



Witherslack Group

Lakeside School, Liverpool

Arboricultural Assessment

March 2021

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CONTENTS

1.0	NON-TECHNICAL SUMMARY	2
2.0	INTRODUCTION	2
3.0	PLANNING POLICY	3
4.0	SURVEY METHODOLOGY	4
5.0	RESULTS.....	9
6.0	ARBORICULTURAL IMPACT ASSESSMENT	11
7.0	NEW TREE AND HEDGEROW PLANTING.....	14
8.0	TREE PROTECTION MEASURES	16

TABLES

Table 1: Summary of Trees by Retention Category

Table 2: Summary of Impact on Tree Stock

Table 3: Example of calculating Soil Volume for New Tree Planting

FIGURES

Figure 1: Location of Tree Preservation Order

PLANS

Tree Survey Plan (9248-T-01)

Tree Retention Plan (9248-T-02)

APPENDICES

Appendix A: Tree Schedule

Appendix B: Protective Fencing Specifications

1.0 NON-TECHNICAL SUMMARY

- 1.1 FPCR were commissioned on behalf of the Witherslack Group to undertake an Arboricultural assessment at Lakeside School, Liverpool (centered around OS Grid Reference SJ 437 893). The aim of the assessment was to identify any arboricultural constraints in relation to a proposed development of the Site.
- 1.2 The Site comprises of a school and a derelict riding school. There are 21 buildings/structures and a pond stocked for fishing on Site. A total of thirty-three individual trees and twenty-two groups of trees were surveyed as part of the Arboricultural Assessment.
- 1.3 Of the trees across the site, seven trees of moderate arboricultural quality and retention category B were recorded with twenty-five individuals and twenty-one groups of trees recorded as low quality and category C. A single tree and a group of trees were deemed unsuitable for retention in their current context and were recorded as category U.
- 1.4 A Tree Preservation Order, namely Wheathill Farm Naylors Road Roby Knowsley L27 2YA, No. 12-2005 applies to a single tree, T22, present within the assessment site and therefore statutory constraints apply to the development in respect of trees.
- 1.5 The proposed development comprises of a redevelopment of the existing school complex and construction of a new complex to the east with infrastructure and landscaping.
- 1.6 To facilitate the proposed development there will be tree losses. These removals are considered as minimal loss of arboricultural value with one tree of moderate quality proposed for removal, the remaining removals considered as being low arboricultural value.
- 1.7 All mature tree trees including T22 are to be retained.

2.0 INTRODUCTION

- 2.1 This report has been prepared by FPCR Environment and Design Limited on behalf of the Witherslack Group to present the findings of an Arboricultural Assessment and survey of trees located at Lakeside School, Liverpool (hereafter referred to as the site), OS Grid Ref SJ 43757 89317.
- 2.2 The initial survey was carried out on 1st October 2019, with an additional survey of the extended site boundary being undertaken on the 28th of May 2020

Scope of Assessment

- 2.3 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.

- 2.4 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.
- 2.5 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.
- 2.6 This report has been produced to provide general advice for redevelopment of the site and includes a generic 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

- 2.7 The site is situated to the east of Liverpool on the outskirts of Belle Vale. Naylor's Road is to the south with open countryside to all other boundaries. The assessment area comprises of a school and part of a derelict riding school. There are numerous associated buildings/structures situated in the north-east portion of the site, and a pond stocked for fishing located in the north-western corner surrounding by managed landscaped grounds and car parking.

3.0 PLANNING POLICY

National Planning Policy Framework 2019

- 3.1 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.
- 3.2 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.
- 3.3 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'.*

- 3.4 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

- 3.5 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.
- 3.6 Following consultation with the Local Planning Authority and having used the online search facility on the website for the Local Planning Authority, Knowsley Council it is understood that there is a Tree Preservation Order, namely Wheathill Farm Naylor's Road Roby Knowsley L27 2YA, No 12-2005 which applies to a single trees present within the assessment site and therefore statutory constraints apply to the development in respect of trees. Before any tree works are undertaken confirmation of the online information should be sought from the Local Authority.

Non-Statutory Considerations

- 3.7 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 highlighted no tree cover within the site.

4.0 SURVEY METHODOLOGY

- 4.1 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.
- 4.2 Trees have been assessed as groups or hedgerows 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.

¹ <http://magic.defra.gov.uk/>

- 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’². 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’³.
- 4.3 An assessment of individual trees within groups or hedgerows 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

- 4.4 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.
- 4.5 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.’⁴*
- 4.6 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.

Ancient Woodland

- 4.7 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.
- 4.8 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.

² http://www.countrysideinfo.co.uk/woodland_manage/whatis.html

³ http://www.countrysideinfo.co.uk/woodland_manage/whatis.html

⁴ Ministry of Housing, Communities and Local Government. (2019). *National Planning Policy Framework*. London: Ministry of Housing, Communities and Local Government.

- 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.

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

BS5837 Categories

4.10 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).

4.11 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.

4.12 **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.

4.13 **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.

- 4.14 **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.
- 4.15 **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

- 4.16 The individual positions of trees and groups 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.

Tree Constraints and Root Protection Areas

- 4.17 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.
- 4.18 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.

- 4.19 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.
- 4.20 Whilst it is generally accepted that a tree's 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.
- 4.21 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

- 4.22 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.
- 4.23 The statements made in this report regarding defects in 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.
- 4.24 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.
- 4.25 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.
- 4.26 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.

