SAVILLS ARBORICULTURE

BS5837:2012 - ARBORICULTURAL IMPACT ASSESSMENT

LINFIT LANE BARNS, 125 LINFIT LANE, HUDDERSFIELD

24th November 2023

Ref	Version	Author	Checked	Date
475913	V.1	TW	MG	24/11/23

SUMMARY

Client	Darren Smith Homes
Inspection Date	17/11/2023
Instruction Brief	Savills Forestry and Arboriculture are instructed by Darren Smith Homes to report on the impact the proposed development will have on trees. The assessment was undertaken in accordance with the principles of British Standard 5837:2012 'Trees in Relation to Design, Demolition & Construction - Recommendations'.
Details of the BS5837:2012 survey.	The BS5837:2012 Tree Survey was undertaken on the 17th November 2023. The conditions were calm and sunny. The site is a proposed driveway within the edge of a field adjacent to a dry stone wall, the stone wall forms a domestic boundary. to the property side of the wall there is a raised embankment which contains a mixture of trees and shrub planting. This report will assess the impact that the proposed driveway will have on the trees and whether engineering solutions may be used to ensure the trees can be retained with minimal impact.

Table 1: Survey breakdown - number of trees and groups; and their respective retention categories.

BS Retention Category	Number of trees/groups
A	
B	T1,T2,T3
C	G1
U	

CONTENTS

1. INSTRUCTION

1.1 We have been instructed by Darren smith Homes to assess the impact of the proposed development on the trees located both within and directly adjacent to the site. This report is undertaken in accordance with the principles of British Standard 5837:2012 'Trees in Relation to Design, Demolition & Construction - Recommendations'.

1.2 We are instructed to prepare a report in order to provide information to assist all parties involved in the planning process to make balanced judgements regarding arboricultural features in relation to the proposed development at Linfit Lane Barns, 125 Linfit Lane, Huddersfield; as such, all significant trees within influencing distance to the development proposal both on and adjoining the site were surveyed on the 17th November 2023 the information was provided within the accompanying BS5837:2012 Tree survey and Constraints Report.

1.3 3 individual trees and 1 group of shrubs were surveyed and mapped on a Preliminary Tree Constraints Plan at Appendix A.

2. REPORT LIMITATIONS

2.1 The inspection was carried out from ground level following the visual tree assessment process, no aerial inspection was carried out. No soil investigations were undertaken.

2.2 Our appraisal of the mechanical integrity of trees on the site is enough to inform the current project. The assessment of trees is carried out from ground level without invasive investigation and the disclosure of hidden defects cannot therefore be expected. Whilst the survey is not specifically commissioned to report on matters of tree safety, the survey will report obvious defects that are significant in relation to the existing and proposed land use.

2.3 The recommendations relate to the site as it exists at present, and to the current level and pattern of usage. A change in use or development of the site or its surroundings may alter the level of risk posed by trees on the site.

2.4 Trees are living organisms whose health can be subject to rapid change. The mitigation recommendations, or any other conclusions, do not preclude the possibility of failure from undetected conditions, weather events, or other acts of man or nature. Trees can unpredictably fail even if no defects or other conditions are present.

3. SOILS

3.1 Soils provide the medium in which tree roots grow. They provide access to mineral elements, water and the means to anchor the tree structure within its environment.

3.2 Damage or changes to the soil matrix or levels can create significant issues for tree health and structural integrity both in the long and short term; it is therefore essential that the soil type and make up is considered when considering trees for retention, removal and also for any proposed landscape mitigation.

3.3 A desktop assessment was carried out to ascertain the soil type using the opensource data provided by LANDIS: Cranfield Soil and Agricultural Institute Soilscape application.

3.4 The following plan Figure 1. provides an overview of the general soilscape within the locale of the proposed development. A more detailed soil assessment may be required to inform construction methodology for any engineering on the site.

