Arboricultural Impact Assessment and Tree Protection Plan

for trees at

Avebury Visitor Car Park

On behalf of

The National Trust
Estate Office
High Street
Avebury
SN8 1RF

Inspected and prepared by

Ben Rose BSc (Hons) MSc DipArb (RFS) MICFor RCArborA
Chartered Arboriculturist
Arboricultural Association Registered Consultant

28th November 2023

SUMMARY

This arboricultural impact assessment report supports a planning application, submitted by the National Trust, for reorganising and resurfacing the visitor car park at Avebury.

Arboricultural advice was taken early in the planning process with the aim of incorporating the best trees on the site. No trees will need to be removed or pruned to enable the proposed development.

During construction, temporary fencing will be used to protect retained trees situated near works areas. For effective tree protection, fencing must be installed before any heavy plant machinery is used on the site and must remain in place until the construction works have been completed.

The development proposal includes new surfacing along the main access road past a large ash tree. The tree is likely to be rooting in soil beneath the area to be surfaced, so a low-impact installation method is needed in this location. Ground preparation works will be carried out under arboricultural supervision and the relevant good practice guidance will be followed. The new surface in this area will be installed in accordance with the accompanying arboricultural method statement.

Supervision by a suitably qualified arboriculturist will be required in the event of any unforeseen construction activity within the root protection area of retained trees at or near the development site. It is advised to inform the project arboriculturist and the local authority's arboricultural officer of necessary works near trees as soon as they become apparent.

There will be a pre-commencement meeting between the site manager and the project arboriculturist where the site manager will be made aware of the tree protection measures that will be required during construction.

This report details how trees are to be protected during construction works. The site manager must be provided with a copy of this report as well as the accompanying arboricultural method statement and it will be their responsibility to impart the information herein to all construction staff.

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1 INTRODUCTION

1.1 Background

1.1.1 The National Trust proposes a new development at their visitor car park in Avebury which is located at 1 Beckhampton Road (SN8 1QT). This land is hereafter referred to as the 'site'. This would involve reorganising and resurfacing the car park; these proposals are hereafter referred to as the 'proposed development'.

1.1.2 The following documents have been reviewed to inform this report:

- General Arrangement - Portus + Whitton - Drawing # 1765 L1
- Car Park Construction Details - CRADDYS - Drawing # 13010sk0011 Rev. B

1.1.3 An initial tree constraints plan was produced in October 2022 and this has informed the design of the proposed site layout.

1.1.4 A check of the Wiltshire Council online mapping system confirms that the site is within a Conservation Area, and that none of the trees at the property are protected by a tree preservation order (TPO).

1.2 The assignment

1.2.1 Instructed by The National Trust, Bosky Trees Ltd conducted a site visit, surveyed the trees that might be affected by the proposed development and specified suitable tree protection measures in the event of a successful planning application. The information compiled in this report is in accordance with the British Standard *BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations*[1].

1.2.2 This report includes the following to accompany a planning application for the proposed development:

- A tree survey plan based on the topographical survey provided, with any additional trees indicatively plotted.
- An arboricultural impact assessment of the proposed development, identifying trees that will be lost, as well as trees that can be retained and protected during development works.
- A tree protection plan, including information on the location of tree protection fencing and ground protection measures.
- Recommendations for remedial works for retained trees to be undertaken before site clearance and construction.
- Method statements for works near trees.

[1] British Standards Institution (2012). *BS5837 Trees in relation to design, demolition and construction – Recommendations*. BSI: London.

1.3 Limitations

1.3.1 The assessment and works recommendations relate to conditions found at the time of inspection. Any significant alteration to the site that may affect present trees, or have implications for planning (including level changes, hydrological changes, storms, extreme climatic events or site works) will necessitate re-assessment of the trees.

1.3.2 Note that this survey is not a tree safety inspection; it has been carried out to inform the planning process. Where clear and obvious hazards have been observed, these have been addressed in the works recommendations. A full assessment of the risks posed by trees would be informed by consideration of site use together with hazards present within a tree. Changes in site use are likely to occur during, and result from, the proposed development. Given these factors, regular tree risk assessments are advised.

1.3.3 This report does not consider tree-related building subsidence. If shrinkable clay soils are present on site, then guidance given in the National House Building Council (NHBC) Standards, chapter 4.2[2] should be used to avert the risk of future subsidence of new buildings.

1.3.4 No detailed assessment of the potential conflict between future site use and the shade cast by trees has been undertaken within this report.

