BS5837 tree survey and Arboricultural Impact Assessment

at

1 Snode Hill, Beech, GU34 4AX
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Author

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Arboricultural Association Registered Consultant

Client

K Saville
1 Snode Hill
Beech
Hampshire
GU34 4AX

Report date
7th February 2023

Report reference
J1461.03

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Contents

1 Instruction

To inspect the trees on and adjacent to the site in relation to British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS5837). To give recommendations to reduce the impact of such development where feasible.

I have been instructed due to my qualifications and experience in Arboriculture. I am a qualified member of the Institute of Chartered Foresters, Royal Institute of Chartered Surveyors, a Chartered Environmentalist and have a Professional Diploma in Arboriculture awarded by the Royal Forestry Society, Technicians' Certificate awarded by the Arboricultural Association, HNC in Forestry and a member of the Arboricultural Association, International Society of Arboriculture and the Royal Forestry Society. I started in the industry as a forestry contractor in 1995, progressing to the surveying and management of arboricultural contracts for a national forestry company, the running of the arboricultural part of a horticultural business overseas. From 2000 I worked in Local Government, initially at a Borough Council and subsequently at Hampshire County Council. Since August 2006 I have been practicing as an independent Arboricultural Association Registered Consultant; providing arboricultural advice to private individuals, companies, developers, architects, structural engineers, landscape architects and local authorities.

2 Site survey

The survey of the trees was of a preliminary nature carried out from ground level. Detailed investigations were not carried out and no tree climbed. The conclusions are based on my own observations, qualifications and experience in arboriculture. All dimensions recorded are estimated. No soil assessments have been undertaken.

The trees have been categorised in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS5837) (see Appendix 3 for further details).

I have relied upon the topographical survey 10508/01 by P Stubbington Land Surveys Limited for the tree positions and canopy spread of the trees surveyed.

Trees have been designated and number referenced to aid correlation between the Arboricultural Impact Assessment, BS5837 tree survey and the tree protection plan. The position on the tree protection plan and the details within the BS5837 tree survey are to be used on site to identify the position of the individual trees on site.

3 Site details

1 Snode Hill is to the south of Snode Hill and north of Medstead Road and forms a triangular area of land with the junction of Snode Hill and Medstead Road being the eastern extent of the site. The site has a general southerly aspect with a series of man made material movements. The main dwelling is close to Snode Hill within the middle of the northern boundary. There are two vehicular access points with the main access being from the north west and the less used access is to the east, at the junction with Snode Hill and Medstead Road. Between the main vehicle access and the dwelling is a car port. Along the southern boundary there is an embankment down to the highway / Medstead Road. To the southwest corner is an outbuilding. To the west is a cut and fill area of lawn.

4 Proposals

The proposal is to demolish the existing garage and construct a replacement garage.

5 Drawings

Drawings were provided by K Saville and received on 31st May 2023. The drawings have been provided by the client for the purposes of this assessment and they are:

- Topographical survey, 10508/01, by P Stubbington Land Surveys Limited
- Three bay 9.05 x 6 full height raised eaves frame: Plan, Spec & Cross Section, KS/001 by Swift Oak
- Three bay 9.05 x 6 full height raised eaves frame: Elevations, KS/002 by Swift Oak
- Proposed garage at 1 Snode Hill – Site Plan, TQRQM23051114429059, by ReQuestaPlan

6 **Tree Preservation Orders and Conservation Areas**

The online mapping tool provided by East Hampshire District Council, accessed on 9th June 2023 identifies that the site is not subject to Conservation Area controls but is subject to Tree Preservation Order (TPO)(EH1192)22. See image SAL1:

SAL1 Image taken from Council website[1]

Due to the position of trees T1801B, T1802C, T1803B, and T1804C, I believe that these trees are subject to TPO.

This impact assessment has been carried out to assess which trees are worthy of retention and how the proposed scheme may affect them. Appendix 2 BS5837 Tree Survey provides further information in this regard.

[1] http://maps.easthants.gov.uk/easthampshire.aspx

7 Summary

The main arboricultural feature of the site adjacent to Snode Hill is T1801B, T1802C, T1803B, and T1804C. These trees are to be retained and industry standard construction methods and tree protection methods (tree protection barriers, ground protection, Arboricultural Consultant supervised excavation works, site monitoring) ought to be used to reduce the impact of the works upon them.

No trees are to be removed to enable the proposed development.

