

**Tree Survey
Arboricultural Impact Assessment
Arboricultural Method Statement**

Relating to:

The Rural History Centre, University of Reading

Produced for:

WSP Parsons Brinckerhoff

Prepared by:

Challice Consulting Ltd.

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Date:

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Our Ref:

CC/1459 AR2699

INTRODUCTION**SECTION**

Frequently Used Key Terms and Abbreviations	1.0
The Proposal	2.0
Instructions and Purpose	3.0
Scope	4.0
Documents Supplied/Used	5.0
Site Details	6.0

TREE SURVEY

Survey Method	7.0
Tree Details	8.0

ARBORICULTURAL IMPACT ASSESSMENT

Introduction to Arboricultural Impact Assessment	9.0
Tree Removal and Retention	10.0
Tree Pruning Works	11.0
Incursions into Root Protection Areas	12.0
Proximity Issues and Shading	13.0
Summary of Arboricultural Impact	14.0

ARBORICULTURAL METHOD STATEMENT

Introduction to Arboricultural Method Statement	15.0
Pre-Commencement Meeting	16.0
General Site Precautions	17.0
Tree Works	18.0
Tree Protective Fencing	19.0
Ground Protection	20.0
Site Access/Hard Surfaces	21.0
Demolition	22.0
Underground Services	23.0
Foundations	24.0
Construction/Hard Landscaping	25.0
Soft Landscaping/Boundary Fencing	26.0
Sequencing and Supervision	27.0
Amendments	28.0
List of Contacts	29.0

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APPENDICES

Appendix 1	Tree Survey Schedule with Recommended Tree Works
Appendix 2	Tree Protection Plan in Colour at A1 and Scale 1:500 with Tree Protective Fencing and Ground Protection Specifications
Appendix 3	Example of Site Inspection Record
Appendix 4	Induction Form for Personnel
Appendix 5	Guidelines for Installing Low Invasive Surfaces

INTRODUCTION

1.0 Frequently Used Key Terms and Abbreviations

Tree Preservation Order	TPO
Arboricultural Method Statement	AMS
British Standard 5837:2012 – Recommendations for Trees in Relation to Design, Demolition and Construction	BS 5837
British Standard 3998:2010 - Recommendations for Tree Work	BS 3998
Root Protection Area/Root Protection Areas	RPA/RPAs
Local Planning Authority	LPA
Cellular Confinement System	CCS

2.0 The Proposal

- 2.1 The proposal is to erect a new temporary construction and site welfare facilities will be provided and will require new underground services. The existing building has already been demolished which required the removal of trees T1, T2, G24 and G44.

3.0 Instructions and Purpose

- 3.1 This report has been commissioned by WSP Parsons Brinckerhoff to;
- Survey the trees in accordance with British Standard (BS 5837) 5837:2012 - Trees in Relation to Design, Demolition and Construction- Recommendations.
 - Make suggestions to decrease the arboricultural impact of the proposed scheme on the retained trees.
 - Detail the arboricultural impact of the proposed project.
 - Prepare a tree work schedule to British Standard (BS 3998) 3998:2010 - Recommendations for Tree Work.
 - Develop a tree protection strategy for the duration of the development including any demolition works.
 - Provision of the above information is designed to address the requirements of the LPA in terms of the arboricultural information necessary to register and determine the planning application.
- 3.2 Provision of the above information is designed to address the requirements of the LPA in terms of the arboricultural information necessary to register and determine the planning application.

4.0 Scope

- 4.1 In surveying the trees to the requirements of BS 5837, trees on and immediately adjacent to the site with a stem diameter over 75mm have been included. Large shrubs and hedges have been included where these are considered to be of significant amenity value. These are particularly important where they provide boundary screening. For clarity and ease of data interpretation, large shrubs have been classified as trees.
- 4.2 A full hazard assessment of the trees (including the assessment of decay or defects and their impact), has not been undertaken as this is considered beyond the scope of this report. Any obvious hazards and defects have been identified in the Tree Survey Schedule and appropriate works recommended for immediate action.

5.0 Documents Supplied/Used

Document	Obtained From	Format/Ref.
Existing and proposed layout plans	WSP Parsons Brinckerhoff	Dwg.
Topographical Survey	WSP Parsons Brinckerhoff	Dwg.

6.0 Site Details

- 6.1 Prior to demolition the site was comprised of a group of derelict prefabricated buildings located within the University of Reading campus.
- 6.2 The site is largely flat with no significant inclines in any direction that would affect the recommendations in this report.
- 6.3 The site is within the administrative jurisdiction of Reading Borough Council.
- 6.4 I have not been instructed to ascertain the protection status of any of the trees on or near the site.

TREE SURVEY

7.0 Survey Method

- 7.1 The site and trees were inspected on 15th September 2015.
- 7.2 The trees were inspected from ground level and no climbing inspections were undertaken.
- 7.3 Heights of the trees were estimated by eye and crown spreads were estimated by pacing.

8.0 Tree Details

- 8.1 The total number of current records is as follows:
Individual Trees (T): 32
Tree Groups (G): 9
- 8.2 The tree details and proposed works are presented in the Tree Survey Schedule with Recommended Tree Works at **Appendix 1** and tree positions are shown on the Tree Protection Plan at **Appendix 2**.
- 8.3 The quality and value of the tree stock has been broken down by BS 5837 quality grade. The grading system can be summarised as follows:

A Grade – trees of high quality and value with a life expectancy of more than 40 years

B Grade – trees of moderate quality and value, with a life expectancy of more than 20 years

C Grade – trees of low quality and value, with a life expectancy of more than 10 years

U Grade – trees for removal, with a life expectancy of less than 10 years

Quality and Value of Existing Tree Stock

	A Grade	B Grade	C Grade	U Grade
No. of Current Tree Records by Grade	3	23	14	1

- 8.4 The RPAs of the trees are included in the Tree Survey Schedule with reference to Table 1 of BS 5837. The RPA is the area, measured in m², which is calculated in accordance with the BS 5837 using the stem diameter of the trees. This should provide retained trees with sufficient rooting environment to survive the proposed development.

