



Gladman Developments Ltd

Land West of Cross Road, Deal

Arboricultural Assessment

November 2021

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1.0 INTRODUCTION

- 1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of Gladman Developments Ltd to present the findings of an Arboricultural Assessment and survey of trees located at Land West of Cross Road, Deal (hereafter referred to as the site), OS Grid Ref TR 360 505.
- 1.2 The survey was carried out on Monday 21st June 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 a planning application for residential development 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 was situated in-between Walmer to the southeast, Deal to the northeast and Sholden to the northwest, all located in the district of Dover. Cross Road ran along the eastern boundary of the site and Ellen's Road formed the southern boundary of the site. The residential edge defined the northern boundary with open countryside to the west. The assessment area comprised a single arable field parcel and area of new woodland planting to the west was also included. Tree cover was confined to the boundaries due to the current use with a diverse range of species present due to the presence of new mixed woodland planting.

2.0 PLANNING POLICY

National Planning Policy Framework July 2021

- 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 July 2021.
- 2.2 Paragraph 10 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:
- *131 'Trees make an important contribution to the character and quality of urban environments and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined⁵⁰, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.*
 - *180(b) '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:
- *180(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 63 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 wilfully 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 No direct consultation with the Local Planning Authority has taken place, however, it is understood having used the online search facility on the website for the Local Planning Authority, Dover District Council that there are no Tree Preservation Orders and Conservation Areas that would apply to any trees present on, or in close proximity to the assessment site and therefore no statutory constraints would 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.
- 2.7 Information provided on Tree Preservation Orders and Conservation Areas is accurate to the date of this assessment and cannot be assumed to remain unchanged. The last check was carried out on the Monday 29th November 2021.

Non-Statutory Considerations

- 2.8 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 tree cover within the site as or included within the following:
- The National Forestry Inventory – Young trees
- 2.9 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
- 2.10 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
- 2.11 Priority habitat designation and inclusion within the National Forestry Inventory does not provide any statutory protection.

¹ <http://magic.defra.gov.uk/>

² Contains public sector information licensed under the Open Government Licence v3.0.

³ <https://www.forestryresearch.gov.uk/tools-and-resources/national-forest-inventory/>

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 and 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.
 - 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 and 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.

BS5837 Categories

- 3.4 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).
- 3.5 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.
- 3.6 **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.

⁴ http://www.countrysideinfo.co.uk/woodland_manage/whatis.html

⁵ http://www.countrysideinfo.co.uk/woodland_manage/whatis.html

- 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.

3.7 **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.

3.8 **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.

3.9 **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

- 3.10 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.
- 3.11 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

- 3.12 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.
- 3.13 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.
- 3.14 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.
- 3.15 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.
- 3.16 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

- 3.17 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.
- 3.18 The statements made in this report regarding the 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 behaviours, 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.
- 3.19 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.
- 3.20 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.
- 3.21 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 five individual trees, eight groups of trees and two hedgerows 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

- 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.

- 4.4 Several of the trees have been discussed in more detail following the table, owing to their physical condition or arboricultural significance.

Results Summary

- 4.5 The majority of tree cover found on site was associated with G7, an area of young and semi mature trees planted to the west creating an L-shaped area of mixed species tree cover. All of the tree cover observed across the site was considered to be low in arboricultural quality and consisted of a mixture of outgrown hedgerow material, linear boundary tree groups and managed hedgerows.

Table 1: Summary of Trees by Retention Category

| | Individual Trees | Total | Groups of Trees | Total |
|---------------------------------------|------------------|-------|--|-------|
| Category U - Unsuitable | T2 | 1 | | 0 |
| Category A (High Quality / Value) | | 0 | | 0 |
| Category B (Moderate Quality / Value) | | 0 | | 0 |
| Category C (Low Quality / Value) | T1, T3, T4, T5 | 4 | G1, G2, G3, G4, G5, G6, G7, G8, H1, H2 | 10 |

