

Report By: KJF Consultancy Ltd

Title: Tree Report to BS 5837: 2012 Trees in relation to design, demolition and construction - Recommendations

Reason for the Report: Supporting information for a planning application and proposed development on land at Glenwood House, Copse Lane, Hayling Island PO11 0QB

Report Ref: TR.16.02.17.01

Produced: 16th February 2017

Client: E Hewitt

Architect: M Holman, HRP Architects Ltd

Local Planning Authority: Havant Borough Council

Proposal: Extensions to the existing dwelling, demolish stables and replace on same footprint, replace shed with outbuilding, create new access

LPA Reference and Case Officer: Not applicable at the time of the report

Report Version:	Version No.1 Produced 16th February 2017
Prepared By:	Karl Forkasiewicz HND (Arb) MICFor MArborA ACIEEM CEnv MCIQB 
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All information contained within this report relating to the condition of trees was considered correct at the time of producing this report. However, it must be understood that future gales^[1] can damage branches and make them unsafe, and cause trees to become unsafe, particularly when in conjunction with heavy rain^[2]. An Arboricultural Consultant should be contacted if you have concerns about the condition of the trees subsequent of the date of this report.

Director - Karl Forkasiewicz



[1] Beaufort Wind Scale Force ≥ 8 .

[2] 4mm h^{-1} .

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Appendix 1. Tree Protection Plan.

1. Introduction

- 1.1 This report has been produced to BS 5837: 2012 Trees in relation to design, demolition and construction - Recommendations (referred to as BS 5837) as supporting information for the proposed development. BS 5837 gives recommendations and guidance on the relationship between trees and design, demolition and construction processes. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures. The standard is applicable if planning permission is required or not.
- 1.2 The report contains a scaled A1 colour CAD Tree Protection Plan (referred to as the plan) that contains a tree survey schedule and an Arboricultural Method Statement (referred to as AMS) to BS 5837. Where necessary, I have provided specifications within the plan/AMS, and included any relevant information regarding materials or products that I have recommended to be used adjacent to trees. The plan is based on the Architect's proposed site layout plan (referred to as the plan) received, and is attached at appendix 1.
- 1.3 To assist any interested party (e.g. local residents/neighbours) that may read this report, a glossary and explanation of the terms used within this report, the plan and AMS, is contained at the end of the report (other relevant terms that may be of interest to the reader are also provided).

- 1.4 The plan has been produced in such a way that if planning permission is granted, it is the only document that will be required on site (without the need for a lengthy report). If planning permission is granted, the plan should form part of the Contract Documentation and copies should be kept on site.

2. The Authors' Credentials

2.1 Arboriculture

- Holds the Higher National Diploma in Arboriculture (HND Arb), a Qualifications and Credit Framework (QCF) Level 5 qualification;
- Professional Member of the Institute of Chartered Foresters (ICF);
- ICF Registered Consultant;
- Chartered Arboriculturist (MICFor);
- Professional Member of the Arboricultural Association (MArborA);
- 9 years' experience as a Local Authority Tree Officer;
- 12 years' experience as an Arboricultural Consultant.

2.2 Ecology

- Professional Member of The Chartered Institute of Ecology and Environmental Management (ACIEEM);
- Chartered Environmentalist (CEnv);
- Registered with Natural England and Licenced (Level 2 Bat Survey Class Licence) to disturb and handle bats;
- Five years' experience as an Ecological Consultant.

- 2.3 The Author is also a Professional Member of the Chartered Institute of Building (MCIOB).

- 2.4 Details of the authors' Insurance, and Continual Professional Development for the last 2 years,' can be provided on request. If requested, some of the details within the information may be redacted to comply with the Data Protection Act.

3. Tree Survey Methodology

- 3.1 To ascertain the physiological and structural condition of trees growing adjacent to the proposed development, the first part of the survey consisted of Visual Tree Assessments^[3] (abbreviated to VTA) from ground level. This also enables the trees to be categorised in accordance with BS 5837, and to give appropriate tree management recommendations - regardless of a development. The tree survey schedule within the plan contains the tree survey details. Trees growing on adjacent land were assessed from the site only, and stem diameters were estimated, in accordance with BS 5837. Decay Detection Equipment^[4] was not used; samples of pathogens or pests were not taken for analysis. Use of such equipment may be recommended within the tree survey schedule; if a pathogen or pest cannot be identified, it may be recommended to send these for analysis.
- 3.2 Bats and birds are closely associated with trees (birds are also closely associated with hedges and shrub masses), often dependant on them as a habitat. All UK species of bats and their roosts are protected by law; bats are European Protected Species. All wild birds, their eggs and their nests are protected by law. The survey did not include an assessment for bat activity/bats, or nesting birds (if the survey was carried out during the bird-nesting season).

