Driveway construction within Root Protection Areas

BS 5837:2012 TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION

Blackmoor House, Coach Hill Lane, Burley, BH244HN

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08/04/2021

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1.0 Instructions

1.1 I received written instructions from Mr I Siddall to undertake a Tree Survey to establish the feasibility of installing an access with driveway to service outbuildings at Black Moor House, Coach Hill Lane, Burley, BH244HN

1.2 This report is prepared in accordance with the BS 5837 Trees in Relation to Design, Demolition and Construction 2012: and is designed to inform the planning and design process

1.3 I am asked to prepare

A Tree Condition Survey
A Tree Constraints Plan (TPP appendix 1.)
Information regarding the construction of a driveway and access suitable for use adjacent to trees

2.0 Introduction

2.1 The site of the proposed entrance is within the current boundary of Blackmoor House. The proposed access will be adjacent to 8 currently protected trees of low to moderate significance

2.2 This document is intended to inform the planning process in accordance with the guidelines set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (BSI, 2012). This standard provides recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including larger shrubs and hedgerows, with structures

'This British Standard 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 whether or not planning permission is required.' (BSI, 2012)

2.3 The guidance recommends a three-stage approach incorporating: (i) initial tree survey, guidance and report; (ii) Arboricultural Impact Assessment and (iii) Arboricultural Method Statement, which details the specific tree protection measures to be adopted in relation to construction activity across the site, and in particular in the vicinity of retained trees. This report fulfils stage 1 of this process.

Site location

2.2 Trees

2.2.1 All trees potentially affected by the proposed works were surveyed from ground-level using the Visual Tree Assessment (VTA) technique. For those trees surveyed in accordance with BS5837:2012, the following data was gathered for each tree surveyed:

- Tree, group or hedge number (sequentially and separately for trees, groups, hedges and stumps)
- Tree species (English names follow Stace [2010] for higher plants)
- Life stage (expressed within a defined 'age-class' category)
- Tree height (in metres)
- Stem diameter (measured at 1.5m above uppermost ground-level)
- Observations on tree position, form, condition, and comments on any significant defects
- Recommendations for arboricultural works
- The physiological and structural condition of the tree(s)
- Estimated Remaining Contribution expressed within defined categories
- BS5837 retention category

2.2.2 The trees adjacent to the proposed access site are primarily mixed broadleaf species with a line of 3 coniferous species positioned on the approximate southern boundary. The site contains predominantly Mature (final 1/3rd of life expectancy) trees with an understorey of Young and Middle aged (2nd 1/3rd of life expectancy) hedging plants forming a screen on the boundary

2.2.3 The trees identified within the survey schedule requires some level of work. Although the work is not needed to facilitate the proposed building works, it is recommended that the works are carried out on the grounds of sound Arboricultural management maintaining the trees as a positive feature on the landscape

Table 1: Number of trees in each retention category

Retention Category	Description	Number
A	Trees of high quality and value, in such a condition as to make a substantial contribution. Retention is highly desirable	0
B	Trees of moderate quality and value, in such a condition as to make a significant contribution. Retention is desirable	1
C	Trees of low quality and value or young trees, in adequate condition to be retained or remain until new planting is established	7
U	Trees which cannot realistically be retained for longer than 10 Years	0
Total		8

2.3 Limitations

2.3.1 This survey and the results contained within this report represent a preliminary assessment from ground-level. Observations have been made for the purposes of assessment in terms relevant to planning and development, and not tree safety. No climbed inspections, invasive or non-invasive decay detection devices have been used in assessing tree condition. As such, the survey conducted and results presented should not be used as a tree safety evaluation, which would require a Tree Safety Survey, designed to provide a more detailed appraisal of the risk and liability associated with specific individual trees or groups of trees.

