Aspbury Planning

Land to south of A617, Rainworth

Arboricultural Assessment

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1.0 INTRODUCTION

1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of Aspbury Planning to present the findings of an Arboricultural Assessment and survey of trees located at Land to south of A617, Rainworth (hereafter referred to as the site), OS Grid Ref SK 589 587.

1.2 The survey was carried out on 10th December 2021.

Scope of Assessment

1.3 The tree survey and assessment of existing trees has been carried out in accordance with guidance contained within British Standard 5837:2012 *'Trees in Relation to Design, Demolition and Construction - Recommendations'* (hereafter referred to as BS5837). The guidelines set out a structured assessment methodology to assist in determining which trees would be deemed either as being suitable or unsuitable for retention.

1.4 The guidance also provides recommendations for considering the relationship between existing trees and how those trees may integrate into designs for development; demolition operations and future construction processes so that a harmonious and sustainable relationship between any retained trees and built structures can be achieved.

1.5 The purpose of the report is therefore to firstly, present the results of an assessment of the existing trees' arboricultural value, based on their current condition and quality and to secondly, provide an assessment of impact arising from the proposed development of the site.

1.6 This report has been produced to accompany an outline planning application for no more than 95 dwellings and has included an assessment of any impact to the tree cover. The survey has therefore focused on any trees present within or bordering the site that may potentially be affected by the future proposals or will pose a constraint to any proposed development.

Site description

1.7 The site is situated to the north of the village of Rainworth, south east of the town of Mansfield. Comprising of a single large field parcel which is currently disused, the A617 forms the north eastern boundary, Rufford Colliery Way forms the south eastern boundary, residential dwellings back onto the south western boundary and the north western boundary abuts offsite woodland.

2.0 PLANNING POLICY

National Planning Policy Framework 2019

2.1 National Planning Policy is defined by the National Planning Policy Framework (NPPF). This sets out the Government's most current and up to date planning policies for England and how these should be applied. The current NPPF is dated February 2019.

2.2 Paragraph 11 of the NPPF states that there is a presumption in favour of sustainable development and states that for decision making, the LPA should be '*c) approving development proposals that accord with an up-to-date development plan without delay'.* In the absence of a development plan or the development plan is out of date, the acting LPA should grant planning

consent so far as the development proposals do not breach the policies and guidance outlined in the NPPF.

2.3 In relation to arboriculture, the NPPF also states that:

- *175(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';*

  and provides specific guidance that:

- *175(d) 'development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity'.*

2.4 Examples of what is deemed to be *'wholly exceptional'* are included within Footnote 58 and provides the examples of '*infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat'.*

Statutory Considerations

2.5 Local authorities have a Duty under the Town and Country Planning Act to create Tree Preservation Orders (TPO) in order to protect and preserve specific trees and woodlands that bring significant amenity benefit to a particular site or location. Under a TPO it is a criminal offence to cut down, top, lop, uproot or willfully destroy a tree protected by that Order, or to cause or permit such actions, if carried out without the prior written consent of the acting LPA. Anyone found guilty of such an offence is liable and in serious cases, may result in prosecution and incur an unlimited fine.

2.6 The presence of any Tree Preservation Orders or Conservation Area designations that may affect the site has yet to be confirmed by Newark and Sherwood District Council. Once this information has been received, the report will be updated accordingly. Before any tree works are undertaken confirmation of the presence of the statutory constraints should be sought from the Local Authority.

Non-Statutory Considerations

2.7 In order to compile existing baseline information on relevant arboricultural considerations information was requested from both statutory and non-statutory nature conservation organisations. The Multi Agency Geographic Information for the Countryside (MAGIC)[1] website identified the woodland (W1) adjacent to the site's north western boundary as included within the following:

- The Priority Habitat Inventory, Deciduous Woodland
- The National Forestry Inventory

[1] http://magic.defra.gov.uk/

2.8 The Priority Habitat Inventory is a spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.[2]

2.9 The deciduous woodland inventory is a rolling programme designed to provide accurate information about the size, distribution, composition and condition of forests and woodlands.[3]

2.10 Priority habitat designation and inclusion within the National Forestry Inventory does not provide any statutory protection.

3.0 SURVEY METHODOLOGY

3.1 The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of BS5837. The survey has been undertaken by a suitably qualified and experienced arboriculturist and has recorded information relating to all those trees within the site and those adjacent to the site which may be of influence to any proposals. Trees were assessed for their arboricultural quality and benefits within the context of the proposed development in a transparent, understandable and systematic way.

3.2 Trees have been assessed as groups, hedgerows or woodland where it has been determined appropriate.

- The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally including biodiversity or habitat potential for example parkland or wood pasture.
- For the purposes of this assessment, a hedgerow is described as any boundary line of trees or shrubs less than 5m wide at the base and are managed under a regular pruning regime.
- For the purposes of this assessment woodland is described as a habitat where 'trees are the dominant plant form. The individual tree canopies generally overlap and interlink, often forming a more or less continuous canopy'[4]. Woodlands however, are not just formed of trees and generally include a great variety of other plants. These will include 'mosses, ferns and lichens, as well as small flowering herbs, grasses and shrubs'[5].

3.3 An assessment of individual trees within groups, hedgerows or woodland has been made where a clear need to differentiate between them, for example, in order to highlight significant variation between attributes including physiological or structural condition or where a potential conflict may arise.

Ancient and Veteran Trees

3.4 Veteran trees and Ancient Woodland are important components of the landscape, their importance can be for a number of reasons including that of their ecological, social, cultural and historic value.

[2] Contains public sector information licensed under the Open Government Licence v3.0.
[3] https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/
[4] http://www.countrysideinfo.co.uk/woodland_manage/whatis.html
[5] http://www.countrysideinfo.co.uk/woodland_manage/whatis.html

3.5 Veteran Trees and Ancient Woodlands are material considerations within the planning process and their importance is specifically recognised within the National Planning Policy Framework (NPPF) 2019, which defines the terms ancient or veteran tree as:

'A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'[6]

3.6 Various published methodologies are currently available which, due to the complexity and subjectivity of the process of defining and assessing these trees, often have conflicting definitions. This assessment, and the criteria used for defining ancient/veteran trees and the identification of attributable ancient/veteran features, has been based on a range of currently published guidance and resources.

3.7 None of the assessed trees were considered as ancient or veteran trees in accordance with accepted methodologies and guidance.

Ancient Woodland

3.8 Ancient woodland in England is defined as an area that has been continuously wooded since at least 1600 AD. 'Continuously wooded' does not require there to have been a continuous cover of trees and shrubs across the entire area. Habitats such as glades, deer lawns, rides, ponds and streams, as well as gaps created by natural occurrences, and forestry may all occur within woodland.

3.9 Ancient woodland includes both ancient semi-natural woodland and plantations on ancient woodland sites:

- Ancient semi-natural woodland (ASNW) is where the stands are composed predominantly of trees and shrubs native to the site that do not obviously originate from planting. However, woodlands with small planting of trees native to the site would still be included in this category. The stands may have been managed by coppicing or pollarding or the tree and shrub layer may have grown up by natural regeneration.
- Plantations on ancient woodland sites (PAWS) these are areas of ancient woodland where the former native tree cover has been felled and replaced by planted trees, predominantly of species not native to the site. These sites often retain some of the ancient woodland features such as soils, ground flora, fungi and woodland archaeology.

3.10 Ancient woodland is a resource of great importance for its wildlife, soils, recreation, cultural value, history and the contribution to diverse landscapes.

3.11 The Multi Agency Geographic Information for the Countryside (MAGIC)[7] website did not identify the woodland (W1) adjacent to the site's north western boundary as Ancient Woodland.

[6] Ministry of Housing, Communities and Local Government. (2019). *National Planning Policy Framework.* London: Ministry of Housing, Communities and Local Government.
[7] http://magic.defra.gov.uk/

BS5837 Categories

3.12 Trees have been divided into one of four categories based on Table 1 of BS5837, *'Cascade chart for tree quality assessment'*. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).