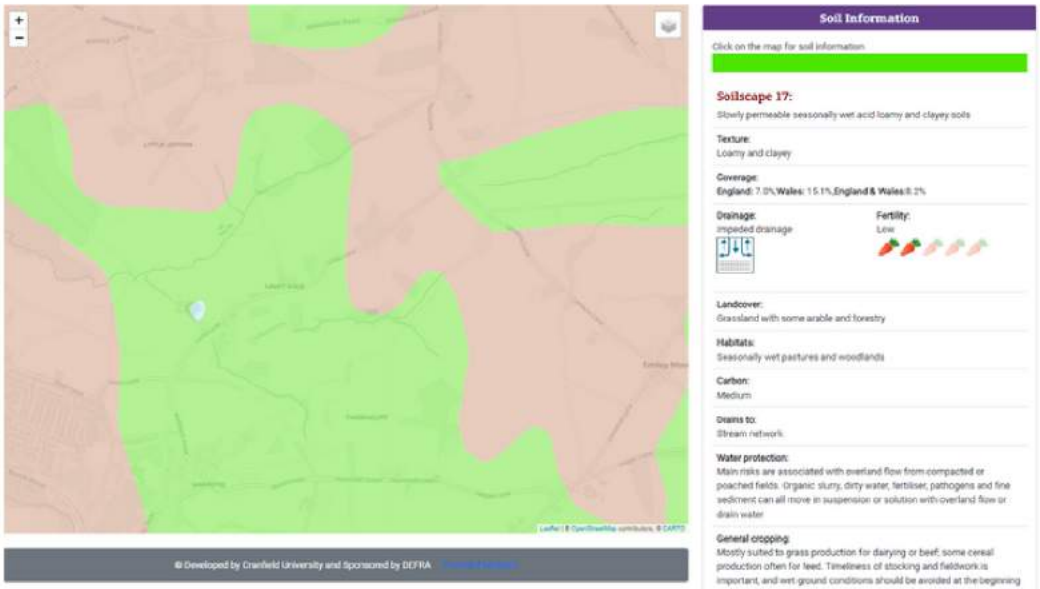


Figure 1. Extract from Landis.org.uk - Soilscape viewer.

4. JUXTAPOSITION OF TREES AND STRUCTURES

4.1 The below ground constraints are generally summarised as the Root Protection Area (RPA). The shape of the RPA and its exact location will depend upon arboricultural considerations including likely tolerance of the tree to root disturbance; morphology and disposition of the roots when known influenced by past or existing site conditions; soil type and structure; and topography and drainage.

4.2 The purpose of the RPA is to prevent physical damage to tree roots and to prevent damage to the soil structure. Tree roots are damaged by soil compaction, changes in soil levels or soil contamination which could reduce tree health and/or stability.

4.3 Root patterns are affected by topography and characteristics of the soil or substrate. Where trees are located within proximity to existing hard standing or underground physical barriers, they are unlikely to have an even distribution of lateral roots due to restrictions in root growth created by compacted sub-grades beneath.

4.4 Provide detail of any trees that will have an adjusted RPA due to existing man made or natural constraints

5. UNDERGROUND SERVICES

5.1 At present we have no detail of any proposed services within the driveway (these have been permitted as part of a separate application). Where service are required within the driveway provided the proposed location and installation of such follows best practice as detailed in within the National Joint Utilities Guidance Document Vol.4 (NJUG 4) there should be no significant impact regarding the trees within this proposal.

6. DEVELOPMENT IMPACT ON TREES

6.1 The preliminary tree survey was undertaken and the trees categorised according to BS5837:2012. The survey identified 3 individual trees and 1 inconsequential group including a cherry and cypress.

6.2 The trees identified have been considered in regards to the proposed development and whether retention is possible, practical and sustainable in the long term.

6.3 The adjacent table provides an overview of the trees identified for removal and retention.

6.4 No trees were found within the proposed development area. a total of three individual trees were identified on adjacent land within the potential influencing distance of the proposed access. A small group of shrubs including a small cherry and cypress were also noted on the adjacent land but are inconsequential to this proposal due to their size and location. T1 and T2 are sycamore, these trees are located in a raised area adjacent to the proposed access and are retained by a drystone wall. T3 is an early mature beech, this tree is located to the rear of the drystone wall at the same level as the field.

6.5 The online soil assessment shown in figure 1 indicates the soils on site to be of a loamy clay type forming seasonally wet pastures. This reduced drainage and higher clay content suggests the soils may be prone to compaction, as such and due to the presence of tree roots from T1, T2 and T3 it is likely that development may impact these trees via direct damage and potential ground compaction should a traditional construction be used. We therefore consider the use of a No Dig solution to be appropriate. We suggest the use of the Cellweb TRP (Tree Root Protection System) would be an appropriate to creating a stable non compacted surfacing solution that avoids direct damage to roots and remains porous to water and gaseous exchange, to avoid a hard standing we propose the use of gravel to fill the the 3 dimensional Cell matrix. Cell Web TRP is a guaranteed engineered tree root protection system. The final driveway design will be lead by the specialist engineers.

7. PROPOSED REVISIONS TO SCHEME

7.1 We advise that all proposed revisions having implications for trees should be referred to us for review.

8. CONCLUSIONS

8.1 BS 5837: 2012 contains clear and current recommendations for a best practice approach to the assessment, retention and protection of trees on development sites. The proposed development has followed this guidance by:

- Seeking arboricultural advice and undertaking a phase 1 preliminary tree survey in order to inform the layout and design of the proposed development
- Respecting the constraints posed to development of the site by high or moderate quality trees
- Acting upon arboricultural advice throughout the design process in order to obtain the best development proposal whilst considering the current and future tree requirements
- Seeking design solutions in accordance with BS5837: 2012 in order to ensure no adverse impact to protected trees

8.2 The protection of retained trees will be in accordance with recommendation contained within the BS and as detailed on the Tree Protection Plan at Appendix C.

