



# Royal Pavilion Gardens

Arboricultural Impact Assessment and  
Method Statement

A Report for Allen Scott Landscape  
Architecture

August 2023



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# Royal Pavilion Gardens

## Arboricultural Impact Assessment and Method Statement

August 2023

<b>Client:</b>	Allen Scott	
<b>Project Ref:</b>	A Garden Fit for A King - Royal Pavilion, Brighton	
<b>Report Ref:</b>	J21177_Arb	
<b>Author:</b>	<b>Technical Review:</b>	<b>Approved:</b>
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<b>Disclosure:</b>		
<p>Greenspace Ecological Solutions Ltd has prepared this report for the sole use of the commissioning client. The information has been prepared and provided in accordance with with British Standard (BS) 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations". This report does not constitute legal advice. The report is in accordance with the agreement under which our services were performed. This report may not be relied upon by any other party except the person, company, agent or any third party for whom the report is intended without the prior written permission of Greenspace Ecological Solutions Ltd. Information obtained from any third party has not been independently verified unless otherwise stated in the report. This report is the copyright of Greenspace Ecological Solutions Ltd. Unauthorised reproduction or usage by any person is prohibited.</p> <p>It should be noted that whilst every effort has been made to meet the client's requirements, no site survey can ensure complete assessment or prediction of the changeable onsite environment. <u>Furthermore, should more than 12 months elapse between the date of this survey and any subsequent development, it may be necessary to consider the need for an update survey to be undertaken.</u></p>		

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## 1 PROJECT OVERVIEW

Client: Allen Scott Landscape Architecture

Site Address: Royal Pavilion Gardens, Brighton

Attending Surveyors: Neil Taylor

Survey Dates: 14<sup>th</sup> April 2022

Site Proposals: Restoration of the existing landscape to include improved access, path widening, restoration of historic views, improved access to the toilet block and replacement of the boundary treatment

Associated Planning Reference Number: Not yet submitted

Source of Relevant Documents:

Document:	Source:
Site Plans:	Allen Scott Landscape Architecture

## 2 INTRODUCTION

### 2.1 Context

2.1.1 To inform a planning application, Greenspace Ecological Solutions (GES) has been commissioned by Allen Scott Landscape Architecture to undertake a tree survey of Royal Pavilion Gardens, Brighton (hereafter referred to as “The Site”). The survey was conducted in accordance with British Standard (BS) 5837:2012 “Trees in Relation to Design, Demolition and Construction - Recommendations”.

2.1.2 The aim of this report is to present the results of the survey in the form of a Tree Survey Schedule (TSS). An Arboricultural Impact Assessment (AIA) has been carried out on the proposed works and a draft Arboricultural Method Statement (AMS) has been produced. An AIA plan has also been produced and accompanies this report as a separate drawing.

2.1.3 The proposal involves the restoration and enhancement of the garden entrances, restoration and reinstatement of the historic walls and railings, restoration of the historic views of the Grade I and II listed buildings, restoration of the path network, construction of a new outdoor learning area, relocation of the bin store, restoration of the gardener’s utility space and improvements to the drainage.

2.1.4 This report in no way constitutes a health and safety survey report. Where concerns for tree health and safety exist, the necessary and appropriate tree inspections should be carried out.

### 2.2 Site Location

2.2.1 The Site is situated in the centre of Brighton, East Sussex and is bound by Church Street to the north, Pavilion Parade to the east, North Street to the south and New Road to the west.

### 2.3 Site Description

2.3.1 The Site is approximately 3.3ha and comprises a Grade II Registered Historic Park and Garden that surrounds the Grade I listed Royal Pavilion.

2.3.2 Within the gardens are a varied collection of trees, notably a large number of elms that are a part of the City of Brighton and Hove’s National Collection of Elm Trees.

2.3.3 The surrounding landscape is predominantly urban.

### 3 SURVEY METHODOLOGY

3.1.1 The trees within the Site were inspected from ground level by consultant arboriculturist Neil Taylor on 14<sup>th</sup> April 2022 followed by a walkover survey with Peter Bourne of the National Elm Collection on 17<sup>th</sup> J in order to confirm the identification of the elm trees.

3.1.2 Measurements were taken in accordance with the recommendations set out in the BS 5837:2012. Canopy spreads were measured and plotted to the four compass points. Where direct access was not possible measurements have been estimated. The surveyed trees are colour coded on the accompanying tree survey drawing according to their relevant BS category.

3.1.3 The trees were categorised in accordance with the following criteria:

*Trees for removal*

U Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management. (Identified by red colouration on the TCP.)

3.1.4 These trees should not be a consideration in the planning process.

*Trees to be considered for retention*

A Those of high quality and value: in such a condition as to be able to make a significant contribution (a minimum of 40 years is suggested). (Identified by green colouration on the TCP.)

B Those of moderate quality and value: those in such a condition as to make a substantial contribution (a minimum of 20 years is suggested). (Identified by blue colouration on the TCP.)

C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm. (Identified by grey colouration on the TCP.)

3.1.5 Category C trees will usually not be retained where they would impose a significant constraint on development. Category A and B trees will normally be retained.

3.1.6 The following subcategories are applied. Trees may be allocated more than one subcategory, but this will not increase their overall value.

1: Mainly arboricultural values

A1 Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).

B1 Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage).

C1 Trees not qualifying in higher categories.