ARBORICULTURAL IMPACT ASSESSMENT

9.0 Introduction to Arboricultural Impact Assessment

- 9.1 This section comprises an assessment of the impact the proposed works detailed in Section 2 above have on trees. It considers the arboricultural impact and how this may be mitigated.

10.0 Tree Removal and Retention

- 10.1 The proposed scheme provides for the retention and protection of all the trees on site with the exception of trees T1, T2, G24 and G44 which have been removed to demolish the existing buildings and B Grade Sycamore T36 and U Grade False Acacia T45.
- 10.2 This low level of tree removal will not impinge on the long-term character and appearance of the area subject to the implementation of a comprehensive landscaping scheme including tree planting, which is normally a standard condition of planning approval.

11.0 Tree Pruning Works

- 11.1 Tree works are recommended for good arboricultural practice and to ensure reasonable clearance from the proposed construction. The pruning described in the Tree Survey Schedule with Recommended Tree Works at

Appendix 1 will not adversely affect the trees or their contribution to local amenity.

12.0 Incursions into Root Protection Areas

- 12.1 The table below summarises the incursions into the RPAs of retained trees. The 'Action' column details how the incursion has been dealt with and why it is considered acceptable. Incursions may be fully invasive (where specialist methods are not used and some root loss is considered acceptable) or low invasive (where specialist methods are used to minimise damage to or loss of roots). Full details of how the works will be carried out without causing damage to the trees are given in the AMS.

Summary of Incursions into RPAs

Tree No.	Type of Incursion	Incursion %	Action
T5	Low invasive to install permeable footpath	27 %	A permeable low invasive surface will be installed on top of the existing soil level under direct arboricultural supervision to limit root disturbance to an acceptable level

- 12.2 No new underground services are to be installed within the RPAs of retained trees.

13.0 Proximity Issues and Shading

- 13.1 The approximate shade segments for key retained trees have been plotted using the ArborCAD software system, which identifies the area of the site which may be affected by shade during the course of the day. The shade segment does not represent the area which will be in shade all day long; however, it represents an area which **may** be affected **at some point** during the course of a day by shade depending on the time of day and season.

- 13.2 The juxtaposition between retained trees and the proposed development is in accordance with Section 5.3 of the BS 5837 and should not lead to future pressure to heavily prune or remove retained trees for the following reasons:
1. Tree pruning has been recommended to provide adequate separation between the proposed development and the retained trees.
 2. Any future tree pruning works are unlikely to be over and above those generally accepted as good arboricultural practice in an urban environment.
 3. Low maintenance gutters can be specified to negate the need for removing leaves from the rainwater collection system.

14.0 Summary of Arboricultural Impact

- 14.1 In summary, the arboricultural impact of the proposed scheme is relatively minor as the majority of the trees to be removed are of low or moderate quality.
- 14.2 During the landscaping phase of the development there is an opportunity to improve the age class distribution and species diversity of the tree stock on this site which is normally subject to a standard planning condition.
- 14.3 The retained trees can be afforded an appropriate degree of protection in accordance with the BS 5837 as detailed in the AMS.

ARBORICULTURAL METHOD STATEMENT

15.0 Introduction to Arboricultural Method Statement

- 15.1 To safeguard the retained trees (both above and below ground parts) during the development works and preserve the soil structure of areas which have been allocated for new planting, it will be necessary to implement tree protection measures as outlined below.
- 15.2 The basic principle is that the area inside the tree protective fencing and where ground protection has been used is to be protected for the duration of the works.

- 15.3 A copy of this AMS shall be maintained on site at all times and made available to all site personnel.
- 15.4 All site personnel shall be made aware of the key impact of this AMS and be given an arboricultural induction by the Site Manager. An Induction Form is attached at **Appendix 4**. A copy of the Induction Form will be signed by all site personnel to confirm that they have understood the issues involved.
- 15.5 As of 2005, Local Planning Authorities have powers to serve **Temporary Stop Notices** if agreed tree protection measures are not carried out. Adhering to this AMS will ensure that such costly and time consuming action is avoided.

16.0 Pre-Commencement Meeting

- 16.1 A pre-commencement site meeting, involving representatives from the Development Company, the Arboricultural Consultant and the LPA Tree Officer will be held to ensure that all aspects of the tree protection process are understood and agreed. A record of the meeting will be communicated to all parties by the Arboricultural Consultant.

17.0 General Site Precautions

- 17.1 The following points will be observed at all times:
- No fires will be lit on site during the construction or demolition phases.
 - No access will be permitted inside the tree protective fencing.
 - No materials, equipment or debris will be stored within the tree protective fencing.
 - Notice boards, telephone cables or other services will not be attached to any parts of retained trees.
 - Materials which will contaminate the soil (e.g. diesel oil and vehicle washings) will not be permitted to migrate into the RPAs of retained trees.

- A dedicated mixing and cleaning area will be set up to prevent concrete, cement and cleaning residue leaching into the RPAs of the retained trees (see Tree Protection Plan for specification).

18.0 Tree Works

- 18.1 All works will be carried out in accordance with BS 3998:2010 'Recommendations for Tree Work' (as amended) and to current arboricultural best practice. Tree works will be carried out by a suitably qualified and experienced Arboricultural Contractor holding the necessary insurance cover. This contractor should carry out the relevant site specific risk assessments and record such information prior to commencement of tasks and work in accordance with current health and safety standards, practices and legislation. A list of such contractors is available from the Arboricultural Association at www.trees.org.uk.
- 18.2 The subject trees may be protected by virtue of being within a Conservation Area or covered by a by a TPO. Submission of this AMS in connection with a planning application should be construed as a formal application to carry out those works specified in the Tree Survey Schedule with Recommended Tree Works at **Appendix 1**. It is recommended that this matter be clarified in writing with the LPA prior to any works commencing.
- 18.3 In addition, prior to the commencement of any tree works, an ecological assessment of specific trees may be required to ascertain whether protected species (e.g. bats, badgers and certain invertebrates) may be affected.
- 18.4 If additional pruning of trees is required to facilitate the proposed works or access for machinery/plant, the Arboricultural Consultant will be contacted to advise on appropriate works and liaise with the LPA as necessary.

