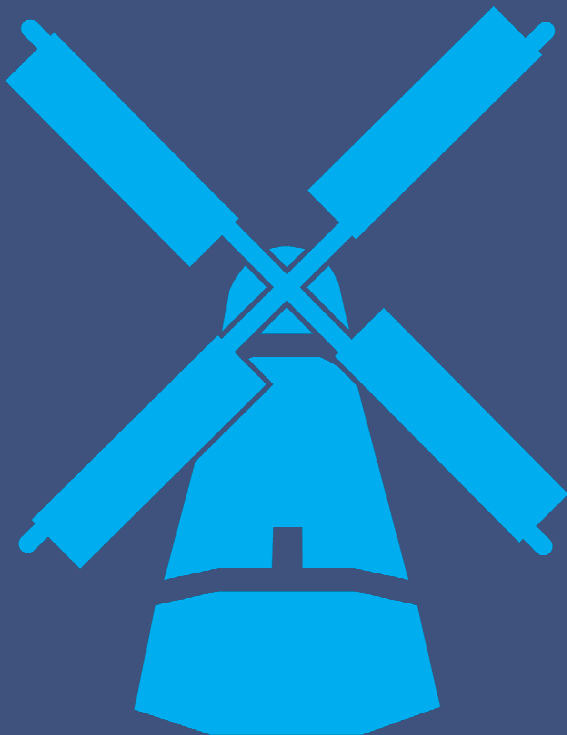




**Greenspace
Ecological
Solutions**

**Hindsland, Eastbourne Road
Willingdon, East Sussex
Arboricultural Impact Assessment and
Method Statement**



March 2021

Danescroft (FREOF V Willingdon) LLP

Hindsland, Eastbourne Road, Willingdon, East Sussex

Arboricultural Impact Assessment and Method Statement

March 2021

Controlled Copy

01 of 02

01 Danescroft (FREOF V Willingdon) LLP

02 Greenspace Ecological Solutions Ltd

This report was written by Neil Taylor and proofed by Paul White ACIEEM

*The content of this report is the responsibility of Greenspace Ecological Solutions Ltd.
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. Furthermore, should more than 24 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.*

Report Number J20961_P2_Arb

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1 PROJECT OVERVIEW

Client: Danescroft (FREOF V Willingdon) LLP

Site Address: Former Hindsland Playing Fields, Eastbourne Road, Willingdon, BN20 9NY

Attending Surveyors: Neil Taylor

Survey Dates: 3rd November 2020

Site Proposals: Residential development

Associated Planning Reference Number: Not yet submitted

Source of Relevant Documents:

Document:	Source:
Site Plans:	Danescroft

2 INTRODUCTION

2.1 Context

- 2.1.1 To inform a planning application, Greenspace Ecological Solutions has been commissioned by Danescroft (FREOF V Willingdon) LLP to undertake a tree survey of Hindsland, Eastbourne Road, Willingdon ("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) will be carried out on the proposed works and an Arboricultural Method Statement (AMS) developed. A Tree Protection Plan (TPP) has also been produced and accompanies this report as a separate drawing.
- 2.1.3 The proposal is for an Outline Application All Matters Reserved except for Access (excluding internal estate roads beyond the access to serve the Medical Centre Plot) for demolition of existing vacant dwelling and erection of up to 180 no. dwellings and medical centre together with all parking, servicing and onsite open space. Works that are likely to affect retained trees include the installation of hard surfaces and the movement of construction vehicles.
- 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 within the village of Willingdon, East Sussex, at National Grid Reference TQ584041. The location of the Site is depicted in Image 1.



Image 1. Location of the Site

2.3 Site Description

- 2.3.1 The Site extends to approximately 6.5 hectares (ha) and is dominated by semi-improved grassland. Scattered trees, dense boundary scrub, a hedgerow, a stream, bare ground, buildings, and hardstanding are also present within the Site
- 2.3.2 The Site is bound by residential properties to the north, agricultural land to the east, the A2270 Eastbourne Road to the west and south, with a parcel of open green space to the north-west. The wider landscape comprises the village of Willingdon to the north, south, and west, with agricultural land to the east, consisting primarily of pasture and hedgerows.
- 2.3.3 The wider landscape is one of urban areas, agricultural land with an interconnecting network of hedgerows, and scattered woodland blocks
- 2.3.4 There are no tree preservation orders on the site and the site is not within a conservation area.