3.13 Category U trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are, for this reason not considered in the planning process on arboricultural grounds. Categories A, B and C are applied to trees that should be of material considerations in the development process. Each category also having one of three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural or conservation values accordingly.

3.14 **Category (U) – (Red):** Trees which are unsuitable for retention and are 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 within this category are:

- Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse and includes trees that will become unviable after removal of other category U trees.
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline.
- Trees that are infected with pathogens of significance to the health and/ or safety of other nearby trees or are very low quality trees suppressing adjacent trees of better quality.
- Certain category U trees can have existing or potential conservation value which may make it desirable to preserve.

3.15 **Category (A) – (Green):** Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years with potential to make a lasting contribution. Such trees may comprise:

- Sub category (i) trees that are particularly good examples of their species, especially if rare or unusual, or are essential components of groups such as formal or semi-formal arboricultural features for example the dominant and/or principal trees within an avenue.
- Sub category (ii) trees, groups or woodlands of particular visual importance as arboricultural and / or landscape features.
- Sub category (iii) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.

3.16 **Category (B) – (Blue):** Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years with potential to make a significant contribution. Such trees may comprise:

- Sub category (i) trees that might be included in category A but are downgraded because of impaired condition for example the presence of significant though remediable defects, including unsympathetic past management and storm damage.

- Sub category (ii) 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.
- Sub category (iii) trees with material conservation or other cultural value.

3.17 **Category (C) – (Grey):** Trees that are considered for retention and are of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Such trees may comprise:

- Sub category (i) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
- Sub category (ii) trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value or trees offering low or only temporary / transient screening benefits.
- Sub category (iii) trees with no material conservation or other cultural value.

Site Plans

3.18 The individual positions of trees, groups, hedgerows and woodland have been shown on the Tree Survey Plan. The positions of trees are based on a topographical / land survey, as far as possible, supplied by the client. Where topographical information has not identified the position of trees these have been plotted using a global positioning system and aerial photography to provide approximate locations. The crown spread, root protection area and shade pattern (where appropriate) are also indicated on this plan.

3.19 As part of this assessment, a Tree Retention Plan has been prepared to show the proposed layout in relation to the existing tree cover allowing an assessment of any potential conflicts. The plan also identifies which trees would be required to be removed or retained as part of the proposed development.

Tree Constraints and Root Protection Areas

3.20 Below ground constraints to future development are represented by tree roots and the soil environment in which they grow which needs to be protected if the tree is to be retained. Tree rooting systems are essential for the uptake of water and nutrients, serving the storage of carbohydrates for the future growth and function of the tree, and form structural anchorage and support for the stem and crown. The perceived rooting area of the tree; referred to as the root protection area (RPA) needs to be protected if the tree is to be retained.

3.21 The RPA is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. The RPA has been calculated in accordance with Annex C, D and Section 4.6 of BS5837:2012 and requires suitable protection in order for the tree to be successfully incorporated into any future scheme. As such, the RPA of existing trees is an important material consideration when considering site constraints and planning development activities.

3.22 Where applicable the shape of the Root Protection Area has been modified to consider the presence of any nearby obstacles (existing or past) which may have restricted root growth and the likely root distribution i.e. the presence of hard standing, structures and underground apparatus. Where groups of trees have been assessed, the Root Protection Area has been shown based on the maximum sized tree in any one group and so may exceed the Root Protection Area required for some of the individual specimens within the group. Further detailed inspection of the individual trees forming a group may be required where development impacts upon the group.

3.23 Whilst it is generally accepted that a trees roots may extend far greater distances than the notional RPA, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water and nutrients), with roots predominantly located in the upper 1,000 mm of the soil horizon; the RPA offers an accepted protective buffer from development.

3.24 Above ground constraints such as the current crown spread of the trees and an illustration of the shade pattern (where appropriate) have been considered and identified within the Tree Survey Plan and Tree Retention Plan indicates their potential area of shading influence.

Considerations and Limitations of the Tree Survey

3.25 The survey was completed from ground level only and from within the boundary of the site. Aerial tree inspections or an assessment of the internal condition of the stem/s or branches were not undertaken at this stage as this level of survey is beyond the scope of the initial assessment.

3.26 The statements made in this report regarding assessed trees does not take into account the effects of extreme / adverse weather conditions, changes in land use prior to the site's development, unforeseen accidents or anti-social behaviors, such as vandalism, which occur since the date of the survey. As such, the assessment of tree condition given within applies to the date of survey and cannot be assumed to remain unchanged.

3.27 It will be necessary to review all comments and observations made within this report, in accordance with sound arboricultural practice, within two years of the date of survey (unless explicitly stated elsewhere within this report). Further review may also be necessary where site conditions change or works to trees are carried out which have not been specified in detail within this report.

3.28 Hedgerows are identified as a Habitat of Principal Importance (HPI) as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. The tree survey conducted, in accordance with BS5837, does not assess hedgerows against the Hedgerow Regulations 1997 or specifically from an ecological perspective, and is outside the scope of this assessment.

3.29 It may be necessary during detailed design to undertake further assessment and accurate positioning of woody species within tree groups and hedgerows to assist structural calculations for foundation design of structures in accordance with current building regulations. The exact position of individual trees or species included as part of a tree group should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths in accordance with NHBC Chapter 4.2 Building near Trees.

4.0 RESULTS

4.1 A total of 51 individual trees, 18 groups of trees, one hedgerow and a single woodland were surveyed as part of the Arboricultural Assessment. Trees were surveyed as individual trees and groups of trees where examples are clearly present as per the description. Refer to the Tree Survey Plan and Appendix A – Tree Schedule for full details of the trees included in this assessment.

Tree Schedule

4.2 Appendix A presents details of any individual trees, groups, hedgerows and woodlands found during the assessment including heights, diameters at breast height, crown spread (given as a radial measurement from the stem), age class, comments as to the overall condition at the time of inspection, BS5837 category of quality and suitability for retention and the root protection area.

4.3 General observations particularly of structural and physiological condition for example the presence of any decay and physical defect and preliminary management recommendations have also been recorded where appropriate.

Results Summary

4.4 Tree cover on the site included a mixture of planted groups along the southern boundary and around an existing pond and watercourse within the east of the site and self-seeded tree cover which had established internal to the site. The highest value tree cover associated with the site is woodland which abutted the north western boundary and a mature tree group situated along an embankment on the south western boundary, which provided screening to offsite dwellings on Churchfield Drive.

4.5 The table below summarises the trees assessed and several of the trees have been discussed in more detail following the table, owing to their physical condition or arboricultural significance.

Table 1: Summary of Trees by Retention Category

	Individual Trees	Total	Groups of Trees	Total
Category U - Unsuitable		0		0
Category A (High Quality / Value)		0	W1	1
Category B (Moderate Quality / Value	T1, T2, T3, T4, T6, T7, T8, T9, T10, T11, T12, T13, T18, T19, T20, T33, T34, T36, T47, T48, T51	21	G1, G2, G3, G4, G7, G8, G11, G13, G16, G17	10
Category C (Low Quality / Value)	T5, T14, T15, T16, T17, T21, T22, T23, T24, T25, T26, T27, T28, T29, T30, T31, T32, T35, T37, T38, T39, T40, T41, T42, T43, T44, T45, T46, T49, T50	30	G5, G6, G9, G10, G12, G14, G15, G18, H1	9

4.6 A raised embankment, identified as a dismantled railway, along the south western boundary provided screening to offsite dwellings on Churchfield Drive. Tree cover along this embankment included a mature line of ash *Fraxinus* excelsior, beech *Fagus sylvatica,* silver birch *Betula pendula* and sycamore *Acer pseudoplatanus* recorded as G4 along with areas of new tree planting G1, G2, G3, G7 and G8 all of which were recorded as moderate quality for their collective landscape and screening value. Several individual trees were also recorded along this boundary where they were separate from groups or where there is a clear need to differentiate between them.