19.0 Tree Protective Fencing

- 19.1 Tree protective fencing is used to ensure that the RPAs of retained trees are safeguarded. These measures may also be employed to protect areas of ground for new landscaping.
- 19.2 The positioning and specification of the fencing is shown in **Appendix 2**. In this case, the default specification of BS 5837 consisting of **fixed Heras** fencing would be effective.
- 19.3 The protective fencing will remain in position for the duration of the development, including the removal of any existing structures. Clear signs will be attached to the fencing once erected – suggested wording will be **‘Construction Exclusion Zone No Access’**.

20.0 Ground Protection

- 20.1 A provision has been made to install ground protection between the edge of the proposed development and the tree protective fencing. This provides adequate working space to permit the safe and practical completion of construction works whilst protecting the rooting environment of the retained trees (position and specification shown in **Appendix 2**). The ground protection will remain in place for the duration of the development, including the removal of any existing structures.

21.0 Site Access/Hard Surfaces

- 21.1 The base construction of the footpath within the RPA of T5 will occur at the initial stage of development to ensure the RPAs of the retained trees are protected (position shown at **Appendix 2**). A CCS is to be used, the depth of which will be determined following consultation with a Structural Engineer or the supplier. Guidelines for installing low invasive hard surfaces within the RPAs of retained trees are attached at **Appendix 5**. This will have an impact on final levels as the principle is to build up levels rather than carry out any excavation. The final surface can be applied after all of the heavy machinery has been removed from site. The tree

protective fencing can be relocated under arboricultural supervision to enable this process.

- 21.2 The existing driveway is suitable for site access during construction and little or no damage is anticipated to the root systems of the retained trees.

22.0 Demolition

- 22.1 There is no requirement for demolition within any of the phases within this proposed development.

23.0 Underground Services

- 23.1 The proposed scheme can make use of existing services and all new services and soakaways will be located in the adequate space outside the RPAs of the retained trees.
- 23.2 The locations of all new services will be available for review at the pre-commencement site meeting before any works start on site.

24.0 Foundations

- 24.1 The foundations for the proposed development are located outside the RPAs of retained trees, therefore, the design and installation of specialised foundations is not required.

25.0 Construction/Hard Landscaping

- 25.1 There is no requirement for additional construction or hard landscaping that will affect the surveyed trees.
- 25.2 Construction is taken to include erection of scaffolding and the installation of associated hard landscaping features such as retaining walls, patios, and cycle stores.

- 25.3 In this instance, retained trees will not impede the erection of scaffolding and no ancillary structures are proposed within the RPAs of the retained trees.
- 25.4 Subject to all of the above tree protection measures being implemented, construction works may proceed without risk of damage to retained trees.

26.0 Soft Landscaping/Boundary Fencing

- 26.1 Soft landscaping will be undertaken when heavy machinery has been removed from site and tree protective fencing taken down. The following points will be observed:

- Care will be taken not to compact the soil within the RPAs of retained trees or where new tree planting is to be carried out.
- No changes in ground levels will occur within the RPAs of the retained trees.
- Unwanted vegetation will be removed manually or using contact herbicides that will not damage existing tree roots.
- No irrigation or drainage pipes will be installed within the RPAs of retained trees.
- If soil has been compacted in areas where planting is proposed, measures to improve soil structure (e.g. decompaction) may be necessary to facilitate successful plant establishment.
- Where fence posts are being installed within the RPAs of retained trees, this will be undertaken under arboricultural supervision. Fence post holes shall be lined with polythene where concrete is used to prevent the harmful cement leaching into the soil and damaging the roots of the retained trees.

27.0 Sequencing and Supervision

- 27.1 Effective tree protection relies on following a logical sequence of events and arboricultural inspection/supervision.
- 27.2 Works which have the potential to affect trees will be supervised by a suitably qualified and experienced Arboricultural Consultant. Regular

inspection visits will also be undertaken to ensure that tree protection measures are being adhered to. The final details of supervision and the frequency of inspection visits will be agreed at the pre-commencement meeting. The Arboricultural Consultant will make a record of visits, which will be attached to the site copy of the AMS for inspection and communicated in writing to the LPA. An example of the Site Inspection Record is found in **Appendix 3**.

Sequencing and Supervision

Stage	Action	Personnel Responsible
1.	Issue arboricultural report to site manager	Client/Developer
2.	Give Arboricultural Consultant (AC) at least a week's notice of pre-commencement meeting	Client/Developer
3.	Pre-commencement meeting	Site Manager, Tree Officer and AC
4.	Arboricultural induction	Site Manager
5.	Carry out tree works	AC to monitor
6.	Erect tree protective fencing and install ground protection	AC to inspect
7.	Install base by hand for the low invasive hard surfacing within the RPA of retained tree T5	AC to supervise
8.	Construct foundations	Site Manager
9.	Install underground services	AC to supervise
10.	Erect scaffolding and carry out construction (including hard landscaping)	Site Manager
11.	Remove machinery/plant	Site Manager
12.	Remove tree protective fencing/ground protection	Site Manager
13.	Carry out soft landscaping and erect boundary fencing	Site Manager to brief landscaping company on site and supervise

28.0 Amendments

- 28.1 Issues sometimes arise on development sites which require amendments to the previously agreed tree protection details. Any amendments to this AMS will be discussed with the Arboricultural Consultant and approved in writing by the LPA prior to being implemented. Copies of paperwork

relating to any amendments shall be attached to the site copy of the AMS to provide a definitive record of what has been agreed.

