OMC Associates

Arboricultural Impact Assessment Report

CLIENT: Mr B. Berisha

SITE: 140 Linden Avenue, Ruislip, HA4 8UB

OUR REF: 2149DCS240502

DATE OF REPORT: 2nd May 2024

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Contents

EXECUTIVE SUMMARY

Demolition of the existing bungalow and construction of two detached dwellings are proposed. No trees would need to be removed to implement the scheme, however, the lateral spread of six trees (T1, T2, T4, T6, T9 & T10) located within neighbouring public open space abutting the property's eastern boundary would need to be reduced back to create space for construction. The dwelling closest to the neighbouring open space would encroach upon the Root Protection Area (RPA) of four trees (T4, T5, T6 & T9); new hard standing at the side and rear of this dwelling and bike / refuse stores would also encroach upon the RPA of these trees, and one other (T10). In all but one instance (T4 – 23%), the cumulative encroachment of the new dwelling and hard standing would be less than the 20% maximum advised within BS 5837:2012. Utilization of an engineered solution for the house (piled foundation with shallow ground beam) and use of a minimal dig sub-base for the hard standing and bases for the bike and refuse stores would substantially reduce the impact of the development upon the trees' root systems.

1.0 INTRODUCTION

1.1 Brief

We are instructed to provide an arboricultural report to assess the potential impacts associated with the construction of two new detached dwellings. Recommendations are consistent with the most recently revised version of the British Standard on this subject, "*Trees in relation to design, demolition and construction - Recommendations*", BS 5837:2012.

1.2 Scope of report

This report incorporates an assessment of the trees potentially affected by the proposed works an Arboricultural Impact Assessment (AIA) that accounts for the various types of damage that may be caused during their undertaking and outline tree protection measures.

The report is supplemented by a Tree Survey Plan showing the site as it currently exists, a Tree Constraints Plan (TCP) illustrating the extents of the trees' RPAs and proposed structure within them, and draft Tree Protection Plan (TPP) highlighting specific matters that would need to be addressed by a detailed Arboricultural Method Statement (AMS).

The following appendices are attached to this report:

Appendix 1: Tree schedule

Appendix 2: A Tree Survey Plan showing the site as existing, with canopy spreads and indicative girth of all retained trees and trees proposed for removal. All trees are represented according to their designated BS 5837 retention category colour (see Appendix 6)

Appendix 3: A Tree Constraints Plan (TCP) indicating root protection areas (RPAs) of retained trees with the proposed scheme superimposed to indicate location and extent of encroachment

Appendix 4: A draft Tree Protection Plan (TPP) highlighting specific matters that would need to be addressed by a detailed Arboricultural Method Statement (AMS)

Appendix 5: Cascade chart explaining tree quality assessment and key to tree schedule references