4.7 Tree cover internal to the site was all likely to have established through self seeding, with it being apparent that the site had been stripped or disturbed previously. From an arboricultural perspective this tree cover was all of low quality being of relatively small proportions and providing limited landscape value. Species present included English oak *Quercus robur*, goat willow *Salix caprea*, silver birch, sycamore and Austrian pine *Pinus nigra ssp. Nigra.* This tree cover was recorded as a single large group G9 with several individual trees also being recorded where they were separate from the groups or where there is a clear need to differentiate between them due to being of larger proportions or different species.

4.8 Woodland W1 along the site's north western boudary is the highest value tree cover associated with the site. Comprising of English oak and silver birch with occasional sycamore and an understorey of holly *Ilex aquifolium*. W1 is classed as Priority Habitat Deciduous Woodland (England) and is included on the National Forest Inventory but was not identified as Ancient Woodland on the Multi Agency Geographic Information for the Countryside (MAGIC)[8] website. W1 is considered as retention Category A for its arboricultural, landscape and conservation value.

4.9 The north eastern boundary adjacent to the A617 is largely devoid of tree cover with only a single unmaintained and recently planted hedgerow (H1) and three likely self-seeded trees (T28, T29 and T30) being recorded. This tree cover provided limited screening to the site and was considered of low quality from an arboricultural perspective.

4.10 Within the eastern portion of the site ran Rainworth Water, a small stream which at the time of the assessment had pooled within an area of low ground close to the site's south eastern boundary and Rufford Colliery Way. Tree cover along this steam and around this area of wetland included a mixture of likely planted alder *Alnus glutinosa* and silver birch along with likely self-seeded goat willow, hawthorn *Crataegus monogyna* and elder *Sambucus nigra*. This tree cover ranged from moderate to low quality, with tree groups G11, G14, G16 and G17 comprising early mature examples of alder and silver birch considered Category B and self-seed groups included G12 and G18 considered Category C.

[8] http://magic.defra.gov.uk/

5.0 ARBORICULTURAL IMPACT ASSESSMENT

5.1 The following paragraphs present a summary of the tree survey and discussion of particular trees and groups recorded in the context of any proposed development in the form of an Arboricultural Impact Assessment in accordance with section 5.4 of BS5837. Any final tree retentions will need to be reconciled with the advice contained within this report.

5.2 The AIA has been based upon the Development Framework Plan and seeks to outline the relationship between the proposals and the existing trees and hedgerows. The drawing shows the proposals for an outline residential development of up to 95 dwellings. An overlay of the layout has been incorporated in the Tree Retention Plan to assist in identifying the relationship and any potential conflicts between the proposals and the existing trees and hedgerows.

Table 2: Summary of Impact on Tree Stock

	Trees to be Retained	Total	Trees to be Removed in full or part	Total
Category U - Unsuitable				
Category A (High Quality / Value)	W1	1		
Category B (Moderate Quality / Value	T1, T2, T3, T4, T6, T7, T8, T9, T10, T11, T12, T13, T18, T19, T20, T33, T34, T36, T47, T48, T51, G1, G2, G3, G4, G7, G8, G11, G13, G16, G17	31		
Category C (Low Quality / Value)	T5, T14, T15, T16, T17, T28, T29, T30, T35, T37, T38, T39, T49, T50, G5, G6, G10, G12, G14, G15, G18, H1	22	T21, T22, T23, T24, T25, T26, T27, T31, T32, T40, T41, T42, T43, T44, T45, T46, G9	17

5.3 The only means of vehicular access to the site will be from a new junction off the A617 in the north east of the site. This boundary is largely devoid of tree cover and to facilitate this access would not require any trees or hedgerow be removed. The Development Framework Plan has proposed new tree planting along the boundary with the A617, to improve screening to the site and this should be considered positive from an arboricultural perspective providing an opportunity to increase species diversity on the site as well as creating future canopy cover.

5.4 The proposed development parcels have at this outline stage been shown central to the site, with significant buffers proposed to the existing boundary tree cover including the offsite woodland (W1) to the west. The development of the site would however require the removal of all the internal self-seeded tree cover (T21, T22, T23, T24, T25, T26, T27, T31, T32, T40, T41, T42, T43, T44, T45, T46 and G9). The removal of this tree cover should not be regarded as a significant impact, due to the low quality and young proportions. Any future development of the site could more than adequately mitigate for this removal through new tree planting as part of the buffers and within the development area itself, providing higher quality trees with a greater diversity of species.

5.5 The outline proposals have provided a sufficient buffer to the high-quality woodland beyond the north western boundary. A potential gabion wall has been shown along this boundary, which is subject to detailed design, but this is shown to be situated beyond the calculated RPA of this woodland, based upon the largest stem recorded along the woodland edge, and as such its construction should be considered acceptable. It would be possible to erect tree protection barriers at a suitable distance to allow for construction of the gabion wall. The Development Framework Plan has also shown properties to be orientated to front onto the woodland which reduces the potential for shading of key living areas and rear gardens and the likelihood of future pressure to prune or remove trees in the future.

5.6 The site's southern boundary which abuts residential dwellings on Churchfield Drive is shown to be unaffected by the development proposals and the existing earth bund and tree cover would be retained and continue to provide screening to the site from these properties. The future development of the site provides an opportunity to implement future management of the planted groups along this boundary, to undertake selective thinning to improve their structure and allow trees sufficient space to reach maturity. The opportunity to implement future management of this tree cover should be considered positive from an arboricultural perspective.

5.7 Similarly, the tree cover around the wetland and watercourse is shown to be retained and would be unaffected by the development proposals. The area would form part of the open space provision and a future development would provide an opportunity to implement future management and improve this tree cover from an arboricultural perspective as well as opportunities to enhance any future ecological value.

5.8 At this outline stage potential footpath routes have been shown linking the site with Rufford Colliery Way beyond the south western boundary. There is currently an informal path along the proposed route however this path is not currently a public right of way and would require upgrading and a suitable crossing point over Rainworth Water provided. With an engineered solution and tree friendly construction methods it would be considered achievable that this footpath route could be provided with minimal arboricultural impacts.

Discussion

5.9 In conclusion for arboriculture, the proposals have been informed by the existing tree cover retaining all the moderate and high-quality trees and maintaining the current screening they provide. The removal of the self-seeded low-quality trees from the centre of the site should not be considered a significant arboricultural impact and necessary to implement any development on the site.

5.10 A future development of the site would provide an opportunity to implement management of the existing planted tree groups and the retention of, coupled with targeted future management and enhancement of the existing and future tree cover should be considered positive from an arboricultural perspective.

Tree Management

5.11 The layout of the development is currently reserved for subsequent approval. In the course of a reserved matters application pursuant to layout, a review of the relationship between the layout and the retained trees should be undertaken by a qualified arboriculturist to assess the existing tree cover and prepare a schedule of tree works.

5.12 All retained trees should be subjected to sound arboricultural management as recommended within section 8.8.3 of BS5837 *Post Development Management of Existing Trees,* where there is a potential for public access in order to satisfy the landowner's duty of care. Additionally, inspections annually and following major storms should be carried out by an experienced arboriculturist or arborist to identify any potential public safety risks and to agree remedial works as required.

5.13 All tree works undertaken should comply with British Standard 3998:2010 and should therefore be carried out by skilled tree surgeons. It would be recommended that quotations for such work be obtained from Arboricultural Association Approved Contractors as this is the recognised authority for certification of tree work contractors.

5.14 All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (March - September inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist.

6.0 NEW TREE AND HEDGEROW PLANTING

6.1 As part of the outline proposals an adequate quantity of structured tree planting has been demonstrated alongside the primary access roads within the roadside verges and along the boundaries with the A617 and offsite woodland. The purpose and function of this new tree planting should be understood from the start of any design stages so that key objectives from a landscape perspective can also be achieved.

Trees

6.2 The landscaping scheme should consider the use of both native tree species (for their low maintenance requirements and nature conservation value) and ornamental species (for their contribution to urban design and amenity value). Species choices should be selected on the basis of their suitability for the final site use. Furthermore, during the design process consultation should be made with the Local Planning Authority to obtain information on their tree strategy and incorporate the planting proposals with any local policies and initiatives and/or Biodiversity Action Plans (BAP).