Table 2: Tree Removal and Retention with BS5837 categories.

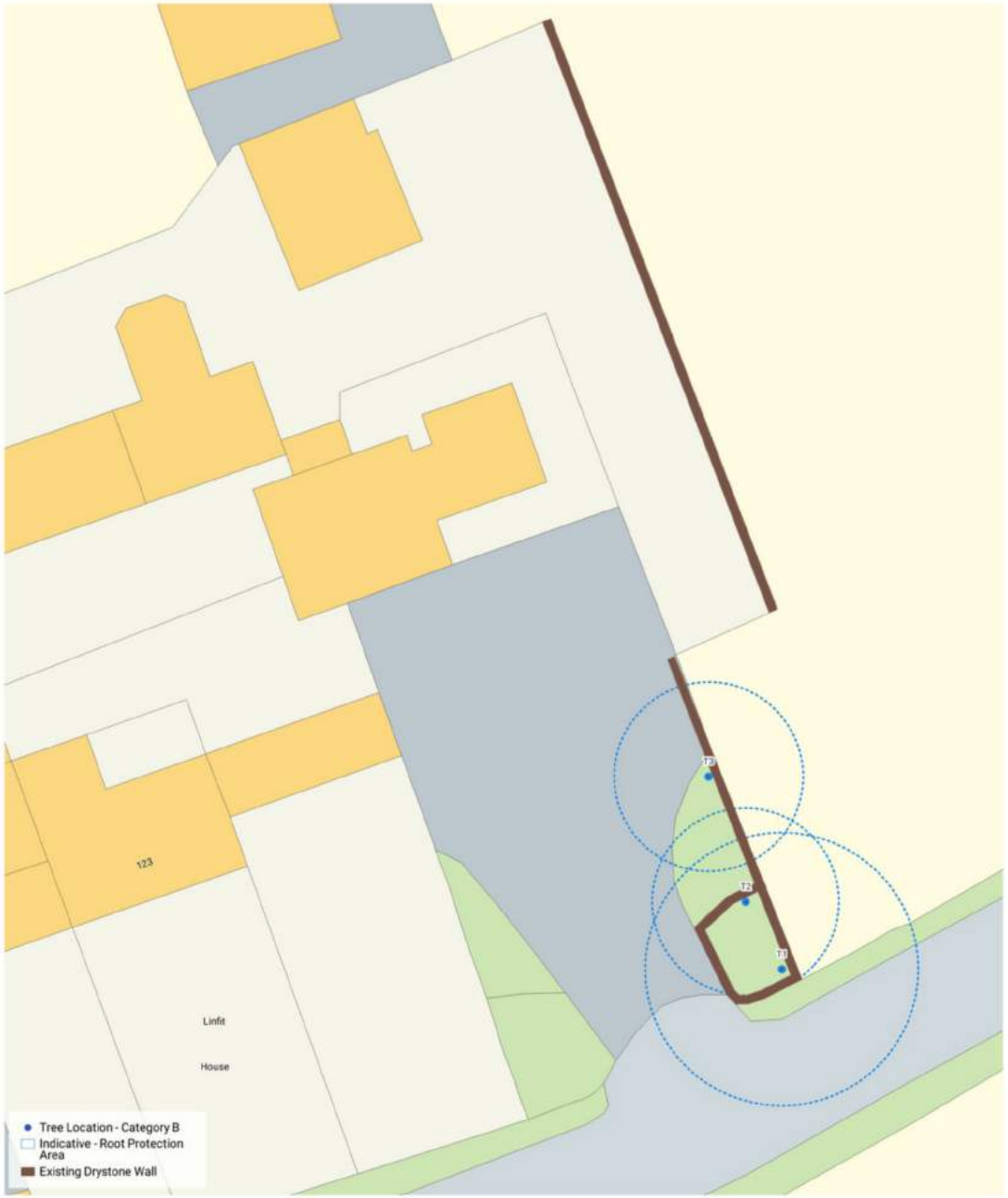
BS Category	Trees Removed (Condition)	Trees Removed (Development)	Trees Retained
A			
B			T1, T2,T3
C			G1
U			