[3] C. Mattheck, K. Bethge, K. Weber. The Body Language of Trees. Encyclopedia of Visual Tree Assessment. 2015.

[4] E.g. the IML Resi PD, Resi FSX, and Resi F, the Picus Sonic Tomography Systems and the PICUS TreeMotion Sensor system (TMS).

- 3.3 However, any bird nests or Potential Roost Features (abbreviated to PRF) seen within trees during the VTAs, are noted within the tree survey schedule, and recommendations are given. PRF must be assessed by a competent person/licenced bat worker, in accordance with BS 8596: 2015 Surveying for bats in trees and woodland. Guide.

4. Desk Study

- 4.1 Information contained within this report regarding Tree Preservation Orders (abbreviated to TPO) and Conservation Areas was obtained from the LPA website (if available) or through contacting the LPA.

5. Limitations

- 5.1 I was not given permission to enter onto any adjacent land to carry out VTAs on trees (only relevant if trees growing on adjacent land are close to the proposed development). The survey was not carried out during the bird-nesting season (1st March to 31st August).

6. Summary and Conclusion

6.1 There are three trees (T1 to T3 within the plan) growing adjacent to the proposed development. Brief details of the trees are below.

Tree No:	Common Name:	Life Stage:	Expected Remaining Years:	BS 5837 Category Colour:	Brief Comments:	Tree Work Required to Implement the Proposal:
T1	Common oak	M	≥ 20	B2/Blue	Leaning stem/historical root plate displacement - a BS 5837 moderate quality tree.	No.
T2	Common oak	M	≥ 40	A2/Green	An important landscape tree - a BS 5837 high quality tree.	No.
T3	Common oak	M	≥ 40	A2/Green	An important landscape tree - a BS 5837 high quality tree.	No.

Table 1. Brief details of trees growing adjacent to the proposed development.

6.2 I contacted the LPA to ascertain if a TPO protects any of the trees, and if the site lies within a Conservation Area; TPOs and Conservation Areas afford protection to trees and are constraints on a development. I was advised that no TPOs protect any of the trees, and that the site does not lie within a Conservation Area.

6.3 No shrub masses, hedges or hedgerows will be affected by the proposed development.

6.4 In my opinion, if the plan and AMS are adhered to, the proposed development is acceptable in tree terms.

6.5 If planning permission is granted, the plan and the AMS can be enforced by the LPA through an appropriate condition attached to the decision notice e.g. *All development works must be carried out in accordance with the approved Tree Protection Plan and Arboricultural Method Statement by KJF Consultancy Ltd. Non-compliance would breach a planning condition and would result in enforcement action.*

6.6 At the time of this report, future pressure to prune or remove trees subject to a TPO will not arise if planning permission is granted.

7. Recommendations

7.1 The owner of the site should advise adjacent landowners of any recommendations within the tree survey schedule that are given for their trees.

7.2 This report should be forwarded to the LPA as supporting information for the planning application. If planning permission is granted the LPA should attach an appropriate planning condition to the Decision Notice e.g. *All development works must be carried out in accordance with the approved Tree Protection Plan and Arboricultural Method Statement by KJF Consultancy Ltd. Non-compliance would breach a planning condition and could result in enforcement action.*

7.3 If planning permission is granted, the appointed Contract Manager will be responsible for complying with the plan and AMS.

Glossary and Explanation of Terms (in alphabetical order)

Access Facilitation Pruning: one-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.

Arboricultural Method Statement (AMS): methodology for the implementation of any aspect of development that is within a tree's Root Protection Area, or has the potential to result in loss of or damage to a tree to be retained.

Arboriculturist: person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

BS 3998: 2010 Tree work Recommendations. The British Standard gives general recommendations for tree work.

BS 5837: 2012 Trees in relation to design, demolition and construction - Recommendations. The British Standard provides recommendations and guidance for Arboriculturists, Architects, Builders, Engineers, and Landscape Architects.

BS 5837: 2012 Categories and Colours: category A; trees of high quality with an estimated remaining life expectancy of at least 40 years. Category B; trees of moderate quality with an estimated remaining life expectancy of at least 20 years. Category C; trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm. Category U; trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. Sub-categories: 1 Mainly arboricultural qualities, 2 Mainly landscape qualities, 3 Mainly cultural values, including conservation. Colours: Category A trees are light green (RGB 000-255-000), B are mid blue (RGB 000-000-255), C are grey (RGB 091-091-091), U are dark red (RGB 127-000-000).