5.0 RESULTS

- 5.1 A total of thirty three individual trees and twenty-two groups of trees 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. The table below summarises the trees assessed.

Tree Schedule

- 5.2 Appendix A presents details of any individual trees and groups 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.
- 5.3 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.
- 5.4 Several of the trees have been discussed in more detail following the table, owing to their physical condition or arboricultural significance.

Ancient and Veteran Trees

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

Results Summary

Table 1: Summary of Trees by Retention Category

	Individual Trees	Total	Groups of Trees	Total
Category U - Unsuitable	T9	1	G20	1
Category A (High Quality / Value)		0		0
Category B (Moderate Quality / Value)	T1, T2, T19, T20, T21, T22, T23	7		0
Category C (Low Quality / Value)	T3, T4, T5, T6, T7, T8, T10, T11, T12, T13, T14, T15, T16, T17, T18, T24, T25, T26, T27, T28, T29, T30, T31, T32, T33	25	G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12, G13, G14, G15, G16, G17, G18, G19, G21, G22	21

- 5.6 In total seven trees of moderate arboricultural quality and retention category B were recorded with twenty-five individuals and twenty-one groups of trees recorded as low quality and category C. A single tree and a group of trees were deemed unsuitable for retention in their current context and were recorded as category U.

- 5.7 Generally, the trees exhibited a fair to good physiological condition, evident from crown densities and shoot extension growth consistent with expectations of their species, age and management. A small proportion of the assessed trees demonstrated a poor condition and / or significant and irremediable forms.
- 5.8 Typically observed features included branch stubs, minor and major proportioned dead wood and bark wounds. The sites historic use as informal gardens, meant that many of the trees had been regularly managed with pruning wounds noted. A number of trees had been subjected to unsympathetic past pruning, resulting in multiple pruning wounds and unnatural crown appearances.

Category B Trees

- 5.9 Trees of moderate quality were predominately positioned along Naylor's Road forming the southern boundary of the site.
- 5.10 Species comprised of English oak *Quercus robur* ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*.
- 5.11 Both individually and collectively these trees created a leafy setting to the site with mature proportions and differing foliage both in shape and color. These trees were considered to be moderate in quality due to additional defects such as broken branches, crossing and rubbing branches and deadwood of various proportions.

Category C Trees

- 5.12 The vast majority of tree cover across the site was considered to be low quality and mainly consisted of younger specimens, regeneration growth, regularly managed ornamental planting or outgrown boundary trees which displayed symptoms associated with declining health.
- 5.13 The majority of these trees had been subjected extensively to unsympathetic pruning methods such as topping, stub cutting and annual trimming of new growth. These practices have resulted in unnatural appearances and areas of dysfunctional tissue and callouses.

Category U Trees

- 5.14 A single specimen of Spring cherry *Prunus x subhirtella* exhibited significant signs of declining health with extensive die back and limited foliage. The location of this tree within surrounding hard landscaping has more than likely resulted in the poor quality of this tree.
- 5.15 G20, a group of boundary trees consisting of Leyland Cypress *Cupressocyparis leylandii* have been subjected to fire damage, this has resulted in the death of all the specimens within the group.

Statutory Constraints

- 5.16 The following figure highlights where trees are included in the Knowsley Council Tree Preservation Order (TPO), Wheathill Farm Naylors Road Roby Knowsley L27 2YA, No 12-2005. Exact details of which trees are within the TPO have been confirmed by Knowsley Council and the tree within the TPO is protected by law from felling or uprooting, pruning including 'topping/lopping' and willful damage or destruction.

- 5.17 The granting of full planning permission would override the protection afforded by the Tree Preservation Order to those trees shown as removed to facilitate the proposals within the approved plans.
- 5.18 If full planning permission is not present, prior to any tree surgery and / or felling of protected trees it will be necessary to apply to the relevant local planning authority to gain consent for the works. For more information regarding Conservation Areas and Tree Preservation Orders it is advised that contact is made with the Local Planning Authority's arboricultural officer, or other such relevant person.

Figure 1: Location of Tree Preservation Order



- 5.19 FPCR reference of this tree is T22 on the Tree Survey Plan 9248-T-01_A.

6.0 ARBORICULTURAL IMPACT ASSESSMENT

- 6.1 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.
- 6.2 The AIA has been based upon the Drawing Title- DR-A-0510_P04 - Site Plan and seeks to outline the relationship between the proposals and the existing trees and hedgerows. The drawing shows the proposals for the redevelopment and extension of the existing school. 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 3: Summary of Impact on Tree Stock

	Trees to be Retained	Total	Trees to be Removed in full or part	Total
Category U - Unsuitable	T9	1		
Category A (High Quality / Value)		0		
Category B (Moderate Quality / Value)	T1, T2, T19, T20, T21, T22	6	T23	1
Category C (Low Quality / Value)	T3, T4, T5, T6, T8, T10, T11, T12, T13, T14, T15, T16, T17, T18, T24, T25, T27, G1, G2, G3, G4, G5, G15, G16, G17, G18	26	T7, T26, T28, T29, T30, T31, T32, T33, G6, G7, G8, G9, G11, G12, G13, G14, G19, G20, G21, G22,	20