3 SURVEY METHODOLOGY

- 3.1 The trees were inspected from ground level by consultant arboriculturist Neil Taylor on 3rd November 2020. Measurements 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.
- 3.2 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 from 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.

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 on or close to the site's boundaries. In the main, the trees in this character group are in a good condition and provide significant amenity in the context of the local area.
 2. The second character group includes the medium sized, middle-aged trees found growing on the site's boundaries. 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 on the site's boundaries. In the main, the trees in this character group are in a good condition but due to their size are of limited amenity value.

5 ARBORICULTURAL IMPLICATIONS ASSESSMENT (AIA)

5.1 Methodology

- 5.1.1 The AIA uses the information obtained in the tree survey to identify areas where the proposed construction 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 R - red (see accompanying drawing reference J20961_P2_Arb_TPP). 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 Details of the trees surveyed are given in the TSS (Appendix A). The juxtaposition of the proposed development in relation to existing tree locations are shown on the accompanying TPP drawing, reference J20961_P2_Arb_TPP).
- 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 TPP, drawing reference J20961_P2_Arb_TPP), for the relationship between the proposed development and the trees on and adjacent to the site.

- The following trees and groups of trees will be removed to enable the proposed development:

T48	to enable the construction of the site access
G4	to enable the construction of an apartment building and car park
Part of G5	to enable the construction of a footpath and car parking spaces
G6	to enable the construction of an apartment building
Part of G7	to enable the construction of a footpath and attenuation pond
Part of H1	to enable the construction of an access road

- The following trees should be pruned prior to the construction of the proposed development:

T33	crown lift overhanging branches to clear 5 metres
T42	crown lift to clear 3 metres, secondary branches only
T43	crown lift to clear 4 metres, secondary branches only
T45	crown lift to clear 3 metres, secondary branches only

- There will be no demolition within the RPA of a retained tree.
- The following trees will be affected by the construction of hard surfaces within the RPA:

T8, T9, T11, T14, T18, T20, T21, T22, T26, T27, T31, T33, T34, T36, T37, T38, T39, T40, T42, T43, T45, T49, T50, T51 and T52

The hard surfaces will be constructed in accordance with the 'no dig' principles outlined in APN12 and utilise a cellular confinement system such as Cell Web as a sub base. Refer to Section 6.3 below for details.

6 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 and shown on the accompanying TPP, drawing number J20961_P2_Arb_TPP).

6.2 Demolition within the RPA of Retained Trees

- 6.2.1 There will be no demolition within the RPA of a retained tree.

6.3 Construction within the RPA of Retained Trees

- 6.3.1 Construction Hard Surfaces: Construction of the proposed hard surfaces that are within the RPA of T8, T9, T11, T14, T18, T20, T21, T22, T26, T27, T31, T33, T34, T36, T37, T38, T39, T40, T42, T43, T45, T49, T50, T51 and T52 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.

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
- 6.3.2 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.
- 6.3.3 No materials or spoil is to be stored within the RPA of a retained tree unless on an existing hard surface.
- 6.3.4 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 The proposed locations of service runs are not known at this stage but are likely to be located outside the RPA of the trees on and adjacent to the site. Where it is not possible to achieve this, the section of service run which passes within the RPA of a tree will be hand dug in accordance with 'broken trenches' described in NJUG 4 Section 4, an extract of which can be found in Appendix C. This will ensure that tree roots are not damaged during the installation of the service. All root pruning will be agreed beforehand with the named Arboriculturist in consultation with the local authority Arboricultural officer. All root pruning will be in accordance with current best working practice. All routes for overhead services will aim to avoid the trees. Where this is unavoidable any tree work will be agreed prior to commencement with the Council's Arboricultural Officer.
- 6.4.2 If the conditions are suitable on site and there is sufficient space, underground services may cross the RPA if a low impact method is used. Such low impact methods include: moleing, directional drilling and thrust boring. It is important that all entry and exit pits remain outside of the RPA and the services are installed at a sufficient depth (at least 600mm) so as to avoid the tree rooting system.

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 the accompanying TPPs, drawing number J20961_P2_Arb_TPP). The fence will consist of “Heras” type panels or similar braced at appropriate intervals and secured to keep in place. The tree protection barrier will be erected prior to the occupation of the site by the contractor and will only be removed once the construction phase is complete.