Appendix 6: Example of minimal-dig foundation system

Appendix 7: Example of minimal-dig sub-base

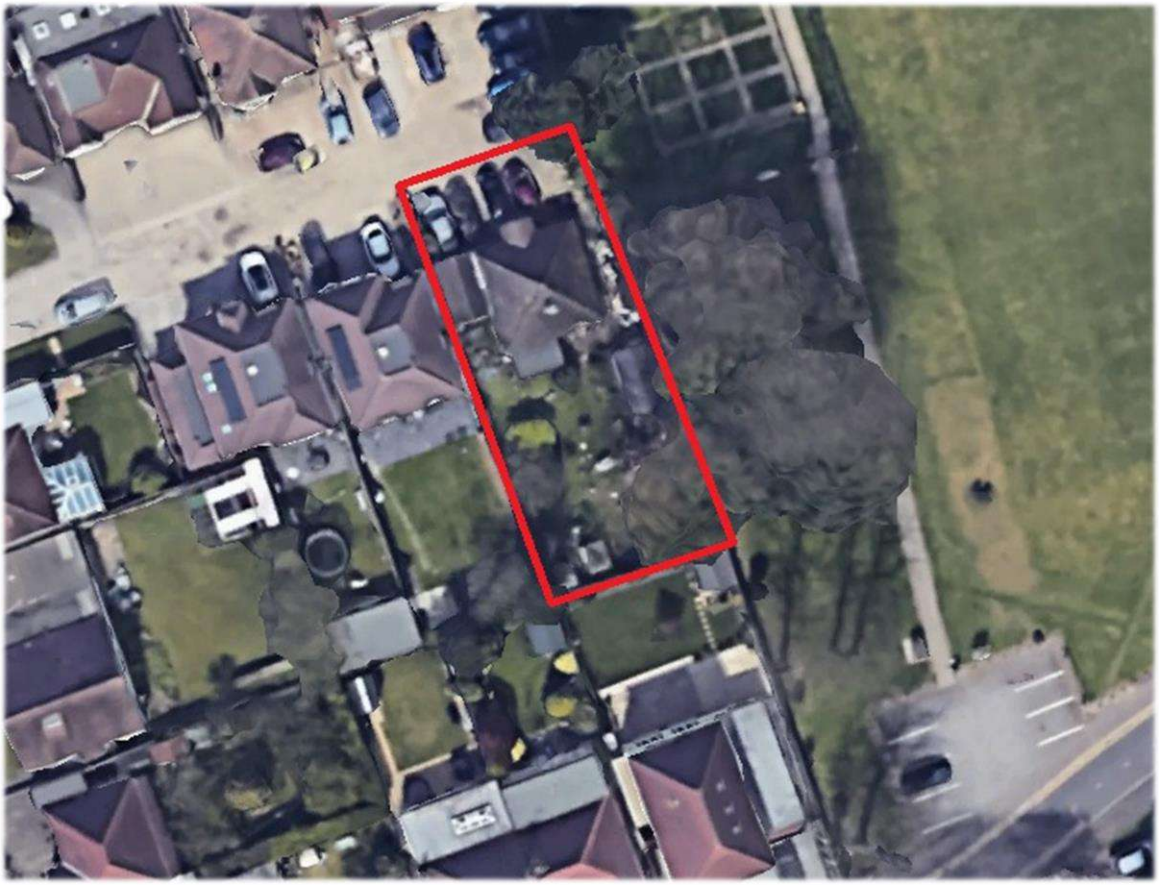
Appendix 8: Photographs

1.3 Documents

We have been provided with layout plans of the proposed development by the project architect Simon Hands and Associates.

1.4 Site description

The site comprises the curtilage of no 140 Linden Avenue, Ruislip.



Imagery courtesy of Google mapping

1.5 Planning proposal

It is proposed that the existing bungalow and garage be demolished, and two detached dwellings constructed, with car parking to the front.

2.0 TREES

2.1 Tree data

Dimensions relating to height, crown spread (at four cardinal points as considered necessary), girth at 1.5m as well as age class, structural and physiological condition and BS 5837:2012 retention category have been recorded. Please refer to the tree schedule at Appendix 1 for all recorded survey data.

The inspection also assesses the height of the trees' crowns and suitability to develop near to them.

This survey does not include a detailed assessment of the health of the trees, but clear structural and physiological factors affecting tree quality have been considered when allocating retention categories. Clear defects requiring remedial works are also reported where necessary in the interests of hazard management.

2.2 Trees and the law

The website of the local authority (London Borough of Hillingdon www.hillingdon.gov.uk)

confirms that the trees within the neighbouring land to the east of the property are subject to Tree Preservation Order, no. 327 (1983). The property is not, however within a Conservation Area. The presence of historic 'in-perpetuity' planning conditions has not, however, been established.

Please note that no works around trees should be carried out without the approval of the Local Planning Authority (since it is likely to incur large fines) unless planning permission has been granted that indisputably necessitates the removal or pruning of any of the trees included within this report.

Section 197 of the Town & Country Planning Act 1990 states that it shall be the duty of the local planning authority to ensure whenever it is appropriate, that in granting planning permission, "adequate provision is made, by the imposition of conditions, for the preservation or planting of trees" Even when no specific legal protection exists it may be necessary to obtain a felling license from the Forestry Commission if the volume of timber removed exceeds felling license quotas.

The Planning (Listed Buildings and Conservation Areas Act) (1990) in conjunction with English Heritage empowers local authorities to designate areas of special architectural or historical interest as 'Conservation Areas', to preserve their character and appearance. Trees can form an intrinsic part of the character and appearance of such areas and the Act prohibits any works to trees within them with a stem diameter measuring 75mm or greater at a height of 1.5 metres from ground level.

Prior written notice must therefore be given to the local authority of the intention to carry out works to trees in Conservation Areas and the authority's formal response obtained within the statutory timeframe before works can commence. Penalties for carrying out works to trees in Conservation Areas without a formal response from Local Planning Authority raising no objection to the Notice are the same as those for unauthorised work to trees protected by TPO.

The Wildlife & Countryside Act 1981 and Conservation (Natural Habitats etc.) Regulations 1994 may be of relevance if the works are carried out in periods that may disturb breeding birds or mammals.

2.3 National planning policy

National Planning Policy Framework (NPPF)

National Planning Policy is currently defined by the National Planning Policy Framework (NPPF), the most current version being adopted in July 2018. At the heart of the NPPF is a presumption in favour of sustainable development and specifically states that, when considering new development proposals that accord with its own development plan, the LPA should approve them without delay.

Section 12 of the NPPF states that *"Planning policies and decisions should ensure that*

developments are…..visually attractive" and "*sympathetic to the local landscape*". Section 15 also states "*Planning policies and decisions should contribute to and enhance the natural and local environment*".

The Publication London Plan

The Publication London Plan was adopted on 2 March 2021. Policy G7 (Tree and Woodlands) states that:

A) "*Trees and woodlands should be protected, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees*."

B) "*In their Development Plans, boroughs should:*

1) protect 'veteran' trees and ancient woodland where these are not already part of a protected site;

2) Identify opportunities for tree planting in strategic locations".

C) "*Development proposals should ensure that, wherever possible, existing trees of quality are retained [Category A and B trees as defined by BS 5837:2012]. If it is imperative that trees have to be removed, there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy."*

2.4 Local planning policy

Hillingdon Council's current Local Plan Part II (adopted 16 January 2020) contains the following policies relating to the protection and retention of trees and landscape in the context of new development:

Policy DMH 6: Garden and Backland Development

There is a presumption against the loss of gardens due to the need to maintain local character, amenity space and biodiversity. In exceptional cases a limited scale of backland development may be acceptable, subject to the following criteria:

i) neighbouring residential amenity and privacy of existing homes and gardens must be maintained and unacceptable light spillage avoided;

ii) vehicular access or car parking should not have an adverse impact on neighbours in terms of noise or light. Access roads between dwellings and unnecessarily long access roads will not normally be acceptable;

iii) iii) development on backland sites must be more intimate in mass and scale and lower than frontage properties, and;

iv) features such as trees, shrubs and wildlife habitat must be retained or re-provided.