2: Mainly landscape values

A2 Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the Site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups).

B2 Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the Site, therefore individually having little visual impact on the wider locality.

C2 Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit.

3: Mainly cultural values, including conservation.

A3 Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture).

B3 Trees with clearly identifiable conservation or other cultural benefits.

C3 Trees with very limited conservation or other cultural benefits.

3.1.7 The tree data collected is used to enable the current canopy spread of the surveyed trees and the Root Protection Area (RPA) to be plotted on the accompanying TPP. The RPA is defined by the formula in paragraph 4.6 of the BS 5837:2012 and may be refined by taking into account

current on-Site constraints to root activity such as buildings, earthworks and hard paving. This forms part of the design process for the proposed development.

- 3.1.8 The design process should consider the below and above-ground constraints posed by the better-quality trees on and adjacent to the Site.



## **4 ASSESSMENT**

### **4.1 Tree Character Groups**

4.1.1 The detailed results of the tree survey are provided in the TSS, in Appendix A.

4.1.2 In summary, the trees on and adjacent to the Site vary considerably in terms of condition and the amenity value that they provide to the wider landscape.

4.1.3 The trees can be divided into three distinct character groups as follows:

1. The first character group includes the large, mature trees found growing across the Site. Included in this character group are a collection of elms that are of national importance. In the main, the trees in this character group are in a good condition and provide significant arboricultural amenity in the context of the local area.
2. The second character group includes the medium sized, middle-aged trees found growing across the Site. In the main, the trees in this character group are in a good condition and bring a sense of maturity to the Site.
3. The third character group includes the smaller, young trees found growing across the Site. In the main, the trees in this character group are in a good condition but due to their size are of limited amenity value in the context of the local area.

## 5 ARBORICULTURAL IMPACT ASSESSMENT (AIA)

### 5.1 Methodology

5.1.1 The AIA uses the information obtained in the tree survey to identify areas where the proposed renovations may be at odds with accepted standards, in terms of a tree's requirements for space in which to maintain existing roots and shoots, and space for future growth.

5.1.2 The quality and relative importance of each tree is illustrated as a coloured polygon. The colour used relates to the BS categories as follows: A - green, B - blue, C - grey and U - red (see accompanying drawing reference J21177\_Arb\_AIA). In general the design process will try to retain A and B category trees. Proposed construction will therefore normally be excluded from the RPA of A and B category trees. Red trees are discounted as they are recommended for removal.

5.1.3 The juxtaposition of the proposed renovations in relation to existing tree locations are shown on the accompanying AIA drawing, reference J21177\_Arb\_AIA).

5.1.4 The AIA considers existing Site conditions and the effect that they may have on the development of the surveyed trees' root systems. Hard structures such as building and paved roads and paths can influence the root activity of trees by reducing the availability of both moisture and nutrients.

### 5.2 Assessment

5.2.1 Refer to the accompanying AIA drawing reference J21177\_Arb\_AIA, for the relationship between the proposed renovations and the trees on and adjacent to the Site.

5.2.2 The following trees will be removed for arboricultural reasons:

- T8, T48, T71 and T80

5.2.3 The following trees will be removed to enable the proposed landscape improvements:

- T7 to reinstate historic sightlines
- T9 to allow replanting
- T10 to allow replanting
- T17 to reinstate historic sightlines
- T25 to enable the widening of the existing access
- T27 to enable the widening of the existing access
- T42 to reinstate historic sightlines

- T54 to allow growing space for T49 and T55
- T57 to reinstate historic sightlines
- T75 to allow for landscape improvements
- T76 to allow for landscape improvements
- T77 to enable the construction of an event access point
- T78 to enable the construction of an event access point

5.2.4 The following trees will be affected by the removal of the existing hard surfacing from within the RPA:

- T1, T18, T19, T29-T34, T82 and T83

The hard surface will be removed in accordance with the methodology outlined in Section 6.2 below.

5.2.5 The following trees will be affected by the removal of the existing wall from within the RPA:

- T43, T44 and T47

5.2.6 The following trees will be affected by the installation of an outdoor learning space within the RPA:

- T1 and T2

In order to make the area level, retaining walls will be required. To minimise the impact on the trees, the wall will be installed on a screw pile and above ground beam, refer to Section 6.3 below for details. The hard surface infill will be porous and installed in accordance with the methodology outlined in Section 6.3 below. Reference should also be made to CTP Consulting Engineers drawing A8394-003.

5.2.7 The following trees will be affected by the landscape improvements to the west of India Gate:

- T52 and T53

Landscaping the existing bank to form steps to be used as a seating area is proposed in this area. In order to create the steps, retaining walls will be required. To minimise the impact on the trees, the wall will be installed on a screw pile and above ground beam, refer to Section 6.3 below for details. The infill between the steps will utilise cell web as a sub base. Reference should also be made to CTP Consulting Engineers drawing A8394-002.

5.2.8 The following trees will be affected by the realignment of the retaining wall around the toilet block:

- T43 and T44

The realigned retaining wall is largely outside of the existing wall apart from where the level change is minimal. To minimise the impact on the trees, the wall will be installed on a screw pile and above ground beam, refer to Section 6.3 below for details.

5.2.9 The following trees will be affected by the construction of new steps for the toilet block within the RPA:

- T43 and T47

The proposed steps are located on the edge of the RPA of T43 and the other side of a retaining wall to T47 so the chance of encountering significant roots is minimal. As a precaution, excavations are to take place in accordance with the methodology outlined in Section 6.3 below.

