



WARWICKSHIRE GOLF COURSE

TREE SURVEY REPORT and ARBORICULTURAL IMPACT ASSESSMENT

In accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'

Prepared for The Club Company

by

Hankinson Duckett Associates

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1 EXECUTIVE SUMMARY

No trees are to be removed and the footprint of the new building will not encroach into the root protection area (RPA) of any of the existing trees. The RPAs of the retained trees will be protected by tree protection measures during construction activity. There are therefore no arboricultural constraints to approval of the proposal.

2 INTRODUCTION

2.1 Background

2.1.1 This report describes the results of a Tree Survey undertaken in accordance with BS5837:2012 of land adjacent to the Driving Range, Warwickshire Golf Course, hereinafter referred to as 'the site'. The extent of the survey area is shown on the Tree Survey Plan in *Appendix A*. The study was undertaken by Don Newling (ND Arb) TechArborA of Hankinson Duckett Associates (HDA) and commissioned by The Club Company in November 2021.

2.2 Scope and purpose of report

2.2.1 The report is intended to inform the planning process in accordance with the guidelines set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (BSI, 2012). This standard provides recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including larger shrubs and hedgerows, with structures.

'This British Standard gives recommendations and guidance on the relationship between trees and design, demolition and construction processes. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures. The standard is applicable whether or not planning permission is required.' (BSI, 2012)

2.2.2 The guidance recommends a three-stage approach incorporating: (i) initial tree survey and report; (ii) Arboricultural Impact Assessment and (iii) Arboricultural Method Statement, which details the specific tree protection measures to be adopted in relation to construction activity across the site, and in particular in the vicinity of retained trees. This report fulfils the first two stages in this process.

2.3 Aims

2.3.1 Specifically, the aims of the study are:

- To conduct a ground-based visual survey of trees within or adjacent to the proposed development, along with any trees situated on adjacent third-party land that have the potential to be impacted upon by the proposals;
- To record the nature, extent and condition of the existing tree cover, and assign a retention category to each tree or group of trees, in accordance with BS5837:2012;

- To compile the survey results in a Tree Data Schedule (*Appendix B*) and produce an accompanying Tree Constraints Plan (*Appendix A*) which provides information on the retention category, crown spread, Root Protection Area (RPA) and location of each tree or group of trees; AND
- To assess the implications of the proposals in relation to existing trees.

2.4 Date of survey

2.4.1 The tree survey was carried out from ground-level by Don Newling (ND Arb) TechArborA on 9th December 2021.

3 METHODOLOGY

3.1 Information recorded

3.1.1 All trees potentially affected by the proposed works were surveyed from ground-level using the *Visual Tree Assessment* (VTA) technique developed by Mattheck and Broeler (1994). For those trees surveyed in accordance with BS5837:2012, the following data was gathered for each tree surveyed:

- Tree, group or hedge number (sequentially and separately for trees, groups, hedges and stumps)
- Tree species (English names follow Stace [2019] for higher plants)
- Life stage (expressed within a defined 'age-class' category)
- Tree height (in metres)
- Stem diameter (measured at 1.5m above uppermost ground-level)
- Observations on tree position, form, condition, and comments on any significant defects
- Recommendations for arboricultural works
- The physiological and structural condition of the tree(s)
- Estimated Remaining Contribution expressed within defined categories
- BS5837 retention category

3.1.2 Category definitions in relation to the above are described fully in *Appendix C*.

3.2 Observed tree defects and recommendations

3.2.1 Where appropriate and with due regard to the limitations of this survey outlined in *Section 2.3.1* below, recommendations have been provided on arboricultural works which should be undertaken in the interests of safety or as part of sound management practice.

3.2.2 It should be noted that any recommendations for tree works identified within the Tree Data Schedule and summarised in *Section 5* are provided in accordance with the guidance set out in BS5837:2012, and not in connection with the proposals. Under the Occupiers Liability Act (1957 and 1984), responsibility for ensuring the safety of individual trees in relation to the statutory 'duty of care' rests with the relevant owner/occupier.

Specific details of any tree work which will be required to facilitate the proposals are included in *Section 5* of this report.

