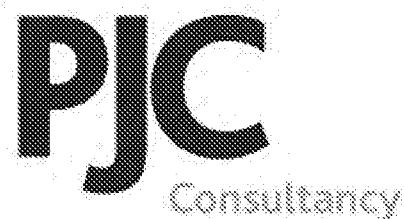


Arboricultural Survey

Land to the south of:
Water lane
Angmering
BN164EJ

20th July 2016



PJC ref: 3874/16-01

This report has been prepared by
PJC Consultancy Ltd
on behalf of
Gleeson Homes

Prepared by	Owen Allpress BSc (Hons) M.Arbor.A Owen has received both an FdSc and a BSc (Hons) in Arboriculture and is a professional member of the Arboricultural Association. Working in the industry for nearly 10 years, Owen has extensive experience in arboricultural contracting, consultancy and business management.
Checked by	Peter Davies FdSc Arboriculture M.Arbor.A Peter has a Foundation Degree in Arboriculture and is a professional member of the Arboricultural Association. He has ten years experience in the arboricultural industry, originally working as a groundsman and feller, and progressing into consultancy. He is a Lantra accredited professional tree inspector.



Chapter House, Priesthawes Farm
Hailsham Road, Polegate,
East Sussex BN26 6QU

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1 INTRODUCTION

1.1 **Instruction:** PJC Consultancy has been instructed by Gleeson Homes to provide an arboricultural survey of The Oval raceway including surrounding land.

1.2 **Brief:** PJC Consultancy has been commissioned to undertake an initial arboricultural survey following the guidelines set out in BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*'.

1.3 **Scope of this report:** This report is concerned with all significant trees located within the property boundaries of the site. Additionally, trees located around the curtilage of the site have also been surveyed when they are considered likely to have the potential to impact on the development (in relation to root and crown protection or foundation design).

1.4 **Purpose of report:** This survey has been undertaken to record the condition and value of all significant trees at the site as well as the material constraints they pose on the development. The information in this report should be used to guide the design proposals.

1.5 **Documents and information provided:** The following documents were provided by the client to produce this report:

- Topographical survey
- Master plan pdf

2 SITE VISIT AND SURVEY METHODOLOGY

2.1 Site visit: A site visit was carried out on 8th July 2016. The weather conditions at the time were dry and bright. The visibility was good.

2.2 Tree information: The following measurements and information were recorded in the Tree Survey Schedule for each individual tree (average dimensions are recorded for groups):

- Tree reference number. (T=tree, G=group, H=hedgerow, W=woodland block).
- Species (common and scientific name).
- Overall tree height (m).
- Stem diameter (mm) per stem or average diameter for multi-stemmed trees with six or more stems.
- Branch spread (m) measured to the four cardinal points.
- Existing height (m) above ground level of canopy.
- Age class (young, semi mature, early mature, mature, over mature or veteran).
- Physiological condition (good, fair, poor).
- Structural condition (good, fair, poor).
- Comments (general description of tree including any notable features).
- Preliminary management recommendations (prescriptions for tree management processes based on the current land use and not related to the proposed development).
- Tree categorisation (see below).
- Root protection area (m²).
- Root protection radius (m).

2.3 Tree categorisation: The condition and value of each tree was evaluated based on the current land use. Each tree or tree group has been awarded either category A, B, C or U and a sub category of either 1,2 or 3 or a combination of the sub categories.

2.4 Tree categorisation summary:

- A – Trees of good condition or high value, with a predicted life span in excess of forty years.
- B – Trees of moderate condition or value, with a predicted life span in excess of twenty years.
- C – Trees of poor condition or low value, with a predicted life span in excess of ten years.
- U – Trees of such impaired condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years.

2.5 Tree sub categorisation summary:

- 1 – Trees have mainly arboricultural value, e.g. trees of good condition, form and vitality or rare tree species.
- 2 – Trees have mainly landscape value, e.g. trees of landscape prominence, that serve to screen unsightly views or that are required for privacy.
- 3 – Trees with mainly cultural value including conservation, e.g. commemorative trees, trees of historical significance, trees of ecological significance or veteran trees.

2.6 Each tree can only be categorised as A, B or C but may comply with more than one sub category. A cascade chart further explaining how tree categorisation is decided is included in Appendix 3.

2.7 **Root protection areas:** Each tree's stem diameter was recorded, and applied to the formula found in Appendix 4 to establish its root protection area. A root protection area represents a calculation of the minimum area of root growth required to support the tree, not the total rooting area.

2.8 The root protection areas are plotted onto the Tree Constraints Plan in Appendix 1, and recorded in the Tree Survey Schedule in Appendix 2. These are represented as a circle on the plan are colour coded depending on the category the tree has been awarded.

2.9 The disturbance of a tree's root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally and act as transport for water and nutrients. Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above the growing medium, (i.e. from porous to non-porous), can alter the resources available to the tree, which in turn can lead to its decline.

2.10 The root protection areas must be left free from excavation and disturbance, and protected from compaction or contamination during any proposed works. The majority of root growth is usually found within the top meter of soil. As such, even shallow disturbance within root protection areas can potentially have a significant impact on the trees.