5.2.10 The following trees will be affected by the replacement of the existing boundary treatment within the RPA:

- T21-T24 and T81-T94

The replacement boundary treatment will be within the location as the existing and no further excavations will be required.

5.2.11 The following trees will be affected by the resurfacing of the existing hard surface within the RPA:

- T1, T19 and T50-T52

The existing hard surface is to be broken up and used as a sub base. No excavations are required beyond the depth of the existing hard surface.

5.2.12 The following trees will be affected by the widening of the existing path network within the RPA:

- T14, T18, T26, T36, T37, T41, T43 and T44

The extent of the widening is relatively minor but will require excavations as the new hard surface will need to tie in with the existing. Excavations are to be carried out by hand in accordance with the methodology outlined in Section 6.3 below. In order to minimise

the excavations required, the new hard surface will utilise cell web as a sub base. Refer to Section 6.3 below for details.

5.2.13 The following trees will be affected by the construction of hard surfaces within the RPA:

- T1, T2, T43, T44, T47, T79, T82 and T83

The new hard surfaces will be constructed in accordance with 'no dig' principles and utilise a cellular confinement system such as Cell Web as a sub base. Refer to Section 6.3 below for details.

## 6 DRAFT ARBORICULTURAL METHOD STATEMENT (AMS)

### 6.1 Methodology

- 6.1.1 The AMS provides the means by which retained trees and hedges can be protected throughout the development.
- 6.1.2 The movement of demolition and construction machinery in close proximity to trees may cause compaction of the soil which affects the tree's ability to absorb moisture and nutrients.
- 6.1.3 The RPAs of retained trees will be protected by a tree protection barrier as described in paragraph 5.5 below.

### 6.2 Demolition within the RPA of Retained Trees

- 6.2.1 Prior to the demolition phase, all tree protection measures will be installed as specified on the Tree Protection Plan (TPP).
- 6.2.2 The removal of the existing retaining wall that is within the RPA of demolition of the building that is on the edge the RPA of T43, T44 and T47 will be carried out using hand operated tools only under the supervision of a suitably qualified arboriculturist. The foundation will be left in situ or reused where possible. Where this is not possible, it will be broken up in situ and removed from the trench by hand. No excavations will take place beyond the foundation line.
- 6.2.3 Where the hard surface is to be removed from within the RPA of a retained tree, it will be broken up using hand operated tools only, under the supervision of a suitably qualified arboriculturist. Once broken up, the material will be raked out of the RPA and the area reinstated with top soil immediately.

### 6.3 Construction within the RPA of Retained Trees

- 6.3.1 Installation of Screw Piles: The process of installing the screw piles is yet to be confirmed but will likely utilise a small excavator. A weight limit of two tons will be placed on all machinery operating within the RPA and ground protection will be installed as part of the site set up. The location of the screw pile will be probed with an air spade prior to installation to check for roots. If roots with a diameter of more than 25mm are uncovered, the location of the screw pile will be shifted until no significant roots are present.
- 6.3.2 Excavations for Steps: Where excavations for the steps are required within the RPA of T44 and T47, they will be carried out by hand under the supervision of a suitably qualified

arboriculturist. In the unlikely event that roots are uncovered, they will be severed using sharp secateurs.

6.3.3 Excavations for the Widening of the Existing Paths: Where the new hard surface is to tie in with the existing levels, a 150mm deep trench will be excavated by hand along the edge of the excavation under the supervision of an arboriculturist. In the unlikely event of roots being uncovered, they will be assessed and if below 25mm in diameter they will be pruned in accordance with current best working practise. If roots with a diameter of more than 25mm are uncovered, they will be retained and incorporated into the subbase. The remaining soil within the footprint of the new surface will then be removed and the cellular confinement system installed as below.

6.3.4 Construction of New Hard Surfaces: Construction of the new hard surfaces that are within the RPA of T1, T2, T43, T44, T47, T79, T82 and T83 will incorporate the principles set out in Arboricultural Advisory and Information Service guidance note APN12 and utilise a cellular confinement system, such as cell web, as a sub base. Guidance on the form of construction necessary to avoid root damage and loss is provided in the form of an extract of the Cell Web Product brochure for their cellular confinement system at Appendix B.

6.3.5 The installation of the new hard surface should proceed in the following order:

- Kill ground vegetation and gather dead organic matter. Care must be taken to select a herbicide that will not affect tree roots.
- Remove major projections such as stumps and rocks. Stumps must be removed with a stump grinder so as to minimise ground disturbance.
- Fill major hollows with sharp sand.
- Lay geotextile membrane over the soil and pin into place.
- Lay cellular confinement system (such as Cell Web) as specified by engineer and pin into place.
- Fill the cellular confinement system with a 'no fines' aggregate to engineer's specification. Work must be carried out progressively so that any machinery used only moves on the laid surface.
- Lay geotextile membrane over filled cellular confinement system
- Install timber sleeper or timber edging as specified by landscape architect or engineer.
- Lay porous wearing course

6.3.6 Where the proposed new hard surface is to be installed on the existing soft landscape, allowances will be made for the increase in level which can be graded out across the remainder of the new hard surface.