29.0 List of Contacts

Contact	Name	Company/LPA	Contact Number(s)	Report Issued to?
Client	Mr. Graham Prowse	WSP Parsons Brinckerhoff	-	Yes
Arboricultural Supervisor	Mr. David Challice	Challice Consulting Ltd.	01306 743374 07831 855764	N/a

Appendix 1

Tree Survey Schedule with Recommended Tree Works

Site: The Rural History Centre, University of Reading
Date Surveyed: 15th September 2015

Surveyor: Mr. David Challice
Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T1	False Acacia 1 Number			GC FB											This tree has been removed to facilitate demolition
Recommended Works/ Reason for Works:															
T2	False Acacia 1 Number			GC FB											This tree has been removed to facilitate demolition
Recommended Works/ Reason for Works:															
T3	Sycamore 1 Number	17	7 6 6 6	GC1.5 FB3 S	Mature	705 3	12	8.5	Normal	Good	Medium	B	1,2	40+	A tree with insignificant defects Rooting restricted by nearby hard surfacing Minor deadwood throughout crown
Recommended Works/ Reason for Works: No work proposed															
T4	Field Maple 1 Number	14	5 6 4 5	GC 2 FB2.5 W	Mature	450 1	12	5.4	Moderate	Fair	Medium	B	2	20+	Branches touching building Significant deadwood throughout crown Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works: Remove all deadwood over 25mm in diameter															
T5	Field Maple 1 Number	17	5 7 6 7	GC 5 FB4 W	Mature	650 1	12	7.8	Moderate	Fair	Medium	B	2	20+	Branches touching building Significant deadwood throughout crown Numerous branch wounds with associated decay A sparser than normal canopy
Recommended Works/ Reason for Works: Remove all deadwood over 25mm in diameter															
Recommended Works/ Reason for Works: Advisable for good arboricultural practice															

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, S, E, W).
3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
5. Protection Multiplier is the number used to calculate the tree's protection radius and area and is shown as 12.
6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak) or Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remedial defects), Poor (major defects present).
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Site: The Rural History Centre, University of Reading
Date Surveyed: 15th September 2015

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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T6	Common Oak 1 Number	18	7 7 6	GC 1.5 FB 3 W	Early Mature	680 1	12	8.2	Normal	Good	Medium	B	1, 2	40+	Split wound northern side Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Remove split branch at 1.5m		Remove all deadwood over 25mm in diameter		Advisable for good arboricultural practice									
T7	Norway Maple 1 Number	16	5 5 4 5	GC 1.5 FB 2.5 W	Mature	450 1	12	5.4	Normal	Good	Medium	B	1, 2	40+	A tree with insignificant defects Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works:		No work proposed													
T8	Norway Maple 1 Number	16	5 5 4 4	GC 1.5 FB 2.5 S	Mature	410 1	12	4.9	Normal	Good	Medium	B	2	40+	A tree with insignificant defects Minor deadwood throughout crown Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works:		No work proposed													
T9	Norway Maple 1 Number	16	5 5 4 6	GC 2 FB 2 S	Mature	380 1	12	4.6	Normal	Good	Medium	B	2	40+	A tree with insignificant defects Minor deadwood throughout crown Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works:		No work proposed													
T10	Norway Maple 1 Number	16	5 5 6 4	GC 1 FB 2 W	Mature	420 1	12	5.0	Normal	Good	Medium	B	2	40+	A tree with insignificant defects Minor deadwood throughout crown Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works:		No work proposed													

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, S, E, W).
3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
5. Protection Multiplier is the number used to calculate the tree's protection radius and area and is shown as 12.
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7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak) or Dead (dead or dying tree).
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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
G11	Sycamore and Ash 4 Number	18	7 7 7	GC 1 FB3 N	Mature	693 3 ave	12	8.3	Moderate	Fair	Medium	C	2	20+	Multiple stemmed growing as group Not all trees plotted on plan
Recommended Works/ Reason for Works:		No work proposed													
T12	Western Red Cedar 1 Number	17	4 4 5 6	GC 0 FB2 S	Mature	1100 1	12	13.2	Moderate	Fair	Medium	C	1, 2	10+	Large partially occluded stem wound up to 2m southern side with questionable stem stability
Recommended Works/ Reason for Works:		Carry out detailed health and safety inspection				Crown lift to 3m over existing access				Advisable for good arboricultural practice					
T13	Irish Yew 1 Number	8	2 2 2	GC 0 FB0 N	Mature	100 5 est	12	1.2	Moderate	Fair	Medium	C	1, 2	40+	A tree with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													
T14	Scots Pine 1 Number	20	3 4 5	GC 0 FB7 E	Mature	770 1	12	9.2	Normal	Good	High	A	1, 2	20+	Significant deadwood throughout crown Stem is leaning southeast
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter				Advisable for good arboricultural practice									
T15	Turkey Oak 1 Number	18	6 7 7	GC 0 FB3 S	Early Mature	670 1	12	8.0	Normal	Good	High	B	1, 2	40+	A tree with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
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3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
5. Protection Multiplier is the number used to calculate the tree's protection radius and area and is shown as 12.
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7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak) or Dead (dead or dying tree).
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Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
G16	Apple 3 Number	10	5 5 5	GC1.5 FB1 N	Mature	500 1 est	12	6.0	Moderate	Fair	Medium	C	1,2	10+	Overgrown fruit trees not pruned for fruit production
Recommended Works/ Reason for Works:		No work proposed													
G17	Ash, Sycamore and Oak 8 Number	17	5 5 5	GC 2 FB4 N	Mature	400 1 est	12	4.8	Moderate	Fair	Medium	C	1,2	20+	Ivy smothering stems prevented proper inspection or stem measurements Mixed species undergrowth Not all trees plotted on plan
Recommended Works/ Reason for Works:		Remove Ivy up to 1.5m from ground level and re-inspect													
T18	Flowering Cherry 1 Number	11	7 6 5	GC1.5 FB2 W	Mature	320 1	12	3.8	Normal	Fair	Medium	C	1,2	10+	Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter													
G19	Common Ash 5 Number	19	7 7 7	GC 3 FB2.5 N	Early Mature	375 1	12	4.5	Moderate	Fair	Medium	C	2	20+	Self sown trees growing in close proximity Significant deadwood throughout crowns Not all trees plotted on plan
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter													
T20	Norway Maple 1 Number	16	5 5 6	GC1.5 FB2 S	Mature	390 1	12	4.7	Normal	Fair	Medium	B	1,2	40+	Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter													