2.3.2 Whilst efforts have been made to detect significant defects within inspected trees, no guarantee can be given as to the safety or otherwise of surveyed trees. Climatic conditions including storms, droughts, and temperature changes can and do cause failure in apparently healthy trees. In addition to these restrictions on access and the presence of dense undergrowth, ivy and other climbing plants can obscure defects from view. It should also be noted that the presence of tree pests and diseases can be affected by the time of year and climatic conditions.

2.3.3 All tree observations, and any recommendations, are based upon the site conditions, levels and patterns of usage observed at the time of survey only. Alterations in these factors will affect any evaluations made and would require a re-assessment of both the trees and site.

2.4 Proposed Structure and External Modelling

2.3.1 The position of the proposed access will place its nearest point circa 4 metres from the nearest retained tree (T1)

2.3.2. The driveway will be constructed using a “No Dig Solution” which negates the need for extensive excavation within the RPA’s of the retained trees and will not exceed 20% of any unsurfaced ground within the RPA’s

3.0 Presence of Tree Preservation Orders (TPO) or Conservation Area Designation

3.1. The New Forest National Park Authority interactive mapping system accessed on 08/04/21, indicated that the trees are the subject of Conservation Area protection

3.1 Effects of buildings on amenity value of trees on or near the site

3.1.1 The trees detailed in this report are to be retained so there is no detrimental effect to their amenity value. If recommendations within this report are met, then there will be no negative affect on the tree during the construction process

3.2 Above and below ground constraints

3.2.1 No construction of foundations or installation of services are to take place within any Construction Exclusion Zone (CEZ)).

3.2.2 The driveway will be constructed using a “No Dig Solution” which negates the need for extensive excavation within the RPA’s of the retained trees and will not exceed 20% of any unsurfaced ground within the RPA’s

3.3 Aboricultural Guidance for Constructing Driveways Close to Trees

‘Traditional driveway construction (excavation and backfilling with compactable load-bearing sub- base material) can seriously damage tree roots,’ Patch & Holding 2007.

3.3.1 The following guidelines may, in many situations, prevent significant and permanent damage to trees. However, In order to protect the condition and health of tree roots within the protection zone during the installation of driveways and or parking areas for light vehicles, the following guidelines MUST be adhered to

3.3.2. No-Dig Construction

Where the construction of a driveway or estate road cannot be avoided within the fenced RPA of retained trees the soil substrate itself will form part of the construction profile (subgrade) and a 'NO-DIG' approach is to be adopted.

The surface (and any associated edge support) should be engineer designed to take account of site specific data including soil type, current level of soil type and anticipated axle loads of vehicle using the new surface.

The surface must:

Provide adequate resistance to applied loads and avoiding localised ground compaction by evenly distributing the carried weight over the track width and wheelbase of any vehicles that will use the access
Provide resistance to or tolerance of deformation by tree roots
Provide oxygen diffusion according to seasonal demand (gas porous)
Provide water throughput to meet seasonal demand (permeable)
Preserve the soil structure during installation to prevent lack of water, exclusion of oxygen, excessive resistance to penetration (density or soil strength) and or chemical toxicity

Construction may (where appropriate) incorporate:

The use of a three-dimensional Cellular Confinement System (CCS), such as Cellweb, as an integral component of the sub-base, to act as a suspension layer by creating cells into which recommended material is contained. Here it is necessary to install a geotextile layer between the ground and the cells to prevent mixing and the cellular materials being pressed in to the ground. Infill materials should include no-fines aggregate (granular) sub-base layer which when compacted is free draining and allow gaseous. Type 1 road stone is not recommended due to its high fines content. Clean angular stone 4-20mm or 20- 40mm in diameter, or angular gravel over 4mmin diameter and able to create a positive interlock with the CCS is acceptable.
Alternatively, where the use of a CSS is not appropriate due to the underlying soil (and/or other site factors) reinforced concrete slabs, supported and suspended on mini-piles and incorporating a designed system that allows for the passage of water and oxygen to the underlying soul maybe used.
Other engineer-designed surfaces that address the requirements of the above performance specification may also be used.