6.3.7 No materials or spoil is to be stored within the RPA of a retained tree unless on an existing hard surface.

6.3.8 In order to avoid damage to the retained trees the tree surgery and felling work identified in the accompanying tree survey schedule will be carried out prior to the occupation of the Site by the building contractor. The work will be carried out in accordance with BS 3998:2010.

#### **6.4 Services**

6.4.1 A new slot drain is proposed in front of the café that passes through the RPAs of T29-T33. The depth of the slot drain will be 200mm which is likely to remain in the sub base of the existing hard surface so the likelihood of encountering roots is minimal. As a precaution, excavations will be carried out under the supervision of a suitably qualified arboriculturist. Roots with a diameter of less than 25mm will be pruned back to the edge of the trench with sharp secateurs. If roots with a diameter of 25mm or more are uncovered, they will be undermined and pinned down so the slot drain can be laid over the top.

#### **6.5 Tree Protection**

6.5.1 Where appropriate, trees that are to be retained on the Site will be protected by the use of a tree protection barrier erected in the location shown on a Tree Protection Plan (TPP). Once the phasing of the works is confirmed, a TPP can be produced and submitted as a condition of planning approval.

#### **6.6 Site Monitoring and Supervision**

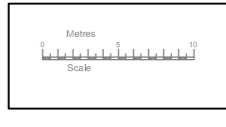
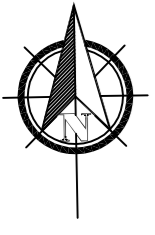
6.6.1 The process of reporting to the client and LPA Tree Officer will be by emailing the checklist form at Appendix C. Only a draft has been produced at this stage as the phasing of the works is yet to be confirmed and a contractor is yet to be appointed. A finalised site monitoring schedule can be produced once all the information is received and can be submitted as a condition of planning approval.



## **7 CONCLUSIONS**

- 7.1.1 Greenspace Ecological Solutions was commissioned by Allen Scott Landscape Architecture to carry out a tree survey at Royal Pavilion Gardens, Brighton.
- 7.1.2 The results of the survey indicate that the trees within the survey area vary considerably in terms of quality and contribution to the amenity value within the local area.
- 7.1.3 A total of thirteen individual trees will be removed to enable the proposed renovations of the gardens. The majority of the trees to be removed are within the C category either due to their size or ailing condition. Two are within the B category but their removal in order to restore the historic sight lines of the Grade II listed gardens is considered to outweigh the arboricultural amenity they provide.
- 7.1.4 New trees will be planted as part of the proposed renovations which will increase the age range and species diversity of the trees in the gardens and local area.
- 7.1.5 Through the specified tree protection measures and construction methodologies, it will be possible to minimise the impact of the proposed development on the retained trees.
- 7.1.6 Overall, there are no known overriding arboricultural constraints which would prevent the proposed development from going ahead, subject to the protection measures and construction methodologies specified within this report being correctly implemented.

# DRAWINGS



Root Protection Area  
 Tree number as recorded on Survey Schedule  
 Tree canopy  
 Coloured symbol indicating BS category as shown below  
 Underlined tree tags denote tree located by eye

**Tree Categories**

- Category A tree BS5837 2012
- Category B tree BS5837 2012
- Category C tree BS5837 2012
- Category U tree BS5837 2012

**Arboricultural Strategy**

- Tree to be retained  
Colour reference in accordance with the categories defined by BS:5837
- Tree to be removed  
Colour reference in accordance with the categories defined by BS:5837
- Tree group/hedge to be retained  
Colour reference in accordance with the categories defined by BS:5837
- Area of supervised excavations. Refer to accompanying tree survey report for details
- Wall to be constructed on a screw pile and above ground beam foundation. Refer to accompanying tree survey report for details
- Area of existing hard surface to remain in situ and used as a sub base for the proposed re-surfacing
- Area of existing hard surface to be removed in accordance with the methodology outlined in the accompanying report


- Area of hard surface to be installed following a 'no dig' method of construction


Drawing Reference : J21177\_Arb\_AIA  
 Project Title  
 Royal Pavilion Gardens, Brighton  
 Drawing Title  
 Arboricultural Impact Assessment  
 Date : 15-08-23 Checked : GN  
 Drawn : NT Approved : N/A  
 Status : Final Scale : 1:500@A1




# APPENDICES


## **APPENDIX A – TREE SURVEY SCHEDULE**


Project:		Royal Pavilion, Brighton				BS 5837 2012 Trees in relation to design, demolition and construction- recommendations			Surveyed by		NAT				
Ref:		J2117_Arb_TSS_A							Weather		Clear				
Date:		14.04.22							Tagged		No				
Client:		Allen Scott Landscape Architecture													
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T1	Ulmus minor 'Atinia' (Field Elm)	15	1170	7	6	6	7	1	2	M	Good - Previously reduced.	Good	None	40+	A3
T2	Ulmus minor 'Atinia' (Field Elm)	14	1480	5	5	6	6	1	3	M	Good - Previously reduced.	Good - decay cavity on stem. Decay at base. Good reaction wood	None	40+	A3
T3	Robinia pseudoacacia (Locust Tree)	7	336	4	4	3	4	3	3	Y	Good	Good	None	40+	C1
T4	Robinia pseudoacacia (Locust Tree)	5	238	3	3	3	3	3	2	Y	Good	Good	None	20-40	B2
T5	Platanus orientalis (Oriental Plane)	10	550	2	4	4	4	1	1	MA	Good	Good	None	40+	B2
T6	Populus alba (White Poplar)	8	840	2	2	3	1	1	5	M	Fair - Topped.	Good	None	20-40	C1
T7	Salix X chryscoma (Weeping Willow)	9	340	4	4	4	3	1	1	Y	Fair - Low vitality. Die back.	Good	None	20-40	C1
T8	Betula pendula (Silver Birch)	7	164	2	1	1	1	2	2	Y	Poor - Declining.	Fair - large dead wood	Remove	<10	U
T9	Prunus sp. (Cherry species)	4	140	5	2	0	0	1	1.5	Y	Fair - Low vitality.	Fair - Poor shape & form.	None	10-20	C1
T10	Prunus sp. (Cherry species)	4	140	3	1	0	0	1	1.5	Y	Fair - Low vitality.	Fair - Poor shape & form.	None	10-20	C1