3.3 Limitations

3.3.1 This survey and the results contained within this report represent a preliminary assessment from ground-level. Observations have been made for the purposes of assessment in terms relevant to planning and development, and not tree safety. No climbed inspections, invasive or non-invasive decay detection devices have been used in assessing tree condition. As such, the survey conducted and results presented should not be used as a tree safety evaluation, which would require a *Tree Safety Survey*, designed to provide a more detailed appraisal of the risk and liability associated with specific individual trees or groups of trees.

3.3.2 Whilst efforts have been made to detect significant defects within inspected trees, no guarantee can be given as to the safety or otherwise of surveyed trees. Climatic conditions including storms, droughts, and temperature changes can and do cause failure in apparently healthy trees. In addition to these restrictions on access and the presence of dense undergrowth, ivy and other climbing plants can obscure defects from view. It should also be noted that the presence of tree pests and diseases can be affected by the time of year and climatic conditions.

3.3.3 All tree observations, and any recommendations, are based upon the site conditions, levels and patterns of usage observed at the time of survey only. Alterations in these factors will affect any evaluations made and would require a re-assessment of both the trees and site.

3.3.4 The locations of the surveyed trees are taken from the topographical survey provided by the client and all the surveyed trees are shown on the Tree Survey Plan in *Appendix A*.

3.3.5 Access to several of the trees was restricted or not possible due to dense vegetation. These trees were, however, assessed as far as site conditions would allow to gather the necessary information. As these trees were surveyed as groups this limitation is not considered to be an overall constraint on the robustness of the survey or subsequent assessment.

3.3.6 In accordance with BS5837, where appropriate trees have been surveyed as groups or hedgerows rather than individual trees where one or more of the following points apply:

- there was little discernable difference between individuals within the group;
- the trees have a collective value but would have little or no individual merit;
- not all the trees were included in the topographical survey; and/or

- lack of access prevented them being accurately plotted manually.

3.3.7 A TPO and Conservation Area search was carried out as part of this report. Other legal restrictions relating to existing trees on the site such as historic planning conditions, restrictive covenants and lease clauses were not investigated. Before any recommended tree work is undertaken it should be ensured that all legal obligations are fully met.

4 LOCATION AND DESCRIPTION OF SURVEY AREA

4.1 Location

4.1.1 The site is located within the Warwickshire Golf Course, approximately 1km north of the northern edge of Warwick to the south, and approximately 1km to the south-west of Leek Wootton village. The site is situated to the south-west of the Club House and car park which are located towards the centre of the golf course and are accessed via a driveway which winds through the golf course from Warwick Road located to the east of the site. The approximate grid reference for the centre of the site is SP 27956 67938.

4.2 Description of survey area

4.2.1 The survey area is shown on the Tree Survey Plan included in *Appendix A*. The site comprises a tree belt running around the southern and eastern side of the driving range building.

4.3 Topography

4.3.1 The site is generally flat with a gentle fall from north to south. However, the land immediately to the south and south-east of the tree belt falls quite steeply.

4.4 Soils

4.4.1 The geological data identifies the soil as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.

5 TREE SURVEY RESULTS

5.1 Trees within survey area

5.1.1 The majority of the surveyed trees are located within a tree belt that runs to the south and east of the existing driving range building. The tree belt is wider towards the southern end and includes a number of shrubs and brambles. The tree belt is dominated by a mature multi-stemmed Goat Willow and there are several early mature trees including Alder, Beech, Birch, Oak and Pine with Gorse, Hawthorn and Willow also present.

5.1.2 Tree locations are shown on the Tree Survey Plan provided in *Appendix A* and a description of all trees located within the site is given in the Tree Data Schedule provided in *Appendix B*.

5.2 Tree quality assessment

5.2.1 Surveyed trees and tree groups have been graded in accordance with the retention categories described in BS5837:2012. *Table 1* provides an at-a-glance overview of the quality of tree cover within and adjacent to the site, with reference to BS5837 Retention Categories. An explanation of these categories is provided below:

- Category A: Trees of high quality, in such a condition as to make a substantial contribution. Retention is highly desirable.
- Category B: Trees of moderate quality, in such a condition as to make a significant contribution. Retention is desirable.
- Category C: Trees of low quality, currently in adequate condition to remain until new planting is established, or young trees with a stem diameter below 150mm.
- Category U: Trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Table 1: Number of trees in each retention category*

Retention Category	Description	Number
A	Trees of high quality and value, in such a condition as to make a substantial contribution. Retention is highly desirable.	0
B	Trees of moderate quality and value, in such a condition as to make a significant contribution. Retention is desirable.	7
C	Trees of low quality and value, in adequate condition to remain until new planting is established, or young trees.	1
U	Trees which cannot realistically be retained for longer than 10 years.	0
Total		8

* Groups and hedgerows counted as one entity

5.2.2 No trees were classified within Retention Category A.

5.2.3 Four trees and three groups were classified within Retention Category B. Where possible, Category B trees should be retained and managed to improve their future value.