- 6.3 To facilitate the proposed development as per the above plan there will be requirements of tree loss. These removals are considered as minimal loss of arboricultural value to the site as only one tree of moderate value is proposed for removal, the remaining removals are considered as being low arboricultural value and should not be seen as a restraint for the development.
- 6.4 T23, a mature sycamore *Acer pseudoplatanus* was deemed to have moderate arboricultural value and is required for removal to facilitate the construction of a new classroom and sporting area of the development of the site. New planting and allocated green spaces are represented within the proposal and these areas could be utilised for new planting to mitigate for the loss of this tree.
- 6.5 Consideration will be needed for the proposed anti climb fence as this infringes upon the root protection area of multiple trees along the southern boundary. The installation of the fencing may cause root damage and care must be taken to eliminate this impact. Details of excavation and supervision for this boundary treatment can be outlined within a site specific Arboricultural Method Statement.

The remaining trees and tree groups recommended for removals were all graded as category C trees exhibiting low arboricultural value due to their age and characteristics. These trees should not be seen as a constraint as effort to replant with trees more fitting to the surrounding area can be utilised therefor improving the diversity of the site through the addition of various species and improved quality trees.

Tree Management

- 6.6 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.

- 6.7 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.
- 6.8 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.

General Design Principles in Relation to Retained Trees

- 6.9 Ground investigation through the use of pneumatic excavation, such as an Air Spade and digging of trial pits, may be required should there be areas where it is not possible to modify the layout to avoid conflict with retained trees. Ground investigations would aim to determine the actual location of the physical roots without causing them damage in the process. Such an assessment would enable consideration of the practicality and suitability of certain 'tree friendly' construction methods and would better inform decision making for a design.
- 6.10 Further assessment of the impact to actual roots found during the ground investigations can then be made and solutions reached thus, greatly reducing any potential future impacts on retained trees whilst allowing the development to proceed and minimising risks to future tree health. Ultimately the aim would be to reduce conflicts between trees and buildings and achieve successful tree retention.
- 6.11 The use of "no-dig" construction methods should be considered prior to decisions being made as to the removal of each tree concerned, where conflicts between trees identified for retention and the layout arise. Such methods of construction and the use of industry led specialist engineering solutions i.e., three dimensional "load bearing" cellular confinement systems can be used particularly in the case of carriageways, footways and driveways in order to avoid unnecessary losses of trees.
- 6.12 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.
- 6.13 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 NEW TREE AND HEDGEROW PLANTING

Trees

- 7.1 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).
- 7.2 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.
- 7.3 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.
- 7.4 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.
- 7.5 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

- 7.6 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.
- 7.7 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

- 7.8 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.
- 7.9 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).
- 7.10 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. One researched method of calculating the minimum required soil volume is as follows:

Table 3: Example of calculating Soil Volume for New Tree Planting (Source: CIRIA C712 and Calculating Target Soil Volumes – Green Blue Urban)

Projected canopy area of mature tree (m) x depth 0.6m		
Calculation 1	Projected mature canopy diameter (metres)	= 3 (Diameter)
Calculation 2	Projected mature canopy area (square metres), (n x Radius ²)	= 7.1 (Area)
Calculation 3	Target soil volume (cubic metres), (Area x 0.6m)	= 4.24 (Volume)
	Target soil volume	= 4.24m ³

General Planting Recommendations

- 7.11 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.
- 7.12 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.

8.0 TREE PROTECTION MEASURES

- 8.1 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

- 8.2 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.
- 8.3 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.
- 8.4 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.
- 8.5 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.
- 8.6 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

- 8.7 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.

- 8.8 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.
- 8.9 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.
- 8.10 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. 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

- 8.11 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.
- 8.12 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.
- 8.13 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.
- 8.14 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.
- 8.15 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.
- 8.16 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
- 8.17 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

- 8.18 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.

- 8.19 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.

