



Land west of Arundel Road,
Angmering

Tree Survey and Arboricultural Impact Assessment

Prepared by
CSA Environmental

on behalf of
Gladman Developments Limited

Report Ref: CSA/3467/03

November 2017

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Appendix D: Tree Survey and Constraints Plan with indicative shading

Appendix E: Tree Retention and Removal Plan

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EXECUTIVE SUMMARY

Residential development is proposed on land west of Arundel Road, Angmering for which outline planning permission is sought.

CSA Environmental was instructed by Gladman Developments Limited to undertake an arboricultural appraisal of the Site. The survey records the tree cover present and assesses its arboricultural value. The report identifies arboricultural constraints and opportunities to inform development design and the planning decision.

A survey of the Site was undertaken in November 2017. A total of 15 trees (T1 – T15), 14 groups (G1 – G14) and 4 hedges (H1 – 4) have been recorded and assessed on and adjacent to the Site.

The primary arboricultural features of the Site have been identified as the two individual, Category A, trees adjacent to the western boundary of the Site and the large area of mixed broadleaf woodland to the north of the Site. In addition, significant, Category B, tree groups were also identified on the northern and southern boundary of the Site along with a collection of individual trees located in the south-west corner of the Site.

In order to implement the proposed vehicle access to the Site, low quality group G8 will require removal.

The Development Framework Plan indicates that within the Site's interior it will likely be necessary to remove a number of the trees and hedgerows. The majority of items that may require removal are Category C (low quality).

Given the nature and low quality of most of the items to be removed, and considering the landscape proposals for the wider Site, this impact is considered acceptable from an arboricultural perspective.

In summary, no overriding arboricultural constraints to development have been identified. The impacts of the outline proposals are considered acceptable in arboricultural terms. At the detailed planning and design stages, it will be necessary to produce a detailed Arboricultural Impact Assessment (AIA) which will evaluate the direct and indirect effects of the detailed proposals, specify tree protection measures and provide mitigation recommendations.

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1.0 INTRODUCTION

- 1.1 This report has been prepared for CSA Environmental by Barton Hyett Associates Limited, on behalf of Gladman Developments Limited for land west of Arundel Road, Angmering (hereafter referred to as 'the Site').
- 1.2 The Site occupies an area of c. 9.07ha and is located around central grid reference TQ 0651 0533, to the north of the town of Angmering, West Sussex.
- 1.3 Residential development is proposed at the Site, for which outline planning permission will be sought.
- 1.4 The objective of this report is to assess the condition of the significant trees and woody vegetation and to provide sufficient information to inform the development design and the planning decision.

2.0 SCOPE

- 2.1 The assessment was carried out from ground level from within the Site.
- 2.2 The assessment has been carried out following the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in Table 1 below.

Table 1. Staged approach with cross references to key guidance

Information Stage	RIBA Stage	BS5837
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

- 2.3 This survey is intended for planning purposes only and does not include all shrubs and small trees on Site. The survey is not intended for the detailed design of foundations (further information upon vegetation can be provided upon request).
- 2.4 Any significant alteration to the Site that may affect the trees present (for instance changes in ground levels, tree works, extreme weather events, hydrological changes etc) may invalidate the survey findings and could necessitate a re-assessment of the trees.
- 2.5 Any tree works recommended as a result of this survey are preliminary only and relate to current Site use. They are not intended as a schedule of works for any development scheme proposed or otherwise.
- 2.6 Reliance has been placed upon the topographical survey supplied.

Limitations

- 2.7 There were no limitations to the survey.

3.0 TREE IDENTIFICATION AND DETAILS

- 3.1 Trees are shown on drawing BHA/267/01 provided at 1:750 scale when printed at A1 size. The Tree Survey Plan is provided in **Appendix C** of this report.
- 3.2 Details of the trees are recorded in the Tree Schedule at **Appendix A** of this report. Explanatory notes about the survey and categorisation process within BS5837:2012 are set out in **Appendix B**.
- 3.3 A check has been made with the local authority to ascertain if trees are protected by legislation [check made on 27/11/2017]. This revealed that none of the trees identified are covered by Tree Preservation Order nor is the Site located within a Conservation Area.
- 3.4 No areas of woodland immediately adjacent to the Site are indicated as ancient or ancient semi-natural woodland on the <http://www.magic.gov.uk> website. However, two areas of ancient semi-natural woodland were indicated west of the site at 230m and 430m from its western boundary. MAGIC provides authoritative geographic information, from across government, about the natural environment.