Policy DMHB 14: Trees and Landscaping

A) All developments will be expected to retain or enhance existing landscaping, trees, biodiversity or other natural features of merit.

B) Development proposals will be required to provide a landscape scheme that includes hard and soft landscaping appropriate to the character of the area, which supports and enhances biodiversity and London Borough of Hillingdon Local Plan Part 2 - Development Management Policies 55 amenity particularly in areas deficient in green infrastructure.

C) Where space for ground level planting is limited, such as high-rise buildings, the inclusion of living walls and roofs will be expected where feasible.

D) Planning applications for proposals that would affect existing trees will be required to provide an accurate tree survey showing the location, height, spread and species of trees. Where the tree survey identifies trees of merit, tree root protection areas and an arboricultural method statement will be required to show how the trees will be protected. Where trees are to be removed, proposals for replanting of new trees on-site must be provided or include contributions to offsite provision.

2.5 Biodiversity Net Gain (BNG)

Following the Environment Act 2021, a new mandate was introduced such that new developments requiring planning permission in England must deliver an overall biodiversity gain. To deliver a biodiversity gain, developers must demonstrate that the habitat value of their development site to nature has been left in a measurably better state than it was before development, by at least 10%. Trees and woody vegetation are integral to biodiversity and losses of existing trees for development would require not just replacement, but even more and better-quality habitat, which could, amongst other measures, be delivered through high quality, carefully considered landscaping schemes.

2.6 Site specific tree comments

The survey was conducted on 28 April 2024. No trees exist within the property. 12 trees and 1 tree group were recorded within neighbouring land abutting the property's eastern boundary (former Civil Service Sports Ground, now public open space) and 1 group of trees was recorded within the neighbouring garden to the south.

The trees within the neighbouring open space predominantly comprise a group of closely spaced, mature 'B' category limes (*Tilia x europaea*) and two 'B/C' category Cappadocian maples (*Acer cappadocicum*), with a small number of semi-mature 'U' category elms (*Ulmus procera*). The limes and maples form a coherent group of notable landscape prominence which confers them a higher collective retention rating than they may otherwise merit as individuals. Aside from the elms which are excluded because of their relative immaturity all trees within the sports ground are subject to Tree Preservation Order (TPO).

The trees within the neighbouring garden to the south comprise a row of six common beech (*Fagus sylvatica*) and one silver birch (*Betula pendula*), planted close to the boundary fence. All trees have been pollarded to approximately 4 metres height.

Photographs of the site are attached at Appendix 8.

3.0 TREE RELATED SITE CONSTRAINTS – GENERAL

3.1 Crowns/canopies of retained trees

While it is desirable to retain as many trees as is practicable within sites of proposed development (especially where dense populations of high-quality trees exist), misplaced retention of lower quality trees should be avoided, to avoid overcrowding and minimise post-development pressure to remove trees on nuisance grounds e.g. because of falling leaves and/or fruit, or shading. This is most applicable to residential development where the presence of trees may impact on living conditions and the future residents' enjoyment of their property.

Where trees are retained within areas of proposed development or the canopies of trees on neighbouring land overhang a development site's boundaries, careful assessment must be made of the potential implications where planned buildings or other structures would exist close to trees, to ensure conflicts do not arise during the construction phase or develop once the development is complete. Where tree canopies would obstruct building work (including erection of scaffolding) or where contact between branches and the new build is foreseeable, skilful pruning can help to accommodate the development. This may simply involve appropriate crown lifting (removal of lower limbs) or some judicious trimming back of lateral branches.

While some careful tree surgery can help to create separation between trees and new structures, pruning is not a panacea when considering development close to trees. Schemes requiring excessive and inappropriate crown reduction that destroy natural tree form and/or adversely affect their health and longevity should ideally be avoided, as should schemes necessitating regular long-term cutting back of trees to alleviate conflict with the new structures. This is especially relevant in the cases of residential development where a juxtaposition between trees and dwellings may generate nuisance to future residents.

3.2 Indirect damage (subsidence)

This is applicable where a shrinkable substrate prevails. Where applicable an appropriate foundation compliant with NHBC guidelines must be designed to ensure that tree and building co-exist for the long term and longer-term pressure to is not applied to remove nearby trees because of indirect damage. The website of the British Geological Survey (BGS) BGS Geology Viewer (BETA) describes the substrate as being '*Lambeth Clay Formation – clay, silt and sand*', a soil type with a high shrinkage potential. Foundation design would, therefore, need to account for this.

3.3 Root Protection Area (RPA)

The RPA is defined in BS5837: 2012 as "*the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree*".

The 2012 British Standard calculation has been used to determine the extents of RPAs. Existing site conditions having the potential to influence the morphology and disposition of tree roots have also been accounted for when determining shape of RPAs. In this instance it is unlikely that any significant root presence will exist beneath the existing bungalow; the RPA of T4 and T5 have been adjusted accordingly. The RPAs of all surveyed trees, modified or otherwise, are illustrated within the Tree Constraints Plan at Appendix 3.

Though encroachment upon the RPA should be avoided (see section 4 for reasons) it may be justifiable under certain conditions, subject to an assessment of the relative tolerance of the given trees, based on a variety of factors. These would include the age and species characteristics.

