

Arboricultural &
Planning Integration Report

at

The Cottage
Shripney Road
Bognor Regis
PO22 9PA

August 2017

Arbortrack Systems Ltd
jwmb/ rpt3/ thecottage/ PI

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Arboricultural & Planning Integration Report

Location	The Cottage, Shripney Road, Bognor Regis, PO22 9PA.	Ref jwmb/ rpt3/ thecottage/ PI
Client & Instructions From	Mr Julian Chatterton, Castle Property Developments Ltd, 1 & 2 The Barn, Oldwick, West Stoke Road, Lavant, Chichester, PO 18 9AA.	Date 10 th August 2017
Terms of Reference	To survey the subject trees in order to assess their general condition and to provide a planning integration statement for the proposed development that safeguards the long term well being of the retained trees in a sustainable manner.	
Report Prepared by	James Bell BSc (Hons.), MSc, Arbor. A. Tech. Cert.	Page N ^o 1 of 11

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Summary

The outline proposals are for the demolition of the existing dwelling & outbuildings and for construction of twenty new houses and flats plus a replacement dwelling (twenty one units in total of which 6 are affordable and 15 market value). The indicative layout provides for car parking (41 spaces), landscaping and associated infrastructure with a new access off the A29: the existing access will be closed.

There are seventy one surveyed trees or groups of trees on or near the site: two are 'A' (high quality) category i.e. 36 & 37, twenty seven are 'B' (moderate quality) category i.e. 1, 2, 6, 9, 10, 20, 21b, 26-30, 33, 33a, 34, 35, 43, 45, 51, 52, 54, G55, 56, 57, 58, 60 & 61, thirty five are 'C' (low quality) category and seven trees are 'U' (unsuitable for retention quality) category i.e. 3, 13, 23-25, 42 & 44.

The following surveyed trees will be removed to allow or facilitate development or for landscape enhancement or for sound arboricultural management i.e. retention presents an unacceptable risk of failure (*): 5, 5a, 7, 8, 11, 11a, 13*, 17-21, 21a, 21b, 23-25*, G27a, 28, 29, 31, 32a, 32b, 38-42, 44*, 46, 48, 49, G55 (partial) & G62 (partial). Excepting tree 20, a weeping willow, and three early mature ash (21b, 28 & 29) these are all low quality trees. The loss of four moderate quality trees is acceptable in the context of these proposals: the landscape planting on the eastern boundary is retained and can readily be reinforced with further planting. The two cedars (36 & 37) that are the prominent arboricultural features of the site are retained and there is good scope for replacement planting on the roadside boundary, which is currently over reliant on post mature Monterey cypress (42, 43 & 44) that have all lost significant elements of their crowns: tree 43 can only be retained if appropriately managed (given the high target that the A29 presents).

All retained trees will be protected in accordance with current standards and guidance. New driveway/ hard standing within the root protection area (RPA) of trees 35, 36, 37, 43, 56, 57, 60 & 61 will be constructed to a low invasive, porous, engineer designed specification where required & possible: details can be agreed via the discharge of conditions-see section 8.4 & Appendix E for additional detail. Areas within RPAs requiring ground protection are shown in Appendix A. Ground protection should be fit for purpose as per guidance in BS5837:2012 section 6.2.3.3. The preferred specification is provided by products such as dura base (<http://www.terrafirma.gb.com>) or eve trakway, which are widely available and approved by many local authorities.

There is good scope & provision for new planting in and around the site e.g. on the roadside boundary, on the eastern flank of the site and internally. On this basis the landscape impact of the proposals, which has been minimized, can be neutral or positive in time.

The proposed scheme is sound in arboricultural terms and the long term well being of the retained trees can be safeguarded in a sustainable manner.

Documents Supplied

- 2 Topographical survey of site from ADA Solutions Ltd, Land & Measured Building Surveyors, 33 Lower Wardown, Petersfield, Hants, GU31 4PA. Layout drawing reference 334/P/03 from MHD Architects, Downholm Studio, Lewes Rd, Ringmer, East Sussex, BN8 5QB. Revised layout Drg N° 334/P/03 from MHD Architects, Downholm Studio, Lewes Road, Ringmer, East Sussex, BN8 5QB.

1.0 Scope of Survey

- 1.1 The survey is concerned with the arboricultural aspects of the site only. Whilst all the significant trees have been assessed, this report does not include discussion in respect of all vegetation, including some small and insignificant trees such as shrubs and some small garden ornamental trees near the site. However general comments are made about lower storey trees and shrubs where appropriate.
- 1.2 Arbortrack Systems Ltd understand that the site does not stand within a conservation area. Trees 27, 36, 37 & 45 have now been made subject to a provisional tree preservation order (TPO) reference unknown.
- 1.3 No discussions took place between the surveyor and any other party.
- 1.4 The trees were inspected on the basis of the Visual Tree Assessment method expounded by Mattheck and Breloer (The Body Language of Trees, DoE booklet Research for Amenity Trees No. 4, 1994).
- 1.5 The survey was undertaken on 27th January & 6th February 2017 by James Bell in accord with British Standard 5837:2012 Trees in relation to design, demolition and construction Recommendations (BS5837:2012).
- 1.6 Pruning works will be required to be in accord with British Standard 3998:2010 Tree work (BS3998:2010).
- 1.7 Underground services near to trees will need to be installed in accord with the guidance given in BS5837:2012 together with the National Joint Utilities Group Volume 4: 2007 Guidelines for the planning, installation and maintenance of utility services in proximity to trees (Issue 2) (NJUG4).
- 1.8 The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

- 1.9 Where hard surfacing may be required in close proximity to trees BS5837:2012 and the principles of Arboricultural Practice Note 12 'Through the Trees to Development', AAIS 2007 (APN 12) with regard to 'No-Dig' surfacing will be employed, although incorporating improvements with the construction methods.
- 1.10 The survey does not set out the working specifications of tree protection measures and engineering and design features, but provides enough detail in principle to demonstrate the feasibility of the scheme.
- 2.0 Survey Method
- 2.1 The survey was conducted from ground level with the aid of binoculars.
- 2.2 No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
- 2.3 No soil samples were taken.
- 2.4 The height of each subject tree was estimated by eye.
- 2.5 The stem diameters (SD) were measured in centimetres at 1.5 metres above ground level for single stems, and just above the root flare for multi-stemmed trees.
- 2.6 The crown spreads were estimated by pacing or by using a Bosch DLE 50 Professional Laser Measure where deemed necessary.
- 2.7 The positions of the subject trees are plotted at Appendix A in a site & tree protection plan. Please note that the attached plan is for indicative purposes only.
- 3.0 The Site
- 3.1 The site stands on the eastern flank of the A29 Shripney Road in the village of Shripney, which itself lies just beyond the northern confines of Bognor Regis. A Premier Inn hotel stands to the north of the site with a residential property to the south. The local character of the wider area north of Bognor Regis is rural/agricultural. The site was formerly used as a small scale nursery and a disused greenhouse, shed and 'buildings' are scattered throughout the site (north of the footpath).
- 3.2 The site is approximately 0.6Ha in size & slopes marginally up to the rear (eastern) boundary. The site stands approximately 1.2-1.5m above the A29 road level. A deep drainage culvert runs along the frontage south of the entrance beside the carriageway and there is an unused entrance at the southern end of the frontage. The existing dwelling stands in the north west corner of the plot near the main entrance. Open fields stand to the east of the site and that boundary has been slightly raised into a bank.

