

Tree Survey and Impact Assessment

*for land at
RFC Bowls Club,
Church Walk,
Gravesend,
Kent
DA12 2QU*

Client
McCarthy Stone

October 2022

1856-KC-XX-YTREE-TreeSurvey-and-ImpactAssessment-Rev0

The Studio, Timbers, Gables Road, Church Crookham, Fleet, Hampshire, GU52 6QY
Telephone +44(0)1252 850096 | Email: mail@keenconsultants.co.uk

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Registered office: 4 Sudley Road, Bognor Regis, West Sussex, PO21 1EU

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Document history

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1.0 Introduction

- 1.1 This tree survey sets out the information about trees to inform the planning process about the quality of trees on site. Following the tree survey the information is extended to consider the impact to them from the proposed development and how construction may proceed whilst ensuring trees are successfully retained.
- 1.2 In this report we consider the proposals for development of the site. We consider those proposals in relation to the survey of trees we conducted as part of the site analysis.
- 1.3 The area subject to this survey consists primarily of a bowling green and section of rugby football club situated at the south of Milton Road, Gravesend.
- 1.4 The site itself is laid mostly to lawn with occasional hedges and occasional tree.
- 1.5 Further trees are prominent within the broad verge between the site and Milton Road. These combine and form an attractive tree group.
- 1.6 Some of the trees within the group have defects that warrant their remove to favour the other, better trees.
- 1.7 We have checked the online portals, including Gravesham Borough Council for statutory protection of trees applicable to the site. Online portals are not always reliable so before works are undertaken to trees a direct enquiry with the Council should be made.
 - **TREE PRESERVATION ORDERS** - details were not available online, or the online portal could not be searched, to clearly identify if trees upon the site were protected by Tree Preservation Order.
 - **CONSERVATION AREAS** - details were not available, or the online portal could not be searched, to clearly identify if trees are within a Conservation Area.
 - As such we advise that a direct enquiry to the Council is made to ascertain if trees are protected.
 - The MAGIC information portal revealed that Ancient and Semi-Natural Woodland IS NOT located within/adjacent to the site. Land upon the site IS NOT listed on the Priority Habitat Inventory - Deciduous Woodland (England)
 - The online portal of the Woodland Trust, Ancient Tree Inventory, revealed that there are NO veteran trees recorded on site.

- 1.8 Nationally adopted guidance has been followed in the preparation of this report. *BS5837:2012: Trees in relation to design, demolition and construction – Recommendations* sets out a structure approach to considering trees during the development process. Guidance is given on the surveying of trees, the protected space that should be allocated to trees, what elements may give rise to harm to trees and what techniques can be deployed to minimise harm.
- 1.9 Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection. We recognise the need to integrate with other disciplines to achieve a balanced approach to development proposals.
- 1.10 We set out how our key elements interact with others at [Appendix1](#) of this report. The appendix provides comprehensive information about the stages of providing tree information within the planning process.
- 1.11 Further explanatory notes about tree survey information are given in [Appendix2](#).

2.0 Tree survey

- 2.1 The objective of this tree survey is to assess the significant trees and woody vegetation on the site to obtain dimensions, assess their quality and evaluate their condition to provide sufficient information to enable decisions to be made on planning aspects of the site and its potential development.
- 2.2 The tree survey:
 - 2.2.1 was conducted on the 11 March 2022 by Jago Keen, MSc, Dip.Arb., MArborA, MICFor from ground level, in accordance with the guidance in British Standard *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*;
 - 2.2.2 is intended for planning purposes only;
 - 2.2.3 is not intended for the detailed design of foundations (further information upon vegetation can be provided upon request);
 - 2.2.4 is not a detailed health and safety condition survey of trees;