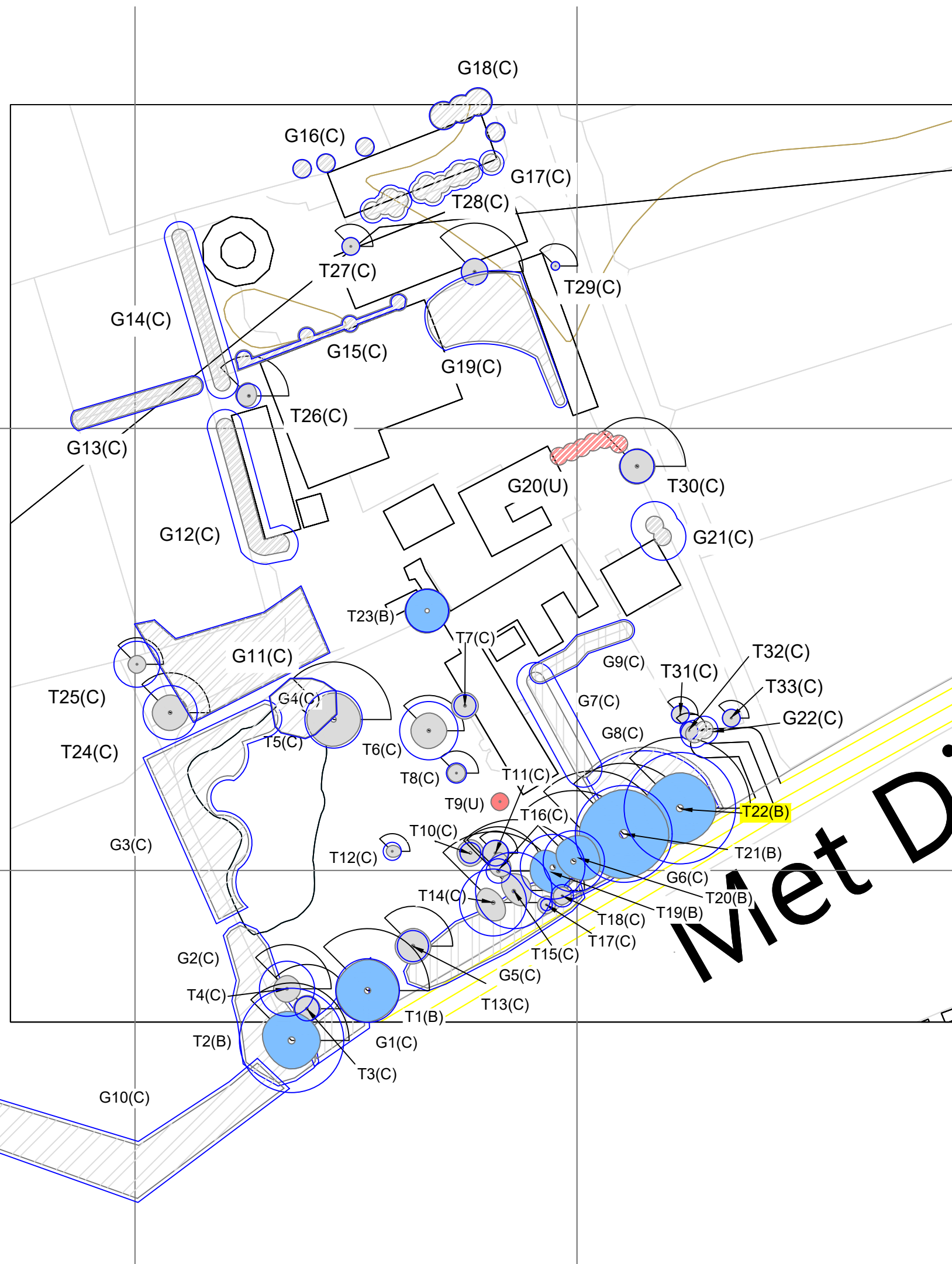
Protection for Aerial Parts of Retained Trees

- 8.20 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.
- 8.21 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.
- 8.22 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.



389400m

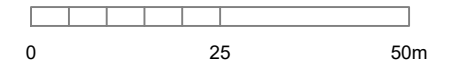
389300m



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)
-  Hedgerow (Colour indicates BS5837:2012 Category)
-  Root Protection Area (The RPA has been altered where appropriate to reflect underground constraints)
-  Individual / Group Number and BS5837:2012 Category
-  Individual tree subject of TPO
-  Indicative Shade Pattern (in accordance with BS5837:2012 where appropriate)

Scale 1:1000 @ A3



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.

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rev	date	description	by



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drawing title

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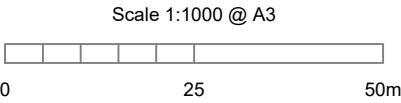
KEY

Tree/Group to be Retained

Tree/Group to be removed to facilitate the proposals

T1 (A)
G1 (A)

T1 (A)



NOTES

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urban design

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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

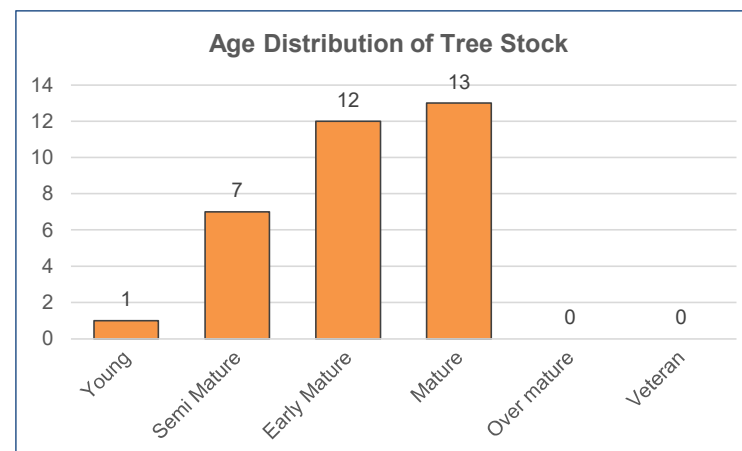
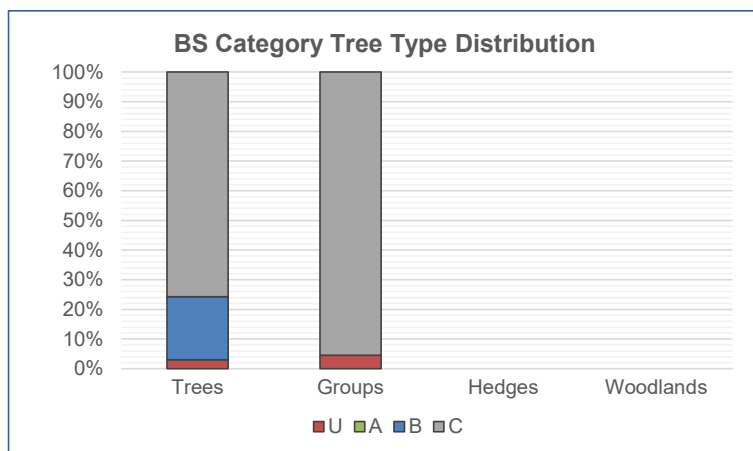
Root Protection Area (RPA)
• The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the rooting area required for a tree to be successfully 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	T9	1	G20	1
Category A		0		0
Category B	T1, T2, T19, T20, T21, T22, T23	7		0
Category C	T3, T4, T5, T6, T7, T8, T10, T11, T12, T13, T14, T15, T16, T17, T18, T24, T25, T26, T27, T28, T29, T30, T31, T32, T33	25	G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12, G13, G14, G15, G16, G17, G18, G19, G21, G22	21
	Total	33	Total	22