- 3.3 Prominent surveyed trees stand on the flanks of the site and intermittently beside the public footpath that transects the site. Two significant Cedar of Lebanon (*Cedrus libani*), numbers 36 & 37, stand slightly more centrally beside a greenhouse-just to the north of the public footpath. The frontage is dominated by three large post mature Monterey cypress (*Cupressus macrocarpa*) numbers 42, 43 & 44 on the plan. Tree quality beyond the northern boundary is rather indifferent overall with a moderate quality sycamore (*Acer pseudoplatanus*) tree 6 & two moderate quality Leyland cypress (*Cupressocyparis x leylandii*) trees 9 & 10 and low quality western red cedar (*Thuja plicata*) trees 13, G14, 16 & G50 present with a slightly post mature hawthorn (15) amongst others. The landscape planting in the north east corner of the site (20a-31) is an attractive feature 'in toto' and tree 20, the moderate quality weeping willow (*Salix babylonica*) that stands alone in the north eastern quadrant of the site is prominent within the site.
- 3.4 Data from the iGeology app from the British Geological Survey suggests that it is likely that the site lies within an area of bedrock geology of Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation & Culver Chalk Formation. Superficial geology is River Terrace Deposits (Undifferentiated) 'Sand, Silt & Clay'. The prevailing soil conditions evidently provide a good medium for tree growth. Any potential for soil compaction (highly deleterious to root function) during development will depend on the proportion of clay present in the upper profile-the presence of clay in this location would appear to be possible. Further to confirmation of the precise soil type present a structural engineer may be able to advise further on the local geology and its implications, if any, for development.
- 4.0 Subject Trees
- 4.1 The BS5837:2012 categorisation of trees is explained in the key to the survey schedule in Appendix B, which provides full detail on surveyed trees. Seventy one trees or groups of trees were surveyed-see Appendix B for full details.
- 4.2 Of the seventy one surveyed trees or groups of trees on or near the site 'two are 'A' (high quality) category i.e. 36 & 37, twenty seven are 'B' (moderate quality) category i.e. 1, 2, 6, 9, 10, 20, 21b, 26-30, 33, 33a, 34, 35, 43, 45, 51, 52, 54, G55, 56, 57, 58, 60 & 61, thirty five are 'C' (low quality) category and seven trees are 'U' (unsuitable for retention quality) category i.e. 3, 13, 23-25, 42 & 44. The following sections provide detail on potentially significant trees:

- 4.3 Trees 42, 43, 44 are large post mature Monterey cypress (*Cupressus macrocarpa*) standing on the eastern roadside boundary of the site. Two have had large elements of their crowns removed (42 & 44) after storm damage in all likelihood. Tree 43 is in slightly better condition (although it has still undergone remedial work) than its neighbours. Tree 44 is in particularly poor condition with large hung up detached branches in the crown and deadwood. Removal or extensive remedial work is required on this tree irrelevant of development.
- 4.4 Trees 36 & 37 are two large mature Cedar of Lebanon (*Cedrus libani*) that are the principal arboricultural features within the site although slightly less visible to road users and other members of the public from directly outside the site due to being partially obscured by trees 22-24. Despite some broken branches as a result of storm damage these are fine ('A' category) trees with likely long useful life expectancies (>40 years). Both are now subject to a provisional TPO.
- 4.5 Tree 4 is a mature twin stemmed hybrid poplar standing near the entrance on the northern boundary of the site. The vigour of the tree appears to be good but the structural condition is less favourable with areas of included bark at the base between the two trunks. This species is likely to become extremely large given time and my feeling is that it is in the wrong location and that the noted defect is likely to shorten its useful life expectancy. On this basis the tree has been given a 'C' (low quality) category.
- 4.6 Trees 41 & 45 are mature ash (*Fraxinus excelsior*) standing beside the driveway and obscured from the A29 by the large Monterey cypress (44). Tree 41 has decay present on the stub of a basal sucker but the extent of any basal decay in the main trunk appears to be minimal and cannot be quantified without further investigation beyond the scope of this report. Tree 41 has been downgraded to 'C' (low quality) category on this basis. Tree 45 has no obvious major defects and is 'B' category (moderate quality) tree with a likely useful life expectancy of twenty plus years. This tree is now subject to a provisional TPO.
- 4.7 Tree 20 is an early mature free standing weeping willow (*Salix babylonica*) in the north east quadrant of the site. This is a 'B' category (moderate quality) tree with no obvious major defects noted.
- 4.8 Trees 33, 33a, 34 & 35 are early mature/ mature sycamores (*Acer pseudoplatanus*) that stand beside the footpath in the southern area of the site with 34 & 35 nearer the frontage. These are 'B' category (moderate quality) trees (34 & 35 are multi stemmed) with long useful life expectancies of > 40 years.

4.9 Tree 54 is a substantial mature beech that stands on the south eastern boundary of the site. The tree stands 17m tall and has a broad rounded crown (slightly asymmetrical to the south). The base could not be examined but no obvious major defects were noted. This is a 'B' category (moderate quality) tree with a long useful life expectancy of more than 40 years.

4.10 Trees in G55 are a largely early mature row of sycamores on the southern boundary of the site and with trees 56-58 form an effective screen to the neighbouring property to the south. The trees are unexceptional individually but their screening value is clear—they are a significant feature on the southern boundary of the site and as such have been given a 'B' (moderate quality) category.

4.11 Two early mature sycamores (60 & 61) are borderline moderate quality trees that are plainly visible from the A29 standing on raised ground beside hard standing associated with an old entrance to the site. These trees are in reasonable condition and have long useful life expectancies—hence the 'B' moderate quality categorisation.

5.0 The Proposal

5.1 The outline proposals are for the demolition of the existing dwelling & outbuildings and for construction of twenty new houses and flats plus a replacement dwelling (twenty one units in total of which 6 are affordable and 15 market value). The indicative layout provides for car parking (41 spaces), landscaping and associated infrastructure with a new access off the A29: the existing access will be closed.

6.0 Planning Integration

6.1 The following surveyed trees will be removed to allow or facilitate development or for landscape enhancement or for sound arboricultural management i.e. retention presents an unacceptable risk of failure (*): 5, 5a, 7, 8, 11, 11a, 13, 17-21, 21a, 21b, 23-25*, G27a, 28, 29, 31, 32a, 32b, 38-42, 44*, 46, 48, 49, G55 (partial) & G62 (partial). Excepting tree 20, a weeping willow, and three early mature ash (21b, 28, 29) these are all low quality trees. The loss of four moderate quality trees is acceptable in the context of these proposals: the landscape planting on the eastern boundary is retained and can readily be reinforced with further planting. The two cedars (36 & 37) that are the prominent arboricultural features of the site are retained (along with two other now TPO'd trees i.e. 27 & 45) and there is good scope for replacement planting on the roadside boundary, which is currently over reliant on post mature Monterey cypress (42, 43 & 44) that have all lost significant elements of their crowns: tree 43 can only be retained if appropriately managed (given the high target that the A29 presents).