BS 8545: 2014 Trees: from nursery to independence in the landscape - Recommendations.

BS 8596: 2015 Surveying for bats in trees and woodland. Guide.

CEZs (Construction Exclusion Zones): area based on the RPA from which access is prohibited for the duration of a project.

Conservation Area: a conservation area is an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance (Section 69 of The 1990 Planning (Listed Buildings and Conservation Areas) Act). Trees growing within a conservation area are afforded protection and notice must be given to the LPA before carrying out tree works.

Contract Manager: person employed to manage the project.

Daylight: combined skylight and sunlight.

National Joint Utility Group (NJUG): a group representing utilities and their contractors on street works issues. The group produces Best Practice Publications, relevant publications are - Volume 4: NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees, and Volume 5: NJUG Guidelines on Environmental Good Practice.

Root Protection Area (RPA): layout design tool indicating the minimum area (m²) around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

RPAr: Root Protection Area radius in metres from the base of the tree.

Three Dimensional Cellular Confinement Systems: a no-dig solution used close to trees/within RPAs that ensures imposed loads are laterally dissipated rather than transferred to the soil and roots below. The walls of the cells are perforated and when combined with the infill of clean angular stone, enable free movement of water and oxygen - essential for maintaining healthy tree roots.

Tree (Arboricultural) Officer: the contact within the LPA regarding trees.

Tree Preservation Order (TPO): a TPO is a legal document that is administered by a Local Planning Authority. Where placed on trees, a TPO affords legal protection to trees and prevents certain works being carried out, without LPA consent. A TPO is a charge on the land on which the trees are situated.

The Town and Country Planning (Tree Preservation)(England) Regulations 2012: the regulations brought significant changes to the way TPOs are administered in England. For all privately-owned trees the 2012 regulations replaced the 1999 regulations. The tree preservation regulations applying to Wales, Scotland and Northern Ireland remain unchanged.

Tree Protection Plan: scaled drawing, informed by descriptive text where necessary, based upon a proposed site layout plan, showing trees (and hedges) for retention and illustrating the tree and landscape protection measures.

Tree Protection Requirements: barriers - welded mesh panels secured to a vertical and horizontal scaffold framework, or supported on rubber or concrete feet, well braced to resist impacts, erected adjacent to trees to form Construction Exclusion Zones. Ground protection - for pedestrians, pedestrian-operated plant up to a gross weight of 2t, and for wheeled or tracked construction traffic exceeding 2t gross weight.

Tree Survey Schedule: a list of the trees growing within a site that is proposed to be developed, and any trees growing on adjacent land close to the site boundaries. The schedule contains TPO/Conservation Area details, and the following columns (to BS 5837):

Sequential tree reference numbers (T1, T2, T3 etc).

Life stages (Y = young, SM = semi-mature, EM = early mature, M = mature, OM = over-mature).

Common and scientific names (e.g. Common oak, *Quercus robur*).

Present heights (e.g. 18m).

Expected ultimate height (e.g. 25m).

Branch spreads (north, east, south and west).

Estimated % spread (e.g. at $\approx 80\%$).

Stem $\varnothing$'s (e.g. 600mm).

RPA_r (Root Protection Area radius from the base of the stem e.g. 7.2m).

RPA (Root Protection Area e.g. 163m²).

Heights to 1st significant branch over the site and height to the lowest foliage over the site (e.g. 2.5m and 2.2m).

Crown to stem ratios (e.g. 80%).

Physiological and structural conditions (e.g. Good - no defects noted at the time of the survey).

Form and quality (e.g. Good - a tree of high quality).

Management recommendations regardless of a development (e.g. remove dead branches $\geq 50\text{mm } \varnothing$).

Expected remaining contribution in years (e.g. ≥ 40 years).

Categories and colours (e.g. A2 / Green).

References.

BS 5837: 2012 Trees in relation to design, demolition and construction - Recommendations. ISBN 978 0 580 69917 7. BSI.