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 number of trees in each age category across the tree stock allowing assessment of their longevity to be made.



Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
INDIVIDUAL TREES										
T1	Ash Fraxinus excelsior	14	600	7	M	F	Broken branches evident Established ivy cover Minor dead wood evident in the crown (<75mm)	163	7.2	B (i)
T2	English Oak Quercus robur	13	600 780	N - 3 S - 8 E - 5 W - 6	M	F	Bark wounds noted Branch stubs evident Broken branches evident Epicormic growth evident within the crown Established ivy cover Minor dead wood evident in the crown (<75mm) Pruning wounds noted	438	11.8	B (i)
T3	Sycamore Acer pseudoplatanus	10	230	3	EM	P	Base obscured Dense ivy cover on main stem Minor dead wood evident in the crown (<75mm)	24	2.8	C (i)
T4	Weeping Willow Salix x sepulcralis 'Chrycosoma'	10	est 300 300 300	3	M	P	Base obscured Dense ivy cover on main stem Minor dead wood evident in the crown (<75mm) Tree has collapsed and continued to grow	122	6.2	C (i)
T5	Weeping Willow Salix x sepulcralis 'Chrycosoma'	13	540	6	M	F	Branch stubs evident Broken branches evident Crossing and rubbing branches Minor dead wood evident in the crown (<75mm) Pruning wounds noted Chain has occluded to base	132	6.5	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T6	Weeping Ash <i>Fraxinus excelsior</i> <i>Pendula</i>	8	550	4	M	P	Bark wounds noted Branch socket cavities observed Branch stubs evident Crossing and rubbing branches Crown had been topped Dieback of the crown observed Epicormic growth evident within the crown Minor dead wood evident in the crown (<75mm) Pruning wounds noted Significant waterlogged ground to base tree house in crown tag 0004 Daldinia concentrica King Alfreds Cakes present	137	6.6	C (i)
T7	Wild Cherry <i>Prunus avium</i>	6	avg 120 120 120	3	EM	F	Crossing and rubbing branches Included bark union Minor dead wood evident in the crown (<75mm) Multi stemmed from base	20	2.5	C (i)
T8	Purple Plum <i>Prunus cerasifera</i> <i>Pissardii</i>	5	avg 10x 60	2	M	F	Crossing and rubbing branches Included bark union Minor dead wood evident in the crown (<75mm) Multi stemmed from base	16	2.3	C (i)
T9	Spring Cherry <i>Prunus x subhirtella</i>	3	80 110	N - 2 S - 2 E - 0 W - 2	SM	P	Base obscured Crossing and rubbing branches Epicormic growth evident within the crown Established ivy cover Limited future potential Low crown form Minor dead wood evident in the crown (<75mm) Multi stemmed from base Pruning wounds noted Specimen in extensive decline	N/A	N/A	U
T10	Sessile Oak <i>Quercus petraea</i>	4	160 110	3	SM	F	Crossing and rubbing branches Epicormic growth evident within the crown Low crown form	17	2.3	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T11	Spring Cherry Prunus x subhirtella	5	240	3	EM	F	Basal suckers present Crossing and rubbing branches Epicormic growth evident within the crown Included bark union Low crown form	26	2.9	C (i)
T12	Spring Cherry Prunus x subhirtella	4	170	N - 1 S - 1 E - 2 W - 1	SM	F	Basal suckers present Crossing and rubbing branches Epicormic growth evident within the crown Included bark union Low crown form	13	2.0	C (i)
T13	Goat Willow Salix caprea	9	6x 120	4	EM	F	Basal suckers present Crossing and rubbing branches Epicormic growth evident within the crown Established ivy cover Included bark union Low crown form Multi stemmed from base	39	3.5	C (i)
T14	Common Lime Tilia x europaea	16	630	N - 4 S - 4 E - 1 W - 4	M	F	Basal suckers present Branch stubs evident Broken branches evident Epicormic growth evident within the crown Low crown form Major dead wood evident in the crown (>75mm) Minor dead wood evident in the crown (<75mm)	180	7.6	C (i)
T15	Common Lime Tilia x europaea	16	720	N - 4 S - 4 E - 4 W - 1	M	F	Basal suckers present Branch stubs evident Broken branches evident Epicormic growth evident within the crown Low crown form Major dead wood evident in the crown (>75mm) Minor dead wood evident in the crown (<75mm)	235	8.6	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T16	Sycamore Acer pseudoplatanus	10	230	N - 4 S - 0 E - 2 W - 1	SM	P	Crossing and rubbing branches Etiolated form	24	2.8	C (i)
T17	Hawthorn Crataegus monogyna	4	110	2	Yng	F	Crossing and rubbing branches Etiolated form	5	1.3	C (i)
T18	Sycamore Acer pseudoplatanus	6	180 110	2	EM	P	Branch stubs evident Crossing and rubbing branches Etiolated form	20	2.5	C (i)
T19	Sycamore Acer pseudoplatanus	16	530 230	N - 4 S - 6 E - 1 W - 5	M	F	Basal suckers present Branch stubs evident Crossing and rubbing branches Dieback of the crown observed Minor dead wood evident in the crown (<75mm)	151	6.9	B (i)
T20	Sycamore Acer pseudoplatanus	16	610	N - 4 S - 6 E - 6 W - 2	M	F	Basal suckers present Branch stubs evident Crossing and rubbing branches Light ivy cover Minor dead wood evident in the crown (<75mm)	168	7.3	B (i)
T21	Sycamore Acer pseudoplatanus	16	Over ivy 640 650	10	M	F	Basal suckers present Base obscured Branch stubs evident Crossing and rubbing branches Dieback of the crown observed Established ivy cover Minor dead wood evident in the crown (<75mm) Sparse / thinning crown Bat boxes present	376	10.9	B (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T22	English Oak Quercus robur	16	Over ivy 1050	8	M	F	Bark wounds noted Branch stubs evident Broken branches evident Crossing and rubbing branches Epicormic growth evident within the crown Established ivy cover Low crown form Major dead wood evident in the crown (>75mm) Minor dead wood evident in the crown (<75mm) Bat boxes present TPO-00012-TPO	499	12.6	B (i)
T23	Sycamore Acer pseudoplatanus	12	Over ivy 290 280	5	M	F	Crossing and rubbing branches Established ivy cover Included bark union Minor dead wood evident in the crown (<75mm) Twin stemmed from base	74	4.8	B (i)
T24	White Willow Salix alba	9	Over ivy 510	4	EM	F	Broken branches evident Characteristic for species Dense ivy cover on main stem Dense undergrowth at the base Minor dead wood evident in the crown (<75mm) Multi leadered form	118	6.1	C (i)
T25	White Willow Salix alba	6	est 220 220 200 190 120	2	EM	F	Characteristic for species Included bark union Light ivy cover Minor dead wood evident in the crown (<75mm) Multi leadered form Multi stemmed from base	85	5.2	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T26	Goat Willow Salix caprea	9	90 100 110 90 120	N - 3 S - 2 E - 1 W - 3	EM	F	Bark wounds noted Characteristic for species Crossing and rubbing branches Included bark union Limited future potential Minor dead wood evident in the crown (<75mm) Multi leadered form Multi stemmed from base	24	2.8	C (i)
T27	Goat Willow Salix caprea	5	80 80 100 70	2	SM	F	Bark wounds noted Broken branches evident Characteristic for species Epicormic growth evident within the crown Limited future potential Multi leadered form Multi stemmed from base	13	2.0	C (i)
T28	Ash Fraxinus excelsior	11	est 250	3	SM	P / F	Base obscured Broken branches evident Limited future potential Over run by bramble and undergrowth.	28	3.0	C (i)
T29	Ash Fraxinus excelsior	5	80	1	SM	P / F	Base obscured Broken branches evident Limited future potential Bramble and undergrowth.	3	1.0	C (i)
T30	Wild Cherry Prunus avium	11	est 170 180 200	4	EM	F	Bark wounds noted Base obscured Crossing and rubbing branches Lateral lever arm observed Multi leadered form Multi stemmed from base	46	3.8	C (i)