- 2.2.5 recommends only preliminary works. Tree works required to achieve the scheme of development will be considered as part of the Impact Assessment and detailed on the Tree Protection Plan;
- 2.2.6 places reliance on the topographical survey.
- 2.3 Details of each tree are recorded in the Schedule of Trees at [Appendix3](#).
- 2.4 Site soil investigations have not been conducted. The (online) 'Geology of Britain Viewer' that contains British Geological Survey materials © NERC [2018] reveals the following soil information:
 - 2.4.1 Bedrock geology: Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) – Chalk.
 - 2.4.2 Superficial deposits: Head – Clay, Silt, Sand And Gravel.
- 2.5 Survey information is used to prepare the constraints posed by trees on development. These constraints are shown on the Tree Constraints Plan. The Plan shows root protection areas prescribed by the guidance within BS5837 paragraph 4.6.2 and adjusted where appropriate as recommended in subsequent paragraph 4.6.3. The root protection area (RPA) is the minimum extent of rooting required to sustain the tree.
- 2.6 Trees change over time hence the contents of this survey can only be relied upon for a period of up to two years. The survey should be refreshed after two years or immediately prior to the design of detailed site layouts where they are phased.

3.0 Application of survey information

- 3.1 Trees place constraints on sites but they also provide opportunities in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of site layout design should be to avoid the RPA. Ideally, structures should be outside the root protection area to provide working space for construction however protection measures can be taken if such clearance, in isolated cases, is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

- a) Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.
- b) Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods.
- c) Service runs that cannot be routed outside the root protection area(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable. Offsite provision may be considered in some circumstances but this will require negotiation with the local planning authority.

4.0 Assessment of impact upon trees

- 4.1 This assessment will consider the impact upon trees of implementing the proposals shown on the drawings listed below:

Table 1 - List of drawings referred to in the impact assessment

Originator	Drg No	Title
ON Architecture	LSE-2821-03-AC-0010 P4	Proposed Site Layout
Keen Consultants	1856-KC-XX-YTREE-TCP01Rev0	Tree Constraints Plan
Keen Consultants	1856-KC-XX-YTREE-TPP01Rev0	Tree Protection Plan

4.2 Site proposals considered in this application include:

4.2.1 Retirement apartments

4.2.2 Access, parking and other hard surfaces

4.2.3 Utilities and services

4.2.4 New and replacement tree planting

4.3 The proposals are considered with reference to the following guidance documents referred to in this report:

Table 2 - List of documents used to inform the impact assessment

Originator	Title/Reference
British Standards Institute	<i>BS5837:2012 Trees in relation to design, demolition and construction – Recommendations</i>
Trees and Design Action Group	<i>Trees in the townscape: A guide for decision makers</i>
Ministry of Housing, Communities and Local Government	<i>National Planning Policy Framework (NPPF)</i>

4.4 National planning policy (paragraph 131 of the NPPF refers) makes clear the important contribution made by trees to the character and quality of urban environments. Trees help to mitigate and adapt to climate change. The application proposals are respectful of the benefits trees provide and have been developed to ensure the retention of trees and the incorporation of new trees within the layout.

4.5 In summary, the proposals seek to retain all the significant trees at the site and are located remote from root protection areas. Short sections of proposed footpath are located within root protection areas but these can be constructed using specialist techniques to avoid harm to the trees.