5.2.4 One group was classified as Category C. These represent poor quality trees, low value specimens, or young trees, which could readily be replaced by new planting subject to ecological considerations.

5.2.5 No trees were classified as Category U.

5.2.6 The Tree Data Schedule (*Appendix B*) provides further details of all the surveyed trees.

5.3 Tree protection status

5.3.1 A check of the Warwick District Council's online interactive map on 4th January 2022 confirmed that the site is not within or adjacent to a Conservation Area and that there are currently no Tree Preservation Orders (TPOs) on or immediately adjacent to the site.

5.4 Tree condition assessment and summary

5.4.1 With the exception of lifting the lower branches overhanging the area between the driving range building and the trees and heavily reducing the height of some of the Hawthorn the surveyed trees have received little or no maintenance in recent years.

5.4.2 A number of the trees to the west of the driving range building have multiple stem wounds/scars caused by golf ball strikes but generally the surveyed trees are in fair condition.

6 ARBORICULTURAL IMPACT ASSESSMENT

6.1 Overview of the proposals

6.1.1 The proposed redevelopment of the site involves replacement of the existing site building and uncovered bays with a new driving range structure.

6.1.2 This Arboricultural Impact Assessment is based upon the Proposed Site Plan Drawing 04 shown on drawing number 30 prepared by Sparcstudio Design Consultants. Where detail has been shown and / or sufficient information is known, the effects have been assessed. It is considered that the level of information provided allows an adequate assessment of the likely effects of the proposed development on existing trees. If impacts on retained trees are unavoidable it is likely that the Local Authority would require the submission of an Arboricultural Method Statement to demonstrate that any significant encroachment into the root protection area (RPA) of retained trees can be practically achieved.

6.2 Implications of tree removal

6.2.1 No tree removal is required to facilitate the layout.

6.3 Implications of tree pruning

6.3.1 Although no pruning is required to facilitate the proposed layout some selective thinning and/or coppicing could be carried out to create more space for new planting and to promote healthier regrowth.

6.4 Implications of ground level changes

6.4.1 No changes in ground levels within the RPA of retained trees are proposed.

6.5 Implications of foundations

6.5.1 The footprint of the buildings does not encroach into the RPA of any of the retained trees.

6.6 Implications of changes to ground surfacing

6.6.1 The theoretical RPA of the retained trees between the building and the trees is already largely covered by a concrete hard surface and as this is not shown to be extended any changes to the type of hard surfacing are not expected to affect the retained trees. Note: if the surface were replaced with a permeable hard surface then providing appropriate care is taken during installation it would improve the conditions within the rooting area of the trees.

6.7 Implications of underground services

6.7.1 The details of all the proposed underground services are not known at this stage but to avoid impacts on retained trees it is recommended that all new services required in connection with the proposed development should, wherever possible, be located outside the RPA of any retained tree, as shown on the Tree Protection Plan (*Appendix D*).

6.7.2 Where essential service provision intrudes on the RPA of any retained tree, all works should be conducted in accordance with the *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (NJUG, 2007), details of which should be finalized at the technical design stage and where necessary covered by an Arboricultural Method Statement.

6.7.3 As the existing building is already connected to services encroachment by new services into the RPA of retained trees is not expected to be significant.

6.8 Implications of over ground services

6.8.1 Details of any proposed over ground services are not known at this stage but to avoid impacts on retained trees it is recommended that any new over ground services required in connection with the proposed development should be located outside and a suitable distance away from the canopies of retained trees. Where new planting is to be established, consideration will be given to providing adequate clearance from over ground services to allow for future growth without the need for regular pruning.

6.9 Implications of new planting

6.9.1 Any new planting within the existing tree belt will be small at the time of planting and intended to reinforce and enhance the quality of the tree belt.