- 6.2 Retained trees can be successfully integrated with the proposals if mitigation measures recommended in section 8 are carefully adhered to i.e. specialist low invasive driveway & hard standing within RPAs.
- 6.3 There is good scope & provision for new planting in and around the site. On this basis the landscape impact of the proposals, which has been minimized, can be neutral or positive in time.
- 7.0 Post Development Pressure
- 7.1 The orientation of the retained trees to the proposed development is likely to be acceptable in terms of daylight.
- 8.0 Tree Protection Measures
- 8.1 BS5837:2012 gives a RPA for each retained tree by reference to section 4.6 in the BS5837:2012. The RPA is usually described as a circle with a radius (Root Protection Area Radius (RPR)) of the prescribed distance within which no activity should occur, though the shape and position of the RPA can be modified by the arboriculturist to meet individual site conditions according to the probable distribution of tree roots. Intrusion into the RPA can usually take place only where the ground is adequately protected in accord with the requirements of section 7 of BS5837:2012.
- 8.2 Retained trees should be protected where appropriate & necessary by a tree protection barrier (TPB) comprising steel mesh panels of 1.8m in height ('Heras'). These panels should be mounted on a scaffolding frame as shown in Figure 2 of BS5837:2012. This TPB should be erected before any work commences on site, should remain 'in situ' undamaged for the duration of all work or each phase, and should only to be removed once all work is completed. The only exception is the completion of soft landscaping but if any excavations, however minor, are to be carried out as part of soft landscaping within RPAs, an arboricultural assessment must be carried out beforehand and any arboricultural protection measures incorporated. The TPB should carry waterproof warning notices denying access within the RPA. A suggested location for the TPB is shown on the tree protection plan in Appendix A. A reinforced specification is also provided in Appendix C and it is recommended that the use of fencing based on this more robust system is considered.
- 8.3 Areas within RPAs requiring ground protection are shown in Appendix A. Ground protection should be fit for purpose as per guidance in BS5837:2012 section 6.2.3.3. The preferred specification is provided by products such as dura base (<http://www.terrafirma.gb.com>) or eve trakway, which are widely available and approved by many local authorities.

- 8.4 No specialist foundations are required for main building footprints. New driveway/ hard standing within the RPA of trees 35, 36, 37, 43, 56, 57, 60 & 61 will be constructed to a low invasive, porous, engineer designed specification where required & possible: details can be agreed via the discharge of conditions-see Appendix E for additional detail. Surfaces should be porous to allow water infiltration & gaseous exchange. The preferred specification is provided by Wrekin Products Ltd: contact Roy Partington on 01543 440440 or email roy@wrekinproducts.com.
- 8.5 The former driveway must be lifted carefully from within the RPA of tree 45 by hand, using hand held power tools only. See Appendix F for further guidance. Replacement should be with good quality topsoil.
- 8.6 The surface water run off and soil drainage have not been studied. Given the site topography and soil type on site I do not foresee any likely detrimental effects on the retained trees in hydrological terms caused by the proposed development.
- 8.7 If any new service runs are envisaged that pass through RPAs then the provisions of BS5837:2012 and NJUG 4 should be employed and if necessary further arboricultural advice sought.
- 8.8 Given that the large majority of tree roots usually exist within the top 60cm of the soil profile it is important that level changes are avoided on the proposed site.
- 8.9 Many site activities are potentially damaging to trees e.g. material storage, parking and the use of plant. In this latter example particular care is required to ensure that the operational arcs of excavation and lifting machinery, including their loads, do not physically damage retained trees when in use.
- 9.0 Conclusion
- 9.1 Trees 5, 5a, 7, 8, 11, 11a, 13*, 17-21, 21a, 21b, 23-25*, G27a, 28, 29, 31, 32a, 32b, 38-42, 44*, 46, 48, 49, G55 (partial) & G62 (partial) will be removed to allow or facilitate development or for landscape enhancement or for sound arboricultural management. Excepting tree 20, a weeping willow, and three early mature ash (21b, 28 & 29) these are all low quality trees and their loss is acceptable.
- 9.2 Protection of all retained trees on site will be in accordance with the requirements of BS5837:2012: appropriate fencing will be employed as detailed in Appendices A & C. Sections of driveway & hard standing within the RPA of trees 35, 36, 37, 43, 56, 57, 60 & 61 will be constructed to a low invasive, porous, engineer designed specification where required & possible.

- 9.3 There is good provision for new planting in and around the site e.g. on the roadside (eastern) & western flanks & within the site. On this basis the landscape impact of the proposals is likely to be neutral and has the scope to be positive in time.
- 9.4 I have taken account of the information given to me and my own observations on site and I am satisfied that this scheme is arboriculturally sound and that the long term well being of the retained trees will be safeguarded in a sustainable manner.
- 10.0 Recommendations
- 10.1 The successful integration of the proposal with the retained trees will need to take account of the following points:
- i) Plan of underground services.
 - ii) Schedule of tree protection measures, including the management of harmful substances.
 - iii) Method statements for constructional variations with regard to tree proximity (e.g. foundations, surfacing and scaffolding) if required
 - iv) Site logistics plan to include storage, plant parking/ stationing, materials handling.
 - v) Tree works' felling, required pruning and new planting. All works must be carried out by a competent arborist in accord with BS3998:2010 and any other prevailing good professional practice.
 - vi) Site supervision' an individual e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. This person must:
 - a) be present on site for the majority of the time
 - b) be aware of the arboricultural responsibilities
 - c) have the authority to stop any work that is causing, or has the potential to cause harm to any tree
 - d) be responsible for ensuring that all site operatives are aware of their responsibilities toward trees on site and the consequences of the failure to observe these responsibilities.
 - e) make immediate contact with the local authority and/ or a retained arboriculturalist in the event of any tree related problems occurring, whether actual or potential.
- 10.2 As a matter of course these points will be resolved in consultation with and subject to the approval of the planning authority through their arboricultural officer.

10.3 The sequence of works should be as follows:

- i) erection of protective fencing & laying of ground protection
- ii) installation of underground services
- iii) main construction including 'low invasive' surfaces
- iv) removal of TPB
- v) soft landscaping

11.0 References

- | | |
|---|---|
| é | British Standards Institute. 2012. Trees in relation to design, demolition & construction-recommendations BS 5837:2012 HMSO, London. |
| é | Barlow JF & Harrison G. 1999. Shade By Trees, Arboricultural Practice Note 5, AAIS, Farnham, Surrey. |
| é | Lonsdale D 1999. Research for Amenity Trees No.7: Principles of Tree Hazard Assessment and Management, HMSO, London. |
| é | Matheny, N; Clark, J. R.1998. Trees and Development: A Technical Guide to Preservation of Trees during Land Development, International Society of Arboriculture, Champaign, IL. |
| é | Mattheck C. & Breloer H. 1994. Research for Amenity Trees No.4: The Body Language of Trees, HMSO, London. |

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Site: The Cottage

Drawing Title: Tree Protection Plan

Appendix: A

1:200 @ A1

Rev B
Aug 2017

Key:

Category A

Category B

Category C

Category U

Category

Root Protection Area

Crown Spread

Tree Number

Species

Category

Tree Protection Fencing

Ground Protection

No Dig Construction or Ground Protection and No Dig Thereafter (minimum area required)

Tree Proposed for Removal

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
1	Sycamore	17	4	2	500 #	6.0	Mature	Normal	Good	B	2	20+	Suckering from base Offsite on verge straddling boundary
2	Sycamore	14	6456	2.5	540	6.5	Mature	Normal	Good	B	2	20+	Offsite on verge but straddling boundary
3	Plum, Purple	5	3132	1.5	330	4.0	Mature	Poor	Poor	U			Decay at trunk base Poor specimen, low vitality
4	Poplar spp	25	7677	5	800	9.6	Mature	Normal	Good	C	2	20+	Minor deadwood lower crown Included bark in main stem unions Bifurcates @ 1.4m; could argue that removal would be acceptable
5	Western Red Cedar	18	2.5/3/2/2	1.5	340	4.1	Early Mature	Moderate	Good	C	2	20+	A sparser than normal canopy Asymmetry (minor)
5a	Western Red Cedar	9	1.5/2.5/1/1	1.5	180	2.2	Semi-mature	Moderate	Good	C	2	20+	
6	Sycamore	16	5	2.5	570 #	6.8	Mature	Normal	Good	B	2	20+	Remote survey: offsite