The impact upon retained trees is likely to be insignificant provided the trees to be retained are protected throughout the development in accordance with this Arboricultural Impact Assessment and Appendix 1: Method Statement and Tree Protection Plan.

As the impact upon the retained trees is likely to be insignificant, there is unlikely to be any arboricultural impact upon the character of the local area.

8 Discussion

Please see Appendix 2: BS5837 Tree Survey for specific details.

8.1 Proposed demolition of existing garage

Tree works as detailed in Appendix 2 is to be implemented to enable the development (demolition of existing garage and construction of new garage) of the site. Due to the limited extent of tree works required, there is unlikely to be any significant impact upon the tree physiology or the amenity that the trees provide.

8.2 Once the tree works are complete, the tree protection measures (tree protective fencing annotated on the Tree Protection Plan as a thick red line and ground protection annotated as a blue diagonal hatch) as detailed in Appendix 1 Method Statement and Tree Protection Plan should be installed to allow demolition and construction works.

8.3 Once the tree protection measures are installed, subject to confirmation by either the project Arboricultural Consultant or planning authority as sufficient, demolition of the existing garage can be implemented.

8.4 Proposed replacement garage

The proposed replacement garage takes advantage of an area previously excavated and is principally outside the normal RPA of the retained trees. However, there are minor encroachments within RPA of some of the retained trees (T1801B by 0.7%, T1802C by 3%, and T1803B by 0.4%). This encroachment includes an allowance of a 30cm offset from the proposed replacement garage to allow for excavation and foundations. These minor encroachments are unlikely to have a significant impact upon the retained trees if the excavations are carried out in a sympathetic manner.

8.5 To minimise the impact of the excavation works, the excavations will need to be carried out as detailed in Appendix 1 Method Statement, section 8 and under the direct supervision of the project Arboricultural Consultant to advise upon the method of excavation, tree root pruning necessary, and to identify any potential remedial works, with priorities and timescale, where necessary

8.6 The proposed replacement garage is outside RPA of T1804C and T1850C and therefore I anticipate that there will be an insignificant impact upon the stability and the physiology of these two trees as a result of the proposed development.

8.7 Services

All new services must avoid the RPAs of retained trees. If this is not possible then the services must be designed by an Engineer in consultation with the Arboricultural Consultant (NQF level 4 or higher in Arboriculture) and written approval from the planning authority Arboricultural Officer prior to installation. Further advice is available in Appendix 1: Method Statement and NJUG Volume 4 “Guidance for the planning, installation and maintenance of utility services in proximity of trees”.

8.8 I have shown an indicative service route outside the RPA of retained trees on the Tree Protection Plan for the anticipated underground service provision between the existing dwelling and the proposed replacement garage.

8.9 Site monitoring and tree protection measures

BS5837:2012 Trees in relation to design, demolition and construction - Recommendations states in paragraph 6.3:

"Wherever trees on or adjacent to a site have been identified within the tree protection plan for protective measures, there should be an auditable system of arboricultural site monitoring. This should extend to arboricultural supervision whenever construction and development activity is to take place within or adjacent to any RPA."

8.10 Therefore, it is necessary for site monitoring by an Arboricultural Consultant (qualified in Arboriculture to NQF Level 4 or higher) to occur for the proposed works. Details of the occasions and frequency of site monitoring will be given in Appendix 1: Method Statement, Arboricultural Method Statement Summary table: Timing of operations.

8.11 Tree protection measures are necessary to aid the retention of the trees. The details of these tree protection measures are specified in Appendix 1: Method Statement and Tree Protection Plan.

8.12 Site compound

The site compound can be located within the site and distant (>1m) from tree protection measures. If there is insufficient space within the site for storage materials will need to be delivered to site on an 'as required' basis and the use of an offsite storage compound may be necessary.

8.13 Soft landscaping

Within the RPA of retained trees there must be no changes of grade (up or down) and the amount of new planting limited to reduce the impact upon the retained trees through severance or damage to tree roots.

8.14 Post development relationship

Due to the nature of the use of the site, the existing relationship with the trees and the proposed layout, there is no significant adverse post development pressures anticipated.

8.15 Falling debris is a regular maintenance issue and should be treated as such. A routine of tree survey and inspection will identify foreseeable failures allowing them to be resolved prior to them becoming an issue.