Impact of application proposals

- 4.6 The proposed apartment building has been set back from the row of trees along the Milton Road frontage. As a result the building is outside the root protection areas and crown spreads of the retained trees.
- 4.7 A balcony structure projects marginally within the root protection area of tree 12 but the intrusion is so minor it will not result in material harm to this vigorous sycamore.
- 4.8 Localised pruning of trees 9, 10, 12 and 14 will be required to provide separation from the balcony structures. Such pruning will be insignificant in relation to the retained crown, will not result in detriment to tree health and will not materially detract from the amenity the trees provide.
- 4.9 The proposed layout of hard surfaces is generally remote from root protection areas so no specialist measures are required.
- 4.10 Small sections of the proposed access, parking bay 1, the turning head and the pathway north of the proposed building lie within the root protection area of retained trees.
- 4.11 Achieving hard surfaces close to trees is possible but some important factors need to be considered, factored in to design and feasibility and then implemented correctly.
- 4.12 BS5837 provides guidance within section 7.4 on what are acceptable methods to achieve hard surfacing within a root protection area. The conditions and ground levels on this site are favourable to achieving these levels.
- 4.13 In this instance there is scope to achieve the hard surfaces by building them above existing levels. The depth of sub-base and surfacing can be minimised by using cellular confinement systems. This follows the principles of 'no-dig' construction to achieve hard surfaces that do not require excavation, do not result in the loss of roots, and do not result in harm to the rooting environment once the surfaces are in use.
- 4.14 Site specific drawings have been produced to show the areas where the principles of no-dig construction are required. Typical construction details of these surfaces are shown on the Keen Consultants' Tree Protection Plan.

Impact of drainage and services

- 4.15 The proposed drainage and services are not shown on the proposed site layout. Where they can be located outside of root protection areas they will require no specialist measures for their installation.
- 4.16 Where services do need to be installed within root protection areas, for instance trees 4 to 13, then specialist techniques for their installation will be needed. Such specialist techniques include moling, thrust-boring, broken trench or excavation by AirSpade.
- 4.17 A swale is proposed, wrapping around the south eastern corner of the building and extending up the boundary with Church Walk. It requires the loss of a hawthorn hedge, a privet hedge, and tree group 1. Tree group 1 is a group of ash with occasional hazel. Ash trees are dying as a result of a disease known as Ash Dieback and so these trees do not present a long term contribution to amenity. The loss of group 1 would therefore enable the planting of new trees to sustain tree cover along this boundary.
- 4.18 No other installations, including mechanical and electrical equipment, are proposed in an area that would be of detriment to trees.

5.0 New and replacement tree planting

- 5.1 The development proposals bring forward opportunity to plant a selection of trees throughout the development. Generous space is available for the planting of new trees to supplement those retained and provide a material contribution to the green infrastructure of the area.
- 5.2 Retaining existing trees and introducing new trees ensures a resource of trees in places where residents and visitors alike will enjoy multiple benefits provided by the tree stock. In so doing the tree stock will be able to withstand climate change, protecting and enhancing the resources of soil, air, water, landscape, amenity value, culture and biodiversity, and increasing the contribution that trees make to the quality of life. In that respect the proposals are in line with the very latest guidance, in terms of integrating trees with built form, contained in *Trees in the townscape: A guide for decision makers* produced by the Trees and Design Action Group and the requirement of paragraph 131 of the National Planning Policy Framework.

- 5.3 Those multiple benefits of this new tree planting, as part of the site's green infrastructure, include contribution to open space, enhancement of sustainable drainage systems, and enhancement of biodiversity. In addition, as those new trees develop, so they will further contribute to local climatic regulation and, where they stand within the sun path of proposed buildings or surfaces within the re-development, they will minimise solar gain during summer months, and provide an accessible choice of shade and shelter.

6.0 Protection of trees during construction

- 6.1 To ensure the retained trees are safeguarded a tree protection plan has been prepared to show the location of protective measures. These measures need to be implemented in advance of construction and maintained until such time as soft landscape proposals require their removal.
- 6.2 In some instances specialist construction techniques or approaches are indicated on the protection plan. These shall be implemented in accordance with site progress.

7.0 Summary of impact assessment

- 7.1 The proposed development results in the loss of very few trees, all of which are low quality and value.
- 7.2 In places hard surfaces coincide with root protection areas but specialist measures can be deployed to minimise harm to trees.
- 7.3 Services and utility installation can be sited remote from trees but where they do need to be located within root protection areas specialist measures can be deployed for their installation to minimise harm to retained trees.
- 7.4 New and replacement tree planting can be provided as part of these development proposals. This new cohort of trees can provide a diverse portfolio of tree cover to ensure sustainability of green infrastructure in the future.
- 7.5 The application proposals recognise the important contribution trees make to the character and quality of urban environments, and the role they play to help mitigate and adapt to climate change. The proposals seek to retain existing trees and integrate new trees in accordance with the requirement of local and national planning policy.