Site: The Cottage Shripney Road Bognor Regis

Appendix B

Date: 27th January 2017

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
7	Holly	7	2.5	1.5	337	4.0	Early Mature	Normal	Good	C	1	20+	Bark removed by sheep: may die
8	Walnut, Common	3	5333	1.5	382	4.6	Early Mature	Normal	Fair	C	1	20+	Terribly mauled Upper crown completely removed
9	Cypress, Leyland	19	4426	2.5	700 #	8.4	Mature	Normal	Good	B	2	20+	Minor deadwood Possible Coryneum canker No access to base
10	Cypress, Leyland	19	4462	2.5	580 #	7.0	Mature	Normal	Good	B	2	20+	Minor deadwood Possible Coryneum canker No access to base;
11a	Ash, Common	2.5	2.5/2.5/0/0	2	230	2.8	Semi-mature	Normal	Fair	C	1	10+	Trained as espalier
11	Eucalyptus	12	7744	2.5	380	4.6	Early Mature	Moderate	Good	C	2	20+	
12	Hawthorn, Common	7.5	4333	2.5	302 #	3.6	Mature	Normal	Fair	C	2	10+	Boundary tree

Site: The Cottage Shripney Road Bognor Regis

Appendix B

Date: 27th January 2017

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
13	Western Red Cedar	16	3232	4	400 #	4.8	Early Mature	Moderate	Poor	U			Decay in trunk Leaning to NE
14	Western Red Cedar	15	4944	2	438	5.3	Mature	Moderate	Fair	C	2	10+	Two branches extend into site & should be removed
15	Hawthorn, Common	9	5755	2	636 #	7.6	Post-Mature	Moderate	Poor	C	2	10+	Remote survey: offsite
16	Western Red Cedar	3.5	1/1.5/1/1	1.5	150	1.8	Young	Normal	Good	C	1	10+	Sheep damaged bark
17	Thuja spp	3	1	1.5	224	2.7	Early Mature	Normal	Fair	C	2	10+	Garden ornamental
18	Ash, Common	7.5	1.25	2.5	170	2.0	Semi-mature	Normal	Good	C	2	20+	
19	Spruce spp	4.5	1.5	1.5	170	2.0	Semi-mature	Normal	Good	C	2	20+	

Site: The Cottage Shripney Road Bognor Regis

Appendix B

Date: 27th January 2017

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
20	Willow, Weeping	16	6857	1.5	510	6.1	Mature	Normal	Good	B	2	20+	Decent enough tree
20a	Ash, Common	9	2123	2.5	170	2.0	Semi-mature	Normal	Good	C	2	20+	2 low quality elder & a twin stemmed ash near base
21	Western Red Cedar	12	2	3	750	9.0	Mature	Normal	Good	C	2	10+	
21b	Ash, Common	14	6646	3.5	360	4.3	Early Mature	Normal	Good	B	2	20+	Bacterial canker
21a	Ash, Common	12	2.5/2/2/3	3.5	200	2.4	Semi-mature	Normal	Good	C	2	20+	
22	Cypress, Monterey	22	7/7/7/10	4	1303 #	15.6	Post-Mature	Poor	Poor	C	2		Dying back (lead stem /centre) Deadwood
23	Cypress, Monterey	15	2		670	8.0	Mature	Dead	Poor	U			

Site: The Cottage Shripney Road Bognor Regis

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Appendix B

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
24	Cypress, Monterey	17	2		540	6.5	Mature	Dead	Poor	U			
25	Cypress, Monterey	14	4474	3	840	10.1	Mature	Poor	Poor	U			Leader is dead
26	Ash, Common	12	4	4	330	4.0	Early Mature	Normal	Good	B	2	20+	330
27	Oak, English	12	3444	2	390	4.7	Early Mature	Normal	Good	B	2	>40	TPO tree
28	Ash, Common	14	3336	3	340	4.1	Early Mature	Normal	Good	B	2	20+	
29	Ash, Common	14	5645	3	350	4.2	Early Mature	Normal	Good	B	2	20+	
30	Ash, Common	14	5652	4.5	360	4.3	Early Mature	Normal	Good	B	2	20+	

Site: The Cottage Shripney Road Bognor Regis

Appendix B

Date: 27th January 2017

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
31	Plum, Purple	4.5	3323	1.5	330	4.0	Early Mature	Normal	Fair	C	2	10+	Topped
32	Ash, Common	5	5442	1.5	400 #	4.8	Early Mature	Normal	Fair	C	2	20+	Topped & reflushed
32a	Birch, Silver	6	3221	0.5	190	2.3	Semi-mature	Moderate	Fair	C	2	10+	Topped @ 3m
32b	Birch, Silver	6	2.5	1	219	2.6	Early Mature	Moderate	Fair	C	2	10+	Topped @ 3m
33a	Sycamore	15	2452	2.5	400 #	4.8	Early Mature	Normal	Good	B	2	20+	Asymmetry (major) Remote survey: offsite Treat as group with 33
33	Sycamore	15	5547	2.5	612 #	7.3	Early Mature	Normal	Good	B	2	20+	Asymmetry (major) Remote survey: offsite Treat as group with 33a
34	Sycamore	15	6	5	566 #	6.8	Mature	Normal	Good	B	2	20+	Ivy clad

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

BS5837:2012 Tree Survey Schedule

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
35	Sycamore	15	5	4	635 #	7.6	Mature	Normal	Good	B	2	20+	Ivy clad
36	Cedar, Atlantic	28	9/9/4/10	2	920	11.0	Mature	Normal	Fair	A	1,2	>40	Deadwood Asymmetry (major) Storm damaged but rather fine tree; TPO tree
37	Cedar, Atlantic	28	7773	2	670	8.0	Mature	Normal	Fair	A	1,2	>40	Deadwood Asymmetry (major) Storm damaged but rather fine tree; TPO tree
38	Birch, Silver	13	4434	2.5	500	6.0	Mature	Normal	Fair	C	2	10+	Topped @ 8m & reflushed; C category multiple stem 7m laburnum at base
39	Western Red Cedar	16	1.5/4/3/3	2	570	6.8	Mature	Normal	Fair	C	2	20+	Leaning (significantly) Borderline B category
40	Western Red Cedar	17	2.5/3/3/3	4	510	6.1	Mature	Normal	Fair	C	2	20+	Dying back (lead stem /centre) Bifurcates @ 2.75m
41	Ash, Common	22	6784	5	570	6.8	Mature	Moderate	Fair	C	2	10+	Decay at trunk base Deadwood (minor) throughout crown Ganoderma bracket @ base; Flinv option

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

BS5837:2012 Tree Survey Schedule

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
42	Cypress, Monterey	18	4726	1.5	1300 #	15.6	Post-Mature	Moderate	Poor	U		<10	Deadwood High target to west Large sections of the crown removed; power lines through lower crown
43	Cypress, Monterey	20	6566	4	1300 #	15.6	Post-Mature	Normal	Fair	B	2	20+	Deadwood Two leaders removed @ 8m Power lines through lower crown
44	Cypress, Monterey	18	9768	5	1200 #	14.4	Post-Mature	Poor	Poor	U		<10	Major deadwood Major hangers Large sections of crown removed
45	Ash, Common	23	7864	4	600	7.2	Mature	Normal	Good	B	2	20+	Daldinia on stub @ 7/8m Lines under crown; TPO tree
46	Cypress, Monterey	130	4544	4	440	5.3	Early Mature	Normal	Fair	C	2	>40	Asymmetry (major)
G47	Bay	7	2.5	1.5	201	2.4	Early Mature	Normal	Good	C	2	20+	3 trees in group
48	Plum, Myrobalan	7	4222	3	290	3.5	Early Mature	Moderate	Fair	C	2	10+	

Site: The Cottage Shripney Road Bognor Regis**Appendix B****Date:** 27th January 2017**BS5837:2012 Tree Survey Schedule****Surveyor(s):** James Bell**Ref:** jwmb/rpt3/thecottage/PI

Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
49	Plum, Myrobalan	8.5	2/2.5/1/2	3	260	3.1	Early Mature	Moderate	Fair	C	2	10+	Other smaller trunks between 49 & 48
G50	Western Red Cedar	13	2.5	0.5	200 #	2.4	Semi-mature	Normal	Good	C	2	10+	A sparser than normal canopy Offsite Western red cedar & Leyland cypress
51	Maple, Field	10	5346	2.5	409 #	4.9	Mature	Normal	Good	B	2	20+	Remote survey
52	Maple, Field	14	4736	3	483 #	5.8	Mature	Normal	Good	B	2	20+	Remote survey
53	Bay	7	1122	1.5	140	1.7	Semi-mature	Normal	Good	C	2	20+	Suckering from base
54	Beech, Common	17	9597	3	900 #	10.8	Mature	Normal	Good	B	1	>40	Base within shed
G55	Sycamore	14	5322	3	326 #	3.9	Early Mature	Normal	Good	B	2	20+	

Site: The Cottage Shripney Road Bognor Regis

Appendix B

Date: 27th January 2017

BS5837:2012 Tree Survey Schedule

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
56	Sycamore	14	4422	4	794	9.5	Mature	Normal	Good	B	2	20+	56
57	Sycamore	14	4422	4	422	5.1	Mature	Normal	Good	B	2	20+	57
58	Sycamore	14	4422	4	408	4.9	Mature	Normal	Good	B	2	20+	58
G59	Elm	8	1	0.5	150	1.8	Young	Normal	Good	C	2	20+	Group of 7 young trees
60	Sycamore	14	2444	2.5	490	5.9	Early Mature	Normal	Good	B	2	20+	Ivy clad
61	Sycamore	14	3266	3.5	484	5.8	Mature	Normal	Fair	B	2	20+	Ivy clad
G62	Hazel, Common	8	2	1.5	120	1.4	Early Mature	Normal	Good	C	2	20+	Multiple stem stools

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

BS5837:2012 Tree Survey Schedule

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Crown Spread	Ground Clearance	Stem Diameter	Protection Radius	Age Class	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
G63	Sycamore	2	0.25	0.5	311 #	3.7	Early Mature	Normal	Good	C	2	20+	Topped @ 1.75m

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd



Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No.	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
3	Plum, Purple	5	330	3132	U		Fell (option)	Decay at trunk base Poor specimen, low vitality Recommended husbandry 2
5	Western Red Cedar	18	340	2.5/3/2/2	C	2	Fell	A sparser than normal canopy Asymmetry (minor) To allow landscape enhancement
5a	Western Red Cedar	9	180	1.5/2.5/1/1	C	2	Fell	To allow landscape enhancement
7	Holly	7	337	2.5	C	1	Fell	Bark removed by sheep: may die To allow landscape enhancement
8	Walnut, Common	3	382	5333	C	1	Fell	Terribly mauled Upper crown completely removed To permit development

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
11a	Ash, Common	2.5	230	2.5/2.5/0/0	C	1	Fell	Trained as espalier To permit development
11	Eucalyptus	12	380	7744	C	2	Fell	To permit development
13	Western Red Cedar	16	400	3232	U		Fell: confirm ownership	Decay in trunk Leaning to NE Recommended husbandry 2
14	Western Red Cedar	15	438	4944	C	2	Remove 2 branches	Two branches extend into site & should be removed Recommended husbandry 2
17	Thuja spp	3	224	1	C	2	Fell	Garden ornamental To permit development

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B Recommended Tree Works

Arbortrack Systems Ltd



Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No.	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
18	Ash, Common	7.5	170	1.25	C	2	Fell	To permit development
19	Spruce spp	4.5	170	1.5	C	2	Fell	To permit development
20	Willow, Weeping	16	510	6857	B	2	Fell	Decent enough tree To permit development
21	Western Red Cedar	12	750	2	C	2	Fell	To permit development
21b	Ash, Common	14	360	6646	B	2	Fell	Bacterial canker To permit development

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd



Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
21a	Ash, Common	12	200	2.5/2/2/3	C	2	Fell	To permit development
22	Cypress, Monterey	22	1303	7/7/7/10	C	2	DWD Aerial inspection to inform further works	Dying back (lead stem /centre) Deadwood Recommended husbandry 2
23	Cypress, Monterey	15	670	2	U		Fell	To allow landscape enhancement
24	Cypress, Monterey	17	540	2	U		Fell	To allow landscape enhancement
25	Cypress, Monterey	14	840	4474	U		Fell	Leader is dead To allow landscape enhancement

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
28	Ash, Common	14	340	3336	B	2	Fell	To allow landscape enhancement
29	Ash, Common	14	350	5645	B	2	Fell	To allow landscape enhancement
31	Plum, Purple	4.5	330	3323	C	2	Fell	Topped To allow landscape enhancement
32a	Birch, Silver	6	190	3221	C	2	Fell	Topped @ 3m To allow landscape enhancement
32b	Birch, Silver	6	219	2.5	C	2	Fell	Topped @ 3m To allow landscape enhancement

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd



Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
36	Cedar, Atlantic	28	920	9/9/4/10	A	1,2	DWD	Deadwood Asymmetry (major) Storm damaged but rather fine tree; TPO tree Recommended husbandry 2
37	Cedar, Atlantic	28	670	7773	A	1,2	DWD	Deadwood Asymmetry (major) Storm damaged but rather fine tree; TPO tree Recommended husbandry 2
38	Birch, Silver	13	500	4434	C	2	Fell	Topped @ 8m & reflushed; C category multiple stem 7m laburnum at base To facilitate development
39	Western Red Cedar	16	570	1.5/4/3/3	C	2	Fell	Leaning (significantly) Borderline B category To permit development
40	Western Red Cedar	17	510	2.5/3/3/3	C	2	Fell	Dying back (lead stem /centre) Bifurcates @ 2.75m To permit development

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
41	Ash, Common	22	570	6784	C	2	Fell	Decay at trunk base Deadwood (minor) throughout crown Ganoderma bracket @ base; FInv option To permit development
42	Cypress, Monterey	18	1300	4726	U		Fell	Deadwood High target to west Large sections of the crown removed; power lines through lower crown To permit development
43	Cypress, Monterey	20	1300	6566	B	2	DWD Aerial inspection to inform further works	Deadwood Two leaders removed @ 8m Power lines through lower crown Recommended husbandry 2
44	Cypress, Monterey	18	1200	9768	U		Fell	Major deadwood Major hangers Large sections of crown removed To permit development
46	Cypress, Monterey	130	440	4544	C	2	Fell	Asymmetry (major) To permit development

Site: The Cottage Shripney Road Bognor Regis

Date: 27th January 2017

Appendix B

Recommended Tree Works

Arbortrack Systems Ltd

Surveyor(s): James Bell

Ref: jwmb/rpt3/thecottage/PI



Tree No.	English Name	Height	Stem Diameter	Crown Spread	BS Cat	Sub Cat	Recommended Works	Comments / Reasons
48	Plum, Myrobalan	7	290	4222	C	2	Fell	To allow landscape enhancement
49	Plum, Myrobalan	8.5	260	2/2.5/1/2	C	2	Fell	Other smaller trunks between 49 & 48 To allow landscape enhancement
G55	Sycamore	14	326	5322	B	2	Fell (partial)	To permit development
G62	Hazel, Common	8	120	2	C	2	Fell (partial)	Multiple stem stools To permit development

Appendix B

Notes on Tree Survey Schedule:

- ¿ Height describes the approximate height of the tree measured in metres from ground level.
- ¿ The Crown Spread refers to the crown radius in metres from the stem centre and is expressed as an average of N S E W aspect if symmetrical.
- ¿ Ground Clearance is the height in metres of crown clearance above adjacent ground level.
- ¿ Clear Stem Height is the distance between trunk base and first branch separation measured in metres.
- ¿ Stem Diameter is the diameter of the stem measured in millimetres at 1.5m from ground level for single stemmed trees. See section 4.6 for detail of treatment for multistems.
- ¿ Protection Radius is a radial distance in metres measured from the trunk centre.
- ¿ Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/ weak), Dead (dead or dying tree).
- ¿ Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present.
- ¿ B.S. Category refers to (British Standard 5837:2012 Table 1) and refers to tree/ group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Unsuitable for Retention.
- ¿ Sub Cat refers to the retention criteria values where 1 is mainly arboricultural qualities, 2 is mainly landscape qualities and 3 is mainly cultural values including conservation.
- ¿ Useful Life is the tree's estimated remaining contribution in years.
- ¿ First Significant Branch (FSB) is the height of the first significant branch above ground level taken at the trunk separation point.