Project:		Royal Pavilion, Brighton						BS 5837 2012 Trees in relation to design, demolition and construction- recommendations			Surveyed by		NAT				
Ref:		J2117_Arb_TSS_A									Weather		Clear				
Date:		14.04.22									Tagged		No				
Client:		Allen Scott Landscape Architecture															
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T11	Crataegus monogyna (Hawthorn)	4	141	1	2	1	2	2	1.5	Y	Good	Good	None	40+	C1		
T12	Koelreuteria paniculata (Pride of India)	5	200	2	2	3	3	1	2	Y	Good	Good	None	40+	B2		
T13	Tilia X europaea (Common Lime)	14	620	6	4	5	5	1	2	MA	Good - Epicormics at base	Good	None	40+	B2		
T14	Ulmus glabra 'Horizontalis' (Weeping Wych Elm)	5	1020	5	6	9	8	1	0	M	Good - grafted	Good	None	40+	A3		
T15	Koelreuteria paniculata (Pride of India)	7	519	7	6	5	6	4	2	MA	Good	Good	None	40+	B2		
T16	Acer platanoides (Norway Maple)	10	480	5	5	5	6	1	3	MA	Good	Good	None	40+	B2		
T17	Tilia X europaea (Common Lime)	15	300	3	4	3	2	1	2	MA	Good	Good	None	40+	B2		
T18	Ulmus 'Lobel' (Elm)	16	540	7	7	3	6	1	2	MA	Good	Good	None	40+	A3		
T19	Ulmus minor 'Senensis' (Elm)	15	670	7	6	7	7	1	3	M	Good	Good - early fruiting body at base	None	40+	A3		
T20	Platanus X hispanica (London Plane)	14	320	7	4	6	4	1	3	MA	Good	Good	None	40+	B2		
T21	Tilia X europaea (Common Lime)	14	470	4	4	3	4	1	2	MA	Good	Good	None	40+	B2		


Project:		Royal Pavilion, Brighton						BS 5837 2012 Trees in relation to design, demolition and construction- recommendations			Surveyed by		NAT				
Ref:		J2117_Arb_TSS_A									Weather		Clear				
Date:		14.04.22									Tagged		No				
Client:		Allen Scott Landscape Architecture															
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T22	Ulmus minor 'Sarniensis' (Guernsey Elm)	15	530	4	6	5	5	1	2	MA	Good - Broken branch in crown	Good	Remove broken branch	40+	A3		
T23	Ulmus wallichiana P39 (Himalayan Elm)	14	380	7	7	1	6	1	3	MA	Good	Fair - suppressed.	None	20-40	B2		
T24	Ulmus wallichiana P39 (Himalayan Elm)	16	630	8	8	8	9	1	3	M	Good	Good	None	40+	A3		
T25	Acer pseudoplatanus (Sycamore)	7	170	2	1	2	2	1	2	Y	Good	Good	None	40+	C1		
T26	Tilia X europaea (Common Lime)	16	540	6	6	6	5	1	1	MA	Good - Epicormics at base	Good	None	40+	B2		
T27	Aesculus hippocastanum (Horse Chestnut)	12	560	3	3	1	3	1	3	MA	Fair - Previously reduced.	Good	None	20-40	C1		
T28	Ulmus 'Lobel' (Elm)	12	170	3	2	1	2	1	3	MA	Good	Good	None	40+	B2		
T29	Ulmus x hollandica 'Vigata' (Huntingdon Elm)	17	740	8	10	3	6	1	2	M	Good	Fair - Poor shape & form.	None	20-40	B3		
T30	Ulmus x hollandica 'Vigata' (Huntingdon Elm)	18	450	4	7	3	5	1	4	MA	Good	Good	None	40+	A3		
T31	Ulmus x hollandica 'Major' (Dutch Elm)	18	1010	4	10	5	5	1	6	M	Good	Good - early fruiting body at base	None	40+	A3		