2 TREE SURVEY INFORMATION

2.1 Details of the site visit

2.1.1 I visited the site and carried out tree survey on 4th October 2022. The survey was not constrained by weather conditions and considered all trees on and around the site.

2.1.2 The proposed development site is currently an operational car park and the trees are located around the perimeter. Come of these trees have been planted and others are remnants of former hedgerows.

2.2 Data collection

2.2.1 Trees, tree groups and hedgerows were allocated a unique identifying number, used throughout this report. ID numbers are listed in the tree schedule and are used on the tree plans.

2.2.2 Trees were inspected at ground level using the visual tree assessment method.[3] As described in table 1 of BS5837,[4] each tree was placed into one of four retention categories: A, B, C or U. Stem diameter was used to calculate the root protection area (RPA)[5] required

[2] National House Building Council (2008). *NHBC Standards Chapter 4.2 - Building near trees*. NHBC: Milton Keynes.

[3] Mattheck, C. and Breloer, H. (1995). *The body language of trees: a handbook for failure analysis*. Research for Amenity Trees 4. HMSO: London.

[4] British Standards Institution (2012). *BS5837 Trees in relation to design, demolition and construction – Recommendations*. BSI: London.

[5] The root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of roots and soil structure is treated as a priority.

by each tree during construction. Information on each tree, tree group and hedgerow is given in Appendix 1.

2.2.3 A total of five individual trees, three groups of trees and three hedges were surveyed (see table 1).

Table 1: Summary of the retentive worth of trees, groups and hedges included in the survey.

BS5837 Category	Quality	Number of trees	Number of groups	Number of hedges
A	High	1	-	-
B	Moderate	2	1	3
C	Low	2	2	-
U	Very poor	-	-	-
	Total	**5**	**3**	**3**

2.3 The tree protection plan

2.3.1 The tree protection plan (TPP-1A) shows the locations of the trees and where fencing and ground protection are required to safeguard trees during construction. This plan is provided at the rear of the report (see Appendix 2).

3 ARBORICULTURAL IMPLICATIONS AND PROPOSED MITIGATION

3.1 Trees for removal

3.1.1 No trees will need to be removed or pruned to enable the proposed development.

3.2 Installing new hard surfacing near trees

3.2.1 New surfacing is proposed along the main access road past a large ash tree (T31). The tree is likely to be rooting in soil beneath the area to be surfaced, so a low-impact installation method is needed in this location. The new driveway in this area must be built in accordance with the Arboricultural Association's Guidance Note 12.[6]

3.2.2 To protect the roots and soil near the adjacent tree, a cellular confinement system is proposed to be laid on the soil surface, where the new surface will be installed. The surface will be topped with a permeable wearing course. Under the proposed methodology, digging or compaction of the soil is prohibited, and existing soil levels will not be lowered within the root protection areas of adjacent trees. Works to prepare the ground for this surface will be carried out under arboricultural supervision and the cellular confinement system will be installed in accordance with the accompanying arboricultural method statement.

3.2.3 The impact of the new surfacing on the root protection areas of trees in G3 and G4 has been considered. The trees in G3 will require a separation distance of 3.36m from the centre of their trunks and the trees in G4 will require a separation distance of 2.16m from the centre of their trunks. These distances have been shown on the tree protection plan (TPP-1A). Only

[6] Rose, B. (2020). *The use of cellular confinement systems near trees.* Guidance Note 12. Arboricultural Association: Stonehouse.

a small proportion of the root protection areas of the trees in G3 will be impacted by the re-surfacing works and I expect that the trees will tolerate this impact, particularly considering that there are more favourable rooting conditions in other directions. Therefore, in my opinion, I do not think that the access road adjacent to G3 and G4 will need to be constructed on a cellular confinement system sub-base.