6.3 In line with the NPPF all schemes should aim achieve a net gain in biodiversity value. Nationally recognised biodiversity metrics allow for the inclusion of, not limited to, newly planted scattered trees, woodlands and hedgerows as a means of compensating for loss of habitat as part of the development. Tree and shrub planting can therefore be used to contribute to this biodiversity gain.

6.4 To maximise biodiversity value (and contribution to net gain) native species or varieties should be specified. Such provisions can be incorporated into both the hard and soft landscaping of the scheme. It is recommended that tree and hedgerow specifications are made following consultation with guidance published by the Local Planning Authority.

6.5 When deciding upon suitable tree species, careful consideration would need to be given to the following: ultimate height and canopy spread, form, habit, density of crown, potential shading effect, colour, water demand, soil type and maintenance requirements in relation to both the built form of the new development and existing properties.

6.6 Through careful species selection, the landscape scheme shall reduce the risk of trees being removed in the future on the grounds of nuisance. Nuisance can be perceived in a number of ways and vary from person to person however most commonly, within the context of trees, low overhanging branches, excessive shading, seasonal leaf fall and the misinformed perception that trees close to buildings cause damage.

Hedgerows

6.7 Hedgerows are identified as a Habitat of Principle Importance (HPI) as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Consequently, it is important that the proposed scheme delivers a net gain in terms of linear hedgerows through new planting to compensate for any losses. Species should be native, and characteristic of the locality.

6.8 Recommended species for native hedgerow planting are as follows:

- *Crataegus monogyna*
- *Prunus spinosa*
- *Cornus sanguinea*
- *Corylus avellana*
- *Acer campestre*
- *Euonymus europaeus*

Rooting Environment and Soil Volumes

6.9 The success of any landscaping scheme relies on an adequate provision of a high-quality rooting environment within which trees can thrive and reach their full potential. Planting trees with due care and consideration can, in the long term, provide a greater return on a schemes green investment and ensure trees remain healthy and grow to mature proportions. Healthy mature trees integrate well into the built environment; increase the maturity of the landscape; help provide a natural green and leafy urban environment in which people would want to reside whilst also benefiting local wildlife.

6.10 The planting of trees within confined urban environments should consider the use of appropriately designed planting pits specifically engineered to promote tree health and longevity. Crucially the aim will be to provide an adequate volume of quality soil for roots to suitably develop by calculating the amount of available soil volumes needed and selecting species whose mature size is compatible with the site. This is an integral component of the planning stage (Lindsey & Bassuk, 1991).

6.11 In a natural environment free from constraints to growth, it has been proven through research that root systems can extend up to three times the radius of the tree crown and although in an urban environment there is often insufficient space to accommodate the extent of the full potential for root growth, all efforts should be made to at least provide as much soil volume as possible.

General Planting Recommendations

6.12 Wherever possible, following discussions with the developer and utility companies, common service trenches should be specified to minimise land take associated with underground service provision and facilitation access for future maintenance.

6.13 Tree planting should be avoided where they may obstruct overhead power lines or cables. Any underground apparatus should be ducted or otherwise protected at the time of construction to enable trees to be planted without resulting in future conflicts.

General Design Principles in Relation to Retained Trees

6.14 In a subsequent Reserved Matters application following the final layout of the scheme, assessment of the distance of proposed development in relation to the calculated root protection area of retained trees should be made which will inform the final layout.

6.15 The routing of below ground services should also be considered with regard to the retained trees as part of a subsequent reserved matters application pursuant to layout. As recommended by the guidance given in section 7.7 of BS5837 services, where possible, should not encroach within the Root Protection Areas of retained trees. If below-ground services are proposed within a Root Protection Area, modifications to the alignment of the service route may need to be made in order to minimise adverse effects on root stability and overall tree health.

6.16 Consideration may also need to be given to the potential for tree roots of newly planted trees and hedgerows to affect or compromise the future services. As far as feasible, it would be preferable that proposed services near both the existing and any new planting should be ducted for ease of access and maintenance and grouped together to minimise any future disturbance.

7.0 TREE PROTECTION MEASURES

7.1 Retained trees will be adequately protected during works ensuring that the calculated root protection area for all retained trees can be appropriately protected through the erection of the requisite tree protection barriers. Measures to protect trees should follow the guidance in BS5837 and will be applied where necessary for the purpose of protecting trees within the site whilst allowing sufficient access for the implementation of the proposed layout. These have been broadly summarised below.

General Information and Recommendations

7.2 All trees retained on site will be protected by suitable barriers or ground protection measures around the calculated RPA, crown spread of the tree or other defined constraints of this assessment as detailed by section 6 and 7 of BS5837.

7.3 Barriers will be erected prior to commencement of any construction work and before demolition including erection of any temporary structures. Once installed, the area protected by fencing or other barriers will be regarded as a construction exclusion zone. Fencing and barriers will not be removed or altered without prior consultation with the Project Arboriculturist.

7.4 Any trees that are not to be retained as part of the proposals should be felled prior to the erection of protective barriers. Particular attention needs to be given by site contractors to minimise damage or disturbance to retained specimens.

7.5 Where it has been agreed, construction access may take place within the root protection area if suitable ground protection measures are in place. This may comprise single scaffold boards over a compressible layer laid onto a geo-textile membrane for pedestrian movements. Vehicular movements over the root protection area will require the calculation of expected loading and the use of proprietary protection systems.

7.6 Confirmation that tree protective fencing or other barriers have been set out correctly should be gained prior to the commencement of site activity.

Tree Protection Barriers

7.7 Tree protection fencing should be fit for the purpose of excluding any type of construction activity and suitable for the degree and proximity of works to retained trees. Barriers must be maintained to ensure that they remain rigid and complete for the duration of construction activities on site.

7.8 In most situations, fencing should comprise typical construction fencing panels attached to scaffold poles driven vertically into the ground. For particular areas where construction activity is anticipated to be of a more intense nature, supporting struts, acting as a brace should be added and fixed into position through the application of metal pins driven into the ground to offer additional resistance against impacts.

7.9 Where site circumstances and the risk to retained trees do not necessitate the default level of protection an alternative will be specified appropriate to the level / nature of anticipated construction activity. The recommended methods of fencing specifications for this site have been illustrated in Appendix B.

7.10 It may be appropriate on some sites to use temporary site offices, hoardings and lower level barrier protection as components of the tree protection barriers.

7.11 Details of the specific protection barriers for the site can be provided should the application be approved, as part of a site specific Arboricultural Method Statement for a Reserved Matters application and in accordance with the guidance contained within BS5837.

Protection outside the exclusion zone

7.12 Once the areas around trees have been protected by the barriers, any works on the remaining site area may be commenced providing activities do not impinge on protected areas.

7.13 All weather notices should be attached to the protective fencing to indicate that construction activities are not permitted within the fenced area. The area within the protective barriers will then remain a construction exclusion zone throughout the duration of the construction phase of the proposed development. Protection fencing signs can be provided upon request.

7.14 Wide or tall loads etc should not come into contact with retained trees. Banksman should supervise transit of vehicles where they are in close proximity to retained trees.

7.15 Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree stem. No concrete should be mixed within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.

7.16 No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.

7.17 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.

7.18 Any trees which need to be felled adjacent to or are present within a continuous canopy of retained trees, must be removed with due care (it may be necessary to remove such trees in sections).

Protection of Trees Close to the Site

7.19 A number of trees were located on the boundaries of the site and therefore the root protection area and crown spread of these trees will need to be protected in the same way as all the retained trees within the site. All trees located outside the boundaries of the assessment site yet within close proximity to works should be adequately protected during the course of the development by barriers or ground protection around the calculated root protection area.