Tree No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
T31	Japanese Maple Acer palmatum	4	70 70 70 80 80	2	EM	F	Branch stubs evident Broken branches evident Crossing and rubbing branches Included bark union Multi leadered form Multi stemmed from base	12	2.0	C (i)
T32	Japanese Maple Acer palmatum	4	70 70 70 80 80	2	EM	F	Branch stubs evident Broken branches evident Crossing and rubbing branches Dense undergrowth at the base Included bark union Multi leadered form Multi stemmed from base	12	2.0	C (i)
T33	Japanese Maple Acer palmatum	4	70 70 70 80 80	2	EM	F	Branch stubs evident Broken branches evident Crossing and rubbing branches Dense undergrowth at the base Included bark union Multi leadered form Multi stemmed from base	12	2.0	C (i)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
GROUPS OF TREES										
G1	Sycamore Acer pseudoplatanus Leyland Cypress Cupressocyparis leylandii	13	avg 340	3	EM	F	Crossing and rubbing branches Established ivy cover Interlocking crowns Low crown forms	52	4.1	C (ii)
G2	Ash Fraxinus excelsior Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus	9	est 100 100	1	EM	P	Base obscured Crossing and rubbing branches Dense undergrowth at the bases Interlocking crowns Low crown forms Outgrown hedgerow Unable to gain access	9	1.7	C (ii)
G3	Crack Willow Salix fragilis English Oak Quercus robur Hawthorn Crataegus monogyna Silver Birch Betula pendula	10	est 90 90 90	2	EM	F	Branch stubs evident Crossing and rubbing branches Dense undergrowth at the bases Interlocking crowns Low crown forms Minor dead wood evident in the crowns (<75mm) Trees around pond	11	1.9	C (ii)
G4	Crack Willow Salix fragilis	10	avg 200 200 200	4	EM	F	Branch stubs evident Crossing and rubbing branches Established ivy cover Minor dead wood evident in the crowns (<75mm) Multi stemmed from base	54	4.2	C (ii)