3.3.3 Kerbs and Edgings

Excavations for kerb and edgings should be avoided within the protection zone. Where the kerbing is required for the footpaths and light structures, peg and board edging is acceptable. For larger structures, such as estate

roads, railway sleepersretainedwithtrackpinsorroadpinsisacceptable. Wheretheroad needs to traverse a lateral slope, gabions and pins may be used as kerbing (BS5837:2005 s.11.10)

3.3.4 Final Surfaces (wearing course)

Where the new access would cover in excess of 20% of the RPA (or wider than 3m) within it, any required hard surface (wearing course) construction above the suspended load spreader should engineer designed to:
Provide resistance to or tolerance of deformation by tree roots.
Provide oxygen diffusion according to seasonal demand (gas porous).
Provide water throughput to meet seasonal demand (permeable).
Preserve the soil structure during installation to prevent lack of water, exclusion of
oxygen, excessive resistance to penetration (density or soil strength) and or chemical toxicity.
Examples of acceptable hard surface include washed gravel (not binding gravel or hoggin as these are almost impermeable when consolidated); dry jointed paving slabs, pavers or bricks on a sharp sand foundation, permeable paving blocks or pre-made concrete slabs with 50mm diameter holes at regular spacing of 300-600mm (to be agreed) with a no- fines or aggregate back-filling of the openings

(Note: Where there is an engineering requirement that roads or driveways are to be waterproof, and therefore impermeable, such as those that are to be adopted by local authorities, the roads must not exceed 20% of the protection zone area or be more than 3 metres wide whichever is least. Where possible alternative engineering construction methods such as suspended surfaces should be considered.)

3.3.5 No excavation, soil stripping, site grading, lowering or raising of soil levels or digging shall take place within the BS 5837:2005 prescribed Root Protected Zone

3.3.6 There must be a method of working that prevents the passage of vehicles and/or machinery across unprotected soil surface within the Root Protection Zone prior to, during and post construction. When making a new access into a site, construction should begin at the entrance and 'rollout' the driveway in front of the machinery that remains on the sub-base. Please note even a single passage of machinery can irreparably damage tree roots of which 90% are within the top 600mm of soil!

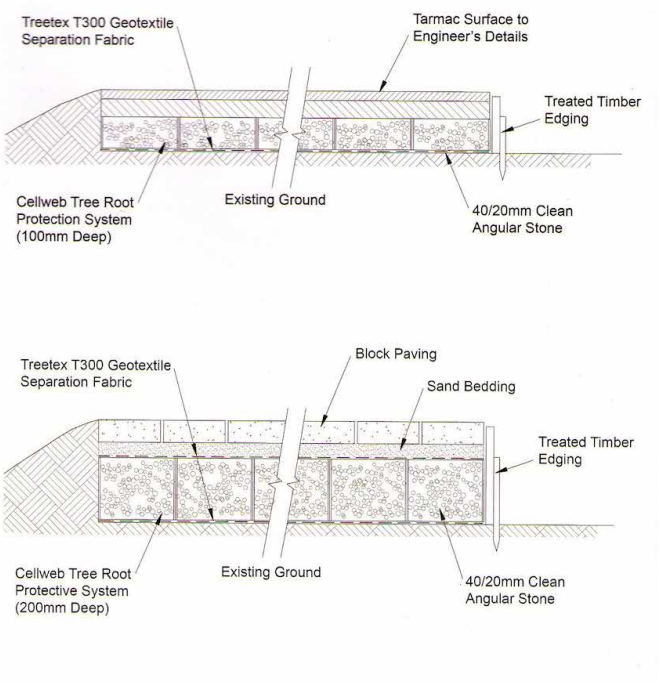
3.3.7 The driveway must be a maximum of 5 metres wide.

3.3.8 A minimum distance of 0.5m should be left around the base of the tree.

3.3.9 Construction should be ideally undertaken between May and October as the ground is driest and less prone to compaction.