- 4.6 G7 consisted of mixed native species planted to form a small, wooded area to the west. Young and semi mature examples of ash *Fraxinus excelsior*, beech *Fagus sylvatica*, bird cherry *Prunus padus*, Dogwood *Cornus sanguinea*, elder *Sambucus nigra*, English oak *Quercus robur*, goat willow *Salix caprea*, silver birch *Betula pendula*, sycamore *Acer pseudoplatanus*, hazel *Corylus avellana*, holly *Ilex aquifolium*, holm oak *Quercus ilex*, hornbeam *Carpinus betulus*, *Prunus* sp. and Spindle *Euonymus europaea* were found to be generally fair in condition. Close planting intervals had resulted in low interlocking and dense crowns which also contained dense undergrowth such as bramble and thorn thickets. Due to the unmanaged condition of G7 and areas of sparse or declining trees this group was considered to be retention category C.
- 4.7 The presence of Chalara dieback of ash *Hymenoscyphus fraxineus* was observed throughout G7. This fungus causes leaf loss, crown dieback and bark lesions and is usually fatal within young tree stock. The presence of this disease would need to be confirmed by the presence of fungal fruiting bodies on the fallen leaf stalks so the appropriate management can be implemented. Despite this, overall, the group was still regarded as being moderate in quality due to the possibility of managing the ash stock.
- 4.8 G8 defined the southern boundary of the western field parcel and was a continuation of G7 although trees within this linear group were slightly larger in proportions. Foliage had been cut back from the field edge with the use of a flail mower and a number of crowns had been topped.

- 4.9 T1 to T4 and G1 were all situated along the northern boundary of the western arable field parcel. A range of species were noted of differing ages although structural conditions present were similar with crowns housing crossing and rubbing branches, flail damage and pruning wounds. Dense ivy and undergrowth obscured views whilst T1 to T3 were situated offsite. Species present were hawthorn (T1), cider gum *Eucalyptus gunni* (T2), holly (T3), sycamore (T4) and blackthorn *Prunus spinosa*, elder, hawthorn, wild cherry *Prunus avium* and privet *Ligustrum ovalifolium* within G1. T2 was in a moribund condition and had little sign of any live growth, it was therefore regarded as retention category U.
- 4.10 To the north a small grass field formed part of the site, which was surrounded by boundary tree cover G2, G4 and G5. G2 consisted of early mature and mature tree cover situated offsite within the rear gardens of private residential properties, species present included ash, elder, hawthorn, walnut, crab apple *malus domestica*, privet and Leyland cypress *Cupressocyparis leylandii*.
- 4.11 G4 comprised outgrown forms of elder, hawthorn and *Prunus sp.* whilst G5 consisted of mature examples of elder, hawthorn and dogwood forming sporadically and again offsite. Due to the unmanaged nature of this entire tree cover crossing and rubbing branches along with dense ivy and undergrowth were common.
- 4.12 G3 was situated within G2 and G4 and consisted of mature specimens of Aspen *Populus tremula* forming a linear tree group. Low crowns showed no major defects although dense ivy had become established.
- 4.13 H1 and H2 comprised of mature examples of privet with additional species of elder and holly within H1. Crowns had been managed in either height or spread with regular clipping of foliage to form solid and consolidated hedgerows.

Ancient and Veteran Trees

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

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 draft development framework plan and seeks to outline the relationship between the proposals and the existing trees and hedgerows. The drawing shows the proposals for residential development with associated open space. 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.

- 5.3 Due to the nature of the site and the location of the tree stock present, the proposals will retain and incorporate all of the existing tree stock into the proposed development. The design of the layout enables this tree cover to continue providing the arboricultural and landscaping benefits to the site and immediate area. Furthermore, the proposals indicate that there will be new tree planting across the site. Along the primary access roads, new trees are shown to be planted. Through careful and appropriate species selection, and with continued management, these trees will give the proposed development a sense of grandeur in years to come. They will help break up the built element of the development. The site also shows significant new planting in the southeastern corner of the site, planting here should be native and will help improve the biodiversity of the site as it is currently a monoculture of arable cereal crop. Adjacent to this area of new planting, there is a proposed attenuation pond. This is another area that could be improved by planting riparian tree species such as *alnus spp* and *Salix spp* which are ideally located in areas such as this.
- 5.4 The proposals also show new informal footpaths through G6 and G7. To implement these paths, these groups should be thinned to allow for access. The thinning of these two groups will help improve the overall quality by allowing more light and space for species to grow and develop further.
- 5.5 Overall, the proposed development would improve the arboricultural value of the site and provide a high-quality residential development. Currently the site is devoid of any tree cover centrally, these proposals would improve and provide an opportunity to increase canopy cover and biodiversity.