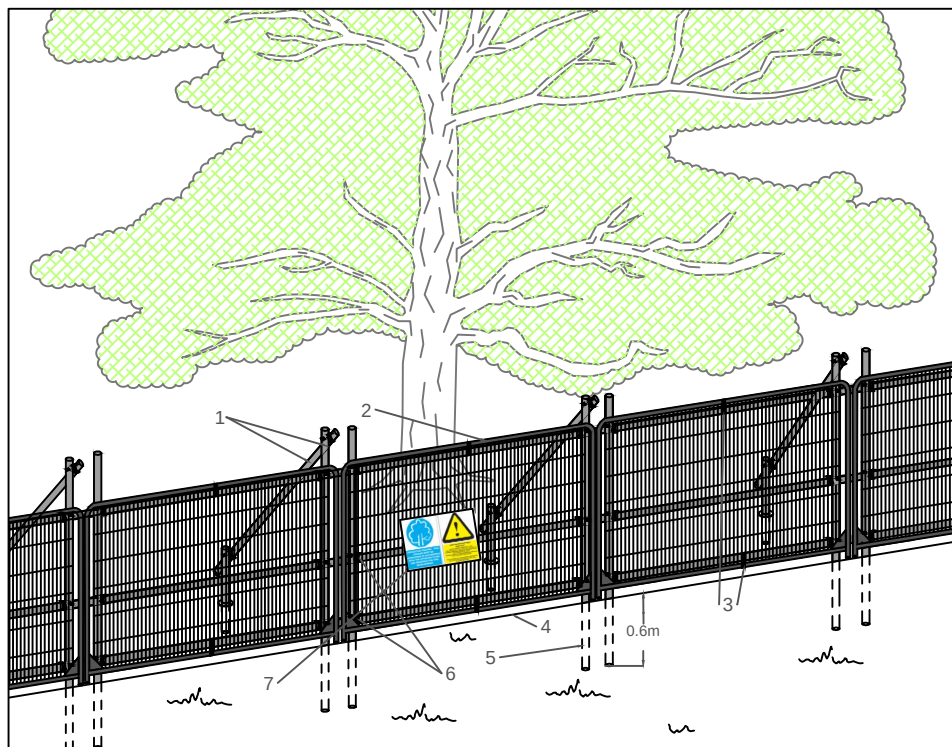
Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G5	Elder Sambucus nigra English Oak Quercus robur Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Holly Ilex aquifolium Leyland Cypress Cupressocyparis leylandii	13	avg 300	3	SM / EM	F	Branch stubs evident Broken branches evident Crossing and rubbing branches Established ivy cover Interlocking crowns Low crown forms	41	3.6	C (ii)
G6	Elder Sambucus nigra Hawthorn Crataegus monogyna	4	est 80 80 80	1	SM	F	Base obscured Crossing and rubbing branches Dense undergrowth at the bases Interlocking crowns Low crown forms Unable to gain access	9	1.7	C (ii)
G7	Leyland Cypress Cupressocyparis leylandii	9	avg 200 200 200	2	EM	F	Base obscured Crossing and rubbing branches Crowns had been heavily reduced Interlocking crowns Low crown forms	54	4.2	C (ii)
G8	Goat Willow Salix caprea Hawthorn Crataegus monogyna Silver Birch Betula pendula Sycamore Acer pseudoplatanus	6	avg 100	2	SM	F	Crossing and rubbing branches Interlocking crowns Low crown forms Sporadic self-seeded group of trees	5	1.2	C (ii)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G9	Beech Fagus sylvatica Elder Sambucus nigra Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus Holly Ilex aquifolium	8	avg 6x 80	2	EM	F	Crossing and rubbing branches Interlocking crowns Low crown forms Minor dead wood evident in the crowns (<75mm)	17	2.4	C (ii)
G10	Ash Fraxinus excelsior Elder Sambucus nigra Hawthorn Crataegus monogyna Sycamore Acer pseudoplatanus	4	est 6x 60	1	EM	F	Crossing and rubbing branches Interlocking crowns Low crown forms Outgrown hedgerow	10	1.8	C (ii)
G11	Elder Sambucus nigra Goat Willow Salix caprea Wild Cherry Prunus avium White Willow Salix alba	6	170 150 140 80	3	Yng / SM	F	Characteristic for species Coppiced form Crossing and rubbing branches Included bark union Multi leadered form Multi stemmed from base Variety of regeneration vegetation with dense bramble	35	3.3	C (i)
G12	Elder Sambucus nigra Goat Willow Salix caprea Norway Maple Acer platanoides White Willow Salix alba	9	80 210 230 90	2	Yng / SM	F	Basal suckers present Base obscured Characteristic for species Crossing and rubbing branches Dense undergrowth at the base Included bark union Interlocking crowns Limited future potential Multi leadered form Multi stemmed from base	50	4.0	C (i)