8.16 Falling debris (leaves, seed, needles) is a regular maintenance issue and should be treated as such. If desired, then www.suraflow.co.uk (which prevents debris falling in the gutter through the coanda effect), or other suitable method can be installed to manage this concern. Down pipes can also be installed with traps (https://www.3ptechnik.co.uk/garden/downpipe-filters-diverters/rainus/ or similar) that are easily cleaned or chains used as the down pipe (which requires no cleaning).

8.17 Soils

In the event of shrinkable soils being found on the site, it will be for an engineer to design the foundations in accordance with the current industry guidance to reduce any potential risk of tree related subsidence to an acceptable level.

8.18 Other trees

This report considers the trees that may significantly be affected by the proposed development. Any trees not mentioned or not surveyed are sufficiently distant that the proposed works are unlikely to have an influence upon them.

9 Conclusion

The main arboricultural features of the site are to be retained and tree protective measures must be utilised to minimise the impact of the proposals upon these trees.

Tree protection measures are necessary to aid the retention of the retained trees.

Arboricultural Consultant supervision of the excavations is necessary to aid the retention of the trees subject to TPO.

The principles and details of the Arboricultural Impact Assessment and Appendix 1: Method Statement and Tree Protection Plan are to be followed to reduce the impact upon the retained trees.

10 Recommendations

That, following any permission from the Local Planning Authority, the principles and details of the Arboricultural Impact Assessment and Appendix 1: Method Statement and Tree Protection Plan are followed to reduce the potential for harm to the retained trees during development.

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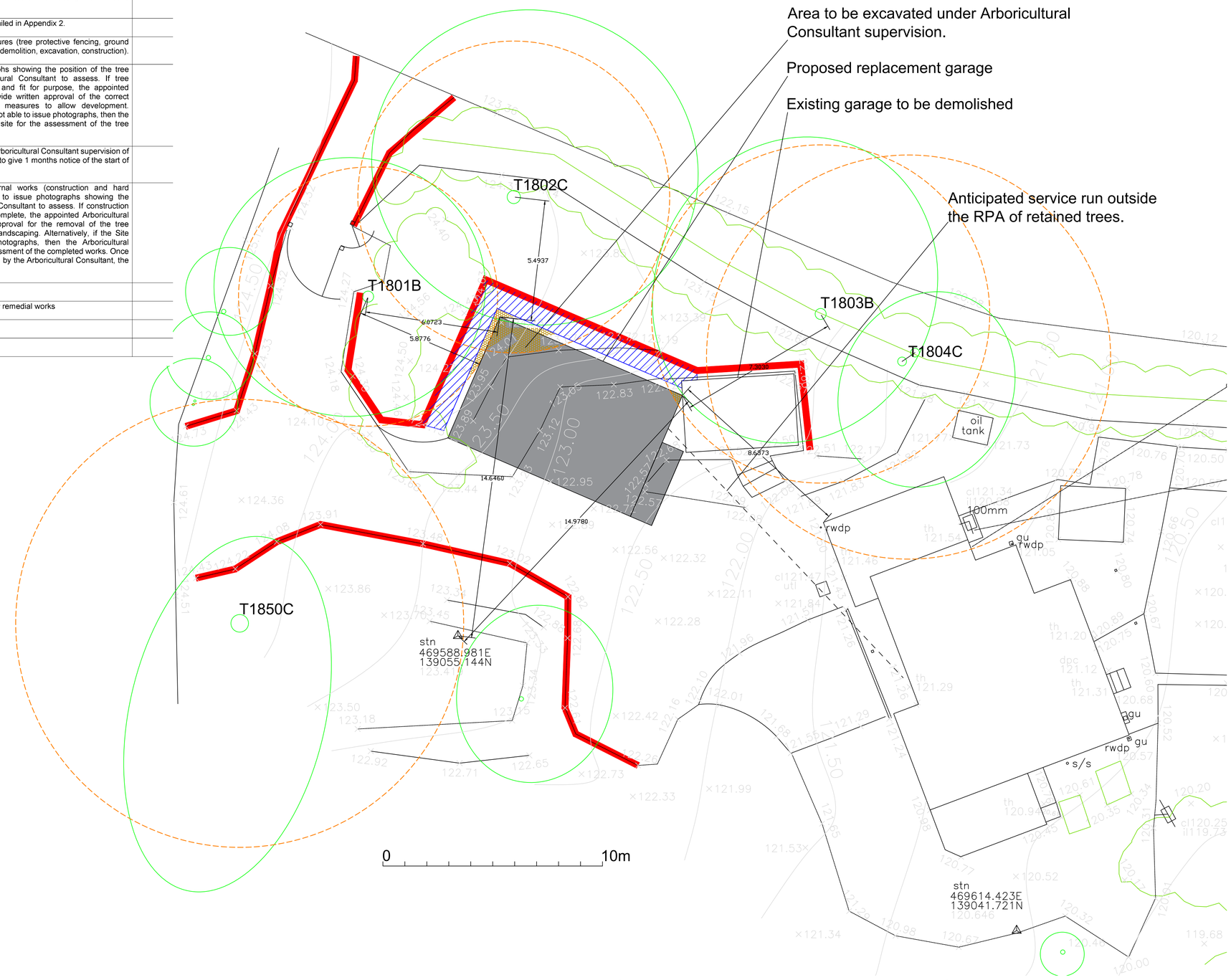
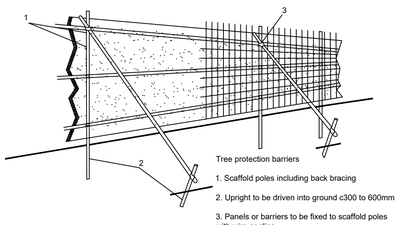
Appendices