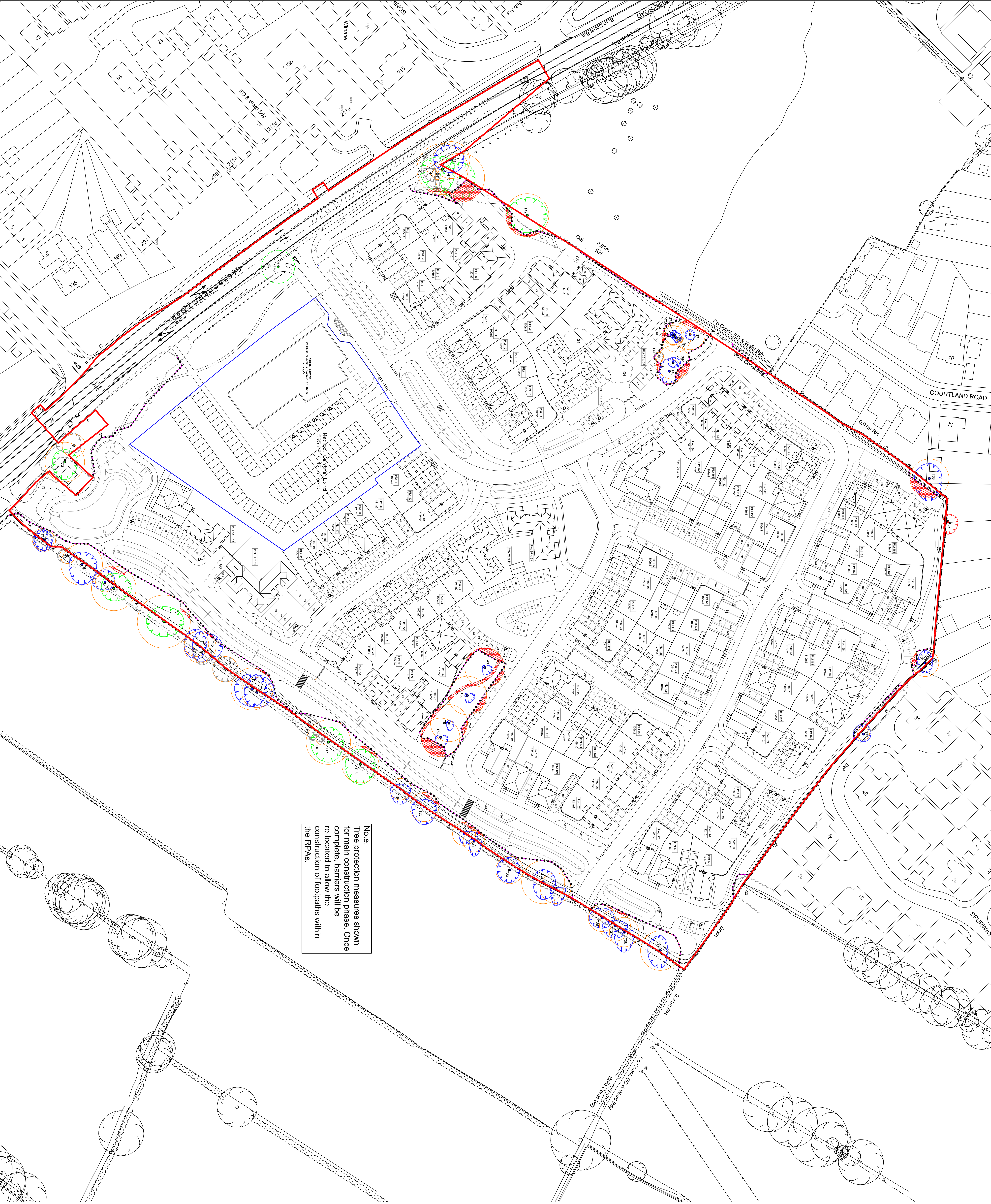
6.6 Site Monitoring and Supervision

The process of reporting to the client and LPA Tree Officer will be by emailing the checklist form at Appendix D. Site monitoring is to be at a frequency agreed and approved by the LPA. It will involve a site visit by the arboriculturist to ensure that the appropriate tree protection measures, as detailed in the approved drawings and method statements, are continually adhered to.