APPENDIX A. BS5837:2012 PRELIMINARY TREE CONSTRAINTS PLAN

No.	Species	Height	DBH (mm)	Crown Spread	Height to 1st Branch	Life stage	Physiological	Structural	ERC	Observations	Recommendations	BS Category	RPA Radius(m)	RPA m2
T1	sycamore	13	650	10	8	M	Moderate	Moderate	10-20	previous stem removal, decaying into main stem.	Retain tree	B2	7.8	191.1345
T2	sycamore	13	445	10	1.7	M	Good	Good	10-20	causing disturbance to low stone wall due to proximity	Retain tree	B2	5.34	89.5844
T3	Beech	13	450	10	3	SM.EM	Good	Good	40+	close proximity to stone boundary wall	Retain tree	B1	5.4	91.60884
G1	mixed shrubs - Cherry and cypress	5	150	2	0.2	SM.EM	Moderate	Good	20-40	insignificant landscape planting, unlikely to affect development	Retain tree	C1	1.8	10.17876

savills

Linfit House Barn -
125 Linfit Lane, Huddersfield



Proposed New Access -
Tree Constraints Plan

5 m
Scale 1:200 (at A3)

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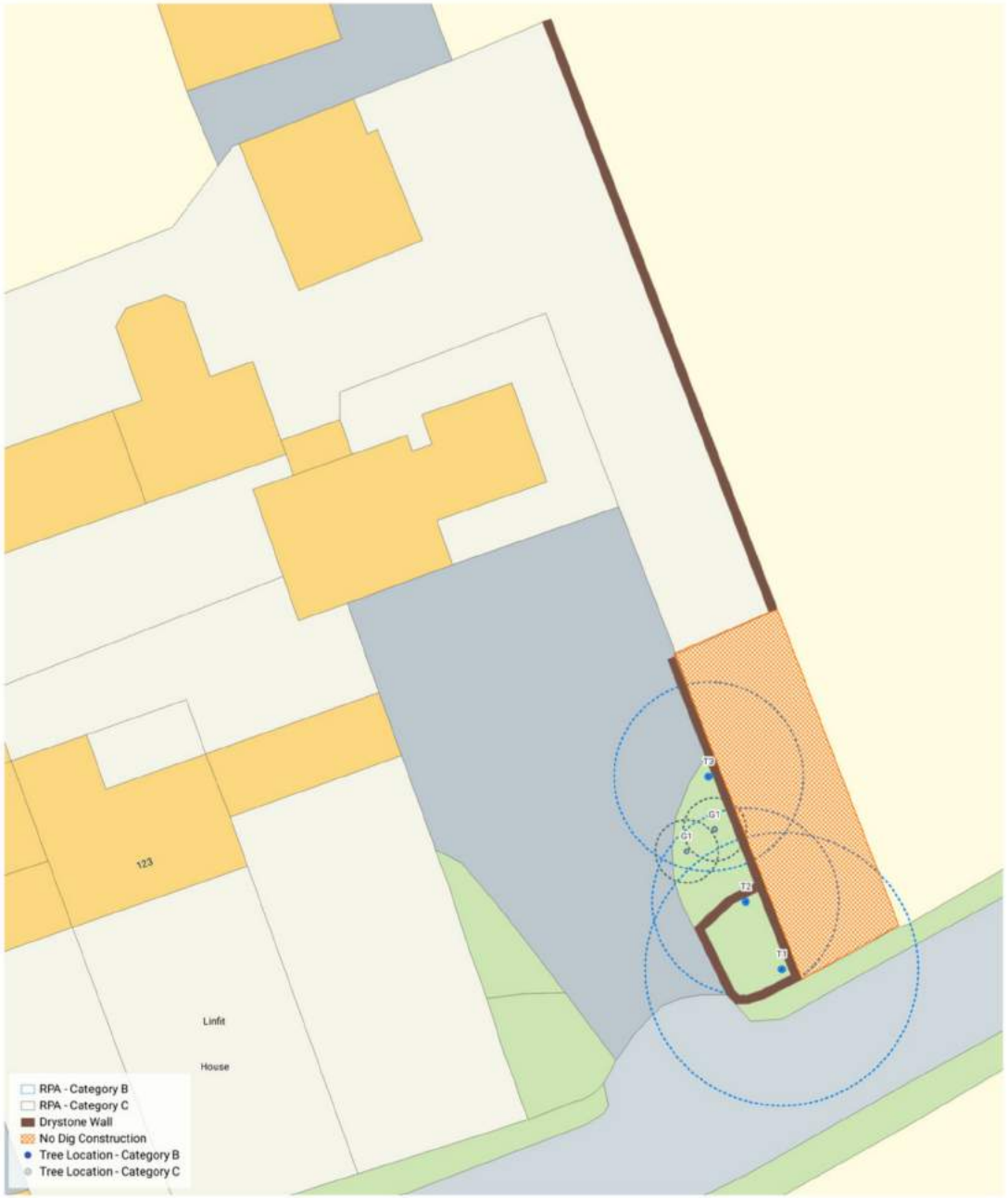
APPENDIX B. ARBORICULTURAL IMPACT ASSESSMENT PLAN

Linfit House Barn - 125
Linfit Lane, Huddersfield



Access Proposal - No Dig Solution

5 m
Scale 1:200 (at A3)