4.0 SITE DESCRIPTION

- 4.1 The Site is located on the western side of Arundel Road which is located to the north of the settlement of Angmering, West Sussex. Arundel Road is orientated south:north and provides access to Angmering from the main A27 road which is located further to the north.
- 4.2 The Site is roughly square in shape and mainly consists of arable land. The south-eastern part of the Site, however, contains a series of commercial units with a private dwelling to their north. These are separated from the Arundel Road by a linear area of separately owned land which itself abuts the north-eastern corner of the Site. This north-east corner is a square-shaped derelict area containing some part-demolished structures.
- 4.3 The Site is accessed via a tarmac access road from Arundel Road.
- 4.4 The northern boundary of the Site borders a residential garden at the eastern end with the remainder of the boundary adjoining mixed broadleaf woodland. The western boundary of the Site is formed by a well-established hedgerow. The southern boundary consists of a chain-link fence; there is a line of mixed tree species just beyond this boundary that help to define the edge of an area of playing fields beyond. The eastern boundaries are marked by hedgerows, fences or areas of unmanaged ruderal growth.
- 4.2 To the east of the Site there is separately owned land with Arundel Road beyond. To the south there are playing fields. Land use beyond the western boundary is agricultural arable production, whilst to the north there is a well-established area of mixed species woodland.

5.0 GEOLOGY

- 5.2 A detailed assessment of the soils on Site has not been provided to Barton Hyett Associates Limited. In the absence of this information we have used an online resource to provide a high-level summary of the site's geology.
- 5.3 This information is obtained from the (online) 'Geology of Britain Viewer' that contains British Geological Survey materials © NERC (2017). The geological information given in this report should not be relied upon by other parties who are advised to carry out their own assessment of the Site conditions to suit their own needs.

Bedrock Geology

- 5.4 The bedrock geology is formed by the London Clay Formation - Clay, Silt And Sand. Sedimentary Bedrock formed approximately 48 to 56 million years ago in the Palaeogene Period. Local environment previously dominated by deep seas.

Superficial Deposit

- 5.5 The superficial geology is formed by Head deposits - Clay, Silt, Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by subaerial slopes (U).

6.0 GENERAL GUIDANCE NOTES FOR DEVELOPMENT

- 6.1 These notes are provided as a guide to the design team. They represent the professional opinion of the arboriculturist, on which trees should be ideally retained given their quality and condition, and which may be acceptable to remove. The views expressed have not been subject to consultation or discussion with any other party.
- 6.2 The Tree Survey and Constraints Plan drawing provided in **Appendix C** shows the Root Protection Areas (RPAs) prescribed by the guidance within BS 5837 paragraph 4.6.2 and adjusted where appropriate as recommended in the subsequent paragraph 4.6.3. The RPA represents the minimum rooting mass and soil volume required to sustain a tree.
- 6.3 For proposed residential developments, consideration must be given to future tree growth and orientation, i.e. adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light. To assist with this, a Tree Survey and Constraints Plan with indicative Shading is provided in **Appendix D**.
- 6.4 A hierarchical approach is adopted in order to achieve optimum use of the Site and location of built structures. This is set out below:

Avoid

- 6.5 The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

- 6.6 Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:
- 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.
 - 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 subject to site-specific soil conditions.