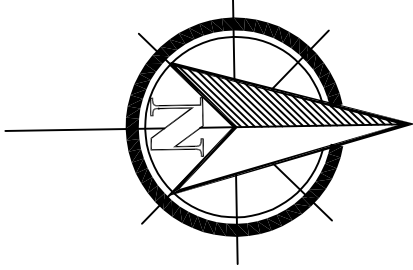
7 CONCLUSION

- 7.1 Greenspace Ecological Solutions was commissioned by Danescroft (FREOF V Willingdon) LLP to carry out a tree survey at of Hindsland, Eastbourne Road, Willingdon.
- 7.2 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.
- 7.3 A total of one individual tree, two groups of trees, part of two further groups of trees and part of one hedge will be removed to enable the construction of the proposed development.
- 7.4 The development of the site provides an opportunity to plant new trees as part of a landscape scheme which will increase the age range and species diversity of the trees in the local area.
- 7.5 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.
- 7.6 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



Note:
Tree protection measures shown for main construction phase. Once complete, barriers will be re-located to allow the construction of footpaths within the RPAs.



Root Protection Area
Tree number as recorded on Survey Schedule
Tree canopy
Coloured symbol indicating RS category as shown below

Underlined tree tags denote tree located by eye

Tree categories

- Category A tree
885837 2012
- Category B tree
885837 2012
- Category C tree
885837 2012
- Category U tree
885837 2012

Arboricultural Strategy

- Tree to be retained
Tree to be retained with the category indicated by RS-2012
- Tree to be removed
Tree to be removed with the category indicated by RS-2012
- Tree group/edge to be retained
Colour reference to be retained with the category indicated by RS-2012
- Tree group or part of tree group to be retained
Colour reference to be retained with the category indicated by RS-2012
- Line along which Tree Protection Barriers should be installed
Barriers should be installed along the line along which the Tree Protection Barriers should be installed with the category indicated by RS-2012
- Area of land surface to be installed
Area of land surface to be installed with the category indicated by RS-2012

Scale: 1:500

Drawing Reference : J20961_P2_Arb_TPP

Project Title : Hindland Playing Fields, Willington

Drawing Title : Tree Protection Plan

Date : 03-03-21

Drawn : NT

Status : Final

APPENDICES

APPENDIX A – TREE SURVEY SCHEDULE

Project:	Hindsland Playing Fields, Willingdon							BS 5837 2012 Trees in relation to design, demolition and construction- recommendations			Surveyed by		NAT		 Greenspace Ecological Solutions		
Ref:	J20961_P2_Arb										Weather		Overcast				
Date:	03.11.20										Tagged		No				
Client:	Danescroft (FREOF V Willingdon) LLP																
				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	ash (Fraxinus excelsior)	8	380	3	3	7	5	1	3	MA	Fair - die back	Good	None	10-20	C1		
T2	oak (Quercus robur)	11	660	5	7	5	5	1	2	M	Good - ivy	Good	None	40+	A2		
T3	oak (Quercus robur)	6	370	2	5	4	4	1	2	MA	Good	Good	None	40+	B2		
T4	oak (Quercus robur)	6	360	3	4	4	4	1	1	MA	Good	Good	None	40+	B2		
T5	ash (Fraxinus excelsior)	6	260	1	3	4	3	1	3	MA	Fair - die back	Good	None	10-20	C1		
T6	oak (Quercus robur)	10	830	6	8	5	5	3	2	M	Good	Fair - decay at base	None	20-40	B2		
T7	field maple (Acer campestre)	6	320	4	3	5	5	1	2	MA	Good	Good	None	40+	B2		
T8	oak (Quercus robur)	10	740	7	5	5	6	1	3	M	Good	Good	None	40+	A2		
T9	oak (Quercus robur)	11	880	8	6	7	6	1	3	M	Good	Good	None	40+	A2		
T10	oak (Quercus robur)	10	410	4	6	5	6	1	2	MA	Good	Fair - poor form	None	20-40	B2		
T11	oak (Quercus robur)	12	530	9	6	3	6	1	2	MA	Good	Fair - poor form	None	20-40	B2		
T12	field maple (Acer campestre)	9	320	4	5	3	1	1	3	M	Good	Fair - decay at base	None	10-20	C1		
T13	ash (Fraxinus excelsior)	9	512	5	5	5	5	2	1	MA	Good	Fair - decay at base and fungal bracket at crown break	None	10-20	C1		
T14	oak (Quercus robur)	10	837	6	7	7	6	3	1	M	Good	Good - triple stem	None	40+	B2		
T15	oak (Quercus robur)	10	500	7	6	5	7	1	2	M	Good	Good	None	40+	B2		