Appendix 1

Introduction to key elements of tree information

Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection.

Keen Consultants break the process down to coordinate with the key elements within both the RIBA Plan of Work (2013) and 'British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations', this is set out in the table and explained below.

Figure 1 - Keen Consultants co-ordinated approach with cross references to key guidance.

Keen Consultants Tree Information	RIBA Stage	BS5837
Tree Survey ↓	Concept ↓	Feasibility ↓
Impact Assessment ↓	Developed design ↓	Proposals ↓
Method Statement ↓	Technical design ↓	Technical Design ↓
Site Monitoring	Construction	Demolition and construction

This cross referenced approach ensures trees are a material consideration and those to be retained will be safeguarded.

Tree Survey and Tree Constraints Plan

To inform the design and layout of the proposed development a tree survey has been undertaken to identify the size and quality of trees both within the site and immediately offsite. We have then used this information to prepare the Tree Constraints Plan drawing that shows the location of each tree, its size and the area around each tree that needs to be considered during the design process. Once prepared this information has been provided to the design team so that they know what constraints the trees pose.

Impact Assessment and Tree Protection Plan

During the design process the design team has consulted with the arboriculturist to ascertain if constraints may be breached, consider options emerging from the design and what spaces for new trees are needed.

Once the design was finalised an impact assessment has been prepared to accompany the planning application. The impact assessment demonstrates the proposals meet national and local planning policy and guidance. It demonstrates the benefits of the retained trees and incorporates new tree planting.

Another essential element of any application is the Tree Protection Plan.

Method Statement

This statement sets out in words how each element of work is undertaken in relation to the trees. It dictates when activities occur and the method that will be used to achieve them. It will also set out a scheme of monitoring and supervision.

Site Monitoring

Following the receipt of planning consent, it is a requirement that the installation of the protective barriers and ground protection are supervised, together with operations such as excavations or surfacing close to trees.

This varies according to the intensity of development near trees, the process is set out to ensure what is planned for in the Tree Protection Plan and method statement is delivered.

Gravesham Borough Council

Appendix 2

Tree Survey Explanatory Notes

The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of *British Standard 5837:2012 Trees in relation to design, demolition and construction-Recommendations* (BS5837). The survey has been undertaken by the qualified and experienced arboriculturist detailed at Table 1 of this report and they recorded information relating to all those trees within the site and those immediately adjacent to the site which may be of influence to any proposals.

The results are recorded in the Schedule of Trees at Appendix 3.

Schedule of trees

Appendix 3 presents details of the individual trees, groups and hedgerows including heights, diameters at breast height, crown spread (given as a radial measurement of cardinal points 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 information.

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.

Details of the individual trees, groups and hedgerows

All trees were assessed for their quality and benefits within the context of proposed development in a transparent, understandable and systematic way.

Individuals

The default position is to record each tree as an individual for its unique contribution to the landscape

Groups and woodlands

Trees have been assessed as groups where it has been determined appropriate by the surveyor. The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally.

Hedges and shrub masses

We consider a hedgerow to typically comprise a line of trees or shrubs that currently is subject to, or has undergone, a pruning regime to contain its dimensions.

For the tree survey hedgerows and substantial internal or boundary hedges (including evergreen screens) have either been recorded in the Tree Schedule, including lateral spread, height and stem diameter(s), or indicated on the Tree Constraints Plan.

A tree survey in accordance with BS5837 does not assess hedgerows against *The Hedgerow Regulations 1997* or specifically from an ecological perspective, as such would be outside the scope of the British Standard assessment.

Shrub masses are collectives of woody plants, rather than trees, and are recorded where they are a significant feature of the site. They have either been recorded in the Tree Schedule or indicated on the Tree Constraints Plan.