Appendix 1: Method Statement and Tree Protection Plan

Method Statement Summary / Timing of operations

	Activity	*Date complete*
01	Pre-commencement meeting with appointed Arboricultural Consultant (NQF Level 4 or higher in Arboriculture) and Site Manager prior to construction works to discuss the tree protection measures. Planning authority Arboricultural Officer to be invited to the meeting with 2 weeks notice.	
02	Implementation of tree works as detailed in Appendix 2.	
03	Installation of tree protection measures (tree protective fencing, ground protection) to facilitate development (demolition, excavation, construction).	
04	Site Manager is to issue photographs showing the position of the tree protection measures for Arboricultural Consultant to assess. If tree protection measures are sufficient and fit for purpose, the appointed Arboricultural Consultant is to provide written approval of the correct installation of the tree protection measures to allow development. Alternatively, if the Site Manager is not able to issue photographs, then the Arboricultural Consultant is to visit site for the assessment of the tree protection measures.	
05	Development of the site with direct Arboricultural Consultant supervision of the excavation works. Site Manager to give 1 months notice of the start of development.	
06	Following completion of the external works (construction and hard landscaping), the Site Manager is to issue photographs showing the completed works for Arboricultural Consultant to assess. If construction and hard landscaping works are complete, the appointed Arboricultural Consultant is to provide written approval for the removal of the tree protection measures to allow soft landscaping. Alternatively, if the Site Manager is not able to issue photographs, then the Arboricultural Consultant is to visit site for the assessment of the completed works. Once written confirmation has been issued by the Arboricultural Consultant, the soft landscaping can commence.	
07	Soft landscaping works	
08	Tree condition and hazard survey for remedial works	
09	Remedial tree works	
10	Occupancy	





Tree protection barriers

1. Scaffold poles including back bracing

2. Upright to be driven into ground c300 to 600mm

3. Panels or barriers to be fixed to scaffold poles with wire or clips

CONSTRUCTION EXCLUSION ZONE

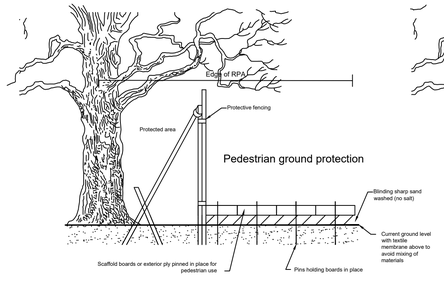
KEEP OUT!

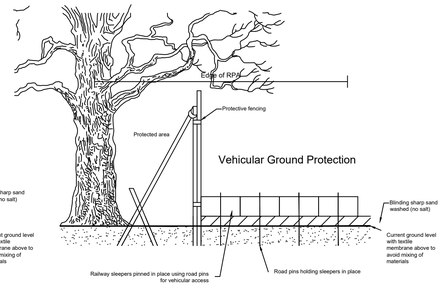
THE FOLLOWING MUST BE OBSERVED BY ALL PERSONS:

- **THE PROTECTIVE FENCING MUST NOT BE MOVED**
- **NO PERSON SHALL ENTER THE PROTECTED AREA**
- **NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA**
- **NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA**
- **NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA**
- **NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA**

ANY ACCESS INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

A3 sign on laminated all weather material at 1.8m on the protective fencing every 10m.