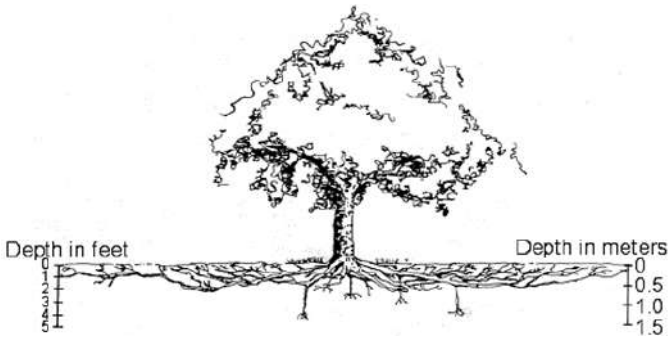
4.0 ARBORICULTRAL IMPACT ASSESSMENT (AIA)

4.1 Effects of development on trees – general

The objective of this report is to identify and evaluate the extent of potential direct and indirect damage to existing trees that may otherwise result if the proposed development were implemented without appropriate guidance.

A tree may take a century to reach maturity but can be irretrievably damaged in a few minutes, often because of a failure to appreciate their vulnerability. *Irreparable damage is frequently inflicted on existing trees in the first few days of a contractor's occupation of a site.*

A tree's root system is particularly vulnerable to damage, which is often inflicted due to a failure to appreciate that the majority of roots occur in the upper 0.5m of soil where oxygen and moisture levels are greatest. The common misconception that roots penetrate much deeper into the soil that they actually do in reality, and that the majority of a tree's root system exists at great depth within the soil frequently results in much greater loss of absorptive root mass than is appreciated.



Typical formation of tree root architecture

This report seeks to provide guidance on how trees in the immediate vicinity of the proposed structure can be protected during its construction.

It is important to be aware that the effects of tree damage may not be apparent for some time (many years) after construction work is completed.

There are a multitude of activities that can kill or damage trees on construction sites and there is a need to be mindful of these activities and why they may be so harmful to trees. These are summarized below.

4.1.1 Direct mechanical damage (*Referred to as D1 in this report*)

Direct damage suffered by trees on construction sites commonly occurs in the form of bark wounding through scuffs and tears e.g. by impact of vehicles or plant machinery, poorly executed branch removal carried out by unskilled operatives, or the accidental snapping, ripping or tearing away of branches/stems struck by high-sided vehicles or machinery. The fragile bark covering shallow roots is also extremely vulnerable to scuffing and tearing, even by pedestrian activity. Although each incidence of damage must be judged according to the individual tree and set of circumstances, such damage is unlikely to cause death unless extensive, but will invariably cause significant disfigurement and initiate long-term degradation of internal tissues, either by weathering or colonisation of wood decay fungi. Such damage often occurs as a result of construction activities taking place too close to trees without protection or appropriate pre-construction tree surgery.

4.1.2 Ground compaction (*Referred to as D2 in this report*)

This is likely to be the most common cause of tree death or decline on a building site, yet the least appreciated due to the root systems' lack of visibility. The vast majority of tree roots are located in the upper soil horizons where soil conditions are most favourable for root growth. It is these upper horizons that are most vulnerable to ground compaction. Compaction destroys soil structure, reducing soil moisture absorption and natural aeration. This process deprives tree roots of moisture as well as giving rise to root asphyxiation and is often fatal to trees.

4.1.3 Changes in ground level (*Referred to as D3 in this report*)

The majority of a tree's root system is generally located in the upper 0.6m of the soil. The bulk of these roots comprise hair-fine, delicate 'feeder' roots, essential for the absorption of oxygen, water and minerals from the soil to facilitate healthy growth and function. Reductions in ground level such as soil stripping can therefore have catastrophic consequences for a tree's health. Conversely, oxygen depletion caused by increases in ground level can result in root asphyxiation and be just as damaging.

4.1.4 Severance of roots by ground works (*Referred to as D4 in this report*)

Excavation of ground to remove old foundations and hard standing, construction of conventional concrete footings, new hard standing or the installation of services such as water/sewerage pipes, gas/electricity cables, TV/telephone cables using open trenching within the driplines of trees severs any roots present, potentially leading to destabilization, decline or death of trees. Local soil hydrology may also be affected in some cases.

4.1.5 Installation of new hard surfacing (*Referred to as D5 in this report*)

Covering surfaces with impermeable materials, especially areas of previously open, undisturbed ground can be extremely damaging to a tree's root system. Trees derive moisture from regular moisture recharge of the ground from rainfall, and nutrients generated by the nutrient cycle from decomposing leaf litter. Oxygen is also essential for healthy root function. The introduction of impervious surfaces can therefore prevent moisture infiltration, the release of nutrients from natural decomposition and gaseous interchange between the ground and the atmosphere – creating a build-up of toxic waste

gases such as carbon dioxide and oxygen deficit. BS 5837 states that new permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.

4.1.6 Contamination of ground (*Referred to as D6 in this report*)

Spillage of petrol, diesel, paint removers, wood preservatives and many other toxic liquids regularly used on building sites can kill roots. Concrete or cementitious (mortar, cement, slurry) washout wastewater is caustic and considered to be corrosive with a pH over 12, essentially the same as ammonia or other household cleaning detergents. The primary ingredient in ready mixed concrete is Portland cement, which consists of Portland cement clinker, calcium sulphate, calcium and magnesium oxide, heavy metals and potassium and sodium sulphate compounds, chromium compounds and nickel compounds. In cases where tree roots have been exposed to the high pH of cement products, the effects may include inhibited growth and dieback of portions of the crown due to cellular damage from the uptake of toxic compounds, and substantial alteration of the soil and plant chemical composition even after the source of pollution is gone.