6.9.2 New planting will not adversely affect retained trees and the overall effect of the landscaping scheme would be to increase the existing tree cover and improve the diversity of tree species.

6.10 Implications of construction activity

Existing trees

5.10.1 The RPAs of all the retained trees will be protected by fencing and the existing hard surfacing. The temporary tree protection fencing will be in accordance with the specification in Figure 3 of BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (BSI, 2012), as shown at *Appendix E*. This fencing protects the construction exclusion zone (the rooting area of retained trees that is outside the footprint of the proposed development and working area required for its construction).

Within the construction exclusion zone, the following rules should apply:

- No construction activity;
- No tree works without prior written consent from the Council;
- No excavation or alteration to ground levels or conditions (apart from those outlined for soft or hard landscape works and drainage works);
- No temporary structures;
- No storage of materials;
- No vehicles or machinery to be used or parked;
- No fixtures of any kind attached to trees; and
- No fires within 15m of the canopy edge of any tree or hedge.

5.10.2 The siting of the proposed tree protection fencing during the demolition/construction phase is shown on the Tree Protection Plan in *Appendix D*.

5.10.3 The areas of RPA that are beyond the line of temporary fencing will be protected by the existing hard surfacing.

5.11 Hazardous materials

5.11.1 All hazardous materials (including cement and petrochemicals) will be appropriately stored, and their usage controlled, to ensure no detrimental impact on tree health, both in terms of existing trees and areas proposed for new landscape planting.

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	Personnel	Position
Author	Don Newling	Senior Arboriculturalist
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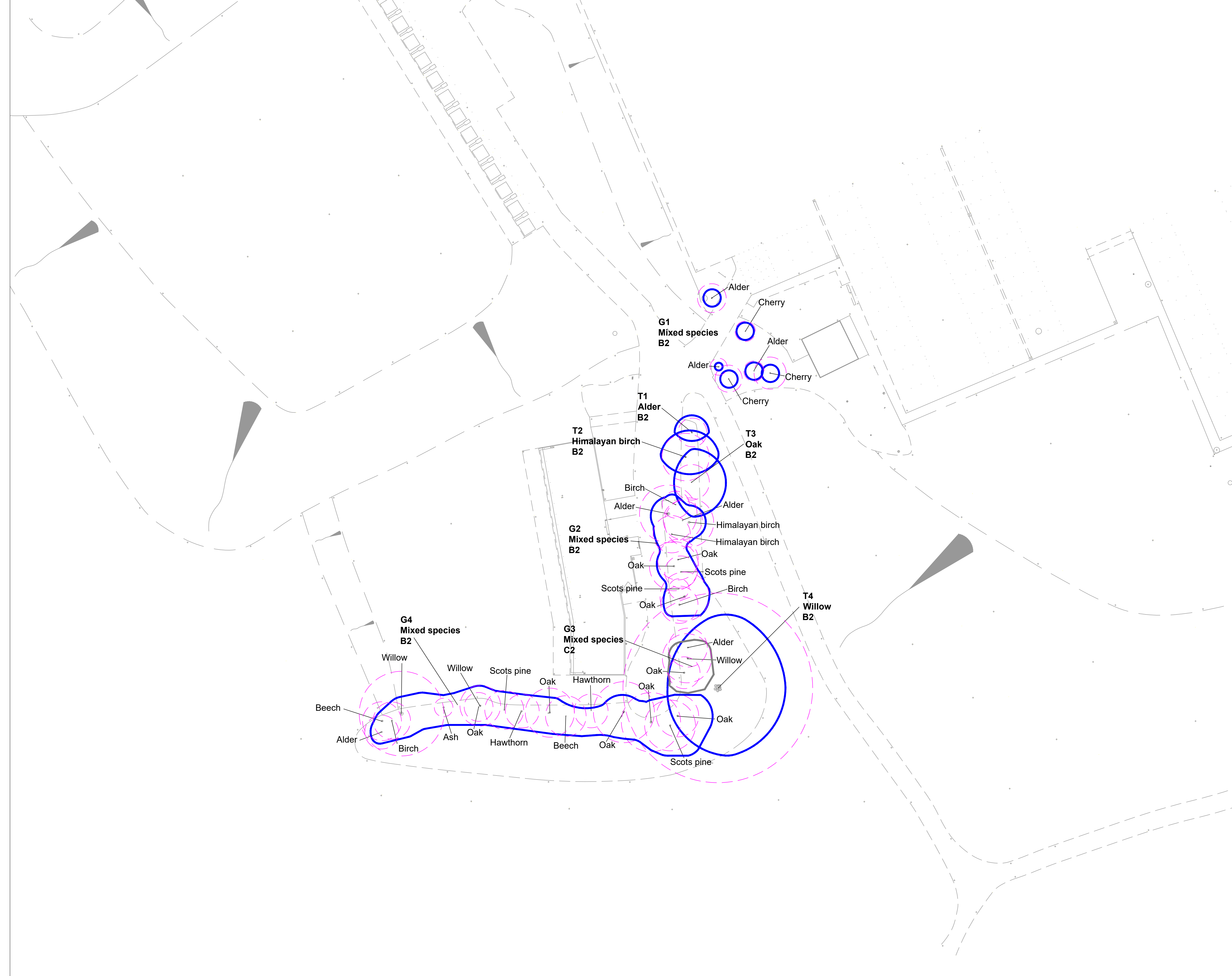
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Appendix A
Tree Survey Plan