3.3.10 Ground vegetation should be killed off using a translocated herbicide (eg. Glyphosphate). Once dead all organic material and rocks etc. should be removed. Hollows should be filled in using sharp sand. Do not grade-off high spots.

Typical No Dig Construction



3.5 Proximity of trees to structures

3.5.1 The impact of trees on the proposed access and vice versa and allowance for futuregrowth has all been considered in the siting of the proposed alterations. Tree size, future growth, light/shading, leaf and fruit nuisance etc. have received due attention and are not considered to be an issue.

BS5837:2012 Tree Survey

John Shutler Tree Services
St Mawes
Bashley Common Road
Bashley
Hampshire
BH255SG
Phone: 01590690456

Client: Mr I Siddall
Project: Black Moor House New Access
Survey Date: 18/03/2021
Surveyor: John Shutler

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
T1											
Common Oak *Quercus robur*	12	1	910	N 5 E 8 S 12 W 4	3 2 4 2	M	A: 374.7 R: 10.92	Fair	C: Fair S: Good B: Good	End weight reduction :: Unspecified Reduce crown(s) :: Unspecified Beginning to show veteran characteristics. New access should be 4m from stem of tree to clear low scaffold limb to East. Dead stub should be cut back to upright growth on lowest limb on eastern aspect to allow access. Lowest limb on southern aspect should be reduced by no more than 3m to reduce end loading. Remaining canopy on southern aspect should be reduced by no more than 1.5m to balance. Remove major deadwood using coronet cuts where possible.	B.2 20 to 40 yrs
T2										Estimated Measurements	
Common Ash *Fraxinus excelsior*	14	1	350	N 3 E 5 S 3 W 3		SM	A: 55.4 R: 4.19	Fair	C: Poor S: Fair B: Fair	Growing against boundary fence Showing early sign's of Ash die back. Monitor annually	C.2 <10 yrs
T3										Estimated Measurements	
Monterey Cypress *Cupressus macrocarpa*	16	1	560	N 0 E 4 S 4 W 4	3 2 2		A: 141.9 R: 6.72	Good	C: Good S: Good B: Good		C.2 10 to 20 yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature
Condition: C Crown; S Stem; B Basal area
Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition
ERC: Estimated Remaining Contributio

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
T4										Estimated Measurements	
Monterey Cypress *Cupressus macrocarpa*	15	1	460	N 1 E 5 S 1 W 4	3 4 2.5	SM	A: 95.7 R: 5.51	Good	C: Good S: Good B: Good		C.2 10 to 20 yrs
T5										Estimated Measurements	
Monterey Cypress *Cupressus macrocarpa*	15	1	340	N 3 E 3 S 1 W 4	2 2 2 2	M	A: 52.3 R: 4.08	Good	C: Good S: Good B: Good		C.2 10 to 20 yrs
T6										Estimated Measurements	
Common Hazel *Corylus avellana*	5	9	225 (Eq)	N 1 E 3 S 3 W 3	2 2 2 2	M	A: 22.9 R: 2.69	Fair	C: Fair S: Fair B: Fair	Coppice :: Unspecified Re coppice to maintain and prevent failure of larger stems	C.2 20 to 40 yrs
T7										Estimated Measurements	
Common Holly *Ilex aquifolium*	6	1	150	N 1.5 E 1.5 S 1.5 W 1.5	2 2 2 2	SM	A: 10.2 R: 1.8	Fair	C: Fair S: Good B: Fair	Fell :: Unspecified	C.2 10 to 20 yrs
T8										Estimated Measurements	
Common Holly *Ilex aquifolium*	14	1	200	N 3 E 3 S 3 W 3	2 2 2 2	M	A: 18.1 R: 2.4	Fair	C: Fair S: Good B: Good	Fell :: Unspecified	C.2 10 to 20 yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature
Condition: C Crown; S Stem; B Basal area
Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition
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Tree Survey Schedule Notes