- Service runs that cannot be routed outside the RPA(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

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

7.0 TREE SURVEY FINDINGS

- 7.1 This survey is not a tree safety inspection. It has been undertaken to inform the planning process. However, where clear and obvious hazards have been observed, these have been identified in the Tree Schedule in **Appendix A** and appropriate recommendations made.
- 7.2 Overall 15 trees, 14 Groups and 4 hedges were surveyed at the Site, the number of each tree, group and hedgerow surveyed in each quality category can be seen in the table below:

Table 2. Summary of arboricultural categories present

BS 5837:2012 Quality Category	Reference number as on Tree Constraints Plan (BHA/267/01)			Total
	Trees	Groups	Hedges	
Category A				
Stem and canopy edge 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.	2	1	n/a	3
Category B				
Stem and canopy edge 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.	9	3	2	14
Category C				
Stem and canopy edge 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 whose loss could easily be mitigated. These trees should not necessarily pose a constraint to development.	3	10	2	15
Category D				
Stem and canopy edge shown dark red on Tree Constraints Plan: Trees 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 although they may have ecological significance.	1	n/a	n/a	1
Totals	15	14	4	33

8.0 ARBORICULTURAL CONSIDERATIONS

Summary of Findings

- 8.1 Two individual trees were identified as Category A (high quality) due to their high arboricultural value. These trees are located offsite but adjacent to the western boundary of the Site. In addition, the large area of mixed broadleaf woodland to the north of the Site was assigned to Category A due to its high landscape value.
- 8.2 A significant element of tree cover is Category B and is mostly comprised of large boundary trees groups on the northern and southern boundary of the Site and individual trees located in the south-west corner of the Site.
- 8.3 The remaining trees and groups are Category C, these trees have been downgraded due to their small size or significant physiological or structural defects. These items are mainly located in the north-eastern corner of the Site.
- 8.4 A single Category U tree was identified and, due its very poor condition, should be removed irrespective of the development proposals.
- 8.5 All A and B category trees and groups (high and moderate quality) should be retained under normal circumstance when on or adjacent to development sites. In addition, they should influence the conceptual design, site layout and possibly construction methods. The removal of Category B trees may be permissible in certain situations and subject to suitable replacement planting mitigation.
- 8.6 With regard to C and U category trees, these are generally of low value, unsuitable retention due to young age, small size or impaired condition or life expectancy. It may not always be possible or desirable to retain low quality trees, unless they are located where they do not pose a significant constraint to the design. Category U trees have been recorded due to the presence of defects or reduced life expectancy and should generally be removed unless they provide particular conservation value to the Site.

Constraints

- 8.7 Confirmed constraints to development at the Site have been identified as the presence of:
- High quality trees adjacent the Site's western boundary
 - An established block of deciduous woodland adjacent the Site's northern boundary

- Significant individual trees in the south-west corner of the Site

8.8 In summary, due to the peripheral location of the moderate and high-quality trees and groups there is minimal arboricultural constraint to development. However, the retention and protection (both from damage during the construction process and also from post development pressure to prune or fell) of the important trees will serve to provide a level of maturity and maintain landscape and amenity values in parts of the Site.

Opportunities

8.9 Opportunities exist for the establishment of new tree planting as part of a scheme of landscape design for the Site. New tree planting could assist in delivering an overall enhancement in the arboricultural resource of the Site; this is particularly relevant in terms of providing an enhanced natural buffer to the perimeter of the Site as well as providing new tree planting within the Site's interior.

9.0 IMPACT ASSESSMENT

- 9.1 This assessment considers the effect of the proposed access to the Site (i.e. the non-reserved matters). It also considers the potential impacts of the development framework plan. However, a further assessment of the reserved matters details will be required at the detailed planning stages.
- 9.2 In order to implement the proposed vehicle access to the Site, low quality group G8 will require removal.
- 9.3 The Development Framework Plan indicates that within the Site's interior it will likely be necessary to remove a number of the trees and hedges. This is necessary to accommodate the internal access road as well the development parcels. The items that will likely require removal are:
- H1, H2, G1, G2, G7, G9, T1, T2, T3, T4 and T5
- 9.4 With the exception of H1 and T2, all of the above items were assigned to Category C (low quality).
- 9.5 The Development Framework Plan also indicates (as shown the Tree Retention and Removal Plan at Appendix E) that some areas of boundary vegetation (G4 and G5) may require pruning or the localised removal of stems. These areas are small and restricted to low quality (Category C) items that are encroaching into the Site.
- 9.6 Given the nature and low quality of most of the items to be removed, and in the context of the landscape proposals for the wider Site (that can be delivered as part of the detailed design and implementation) this impact is considered acceptable from an arboricultural perspective.