KEY

- T8 Tree number
- G4 Group number
- Tree canopies
- Root Protection Area (RPA)

BS5837:2012 Tree Categories

- Canopy extent of tree: Category A - High quality
- Canopy extent of tree: Category B - Moderate quality
- Canopy extent of tree: Category C - Low quality
- Canopy extent of tree: Category U - Unsuitable for retention

Notes

A full qualitative analysis of tree cover (The Tree Data Schedule) accompanies this drawing.

Do not scale off drawing - refer to Tree Data Schedule for accurate crown spread measurements.

Depictions of tree canopies are based on measurements taken to four cardinal compass points.

The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

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CLIENT:
The Club Company

PROJECT:
Warwickshire Golf Course Trees

TITLE:
Tree Survey Plan

SCALE AT A1: 1:200 DATE: January 2022

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Appendix B
Tree Data Schedule

Reference	Life Stage & Species	Height (m)	Crown Ht (m)	FSB Ht (m)		Stem Diameter (mm)	Branch Spread			Observations	Preliminary management recommendations	Physio Cond		BS5837 Ret. Cat.
				Dir			W	N (m)	E			Struct Cond	Life Expectancy	
T1	EM Alder <i>Alnus glutinosa</i>	5	0	2	140	2	2	2	Epicormic growth, lifted, partially suppressed	No immediate works required	Good	20+	B2	
				E			1				Fair			
T2	EM Himalayan birch <i>Betula utilis</i>	9	2	2	230	3	3	4	Lifted, large pruning wounds with exposed heartwood but good wound wood	No immediate works required	Good	20+	B2	
				W			2				Fair			
T3	EM Oak <i>Quercus robur</i>	6	1.5	1.5	170	2	4	4	Pollarded at 1.5m, three stems, partially suppressed	No immediate works required	Good	20+	B2	
				S			4				Fair			
T4	M Goat willow <i>Salix caprea</i>	13	0	0.5	310 x 9	6	9	8	Multi-stemmed, some dead wood	No immediate works required	Good	40+	B2	
				N			8				Fair			
G1	SM Mixed species	up to 5	0	-	up to 140	0	0	0	Alder & Cherry, within shrub bed	Remove redundant stake & tie from trees	Good	20+	B2	
				-			0				Fair			
G2	EM Mixed species	up to 12	0	-	up to 240	0	0	0	Alder, Oak, Himalayan birch, Scots pine, Silver birch, lifted, minor sporadic understorey of Blackthorn, Holly & Alder	No immediate works required	Good	20+	B2	
				-			0				Fair			
G3	EM Mixed species	up to 9	0	-	up to 240	0	0	0	Alder, Willow, Oak, partially suppressed, broken branches in Willow	Remove broken branches	Good	20+	C2	
				-			0				Fair			
G4	EM Mixed species	up to 11	0	-	up to 420	0	0	0	Includes Alder, Beech, Willow, Oak, Hawthorn, Scots pine, Ash, unmanaged, Hawthorn mainly pollarded at a metre, several trees with multiple stem wounds/scars sustained bt golf ball strikes, understorey predominantly gorse and bramble	No immediate works required	Good	20+	B2	
				-			0				Fair			

