

BS5837:2012 Tree survey

For
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Tree Survey with Preliminary

Tree Constraints.

Assessed in accordance with

BS5837:2012

‘Trees in relation to design, demolition and construction

-Recommendations’

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1.0 Introduction

1.1 Client Instruction

Simon Ffoulkes Tree Consulting was instructed by Les Humphrey Associates, Architects, to undertake a preliminary tree survey at East Grinstead Sports Club accordance with BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.

- 1.1.1 The reason for a BS5837 survey is to comply with The Town and Country Act 1990 legislation, requiring consultation on trees that will or may be affected by the construction process
- 1.1.2 As part of the survey a Tree Constraints plan was to be formulated to show the trees that would be a constraint to the building process.
- 1.1.3 There is a proposal to extend the car parking area to an existing field to the south of the original car park, that is bounded by two woodlands and a strip of trees.
- 1.1.4 The proposal requires an access road to be constructed through the RPA of some of the trees in the woodland W1
- 1.1.5 The requirement of the survey was;
 - To record relevant information about the trees on the topographical plan survey.
 - Include any trees or groups not included on the plan.
 - To provide a report that includes a tree survey and an arboricultural impact assessment (AIA) that will indicate any impacts of the proposed development on the adjacent trees and any effects of retaining the trees on the development.
 - To provide information that shows which trees are a constraint to development.
 - To recommend any trees that require pre-construction management or removal.

1.2 Documents provided

- 1.2.1 A plan drawing Job No 220214-01 Drg Scale 1:500

1.3 Scope of the survey

- 1.3.1 The survey relates to trees that are over 75mm diameter at 1.5m height. Groups and hedges may include trees with a smaller diameter.
- 1.3.2 The scope included trees on the Plan drawing that are likely to be affected by the building proposal.
- 1.3.3 The data from the tree survey is provided as an independent survey and does not adhere to specific proposals for the development.

1.4 Survey method

- 1.4.1 The survey method is based around a 'Visual Tree Assessment system' (VTA) that is ratified by the Arboricultural Association and is based on the VTA by *Matteck, C Breloer, H (1994), 'Visual Assessment of Trees'*.
- 1.4.2 No soil samples were taken. The tree inspection was carried out from the ground. The only tools used were a rubber hammer, a steel probe, a dbh tape, a measuring tape and the use of binoculars. Pictures were taken with a digital camera.
- 1.4.3 All the data recorded was in line with those required within BS5837:2012.
- 1.4.4 All the tree species were recorded, and the trees were categorised in conjunction with the Cascade chart within the BS5837:2012 document.

1.5 Limitations

- 1.5.1 Trees are living organisms means their health and wellbeing can change over time and with climatic conditions. The assessment of risk because of unpredictable events recognises that the tree that is surveyed can only be judged upon factors evident at that time of inspection by a suitably qualified arboricultural inspector. All trees that are within the remit of a survey should be checked on a regular basis that is commensurate with the level of risk posed by the trees. A suitable time frame is between one year and 18 months.

2.0 Site visit and observations

2.1 Site visit

- 2.1.1 A site visit was undertaken on by Simon Ffoulkes a trained arboriculturist

2.2 Site observations

- 2.2.1 The land is accessed via the sports club entrance. There is an area of land to the south of the original car park that looks like a field but was cleared of the soil and then rubble over some years back. The grass has grown over the entire field area now.
- 2.2.2 The ground is level and is surrounded by either woodland or a strip of trees.

3.0 Tree survey

3.1 Tree survey with the constraints

- 3.1.1 The tree survey indicates the grades allocated to the trees and groups on the survey drawing in the **Appendix 2** Tree Survey.

- 3.1.2 The survey identified 28 features that are 24 single trees, one group and three woodland areas applicable to the proposed site and construction process. The **Table 1** below indicates which grade has been applied and to how many trees.