Project:	Hindsland Playing Fields, Willingdon							BS 5837 2012 Trees in relation to design, demolition and construction- recommendations			Surveyed by	NAT	 Greenspace Ecological Solutions		
Ref:	J20961_P2_Arb										Weather	Overcast			
Date:	03.11.20										Tagged	No			
Client:	Danescroft (FREOF V Willingdon) LLP														
				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
T16	oak (Quercus robur)	6	200	1	1	5	2	1	3	MA	Fair - suppressed	Fair - poor form	None	10-20	C1
T17	oak (Quercus robur)	10	886	6	8	7	6	2	1	M	Good	Good	None	40+	A2
T18	oak (Quercus robur)	10	620	6	8	6	6	1	2	M	Good	Good	None	40+	A2
T19	oak (Quercus robur)	7	360	4	6	4	2	1	1	MA	Good	Good - leans north	None	20-40	B2
T20	oak (Quercus robur)	8	480	5	7	5	3	1	2	MA	Good	Good	None	40+	B2
T21	oak (Quercus robur)	7	380	6	4	2	1	1	1	MA	Good	Fair - poor from	None	20-40	B2
T22	oak (Quercus robur)	6	360	3	6	2	1	1	3	MA	Good	Fair - poor from	None	20-40	B2
T23	oak (Quercus robur)	6	460	4	5	5	5	1	2	MA	Good	Good	None	40+	B2
T24	oak (Quercus robur)	11	856	5	7	4	5	2	2	M	Fair - die back	Good	None	20-40	B2
T25	oak (Quercus robur)	8	510	4	7	2	0	1	2	MA	Good	Fair - poor form	None	20-40	B2
T26	oak (Quercus robur)	7	450	5	4	5	4	1	3	MA	Good	Good	None	40+	B2
T27	oak (Quercus robur)	9	520	5	5	5	2	1	1	MA	Good	Good	None	40+	B2
T28	oak (Quercus robur)	8	490	4	8	4	1	1	1	MA	Good	Fair - poor form	None	40+	B2
T29	oak (Quercus robur)	6	660	3	7	5	6	1	1	MA	Good - ivy	stem obscured by ivy	Sever ivy	40+	B2
T30	silver birch (Betula pendula)	4	200	3	3	4	4	1	1	MA	Good - off site	Good	None	40+	B2

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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	
T31	oak (Quercus robur)	9	450	3	4	3	5	1	2	MA	Good - off site	Good	None	40+	B2	
T32	silver birch (Betula pendula)	10	320	4	5	2	3	1	3	MA	Dead - off site	—	N/A off site	0	U	
T33	ash (Fraxinus excelsior)	10	650	5	9	6	6	1	3	M	Good - off site	Fair - decay at base	N/A off site	20-40	B2	
T34	Lombardy poplar (Populus nigra 'Italica')	12	500	2	2	2	2	1	1.5	MA	Good	Good	None	20-40	B2	
T35	Lombardy poplar (Populus nigra 'Italica')	8	120	1	1	1	1	1	1.5	Y	Good	Good	None	40+	C1	
T36	Lombardy poplar (Populus nigra 'Italica')	12	480	2	2	1	2	1	1.5	MA	Good	Good	None	20-40	B2	
T37	Lombardy poplar (Populus nigra 'Italica')	10	320	1	2	1	2	1	1.5	MA	Good	Good	None	20-40	B2	
T38	Lombardy poplar (Populus nigra 'Italica')	10	320	1	1	1	1	1	1.5	MA	Good	Good	None	20-40	B2	
T39	Lombardy poplar (Populus nigra 'Italica')	12	560	3	2	2	2	1	1.5	MA	Good	Good	None	20-40	B2	
T40	oak (Quercus robur)	7	502	4	5	4	5	2	0	MA	Good	Good	None	40+	B2	
T41	oak (Quercus robur)	4	150	2	1	2	2	1	0	Y	Good	Good	None	40+	C1	
T42	oak (Quercus robur)	10	720	8	7	8	7	1	1.5	M	Good	Good	None	40+	A2	
T43	oak (Quercus robur)	9	820	6	9	8	6	1	1	M	Good	Good	None	40+	A2	