Notes on Recommended Tree Works:

1, 2,3	Urgent (ASAP), Standard (6-12 months), Non-Urgent (2-3 years)
CB	Cut back to boundary/ clear from structure
CL#	Crown lift to given height in meters
CT#%	Crown Thinning by identified %
CCL	Crown clean (remove deadwood/ crossing & hazardous branches & stubs)
CR#%	Crown Reduce by given maximum percentage (of outermost branch & twig length)
DWD	Remove deadwood
Fell	Fell to ground level
FInv	Further Investigation (generally with decay detection equipment)
Pol	Pollard or re-pollard
Mon	Monitor ongoing condition (annually by staff/ owners & every 2-3 years by consultant). Svr Ivy/ Clr Bs Sever Ivy/ clear base and re-inspect base/ stem for concealed defects

Appendix C Tree Protective Fencing Detail (from BS5837:2012)

Figure 2 Default specification for protective barrier

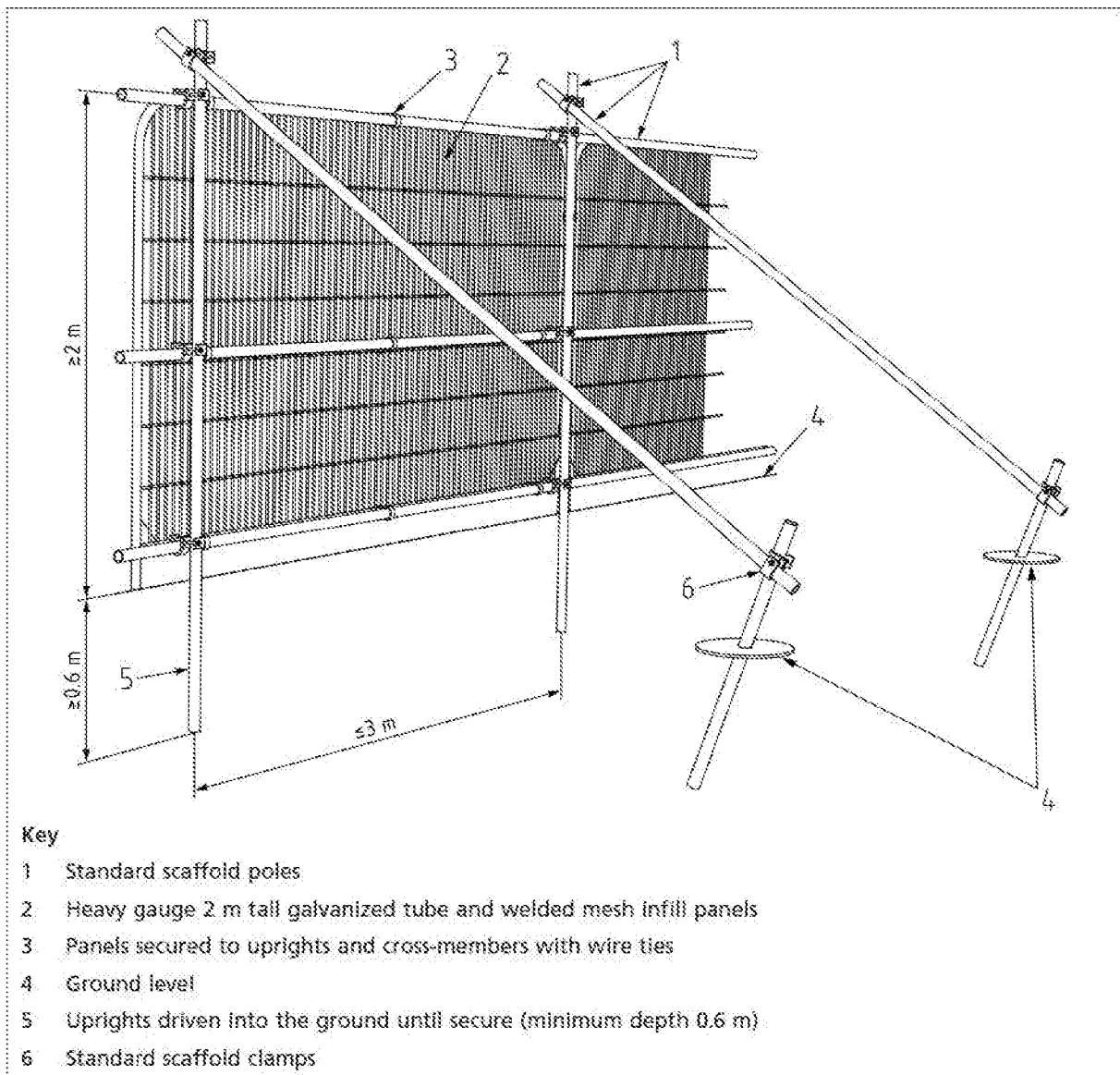
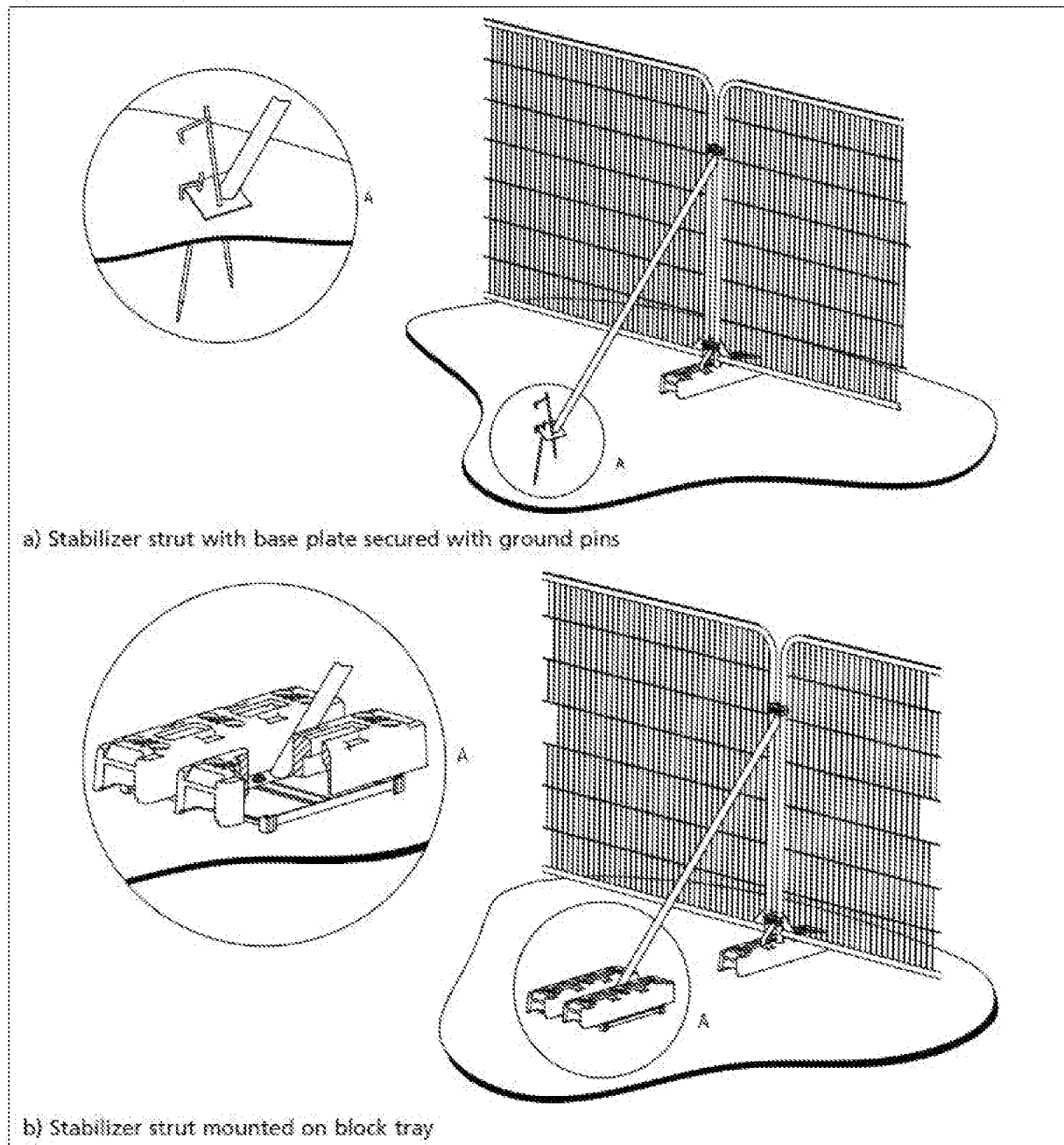
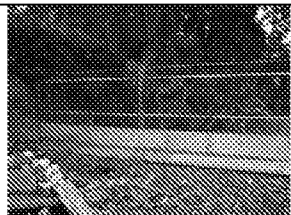
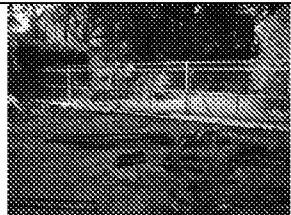
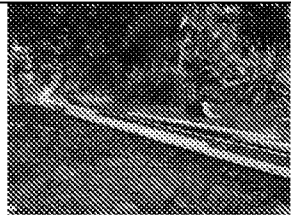
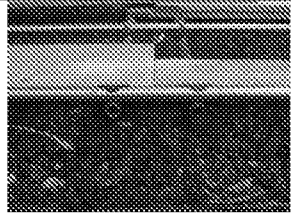
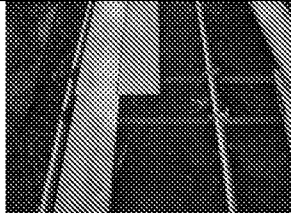