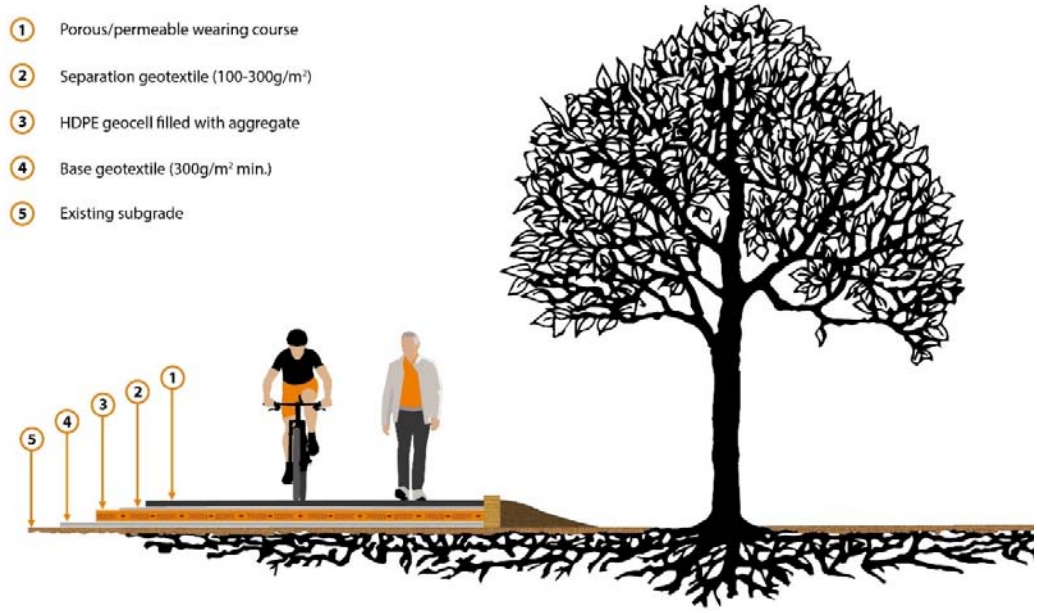


Figure 1: An example of the system proposed for protecting the soil near the retained trees.

3.3 New service runs

3.3.1 Typical 'open trench' installation of underground services near trees is likely to sever roots; this will harm the tree's physiological condition, provide an opportunity for fungal infection, and could leave them prone to windthrow. Therefore, new underground services will be located and designed to avoid retained trees' root protection areas.

3.3.2 Three new sections of ducting are proposed beneath the drive, but these will not impact trees. If any additional underground services are required it will be necessary for suitable members of the project team, including an arboricultural consultant, to design their routes. An appropriate specification and method statement are required for their installation and guidance provided in Volume 4 of the National Joint Utilities Guidelines (NJUG4)[7] must be followed.

[7] National Joint Utilities Group (2007). *Guidelines for the planning, installation, and maintenance of utility apparatus in the proximity to trees.* Volume 4 (NJUG4). National Joint Utilities Group: Eastleigh.

3.4 Level changes and retaining walls

3.4.1 Level changes or slopes must comply with the constraints attached to the construction exclusion zones. This means that any soil grading must take place outside of the fenced areas identified on the tree protection plan.

3.5 Tree protection fencing

3.5.1 Temporary fencing and/or barriers must be used during construction to protect retained trees situated near works areas. The locations of such fencing/barriers is indicated on tree protection plan at the rear of the report (TPP-1A). For effective tree protection, protective fencing must be installed before any heavy plant machinery is used on the site and must remain in place until completion of construction works (unless under arboricultural supervision). The fenced off areas will be designated as 'construction exclusion zones'.

3.6.2 A specification for suitable tree protection fencing is provided in the accompanying arboricultural method statement.

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1 Evaluation of the proposed development's arboricultural impact

4.1.1 No trees will need to be removed or pruned to enable the proposed development. The use of the cellular confinement system near T31 is a low-impact approach and I expect that this tree will tolerate the expected works within its root protection area without any significant impact on its long-term health or appearance.

4.1.2 Since only a small proportion of the root protection areas of the trees in G3 will be impacted by the re-surfacing works I expect that the trees will tolerate this impact, particularly considering that there are more favourable rooting conditions in other directions. Therefore, in my opinion, I do not think that the access road adjacent to G3 will need to be constructed on a cellular confinement system sub-base.

4.1.3 Overall, provided that the tree protection measures detailed in the accompanying arboricultural method statement are followed, I consider that the proposed development can be constructed without causing significant damage to any of the trees at the site. Therefore, I am satisfied that the proposed development will have an acceptable impact on local tree cover.

5 RECOMMENDATIONS

5.1 Tree work

5.1.1 All tree works necessary for the proposed development are listed in the schedule in Appendix 1.

5.1.2 All permitted and approved tree work must be undertaken in accordance with BS3998:2010 *Recommendations for tree work*,[8] ideally at the beginning of the construction phase before protective fencing is erected. Only qualified and insured tree surgeons should be employed.

[8] British Standards Institution (2010). *BS3998 Recommendations for tree work*. BSI: London.