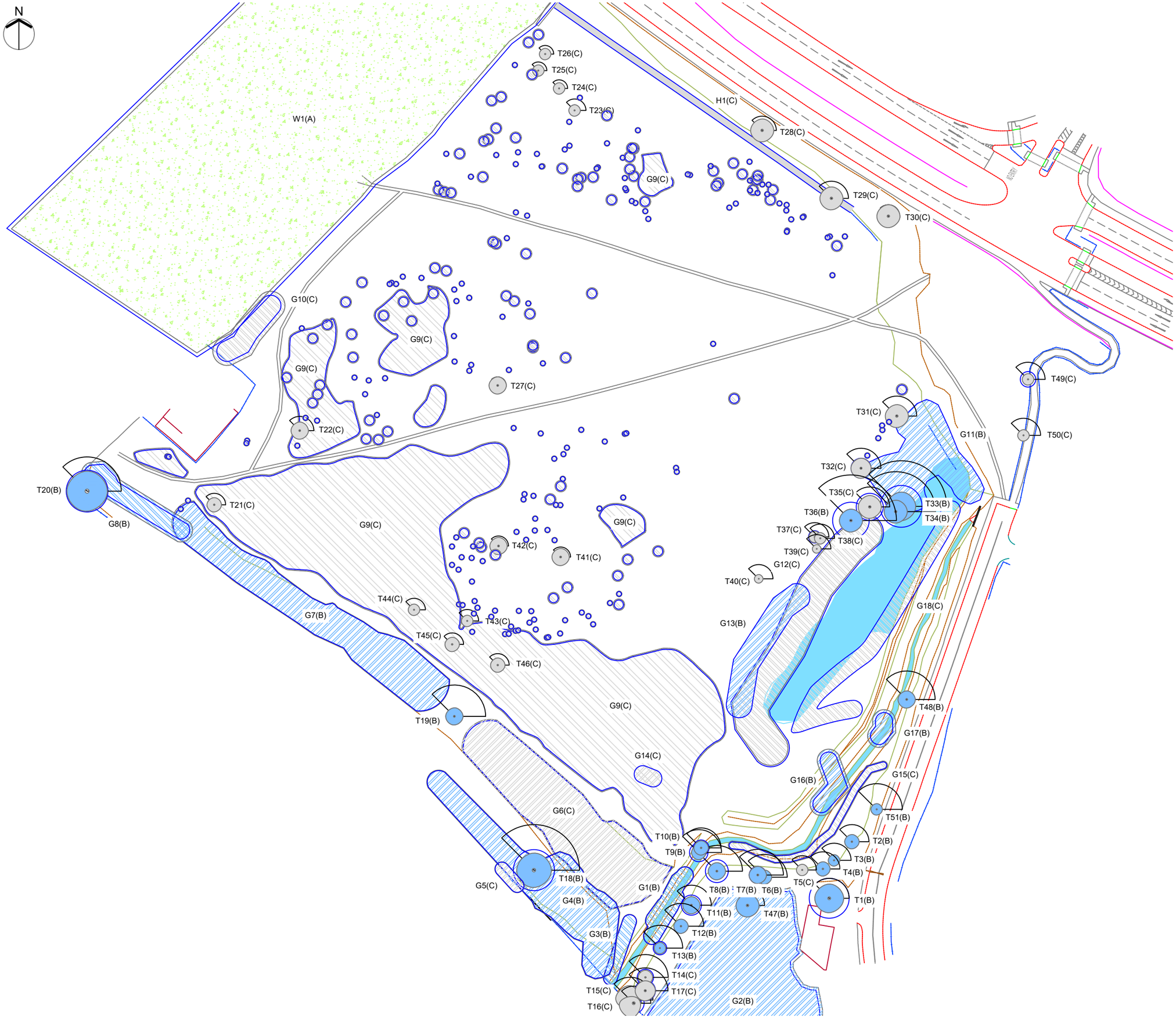
7.20 Any trees which are to be retained and whose Root Protection Areas may be affected by the development should be monitored, during and after construction, to identify any alterations in quality with time and to assess and undertake any remedial works required as a result.

Protection for Aerial Parts of Retained Trees

7.21 Where it is deemed necessary to operate wide or tall plant within close proximity to trees it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obstructive branches as any such equipment would have potential to cause damage to parts of the crown material, i.e. low branches and limbs, of retained trees within the protective barriers. This is termed as ‘access facilitation pruning’ within BS5837. Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturist.

7.22 A pre-commencement site meeting with contractors who are responsible for operating machinery is advised to firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.

7.23 In the event of having caused any branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with British Standard 3998:2010 and in agreement with the Local Planning Authority prior to correcting the damage, upon completion of development.



KEY

- Category U - Trees / Groups Unsuitable for Retention (BS 5837:2012)
- Category A - Trees / Groups of High Quality (BS 5837:2012)
- Category B - Trees / Groups of Moderate Quality (BS 5837:2012)
- Category C - Trees / Groups of Low Quality (BS 5837:2012)
- Woodland (Colour Indicates BS5837:2012 Category)
- Hedgerow (Colour indicates BS5837:2012 Category)
- Root Protection Area (The RPA has been altered where appropriate to reflect underground constraints)
- T1 (A) G1 (A) — Individual / Group Number and BS5837:2012 Category
- Indicative Shade Pattern (in accordance with BS5837:2012 where appropriate)

Scale 1:1250 @ A3

0 25 50 75m

NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule.

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

rev	date	description	by
-	16.12.20	First Issue	EC

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

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client
Aspbury Planning

project
Land to south of A617
Rainworth

drawing title
TREE SURVEY PLAN

scale	drawn/checked	date
1:1250 @ A3	EC	December 2020

drawing number
9474-T-01

rev
-

CAD file: K:\9400\9474\ARB\Plans\Tree Survey Plan.dwg

KEY

- Tree/Group to be Retained
- Tree/Group to be removed to facilitate the proposals
- Hedgerow Proposed to be Retained
- Woodland to be Retained
- Root Protection Area (Shown for retained trees only)
- T1 (A) G1 (A) — Individual / Group Number and BS Category
- T1 (A) G1 (A) — Individual / Group Number to be Removed and BS 5837:2012 Category
- Indicative Shade Pattern (in accordance with BS5837:2012 where appropriate)

Scale 1:1250 @ A3

0 25 50 75m

NOTES

All dimensions to be verified on site. Do not scale this drawing, use figured dimensions only. All discrepancies to be clarified with project Arboriculturalist. Drawing to be read in conjunction with Arboricultural Assessment and Appendix A - Tree Schedule.

Drawing has been produced in colour and is based on digital information in .dwg format, aerial images and/or GPS location where appropriate. A monochrome copy should not be relied upon. The exact position of individual trees or species included as part of a tree group, woodland or hedgerow should be checked and verified on site prior to any decisions for foundation design, tree operations or construction activity being undertaken. Further survey work would be required for calculating foundation depths.

Trees are living organisms that change over time, the condition of all trees illustrated herein, are to be checked by the project Arboriculturalist should works commence 12 months after the date of this survey.

SOME TREES MAY BE SUBJECT TO STATUTORY CONSTRAINTS. IT IS THEREFORE ADVISED THAT NO WORKS SHOULD BE UNDERTAKEN TO ANY TREES ILLUSTRATED HEREIN WITHOUT FIRST OBTAINING THE RELEVANT AUTHORISATION TO DO SO UNLESS AGREED AS PER THE APPROVED PLANS THROUGH PLANNING CONSENT.