Tree Management

- 5.6 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.
- 5.7 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.
- 5.8 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.
- 5.9 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

- 5.10 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.
- 5.11 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.
- 5.12 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.
- 5.13 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.
- 5.14 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.
- 5.15 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.

6.0 NEW TREE AND HEDGEROW PLANTING

- 6.1 As part of the development proposals an adequate quantity of structured tree planting has been demonstrated predominantly within or close to hard landscaped areas of car parking or alongside the primary access roads within the roadside verges. 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 to 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 scheme's 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. One researched method of calculating the minimum required soil volume is as follows:

Table 2: 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

- 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 facilitating 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.

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. 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

- 7.11 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.
- 7.12 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.
- 7.13 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.
- 7.14 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.
- 7.15 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.
- 7.16 Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
- 7.17 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).

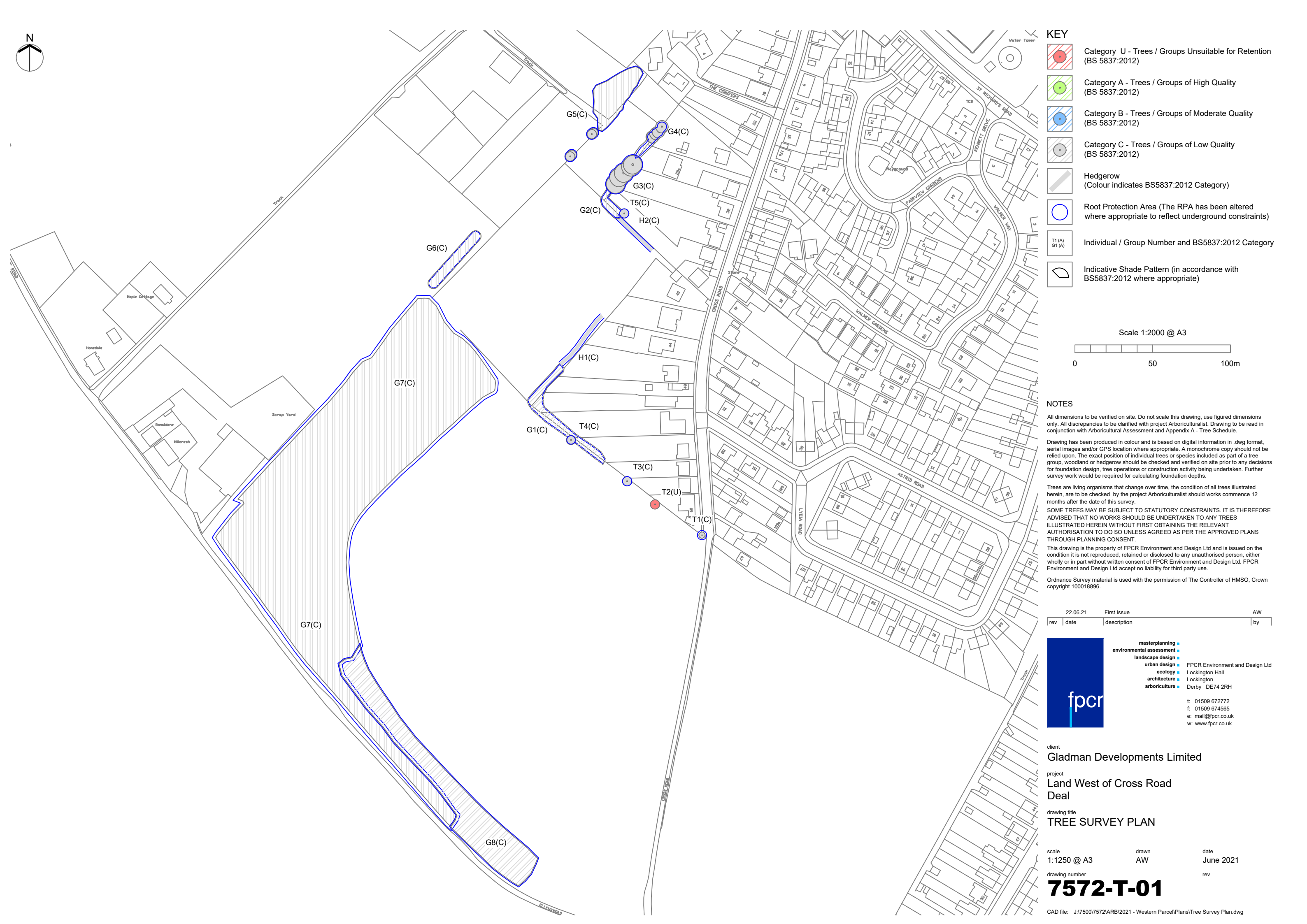
Protection of Trees Close to the Site

- 7.18 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.









- 7.19 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

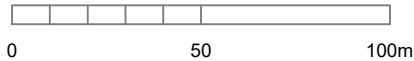