4.2 Effects of development on trees – site specific

Facilitative tree work

The lateral spread of seven trees (T1, T2. T4, T6, T8, T9 & T10) would need to be reduced by 2.5 – 4m to create space for the construction of the dwelling closest to the trees and to maintain clearance from the house after construction. Given the trees' form and historic management, this work would not involve the pruning of any large diameter branches, nor would the work detract from the trees' appearance and amenity value.

Demolition work and removal of shed and concrete slab / surfacing

Demolition of the existing bungalow and removal of the shed, concrete base and concrete surfacing in the rear garden poses a moderate to high risk of potential root damage to T4, T5, T6, T9, T10 & T11. This work would need to be undertaken working from outside the RPA of these trees, or from protected ground.

Construction of new foundations (*damage type – D4*)

The foundations of the dwelling nearest the trees would encroach upon the RPA of eight trees, as listed in the table below:

House Encroachment
T4 – 13%
T5 – 7%
T6 – 6%
T9 – 11%

0 – 10% – Green
11 – 15% – Amber
16+% – Red

The degree of encroachment and overall impact of the proposal upon T4 – T6 and T9 could be significantly reduced by the use of 'minimal-dig' construction techniques, such as piled foundations supporting a ground beam set at existing ground level or just above it, or cast reinforced floor slab e.g. Abbey Pynford's 'Treesafe' system Treesafe - Abbey Pynford.

Installation of new hard surfacing (*damage types – D3, D5*)

New hard surfacing (patio) at the rear of the house nearest the trees would encroach upon the RPA of five trees, as listed in the table below:

Patio Encroachment
T4 – 10%
T5 – 9%

0 – 10% – Green
11 – 15% – Amber
16+% – Red

Patio Encroachment
T6 – 14%
T9 – 9%
T10 – 2%

0 – 10% – Green
11 – 15% – Amber
16+% – Red

The cumulative encroachment of the house and the new patio would total 23% for T4, 16% for T5 and 20% for T6 and T9. The use of a minimal dig sub base would, therefore, be strongly advised for the path and patio alongside the new dwelling closest to these trees, and a shallow concrete base cast at existing ground level for the bike and refuse store. Use of a cellular confinement system such as Geotechnics 'Cellweb TRP': Cellweb®TRP - Cellular Confinement System (geosyn.co.uk) or similar product mounted at existing ground level would negate the requirement for a traditional sub-base and associated excavations, which have the potential to damage the root systems of these trees.

Installation of new utility services (*damage type – D4*)

The existing connections for water and drainage connections for the house nearest the trees would be re-utilized. All excavations to facilitate the new connections would, however, need to be undertaken with the use of hand tools under the supervision of an arboriculturist to minimise root disturbance.

Soil compaction (*damage type – D2*)

The root systems of all trees in the vicinity of the construction area would be highly vulnerable to soil compaction damage from pedestrian activity, use of wheeled or tracked plant machinery and storage of materials. Suitable protection measures (protective fencing and / or temporary ground protection) would, therefore, need to be implemented, to minimise this type of damage.

Use of cementitious / concrete products (*damage type – D6*)

The mixing and use of wet concrete during construction e.g. for foundations has the potential to poison tree roots. Concrete or cementitious mortar is extremely alkaline with a pH of 12, which is and toxic to tree roots. To contain its potentially toxic effects, all structures within RPAs where concrete would be used would need to be lined with heavy-grade polythene to prevent it leaching into the surrounding soil. No mixing of concrete or washing out of mixing equipment should also be undertaken within 5 metres of the RPA of any tree.

Potential nuisance issues associated with the relationship between new houses and existing trees

Proximity of buildings to the canopy of existing trees to be retained

The overhang of T4, T6 and T9, and, to a lesser extent, T10 would require periodic management to maintain clearance from the dwelling closest to the trees. This would not be considered onerous upon the future occupants, however, as the branches overhanging the property are not substantial on account of the trees' historic management. All such work should be carried out by an experienced and suitably insured arboricultural contractor working in compliance with current industry best practice standards and relevant wildlife protection legislation.

Shading

Given the orientation of the proposed houses in relation to the passage of the sun, when in leaf, T4 – T11 would only cast moderate shade over both plots in the mornings. This would not significantly impact the living conditions of either house.

4.3 Conclusions

Encroachments upon the RPA of T4 represented by the new dwelling and associated hard standing marginally exceed the maximum 20% advised within BS 5837:2012, but they could be significantly

reduced through the implementation of an engineered foundation and minimal dig sub-base. The prevailing rooting environment outside the property (public open space) would also support compensatory root development for these trees.

The likelihood of potential future nuisance issues arising as a result of the close spatial relationship between the new house and the neighbouring trees is deemed to be low to moderate on the basis that the trees would not cast significant shade over either of the new dwellings for prolonged periods when in leaf, and the degree of management required to maintain clearance of the canopies of T4, T6, T9 and, to a lesser extent T10 from the easternmost house would be infrequent and would not adversely affect the trees' appearance and amenity value. All such work would be subject to the council's prior written consent, however, given the trees' statutory protection, and should be carried out by an experienced and suitably insured arboricultural contractor working in compliance with current industry best practice standards and relevant wildlife protection legislation.