10.0 FURTHER RECOMMENDATIONS AND CONCLUSIONS

10.1 The following is recommended to inform the next stages of the design/planning process of the proposed development, such that suitable arboricultural impact avoidance, mitigation and compensation measures may be adopted:

- Consultation with LPA/Tree Officer with regard to potential effects on identified arboricultural features
- Detailed Arboricultural Impact Assessment in line with BS 5837:2012 at the detailed design stage.

Together with:

- A suitable Tree Protection Plan and Arboricultural Method Statement once the design is finalised at the advanced planning stage

10.2 In conclusion, no overriding arboricultural constraints to development have been identified subject to the implementation of the recommendations and advice included within this report.

11.0 REFERENCES

British Standards Institution, 2012. BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. Fourth edition. London: BSI.

Department for Communities and Local Government, 2012. *National Planning Policy Framework*. London: Department for Communities and Local Government.

TDAG (Trees and Design Action Group), 2012. *Trees in the Townscape, Issue 3: November 2012*. <http://www.tdag.org.uk/trees-in-the-townscape.html>

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Appendix A

Tree Schedule
(Ref. CSA/3467/02)

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Table A.1 Key to Tree Schedule

Column Heading	Explanation
Tree No.	Unique number corresponding with number on plan
Species	English names
Ht (m)	Height in metres
No of stems	Number of stems at 1.5m above ground level
Est diam?	Stem diameter estimated where site conditions do not allow measurement.
Calc / actual stem diameter (mm)	The stem diameter of a single-stemmed tree, or calculated aggregated diameter of multi-stemmed trees (All measurements conform to Annex C of BS 5837:2012)
Crown radii (m)	Crown radius in metres to cardinal points of the compass
Stem diameters (cm)	All measurements conform to Annex C of BS 5837:2012
Avg. crown height (m)	Height in metres between the ground and underside of canopy
1st branch height (m) and 1st branch dir.	Height from ground level to base of first major branch and the approximate direction of growth
Life stage	Age Class definitions: Y = Young EM = Early mature SM = Semi-mature M = Mature LM = Late mature
General observations	Notes on condition and significance.
Health and vitality	Assessment of physiological condition (Good / Fair / Poor / Dead)
Struct. Cond	Assessment of structural condition (Good / Fair / Poor / Dead)
Estimated remaining contribution	Useful estimated remaining contribution of the tree or tree group
Category grading 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)
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

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BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 3467_02

SURVEYOR: M REID

DATE: NOV 2017

CLIENT: GLADMAN DEVELOPMENTS LIMITED



INDIVIDUAL TREES

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²
T1	Goat willow	6	6	#	200	4.0-3.0-4-7	1.5	1	W	EM	Self set tree of very limited merit	Good	Fair	10+	C1	2.4	18
T2	Apple (Bramley)	6	1	#	360	5.0-5.0-6-5	2.0	0.25	E	M	Attractive tree within garden with rounded form. Could be retained as a feature in context of proposed land use.	Good	Good	20+	B1	4.3	59
T3	Common ash	13	1	#	480	9.0-6.0-2-7	4.0	5	N	M	One-sided crown due to pruning to clear overhead services. Extensive decay in lower stem. No medium and longer term potential	Poor	Poor	<10	U	5.8	104
T4	Common ash	13	2	#	600	6.0-5.0-4-6	5.0	3	SE	M	High proportion of deadwood throughout crown. No real potential to enhance site in medium and longer term	Fair	Fair	10+	C1	7.2	163
T5	Common ash	8	8	#	480	6.0-6.0-5-4	2.0	0.5	W	EM	Many stemmed tree with low rounded form. Minimal medium and long term value in proposed land use context	Fair	Fair	10+	C1	5.8	104
T6	Common ash	16	1	#	550	6.0-9.0-8-9	4.0	4	SW	M	Offsite tree but a large distinguishing feature within the group	Fair	Good	20+	B1	6.6	137
T7	Common ash	15	1	#	400	5.0-6.0-5-5	4.0	4	SE	SM	Relatively distinct feature	Good	Fair	20+	B1	4.8	72
T8	English oak	23	1	-	850	10.0-10.0-10-9	5.0	4	E	M	Large and very prominent arboricultural feature. Dense Ivy on stem. Located within hedgerow and likely to be offsite therefore. A key tree in the context of the proposed land use.	Good	Good	40+	A2	10.2	327
T9	English oak	10	1	#	550	5.0-5.0-8-5	5.0	4.5	SE	SM	Smaller distinct feature. Offsite. Considerable scope for future growth	Good	Good	40+	A2	6.6	137
T10	Lombardy poplar	30.0	1	#	900	3.0-3.5-3-3	4.0	0.5	W	SM	Large feature tree on boundary of site. Forms a distinct feature along with four other similar trees.	Good	Good	20+	B1	10.8	366
T11	Lombardy poplar	28.0	1	#	550	3.0-3.5-3-3	4.0	0.5		SM	Large feature tree on boundary of site. Forms a distinct feature along with four other similar trees.	Good	Good	20+	B1	6.6	137
T12	Lombardy poplar	28.0	1	#	350	3.0-3.5-3-3	4.0	0.5		SM	Large feature tree on boundary of site. Forms a distinct feature along with four other similar trees.	Good	Good	20+	B1	4.2	55