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, S, E, W).
3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
5. Protection Multiplier is the number used to calculate the tree's protection radius and area and is shown as 12.
6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak) or Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remedial defects), Poor (major defects present).
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Site: The Rural History Centre, University of Reading
Date Surveyed: 15th September 2015

Surveyor: Mr. David Challice
Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T21	Norway Maple 1 Number	16	5 4 3 5	GC 1.5 FB 3 S	Mature	370 1	12	4.4	Normal	Fair	Medium	B	2	40+	Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter				Advisable for good arboricultural practice									
T22	Norway Maple 1 Number	16	4 7 4 7	GC 1.5 FB 3 W	Mature	400 1	12	4.8	Normal	Fair	Medium	B	2	40+	Branches touching building Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter				Cut back from building to give 2m clearance									
T23	Norway Maple 1 Number	16	5 7 4 4	GC 2 FB 2 W	Mature	370 1	12	4.4	Normal	Fair	Medium	C	1, 2	40+	Branches touching building Significant deadwood throughout crown Crown suppressed by larger nearby trees
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter				Cut back from building to give 2m clearance									
G24	Sycamore 2 Number			GC FB											These trees have been removed to facilitate demolition
Recommended Works/ Reason for Works:															
T25	Cockspur Thorn 1 Number	6	4 2 3 2	GC 0 FB 1 S	Mature	190 1	12	2.3	Normal	Good	Medium	B	1, 2	20+	Stem leaning south Damaged limb in crown at 2.5m
Recommended Works/ Reason for Works:		Remove damaged limb				Cut back to give 2m clearance from building				Recommended to permit development					

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, S, E, W).
3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
5. Protection Multiplier is the number used to calculate the tree's protection radius and area and is shown as 12.
6. Protection Radius is a radial distance measured from the trunk centre.
7. Growth Vitality - Normal growth, Moderate (below normal), Poor (sparse/weak) or Dead (dead or dying tree).
8. Structural Condition - Good (no or only minor defects), Fair (remedial defects), Poor (major defects present).
9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Tree Survey Schedule with Recommended Tree Works

Site: The Rural History Centre, University of Reading
Date Surveyed: 15th September 2015

Surveyor: Mr. David Challice
Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
G26	Mixed Species Group Mainly Ash and Sycamore approx 18 Number	17	6 6 6 6	GC 1 FB1 N	Early Mature	350 1	12	4.2	Moderate	Fair	Medium	C	2	20+	Self sown trees of little individual merit Ivy smothering stems prevented proper inspection or stem measurements Not all trees plotted on plan
Recommended Works/ Reason for Works:		Cut back to give 2m clearance from building			Remove Ivy up to 1.5m from ground level and re-inspect			Recommended to permit demolition and advisable for good arboricultural practice							
T27	Common Ash 1 Number	18	2 8 7 8	GC 2 FB4 S	Mature	520 1	12	6.2	Moderate	Fair	Medium	C	2	10+	Crown suppressed by nearby trees Minor deadwood throughout crown
Recommended Works/ Reason for Works:		No work proposed													
T28	Whitebeam 1 Number	13	2 3 3 4	GC 2 FB1.5 S	Mature	270 1	12	3.2	Normal	Good	Medium	B	1,2	20+	Crown suppressed by nearby trees
Recommended Works/ Reason for Works:		No work proposed													
T29	Whitebeam 1 Number	10	4 4 4 4	GC1.5 FB1 E	Mature	360 1	12	4.3	Normal	Good	Medium	B	2	20+	Crown suppressed by nearby trees
Recommended Works/ Reason for Works:		No work proposed													
T30	Whitebeam 1 Number	13	4 4 4 5	GC0.5 FB1.5 S	Mature	390 1	12	4.7	Moderate	Good	Medium	B	2	20+	Crown suppressed by nearby trees
Recommended Works/ Reason for Works:		No work proposed													

- Notes:
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3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
4. Stem Diameter is the diameter of the stem measured in millimeters at 1.5m from ground level. The stem diameter may be estimated (est) where access is restricted or an average (ave) taken for groups or multi-stemmed trees with more than five stems. The number of stems is also indicated.
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9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Tree Survey Schedule with Recommended Tree Works

Site: The Rural History Centre, University of Reading
Date Surveyed: 15th September 2015

Surveyor: Mr. David Challice
Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T31	Sycamore 1 Number	19	7 6 7 7	GC1.5 FB4 W	Mature	700 4 ave	12	8.4	Moderate	Fair	Medium	C	2	10+	Potentially weak stem union on northern side Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Carry out detailed health and safety inspection							Advisable for good arboricultural practice						
T32	Common Ash 1 Number	19	4 5 4 7	GC1.5 FB1 N	Early Mature	370 1	12	4.4	Moderate	Fair	Medium	C	2	10+	Significant deadwood throughout crown Crown suppressed by nearby trees
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter							Advisable for good arboricultural practice						
G33	Common Ash 2 Number	19	4 7 3 7	GC1.5 FB4 S	Early Mature	440 1	12	5.3	Moderate	Fair	Medium	C	2	10+	Significant deadwood throughout crowns Crowns suppressed by nearby trees Branches touching nearby building
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter							Cut back to give 2m clearance from building						
G34	Field Maple 3 Number	8	3 3 3 3	GC1.5 FB1 S	Semi-Mature	200 1	12	2.4	Normal	Good	Medium	B	1,2	40+	Trees with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													
G35	Hornbeam 5 Number	8	4 3 3 3	GC 1 FB0.5 S	Semi-Mature	250 1 ave	12	3.0	Normal	Good	Medium	B	2	40+	Trees with insignificant defects
Recommended Works/ Reason for Works:		Crown lift to 2m over existing footpath							Recommended to permit development						