2.11 **Limitations of site visit:** The survey methodology was restricted to a visual tree assessment from ground level. No tree climbing or ground investigation was carried out for this report. Where existing site constraints are present such as ivy covered trees, a very dense under-storey, or where trees are located on third party land to which access was not granted, tree dimensions were estimated by eye as accurately as possible.

3 SITE DETAILS AND SURVEY FINDINGS

3.1 Site location: The site is situated south of Water Lane, to the east of Angmering. The surrounding land use is comprised exclusively of transport and farmland with residential properties to the west. The location of the site within its environs is shown in figure 1.

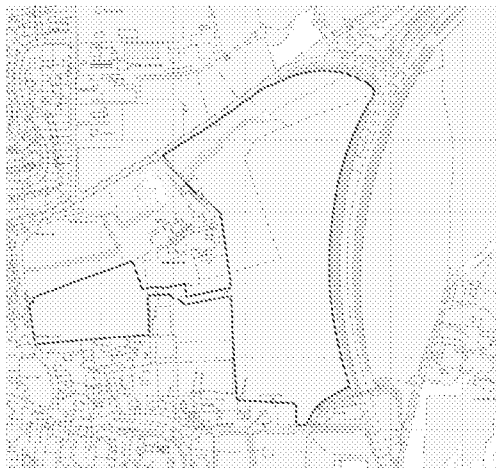


Figure 1: Location of Site and Environs

3.2 Information for each tree can be viewed in the Tree Survey Schedule in Appendix 2.

3.4 Statutory tree protection: Arun District Council Planning Department was contacted by telephone on 3rd December 2015 to establish restrictions to tree works at the site. No Tree Preservation Order (TPO) protects the trees on this site on the date of this report however Parts of the site are within the South Downs National Park. Any persons proposing to undertake tree works must check the status of these trees with the local authority, and gain necessary consent before works are undertaken.

3.6 Financial penalties and/or criminal proceedings can result if tree works are carried out on a protected tree without consent. The entirety of the tree is protected, both above and below ground.

3.7 Tree categorisation summary: A total of seven trees including three tree groups were surveyed and recorded in the Tree Survey Schedule. Three entries was categorised as B and the remainder categorised as C. The predicted contribution of one tree is less than ten years, leading to their categorisation as U.

4 CONCLUSIONS

4.1 To comply with BS5837: 2012, it is recommended that an arboricultural impact assessment be produced when the proposed layout has been finalised. The arboricultural impact assessment should include a schedule of trees to be retained and removed, evaluate the likely effects of construction works on retained trees including post development pressures and provide recommendations on mitigation measures to be implemented. It should also include a Tree Retention Plan.

4.2 As far as possible new buildings and areas of hard surfacing should be located outside of the root protection areas of retained trees. In certain situations, engineered solutions are available to allow construction within the root protection areas. Further input from an arboriculturalist should be sought regarding their site-specific viability before these methods are relied upon.

4.3 Over-shading of gardens and dwellings for prolonged periods, nuisance caused by leaf/fruit drop or honeydew drip (particularly onto footpaths, parking areas or roof guttering) and an over-bearing presence of large trees can result in significant pressure from future residents to carry out harsh remedial pruning works or to remove trees post development. All of these factors should be considered at the design stage.

4.4 Allowance should be made for future canopy growth of both existing and newly planted trees. Trees growing in areas of limited space may require regular future pruning works. The suitability of different species for regular crown reductions, the affect on their amenity value and the cost of future tree works should be considered.

4.5 The final design should show service locations and their routing. New utilities should be located outside of the trees root protection areas where they are underground and outside of the anticipated area of mature crown spread where above ground. If this is not possible, recommendations outlined in NJUG10 '*Guidelines for the planning, installation and maintenance of utilities in proximity to trees*' should be followed. Advice should also be sought from the project arboriculturalist.

4.6 Where tree removal is necessary to facilitate the wider regeneration benefits associated with development, a tree replacement strategy could be implemented to mitigate tree loss. If further tree planting does occur, consideration should be given to species selection (in relation to form and potential size) and planting locations to ensure their successful integration into the new development.

5 OTHER CONSIDERATIONS

5.1 Trees should be checked for protected species before works are undertaken. It is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations. Nesting birds are protected by the Wildlife and Countryside Act. If protected species are discovered, Natural England should be contacted for advice.

5.2 The tree works contractors should carry out all tree works to BS3998: 2010 '*Tree works – recommendations*', as modified by research that is more recent. They should also carry relevant, adequate and up to date insurance.

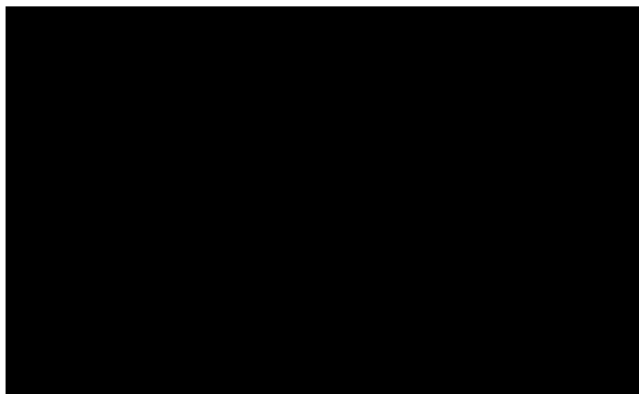
5.3 It is also recommended that all tree works be carried out by an Arboricultural Association approved contractor. Approved contractors are expected to work to industry best standards, and the Arboricultural Association website contains contact details and information on engaging a suitable contractor.