Individual trees within groups, woodlands and hedges

An assessment of individual trees within the groups has been made where there has been 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 Categorisation

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).

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 & 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.

Please note that the estimated remaining life expectancy figures are taken for BS5837 and relate to their categorisation. The life expectancy figures are therefore arbitrary and may vary in reality.

Category (U)

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.

Category (A)

Shown green on Tree Constraints Plan: Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years and with potential to make a lasting contribution. Such trees may comprise:

Sub categories

- 1) 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.
- 2) trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.
- 3) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.

Category (B)

Shown blue on Tree Constraints Plan: Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years and with potential to make a significant contribution. Such trees may comprise:

Sub categories

- 1) 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.
- 2) 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.
- 3) trees with material conservation or other cultural value.

Category (C)

Shown grey on Tree Constraints Plan: 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 categories

- 1) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
- 2) 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.
- 3) trees with no material conservation or other cultural value.

Devising BS5837 root protection areas

Default situation

The root protection area is a function of the stem diameter, it is multiplied by 12 to give a radius. For multi-stemmed trees the stems are combined to provide an effective diameter figure which is then multiplied.

Initially the root protection area should be plotted as a circle, and in many situation it remains a circle.

Influenced situation

Adjustments to the root protection area are made where pre-existing site conditions that would influence root distribution are present. Typically this will be buildings and retaining walls, lighter structures such as hard surfacing, sheds and garages generally do not have the same influence.

Ponds, rivers and watercourses will also influence root distribution as waterlogged soils are not conducive to root growth. Rainwater attenuation and ditches are likely to have a lesser impact if they are dry for significant periods.

Veteran trees

Natural England have introduced Standing Guidance that requires the allocation of buffer zones to veteran (including ancient) trees. They have prescribed that a buffer zone of 15 times the stem diameter of the tree is allocated. This will result in a buffer zone of larger diameter than the root protection area. Where veteran trees are identified during the tree survey they are allocated a Natural England buffer zone on the Tree Constraints Plan.

The Guidance is silent on what can and cannot be done within the buffer zone but it is reasonable to assume that it is prescribed to avoid material harm to the tree. It is also silent on what can and cannot be done when the land within the buffer zone is previously developed.

With this added layer of protection it is important to establish if a tree is veteran or not. The Guidance was not intended to be applied to all mature trees but to the sub-set of trees that are of great age. This is analogous with the NPPF requirement to safeguard trees that have attained an age where they are worthy of veteran or ancient status.

It is therefore important to establish a basis for defining trees as veteran as opposed to those trees that may have veteran characteristics or those trees that are mature.

Stem size is a useful guide and, in combination with size, so are characteristics of the tree. If we consider the guidance on stem size being a suitable guide to classifying trees as veteran we see:

- a) The most up to date (2013) guidance is that in ¹*Ancient and other veteran trees: further guidance on management* edited by David Lonsdale and published by The Tree Council in conjunction with The Ancient Tree Forum. Lonsdale considers that many trees may have veteran characteristics at any age however proposes, at a species level, size thresholds when a tree may be considered a veteran. A chart (see Figure 1 below) lists, species by species, the size criteria for trees reaching veteran status and then moving on to the later, ancient stage of life. Of those species listed in the chart we only need consider oak. We see that until trees attain a stem girth of around 4.6m (equivalent stem diameter of 1.46m) then an oak is only considered to be 'Locally notable'
- b) A somewhat older (1999) publication, ²*Veteran Trees: A guide to good management* edited by Helen Read and published by English Nature et al, is very similar in its definition by setting out three distinct bands for oak trees:
 - i) those with a diameter of more than 1.0m are potentially interesting
 - ii) those with a diameter of more than 1.5m are valuable in terms of conservation
 - iii) those over 2.0m in diameter are truly ancient
- c) English Nature's own ³*Development of a veteran tree site assessment protocol (Report Number 628)* of 2005 sought to give more structure to grading sites where veteran trees were present. It considered that trees over 1.0m diameter could be classed as veteran.