BS5837:2012 TREE SURVEY SCHEDULE

LAND WEST OF ARUNDEL ROAD, ANGMERING

PROJECT NO: 3467_02

SURVEYOR: M REID

DATE: NOV 2017

CLIENT: GLADMAN DEVELOPMENTS LIMITED



Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²
T13	English oak	9.0	1	#	400	7.0-5.0-5-5	5.0	4	E	SM	Smaller tree with low, rounded form	Good	Good	20+	B1	4.8	72
T14	Lombardy poplar	25.0	1	#	400	2.0-1.5-2-2	3.0	3.5	NW	SM	Medium sized feature tree on boundary of site. Forms a distinct feature along with four other similar trees.	Good	Good	20+	B1	4.8	72
T15	Lombardy poplar	28.0	1	#	750	2.5-3.5-3-3	4.0	3	R	SM	Large feature tree on boundary of site. Forms a distinct feature along with four other similar trees.	Good	Good	20+	B1	9.0	255

GROUPS OF TREES

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA m²
G1	Common beech, blackthorn, common ash, purple leafed plum, Apple	4-7	4	#	150	3	0.5	EM	Informal group at boundary and within in of garden. Does not include any trees with long term potential to enhance proposed land use.	Good	Fair	10+	C2	10.0
G2	Leyland cypress, English oak	11-13	3	#	400	4	1.0	SM	Oak form is greatly suppressed by the two cypress which are now outgrowing the location. Unviable trees in the medium and longer term	Good	Fair	10+	C2	72.0
G3	Hawthorn, common ash, English elm	7-10	12	#	250	2	0.5	EM	Outgrown hedgeline on top of bank bordering site entrance. Lateral spread managed by flailing but no other management evident. Possibly located off site	Good	Fair	10+	C2	28.0
G4	Leyland Cypress, common ash	11-13	3	#	500	4	4.0	SM	Offsite trees. Most relevant trees are adjacent to and overhanging the existing site entrance.. cypresses are outgrowing the location	Good	Fair	10+	C2	113.0
G5	Goat, willow, common ash, hazel,	3-7	15+	#	75	2	1.0	EM	Possibly offsite, but boundary is distinct. Informal area of unmanaged natural regeneration that will outgrow the setting.	Good	Fair	10+	C2	3.0
G6	Common ash, common lime, hawthorn, elder, sycamore, poplar, alder,	4-15	25+	#	35	3	2.0	SM	Offsite tree group, linear in form along with southern boundary of the site and forming a strong landscape feature. Considerable scope for future growth and associated scope to shade and dominate future residential developments as well as also to function well as a screen. 8m overhang into site by poplars towards western end.	Good	Fair	20+	B2	1.0