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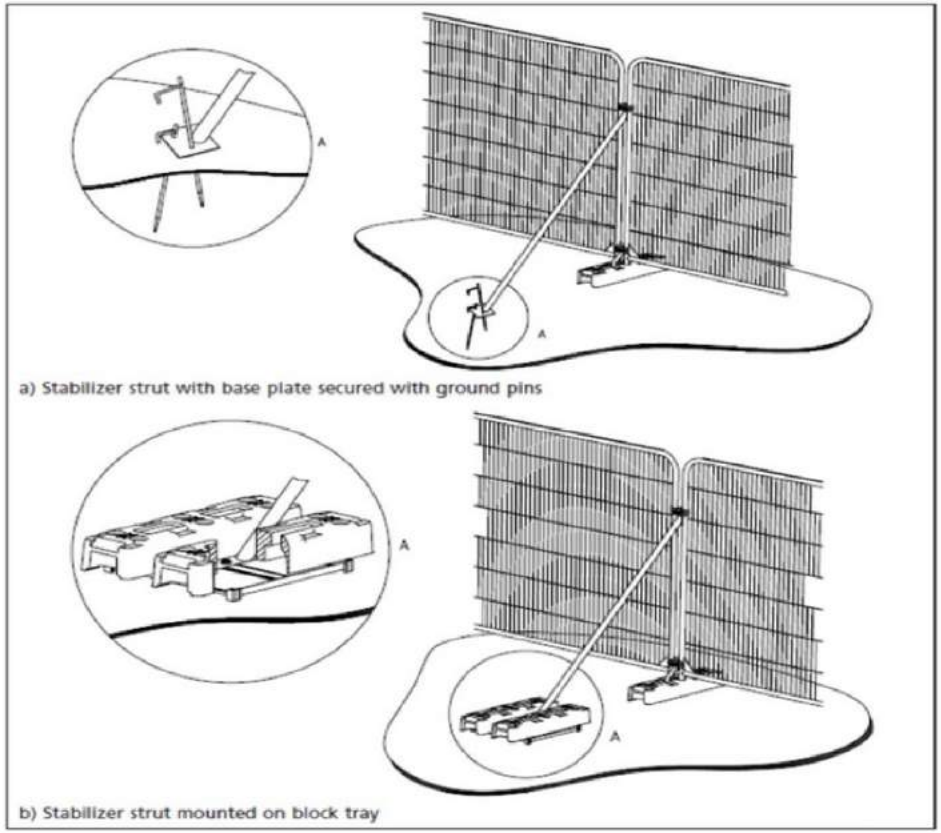
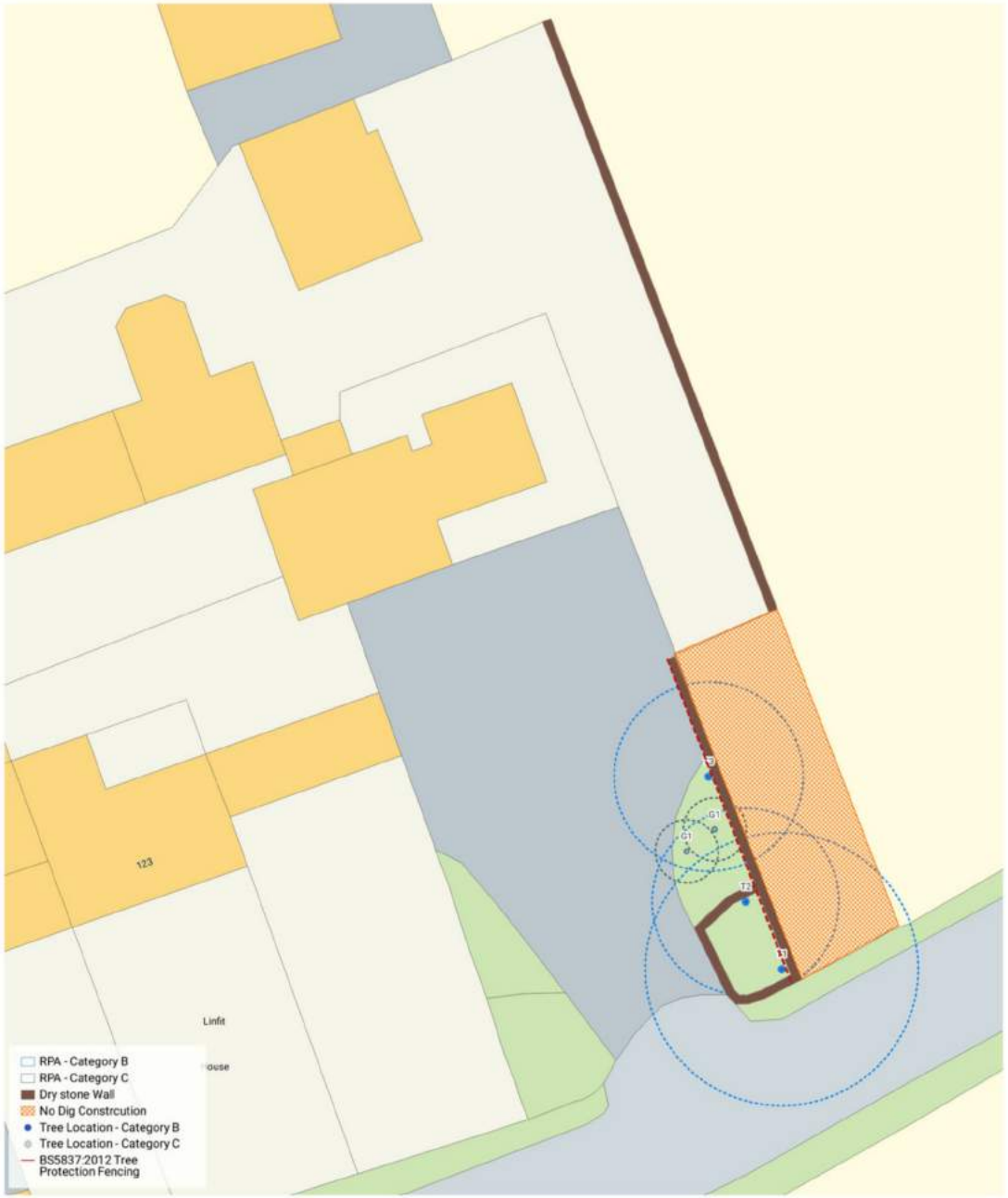
APPENDIX C. TREE PROTECTION PLAN

