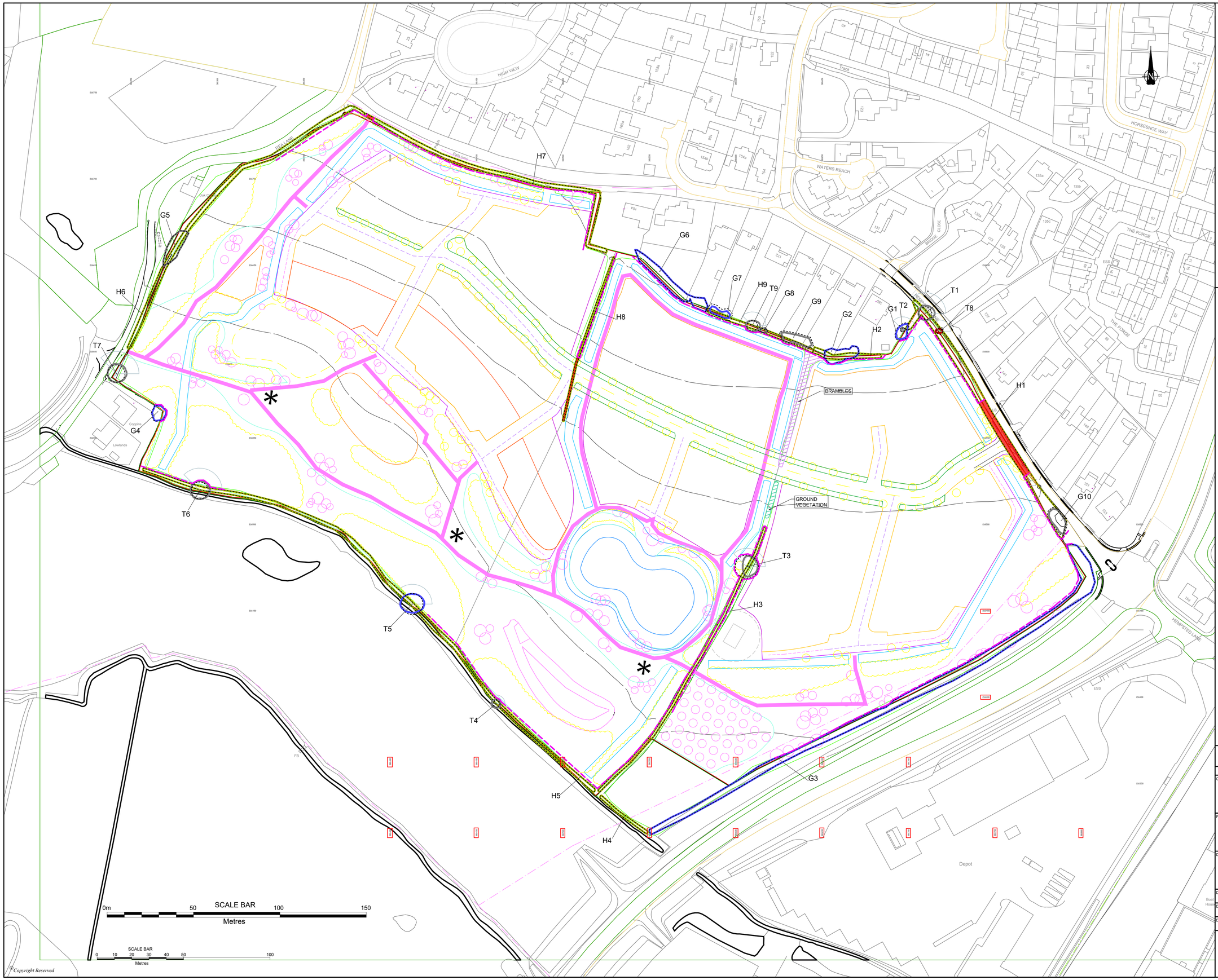
Appendix 8: Glossary of Common Terms Used in Arboriculture

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

- RED LINE BOUNDARY
- HEDGE
- BRAMBLES
- GROUND VEGETATION
- TREES REMOVED DUE TO CONDITION AND/OR TO ENABLE DEVELOPMENT
- EXTENT OF PRUNING
- LOCATION OF TREE PROTECTION FENCING

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.

- CATEGORY A CROWN SPREAD
- CATEGORY B CROWN SPREAD
- CATEGORY C CROWN SPREAD
- CATEGORY U CROWN SPREAD
- ROOT PROTECTION AREA
- VETERAN TREE BUFFER ZONE
- T1/G1/W1/H1 TREE/TREE GROUP/ WOODLAND/HEDGE NUMBER
- POTENTIAL DIRECT OBSTRUCTION OF SUNLIGHT

- Proposed thicket/woodland planting
- Street trees
- Native tree planting
- Community orchard
- Wildflower/long grass
- Existing drainage basin
- Existing watercourses
- Proposed swales
- Proposed drainage basin
- Proposed foul pump station (15m cordon sanitaire)
- Bridleway
- Public footpath
- Pedestrian connection
- Cycle way
- Spine street
- Secondary streets
- Private drives
- Recreational footways
- Circular jogging route
- Play areas (LEAP: Locally Equipped Area of Play (400m²) NEAP/MUGA: Neighbourhood Equipped Area of Play(1000m²)/Multi-Use Games Area (450m²))
- Informal kickabout area (including a single set of goalposts)
- Active fitness space along circular jogging route
- Contours

NOTES:
REFERENCED DRAWING: CSA ENVIRONMENTAL, DEVELOPMENT FRAMEWORK PLAN 2022, CSA/6036/103 REV C

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
A	First Issue	03/08/22	BH	MS	MS

CLIENT

GLADMAN DEVELOPMENTS LIMITED

PROJECT

LAND AT HEMPSTED LAND, GLOUCESTER

DRAWING TITLE

TREE PROTECTION PLAN

DRG No.		REV
GM10710-041		A
DRG SIZE	SCALE	DATE
A1	1:1000	13/07/2022
DRAWN BY	CHECKED BY	APPROVED BY
MAB	JY	MS

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