Table 1: Grading of features

BS 5837:2012 categories	Trees	Groups
'A' grade	0	0
'B' grade	5	0
'C' grade	15	4
'U' grade	2	0

- 3.1.3 The grading of the trees is based on the cascade chart from BS5837:2012 which will be found in the **Appendix 2**
- 3.1.4 The Root Protection Area (RPA) of each tree will be calculated by the tables within BS5837:2012 which are in the **Table 2** below. They are based on the principle of a circle with its centre on the base of each tree.

Table 2 Tree RPA calculation

Number of stems	Calculation
Single stem tree	$\text{RPA(m}^2\text{)} = \frac{(\text{stem diameter mm @ 1.5m x 12})^2 \times 3.142}{1000}$
Tree with more than one stem arising below 1.5m above ground level	$\text{RPA(m}^2\text{)} = \frac{(\text{stem diameter 1})^2 + (\text{stem diameter 2})^2 + \dots + (\text{stem diameter 5})^2}{1000} \times 3.142$
Trees with more than five stems arising below 1.5m above ground level	$\text{RPA(m}^2\text{)} = \frac{(\text{mean stem diameter})^2 \times \text{number of stems @ 1.5m x 12}}{1000} \times 3.142$

- 3.1.5 The RPA is not always consistent with a circle and many factors will affect the rooting area of a tree. The deviation of the RPA is discussed in (section 4.6.3 of the BS5837:2012) document. Some factors that may affect the RPA are;

- The presence of roads.
- Topography.
- Drainage

- Soil type and structure
- Previous management

3.1.6 The Tree Constraints drawing is attached within **Appendix 4** and shows the extent of RPA along with Tree protection measures. The above ground constraints are indicated by the tree canopy spread and tree height. The below ground constraints are indicated by the Tree Constraints plan. Where a tree canopy extends beyond the RPA of the tree, the constraints plan will be extended to include the canopy.

4.0 Arboricultural Impact Assessment (AIA)

4.1 Legal constraints

4.1.1 The Local Planning Authority Mid Sussex Council. The woodland to the east of the field 'W2' is covered by a TPO.

4.2 Trees to be pruned or removed

4.2.1 The site plans show that trees T1, T2, T3 and T18 as well as group G16 will all have to be removed to allow an access road to the field site.

4.2.2 The trees T2 and the group G16 are both 'C' grade trees and as such are not a constraint to the development, as set out in the British Standard.

4.2.3 The tree T17 although it has been downgraded because of the decline of the crown, it has a large amount of die back in the crown. It will require a minimum of a 30% reduction of the crown to retain it as part of the environment. The RPA is a constraint but if there is a 'No Dig' solution that is built around the tree, this could allow the tree to regenerate.

4.3 Tree encroachment

- 4.3.1 The re-development plans show the following trees will have their RPA encroached by the proposed development or will be encroached by the building process. The encroached trees are indicated in **Table 3** below.

Table 3

T = Tree G = Tree Group

Tree Ref number	Species	Grade
T1	English oak	B1
T2	Goat Willow	C1
T3	Beech	B1
G16	Hawthorn, Field maple, English oak	C2
T17	English oak	C1
T18	Scots Pine	B1

5.0 Tree protection measures

5.1 General tree protection

- 5.1.1 Tree protection for the retained trees should be installed before any of the construction process work is undertaken. This must include the movement of plant and machinery on site.
- 5.1.2 Tree protection shall include protection for the trees that require tree surgery management before any construction process begins. This is to ensure that the ground is not compacted, and no other trees are damaged by the tree surgery.

- 5.1.3 Normally the Tree Root Protection Area (RPA) is must be regarded as unavailable for use during the development process and access within the RPA is to be strictly limited.
- 5.1.4 Trees that are to be retained should be protected in a manner consistent with that indicated in the British Standard 5837:2012 to protect the RPA to the end of the project. The protection area is known as the Tree Protection Plan (TPP) and will need to be implemented within the AMS.
- 5.1.5 Materials must not be stored within the RPA during the construction process. No vehicles are permitted within the RPA. No washings should be allowed to soak into the RPA and any fires or cement mixing should be at least five metres from any tree.
- 5.1.6 Where root severance is required, roots up to 25mm in diameter can be severed and larger roots should follow the NJUG 10 guidelines, volume 4, with arboricultural supervision.
- 5.1.7 Tree protection includes protection to the canopy of the trees and where the canopy of a tree extends beyond the RPA this area should be included as part of the tree protection zone.