Figure 2. Extract from BS5837:2012 Tree Protection Fencing - Figure 1. Tree Protection Fencing in accordance with BS5837:2012.



Linfit Lane Barns - 125
Linfit Lane, Huddersfield



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Tree Protection Scheme

5 m
Scale 1:200 (at A3)

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APPENDIX D. CASE STUDIES - CELL WEB TRP

Case Study

Cellweb® TRP

Woodside Cottages, Eversley Cross, Hook

Location:
Woodside Cottages
Eversley Cross
Eversley Hook, Hampshire
RG27 0NP

Client:
Daniels & Associates

Contractor & Installer:
DPL Carpentry

Consultant / Engineer: Robert J. Moxon

Merchant:
Travis Perkins Trading Co Ltd - Finchamstead

Hart District Council had approved planning for the erection of two semi-detached houses on land to the north of Reading Road in Eversley which would later be known as 'Woodside Cottages'.

Daniels & Associates contacted Geosynthetics Ltd for some advice in regards to the access road and car park. The two main problems were the fact that the land was low lying and tended to flood but this was further complicated by the several mature trees on the site with large tree protection areas (TPA's) which encroached in both the access road and car park.

Soakaways weren't an option on site so they were also required to allow for connecting all the downpipes and surface water drainage to the public surface water sewer on the

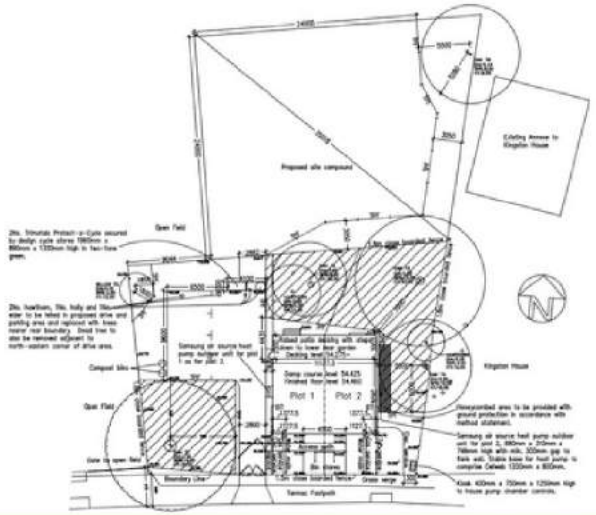

Figure 1 – Plan view: Site and Tree Root Protection areas

Our engineering team reviewed all the information provided by the consultant and following calculations they produced multiple site-specific cross-sections for a solution utilising Cellweb® TRP. Cellweb® is the only cellular confinement system specifically designed and independently test for tree root protection applications. The unique cell size, cell depth and cell wall perforations combine to the strength of Cellweb® TRP to create the market leading tree root protection system. The loads placed upon it, once infilled with a clean angular stone, are laterally dissipated rather than transferred to the soil, protecting the roots below. This enables free movement of water and oxygen, ensuring that nutrient supplies to the tree roots are maintained.

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Case Study

Cellweb® TRP

Woodside Cottages, Eversley Cross, Hook

The proposed solution consisted of laying several layers of Cellweb® TRP to achieve the required levels and then installed in conjunction with drainage systems without compromising the health of the trees and resolving the drainage issues.