rev	date	description	by
-	19.01.21	First Issue	EC
A	16.03.21	Final Issue	EC

fpcr

masterplanning
environmental assessment
landscape design
urban design
ecology
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client
Aspbury Planning

project
Land to south of A617 Rainworth

drawing title
TREE RETENTION PLAN

scale	drawn/checked	date
1:1250 @ A3	EC / HCK	March 2021

drawing number
9474-T-02

rev
A

CAD file: K:\9400\9474\ARB\Plans\Tree Retention Plan.dwg

Appendix A - Tree Schedule

Measurements	Age Classes	Quality Assessment of BS Category	ULE (relates to BS Category)
Height - Measured using a digital laser clinometer (m)	**YNG**: Establishing, typically with good vigour and fast growth rates and strong apical dominance; c. less than 1/3 life expectancy	**Category U -** Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	<10 years
Stem Dia. - Diameter measured (mm) in accordance with Annex C of the BS5837	**SM:** Semi-mature trees less than 1/3 life expectancy	**Category A -** Trees of high quality with an estimated remaining life expectancy of at least 40 years.	40+ years
Crown Radius - Measured using a digital laser clinometer radially from the main stem (m)	**EM:** Established, typically vigorous and increasing in apical height and lateral spread; 1/3 - 2/3 life expectancy. Offers landscape significance	**Category B -** Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	20-40 years
Abbreviations est - Estimated stem diameter avg - Average stem diameter for multiple stems upto - Maximum stem diameter of a group	**M:** Fully established over 2/3 life expectancy, generally good vigour and achieving full height potential with crown still spreading	**Category C -** Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	10-20 years
	OM: Fully mature, at the extremes of expected life expectancy, vigour decreasing, declining or moribund	Sub-categories: (i) - Mainly arboricultural value (ii) - Mainly landscape value (iii) - Mainly cultural or conservation value	
	V: biological, cultural or aesthetic value comprising niche saproxylic habitat. Individuals of large proportions (stem girth) in comparison to trees of the same species/surviving beyond the typical age range for their species.	**The BS category particular consideration has been given to the following:** • The presence of any structural defects in each tree/group and its future life expectancy • The size and form of each tree/group and its suitability within the context of a proposed development • The location of each tree relative to existing site features e.g. its screening value or landscape features • Age class and life expectancy	

Structural Condition	Physiological Condition
Good - No significant structural defects	**Good -** No significant health problems
Fair - Structural defects that can be remediated	**Fair -** Symptoms of ill-health that can be remediated
Poor - Significant defects beyond remediation, present a risk of failure in the foreseeable future	**Poor -** Significant ill-health. Unlikely the tree will recover in the long term
Dead - Dead tree with structural integrity of tree severely compromised	**Advanced Decline / Dead -** Advanced state of decline and unlikely to recover or Dead

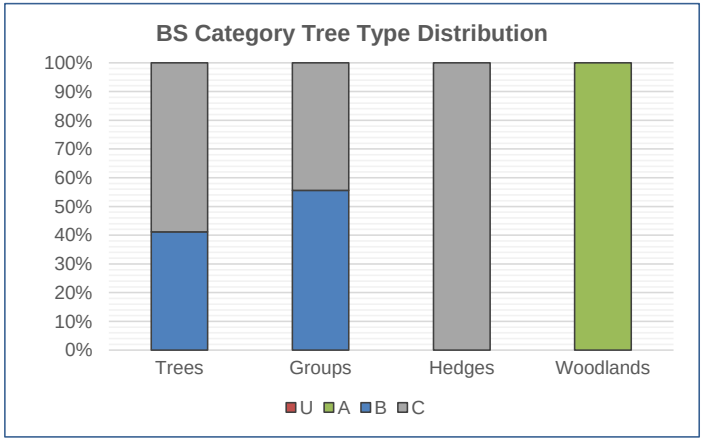
Root Protection Area (RPA)
• The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully retained. Tree roots extend beyond the calculated RPA in many cases and where possible a greater distance should be protected. • Where veteran trees have been identified the RPA has been calculated in accordance with Natural England guidance i.e. 15x the stem diameter, uncapped.

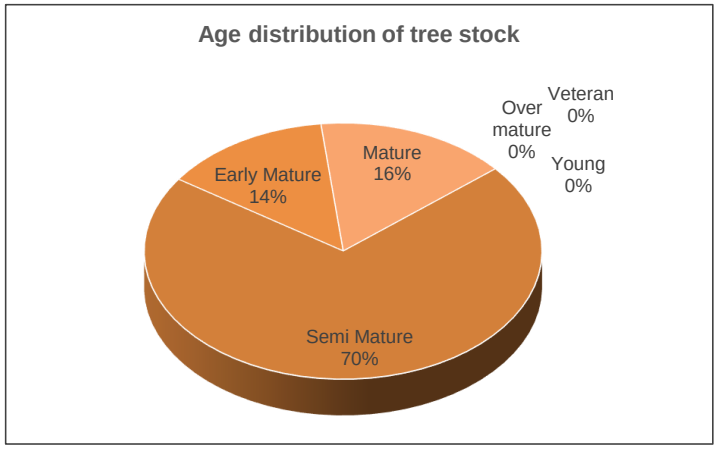
Appendix Summary

	Individual Trees	Totals	Tree Groups and Hedgerows	Totals
Category U		0		0
Category A		0	W1	1
Category B	T1, T2, T3, T4, T6, T7, T8, T9, T10, T11, T12, T13, T18, T19, T20, T33, T34, T36, T47, T48, T51	21	G1, G2, G3, G4, G7, G8, G11, G13, G16, G17	10
Category C	T5, T14, T15, T16, T17, T21, T22, T23, T24, T25, T26, T27, T28, T29, T30, T31, T32, T35, T37, T38, T39, T40, T41, T42, T43, T44, T45, T46, T49, T50	30	G5, G6, G9, G10, G12, G14, G15, G18, H1	9
	Total	51	Total	20

BS Category Tree Type Distribution displays the proportion of trees assessed in each type to enable a better understanding of the category distribution.

Age Distribution of Tree Stock shows the proportion of trees assessed in each age class across the whole site which allows an interpretation of overall age distribution of tree stock on the site.





Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
T1	Goat Willow Salix caprea	7	est 400 300 300	5	M	F	Situated beyond boundary hard standing within 1m of base to South decay evident within southernmost stem crossing and rubbing branches past pruning with branch stubs	154	7.0	B (iii)
T2	English Oak Quercus robur	6	180	2.5	SM	G	Characteristic for species Low crown form No major defects were noted	15	2.2	B (i)
T3	Alder Alnus glutinosa	6	150	2	SM	G	Characteristic for species No major defects were noted	10	1.8	B (i)
T4	Wild Cherry Prunus avium	6	180	2.5	SM	G	Characteristic for species No major defects were noted	15	2.2	B (i)
T5	Sycamore Acer pseudoplatanus	5	150	2	SM	F	Characteristic for species Wire occluded in main stem at 1m broken branches	10	1.8	C (i)
T6	Aspen Populus tremula	8	180	2.5	SM	G	Characteristic for species No major defects were noted	15	2.2	B (i)
T7	Aspen Populus tremula	9	200 150	3	SM	F	Characteristic for species Twin stemmed from base larger stem splits at 1.5m with tight union and crossing natural braces noted	28	3.0	B (i)
T8	Sycamore Acer pseudoplatanus	9	250 200 100	3	SM	F	Characteristic for species Twin stemmed from base with large basal sucker	51	4.0	B (i)
T9	Alder Alnus glutinosa	8	200 180	2.5	SM	G	Characteristic for species Twin stemmed from base situated on watercourse	33	3.2	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T10	Alder Alnus glutinosa	7	230	2.5	SM	G	Characteristic for species situated on watercourse	24	2.8	B (i)
T11	Goat Willow Salix caprea	7	6x 120	3	SM	G	Characteristic for species Multi stemmed from base	39	3.5	B (i)
T12	Silver Birch Betula pendula	8	200	2.5	SM	G	Characteristic for species No major defects were noted	18	2.4	B (i)
T13	Goat Willow Salix caprea	8	120 120 100	2	SM	G	Characteristic for species No major defects were noted	18	2.4	B (i)
T14	Silver Birch Betula pendula	8	180 120 100	2.5	SM	F	Characteristic for species Multi stemmed from base Northernmost stem has apparent weak union	26	2.9	C (i)
T15	Silver Birch Betula pendula	8	320	N - 5 S - 3 E - 3 W - 5	M	F	Situated on application boundary crown overhangs adjacent car park broken branches and large diameter dead wood noted in crown including large hanging branch	46	3.8	C (i)
T16	Hawthorn Crataegus monogyna	6	180 180 120 120	N - 2 S - 5 E - 2 W - 5	M	F	Situated on application boundary crown overhangs adjacent car park suppressed crown form	42	3.7	C (i)
T17	Goat Willow Salix caprea	8	200 200 100	3.5	EM	F	Characteristic for species Multi stemmed from base Included union between two largest stems	41	3.6	C (i)
T18	Sycamore Acer pseudoplatanus	16	300 300 300 300	6	M	G	Characteristic for species Crossing and rubbing branches Major dead wood evident in the crown (>75mm) Multi stemmed from base	163	7.2	B (i)
T19	Silver Birch Betula pendula	11	est 200	3	EM	G	Characteristic for species Unable to gain access	18	2.4	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T20	Sycamore Acer pseudoplatanus	12	500 350	7	M	F	Twin stemmed from base with no fused union crossing and rubbing branches pruning wounds with branch stubs noted	169	7.3	B (i)
T21	Austrian Pine Pinus nigra ssp. Nigra	4	180	2.5	SM	G	Characteristic for species Likely self-seeded	15	2.2	C (i)
T22	Austrian Pine Pinus nigra ssp. Nigra	5	180	3	SM	G	Characteristic for species Likely self-seeded	15	2.2	C (i)
T23	Austrian Pine Pinus nigra ssp. Nigra	4	160	2	SM	G	Characteristic for species Likely self-seeded	12	1.9	C (i)
T24	Austrian Pine Pinus nigra ssp. Nigra	3	120	2	SM	G	Characteristic for species Likely self-seeded	7	1.4	C (i)
T25	Maritime Pine Pinus pinaster	3	120	2	SM	G	Characteristic for species Likely self-seeded	7	1.4	C (i)
T26	Scots Pine Pinus sylvestris	3	120	2	SM	G	Characteristic for species Likely self-seeded	7	1.4	C (i)
T27	Austrian Pine Pinus nigra ssp. Nigra	3	180	3	SM	G	Characteristic for species Likely self-seeded	15	2.2	C (i)
T28	Austrian Pine Pinus nigra ssp. Nigra	5	180	4	SM	G	Characteristic for species Likely self-seeded situated on embankment adjacent to carriageway	15	2.2	C (i)
T29	Goat Willow Salix caprea	6	200 150 150 100	4	EM	F	Multi stemmed from 1m likely self seeded included unions noted between stems	43	3.7	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T30	Austrian Pine Pinus nigra ssp. Nigra	4	160	4	SM	G	Characteristic for species Unable to gain access Likely planted situated on embankment adjacent to carriageway	12	1.9	C (i)
T31	Goat Willow Salix caprea	7	220 180	4	EM	F	Twin stemmed from base with basal suckers likely self seeded included union noted between stems saturated ground at base unable to access stem	37	3.4	C (i)
T32	Goat Willow Salix caprea	7	250 150	3.5	EM	F	Twin stemmed from 1m likely self seeded included union noted between stems saturated ground at base	38	3.5	C (i)
T33	Alder Alnus glutinosa	16	6x 250	5	M	F	Characteristic for species Minor dead wood evident in the crown (<75mm) Multi stemmed from base Nesting material within crown	170	7.3	B (i)
T34	Silver Birch Betula pendula	14	290	4	M	G	Characteristic for species No major defects were noted	38	3.5	B (i)
T35	Goat Willow Salix caprea	7	320 180 150	4	EM	F	Multi stemmed from 1m likely self seeded included union noted between stems saturated ground at base leaning stem to North	71	4.8	C (i)
T36	Alder Alnus glutinosa	16	330 330 260	4	M	F	Characteristic for species Minor dead wood evident in the crown (<75mm) Multi stemmed from base	129	6.4	B (i)
T37	Silver Birch Betula pendula	5	150 100	2	SM	F	Characteristic for species Likely self seeded	15	2.2	C (i)
T38	Silver Birch Betula pendula	5	120	2	SM	F	Characteristic for species Likely self seeded	7	1.4	C (i)
T39	Silver Birch Betula pendula	5	100	1.5	SM	F	Characteristic for species Likely self seeded	5	1.2	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T40	Silver Birch Betula pendula	5	100	1.5	SM	F	Characteristic for species Likely self seeded	5	1.2	C (i)
T41	Austrian Pine Pinus nigra ssp. Nigra	3.5	150	3	SM	G	Characteristic for species Likely self-seeded	10	1.8	C (i)
T42	Austrian Pine Pinus nigra ssp. Nigra	3.5	150	3	SM	G	Characteristic for species Likely self-seeded	10	1.8	C (i)
T43	Austrian Pine Pinus nigra ssp. Nigra	4	150	2	SM	G	Characteristic for species Likely self-seeded	10	1.8	C (i)
T44	Austrian Pine Pinus nigra ssp. Nigra	4	150	2	SM	G	Characteristic for species Unable to gain access Likely self-seeded	10	1.8	C (i)
T45	Austrian Pine Pinus nigra ssp. Nigra	4	150	2.5	SM	G	Characteristic for species Unable to gain access Likely self-seeded	10	1.8	C (i)
T46	Austrian Pine Pinus nigra ssp. Nigra	4	140	2.5	SM	G	Characteristic for species Unable to gain access Likely self-seeded	9	1.7	C (i)
T47	Austrian Pine Pinus nigra ssp. Nigra	6	est 200	4	SM	G	Characteristic for species Unable to gain access Likely self-seeded	18	2.4	B (i)
T48	Alder Alnus glutinosa	10	est 200	3	EM	G	Characteristic for species Unable to gain access	18	2.4	B (i)
T49	Silver Birch Betula pendula	6	130 140 120	2	SM	F	Characteristic for species Multi stemmed from base Apparent weak union between stems to west	23	2.7	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T50	Austrian Pine Pinus nigra ssp. Nigra	6	150	2	SM	F	Planted to close to wooden railings railings is damaging stem	10	1.8	C (i)
T51	Silver Birch Betula pendula	9	150	2	SM	G	Characteristic for species No major defects were noted	10	1.8	B (i)