Appendix 1: Method Statement

1. A pre-commencement meeting prior to the start of any works between the Local Planning Authority (LPA) Arboricultural Officer, appointed Arboricultural Consultant and Site Manager must take place to clarify any additional protection measures required.

The purpose of the pre-commencement site meeting is to:

- confirm the position of the tree protective fencing and / or ground protection on site;
- discuss any potential conflict with the tree protection measures and identify acceptable solutions;
- understand the timeframe for the site clearance, demolition and construction phases;
- identify and agree the frequency of Arboricultural site monitoring, recording process and reporting procedure to the Local Planning Authority to aid discharge of relevant planning conditions (appointed Arboricultural Consultant to issue written report to Site Manager and Local Planning Authority discussing findings from site monitoring).

To aid the site clearance, demolition and construction phase for the development of the site an Arboricultural Consultant (NQF Level 4 or higher in Arboriculture) must be appointed to inspect and monitor the site at the start of the works and on an as required basis throughout the construction works to ensure that the protection procedures are adhered to and to assist with addressing further arboricultural issues that may arise.

2. Tree works may be required in the interest of good arboricultural practice and to facilitate the use of the site once development is complete. These works are listed in the recommendations of Appendix 2: BS 5837 Tree Survey. All tree works should be carried out according to BS3998: 2010 'Recommendations for tree works' and carried out by an appropriately competent, experienced, qualified and insured arboricultural contractor and preferably under the supervision of the Arboricultural Consultant.

3. The protective measures, as shown on the drawing "Tree protection plan" must be erected after the tree works and prior to any demolition or construction works. Once erected, barriers and ground protection must be considered sacrosanct, and must not be removed or altered without prior recommendation by the appointed Arboricultural Consultant and written approval by the LPA.

The protective barriers and ground protection must be erected according to drawings "Tree protection plan" and Appendix 2: BS5837 survey sheet which is based upon the guidelines in BS5837: 2012 'Trees in relation to construction'. Tree protective fencing and ground protection positions to be identified at the pre-commencement site meeting. Scaling from the tree protection plan should not be used.

Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. On all sites, special attention should be paid to ensure that the barriers remain rigid and complete. Barriers must consist of a 1.8 high scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. Onto this 1.8m high weldmesh panels should be securely fixed with wire or scaffold clamps. Weldmesh panels on rubber or concrete feet are not resistant to impact and must not be used. If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

Ground protection for pedestrian movements (and scaffolding activities) within the root protection area (RPA) must be a single thickness of scaffold boards on top of a compressible layer (for instance bark mulch) laid onto a geotextile membrane, or supported by scaffold (see drawing on Tree Protection Plan). If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

Ground protection for wheeled or tracked construction traffic movements within the root protection area (RPA) must be designed by an engineer and Arboricultural Consultant to accommodate the likely loading and may involve the use of proprietary systems (for instance www.evetrakway.co.uk) or reinforced concrete slabs or a series of railway sleepers pined together or other suitable system to ensure that the bulk density of the soil remains lower than 1.5g/cm3. If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

These tree protective measures shall be identified and marked on the 'Tree protection plan' and all the approved engineering drawings to be used on site.

Any encroachment within the RPA or breaches of the tree protection measures must be reported to the appointed Arboricultural Consultant to enable them to provide recommendations to mitigate the encroachment / breach and to allow the issue and mitigation to be reported to the Local Planning Authority for their written approval.

4. All site personnel must be briefed by the Site Manager or the Arboriculturalist on the importance of the trees to be retained and the protective measures implemented to aid their retention into the future. The Site Manager is responsible for the implementation of all tree protection measures.

5. Once the construction exclusion zone has been protected by barriers then construction work can commence. All weather notices should be erected on the barriers with words such as "Construction exclusion zone - keep out" (see recommended sign on the Tree Protection Plan).

6. Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to the equipment and retained trees, and might make the safe retention of the retained trees impossible. Consequently, any transit or transverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus requiring tree works to clear the necessary access.

Material which will contaminate the soil, e.g. concrete (dry or mixed), diesel, oil, vehicle washings, etc. must not be discharged within the root protection area. It is essential that an allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar, diesel or oil cannot run towards the trees.