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Date:		14.04.22									Tagged		No				
Client:		Allen Scott Landscape Architecture															
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T32	Ulmus glabra 'Minor' (Wych Elm)	17	570	3	9	9	7	1	3	MA	Good	Good	None	40+	A3		
T33	Ulmus 'Lobel' (Elm)	18	520	6	5	6	6	1	4	MA	Good	Good	None	40+	A3		
T34	Ulmus 'Lobel' (Elm)	11	120	1	2	2	2	1	2	Y	Good	Good - Major bark wounding on stem.	None	40+	C1		
T35	Tilia X europaea (Common Lime)	18	410	5	4	3	5	1	4	MA	Good	Good	None	40+	B2		
T36	Tilia X europaea (Common Lime)	4	510	0.5	1	1	1	1	2	MA	Fair - monolith	Good	None	10-20	C1		
T37	Tilia X europaea (Common Lime)	12	480	4	4	4	4	1	3	MA	Good	Good	None	40+	B2		
T38	Ulmus x hollandica 'Commelin' (Dutch Elm)	18	440	4	9	5	5	1	7	MA	Good	Fair	None	40+	A3		
T39	Ulmus glabra 'Camperdownii' (Camperdown Elm)	4	210	1	3	2	1	1	2	MA	Good - grafted	Good - Major bark wounding on stem.	None	20-40	B3		
T40	Ulmus x hollandica 'Commelin' (Dutch Elm)	17	480	7	5	5	8	1	3	MA	Good	Good	None	40+	A3		


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				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T41	Ulmus x hollandica 'Commelin' (Dutch Elm)	16	420	2	7	8	9	1	3	MA	Good	Good - Crown distorted due to group pressure.	None	40+	B3		
T42	Tilia X europaea (Common Lime)	11	410	4	5	4	6	1	2	MA	Good	Good	None	40+	B2		
T43	Ulmus x hollandica 'Major' (Dutch Elm)	18	1110	8	7	6	7	1	5	OM	Good - Previously reduced.	Good	None	40+	A3		
T44	Ulmus x hollandica 'Major' (Dutch Elm)	17	1030	2	7	7	7	1	3	OM	Good - Previously reduced.	Good	None	40+	A3		
T45	Taxus baccata (Yew)	3	160	3	2	1	2	1	0	Y	Good	Good	None	40+	C1		
T46	Juglans regia (Walnut)	9	290	3	4	4	5	1	2	MA	Good	Good	None	40+	B2		
T47	Ulmus procera (English Elm)	12	1250	5	4	3	4	1	2	V	Good	Fair - Cavity on stem.	None	40+	A3		
T48	Acer pseudoplatanus (Sycamore)	20	840	9	8	8	9	1	3	M	Fair - upper crown die back	Good	None	10-20	C1		
T49	Ulmus 260 (Elm)	12	570	8	10	4	7	1	2	MA	Good	Good	None	40+	A3		
T50	Ulmus glabra (Wych Elm)	17	690	8	11	3	5	1	8	MA	Good	Good	None	40+	A3		
T51	Tilia X europaea (Common Lime)	17	480	4	8	5	5	1	6	MA	Good	Good	None	40+	B2		

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Date:				14.04.22							Tagged		No				
Client:				Allen Scott Landscape Architecture													
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T52	Ulmus minor 'Sarniensis' (Guernsey Elm)	18	560	7	6	4	5	1	2	MA	Good	Good	None	40+	A3		
T53	Ulmus minor 'Sarniensis' (Guernsey Elm)	12	440	6	4	5	4	1	5	MA	Good	Good	None	40+	A3		
T54	Pinus radiata (Monterey Pine)	7	260	0	4	3	0	1	2	Y	Good	Fair - Poor shape & form.	None	10-20	C1		
T55	Ulmus x hollandica 'Groeneveld' (Dutch Elm)	15	570	5	7	6	7	1	2	MA	Good	Good	None	40+	A2		
T56	Prunus sp. (Cherry species)	3	280	4	3	2	2	1	1	MA	Good	Good	None	40+	B2		
T57	Sophora japonica (Pagoda Tree)	10	350	7	2	7	8	1	2	MA	Fair - low vitality	Good	None	20-40	C1		
T58	Tilia x euchlora (Caucasian Lime)	12	610	6	5	5	4	1	2	MA	Good	Good	None	40+	B2		
T59	Sorbus aucuparia (Rowan)	6	170	2	2	2	2	1	2	Y	Good	Good	None	40+	C1		
T60	Koelreuteria paniculata (Pride of India)	5	210	3	3	2	2	1	2	Y	Good	Good	None	40+	B2		
T61	Acer pseudoplatanus 'Atropurpureum' (Sycamore)	9	510	5	4	4	4	1	3	MA	Fair - Previously reduced.	Good	None	40+	B2		

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Client:		Allen Scott Landscape Architecture															
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T62	Koelreuteria paniculata (Pride of India)	5	190	3	3	4	2	1	2	Y	Good	Good	None	40+	B2		
T63	Betula pendula (Silver Birch)	7	140	2	2	2	1	1	2	Y	Good	Good	None	40+	C1		
T64	Trachycarpus fortunei (Chinese Windmill Palm)	6	120	1	1	1	1	1	4	Y	Good	Good	None	20-40	C1		
T65	Quercus cerris (Turkey Oak)	11	460	8	3	5	6	1	2	MA	Good	Good	None	40+	B2		
T66	Ulmus x hollandica (Dutch Elm)	12	570	7	6	7	6	1	2	MA	Good - Previously reduced.	Good	None	40+	A3		
T67	Carpinus betulus (Hornbeam)	9	309	7	5	1	3	2	2	MA	Fair	Fair - Poor shape & form.	None	44105	C1		
T68	Betula pendula (Silver Birch)	6	122	2	1	1	2	2	1.5	Y	Good	Good	None	40+	C1		
T69	Betula pubescens (Downy Birch)	3	50	2	2	2	1	1	1	Y	Good	Good	None	40+	C1		
T70	Quercus cerris (Turkey Oak)	9	260	5	4	2	4	1	2	MA	Good	Good	None	40+	B2		
T71	Fraxinus excelsior (Ash)	9	310	4	4	1	3	1	2	MA	Fair - Die back.	Good	None	<10	U		
T72	Quercus cerris (Turkey Oak)	6	190	4	4	5	4	1	2	Y	Good	Good	None	40+	C1		