6.0 Discussion

6.1 Tree Constraints

- 6.1.1 From the Tree constraints plan **Appendix 4** the trees T1, T2, T3, G16, T17 and T18 will be encroached by the building process.
- 6.1.2 The tree T17 can remain as it has some Arboricultural value if it is reduced to live wood. If the ground conditions improve through less ground compaction, the tree may recover.
- 6.1.3 The trees T1, T2, T3 and T18 and group G16 will need to be removed to facilitate the access road
- 6.1.4 The woodland edge of W1, W2 and W3 can all be protected by having a minimum of a four metre edge constraint around these areas to protect the RPA of the trees. All the woodland areas are classified as 'C' grade owing to a number of dead and dying trees within them.
- 6.1.5 It would be prudent to remove all the dead and dying trees within the woodlands before any construction of the proposed car park was to start as many are within falling range of the proposal.
- 6.1.6 The woodland edge W1 is populated by mainly etiolated Scots pine trees. Although these are 'C' grade trees they offer some intrinsic value if retained.
- 6.1.7 The woodland W2 is a large area extending further than shown as part of the edge. 30% of this woodland is Ash and much of it is dead or dying. The entire woodland has a mixture of etiolated trees and would benefit from some form of woodland management project.
- 6.1.8 The woodland W3 could easily be upgraded to a 'B' category wood if the dead and dying trees were removed and there was some sustainable management plan.
- 6.1.9 The method of protection for the trees that will be retained will be set out within the Arboricultural Method statement (AMS).

7.0 Conclusions

7.1 Conclusions

- 7.1.1 The proposal is achievable but T1, T3 and T18 all grade 'B' tree will require removal and there will be the need to construct a No Dig Roadway.
- 7.1.2 There will need to be an Arboricultural Method Statement (AMS) for the site that will set out the processes to achieve a joined up and harmonious approach to protecting the trees that are to be retained.
- 7.1.4 All tree work should be carried out in accordance with BS 3998:2010 – Recommendations for tree works.
- 7.1.5 All the trees must be assessed for nesting birds and protected species i.e bats. As disturbing protected species is an offence under the **Wildlife and Countryside Act 1981** and the **Countryside and Rights of Way Act 2000**. Advice on Bats and birds nesting can be obtained by contacting;
- Bats: Bat Conservation Trust (0845 1300 2280/ www.bats.org.uk)
 - Nesting Birds: Natural England (0845 600 3078/ www.naturalengland.ork.uk)
- 7.1.6 The Arboricultural Impact Assessment (AIA) indicates the impacts of the project and as there is a requirement for Tree Protection measures, an Arboricultural Method Statement (AMS) will provide the instruction on how the trees are to be protected.

8.0 References

British Standards Institution (2012) *BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations* London: BSI

Mattheck. C and Breloer.H (1994). *The Body Language of Trees*. London: H.M.S.O

NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees

Appendix 1 – Cascade chart

Table 1 – Cascade Chart For Tree Quality Assessment				
Trees for removal				
Category and definition	Criteria			Identification on plan
Category 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	Trees that have serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees such as where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety of other trees nearby, for example Dutch Elm Disease, or very low quality trees suppressing adjacent trees of better quality Note – Habitat reinstatement may be appropriate. For example R category tree used as a bat roost: installation of bat box in nearby tree.			Dark Red
Trees to be considered for retention				
Category and definition	Category – Subcategories			Identification on plan
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution. A minimum of 40 years is suggested.	Trees that are particularly good examples of there species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal Arboricultural features for example the dominant and/or principal trees within an avenue	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance for example avenues or other aboricultural features assessed as groups	Trees, groups or woodlands or significant conservation, historical, commemorative or other value for example veteran trees or wood-pasture	Light Green
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution. A minimum of 20 years is suggested.	Trees that might be included in the high category, but are downgraded because of impaired condition. Examples include the presence of remediable defects including unsympathetic past management and minor storm damage	Trees present in numbers, usually as groups or woodlands, so they form distinct landscape features which attract a higher collective rating than they might as individuals. But which are not, individually, essential components of formal or semi-formal arboricultural features. For example trees of moderate quality within an avenue that includes better, A category specimens. Or trees which are internal to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	Mid Blue
Category C Those trees of low quality and value: currently in adequate condition to remain until new planting could be established - a minimum of 10 years is suggested - or young trees with a stem diameter below 150 mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits	Grey
Note – Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.				