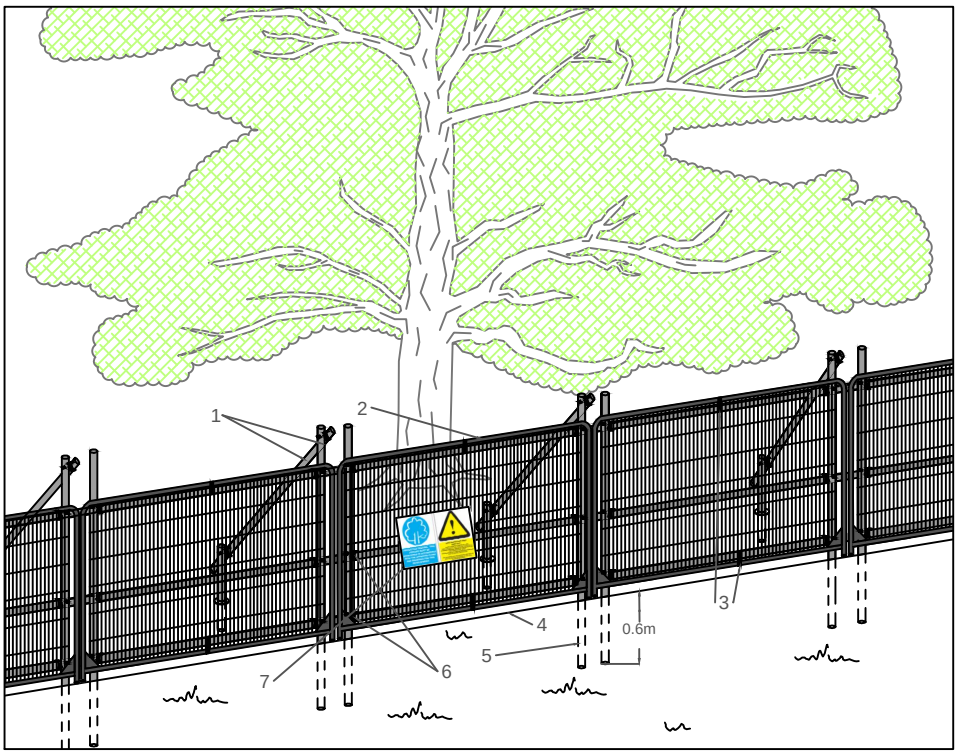
Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
GROUPS OF TREES										
G1	Alder Alnus glutinosa	8	upto 240	3	SM	G	Characteristic for species Situated on watercourse close spacing between trees	26	2.9	B (ii)
G2	Goat Willow Salix caprea Aspen Populus tremula	10	upto 250	4	EM	F	Likely planted group along steep embankment unable to access entire group due to dense undergrowth close spacing between trees provides moderate landscape and screening value	28	3.0	B (ii)
G3	Silver Birch Betula pendula Aspen Populus tremula	10	upto 200	2.5	SM	G	Likely planted group along embankment close spacing between trees has resulted in etoliated forms dense undergrowth restricts access to part of group	18	2.4	B (ii)
G4	Ash Fraxinus excelsior Beech Fagus sylvatica Silver Birch Betula pendula Sycamore Acer pseudoplatanus	16	upto 400	5	M	G	Situated on steep embankment likely pre date much of the surrounding tree cover original buffer planting dense ivy cover on stems unable to access entire group due to undergrowth	72	4.8	B (ii)
G5	Leyland Cypress Cupressocyparis leylandii	9	upto 200	2.5	EM	F	Linear group planted within site crowns overhang adjacent building limited screening value due to large embankment and mature trees behind	18	2.4	C (ii)
G6	Goat Willow Salix caprea Silver Birch Betula pendula Sycamore Acer pseudoplatanus Alder Alnus glutinosa Aspen Populus tremula	7	upto 140	2	SM	F	Possibly planted but had spread through self seeding dense undergrowth throughout restricts access close spacing between trees occasional gaps creating clearings currently dense with bramble	9	1.7	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G7	Goat Willow Salix caprea Silver Birch Betula pendula Sycamore Acer pseudoplatanus	8	upto 150	2	SM	G	Likely planted group close spacing between trees has resulted in etoliated forms predominantly silver birch with occasional goat willow and sycamore	10	1.8	B (ii)
G8	Goat Willow Salix caprea	7	150 150 150	4	EM	F	Characteristic for species Multi stemmed from base Unable to gain access Group provides some screening and landscape value	31	3.1	B (ii)
G9	English Oak Quercus robur Goat Willow Salix caprea Silver Birch Betula pendula Sycamore Acer pseudoplatanus Austrian Pine Pinus nigra ssp. Nigra	5	avg 120	2	Yng / SM	F / G	Self seeded tree cover which had established across the site dense undergrowth restricts access rabbit damage noted on some trees	7	1.4	C (ii)
G10	Goat Willow Salix caprea	7	upto 300	5	M	F	Small group of trees provides limited screening value due to adjacent woodland	41	3.6	C (ii)
G11	Alder Alnus glutinosa	12	upto 250	3	EM	G	Dense tree group situated around saturated ground and along small watercourse close spacing between trees has resulted in etoliated forms unable to access group	28	3.0	B (ii)
G12	Goat Willow Salix caprea	7	upto 6x 120	3	SM / EM	F	Characteristic for species Included bark union Multi stemmed from base Likely self seeded on area of saturated ground	39	3.5	C (ii)
G13	Silver Birch Betula pendula	16	upto 250	3	EM	F	Characteristic for species Linear group likely planted nesting material noted in crown	28	3.0	B (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G14	Goat Willow Salix caprea Silver Birch Betula pendula	7	est 250	3	EM	F	Characteristic for species Small tree group within dense undergrowth unable to access	28	3.0	C (ii)
G15	Hawthorn Crataegus monogyna	3	upto 100	1.5	SM	F	situated along watercourse dense in sections likely planted as a hedgerow but unmaintained	5	1.2	C (ii)
G16	Alder Alnus glutinosa	12	est 250	4	EM	G	Characteristic for species Unable to gain access	28	3.0	B (ii)
G17	Alder Alnus glutinosa	12	est 250	4	EM	G	Characteristic for species Unable to gain access	28	3.0	B (ii)
G18	Ash Fraxinus excelsior Crack Willow Salix fragilis Elder Sambucus nigra Goat Willow Salix caprea Hawthorn Crataegus monogyna Alder Alnus glutinosa	7	est 250	3	EM	F	Sporadic likely self seeded tree group around saturated ground and along watercourse unable to access group sparse in sections dense undergrowth throughout	28	3.0	C (ii)

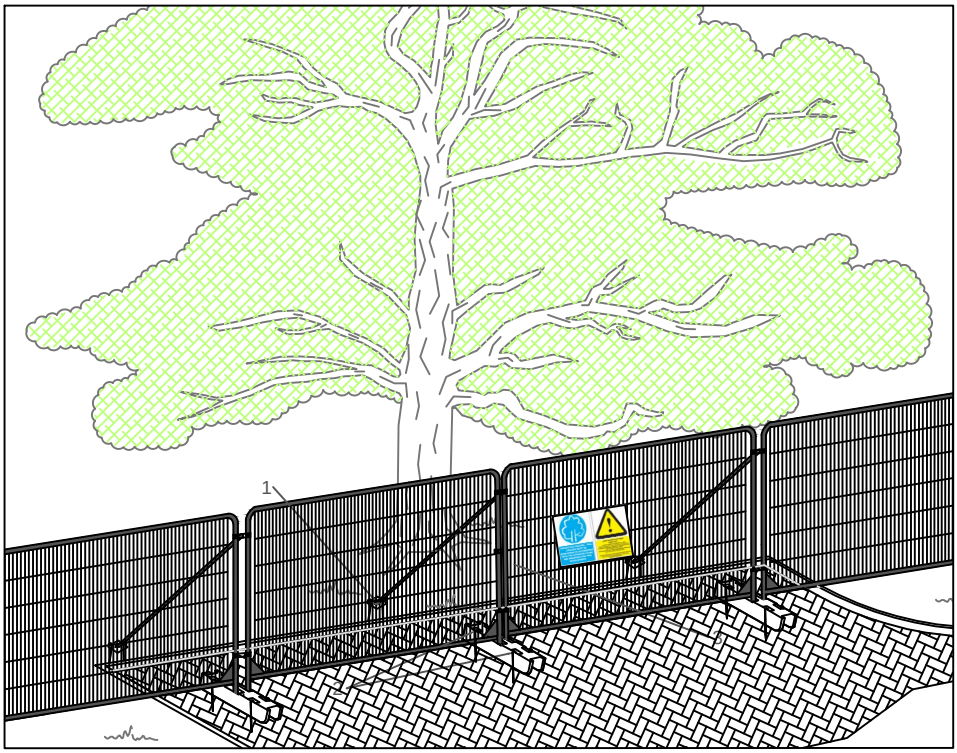
Hedge No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
HEDGEROWS										
H1	Field Maple Acer campestre Hawthorn Crataegus monogyna Hazel Corylus avellana	2.5	upto 100	1	SM	F	Un-maintained hedgerow Recently planted	5	1.2	C (ii)

Wood No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
WOODLANDS										
W1	English Oak Quercus robur Silver Birch Betula pendula Sycamore Acer pseudoplatanus Holly Ilex aquifolium	15	upto 600	6	M	G	Typical broadleaf woodland predominantly silver birch with oak throughout and occasional sycamore Holly presented along site boundary public footpaths throughout	163	7.2	A (ii),A (iii)



Standard specification for protective barrier

1. Standard scaffold poles
2. Heavy gauge 2m tall galvanized tube and welded mesh infill panels
3. Panels secured to scaffold frame with wire ties
4. Ground level
5. Uprights driven into the ground until secure (min depth of 0.6m)
6. Standard scaffold clamps
7. Construction Exclusion Zone signs



Above ground stabilising systems

1. Stabiliser strut with base plate secured with ground pins
2. Feet blocks secured with ground pins
3. Construction Exclusion Zone signs

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

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NOTES

drawing title

APPENDIX B
PROTECTIVE FENCING SPECIFICATIONS

CAD file: S:\Arb resources\Basic Templates\Tree Protection\Appendix B - Protective Fencing A4.dwg