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Date:				14.04.22							Tagged		No				
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				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T73	Ulmus minor 'Atinia' (Field Elm)	9	220	3	2	2	2	1	3	Y	Good	Good	None	40+	B3		
T74	Populus alba (White Poplar)	7	220	4	3	3	3	1	1.5	Y	Good	Good	None	40+	B2		
T75	Trachycarpus fortunei (Chinese Windmill Palm)	5	100	1	1	1	1	1	3	Y	Good	Good	None	20-40	C1		
T76	Trachycarpus fortunei (Chinese Windmill Palm)	5	120	1	1	1	1	1	3	Y	Good	Good	None	20-40	C1		
T77	Trachycarpus fortunei (Chinese Windmill Palm)	5	130	1	1	1	1	1	3	Y	Good	Good	None	20-40	C1		
T78	Pinus radiata (Monterey Pine)	9	380	3	2	2	4	1	3	MA	Good	Fair - Poor shape & form.	None	20-40	C1		
T79	Ulmus minor 'Atinia' (Field Elm)	14	1010	7	4	3	7	1	3	M	Good - Previously reduced.	Fair - Cavity on stem.	None	20-40	A3		
T80	Aesculus hippocastanum (Horse Chestnut)	12	700	3	3	2	3	1	7	M	Dead	Stem Obscured by Ivy	None	0	U		
T81	Ulmus minor 'Atinia' (Field Elm)	17	840	3	4	5	8	1	3	M	Good - Epicormics on stem.	Good	None	40+	A3		
T82	Ulmus minor 'Atinia' (Field Elm)	18	940	5	7	7	3	1	4	M	Good - Epicormics on stem.	Good	None	40+	A3		

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Date:		14.04.22							Tagged		No				
Client:		Allen Scott Landscape Architecture													
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T83	Ulmus minor 'Atinia' (Field Elm)	14	1020	9	7	2	5	1	4	M	Good	Fair - crown bias to north	None	20-40	B3
T84	Ulmus minor 'Atinia' (Field Elm)	5	1400	3	3	2	1	1	2	V	Fair - Previously reduced. street tree.	Good	None	20-40	B3
T85	Platanus X hispanica (London Plane)	10	460	7	6	5	5	1	2	MA	Good - street tree.	Good	None	40+	B2
T86	Ulmus minor 'Atinia' (Field Elm)	17	1030	7	8	8	7	1	2	M	Good - street tree.	Good	None	40+	A3
T87	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	17	620	6	9	4	5	1	2	M	Good - street tree.	Good	None	40+	A3
T88	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	14	580	7	3	4	7	1	2	MA	Good	Good	None	40+	A3
T89	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	14	550	6	7	4	5	1	3	MA	Good	Good	None	40+	A3
T90	Platanus X hispanica (London Plane)	10	300	7	5	1	4	1	2	MA	Good - Crown distorted due to group pressure.	Good	None	40+	B2
T91	Ulmus x hollandica 'Klemmer' (Flanders Elm)	16	730	9	8	9	9	1	4	M	Good	Good	None	40+	A3

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Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T92	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	13	550	7	7	8	3	1	3	MA	Good - street tree.	Good	None	40+	A3		
T93	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	14	550	7	9	5	6	1	2	MA	Good - street tree.	Good	None	40+	A3		
T94	Ulmus x hollandica 'Vegeta' (Huntingdon Elm)	17	570	7	10	9	9	1	2	M	Good - street tree.	Good	None	40+	A3		
T95	Trachycarpus fortunei (Chinese Windmill Palm)	5	140	1	1	1	1	1	4	Y	Good	Good	None	20-40	C1		
T96	Laurus nobilis (Bay)	5	108	2	2	2	2	2	1.5	Y	Good	Good	None	20-40	C1		
G1	Taxus baccata (Yew)	3	Varied						Y	Good	Good	None	40+	C1			

## Appendix B: Extract from the Cell Web product brochure

# CellWeb

Tree Root Protection System



**CellWeb Tree Root Protection System provides a flexible and permeable solution for protecting tree roots while creating a strong stable surface for traffic.**



With increased urbanisation and more redevelopments of existing properties, the need to be mindful of the impact on the surrounding environment is more important than ever.