Appendix 2 – Survey Key

Key For Survey

Species:	Common names
Height:	metres, estimated using a Sunnato metre.
Stem Diameter:	measured in millimetres at 1.5 metres. In the case of a multi-stemmed tree, each stem is measured at 1.5 meters. All stems are added up and divided by the number of stems, giving the average value. # = estimated for trees that are off site or cannot be measured.
Branch Spread:	In metres at the four compass points, measured with a tape in metres.
Canopy Height:	Measured in metres from the ground with the cardinal point given for the lowest part of the canopy
Age Class:	Y = Young SM = Semi Mature EM = Early Mature M = Mature OM = Over mature

The Age Class is relevant to each species

Structural Condition: S) Commented on.

Physiological Condition: P) Commented on

Physiological Conditions:

Good – No structural or physiological problems of any merit.

Fair – Some structural or physiological problems that may require some attentive work or some long-term problems.

Poor - Some major structural problems that are life limiting.

Dead

Minor Dead wood Dead wood of less than 25mm diameter and of a size that would not cause injury if it fell from the tree

Major Dead wood Dead wood that could inflict an injury if it fell from the tree.

Comments maybe be added

Preliminary

Management: For work pre-construction work.

Life Expectancy: Expressed in ten year increments
+ = additional life expectancy
< = less than the life expectancy
Carried out as an estimation.

Category Rating: As per the chart of BS 5837, supplied.

Appendix 3 – Tree survey

Tree Reference codes:

T = Tree G = Group

Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
T1	Scots Pine	21	510	N3 S4 E3 W4	15S	M	S) Good, an etiolated tree P) Fair, A high canopy crown	None	20+	B1
T2	Goat Willow	20	380	N3 S4 E4 W3	10S	M	S) Good, an etiolated tree P) Good	None	10+	C1
T3	Beech	20	320	N1 S2 E2 W2	2S	EM	S) Good, an etiolated tree P) Good, an asymmetric crown	None	20+	B1
T4	Scots Pine	20	390	N2 S2 E2 W2	12E	M	S) Poor, multiple stem wounds, basal decay P) Fair	None	>10	U
T5	Scots Pine	21	390	N3 S2 E1 W3	10W	M	S) Fair, Major dead wood P) Fair, an asymmetric crown	None	10+	C1

Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
T6	Scots Pine	21	460	N3 S4 E3 W4	8N	M	S) Fair, stem wound P) Fair, major dead wood	None	10+	C1
T7	Norway spruce	19	210	N1 S1 E1 W1	3W	EM	S) Fair, a suppressed tree P) Fair	None	10+	C1
T8	Norway spruce	19	160	N0.5 S0.5 E0.5 W0.5	3N	EM	S) Poor, a suppressed growth tree P) Fair	None	>10	U
T9	English oak	20	580	N3 S3 E10 W3	4S	M	S) Fair, the growth has been suppressed, an asymmetric crown P) Good	None	20+	B1
T10	Scots Pine	21	410	N4 S4 E4 W3	15N	M	S) Fair, an etiolated tree, major dead wood P) Fair	None	10+	C1
T11	Scots Pine	20	390	N3 S3 E1 W3	4W	M	S) Fair, an asymmetric crown P)	None	10+	C1