Figure 3 Examples of above-ground stabilizing systems





Illustrative example of strengthened tree RPA ground protection set forward of protective barrier.

An adaptation of BS 5837: 2005 Trees in Relation to Construction (Figure 3.)

Installation by Tree Projects 2008.



Appendix D

1.0 Glossary of Terms & Abbreviations

Canker	Disease damaged area of a tree, usually caused by fungus or bacteria.
Co-dominant Stem	A stem which has grown in direct competition to the main stem and which has formed a substantial size influencing the appearance of the tree.
Crown Lift	The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance underneath for vehicles etc.
Crown reduce	The reduction of a tree's height or spread while preserving its natural shape.
Crown thin	The removal of some of the density of a tree's crown, usually 5-25% allowing more light through its canopy and reducing wind resistance.
Deadwood	The removal of all dead, dying and diseased branches from a tree. Also, wood which is dead.
Dieback	Where branches are beginning to show signs of death usually at the tips in the crown.
Epicormic shoots	Small branches that grow in uncharacteristic clusters around the base or the stem of a tree, usually as a result of bad pruning or some other stress factor.
Formative pruning	The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation is aimed at reducing the potential for future weaknesses or problems within the tree's crown.
Included bark	Where the bark on two adjoining branches or stems is growing tight together, forming a joint with limited physical strength.
Pollarding	A method of tree management in which the main trunk of the tree is cut at about 4m, and the resulting branches are then cropped on a regular basis.
Remedial pruning	The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's crown. Sometimes referred to as crown cleaning.
Topping	Topping is a form of pruning that removes terminal growth leaving a 'stub' cut end. Topping causes serious health problems to a tree.

2.0 General Guidelines

- 2.1 All work must be to BS 3998:2010 – Tree work-Recommendations
- 2.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors, and should be covered by adequate public liability insurance.
- 2.3 Any defects seen by a contractor or the client that were not apparent to the consultant must be brought to the consultant's attention immediately.
- 2.4 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this method statement are carried out under the supervision of the designated arboriculturist.
- 2.5 It is advisable to have trees inspected by designated arboriculturist regularly. On this site it is recommended that these inspections are made every year.

Appendix E

No Dig' Driveway Construction-Guidance Notes

- ¿ Install F4M Geotextile Separation Fabric over cleared levelled ground surface N.B. ensure that existing material is carefully removed and levels altered minimally: infill with salt free sharp sand where necessary.
- ¿ The cellular confinement system (e.g. 1 x 200 mm 'ProtectaWeb' cellular confinement system subject to site requirements & manufacturer's recommendations) is then laid on the membrane and adjacent panels are stapled together. Place staking pins to maintain 'ProtectaWeb' cells open.
- ¿ Panels are then backfilled with 200mm depth of no-fines 20-40mm particle size stone (clean granular fill).
- ¿ The construction should ideally be undertaken between May and October when the ground is sufficiently dry to prevent compaction occurring. The sub-base should be flat, that is to say any small hollows should be filled with sharp sand to bring up to surrounding levels.
- ¿ The geotextile should be laid out and not trafficked across at any time.
- ¿ The 'ProtectaWeb' confinement system should be laid out and worked on as the contractor progresses across the length of the area. The panels are sequentially filled with the no-fines aggregate, each serving as a platform for the next section.
- ¿ There is no need at any time for the ground to be crossed by heavy traffic. The particles/gravel pieces are transported from the on site storage area over the freshly-laid confinement system BY WHEELBARROW and installed BY HAND. There will be no trespass on to the root protection area beyond the installation of the confinement system itself.
- ¿ The infill can then be rolled to compact the particles and create a tight interlock across the cells. The finished surface can then be laid on top. Again no fines material to be used: porous tarmac is recommended for this site given the level changes that are required.
- ¿ New kerb lines may be cast into the ProtectaWeb cells.
- ¿ During the main construction phase a wearing course should be placed over the 'Protectaweb' system.
- ¿ For technical data on the ProtectaWeb system always refer to the manufactures guidelines for design and implementation.

Further technical advice can be gained from the manufacturer(s): Wrekin Products
www.wrekinproducts.com. Contact Roy Partington on 01543 440440 or email roy@wrekinproducts.com

ProtectaWeb Method Statement

For the installation of ProtectaWeb Tree Root Protection System

Introduction

The Wrekin Tree Root Protection System is available in 4 different depths for varied traffic loadings, each site should have a specific design detailed to ensure the correct depth of product is used.

However, unless the existing ground conditions contain very weak soils and have a low CBR the the following can apply:

- Footpath System- Geogrid and Geotextile combination with Asphalt/Resin- for Pedestrians and Cycleways, no vehicular traffic.
- 75mm- For Pedestrians Cycleways and Vehicles up to 1.5tons
- 100mm- For Cars, 4 wheel drives, vans etc up to 6tons
- 150mm- For Fire engines, removal vehicles and dust carts up to 20-30tons
- 200mm- For Construction vehicles, cranes etc 40tons and all above.