There must be no fires on the site.

Notice boards, telephone cables or other services must not be attached to any part of the tree.

7. The advice of the appointed Arboricultural Consultant must be sought where underground structures present within the RPA are / will become redundant. In general it is preferable to seal these off as this avoids the need for significant excavation.

8. Any excavations in proximity of retained trees will require certain precautions to avoid unnecessary damage to trees to be retained, and should be undertaken as follows:

- All excavations should avoid damage to the protective bark covering larger roots. Roots, whilst exposed, should be wrapped in dry, clean hessian sacking to prevent desiccation (drying) and to protect from temperature changes.
- Roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using a proprietary clean cutting tool such as bypass secateurs or handsaw.
- Roots larger than 25mm diameter should only be severed following consultation with the appointed Arboricultural Consultant, as the roots may be essential to the tree's health and stability.
- Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded by sharp sand (builder's sand should not be used because of its high salt content which is toxic to tree roots), or other loose granular fill, before soil or other material is replaced. This material, e.g. general purpose grade topsoil to BS3882, should be free of contaminants and other foreign objects potentially injurious to tree roots.
- Further details are available in NJUG Volume 4 "Guidance for the planning, installation and maintenance of utility services in proximity of trees".
- Any excavation within the RPA of retained trees must be subject to Arboricultural Consultant supervision.

9. There are no services to be installed within the RPA of the retained trees, other than as described in the Arboricultural Impact Assessment or shown on the Tree Protection Plan.

10. There should be no changes in grade within the RPA without prior recommendation by the appointed Arboricultural Consultant and approval of the LPA.

11. Following completion of the construction and hard landscaping works a site meeting between the Local Planning Authority Arboricultural Officer, appointed Arboricultural Consultant and Site Manager must take place to assess whether the protective barriers and ground protection can be removed to allow soft landscaping works.

12. Following the completion of the soft landscaping works a tree survey must be undertaken to identify whether additional tree works are required for the safe use of the site and adjacent land users.

Method statement for the removal of the existing hard surfaces.

RPA refers to the Root Protection Area as detailed in Appendix 2: BS5837 Tree Survey.

- The existing hard surface should be broken up, lifted and removed from the RPA from outside the RPA where feasible, or from exiting hard surfaces within the RPA.
- The excavation of the hard surface must not extend into the soil underneath unless specifically determined by the Arboricultural Consultant. In reality this would mean that the 'toothless' excavator bucket should be kept horizontal so that any disturbance to the soil is kept to a minimum. When the hard surface is thin or close to the soil level, the works must be carried out by hand to prevent avoidable unnecessary damage to the tree roots.
- All material, once lifted, must be transported to outside the RPA to prevent compaction or contamination of the tree roots. No material should be stored within the RPA.
- Due care and attention must be undertaken to ensure that machinery or other operations do not cause damage to the above ground parts of the tree.
- Where an existing hard surface is removed and replaced with soil the infill material must be a good quality, weed free aerobic natural topsoil with good crumb structure. Man made sopils are not acceptable. Soil samples must be issued to the Arboricultural Consultant for written approval prior to delivery on site where the soil is to be installed within the RPA of retained trees.

General / Key:

Root protection area
Indicative canopy
Barrier fencing
Ground protection
Manual excavation

Site: 1 Snode Hill, Beech GU34 4AX

Data: Site layout and survey data provided by Client.

This drawing is produced in colour. Please ensure that you use a colour printing to ensure that the drawing is correctly interpreted.

Item reference (T/G/H/W)
Item number (1, 2, etc.)
BS5837 category (A/B/C/U)
For instance: T1C

Drawing title:

Tree protection plan

Drawing reference:
J1461.03

Revision:
-

Date:
9th June 2023

Scale:
1 to 100 on A1 (site layout only)

Sheet:
1 of 1

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Appendix 2: BS5837 tree survey

BS5837 Tree Survey
Site 1 Snode Hill, Beech, GU34 4AX
Date of survey 15th February 2023
Job reference J1481.03
Surveyor Ben Abbatt