5.4 The trees at this site were assessed for their condition and safety in relation to the average range of weather conditions that the region experiences. Any weather events that exceed the average norm cannot be predicted, and so their effects are not considered within this report.

5.5 The views and opinions contained within this report are entirely those of the author.

Contact details

PJC Consultancy Ltd
Chapter House
Priesthawes Farm
Hailsham Road
Polegate
East Sussex
BN26 6QU



Author: Owen Allpress

Date: 20th July 2016

APPENDIX 1

Tree Constraints Plan



Key:

- RPA for CAT B Tree*
- RPA for CAT C Tree*
- RPA for CAT U Tree*
- Tree canopy

** Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.*

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. no. PJC/3874/16-01 contains further information for each tree.

This drawing should be viewed in colour.

Drawing no: PJC/3874/16/A Rev: 01 Sheet number: 1 of 1

Client and site:
Gleeson Homes
Land south of south of Water Lane
Angmering
West Sussex

Drawing title: Tree Constraints Plan

Date drawn: 20/07/2016

Scale: NTS

Drawn by: OA **Checked by:** NB



PJC Consultancy
Chapter House, Priesthewes Farm, Hailsham
Road, Polegate, East Sussex, BN26 6QU.
01323 768155
www.pjconsultancy.com

APPENDIX 2

Tree Survey Schedule



Client: Gleeson Homes
 Site: Land south of Water Lane, Angmering
 Survey date: 8th July 2016
 Surveyor: Owen Allpress

T: Individual tree or shrub
 G: Group of 2 or more trees
 H: Hedgerow
 W: Woodland block

Tree ref. no	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T29	English Oak, (<i>Quercus Robur</i>)	11	800 est	N: 6 E: 6 S: 5 W: 5	2	Mature	Good	Good	Tree adjacent stream southern most section of site south of Water lane.	None	B2	289.9	9.6
T30	2 x Willow, (<i>Salix Spp</i>)	11	500 est	N: 7 E: 5 S: 5 W: 7	0	Mature	Good	Poor	Partially failed trees on bank and ditch to south of waters lane.	None	U	113.3	6.0
G31	5 x Large leaf lime, (<i>tilia platyphylus</i>)	5	350 est avg	N 3 E 3 S 3 W 3	0	Mature	Good	Good	Trees bordering Northern boundary of top field.	None	B2	55.5	4.2
T32	Ash, (<i>Fraxinus excelsior</i>)	5	500 est	N 4 E 4 S 4 W 4	3	Mature	Good	Good	Stem inclusion, dual stem from 1m	None	C2	113.3	6.0
T33	Bird cherry, (<i>Prunus Padus</i>)	4	350 est	N 3 E 3 S 3 W 3	2	Mature	Good	Good	Grown in competition with surrounding hedge	None	C2	55.5	4.2
T34	Eucalyptus gunnii	3	150 est	N 2 E 2 S 2 W 2	2	Juvenile	Good	Good	Planted tree on field side.	None	C1	10.2	1.8



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Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
G35	Holly and pine	3	250 est	N 3 E 3 S 3 W 3	3	Mature	Good	Good	Third party trees in gardens beyond fence.	None	C2	28.3	3.0
T36	Sycamore, (<i>Acer pseudoplatanus</i>)	5	350 est	N 4 E 4 S 4 W 4	3	Mature	Good	Fair	Third party tree. Significant included union at 1.5m dual stem beyond this.	None	C1	55.5	4.2
T37	Pedunculate oak, (<i>Quercus robur</i>)	4	200 est	N 3 E 3 S 3 W 3	1	Semi-mature	Good	Good	Young tree with good potential for retention.	None	B1	18.1	2.4
G38	Cherry, hawthorn & elder	≥5	150 Est avg	N/a		Semi-mature	Good	Good	Screening value adjacent road and existing field access.	None	C2	10.2	1.8

APPENDIX 3

Cascade Chart for Tree Quality Assessment

Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after the removal of other category U trees (e.g. 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, or very low quality trees suppressing adjacent trees of better quality <i>Note Category U trees can have existing or potential conservation value which it might be desirable to preserve</i>			Red
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher value 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	Trees with material conservation or other cultural	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

APPENDIX 4

Root Protection Area Formulas

CALCULATING THE RPA

For single stemmed trees

$$\text{RPA(m}^2\text{)} = \frac{(\text{stem diameter (mm)} @ 1.5 \text{ m x } 12)^2 \times 3.142}{1000}$$

For trees with two to five stems, a combined stem diameter is calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$$

For trees with more than five stems, the combine stem diameter is calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$