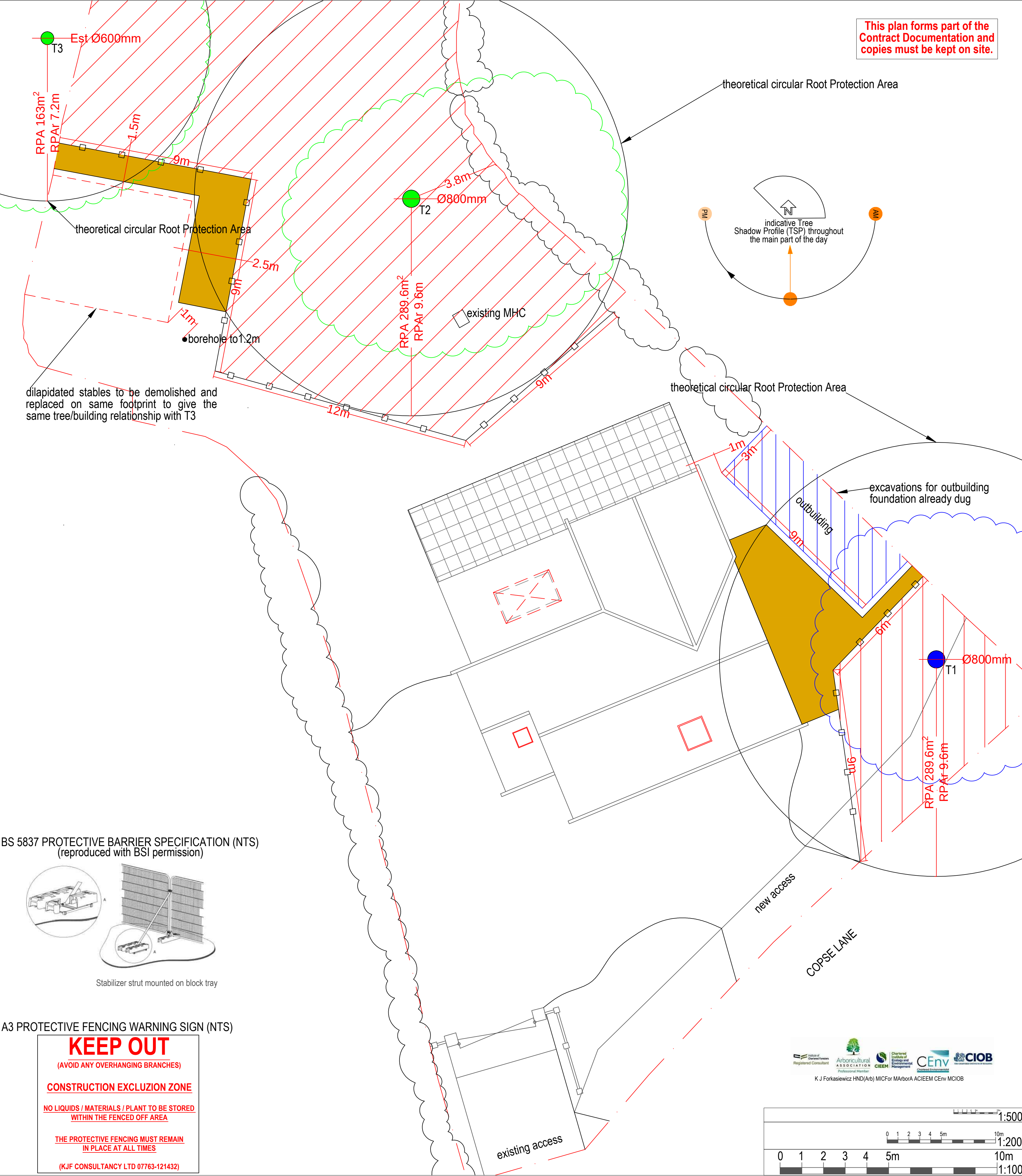
BS 3998: 2012. Tree work - Recommendations. ISBN 978 0 580 53777 6. BSI.

BS 8545: 2014 Trees: from nursery to independence in the landscape - Recommendations. ISBN 978 0 580 71317 0. 978 0 580 80950 7. BSI.

BS 8596: 2015 Surveying for bats in trees and woodland. Guide. ISBN 978 0 580 80950 7. BSI.