The proposed scheme accords with council policy DMH6 (point iv) on the basis that all trees potentially affected by it would be retained. It also accords with policy DMHB14 on the basis that:

A) all trees potentially affected by the development would be retained

D) this report provides an accurate survey of all trees potentially affected by the development that indicates their height, spread, species and Root Protection Areas, provides draft protection recommendations.

All specific matters relating to tree protection as listed below and within the draft Tree Protection Plan at Appendix 4 could be provided by way of a detailed Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP).

4.4 Issues to be addressed by the AMS/TPP:

- Facilitative tree work
- Demolition of the existing bungalow, concrete hard surfacing, shed and base within RPAs
- Utility connections within RPAs
- Installation of piled foundations, new hard surfacing and bike / refuse stores within RPAs
- Installation of temporary ground protection and protective fencing
- Arboricultural supervision and monitoring
- Mixing and use of concrete around tree roots
- Additional precautions.

OMC Associates

Appendix 1 Tree Schedule

Site: 140 Linden Ave, Ruislip, HA4 8UB
Date: April 2024
OMC Ref. 2149

TREE SCHEDULE

No.	Species	Height (m)	Stem ø @ 1.5m (mm)	Crown Spread (m)	Maturity	Physiological & Structural Condition	Crown Height (m)	1st Sig. Branch (Ht./Dir.)	SULE	BS5837 Cat.	Comments	RPA Radius (m)
T1	English elm *(Ulmus procera)*	8	160	N -4 S -3.6 E -3.5 W -3	Y	Phys. -Poor Struct. -Fair	3.5		<10	U	Self sown elm within grounds of nursery. Showing early signs of Dutch elm disease. **Works: Reduce western lateral spread by 2.5m (P)**	1.92
T2	English elm *(Ulmus procera)*	4.5	130	N -1.5 S -1.5 E -2.5 W -2	Y	Phys. -Fair Struct. -Fair	2.5		<10	U	Self sown elm within grounds of nursery. **Works: Reduce western lateral spread by 1.5m (P)**	1.56
T3	English elm *(Ulmus procera)*	8	160	N -2 S -1.5 E -1.5 W -1.5	Y	Phys. -Dead Struct. -Fair			<10	U	Dead elm within grounds of nursery. **Works: -**	1.92
G1	English elm *(Ulmus procera)*	8	160	N -3 S -0.5 E -0.5 W -4	Y	Phys. -Fair Struct. -Fair			<10	U	2x ivy-clad elms within grounds of neigbouring recreation ground. Suppressed, asymmetric form. **Works: -**	1.92
T4	Common lime *(Tilia x europaea)*	19	780	N -12.8 S -3.2 E -4 W -6.5	M	Phys. -Good Struct. -Fair	2.0		>40	B2	Within grounds of neigbouring recreation ground. Asymmetric form. Ivy-clad to approx. 13m height; stem diameter estimated over ivy stems. High collective amenity value. **Works: Reduce western lateral spread by 2.5m (P)**	9.36
T5	Common lime *(Tilia x europaea)*	19	800	N -12 S -2.5 E -11.2 W -4	M	Phys. -Good Struct. -Fair	2		>40	B2	Within grounds of neigbouring recreation ground. Asymmetric form. Ivy-clad to approx. 12m height; stem diameter estimated over ivy stems. High collective amenity value. **Works: -**	9.6
T6	Common lime *(Tilia x europaea)*	20	510	N -0.5 S -2.5 E -1.5 W -6.8	M	Phys. -Fair Struct. -Fair	2.0		20-40	B2	Within grounds of neigbouring recreation ground. Severely asymmetric form. Completely ivy-clad; stem diameter estimated over ivy stems. Moderate collective amenity value. **Works: Reduce western lateral spread by 2.5m (P)**	6.12

Y - Young, SM - Semi Mature, EM - Early mature, M - Mature, OM - Over mature, V - Varied