- 7.20 Where it is deemed necessary to operate wide or tall plant within close proximity to trees it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obstructive branches as any such equipment would have potential to cause damage to parts of the crown 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.
- 7.21 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.
- 7.22 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.



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
-  Indicative Shade Pattern (in accordance with BS5837:2012 where appropriate)

Scale 1:2000 @ 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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- masterplanning
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Gladman Developments Limited

project
Land West of Cross Road Deal

drawing title
TREE SURVEY PLAN

| | | |
|----------------------|-------------|-------------------|
| scale 1:1250 @ A3 | drawn AW | date June 2021 |
| drawing number | | rev |

7572-T-01



KEY

Tree/Group to be Retained

Root Protection Area (The RPA has been altered where appropriate to reflect underground constraints)

Individual / Group Number and BS5837:2012 Category

Indicative Shade Pattern (in accordance with BS5837:2012 where appropriate)

Scale 1:1250 @ 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.

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Land West of Cross Road Deal

drawing title

TREE RETENTION PLAN

scale

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drawn

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date

October 2021

drawing number

7572-T-02

rev

B

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: <ul style="list-style-type: none"> • 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 |

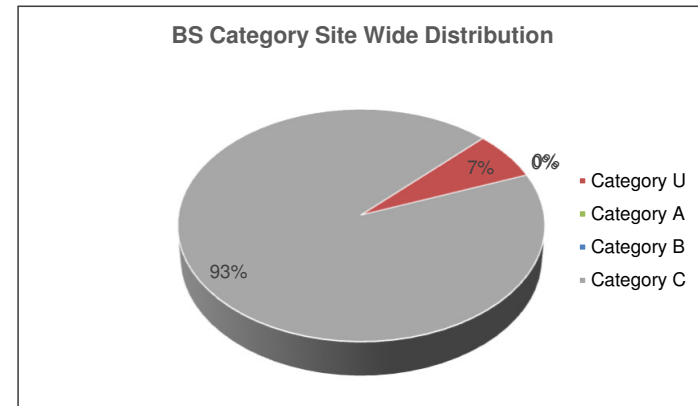
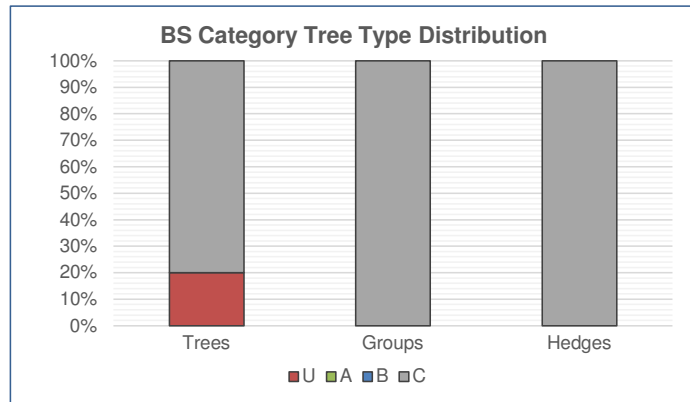
| Root Protection Area (RPA) |
|--|
| <ul style="list-style-type: none"> • The RPA Radius column provides the extent of an equivalent circle from the centre of the stem (m). • The RPA is calculated using the formulae described in paragraph 4.6.1 of British Standard 5837: 2012 and is indicative of the 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 | T2 | 1 | | 0 |
| Category A | | 0 | | 0 |
| Category B | | 0 | | 0 |
| Category C | T1, T3, T4, T5 | 4 | G1, G2, G3, G4, G5, G6, G7, G8, H1, H2 | 10 |
| | Total | 5 | Total | 10 |