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G13	Goat Willow Salix caprea White Willow Salix alba	7	80 120 80 90	2	Yng / SM	F	Basal suckers present Base obscured Characteristic for species Crossing and rubbing branches Included bark union Interlocking crowns Multi leadered form Multi stemmed from base	16	2.3	C (i)
G14	Hawthorn Crataegus monogyna Norway Maple Acer platanoides	8	est 250 180 170 150 80	3	SM	F	Bark wounds noted Base obscured Broken branches evident Crossing and rubbing branches Dead trees noted Dense undergrowth at the base Multi leadered form Multi stemmed from base	69	4.7	C (i)
G15	Goat Willow Salix caprea	9	est 140	2	Yng / SM	F	Bark wounds noted Basal suckers present Base obscured Characteristic for species Dense undergrowth at the base Limited future potential Multi leadered form Multi stemmed from base	9	1.7	C (i)
G16	Goat Willow Salix caprea Silver Birch Betula pendula	9	est 90 80 110	2	Yng / SM	F	Bark wounds noted Basal suckers present Base obscured Characteristic for species Dense undergrowth at the base Limited future potential Multi leadered form Multi stemmed from base Fire damage	12	2.0	C (i)

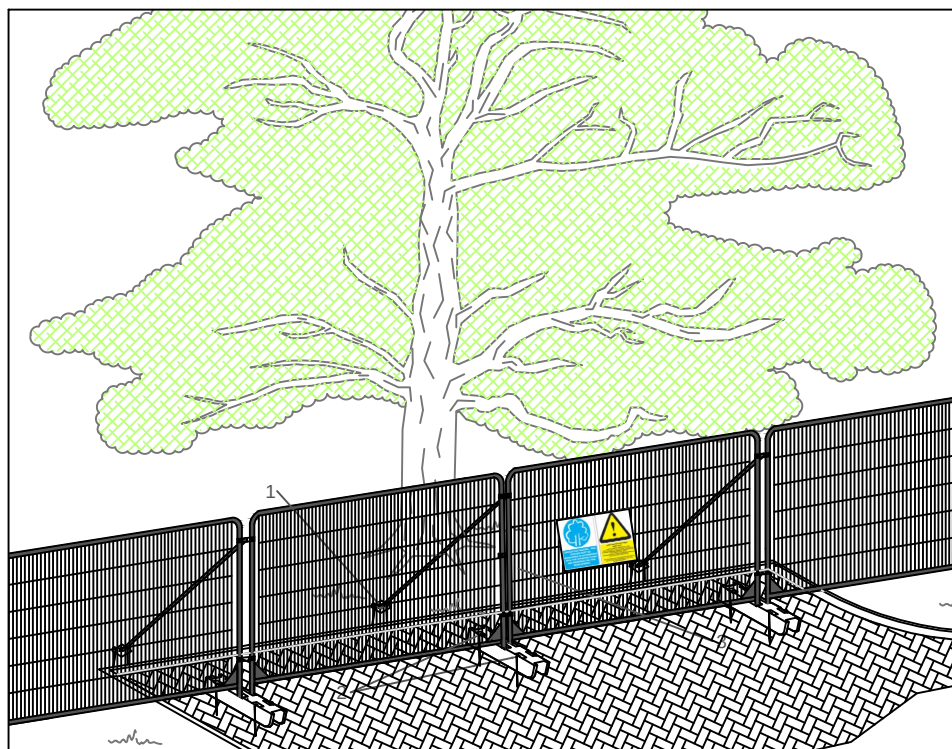
Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G17	Goat Willow Salix caprea	10	est 90 180 110	2	Yng / SM	F	Bark wounds noted Basal suckers present Base obscured Characteristic for species Dense undergrowth at the base Limited future potential Multi leadered form Multi stemmed from base Fire damage	24	2.8	C (i)
G18	Goat Willow Salix caprea White Willow Salix alba	11	140 140 160 80	3	Yng / SM	F	Bark wounds noted Base obscured Branch stubs evident Broken branches evident Characteristic for species Dense undergrowth at the base Epicormic growth evident within the crown Included bark union Interlocking crowns Minor dead wood evident in the crown (<75mm) Multi leadered form Multi stemmed from base	32	3.2	C (i)
G19	Elder Sambucus nigra Goat Willow Salix caprea Norway Maple Acer platanoides	9	avg 210 80 90 180	3	Yng / SM	F	Bark wounds noted Base obscured Branch stubs evident Crossing and rubbing branches Dense undergrowth at the base Interlocking crowns Minor dead wood evident in the crown (<75mm) Multi leadered form Multi stemmed from base	41	3.6	C (i)
G20	Leyland Cypress Cupressocyparis leylandii	9	upto 230	2	EM	D / P	Extensive fire damage only one tree remains alive	N/A	N/A	U

Group No	Species	Height	Stem Dia.	Crown Radius	Age Class	Overall Condition	Structural Condition	RPA	RPA Radius	BS5837 Cat
G21	Prunus sp. Leyland Cypress Cupressocyparis leylandii	12	upto 440	2	SM / EM	F	Base obscured Dense undergrowth at the base Light ivy cover	88	5.3	C (i)
G22	Leyland Cypress Cupressocyparis leylandii	7	190 80 80 80 100	2	SM	F	Characteristic for species Dense undergrowth at the base Included bark union Multi leadered form Multi stemmed from base	30	3.1	C (i)



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

NOTES

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APPENDIX B PROTECTIVE FENCING SPECIFICATIONS

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