Appendix C
Explanation of Terms

Reference Numbering

Each tree, group of trees or hedgerow is given an individual reference, made up of sequential numbers prefixed by a letter where:

T = Individual Tree, **G** = Group, **H** = Hedge, **S** = Stump, **R** = Reference, **X** = Shrub, **JK** = Japanese Knotweed

Age and Species

Life Stage

Trees are assigned to one of five age classes as follows:

Young (Y)	Tree in establishment stage, normally up to 5-10 years old
Semi-mature (SM)	Establishing tree with potential for significant growth both in terms of tree height and crown spread. Typically, having attained at least 25% of likely mature height and crown spread
Early Mature (EM)	Establishing tree with potential for significant growth both in terms of tree height and crown spread. Typically, having attained at least 50% of likely mature height and crown spread
Mature (M)	Established tree, typically having attained at least 70% of likely mature height and crown spread
Over-mature (OM)	Extensive decline in physiological functions and/or structural integrity
Veteran (V)	A tree that shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species.

Species

Tree names and other plant names follow Stace (1997) and are provided as both Common (English) species names and scientific (Latin) names.

Size and Spread

Height

Current tree height in metres.

Stem Diameter

Stem diameter, measured in millimetres, at 1.5m above ground-level. On multi-stemmed trees this measurement is taken using the guidance in Annex C of BS5837:2012.

Branch Spread

Radial crown spread measured in four compass directions (north, south east, and west) using magnetic north.

First Significant Branch (FSB)

Height of first significant branch above adjacent site ground-level in metres and direction of growth measured in one compass direction using magnetic north.

Crown Height

Height of crown clearance above adjacent site ground-level in metres. Where this varies around the canopy, the height of the lowest point is recorded.

Observations

This section provides details, where relevant, pertaining to the tree's position, form, pruning history and an account of any significant defects observed. Access restrictions and other incidental observations are also noted here.

Recommendations

These are normally based upon remedial action to address any observed significant defects. These may be recommended for tree safety reasons, or for reasons of good arboricultural practice and tree management.

Condition and Value

Physiological Condition

Good	Healthy tree with no symptoms of significant disease
Fair	Tree with early signs of disease, small defects, decreased life expectancy, or evidence of less than average vigour for the species
Poor	Significant disease present, limited life expectancy, or with very low vigour for the species and evidence of physiological stress
Dead/dying	Tree is in advanced stages of physiological failure and is dying or dead

Structural Condition

Good	No significant structural defects observed
Fair	Some structural defects observed, including the presence of deadwood in otherwise healthy trees with a good life expectancy
Poor	Significant structural defects observed resulting in a tree which is likely to require either monitoring or remedial action
Dead/dying	Major defects which compromise the safety of the tree. Remedial works or tree removal are likely to be required in many target locations

Life Expectancy or Estimated Remaining Contribution (ERC)

The estimated number of years before the tree may require removal is expressed as one of the following categories: (i) <10 years; (ii) 10+ years; (iii) 20+ years; (iv) 40+ years.