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

BS Category Site Wide Distribution shows the proportion of trees assessed in each category across the whole site which allows an interpretation of the site's overall quality.



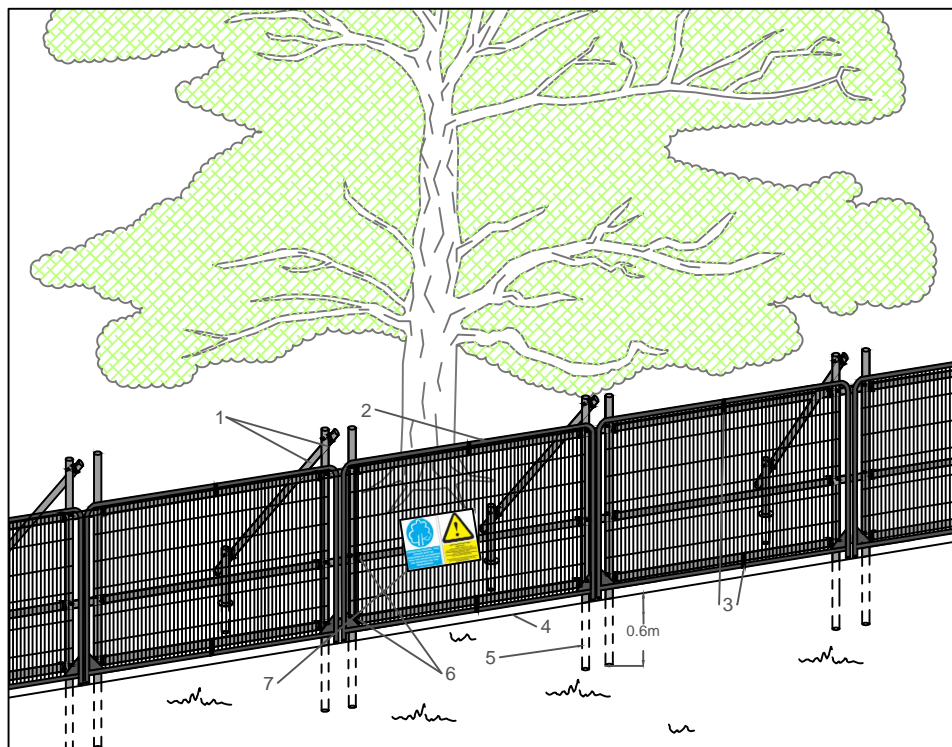
| Tree No | Species | Height | Stem Dia. | Crown Radius | Age Class | Overall Condition | Structural Condition | RPA | RPA Radius | BS5837 Cat |
|-------------------------|---|--------|-------------------|--------------|-----------|-------------------|--|-----|------------|------------|
| INDIVIDUAL TREES | | | | | | | | | | |
| T1 | Hawthorn <i>Crataegus monogyna</i> | 4 | est 250 | 2 | M | P | Base obscured Dense ivy cover on main stem Situated offsite | 28 | 3.0 | C (i) |
| T2 | Cider Gum <i>Eucalyptus gunni</i> | 7 | est 150 150 | 3 | SM | D | Base obscured Dieback of the crown observed Extensive decline Situated offsite | N/A | N/A | U |
| T3 | Holly <i>Ilex aquifolium</i> | 7 | Over ivy 250 | 3 | M | F | Base obscured Flail damage evident Pruning wounds noted Other situated offsite behind | 28 | 3.0 | C (i) |
| T4 | Sycamore <i>Acer pseudoplatanus</i> | 8 | 100 130 160 | 3 | EM | P | Basal suckers present Base obscured Crossing and rubbing branches Flail damage evident | 24 | 2.7 | C (i) |
| T5 | Lawson Cypress <i>Chamaecyparis lawsoniana</i> | 7 | est 6x 100 | 3 | EM | P | Crossing and rubbing branches Dense ivy cover on main stem Situated offsite Unable to gain access | 27 | 2.9 | 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 | Blackthorn Prunus spinosa Elder Sambucus nigra Hawthorn Crataegus monogyna Wild Cherry Prunus avium Privet Ligustrum ovalifolium | 5 | est 6x 80 | 3 | EM | F | Base obscured Crossing and rubbing branches Dense undergrowth at the base Flail damage evident Outgrown hedgerow | 17 | 2.4 | C (ii) |
| G2 | Ash Fraxinus excelsior Elder Sambucus nigra Hawthorn Crataegus monogyna Common Walnut Juglans regia Crab Apple Malus sylvestris Privet Ligustrum ovalifolium Leyland Cypress Cupressocyparis leylandii | 11 | est 200 | 3 | EM / M | F | Base obscured Crossing and rubbing branches Dense ivy cover on main stems Dense undergrowth at the base Situated offsite Unable to gain access | 18 | 2.4 | C (ii) |
| G3 | Aspen Populus tremula | 15 | Over ivy 530 | 6 | M | F | Base obscured Dense ivy cover on main stems Dense undergrowth at the base Interlocking crowns Low crown forms | 127 | 6.4 | C (ii) |