5.2 Legal restrictions to tree works

5.2.1 The *Town and Country Planning (Tree Preservation) (England) Regulations 2012*[9] and the accompanying *Guide to tree preservation procedures* make clear that it is an offence to deliberately destroy a tree subject to a tree preservation order (TPO), or to damage it in a manner that is likely to destroy it, without the permission of the local planning authority. To do so is punishable by an unlimited fine and a replacement tree would normally need to be planted. Trees standing within a conservation area protected in the same way as a tree protected by a tree preservation order.

5.2.2 If this report is submitted with a full planning application that is subsequently approved, any works listed in this report may be carried out before construction work begins without further permission from the local planning authority. However, since the trees are situated in a conservation area, any works taking place before planning permission has been approved must be granted by application for tree works to the local planning authority.

5.3 Works that must follow an arboricultural method statement

5.3.1 An arboricultural method statement for work near trees has been produced and this is provided as a separate stand-alone document. There will be minimal impacts on the adjacent trees if this arboricultural method statement is followed. The following method statements are provided:

- General specification for effective tree protection.
- Specification for tree protection fencing.
- Method statement for installing cellular confinement systems.

5.4 Agenda for arboricultural supervision

5.4.1 There will be a pre-commencement site meeting between the project arboriculturist and the construction site manager. During this 'toolbox talk' the arboriculturist will explain how trees could potentially be damaged by construction works and discuss how such damage can be avoided, and the agreed methodology for the works will be fully explained. The toolbox talk will also provide an opportunity for the contractor to raise and issues with working methods or features that they think could potentially impact the retained trees. At this point the location and suitability of the tree protection fencing will be checked by the project arboriculturist. A record of this meeting will be produced by the arboriculturist and this will be supplied to the Wiltshire Council tree officer.

5.4.2 The necessary ground preparation prior to the installation of the cellular confinement system will need to be carried out under arboricultural supervision. The supervising arboriculturist will make a record of each visit and make this available to the local authority tree officer.

[9] Town and Country Planning, England. *The town and country planning (tree preservation) (England) regulations 2012*. Town and Country Planning, England: London. Available at: https://www.legislation.gov.uk/uksi/2012/605/pdfs/uksi_20120605_en.pdf.

Table 2: Agenda for arboricultural supervision.

Item no.	Phase	Works description
1	Pre-commencement	Tree protection put in place.
2	Pre-commencement	Toolbox talk from project arboriculturist.
3	Pre-commencement	Certificate of tree protection fencing compliance submitted.
4	Construction	Supervision of the ground preparation in advance of installing the cellular confinement system adjacent to T31.

5.4.3 Supervision by a suitably qualified arboriculturist will also be required if any unforeseen construction activity is to take place within the root protection area of any trees retained on or near the site. The project arboriculturist and the local authority's arboricultural officer should be informed of necessary works near trees as soon as they become apparent.

Appendix 1: Tree Schedule

Site: Avebury visitor car park

Surveyor: Ben Rose

Date of Survey: 4th October 2022

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T31	Ash	10	2	115	2	3	2	3	6	FM	G	20+	Basal shoot growth. Recent heavy crown reduction, with approximately 2m subsequent regrowth. Early symptoms of Chalara dieback in 2022.	No action required at present.	**B2**
T32	Field maple	7	4	32	6.5	1	3.5	4.5	3	M	G	20+	Hedgerow tree. Crown suppressed by larger adjacent Norway maple.	No action required at present.	**C1**
T33	Hawthorn	5	1	30	1	2.5	2	3	2	FM	F	10+	Hedgerow tree. Heavily ivy clad. Crown suppressed by larger adjacent Norway maple.	No action required at present.	**C1**
T34	Norway maple	13	1	73	6.5	8	7.5	5	3	M	G	40+	A footpath passes beneath the crown exposing roots. No obvious significant defects.	No action required at present.	**A1**
T35	Field maple	7	1	41	5.5	4	4	4.5	4	M	G	40+	No obvious significant defects.	No action required at present.	**B1**

A key explaining each category is provided at the rear of the schedule

Appendix 1: Group Schedule

Site: Avebury visitor car park

Surveyor: Ben Rose

Date of Survey: 4th October 2022

Group Number	Tree Species	Number in Group	Height (m)	Number of stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
G3	Field maple, barberry, hazel, wayfaring tree and elder	28	10	1	**28**	4	4	4	4	4	EM	G	40+	This is a belt of trees that screen the car park.	No action required at present.	**B2**
G4	Field maple, barberry, hawthorn, wayfaring tree and elder	15	6	MS	**18**	2.5	2.5	2.5	2.5	1	EM	F	40+	Small trees, most are covered in ivy. Some trees are in poor health and there are a few gaps.	Sever ivy at base of trees. Remove trees in poor health and plant up any gaps.	**C2**
G5	Hawthorn, field maple, privet and elm	7	3	MS	**4**	1	1	1	1	1	SM	G	20+	Small trees beneath the crown of a large Norway maple. Some of the elms are dead.	No action required at present.	**C1**