¹ *Ancient and other veteran trees: further guidance on management* edited by David Lonsdale and published by The Tree Council in conjunction with The Ancient Tree Forum

² *Veteran Trees: A guide to good management* edited by Helen Read and published by English Nature et al

³ *Development of a veteran tree site assessment protocol (Report Number 628)* of 2005

In summary, a tree may enter its veteran stage at 1.0m diameter but a more reliable size threshold, as held out by the latest guidance on the matter, is 1.5m diameter.

The other factor, tree characteristics, is also worth considering as veteran tree characteristics can be found on even young trees. Of course, if we count every tree with veteran tree characteristics as veteran we do a disservice to those truly veteran trees that warrant protection.

Read (1999), as set out above, considers veteran tree characteristics as:

- large girth for species
- major trunk cavities or progressive hollowing
- naturally forming water pools
- decay hollows
- physical damage to trunk
- bark loss
- large quantities of deadwood within the crown
- sap runs
- crevices in the bark, under branches or on the root plate sheltered from direct rainfall
- fungal fruiting bodies
- high number of interdependent wildlife species
- epiphytic plants
- an 'old' look
- high aesthetic interest

Lonsdale (2013) adds to this list:

- progressive narrowing of successive annual increments in the stem
- changes in crown architecture
- progressive or episodic reduction in post-mature crown size, often known as retrenchment

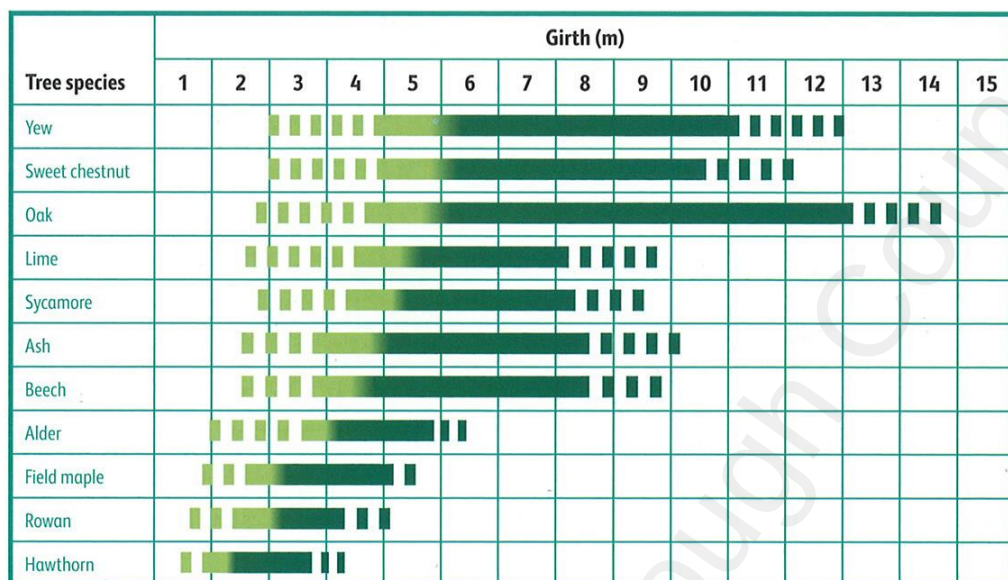
Lonsdale also states that "In order to qualify as a veteran, the tree should show signs of crown retrenchment and signs of decay in the trunk, branches or roots, such as exposed deadwood or fungal fruit bodies".

The English Nature Report Number 628 refers to Read (1999) for a list of veteran features but does add that in addition a tree may also:

- have a pollard form or show indications of past management
- have a cultural/historic value
- be in a prominent position in the landscape

These three criteria, when examined, are not truly indicative of a veteran tree on their own as these criteria could be applied to street trees in peri-urban locations that date from the mid-20th century - many of those are of pollard form, have cultural and historic value and a prominent position in the landscape.