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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
T44	oak (Quercus robur)	10	620	5	5	7	6	1	3	MA	Good - ivy	Good	None	40+	B2
T45	oak (Quercus robur)	10	850	5	9	9	5	1	1	M	Good	Good	None	40+	A2
T46	ash (Fraxinus excelsior)	6	180	1	7	1	0	1	2	Y	Fair - suppressed	Fair - poor form	None	10-20	C1
T47	ash (Fraxinus excelsior)	8	200	1	5	4	0	1	2	Y	Fair - suppressed	Fair - poor form	None	10-20	C1
T48	oak (Quercus robur)	10	550	6	6	6	6	1	1	M	Good - off site	Good	None	40+	A2
T49	Lombardy poplar (Populus nigra 'Italica')	15	660	3	3	1	1	1	2	M	Good	Good	None	20-40	B2
T50	Lombardy poplar (Populus nigra 'Italica')	14	640	3	3	1	1	1	2	M	Good	Good	None	20-40	B2
T51	Lombardy poplar (Populus nigra 'Italica')	14	620	2	3	1	1	1	2	M	Good	Good	None	20-40	B2
T52	Lombardy poplar (Populus nigra 'Italica')	15	640	3	4	2	1	1	2	M	Good	Good	None	20-40	B2
G1	field maple, oak	Up to 5	Varied							MA	Good - overgrown hedgerow	Good	None	40+	C1
G2	field maple	Up to 6	Varied							MA	Good - boundary group	Good	None	40+	C1
G3	blackthorn, cherry plum	Up to 4	Varied							MA	Good - off site boundary group	Good	None	40+	C1
G4	goat willow	Up to 8	Varied							MA	Good - self sown group	Good	None	20-40	C1

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Client:	Danescroft (FREOF V Willingdon) LLP														
				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
G5	oak, hawthorn, goat willow	Up to 6	Varied							Y-MA	Good - boundary group	Good	None	40+	C1
G6	Leyland cypress	Up to 10	Varied							MA	Good - conifer group	Fair - two failed stems	None	10-20	C1
G7	cherry plum, hawthorn	Up to 5	Varied							MA	Good - boundary group	Good	None	20-40	C1
H1	hawthorn, hazel, goat willow, gorse	Up to 4	Varied							MA	Good - boundary hedge	Good	None	40+	C1
H2	cotoneaster, hawthorn, hazel, elder	Up to 3	Varied							MA	Good - boundary hedge	Good	None	40+	C1
H3	box honeysuckle	Up to 1	Varied							MA	Good - garden hedge	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:

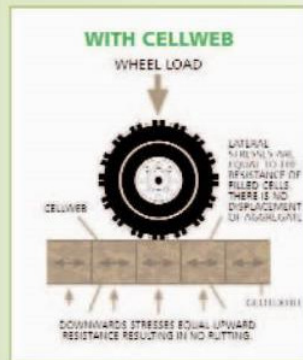
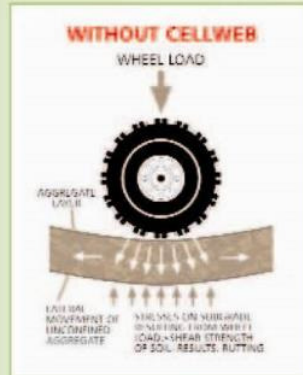


Problems:

- 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.

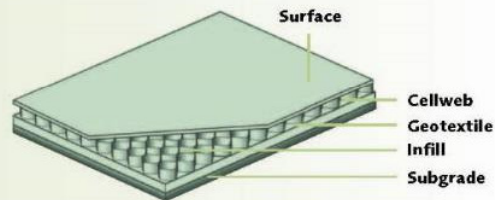
Product features



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

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01455 617 139
or email 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.