BS5837:2012 TREE SURVEY SCHEDULE

LAND WETST OF ARUNDEL ROAD, ANGMERING

PROJECT NO: 3467_02

SURVEYOR: M REID

DATE: NOV 2017

CLIENT: GLADMAN DEVELOPMENTS LIMITED



Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA m²
G7	Blackthorn, hawthorn, English elm, ash.	3-6	15	#	250	2	1.0	SM	Areas of unmanaged scrub growth. Quite a high proportion of elm suckers, so far without symptoms of Dutch elm disease.	Fair	Fair	10+	C2	28.0
G8	Blackthorn, goat willow, buddleia	3-7	25	-	180	2	0.5	EM	Dense, impenetrable area of unmanaged scrub.	Good	Fair	10+	C2	15.0
G9	Common ash	4-8	3	#	280	2	2.0	EM	Self set trees. Previously poorly pruned by topping.	Fair	Poor	10+	C2	35.0
G10	Gum	14-15	20	#	300	4	4.0	SM	Offsite tree group in adjacent garden. Stems are forced up by adjacent trees leaving high ratio between height and stem diameter. One low branch extends over site at eastern end of group.	Good	Fair	10+	C2	41.0
G11	Leyland Cypress, crack willow	10-15	10	#	500	4	2.0	M	Offsite tree group in adjacent garden. Unmanaged and outgrowing space.	Good	Fair	10+	C2	113.0
G12	Crack willow, common ash, hawthorn, English oak	3-16	30	#	450	3	1.0	M	Offsite woodland. Lower spread into site managed by flailing.	Good	Good	40+	A2	92
G13	English oak, ash	14-16	25	#	500	8	4.0	M	Woodland edge trees with considerable crown overhang into site. This collective and distinctive feature should form a constraint as part of any future design process . Note that several large ash trees show signs of crown dieback.	Fair	Good	20+	B2	113
G14	Common alder	8-10	28	#	150	2	1.5	EM	Offsite linear boundary group of trees with considerable scope for future growth. Potential to exert overbearing effect whilst also functioning well as screen.	Good	Good	20+	B2	10

HEDGEROWS

Ref	Species	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category
H1	Hawthorn	3	3	100	1	EM	Well established boundary hedge with lateral spread into site managed by flailing. No recent height management.	Good	Fair	20+	B2
H2	Hawthorn, elder, ash, field maple, dogwood	5	4	100	1	EM	Unmanaged boundary treatment associated with adjacent commercial units. Separated from main field by informal area of low scrub upto fence line.	Good	Fair	10+	C2

BS5837:2012 TREE SURVEY SCHEDULE

LAND WETST OF ARUNDEL ROAD, ANGMERING

PROJECT NO: 3467_02

SURVEYOR: M REID

DATE: NOV 2017

CLIENT: GLADMAN DEVELOPMENTS LIMITED



Ref	Species	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category
H3	Leyland Cypress, Eleagnus pungent, beech.	3	2	90	1	EM	Boundary hedge maintained on site side and top by flailing.	Good	Fair	10+	C2
H4	Hawthorn, English elm, goat willow,	4	3	150	1	M	Boundary hedgeline, managed only by flailing back to boundary. Possibly an offsite feature.	Good	Fair	20+	B2

Appendix B

Tree Survey Explanatory Notes

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The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of BS5837. The survey has been undertaken by the qualified and experienced arboriculturist 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 Tree Schedule at Appendix A.

Tree Schedule

Appendix A presents details of the individual trees, groups and hedgerows including heights, diameters at 1.5m above ground level, 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, BS 5837 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 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 *British Standard 5837:2012* does not assess hedgerows against *The Hedgerows 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.

BS 5837 Categorisation

Trees have been divided into one of four categories based on Table 1 of BS 5837, '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.

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 desirable 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 the following 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 the following 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 the following 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 Root Protection Areas

Default Situation

The root protection area as described in BS5837 is a function of the stem diameter which is multiplied by 12 to give a radius. For multi-stemmed trees the stems are combined to provide an effective diameter figure that is then multiplied.

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

Statutory Obligations

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Any Statutory designations such as this are identified within this report (details included in Appendices).

The National Planning Policy Framework 2012 (NPPF) states that:

'planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss'.