Young (Y)	Tree in establishment stage, normally up to 5-10 years old
Semi-mature (SM)	Establishing tree with potential for significant growth both in terms of tree height and crown spread. Typically, having attained at least 25% of likely mature height and crown spread
Early Mature (EM)	Establishing tree with potential for significant growth both in terms of tree height and crown spread. Typically, having attained at least 50% of likely mature height and crown spread
Mature (M)	Established tree, typically having attained at least 70% of likely mature height and crown spread
Over-mature (OM)	Extensive decline in physiological functions and/or structural integrity
Veteran (V)	A tree that shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species.

Size and Spread

Height Current tree height in metres.

Stem Diameter Stem diameter, measured in millimetres, at 1.5m above ground-level. On multi-stemmed trees this measurement is taken using the guidance in Annex C of BS5837:2012.

Crown Spread Radial crown spread measured in four compass directions (north, south east, and west) using magnetic north.

Crown Clearance Height of crown clearance above adjacent site ground-level in metres. Where this varies around the canopy, the height of the lowest point is recorded.

Life Expectancy or Estimated Remaining Contribution (ERC)

The estimated number of years before the tree may require removal is expressed as one of the following categories: (i) <10 years; (ii) 10+ years; (iii) 20-40 years; (iv) 40+ years.

Condition and Value

Physiological Condition

Good	Healthy tree with no symptoms of significant disease
Fair	Tree with early signs of disease, small defects, decreased life expectancy, or evidence of less than average vigour for the species
Poor	Significant disease present, limited life expectancy, or with very low vigour for the species and evidence of physiological stress
Dead/dying	Tree is in advanced stages of physiological failure and is dying or dead

Structural Condition

Good	No significant structural defects observed
Fair	Some structural defects observed, including the presence of deadwood in otherwise healthy trees with a good life expectancy
Poor	Significant structural defects observed resulting in a tree which is likely to require either monitoring or remedial action
Dead/dying	Major defects which compromise the safety of the tree. Remedial works or tree removal are likely to be required in many target locations

BS5837 Category of retention. Each tree, group of trees or hedge is assigned to a retention category where:

A	Trees of high quality, retention is highly desirable
B	Trees of moderate quality where retention is desirable
C	Trees of low quality, or young trees with a stem diameter <150mm. Category C trees many be retained, replaced or relocated
U	Trees unsuitable for retention or trees which should be removed

In accordance with BS5837:2012, a numerical suffix is added to the retention category of each tree, which indicates the principal reason for the value of each tree or groups of trees, where:

1	Mainly arboricultural values, including fine examples of the species
2	Mainly landscape values, including trees providing screening and/or softening effects to the locality, or trees of visual prominence
3	Mainly cultural values, including conservation, historical and commemorative values

Tree Survey limitations

This report relates specifically to the condition of the tree or trees upon the days that the inspection was carried out.

Inspection was carried out from ground level, with use of binoculars where necessary. No climbing inspection was conducted

No analysis of soil samples was undertaken. Root areas and possible underground conflict interaction were only investigated insomuch as a surface visual inspection. .