BS5837 Retention Category

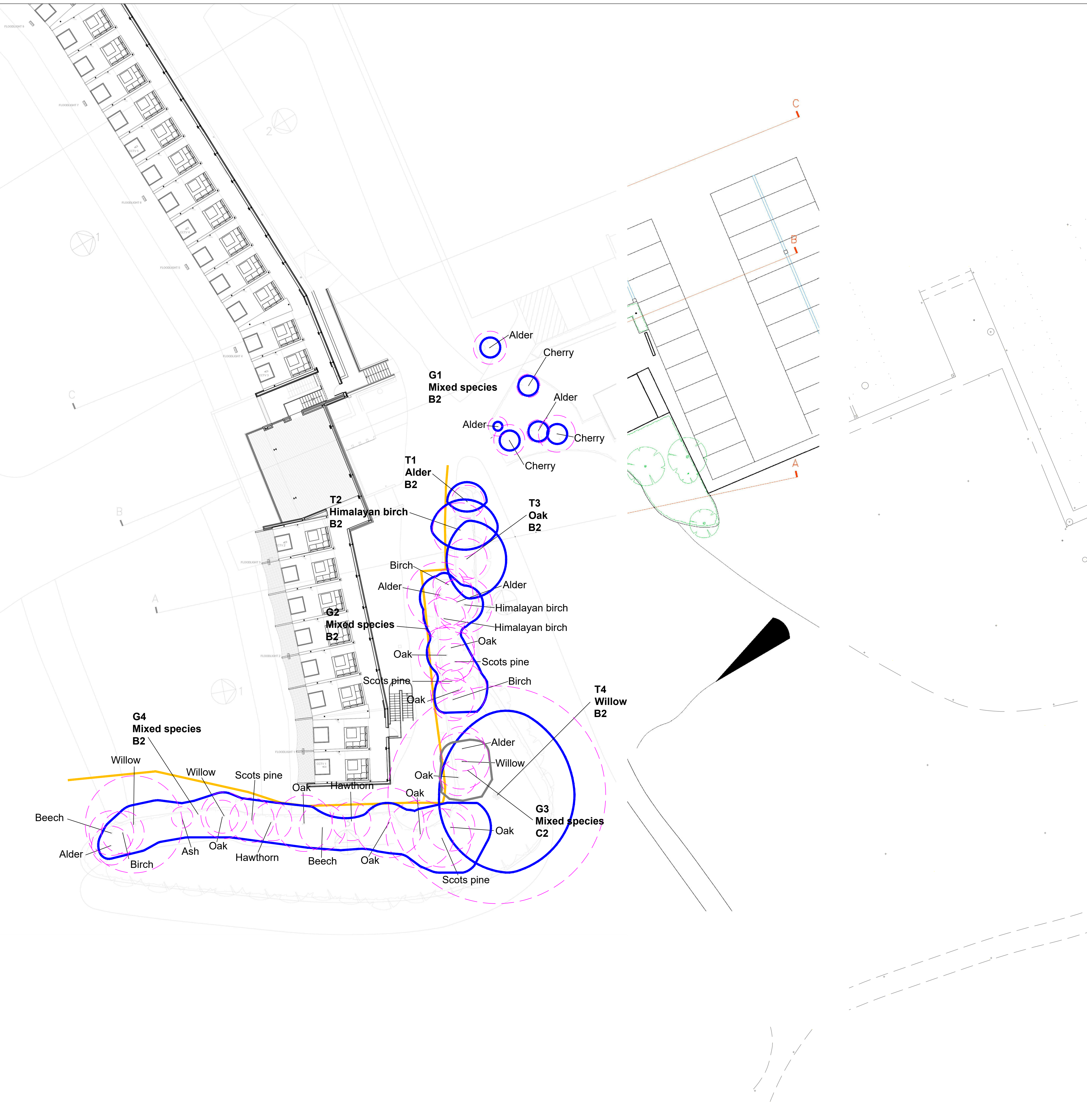
Each tree, group of trees or hedge is assigned to a retention category where:

A	Trees of high quality, retention is highly desirable
B	Trees of moderate quality where retention is desirable
C	Trees of low quality, or young trees with a stem diameter <150mm. Category C trees may be retained, replaced or relocated
U	Trees unsuitable for retention or trees which should be removed

In accordance with BS5837:2012, a numerical suffix is added to the retention category of each tree, which indicates the principal reason for the value of each tree or group of trees, where:

1	Mainly arboricultural values, including fine examples of the species
2	Mainly landscape values, including trees providing screening and/or softening effects to the locality, or trees of visual prominence
3	Mainly cultural values, including conservation, historical and commemorative values

Appendix D
Tree Protection Plan



KEY

T8	Tree number
G4	Group number
(Blue outline)	Tree canopies
(Pink dashed outline)	Root Protection Area (RPA)
(Yellow outline)	Tree Protection Fence

BS5837:2012 Tree Categories

(Green outline)	Canopy extent of tree; Category A - High quality
(Blue outline)	Canopy extent of tree; Category B - Moderate quality
(Grey outline)	Canopy extent of tree; Category C - Low quality
(Red outline)	Canopy extent of tree; Category U - Unsuitable for retention

Notes
 A full qualitative analysis of tree cover (The Tree Data Schedule) accompanies this drawing.
 Do not scale off drawing - refer to Tree Data Schedule for accurate crown spread measurements.
 Depictions of tree canopies are based on measurements taken to four cardinal compass points.
 The original of this drawing was produced in colour - a monochrome copy should not be relied upon.
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CLIENT:
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PROJECT:
Warwickshire Golf Course Trees