In this respect of ancient woodland is defined as an area which:

'has been wooded continuously since at least 1600 AD', and an

'Aged or veteran tree: A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape, or culturally.'

Appendix C

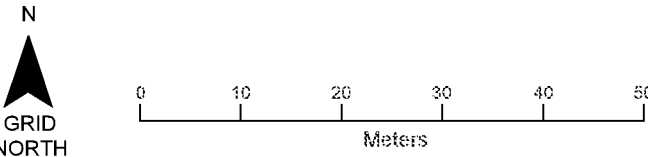
Tree Survey and Constraints Plan
(BHA/267/01 – Sheet 1)

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Tree No	Species	RPA Radius M	RPA Area M2	Category
T1	Goat willow	2.4	18	C1
T2	Apple (Bramley)	4.3	59	B1
T3	Common ash	n/a	n/a	U
T4	Common ash	7.2	163	C1
T5	Common ash	5.6	104	C1
T6	Common ash	6.6	137	B1
T7	Common ash	4.8	72	B1
T8	English oak	10.2	327	A2
T9	English oak	6.6	137	A2
T10	Lombardy poplar	10.6	349	B1
T11	Lombardy poplar	6.6	137	B1
T12	Lombardy poplar	4.2	55	B1
T13	English oak	4.8	72	B1
T14	Lombardy poplar	4.8	72	B1
T15	Lombardy poplar	9	255	B1
G1	Common beech, blackthorn, common ash, purple leafed plum, Apple	1.8	n/a	C2
G2	Leyland cypress, English oak	4.8	n/a	C2
G3	Hawthorn, common ash, English elm	3	n/a	C2
G4	Leyland Cypress, common ash	6	n/a	C2
G5	Goat willow, common ash, hazel	1	n/a	C2
G6	Common ash, common lime, hawthorn, elder, sycamore, poplar, alder	0.6	n/a	B2
G7	Blackthorn, hawthorn, English elm, ash	3	n/a	C2
G8	Blackthorn, goat willow, buddleia	2.2	n/a	C2
G9	Common ash	3.3	n/a	C2
G10	Gum	3.6	n/a	C2
G11	Leyland Cypress, crack willow	6	n/a	C2
G12	Crack willow, common ash, hawthorn, English oak	5.4	n/a	A2
G13	English oak, ash	6	n/a	B2
G14	Common alder	1.8	n/a	B2
H1	Hawthorn	1.3	n/a	B2
H2	Hawthorn, elder, ash, field maple, dogwood	1.3	n/a	C2
H3	Leyland Cypress, Ekeagrus pungens, beech	1.1	n/a	C2
H4	Hawthorn, English elm, goat willow	1.6	n/a	B2



- KEY** BS 5837 - 2012 Categories
- Tree Category A - High Quality
 - A Category - Hedgerow, Group, Woodland
 - Tree Category B - Moderate Quality
 - B Category - Hedgerow, Group, Woodland
 - Tree Category C - Low Quality
 - C Category - Hedgerow, Group, Woodland
 - Tree Category U - Unsuitable for Retention
 - U Category - Hedgerow, Group, Woodland
 - Root Protection Area to BS 5837:2012
 - Shrub Mass / Offsite Tree / OOS (Out of scope)
 - Indicative Tree Shading



PROJECT TITLE
Land West of Arundel Road, Angmering (C.2269)

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE
1:750

DRAWING NUMBER
BHA_267_01

DRAWN BY
DB

APPROVED BY
RH

REVISION
-

SHEET
1/2

DATE
08/11/2017

CLIENT
Gladman Developments Limited

COORDINATE SYSTEM / DATUM
British National Grid / Newlyn Datum (AOD)

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Suite 1, Deer Park Business Centre, Eckington,
Penshore, Works. W10 3DN
01386 751100 • csaenvironmental.co.uk

Barton Hyett Associates
Arboricultural Consultants

Appendix D

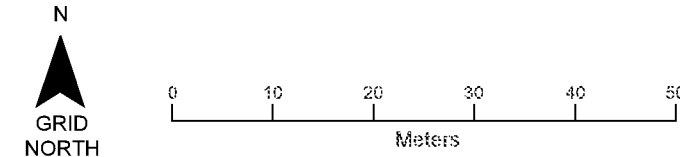
Tree Survey and Constraints Plan with indicative shading
(BHA/267/01 – Sheet 2)