A key explaining each category is provided at the rear of the schedule

Appendix 1: Hedge Schedule

Site: Avebury visitor car park

Surveyor: Ben Rose

Date of Survey: 4th October 2022

Hedge Number	Tree Species	Height (m)	No. of Stems	Stem Ø (cm)	Width (m)	Length (m)	Age Class	Overall Health	ULE (Years)	Condition & Notes	Recommended Management	Category
H2	Field maple, hawthorn and elder	3	MS	**12**	1.5	18	M	G	20+	This is an old hedgeline that is regularly flailed. Some gaps at low levels. Ivy throughout.	No action required at present.	**B2**
H3	Field maple, hawthorn, dogwood and elder	3	MS	**12**	1.5	28	M	G	20+	This is an old hedgeline that is regularly flailed. Some gaps at low levels. Ivy throughout.	No action required at present.	**B2**
H4	Field maple, hawthorn and privet	7	MS	**18**	5	35	EM	G	40+	This has some older trees with recent planting in-between. It hasn't been managed in recent years which has allowed the trees to develop wide crowns. This hedge screens the car park.	No action required at present.	**B2**

A key explaining each category can be found at the rear of the schedule.

Tree Schedule - KEY

Tree/Group/Hedge Number
Tree, tree-groups or hedges have been allocated a number for the purpose of this survey. Numbers within the Tree Schedule relate to those marked on the Tree Removal Plan and Tree Protection Plan drawings.

Trees protected by a tree preservation order (TPO) are highlighted by grey colouration in the tree schedule.

Species
Common names are listed.

Number in Group
Number of trees within a group. A group of trees may comprise of more than one species.

Height (m)
All heights are estimated in metres.

Number of Stems
The number of stems is either 1, 2, 3, 4, 5 or MS (multi-stemmed). This feature influences how the area of the recommended root protection area is calculated.

Stem or Combined Diameter (cm)
Single stem diameters are measured at 1.5m with a diameter tape. The combined stem diameters for trees with up to five stems and trees with more than five stems (MS) trees are calculated in accordance with the guidance.

Crown Spread Radius (m)
The crown radius from tree trunk to crown limit identified at the four cardinal points (N, S, E and W) in order to allow presentation of the above ground constraints on the Tree Protection Plan.

Measurements are approximate and recorded to the nearest half metre.

1st Branch (m)
This is a record of the height of the lowest branch. This is useful when planning access routes or considering if pruning will be required to site new features under a tree crown.

Age Class
(Y) Young, (SM) Semi-Mature, (EM) Early-Mature, (M) Mature, (FM) Fully-Mature or (V) Veteran.

Overall Health
An overall assessment of the physiological condition of the tree recorded as (G) Good, (F) Fair, (P) Poor, (D) Dead.

ULE (Years)
Useful Life Expectancy. Anticipated future contribution to amenity, in years.

Tree Structural Condition & Site Notes
Observations on the form of the tree, condition and structural integrity.