| Group No | Species | Height | Stem Dia. | Crown Radius | Age Class | Overall Condition | Structural Condition | RPA | RPA Radius | BS5837 Cat |
|----------|---|--------|-------------------|--------------|-----------|-------------------|---|-----|------------|------------|
| G4 | Elder Sambucus nigra Hawthorn Crataegus monogyna Prunus sp. | 7 | est 250 | 4 | M | F | Base obscured Crossing and rubbing branches Dense ivy cover on main stems Dense undergrowth at the base Interlocking crowns Low crown forms | 28 | 3.0 | C (ii) |
| G5 | Elder Sambucus nigra Hawthorn Crataegus monogyna Dogwood Cornus sanguinea | 5 | est 200 200 | 3 | M | F | Base obscured Crossing and rubbing branches Dense ivy cover on main stems Dense undergrowth at the base Interlocking crowns Low crown forms Situated offsite Sporadic self-seeded group of trees | 36 | 3.4 | C (ii) |
| G6 | Elder Sambucus nigra Hawthorn Crataegus monogyna Prunus sp. | 4 | est 150 150 | 3 | EM / M | F | Base obscured Crossing and rubbing branches Dense ivy cover on main stems Dense undergrowth at the base Interlocking crowns Low crown forms Situated offsite Sporadic self-seeded group of trees | 20 | 2.5 | C (ii) |
| G7 | Ash Fraxinus excelsior Beech Fagus sylvatica Elder Sambucus nigra English Oak Quercus robur Goat Willow Salix caprea Silver Birch Betula pendula Sycamore Acer pseudoplatanus Hazel Corylus avellana | 8 | est 150 | 2 | Yng / SM | F | Branch stubs evident Broken branches evident Crossing and rubbing branches Dense ivy cover on main stem Dense undergrowth at the base Flail damage evident Interlocking crowns Low crown form Pruning wounds noted Area of new planting sparse in places larger trees to the south possible evidence of ash dieback | 10 | 1.8 | C (ii) |