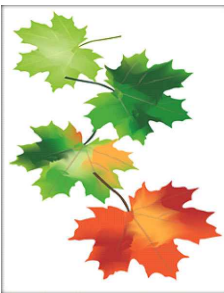
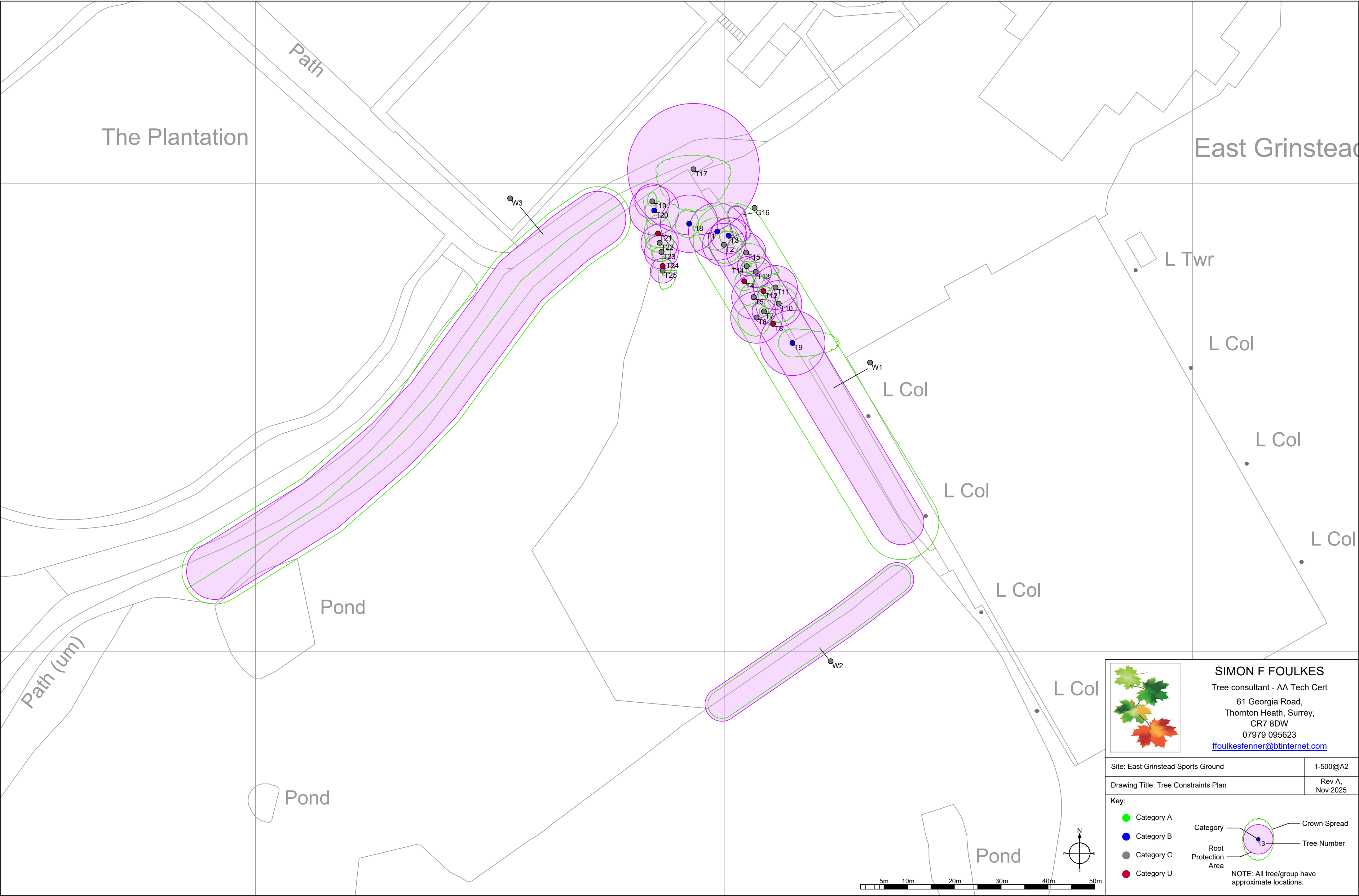
Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
T12	Scots Pine	20	210	N1 S1 E2 W1	15N	EM	S) Poor, a contorted stem and a wound site P) Fair	None	>10	U
T13	Beech	12	280	N2 S1 E5 W2	1E	EM	S) Poor, suppressed growth P) Fair	None	10+	C1
T14	Beech	15	170	N1 S0 E1 W1	1W	EM	S) Fair, etiolated P) Fair	None	10+	C1
T15	Goat Willow	15	350	N2 S2 E4 W2	4W	M	S) Poor, stem wound and a contorted stem P) Fair	None	10+	C1
G16	Hawthorn, Field maple, English oak	10	150	N4 S4 E2 W2	0	SM	S) Fair, etiolated and suppressed growth P) Fair, a group of understory trees. One stem has failed	None	10+	C2
T17	English oak	21	1170	N3 S9 E8 W8	2S	OM	S) Poor, major dead wood and crown die back, stem wounds P) Poor, sparse crown with dieback and lower epicormic growth	None	10+	C1

Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
T18	Scots Pine	22	510	N3 S3 E2 W3	S10	M	S) Good, an etiolated tree. P) Good	None	20+	B1
T19	Scots Pine	20	310	N2 S1 E1 W1	N10	M	S) Fair, Etiolated. P) Fair, an asymmetric crown	None	10+	C1
T20	Scots Pine	22	440	N2 S3 E3 W2	S12	M	S) Good, twin forked. P) Good, minor decay	None	20+	B1
T21	Goat Willow	18	390	N4 S3 E3 W3	N10	OM	S) Poor, a dead crown. P) Poor, stem decay	Section fell	>10	U
T22	Norwy spruce	22	330	N2 S2 E3 W2	S6	M	S) Good, an etiolated tree. P) Fair	None	10+	C1
T23	Scots Pine	22	300	N1 S1 E1 W2	S12	M	S) Good, an etiolated tree. P) Fair, a small crown	None	10+	C1

Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
T24	Goat Willow	8	220	N2 S2 E2 W0	S1	OM	S) Poor, a dying crown. P) Poor	Section fell	>10	U
T25	Goat Willow	17	220	N0 S4 E3 W1	0	M	S) Fair. P) Fair, an asymmetric crown	None	10+	C1
W1	Scots pine, Birch and Goat willow understory	21	400 avg	N35 S35 E8 W8	10	SM -M	S) All the Pine trees are etiolated, many with stem wounds P) There is a high canopy with a lower understory of younger trees up to 10m	None	10+	C3
W2	Ash, Goat willow, Birch, Scots Pine, English oak, Hawthorn	20	300 avg	N S E W		SM-OM	S) Poor, 40% of the wood is Ash that is dying. All the trees are etiolated P) fair, high canopies on the etiolated trees, with an understory	None	10+	C3

Tree Reference number	Species	Height m	Stem Diameter mm	Branch spread m	Height of canopy and first major branch cardinal point	Age class	Physiological Conditions	Preliminary management recommendations	Estimated remaining years	Category Rating
W3	English oak, Goat willow, Scots Pine	20	500 avg	N7 S7 E30 W30		EM-M	S) Fair, many of the Oak and Scots Pine trees are etiolated P) Fair, major dead wood and some of the understory of Willows are dead or dying	Clear the dead trees	10+	C3

Appendix 4 – Tree constraints plan



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Site: East Grinstead Sports Ground

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Drawing Title: Tree Constraints Plan

Rev A,

Nov 2025

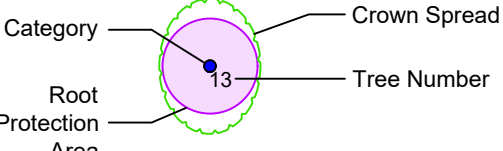
Key:

Category A

Category B

Category C

Category U



NOTE: All tree/group have approximate locations.