In summary, it is important to consider the size of the tree and its characteristics. Just because a tree is mature does not mean it is veteran neither does the presence of veteran characteristics alone.



KEY: Locally notable Veteran/notable Ancient Late ancient

Figure 1- Chart of girth in relation to age and developmental classification of trees

Appendix 3

Schedule of Trees

*for land at
RFC Bowls Club,
Church Walk,
Gravesend,
Kent
DA12 2QU*

Key to Tree Schedule

Column Heading	Explanation
Tree No.	Unique number corresponding with number on plan
Species	English names
Ht (m)	Height in metres
Branch Spread	Crown radius in metres to cardinal points of the compass
Stem diameters (cm)	All measurements conform to Annex C of BS 5837:2012 Single stem - Stem diameter in centimetres measured at 1.5m above ground level. Multi-stemmed tree with 2 to 5 stems – Diameter of each stem Multi-stemmed tree with more than 5 stems – Average stem diameter and number of stems
Height of crown clearance	Height in metres between the ground and underside of canopy
Height of first major branch and direction of growth	Height from ground level to base of first major branch and the approximate direction of growth
Abbreviations as suffix to a dimension	<i>Suffix 'e' denotes an estimated dimension.</i> <i>Suffix 'av' denotes an average dimension</i>
Age class	Age Class definitions: Y = Young S = Semi-mature E = Early mature M = Mature O = Over mature
Category grading (see Appendix A2 for detailed explanation) and Estimated remaining contribution (yrs)	Summary of BS 5837: 2012 categorisation: 1. Trees that do not warrant consideration for retention: U = those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management. 2. Trees to be considered for retention: A1, 2 or 3 = trees of high quality and value (substantial contribution >40 yrs) B1, 2 or 3 = trees of moderate quality and value (significant Contribution >20 yrs) C1, 2 or 3 = trees of low quality and value (but adequate, ie >10 yrs or young trees – until new planting can be established)
Estimated remaining contribution	Useful estimated remaining contribution of the tree or tree group
Condition	Brief description including physiological and structural defects
Preliminary management recommendations	Describes current arboricultural requirement for the tree in its current context and should be undertaken as soon as reasonably practicable.
Root protection radius	Radius of minimum root protection area in metres calculated from section 4.6 and Annex D of BS5837:2012
Root protection area	Total area of minimum root protection area extrapolated from root protection radius

Trees at RFC Bowls Club, Church Walk, Gravesend, Kent DA12 2QU

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)							Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems									
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia									
1	Group of ash	8av	3av				10av							0	-	S	C2	>10	Group of ash along boundary of road. All showing signs of Ash Dieback. Includes occasional hawthorn and hazel.	Remove.	1.20	5
2	Field maple	14	3	4	4	5	45e							1.5	1.5W	S	B2	>20	Combines with other trees on broad verge to form tree belt. Main stem smothered in ivy. Lower stem beginning to absorb railings.	Crown lift to 3m above ground level to provide height clearance over pathway.	5.40	92
3	Lime	14	4	5	3	3	34							4	4N	S	B2	>20	Forms part of a row of trees growing in broad verge to north of site.		4.08	52
4	Lime	15	5	5	5	6	42							2	2W	S	B2	>20	Forms part of a row of trees growing in broad verge to north of site.	Crown lift to 3m above ground level to provide height clearance over pathway.	5.04	80
5	Group of crack willow	10av	5av				55av							2	2SW	E	C2	>10	Collection of trees in verge between footpath and road. All of have recently been pollard.		6.60	137
6	Lime	15	5	5	6	6	41							2	2S	S	B2	>20	Forms part of a row of trees growing in broad verge to north of site.	Crown lift to 3m above ground level to provide height clearance over pathway.	4.92	76
7	Cherry	14	6	6	6	5	43							2	2S	S	B2	>20	Forms part of a row of trees growing in broad verge to north of site.	Crown lift to 3m above ground level to provide height clearance over pathway.	5.16	84
8	Lime	16	6	5	5	4	37							2	2S	S	C2	>10	Contributes to row of trees within verge but genetically predisposed to form tight unions. Those unions are liable to failure as the tree matures. Unsited to long term retention.	Crown lift to 3m above ground level to provide height clearance over pathway.	4.44	62