No dig System

Material List:

- ProtectaWeb 3 Dimensional Cellular Confinement System
- Root-Tex 30 minimum separation and protection fleece
- Root-Tex 10 minimum separation geotextile
- Steel 700mm staking pins
- Stapler and Staples/heavy cable ties
- 4/20mm or 40/20mm Clean Angular Stone to Bs EN 13242 and 12620
- Finish porous surfacing materials are preferable

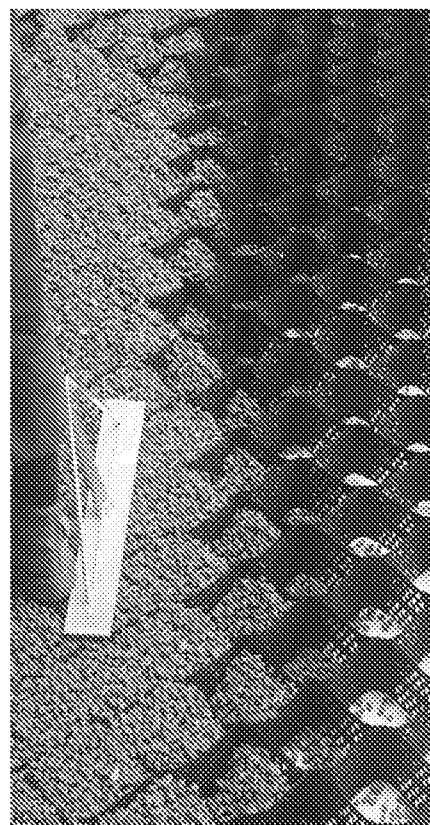
Stage 1-Ground Preparation

- Remove surface vegetation to treat with suitable herbicide to level-under the supervision of the project Arboriculturist.
- Fill any hollows that may be in the exposed ground with no fines 4/20mm clean angular stone.
- Place Root-Tex 30 Geotextile over the area to be protected ensuring laps with a minimum of 300mm.
- Mark out the area to be protected with edging detail. For Example: Timber boards.

Stage 2-Installation of ProtectaWeb TRP

- Roll out Root-Tex 30 Geotextile to cover the area to be protected.
- Insert 4 equally spaced steel pins along the the width of the panel.
- Expand the panel over the Root-Tex 30 and the pins, extend to the required length, then pin across the opposite panel end.
- Pin along the length of the panel each side.
- If full panels are not being used then ensure the cells have been expanded to their full dimension.
- Staple or cable tie any adjacent panels together.

The ProtectaWeb panels can be cut to shape if required with a heavy duty Stanley Knife.



1. Wrekin Products Ltd is continually seeking to improve our products and therefore reserves the right to alter product specifications without prior notice.
2. It is the responsibility of all users to satisfy themselves that the above data is current.
3. Wrekin cannot be held responsible for the performance of these products as conditions of use are beyond our control.

Stage 3-Filling the ProtectaWeb

Using 4/20mm or 40/20mm clean angular stone to Bs EN 13242 and 12620 (depending on the cell depth being used)

- Fill the cells of the ProtectaWeb with a 4/20mm or 40/20mm clean angular stone.
- Allow 25mm overfill for any settlement of the stone into the cells.
- If the area is to be trafficked immediately, slightly increase the amount of surcharge overfill to a maximum of 50mm over the ProtectaWeb with 4/20mm or 40/20mm clean angular stone.

Stage 4-Finish Surfacing Details

The ProtectaWeb TRP system can be surfaced with the materials listed below:

Finish 1- Block Paving

- Place Root-Tex 10 separation fabric over the filled ProtectaWeb
- Lay sand/gravel bedding material as per to manufacturers recommendations
- Place porous/standard blocks as per manufacturers instructions

Finish 2-Porous and standard Asphalt

- Slightly surcharge the ProtectaWeb with 25mm of 4/20mm or 40/20mm clean angular stone
- Place hot Asphalt as per to manufacturers instructions

Finish 3- Resin Bound Gravels

- Place Root-Tex 20 separation fabric over the filled ProtectaWeb
- Lay Asphalt carpet and resin bound gravel to the required thickness and as per the manufacturers instructions

Finish 4-Loose Gravel

- Option 1- Slightly overfill the ProtectaWeb with the clean angular stone
- Option 2- Place a 25mm thick decorative stone on top of the filled ProtectaWeb

Finish 5- CellTrack Gravel Retention System

- Place Root-Tex 10 separation geotextile over the filled ProtectaWeb
- 20mm bedding layer of 5mm single sized stone and lightly tamp
- Lay CellTrack porous pavers and fill with a 6-10mm decorative stone

Finish 6- CellTrack Grass Protection System

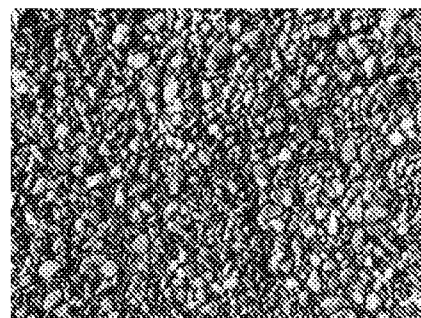
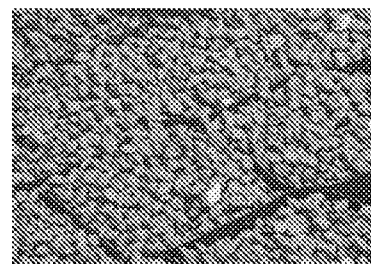
- Place Root-Tex 10 separation geotextile over the filled ProtectaWeb
- 70mm of Rootzone bedding layer (60% sand/40% soil) and lightly tamp
- Lay CellTrack porous pavers and fill with Rootzone mix, seed accordingly (please allow 4-6 weeks for the seed to germinate before trafficking)

NEW Finish 7- Trial-Flex

- Place Root-Tex 10 separation geotextile over the area for pedestrian protection.
- Roll over Egrid on top of the Geotextile (strength based per application)
- Cover to a depth of 50mm of TrialFlex porous flexible resin bound finish.

Finish 8- Concrete

- Place Root-Tex 10 separation Geotextile over the filled ProtectaWeb
- Cast the concrete slab over the Geotextile



1. Wrekin Products Ltd. is continually seeking to improve our products and therefore reserves the right to alter product specifications without prior notice.
2. It is the responsibility of all users to satisfy themselves that the above data is current.
3. Wrekin cannot be held responsible for the performance of these products as conditions of use are beyond our control.

Appendix F

Method Statement for the uptake of hard surfacing near to trees

1/. The uptake of the existing surfacing should be carried out from outside the root protection area (RPA) whenever possible and from within the footprint of the existing surfacing or building where within the RPA of the tree(s).

2/. The excavation of the material must not extend into the soil underneath. In practical terms the bucket of the excavator must be used so that the teeth are horizontal in order that disturbance of the underlying soil is kept to an absolute minimum.

3/. The rubble must not be stockpiled within the RPA of the tree and must be exported without crossing the RPA.

4/. Due care and planning must be taken to ensure that the operational arcs of excavators do not damage the crowns of retained trees.

5/. Where new surfacing is to be installed, if the depth of the old surface is insufficient, the wearing surface may need to be higher than existing in order to accommodate the appropriate thickness. There may be a requirement for a geo-textile membrane to be laid on the soil surface, but this is an engineering matter dependent on soil type. The separation is beneficial to root development.

6/. Where the old surface is taken up and not replaced the infill should be of good quality topsoil laid without compaction.