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Root Protection Area - Area (sqm)	Development related tree works	Development related mitigation
T	1801	B1	Beech *Fagus sylvatica*	23	490	4	6	7	6	4	Mature	Good	Good	Low branches.	20+	5.9	108.7	Crown lift to clear branches within 2m of the proposed structure retaining overhanging and lateral branches outside this distance.	Install tree protection measures as detailed in Appendix 1 Method Statement and Tree Protection Plan. Arboricultural Consultant supervision of excavation works within the root protection area.
T	1802	C1	Beech *Fagus sylvatica*	22	590	7	7	7	7	3	Mature	Good	Fair	Previously topped at 4m with three main stems arising. Low branches.	10+	7.1	157.5	Crown lift to clear branches within 2m of the proposed structure retaining overhanging and lateral branches outside this distance.	Install tree protection measures as detailed in Appendix 1 Method Statement and Tree Protection Plan. Arboricultural Consultant supervision of excavation works within the root protection area.
T	1803	B1	Beech *Fagus sylvatica*	23	640	6	6	6	6	3	Mature	Good	Good	Low branches.	20+	7.7	185.4	Crown lift to clear branches within 2m of the proposed structure retaining overhanging and lateral branches outside this distance.	Install tree protection measures as detailed in Appendix 1 Method Statement and Tree Protection Plan. Arboricultural Consultant supervision of excavation works within the root protection area.
T	1804	C1	Field maple *Acer campestre*	14	770	6	6	6	6	2	Mature	Good	Fair	Close to building. Low branches.	20+	9.2	268.3	No works required.	Install tree protection measures as detailed in Appendix 1 Method Statement and Tree Protection Plan.
T	1850	C1	Black pine *Pinus nigra*	27	850	5	7	9	7	6	Mature	Good	Fair	Asymmetrical canopy and (phototrophic) lean towards the south. Typical moderate deadwood throughout. Occasional branch failure. Two main stems from 6m with good 'u' shaped tensile union.	10+	10.2	327.0	No works required.	Install tree protection measures as detailed in Appendix 1 Method Statement and Tree Protection Plan.

General notes

The BS5837 tree survey is not a “Tree Condition / Hazard Survey” and must not be relied upon in this regard. Such a survey is to be carried out, on the instruction of the Site Manager as detailed on the Tree Protection Plan, Timing of operations.

Typical significant defects that are identified are referred to in Lonsdale, D., “Hazards from Trees, a general guide” (FCPG13) published in 2000 by the Forestry Commission, Lonsdale, D., “Principles of tree hazard assessment and management” published in 1999 and 2001 and reprinted in 2013 by the Forestry Commission, and Mattheck, C., “The body language of trees” published in 1994 by the Department of the Environment and 2015 by Karlsruhe Institute of Technology.

Reasonable access around the base of the tree is required to carry out a tree survey. Where this is not feasible, these parts of the tree may not be fully assessed. If a view of the entire structure of the tree(s) is limited, for instance by the properties in private ownership or obscured by vegetation, this is a limitation to the tree survey and some parts of the tree may not be able to be fully surveyed.

As trees are dynamic structures their condition and health may change in a short period of time, particularly in relation to changes in their immediate environment and circumstances. Therefore, the survey is an assessment of the trees at the time of the survey only. If there is a significant change in the immediate environment and circumstances, then this should be brought to the attention of the Arboricultural Consultant so that they may advise accordingly.

This tree survey can only be an assessment of the tree at the time of the survey and the tree(s) should be re-surveyed on a regular basis. An appropriate time period between surveys may be up to 5 years depending upon the condition of the trees, their maturity, the tree species, the use of the environment within which the tree stands, and how often the area is used. The default period, if none provided, is 1 year.

I have not checked whether the site is within a Conservation Area or whether the trees are under Tree Preservation Order (TPO) specifically with the planning authority. Prior to any tree works confirmation of whether these legal restrictions apply to the site or trees ought to be sought from the Local Planning Authority (LPA). If the trees stand within a Conservation Area designated under the Town and Country Planning Act the LPA will normally require 6 weeks notice of intention to carry out any tree works as detailed in the survey. If the trees are under TPO then the LPA will normally require an application for any tree works. Some tree works are exempt, for instance if the trees are dead or dangerous, and certain works can be carried out without application. It is necessary to give the LPA at least five days notice prior to carrying out any of these tree works under these exemptions. This survey, with recommendations, can be used to support any such application or notice.

Wildlife issues are of significant concern to the general public. A balance has to be found between the protection of wildlife and the need for safety when managing trees. The Wildlife and Countryside Act (1980) and Countryside Rights of Way Act (2000) give statutory protection to wild birds, bats, mammals, some invertebrates and plants. It is important to ensure that this legislation is properly considered when carrying out any works to trees.