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
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10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
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Tree Survey Schedule with Recommended Tree Works

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Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T36	Sycamore 1 Number	13	4 5 4 4	GC1.5 FB2.5 N	Early Mature	350 1	12	4.2	Normal	Good	Medium	B	1,2	40+	Minor deadwood throughout crown Branches touching building
Recommended Works/ Reason for Works:		Fell and replant				Recommended to permit development									
T37	Hornbeam 1 Number	15	4 4 4 4	GC 1 FB 3 S	Mature	420 1	12	5.0	Normal	Good	Medium	A	1,2	40+	A tree with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													
T38	Silver Birch 1 Number	15	5 5 6 5	GC0.5 FB0.5 E	Mature	436 2	12	5.2	Normal	Good	Medium	B	2	20+	A tree with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													
T39	Sycamore 1 Number	17	8 8 8 8	GC2.5 FB 2 N	Mature	840 1	12	10.1	Normal	Fair	Medium	C	2	10+	Potential weak branch unions Significant deadwood throughout crown
Recommended Works/ Reason for Works:		Carry out detailed health and safety inspection				Remove all deadwood over 25mm in diameter				Advisable for good arboricultural practice					
T40	Sycamore 1 Number	16	8 8 8 8	GC2.5 FB 2 S	Early Mature	560 1	12	6.7	Normal	Good	Medium	B	1,2	40+	A tree with insignificant defects
Recommended Works/ Reason for Works:		No work proposed													

- Notes:
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9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
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Tree Survey Schedule with Recommended Tree Works

Site: The Rural History Centre, University of Reading
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Surveyor: Mr. David Challice
Our Ref: CC/1459 AR2699

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Age Class	Stem Diameter	Protection Multiplier	Protection Radius	Growth Vitality	Structural Condition	Landscape Contribution	B.S. Cat	Sub Cat	Useful Life	Observations
T41	False Acacia 1 Number	17	9 9 9	GC2.5 FB2.5 N	Mature	960 1	12	11.5	Normal	Good	High	A	1,2	40+	Significant deadwood throughout crown Insignificant stem wounds present
Recommended Works/ Reason for Works:		Remove all deadwood over 25mm in diameter							Advisable for good arboricultural practice						
T42	Sycamore 1 Number	23	7 7 7	GC1.5 FB2 E	Mature	890 1	12	10.7	Normal	Fair	High	B	2	40+	Tight stem unions Significant deadwood throughout crown Hanging branches in crown
Recommended Works/ Reason for Works:		Monitor stem unions yearly Remove all deadwood over 25mm in diameter							Advisable for good arboricultural practice						
G43 approx	Sycamore and Pine 20 Number	17	5 5 5	GC 2 FB2 N	Early Mature	450 1 ave	12	5.4	Normal	Good	Medium	B	1,2	40+	Useful group of boundary screening trees Self sown understorey present which is not plotted on plan Not all trees plotted on plan
Recommended Works/ Reason for Works:		No work proposed													
G44 approx	Mixed Species Mainly Willow 6 Number			GC FB											These trees have been removed to facilitate demolition
Recommended Works/ Reason for Works:															
T45	False Acacia 1 Number	10	4 4 4	GC 0 FB0 N	Early Mature	316 10	12	3.8	Moderate	Poor	Low	U		<10	Multiple stemmed with low potential
Recommended Works/ Reason for Works:		Fell and replant							Advisable for good arboricultural practice						

- Notes:
1. Height describes the approximate height of the tree measured in meters from ground level.
2. The Crown Spread refers to the crown radius in meters from the stem centre and is shown above on each of the four compass points (i.e. N, S, E, W).
3. Ground Clearance (GC) is the height in meters of crown clearance above adjacent ground level, the height of the first significant branch (FB) and the direction in which it is growing.
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9. Landscape Contribution - High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
10. B.S. Cat refers to British Standard 5837:2012 Table 1 and refers to tree/group quality and value; 'A' - High, 'B' - Moderate, 'C' - Low, 'U' - Remove.
11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
12. Useful Life is the tree's estimated remaining contribution in years.

Appendix 2

Appendix 3



Appendix 4

Induction Form for all Site Personnel:

Site Name:

- I have had explained to me by the Site Manager the key implications of the Arboricultural Method Statement relating to the development at the above site.
- I am aware that the tree protective fencing must remain in its original position and must not be moved without the approval of the appointed Arboricultural Consultant.
- I understand that certain operations must be supervised by the appointed Arboricultural Consultant and that these operations must not start until the consultant is present and has given approval.
- I confirm that I will bring any concerns about potential damage to trees to the attention of the Site Manager.
- I am aware that I must not cause damage to any of the retained trees on or adjacent to the site. Damage may be caused by direct means (i.e. physical damage caused to roots or the trunk/branches of the tree) or by indirect means (e.g. by fire or toxic materials entering the rooting environment of the tree).