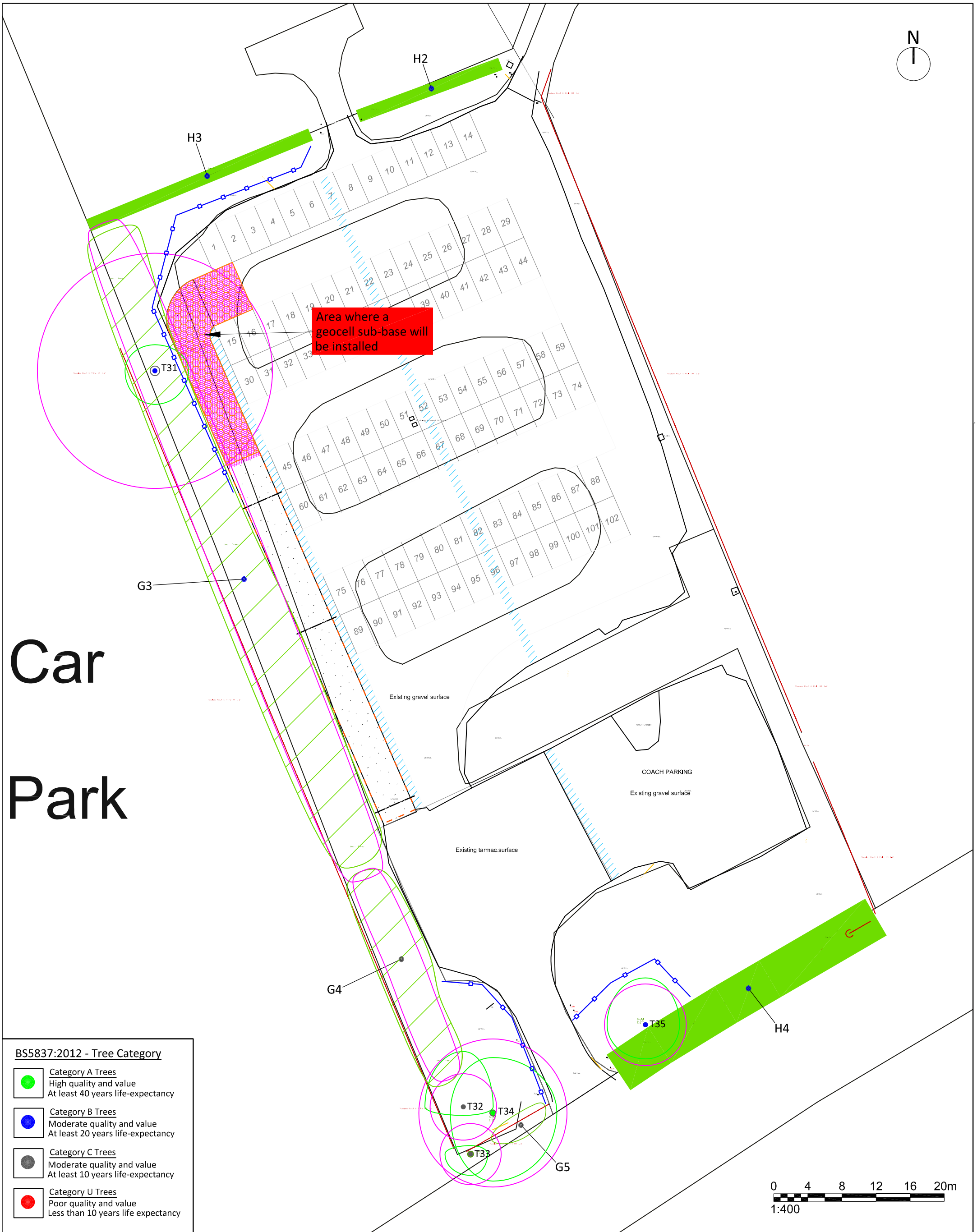
Site notes are detailed when relevant to the growth conditions or rooting constraints.

Management Recommendations
Recommended tree surgery works to be carried our prior to construction. Terminology used is based on guidance detailed in BS3998:2010 – Recommendations for tree work[1].

Category
Tree category as defined within BS5837:2012. Categories A (high quality), B (moderate quality) and C (low quality) are trees that should be considered for retention. Category U trees are unsuitable for retention.

[1] British Standards Institution (2010). BS3998 - Recommendations for Tree Work. BSI, London.

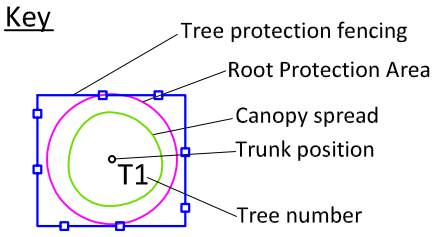
Car Park



BS5837:2012 - Tree Category

- Category A Trees
  High quality and value
  At least 40 years life-expectancy
- Category B Trees
  Moderate quality and value
  At least 20 years life-expectancy
- Category C Trees
  Moderate quality and value
  At least 10 years life-expectancy
- Category U Trees
  Poor quality and value
  Less than 10 years life expectancy

Key



Tree group canopy outline

Hedge line

Area where the arboricultural method statement is to be followed

BOSKYTREES

Rook Lane House
Christchurch Street West
Frome, BA11 1EB

info@boskytrees.co.uk
Tel: 01373 832778

Project Name:	Visitor Car Park Avebury
Client:	The National Trust
Agent:	
Drawing Title:	Tree Protection Plan
Date:	28-11-2023
Drawing Number:	TPP-1
Revision	A
Scale:	1:500 @ A3