Bird nests were not identified whilst on site. However, any Arborist carrying out the tree works should ensure that there is no disturbance to nesting birds prior to the works being carried out. Further guidance upon the appropriate timing of the works can be sought from DEFRA, if necessary. Where nesting birds are found, further information should be sought from DEFRA 08459 33 55 77 or helpline@defra.gsi.gov.uk. Prior to any works being implemented the tree contractor must identify whether there are any bats or birds using the tree as roost or nest. If such habitation is identified, then the tree contractor must obtain the necessary licence from Natural England (0845 601 4523 www.naturalengland.org.uk) to carry out the works.

During the tree works, the contractor should carry out the tree works with bats as an active consideration and follow the current industry best practice, e.g. BS8596 Micro guide to surveying for bats in trees and woodland https://shop.bsigroup.com/upload/273444/BSI-Bat-Microguide-UK-EN.pdf .

Biosecurity measures: To minimise to potential for contamination of the tree from other tree works it is appropriate to sterilise tools to be used before and after the works are implemented. Appropriate disinfectant includes Propellar or Cleankill Sanitizing spray. Loose debris is to be brushed off prior to treating with disinfectant to ensure appropriate application. See http://www.forestry.gov.uk/pdf/FCMS028-guidance.pdf/$file/FCMS028-guidance.pdf for further information on Biosecurity and http://www.forestry.gov.uk/forestry/infd-9fjd2d for disinfectant information.

Appendix 3: Key to BS5837 tree survey

No	Tree number.	
Species	Species of tree.	
Height	Height measured in metres and rounded to the nearest metre.	
Stem ∅	Stem diameter(s) at 1.5metres following normal Forestry conventions or immediately above the root flare for multiple stemmed trees where appropriate, in millimetres.	
Canopy spread	Canopy spread in metres is taken at the four cardinal points to derive a reasonable representation of the canopy shape in plan view.	
Height of crown	Height, in metres, of crown clearance above adjacent ground level.	
Age class	Young	A tree considered to be less than approximately 20 years old.
	Middle aged	A tree in approximately the first 1/5th of its normal life span with apical dominance (rapidly growing with a clear main leader) and not yet fully at its environmental potential full height or canopy spread.
	Mature	A tree in its 2/5ths to 5/5ths of its normal life span with apical dominance lost and at its environmental potential full height and canopy spread.
Condition (Physiological and Structural)	Good	A tree of typical physiological and structural condition that requires only general tree works to facilitate its retention in the landscape.
	Fair	A tree of impaired physiological and / or structural condition that may require remedial and general tree works to facilitate its retention in the landscape.
	Poor	A tree of significantly impaired physiological and / or structural condition that will require remedial and general tree works to facilitate its retention in the landscape if feasible.
Preliminary management recommendations	As per BS3998: 2010 Recommendations for Tree Works.	
BS5837 Category grading	See below: Table 1.	
Estimated remaining contribution (years)	Estimated remaining contribution in years (e.g. < 10, 10+, 20+, 40+).	
Root protection area	See below: Extract from BS5837:2012.	
	All measurements in metres are approximate and rounded to the nearest metre.	

Table 1 - Cascade chart for tree quality assessment, BS5837: 2012 Trees in relation to construction - Recommendations

Trees UNSUITABLE FOR RETENTION			
Category and definitions	CRITERIA		
Category U Those 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	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality. NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5 of BS5837:2012		
Trees to be considered for retention			
Category and definitions	CRITERIA - subcategories		
	1 Mainly arboricultural values	**2** Mainly landscape values	**3** Mainly cultural values, including conservation
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation.	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural value.

Root protection area (RPA)

Extract from BS5837:2012.

4.6.1 For single stem trees, the RPA (see **3.7**) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, one of the two calculation methods below should be used. In all cases, the stem diameter(s) should be measured in accordance with Annex C, and the RPA should be determined from Annex D. The calculated RPA for each tree should be capped to 707 m2.

a) For trees with two to five stems, the combined stem diameter should be calculated as follows:

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

b) For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows:

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

4.6.2 The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

4.6.3 Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

a) the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and
underground apparatus);

b) topography and drainage;

c) the soil type and structure;

d) the likely tolerance of the tree to root disturbance or damage.