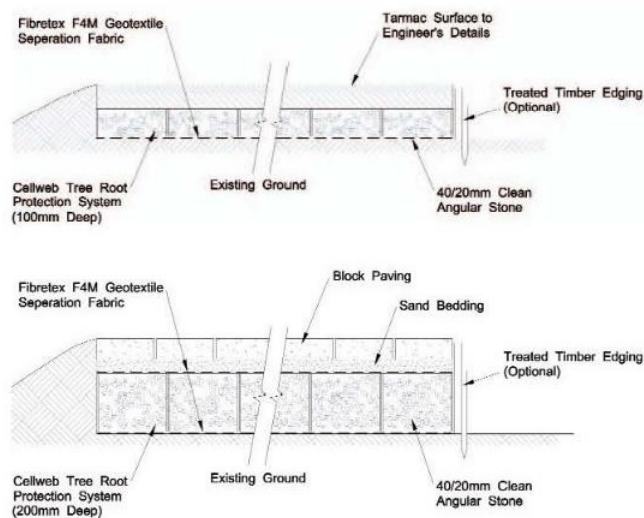
Final surfacing.

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.

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APPENDIX C – SECTION 4, EXTRACTED FROM NJUG 4

4. HOW TO AVOID DAMAGE TO TREES

This section gives general guidance on methods of work to minimise damage to trees. The local authority (or for privately owned trees, the owner or their agent), should be consulted at an early stage prior to the commencement of any works. This will reduce the potential for future conflict between trees and apparatus.

4.1 Below Ground

Wherever trees are present, precautions should be taken to minimise damage to their root systems. As the shape of the root system is unpredictable, there should be control and supervision of any works, particularly if this involves excavating through the surface 600mm, where the majority of roots develop.

4.1.1 Fine Roots

Fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them e.g. frost and extremes of heat. It is therefore important to protect exposed roots where a trench is to be left open overnight where there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.

4.1.2 Precautions

The precautions referred to in this section are applicable to any excavations or other works occurring within the Prohibited or Precautionary Zones as illustrated in Figure 1 – 'Tree Protection Zone'.

4.1.3 Realignment

Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone.

The appropriate method of working within the Precautionary Zone should be determined in consultation with the local authority (or for privately owned trees the owner or their agent) and may depend on the following circumstances;

- the scope of the works (e.g. one-off repair or part of an extensive operation)
- degree of urgency (e.g. for restoration of supplies)
- knowledge of location of other apparatus
- soil conditions
- age, condition, quality and life expectancy of the tree

Where works are required for the laying or maintenance of any apparatus within the Prohibited or Precautionary Zones there are various techniques available to minimise damage.

Acceptable techniques in order of preference are;

a) Trenchless

Wherever possible trenchless techniques should be used. The launch and reception pits should be located outside the Prohibited or Precautionary Zones. In order to avoid damage to roots by percussive boring techniques it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement.

b) Broken Trench - Hand-dug

This technique combines hand dug trench sections with trenchless techniques if excavation is unavoidable. Excavation should be limited to where there is clear access around and below the roots. The trench is excavated by hand with precautions taken as for continuous trenching as in (c) below. Open sections of the trench should only be long enough to allow access for linking to the next section. The length of sections will be determined by local conditions, especially soil texture and cohesiveness, as well as the practical needs for access. In all cases the open sections should be kept as short as possible and outside of the Prohibited Zone.

c) Continuous Trench - Hand-dug

The use of this method must be considered only as a last resort if works are to be undertaken by agreement within the Prohibited Zone. The objective being to retain as many undamaged roots as possible.

Hand digging within the Prohibited or Precautionary zones must be undertaken with great care requiring closer supervision than normal operations.

After careful removal of the hard surface material digging must proceed with hand tools. Clumps of roots less than 25mm in diameter (including fibrous roots) should be retained in situ without damage. Throughout the excavation works great care should be taken to protect the bark around the roots.

All roots greater than 25mm diameter should be preserved and worked around. These roots must not be severed without first consulting the owner of the tree or the local authority tree officer / arboriculturist. If after consultation severance is unavoidable, roots must be cut back using a sharp tool to leave the smallest wound.