The demand for building site access, driveways and parking around existing trees can have a potentially fatal impact on the tree if carried out incorrectly. Tree preservation orders (TPO's) ensure that trees are not wilfully damaged. However the need for vehicle access over and around tree roots can still cause the following problems:

### Problems:

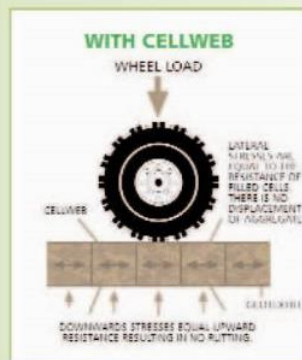
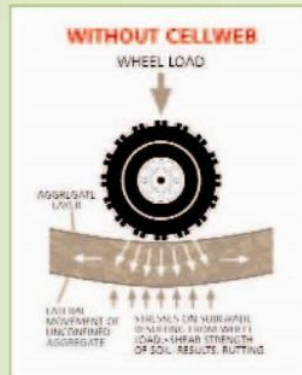
- Compaction of subsoils (especially by construction traffic) causing oxygen and nutrient depletion
- Creating an impermeable surface that prevents water reaching the roots
- Changes in ground level and water table
- Damage caused during excavation
- Contamination of the subsoil



By using CellWeb Tree Root Protection System you can avoid these problems and ensure the tree's long-term future. BS 5837:1991 (revised 2005) and APN 1 provide information for the protection of trees during the construction process, and CellWeb is a well-established solution that conforms to these guidelines.



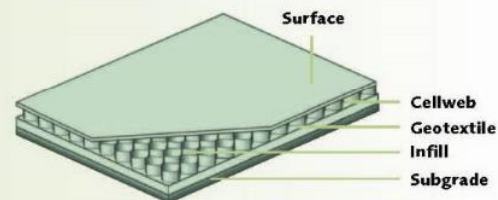
# Product features



Cellweb's patented design with its unique cellular structure and perforated cell walls reduces the vertical load pressure on tree roots and prevents damage. With clean granular materials as infill, air and moisture can reach the roots to encourage healthy growth.

With no-dig solutions being the preferred option of most Arboricultural Consultants and Tree Officers, CellWeb is ideal as only the surface vegetation need be removed. As well as avoiding disruption to the roots this reduces installation time and saves money.

What's more CellWeb also cuts down the depth required for the sub base – in most cases by 50% for further cost savings. CellWeb also significantly reduces surface rutting, increasing the long-term performance of the finished surface.



Using CellWeb for tree root protection gives you these benefits:

- Reduced depth of excavation required
- Preventing the compaction of subsoils
- Preventing oxygen and nutrient depletion
- Environmentally sound
- Quick, easy and cost-effective installation
- Free technical support available

CellWeb gives you the cost-effectiveness you need at the same time as helping to preserve trees.

**Geosynthetics Ltd** is a leading dis

**Please call**  
**01455 617 139**  
 or email [sales@geosyn.co.uk](mailto:sales@geosyn.co.uk)  
 for further information.

Wide  
product  
range

Large  
stock  
holding

Next day  
delivery



Access road for the National Lake District Parks Authority.

Site before construction pictured above.



CellWeb during installation.



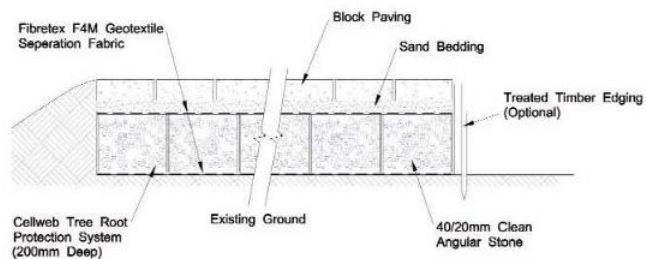
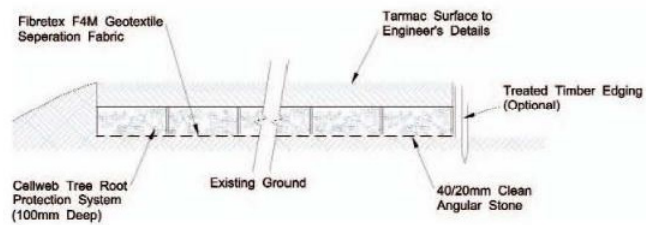
Final surfacing.

## Final surfacing

The CellWeb Tree Root Protection is totally confined within the clean stone sub base, therefore you can choose whichever surface materials are most appropriate for your installation. Some materials are more suitable than others and serious consideration should be given to the porosity of the surface for continued healthy growth of the tree. An ideal surfacing are DuoBlocks: a grass reinforcement and gravel retention system. Geosynthetics can supply these systems for a visually attractive surface that also has the advantage of being fully porous.

Loose or bonded gravels can be used as an alternative hard landscaping and CellWeb can also be used with block paviors whose porous joints will permit moisture and air transfer to the roots. Where planning allows, porous asphalt is yet another possible surfacing treatment.

Call our sales office on 01455 617 139 for more information.



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**Geosynthetics**

**APPENDIX C – DRAFT PROGRAMME OF SITE MONITORING**

**Royal Pavilion Gardens, Brighton**  
**Site Monitoring Form**

To be completed by the named arboriculturist and emailed to the client and tree officer at the completion of each operation.

Arboriculturist.....

Client.....

Project Manager.....

Tree Officer.....

(The above to be filled in with names and contact numbers)

OPERATION	TIMING	DATE	COMMENTS
Pre-commencement meeting or contact with project/Site manager.	Before any works or pre-works on Site		
Spot check of tree protection measures	Before works begins		
Supervision of excavations for slot drain	During ground works		
Spot check of installation of no dig hard surface within RPA of T1, T2, T43, T44, T47, T79, T82 and T83	During ground works		
Supervision of excavations for footpath widening	During ground works		

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Supervision of probing for screw piles	Prior to installation of screw piles		
Supervision of excavations for steps	During ground works		
Completion of development	Once all construction activity has been completed		