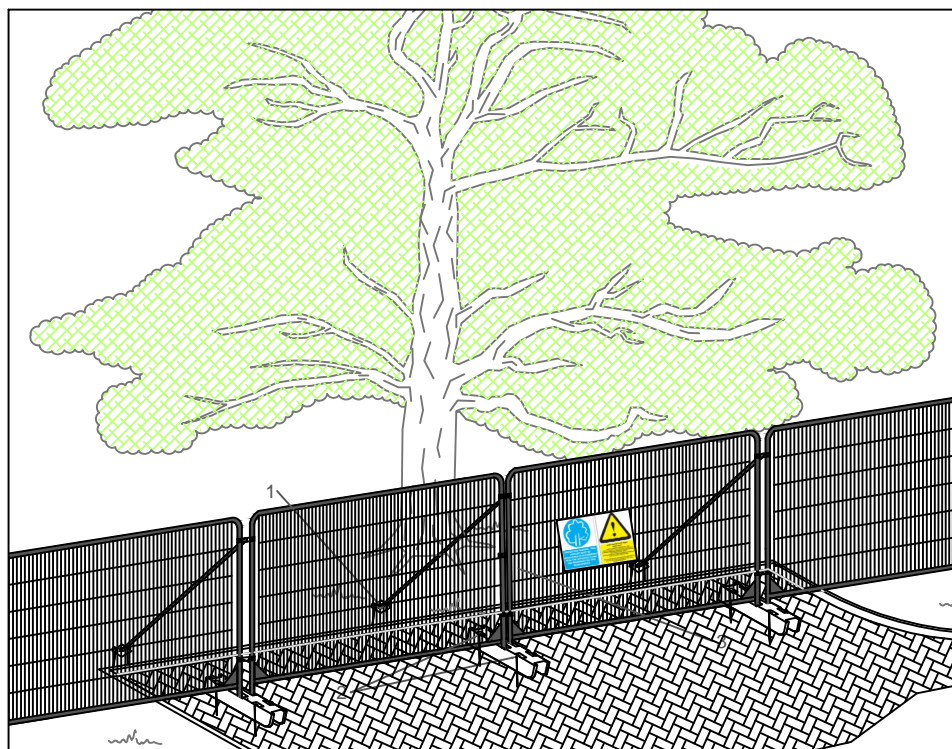
| Group No | Species | Height | Stem Dia. | Crown Radius | Age Class | Overall Condition | Structural Condition | RPA | RPA Radius | BS5837 Cat |
|----------|--|--------|---------------|--------------|-----------|-------------------|--|-----|------------|------------|
| G8 | Ash Fraxinus excelsior Elder Sambucus nigra English Oak Quercus robur Goat Willow Salix caprea English Elm Ulmus procera Dogwood Cornus sanguinea | 10 | est 6x 100 | 3 | SM / EM | P / F | Base obscured Branch stubs evident Broken branches evident Crossing and rubbing branches Crown had been topped Dense undergrowth at the base Flail damage evident Interlocking crowns Low crown form Some areas managed in height | 27 | 2.9 | C (ii) |

| Hedge No | Species | Height | Stem Dia. | Crown Radius | Age Class | Overall Condition | Structural Condition | RPA | RPA Radius | BS5837 Cat |
|------------------|--|--------|--------------|--------------|-----------|-------------------|--|-----|------------|------------|
| HEDGEROWS | | | | | | | | | | |
| H1 | Elder Sambucus nigra Holly Ilex aquifolium Privet Ligustrum ovalifolium | 2 | est 6x 60 | 1 | M | F | Dense ivy cover on main stems Dense undergrowth at the base Hedgerow maintained in height only | 10 | 1.8 | C (ii) |
| H2 | Privet Ligustrum ovalifolium | 1 | est 6x 50 | 1 | M | F | Maintained hedgerow | 7 | 1.5 | C (ii) |



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

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APPENDIX B PROTECTIVE FENCING SPECIFICATIONS

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