Print Name:

Sign Name:

Date:

Appendix 5

Guidelines for Installing Low Invasive Surfaces



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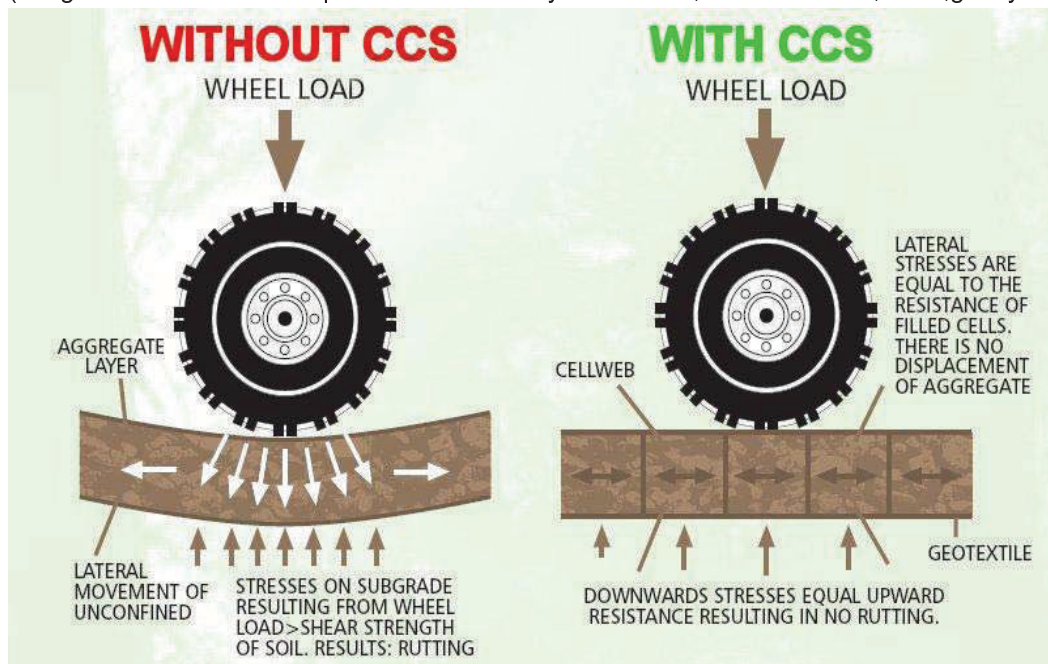
Key Terms and Abbreviations:

Root Protection Area/Root Protection Areas	RPA/RPAs
Cellular Confinement System	CCS
British Standard (BS) 5837	BS
Arboricultural Method Statement	AMS

- 1.0 Avoiding damage to tree roots, oxygen depletion and compaction of subsoil are important considerations when installing hard surfacing close to trees. An acceptable solution with minimal disturbance can be achieved with the use of a Geotextile membrane and the introduction of a CCS. This can be laid directly onto the existing soil level within the RPAs of retained trees. This low invasive CCS system prevents rutting and compaction of the subsoil.

Illustration of Stress Distribution

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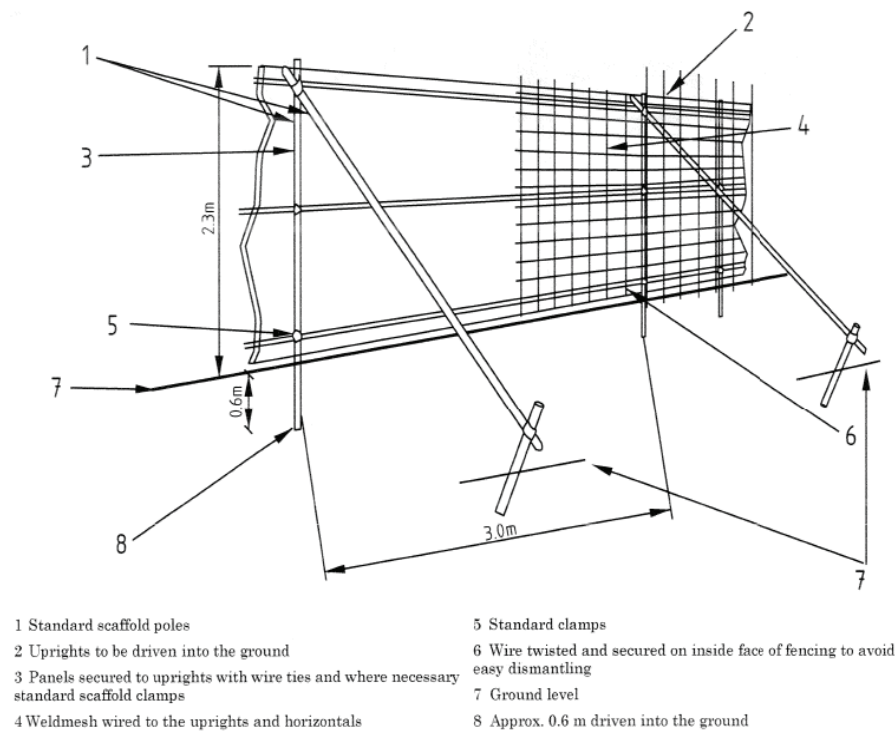


- 2.0 Retained trees must be protected first by the erection of fencing (see diagram below), then by the construction of surfaces in accordance with Sections 9 and 11 of the BS. **The tree protective fencing and surfaces within the RPAs of retained trees must be installed as per the sequencing recommended within the AMS. Hard surfaces constructed in this way can be used for construction access, storage and on-site parking and may need to be installed prior to demolition or construction.**

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Tree Protective Fencing Detail (alternative materials can be used, though all fencing is to be 'fit for purpose')



- 3.0 If ground levels are to be raised by more than 100mm within RPAs, this should be achieved by the use of a granular material which does not inhibit vertical gaseous diffusion. For example; no-fines gravel, washed aggregate, or cobbles.
- 4.0 Ideally, the CCS should be installed between May and October when the ground is driest and least prone to compaction. The approved wearing course is to be laid over the CCS. Where the new surface covers in excess of 20% of the RPA or is wider than 3m within the RPA, the new surface should be constructed in such a manner as to permit infiltration of moisture and gaseous diffusion. Government guidance now recommends permeable surfacing on most construction sites for drainage reasons and this should be considered for all hard surfacing within the RPA of retained trees.
- 5.0 The use of a non-woven Geotextile beneath the cellular mattress acts as a separation/filtration layer. The CCS should be filled with **no-fines** stone in the 20-40mm range. It is important that machinery is only used on the filled CCS and that it is not allowed to compact the soil within the RPAs of trees. Once filled, the perforated cellular wall structure provides mechanical interlock for infill materials, increasing the shear strength while allowing intercellular lateral free drainage.
- 6.0 The system is used as a permanent base for a wearing course and can also be used to provide a temporary site access. CCS material is available in thicknesses from 75mm to

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300mm. The exact thickness required on a site will depend on soil type and the anticipated use of the surface. **A Structural Engineer should design all engineering solutions to surfaces and Geosynthetics offer a free design service.**

- 7.0 The entire RPAs of trees are fenced off at the outset of the project. The fencing is then re-aligned when the works are to commence to facilitate construction of the hard surface.