TREE SCHEDULE

No.	Species	Height (m)	Stem ø @ 1.5m (mm)	Crown Spread (m)	Maturity	Physiological & Structural Condition	Crown Height (m)	1st Sig. Branch (Ht./Dir.)	SULE	BS5837 Cat.	Comments	RPA Radius (m)
T7	Cappadocian maple *(Acer cappadocicum)*	19	320 330	N -3.8 S -2.8 E -6.1 W -4	M	Phys. -Fair Struct. -Fair			20-40	B2	Within grounds of neigbouring recreation ground. Severely asymmetric form. Bifurcated at 1m. Ivy-clad to approx. 12m height; stem diameter estimated over ivy stems. High collective amenity value. **Works:** -	5.52
T8	Common lime *(Tilia x europaea)*	19	600	N -5.5 S -1 E -9.2 W -1	M	Phys. -Good Struct. -Fair	2		>40	B2	Within grounds of neigbouring recreation ground. Asymmetric form. Completely ivy-clad; stem diameter estimated over ivy stems. High collective amenity value. **Works:** -	7.2
T9	Cappadocian maple *(Acer cappadocicum)*	13	600	N -2 S -2.5 E -1.5 W -7.1	M	Phys. -Fair Struct. -Fair	2		10-20	C1/2	Within grounds of neigbouring recreation ground. Severely asymmetric form. Completely ivy-clad; stem diameter estimated over ivy stems. Narrow cavity in stem to NE between 0.5-1.3m. Moderate collective amenity value. **Works: Reduce western lateral spread by 4m (P)**	7.2
T10	Common lime *(Tilia x europaea)*	16	500	N -1 S -6.9 E -0.5 W -6.3	M	Phys. -Fair Struct. -Fair	2		>40	B2	Within grounds of neigbouring recreation ground. Severely asymmetric form. Completely ivy-clad and dense, matured basal epicormic shoots all round. Stem diameter estimated over ivy stems. Moderate collective amenity value. **Works: Reduce western lateral spread by 2.5m (P)**	6
T11	Common lime *(Tilia x europaea)*	19	830	N -5.7 S -7.8 E -3 W -6.5	M	Phys. -Fair Struct. -Fair			>40	B2	Within grounds of neigbouring recreation ground. Asymmetric form. Ivy-clad above 2m to approx. 14m height; stem diameter estimated over ivy stems. High collective amenity value. **Works:** -	9.96
T12	Common lime *(Tilia x europaea)*	19	800	N -3 S -6.6 E -7.5 W -1.5	M	Phys. -Fair Struct. -Fair			>40	B2	Within grounds of neigbouring recreation ground. Asymmetric form. Ivy-clad above 2m to approx. 17m height; stem diameter estimated over ivy stems. Dense basal epicormic shoots. High collective amenity value. **Works:** -	9.6
T13	English elm *(Ulmus procera)*	8	150	N -2 S -2 E -2 W -2	Y	Phys. -Fair Struct. -Fair			<10	U	Self sown elm within grounds of nursery. **Works:** -	1.8

TREE SCHEDULE

No.	Species	Height (m)	Stem ø @ 1.5m (mm)	Crown Spread (m)	Maturity	Physiological & Structural Condition	Crown Height (m)	1st Sig. Branch (Ht./Dir.)	SULE	BS5837 Cat.	Comments	RPA Radius (m)
G2	Silver birch *(Betula pendula)* Common beech *(Fagus sylvatica)*	4	150	N -0.5 S -0.5 E -0.5 W -0.5	SM	Phys. -Good Struct. -Good			>40	C2	Within neigbouring garden to south. Six beech and one silver birch. All pollarded. **Works: -1.7**	4.76
T14	Holly *(Ilex aquifolium)*	4	220	N -3.6 S -3.5 E -3.7 W -3.5	M	Phys. -Poor Struct. -Fair	2.5		10-20	C1	Within neigbouring garden to west. Stem diameter estimated. Low vitality. **Works: -**	7.46
T15	Damson *(Prunus domestica)*	4	170	N -3.5 S -0.5 E -1.8 W -3.5	M	Phys. -Poor Struct. -Fair			10-20	C1	Within neigbouring garden to west. Stem diameter estimated. Asymmetric form. Low vitality. **Works: -**	5.77

Y - Young, SM - Semi Mature, EM - Early mature, M - Mature, OM - Over mature, V - Varied

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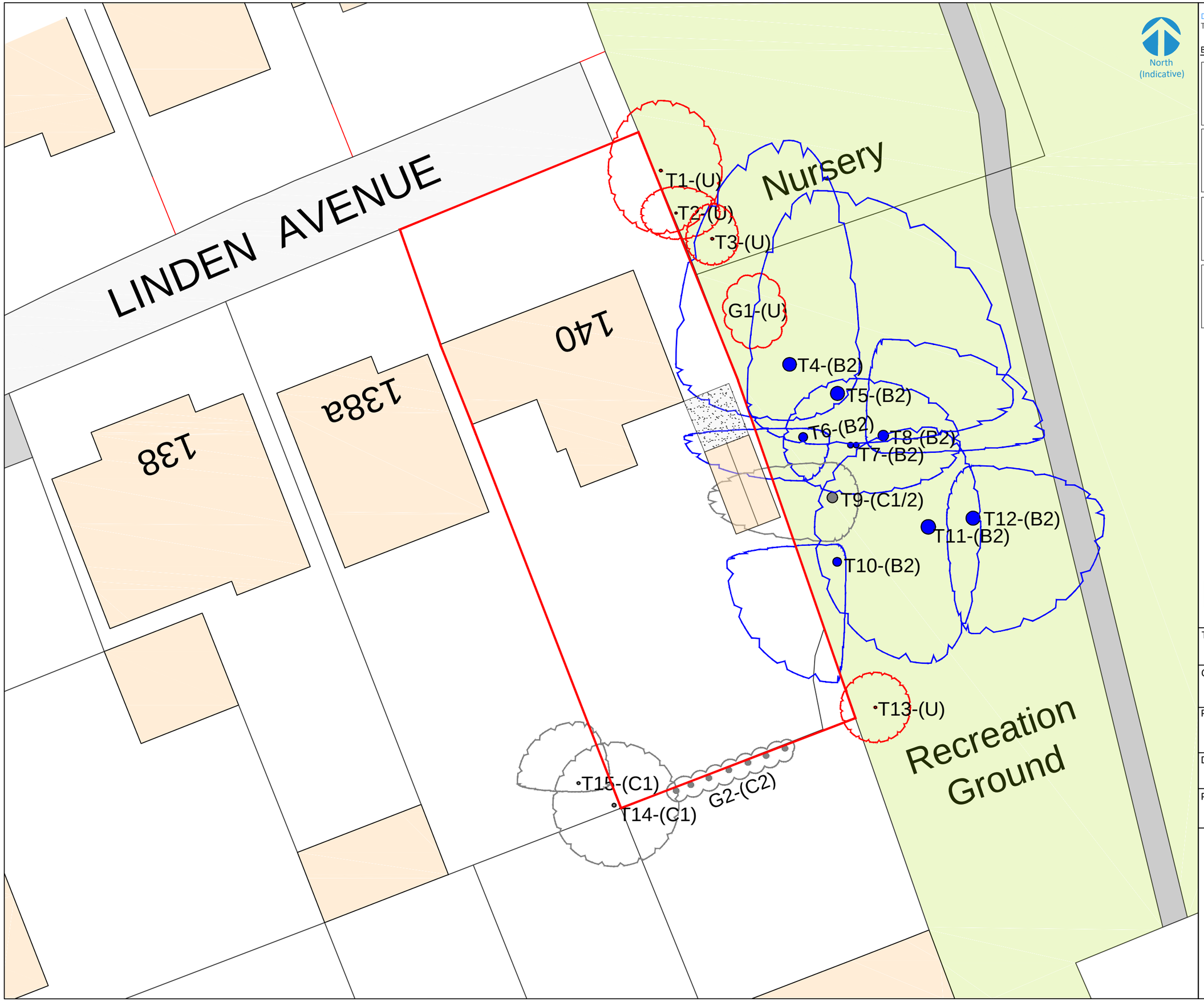
Appendix 2 Tree Survey Plan