Trees at RFC Bowls Club, Church Walk, Gravesend, Kent DA12 2QU

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
9	Cherry	15	7	5	7	7	53								2	2E	S	B2	>20	Contributes to row of trees with in verge alongside site. Some decay associated with past branch loss.	Prune to provide 2m clearance from balcony. Crown lift to 3m above ground level to provide height clearance over pathway.	6.36	127
10	Lime	14	5	5	6	5	39								2	2S	S	C2	>10	Contributes to row of trees within verge but genetically predisposed to form tight unions. Those unions are liable to failure as the tree matures. Unsited to long term retention. Small broken branch in lower crown.	Prune to provide 2m clearance from balcony. Crown lift to 3m above ground level to provide height clearance over pathway.	4.68	69
11	Lime	16	8	6	6	7	46								2	2NE	S	B2	>20	Broader spreading from than other trees within the tree belt.	Crown lift to 3m above ground level to provide height clearance over pathway.	5.52	96
12	Sycamore	15	5	6	5	6		30e	30e	25e					2	2S	S	C2	>10	Triple-stemmed tree from common root stock. All stems partially smothered in ivy. Compromising development of adjoining lime.	Prune to provide 2m clearance from balcony. Crown lift to 3m above ground level to provide height clearance over pathway.	5.91	110
13	Cherry	8	6	5	2	4	38								2	2N	S	C1	>10	Broad-spreading tree. Lacking vitality. Unsited to long term retention.		4.56	65
14	Group of cherry	10av	5av				30av								2	2N	S	C2	>10	Group of closely spaced trees growing at edge of site. All stems covered in ivy.	Prune to provide 2m clearance from balcony.	3.60	41
15	Sycamore	12	3	3	4	2	26								2	2S	S	C1	>10	Development compromised by adjoining cherry.		3.12	31
16	Cherry	13	8	7	7	7	70e								2	2W	E	B2	>20	Larger example of species. Broad spreading form. Main stem covered in ivy. Evidence of bacterial canker infection as is typical of this species.	Crown lift to 5m above proposed parking.	8.40	222

Trees at RFC Bowls Club, Church Walk, Gravesend, Kent DA12 2QU

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)								Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Tree Works to BS3998	Root protection radius (m)	Root protection area sq.m
							Single Stem	2-5 stems					More than 5 stems										
			N	E	S	W		Stem 1	Stem 2	Stem 3	Stem 4	Stem 5	Mean dia	No. stems									
17	Cherry	12	3	3	5	4		25e	25e	25e					2	2S	S	C1	>10	Triple-stemmed from ground level. All stems covered in ivy. Development compromised by adjoining larger tree.		5.20	85
18	Lime	13	4	3	2	3	19								2	3S	S	C1	>10	Established tree growing in verge. Development compromised by adjoining trees.		2.28	16
19	Cherry	12	5	2	5	4	35								3	3NW	S	C2	>10	Small tree growing at edge of site. Main stem covered in ivy.		4.20	55
20	Cherry	11	2	2	5	5	15e								2	2S	S	C1	>10	Small tree growing at edge of site. Main stem covered in ivy.		1.80	10
21	Cherry																	U	<10	Dead	Remove.		
22	Cherry																	U	<10	Dead	Remove.		
23	Lime	9	4	5	5	4	26								2	2S	S	B1	>20	Reasonably well formed tree growing in verge close to junction of Ellerslie.		3.12	31
24	Group of silver birch	13av	4av				25av								2	2S	S	C2	>10	Group of birch stems growing at western edge of site.	Remove 1 stem as shown.	3.00	28