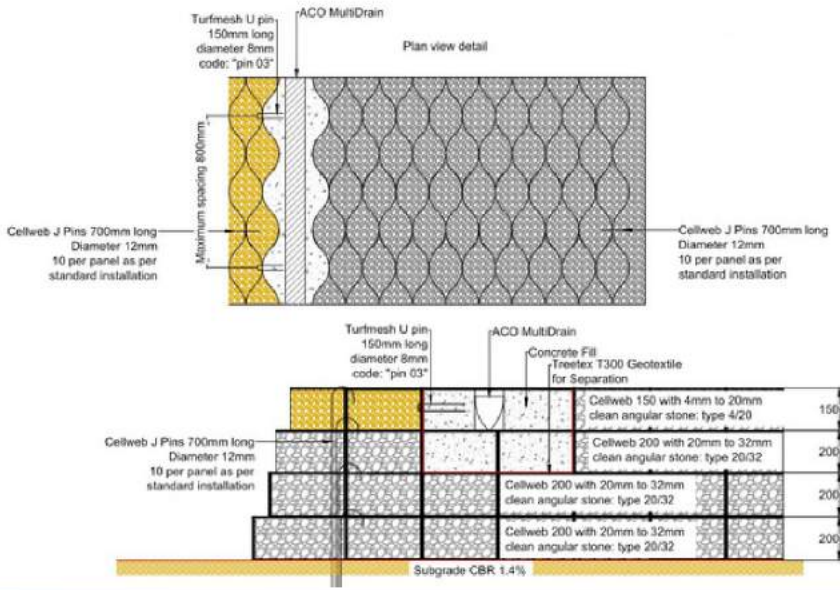

Figure 2 – Cellweb® TRP Solution and drain detail

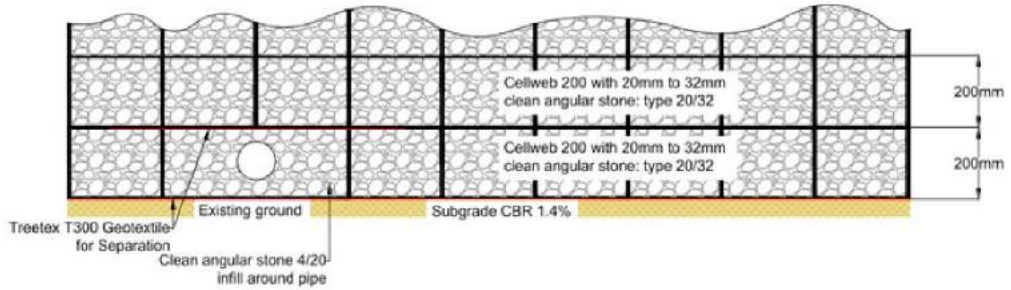

Figure 3 – Cellweb® TRP Solution and pipe detail

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Case Study

Cellweb® TRP

Woodside Cottages, Eversley Cross, Hook

Image 1. Cellweb alongside drainage pipe

Image 2. Cellweb alongside drainage pipe

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According to the Geotechnical Report, the ground profile comprised soft to firm gravelly silt resting upon medium dense to firm sandy gravelly clay and clayey gravelly sand. Groundwater level was found near the surface (400mm – 500mm bgl), having an effect on the soils strength. For the calculations of the access road and carpark it was assumed a subgrade with a CBR of 1.4%.

Construction traffic was considered as the critical loading for the design, resulting in a minimum depth of 200mm for the Cellweb® TRP. As mentioned above, several layers of Cellweb were laid up to achieve the different levels across the site. The base layers of Cellweb 200mm were filled with clean angular Type 20/32 (single size aggregate 20mm to 32mm) for drainage purposes and the top panels of 150mm and 75mm were filled with clean angular stone Type 4/20 (4mm to 20mm blended aggregate).

DPL Carpentry Services constructed the access road and carpark using the Cellweb® TRP system following our design and installation guidelines. Once we'd completed the scoping agreement and terms and conditions, the site was issued a free tree guarantee. Cellweb® has been utilised in the market since 1998 with zero failures but in the unlikely event that the system were to fail, the guarantee covers the replacement of the dead tree(s) up to a value of £10,000 per tree. The guarantee also covers the replacement of the Cellweb® TRP system which has failed up to the value of £50,000. The life span of the guarantee is 10 years from the date of invoice for the Cellweb® TRP. Geosynthetics Ltd were also available to offer assistance in regards to installation.

For advice on the construction of any of hard surface through root protection areas please contact the TRP team on 01455 617 139 or email sales@geosyn.co.uk.