C. Mattheck, K. Bethge, K. Weber. The Body Language of Trees. Encyclopedia of Visual Tree Assessment. 2015.

TREE SURVEY SCHEDULE TO BS 5837:2012, N/A = NOT APPLICABLE (*trees growing on adjacent land - surveyed from within the site only, ** category U trees)														
TREE No.	COMMON NAMES & SCIENTIFIC NAMES	LIFE STAGE	PRESENT HEIGHT = (m)	ULTIMATE HEIGHT = (m)	SPREAD (N.E.S & W) = (m)	% SPREAD	ESTIMATED SPREAD	STEM Ø (mm)	RPA radius (m)	RPA's (m²)	HEIGHT TO 1st BRANCH OVER SITE AND HEIGHT TO LOWEST FOLIAGE OVER SITE = (m)	CROWN TO STEM RATIO (%)	PHYSIOLOGICAL/STRUCTURAL CONDITION, FORM/QUALITY - AT THE TIME OF THE SURVEY:	TREE MANAGEMENT RECOMMENDATIONS (WHERE PRESENT, IVY SHOULD BE CUT AROUND THE STEM AT THE BASE OF THE TREES; KJF CONSULTANCY LTD MUST BE INFORMED OF ANY FINDINGS FROM CARRYING OUT ANY THE RECOMMENDATIONS):
T1	Common Oak (Quercus robur)	M	16	16	see plan	95	see plan	see plan	see plan	see plan	4.5 and 3	≈ 61	Leaning stem/historical root plate displacement - a moderate quality tree.	None at the time of the survey.
T2	Common Oak (Quercus robur)	M	18	20	see plan	95	see plan	see plan	see plan	see plan	4 and 2.5	≈ 86	No defects noted at the time of the survey - an important landscape tree. A tree of high quality.	None at the time of the survey.
T3	Common Oak (Quercus robur)	M	16	18	see plan	90	see plan	see plan	see plan	see plan	6 and 4	≈ 78	No defects noted at the time of the survey - an important landscape tree. A tree of high quality.	None at the time of the survey.
The tree survey was carried out by K J Forkasiewicz (Chartered Arboriculturist & Registered Consultant) during February 2017. The plan is based on the proposed site layout plan received. KJF Consultancy Ltd must be informed of any discrepancies.														



Relevant details (to be completed by the Contract Manager):	
LPA Reference	
LPA Case Officer	
LPA Arboricultural Officer	
Contract Manager	
Arboricultural Consultant	
Arboricultural Method Statement	

Declaration by the Contract Manager

I confirm that prior to any demolition/construction works, all contractors/sub-contractors will be made aware of the following information:-

Contract Manager _____ Signed _____ Date ____/____/____

- Any tree damage must be reported to the Contract Manager immediately.
 - Where placed, barriers (that form CEZs), warning signs and ground protection must remain in place at all times unless otherwise agreed with the Local Planning Authority.
 - Chemicals/liquids/materials/plant/vehicles must not be placed behind barriers. Chemicals/liquids (excluding clean water) must not be placed on any ground protection.
 - Excavations must not be made below ground protection or within CEZs. Site levels must not be changed below ground protection or within CEZs.
 - Care must be taken to avoid any contact with branch tips/branches/stems when using machinery/plant.
 - Fires on sites should be avoided. Where they are unavoidable, they should not be lit in a position where heat could affect foliage, branches or stems. The potential size of a fire and the wind direction should be taken into account when determining its location and it should be attended at all times until safe enough to leave.
 - Concrete or cementitious (mortar, cement, slurry) washout wastewater (washwater) is caustic and considered to be corrosive with a pH over 12, essentially the same as Ammonia or other household cleaning detergents. Therefore, washwater must be disposed of on site down a foul drain or carefully taken off site in a container.
- Agreement:** Mr K J Forkasiewicz agrees to attend a pre-commencement site meeting (if a meeting is requested by the LPA; 72 hours' notice is required), and if required, act as an appointed Arboricultural Consultant, and carry out any required on site supervision/site visits. Following any on site supervision/site visits, the appointed Arboricultural Consultant will forward a Development Site Report to the LPA Tree Officer by email, with photographs, as a record of the audited system of Arboricultural site monitoring.

PHASE 1

ARBORICULTURAL CONSULTANT: if applicable, the LPA will be informed in writing (i.e. by email) that an Arboricultural Consultant has been appointed.

TREE WORKS: tree management recommendations contained within the tree survey schedule will be carried out (the owners of any trees growing on adjacent land will be informed by the Contract Manager of any recommendations given for their trees). Tree work will be carried out to BS 3998, by a competent Tree Work Contractor; all arisings will be removed from site unless woodchips are to be used on site.

TREE WORKS REQUIRED TO IMPLEMENT THE DEVELOPMENT: none required.

SITE ACCESS: access into the site will be gained from the existing access; a temporary haul road or metal plates will be placed to prevent damage to the lawn - to be removed on completion.