4.1.5 Backfilling

- Any reinstatement of street works in the United Kingdom must comply with the relevant national legislation (see: **Volume 6 – 'Legislation and Bibliography'**). In England this relates to the requirements of the code of practice – 'Specification for the Reinstatement of Openings in Highways' approved under the New Roads and Street Works Act 1991. Without prejudice to the requirements relating to the specification of materials and the standards of workmanship, backfilling should be carefully carried out to avoid direct damage to roots and excessive compaction of the soil around them.
- The backfill should, where possible, include the placement of an inert granular material mixed with top soil or sharp sand (not builder's sand) around the roots. This should allow the soil to be compacted for resurfacing without damage to the roots securing a local aerated zone enabling the root to survive in the longer term.
- Backfilling outside the constructed highway limits should be carried out using the excavated soil. This should not be compacted but lightly "tamped" and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.

4.1.6 Additional Precautions near Trees

- Movement of heavy mechanical plant (excavators etc.) must not be undertaken within the Prohibited Zone and should be avoided within the Precautionary Zone, except on existing hard surfaces, in order to prevent unnecessary compaction of the soil. This is particularly important on soils with a high proportion of clay. Spoil or material must not be stored within the Prohibited Zone and should be avoided within the Precautionary Zone.
- Where it is absolutely necessary to use mechanical plant within the Precautionary Zone care should be taken to avoid impact damage to the trunk and branches. A tree must not be used as an end-stop for paving slabs or other materials nor for security chaining of mechanical plant. If the trunk or branches of a tree are damaged in any way advice should be sought from the local authority tree officer / arboriculturist.

See TABLE 1 –'Prevention of Damage to Trees Below Ground' below for summary details regarding causes and types of damage to trees and the implications of the damage and the necessary precautions to be taken to avoid damage.

TABLE 1 - Prevention of Damage to Trees Below Ground

Causes of Damage	Type of Damage	Implications to Tree	Precautions
Trenching, mechanical digging etc.	Root severance	• The tree may fall over • Death of the root beyond the point of damage • Potential risk of infection of the tree The larger the root the greater the impact on the tree.	Hand excavate only within the Precautionary Zone. Work carefully around roots. Do not cut roots over 25mm in diameter without referring to the local authority tree officer. For roots less than 25mm in diameter use a sharp tool and make a clean cut leaving as small a wound as possible.
Trenching, mechanical digging, top soil surface removal etc.	Root bark damage	• The tree may fall over • If the damage circles the root it will cause the death of the root beyond that point • Potential risk of infection of the tree The larger the root the greater the impact on the tree.	Do not use mechanical machinery to strip the top soil within the Precautionary Zone. Hand excavate only within the Precautionary Zone. Work carefully around roots. Do not cut roots over 25mm in diameter without referring to the local authority tree officer. For roots less than 25mm use a sharp tool and make a clean cut leaving as small a wound as possible.
Vehicle movement and plant use. Material storage within the precautionary area.	Soil compaction & water saturation	Restricts or prevents passage of gaseous diffusion through soil, the roots are asphyxiated and killed affecting the whole tree.	Prevent all vehicle movement, plant use or material storage within the Precautionary Zone.
Top-soil scouring, excavation or banking up.	Alterations in soil level causing compaction or exposure of roots.	Lowering levels strips out the mass of roots over a wide area. Raising soil levels asphyxiates roots and has the same effect as soil compaction.	Avoid altering or disturbing soil levels within the Precautionary Zone.
Use of herbicides.	Poisoning of the tree via root absorption	• Death of the whole tree • Death of individual branches Damage to leaves and shoots.	The selection and application of herbicides must be undertaken by a competent person in accordance with COSHH regulations.
Spillage of oils or other materials.	Contamination of soil	Toxic and asphyxiation effects of chemicals, oils, building materials (cement, plaster, additives etc.) on the root system can kill the tree.	Never store oils, chemicals or building materials within the Precautionary Zone or within the branch spread of a tree, which ever is the greater.
Placement or replacement of underground apparatus.	Various	Death of all or part of the tree.	Effective planning and liaison with local authority tree officer, taking into consideration the position of trees, and their future growth potential and management

APPENDIX D – PROGRAMME OF SITE MONITORING**Hindsland Playing Fields, Eastbourne Road, Willingdon****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 ground works begin		
Spot check of installation of no dig hard surface within RPA of retained trees	During ground works		
Re-location of tree protection measures to enable construction of footpaths within RPAs	After main construction phase		
Completion of development	Once all construction activity has been completed		