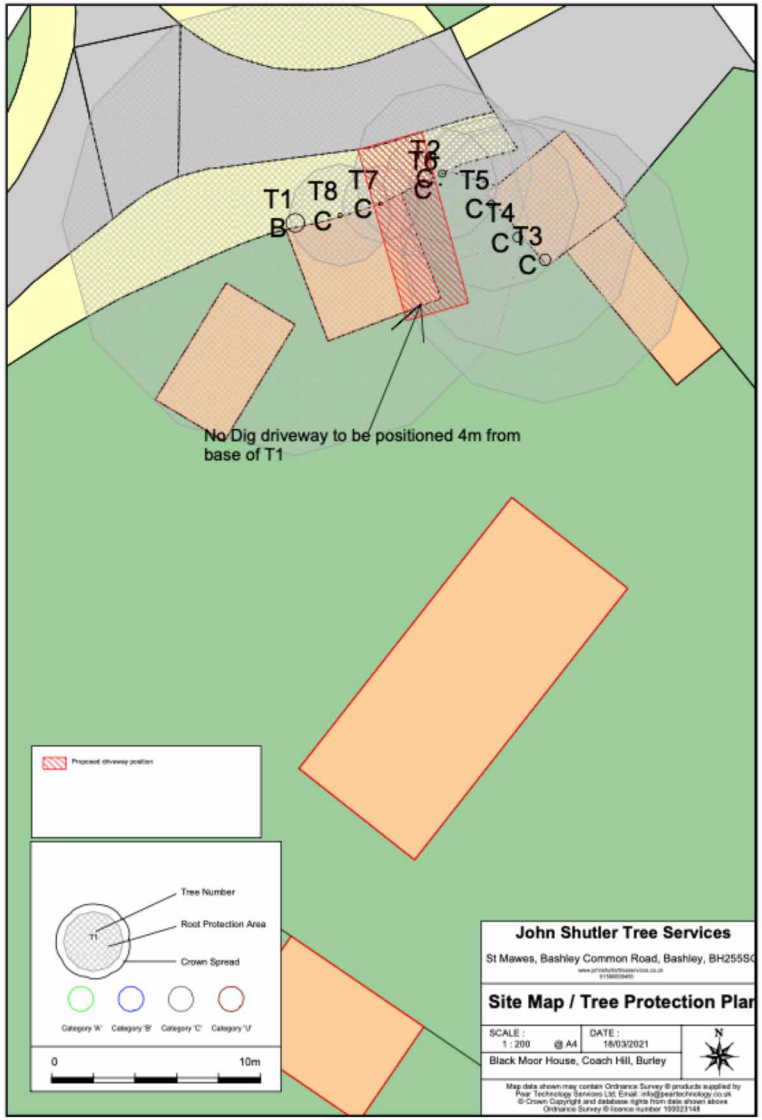
The report is valid only for typical weather conditions. Healthy trees, or parts of healthy trees, may fail in unusually high or unpredictable winds or violent storms and as such the consequences of such weather phenomena are unforeseeable. It follows that John Shutler Tree Services cannot be held liable for any such failures.

There is no such thing as a safe tree. The law recognises this and focuses upon the concept of 'reasonably foreseeable' incidents. In commissioning this report you fulfil part of your duty of care under common law and the Occupiers Liability Acts 1957 & 1984. Other legislation may also apply.

These trees may fall under the protection of the Local Council. As such, permission may be required before works begin. It should be noted that the Local Council may not share the views presented in this report.

Due to the date of the inspection, John Shutler Tree Services accepts no liability for fungal pathogens that may not be evident due to the time of ye

Appendix 1



John Shutler Tree Services Document Control

Project Title: Blackmoor House
Project Reference: Document Title: Tree Survey Report and Arboricultural Guidance
Commissioning Party: Mr I Siddall

Issue	Description	Date of issue	Signed
1	Tree Survey Report and Arboricultural Guidance	08/04/21	[redacted]

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by John Shutler Tree Services no other party may use, make use of or rely on the contents of the report. No liability is accepted by John Shutler Tree Services for any use of this report, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of John Shutler Tree Services using reasonable skill, care and diligence, taking into account the manpower, resources, investigations and testing devoted to it by agreement of the client, and no explicit warranty is provided as to its accuracy. It should be noted, and it is expressly stated that no independent verification of any of the documents or information supplied to John Shutler Tree Services has been made.

The report and any dispute or claim arising out of or in connection with it or its subject matter shall be governed by the law of England and the courts of England shall have exclusive jurisdiction to settle any dispute or claim that arises out of or in connection with the report, or its subject matter.