TREE PROTECTION REQUIREMENTS: where shown within the plan, protective barriers to BS 5837 (Heras fencing in 3m sections) will be placed to form CEZs - a specification for the barriers is contained within the plan, any hard landscaping/shrubs/hedges/timber structures required to be removed to place the barriers will be removed by hand; all arisings will be barrowed away and removed from site. The barriers are dimensioned to enable accurate setting out. A warning sign (example shown within the plan) will be placed on some of the barriers. The barriers will remain in place at all times until completion of the development, unless otherwise agreed with the LPA Tree Officer. Where shown within the plan, ground protection to BS 5837 will be placed to the following specifications (any hard landscaping/shrubs/hedges/timber structures that need to be removed to place the ground protection will be removed by hand - all arisings will be barrowed away and removed from site):-

For pedestrian movements only (and to protect the ground where a three dimensional cellular confinement system is to be installed - if shown within the plan), a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane.

For wheeled or tracked construction traffic >2t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected. Clean metal road plates may also be used to form the ground protection for construction traffic.

The ground protection will remain in place until completion of the development, unless otherwise agreed with the LPA Tree Officer.

PRE-COMMENCEMENT SITE MEETING WITH TREE OFFICER: following the placement of any tree protection requirements, the LPA Tree Officer will be invited to attend a pre-commencement site meeting to discuss this method statement with the Contract Manager.

DEMOLITION WORKS/SITE CLEARANCE: the dilapidated stables will be demolished - care will be taken to avoid contact with any branches from T3; all arisings will be removed from site.

CONSTRUCTION PLANT/VEHICLES: no plant or vehicles will be parked within any RPAs.

SITE ACCOMMODATION/OFFICE: the existing dwelling will be used as site accommodation/office.

PHASE 2

PLACING OF MATERIALS ON SITE: all materials will be placed outside RPAs and will be barrowed (a mechanised barrow may be used) and carried around the site. Barrows will be free of contaminants. An electric conveyor may also be used to transport materials into the site. All liquids/chemicals (brick/stone cleaning acids, curing agents, bitumen, diesel, oils, paints/solvents, petrol etc), will be placed within clean plastic mixing tubs at all times and placed outside RPAs.

EXCAVATIONS WITHIN RPAs: none required. Brickwork to the front elevation will be built off previous underpinning - no excavations will be carried out.

SERVICES: new services will not be placed within RPAs. Existing drains from main house to manhole cover to be replaced with new pipe; excavations will be carried out using hand tools only, and all arisings will be barrowed away and removed from site. Excavations to lay new drains from stables to manhole cover will be made using hand tools only, all arisings will be barrowed away and removed from site.

CONSTRUCTION WORKS: construction works will commence; cement and screed will be delivered to the site and/or mixed on raised waterproof bund's (placed outside RPAs), and will be barrowed around the site - barrows will not contain holes.

DISPOSAL OF WASHWATER: washwater will be placed down foul drains on site, or carefully placed in containers and taken off site.

ON SITE SUPERVISION/SITE VISITS: an Arboricultural Consultant does not need to be instructed to supervise any works or make site visits during construction works.

PHASE 3

COMPLETION: any surplus materials will be removed from site.

NEW LAWN: the new access will be created; the first 5m of the existing access and new access will consist of permeable paving.

Key:

Calculation of RPAs (circular/theoretical RPAs are shown within the plan and are coloured in accordance with the category of the tree): for single stem trees, the RPA is calculated as an area equivalent to a circle with a radius 12 times the stem diameter at 1.5m from the base of the tree. For trees with more than one stem, one of the two calculation methods below is used:-

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2} \quad \sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

Development site boundary _____
Protective barriers (where required) _____ (in 3m long sections)

Construction Exclusion Zones (where required) _____ (CEZs)

Ground protection areas (where required) pedestrian access only _____ for construction traffic >2t gross weight _____

To be demolished _____

3D Cellular Confinement System (where required) _____

80mm Ø perforated tubing (storm water management system) laid within RPAs _____ (where required)

CLIENT: E Hewitt

PROJECT: Proposed Development on Land at Greenwood House, Copse Lane, Hayling Island PO11 0QB

DRAWING TITLE: Appendix 1. Tree Protection Plan

DATE: 16th February 2017

DRAWN BY: K J Forkasiewicz

DRAWING No: TPP.16.02.17.01

SCALE: 1:100 @ A1

CHECKED BY: JF

REV:

REVISION DETAILS:

DATE

DETAILS

REV