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Tree No	Species	RPA Radius M	RPA Area M2	Category
T1	Goat willow	2.4	18	C1
T2	Apple (Bramley)	4.3	59	B1
T3	Common ash	n/a	n/a	U
T4	Common ash	7.2	163	C1
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G1	Common beech, blackthorn common ash, purple leafed plum, Apple	1.8	n/a	C2
G2	Leyland cypress, English oak	4.8	n/a	C2
G3	Hawthorn, common ash, English elm	3	n/a	C2
G4	Leyland Cypress, common ash	6	n/a	C2
G5	Goat willow, common ash, hazel	1	n/a	C2
G6	Common ash, common lime, hawthorn, elder, sycamore, poplar, alder	0.6	n/a	B2
G7	Blackthorn, hawthorn, English elm, ash	3	n/a	C2
G8	Blackthorn, goat willow, buddleia	2.2	n/a	C2
G9	Common ash	3.3	n/a	C2
G10	Gum	3.6	n/a	C2
G11	Leyland Cypress, crack willow	6	n/a	C2
G12	Crack willow, common ash, hawthorn, English oak	5.4	n/a	A2
G13	English oak, ash	6	n/a	B2
G14	Common alder	1.8	n/a	B2
H1	Hawthorn	1.3	n/a	B2
H2	Hawthorn, elder, ash, field maple, dogwood	1.3	n/a	C2
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H4	Hawthorn, English elm, goat willow	1.8	n/a	B2



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 - Root Protection Area to BS 5837:2012
 - Shrub Mass / Offsite Tree / OOS (Out of scope)
 - Indicative Tree Shading



PROJECT TITLE
Land West of Arundel Road, Angmering (C.2269)

DRAWING TITLE
**Tree Survey & Constraints Plan
with Indicative Tree Shading**

SCALE
1:750 @ A1 BHA_267_01

DRAWN BY DB	APPROVED BY RH	REVISION -	SHEET 2/2	DATE 08/11/2017
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CLIENT
Gladman Developments Limited

COORDINATE SYSTEM / DATUM
British National Grid / Newlyn Datum (AOD)

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Barton Hyett Associates
Arboricultural Consultants

Appendix E

Tree Retention and Removal Plan (BHA_267_02)

Tree No	Species	RPA Radius M	RPA Area M2	Category
T1	Goat willow	2.4	18	C1
T2	Apple (Bramley)	4.3	59	B1
T3	Common ash	n/a	n/a	U
T4	Common ash	7.2	163	C1
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G5	Goat willow, common ash, hazel	1	n/a	C2
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G7	Blackthorn, hawthorn, English elm, ash	3	n/a	C2
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G10	Gum	3.6	n/a	C2
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H3	Leyland Cypress, Ekeagrus pungent, beech	1.1	n/a	C2
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KEY

BS 5837 - 2012 Categories

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A Category - Hedgerow, Group, Woodland

Tree Category B - Moderate Quality

B Category - Hedgerow, Group, Woodland

Tree Category C - Low Quality

C Category - Hedgerow, Group, Woodland

Tree Category U - Unsuitable for Retention

U Category - Hedgerow, Group, Woodland

Root Protection Area to BS 5837:2012

Shrub Mass / Offsite Tree / OOS (Out of scope)

Tree, Groups & Hedgerows to be Removed

Groups that may require localised canopy pruning or removal if stems are within the site to provide suitable highway/footpath clearance for visibility

GRID NORTH

010/03/2018

PROJECT TITLE

Land West of Arundel Road, Angmering (C.2269)

DRAWING TITLE

Tree Retention & Removal Plan

SCALE

1:750

DRAWING NUMBER

BHA_267_02

DRAWN BY

AD

APPROVED BY

RH

REVISION

A

SHEET

-

DATE

01/03/2018

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Parsloke, Works. W10 3DN
01386 751100 - csaenvironmental.co.uk

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