Case Study

Cellweb® TRP

Woodside Cottages, Eversley Cross, Hook

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Case

STUDY

MARKET SECTOR:
Environmental

LOCATION:
69 Church Lane,
Oakley, Bedfordshire

CONTRACTOR:
Larkin Homes

CONSULTANT:
RGS Tree consultants

The BACKGROUND

In spring 2016 Geosynthetics Ltd were contacted by Robert Yates of RGS Arboricultural Consultants regarding a new driveway at a development in Oakley, Bedfordshire.

The proposed route for the drive passed through a wooded area and therefore through the root protection areas (RPAs) of numerous trees which were to be retained. In order to maintain the health of the retained trees a no dig drive would need to be constructed.

The Cellweb® Tree Root Protections system is specifically designed for the construction of new hard surfaces within RPAs. It is constructed on the existing ground surface, removing the requirement for excavation and preventing root severance.

Our Client's REQUIREMENTS

A driveway to a new development, passing through a wooded area.

The system allows continued water permeation and gas exchange by confining an open graded clean angular stone infill material.

The system is also extremely effective at spreading point loads and reducing the load that is applied to the soils beneath. This in turn minimises soil compaction maintaining an open soil structure which allows continued gas exchange, water permeation and migration.

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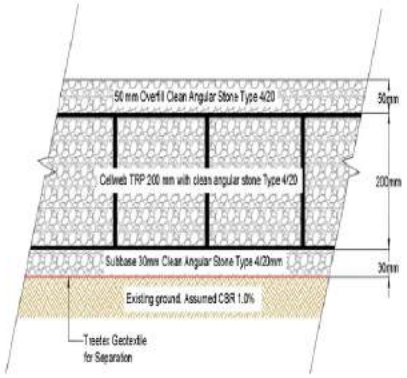
SOLUTION

Geosynthetics Cellweb TRP Technical Specifier met on site with Robert Yates of RGS Arboricultural Consultants and contractor, Warin Larkin of Larkin homes.

As can be seen in photo 1, most of the proposed route was over level ground which would lend itself to a relatively simple specification and installation, utilising a single layer of the Cellweb® Tree Root Protection system. Photo 2 shows what will become the entrance to the drive way where a section of the existing hedge will be removed, opening out onto the highway. It can be seen that this portion of the proposed driveway contains a significant fall in levels resulting in a large hollow. Within this hollow sits the RPAs of several retained Horse Chestnuts and a large yew.As a rule of thumb a single layer of the Cellweb® TRP system should not be laid on a gradient greater than one in ten.

The client had also requested that the driveway was to be level, and these factors combined meant that the hollow would need to be infilled. Due to the presence of RPAs this would need to be achieved using a technique whereby the Cellweb® TRP system would be stacked or layered in the hollow to achieve the required build up. During the site meeting Larkin Homes measured the depth of the hollow at its deepest point and the span
of the hollow at its widest point. The remaining area of level driveway was measured and information on the proposed traffic loadings was obtained.

This information was then provided to Geosynthetics in-house engineering department so that they could prepare site specific recommendations for the driveway build up.The engineering team at Geosynthetics prepared two recommendations, one for the hollow section of the driveway and another for the remaining level section. Diagram 1 shows the recommended build up for the level section of the drive way. The 200mm depth Cellweb® was recommended based on the proposed traffic loadings which were provided and an assumed California Bearing Ratio
(CBR) value of 1%. Actual CBR values for the site were unknown.



APPENDIX D. BIBLIOGRAPHY

Ancient woodland, ancient trees and veteran trees: advice for making planning decisions. Natural England and Forestry Commission.

BS5837:2012 Trees in relation to design, demolition and construction - Recommendations. British Standards Institute.

British Standard 3998:2010 Tree work – Recommendations

Forestry Commission, (2021) Managing Ash Dieback in England, Edinburgh, Forestry Commission

Forestry Commission, (2018) Managing ash in woodlands in light of ash dieback: Operations Note 046, Edinburgh

Health and Safety at Work Act 1974 section 3

Lonsdale Dr. D (1999) The Principles of Tree Hazard Assessment and Management (Research for Amenity Trees), London

Mattheck C (2007) Updated Field Guide for Visual Tree Assessment, FKG, Germany

Management of the Health and Safety at Work Regs 1999 section 3

The National Tree Safety Group (2011) Common Sense Risk Management of Trees, Forestry Commission, Edinburgh

National Planning Policy Framework 2023 - Department for Levelling up, Housing and Communities , UK Government.

NATIONAL HOUSE-BUILDING COUNCIL. Building near trees. NHBC Standards Chapter 4.2. Milton Keynes: NHBC, 2011.

Protected species and development: advice for local planning authorities. Natural England and Department for Environment, Food and Rural Affairs. UK Government.

The Tree Council, (2020) Ash dieback disease, A guide for tree owners

Town and Country Planning Act 1990. UK Government

Town and Country Planning Tree Preservation England Regulations 2012. UK Government.

Wildlife and Countryside Act 1981 (as amended). UK Government