Stages for Installation of Low Invasive Surfaces

- Stage 1** **Erect tree protective fencing to cover entire RPAs of retained trees.**
- Stage 2** **Re-align tree protective fencing** just prior to work commencing to facilitate construction of low invasive surface. The tree protective fencing must then remain intact until all construction works are completed.
- Stage 3** **Remove surface vegetation** by using a specific herbicide (as advised by a specialist) or manually remove using hand tools. Light machinery operating from beyond the RPA and tree canopy of retained trees could, under specialist supervision, be used to carefully remove existing wearing surfaces, (the sub base of existing surfaces or foundations should be left in situ where possible). If the existing soil level is to be lowered, material is to be cleared away manually. Roots over 25mm in diameter, which are found within the construction profile, should not be severed, but be left in situ and covered immediately with soil or sharp sand to prevent desiccation.
- Stage 4** **Carry out final clearance under the canopies of retained trees.** This should be completed using hand forks (not spades) and any roots exposed should be cleanly cut and covered in soil/sharp sand immediately. Any delay to this process will require irrigation of any exposed roots and subsequent protection with dampened Hessian sacking or similar. Agreed removal of shrubs, saplings or trees, within the RPAs of retained trees should be cut to or just below ground level rather than pulled out, which can damage entwined roots.
- Stage 5** **Level out the ground if necessary** using sharp sand or topsoil (or a mixture thereof). This fills out any hollows in the ground and ensures a smooth surface for laying out of the Geotextile membrane. It is important not to use any machinery within the RPAs of the trees that could compact the soil.

Stage 6 **Install the non-woven Geotextile** directly over the soil surface and fix in place.



Stage 7 **Lay CCS out over the Geotextile membrane** and ensure edges are anchored open during the infill process with steel staples or wooden pegs.



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Stage 8 **Fill the CCS,** ensuring machinery works only on already filled areas and not the sub grade. Typical infill consists of no fines angular granular material of 20-40mm in diameter.



Stage 9 **Install kerbs and edgings** directly on top of existing soil grade level. For light structures, a treated peg and board may be acceptable. For more substantial structures, railway sleepers, drilled kerbstones or gabions, held in place with track or road pins are more suitable. Edgings can be formed using bent reinforcing sheets if required (see diagram below).



Stage 10 **Install permeable surface**

Surfacing Options

Block Paving

- Lay a second layer of Geotextile separation fabric over the infill CCS.
- Lay a sharp sand bedding layer compacted with a vibro-compaction plate to recommended depth.
- Place block paviors as per manufacturer's instructions.

Loose Gravel

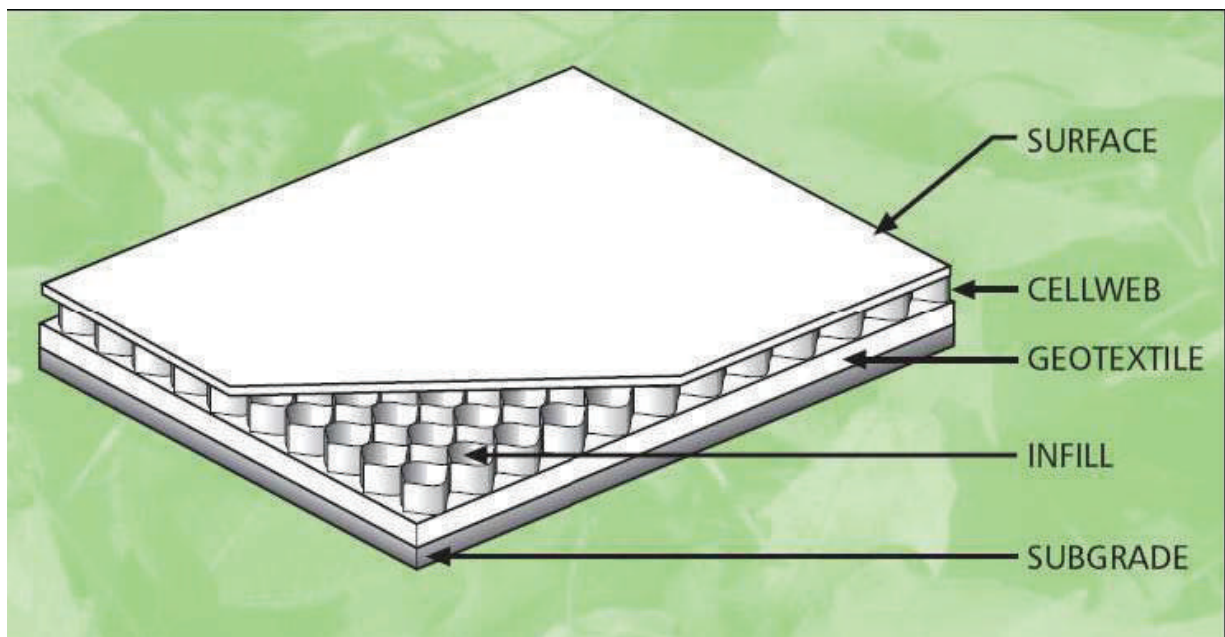
- Place second layer of Geotextile separation fabric over the infill CCS.
- Place pea shingle/ gravel to required depth.

Permeable Tarmac

- Lay as per manufacturer's recommendations on top of CCS

Makeup of Final Surface

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