TITLE:
Tree Protection Plan

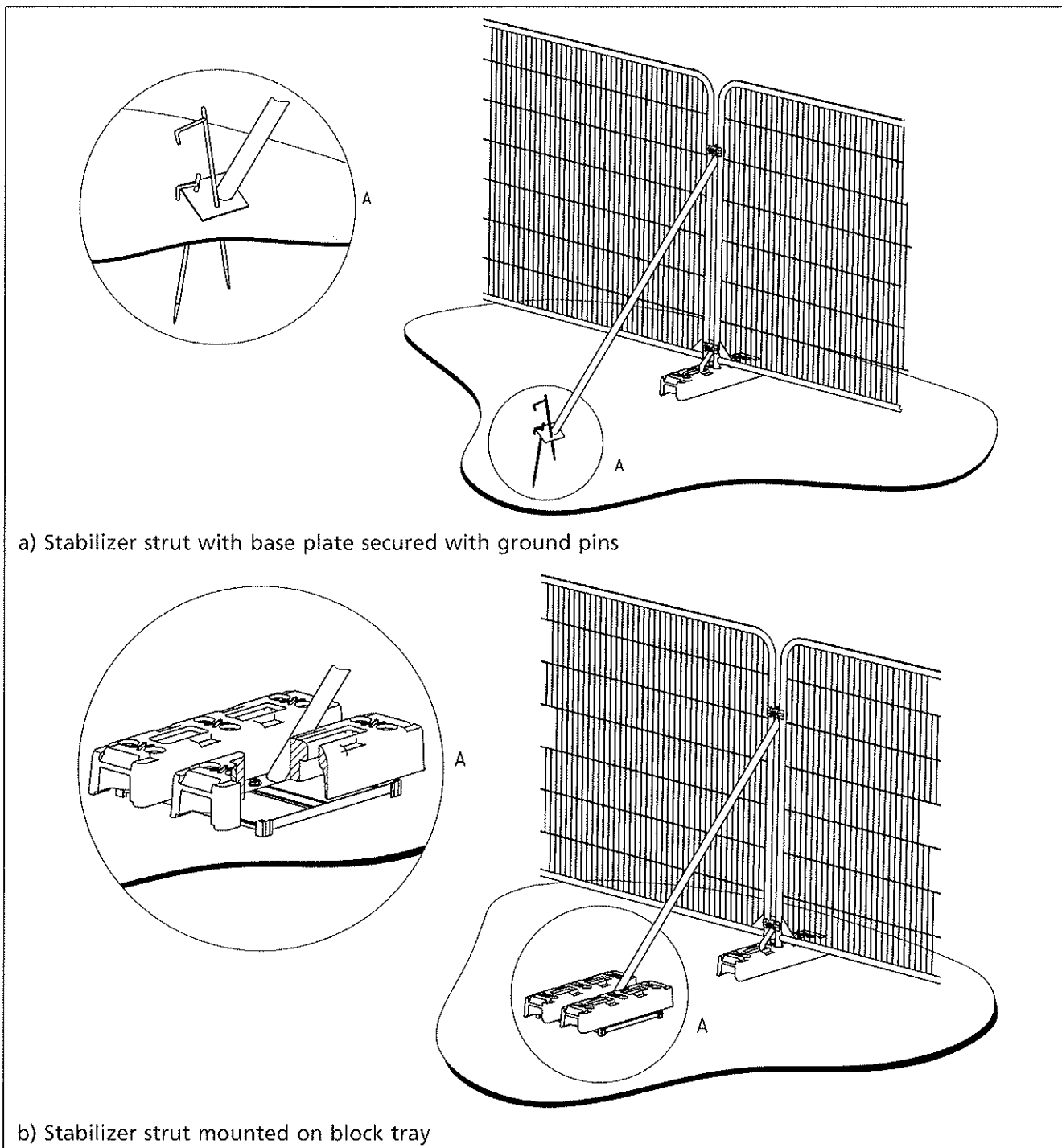
SCALE AT A1:
1:200

DATE:
January 2022

Appendix E

Figure 3, 3a and 3b of BS5837: 2012

Figure 3 Examples of above-ground stabilizing systems



6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.