DO NOT SCALE - Use only figured dimensions
To be read in colour

BS 5837:2012 TREE RETENTION CATEGORIES

Category A
Trees of high quality and value: in such a condition as to be able to make substantial contribution (a minimum of 40 years is suggested)

Category B
Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)

Category C
Trees 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.

Category U
Trees 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.

-	-	REVISIONS

Title
Tree Survey Plan

Client
Mr B. Berisha

Project
140 Linden Avenue, Ruislip, HA4 8UB

Date	Drawn by
April 2024	CS
Project Ref. 2149_TSP	Scale 1:200 @ A3

O M C
Arboriculture

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OMC Associates

Appendix 3 Tree Constraints Plan

LINDEN AVENUE

138

138a

FOOTPRINT OF EXISTING DWELLING AND GARAGE

EXISTING SHED AND CONCRETE BASE / SURFACING WITHIN RPAs

PROPOSED NEW DWELLING

PROPOSED NEW DWELLING

Nursery

Recreation Ground

T1-(U)

T2-(U)

T3-(U)

G1-(U)

T4-(B2)

T5-(B2)

T6-(B2)

T8-(B2)

T7-(B2)

T9-(C1/2)

T12-(B2)

T11-(B2)

T10-(B2)

T13-(U)

T15-(C1)

T14-(C1)

G2-(C2)

RPA

North (Indicative)

DO NOT SCALE - Use only figured dimensions
To be read in colour

BS 5837:2012 TREE RETENTION CATEGORIES

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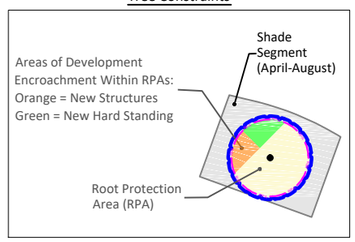
Category U
Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

BS 5837 Root Protection Areas
Nominal - prior to adjustment

Extents of Proposed Facilitation Pruning
- T1, T2, T4, T6, T9 & T10

Tree Constraints



Title
Tree Constraints Plan

Client
Mr B. Berisha

Project
140 Linden Avenue, Ruislip, HA4 8UB

Date	Drawn by
April 2024	CS
Project Ref. 2149_TCP	Scale 1:200 @ A3

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Appendix 4 Draft Tree Protection Plan

SPECIFIC MATTERS TO BE ADDRESSED BY ARBORICULTURAL METHOD STATEMENT:

- FACILITATIVE TREE WORK
- DEMOLITION OF EXISTING DWELLING, SHED AND CONCRETE BASE / SURFACING WITHIN RPAs
- NEW UTILITY CONNECTIONS WITHIN RPAs
- INSTALLATION OF PILED FOUNDATION FOR HOUSE
- UTILIZATION OF MINIMAL-DIG SUB BASE FOR PATIO, PATH ALONGSIDE HOUSE & BIKE / REFUSE STORES
- INSTALLATION OF PROTECTIVE FENCING AND TEMPORARY GROUND PROTECTION

North (Indicative)

T1-(U)
T2-(U)
T3-(U)
G1-(U)
T4-(B2)
T5-(B2)
T6-(B2)
T8-(B2)
T7-(B2)
T9-(C1/2)
T12-(B2)
T11-(B2)
T10-(B2)
T13-(U)
T15-(C1)
T14-(C1)
G2-(C2)

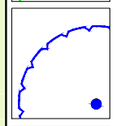
Nursery

Recreation Ground

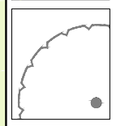
DO NOT SCALE - Use only figured dimensions
To be read in colour

BS 5837:2012 TREE RETENTION CATEGORIES

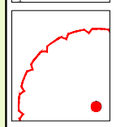
Category A
Trees of high quality and value: in such a condition as to be able to make substantial contribution (a minimum of 40 years is suggested)



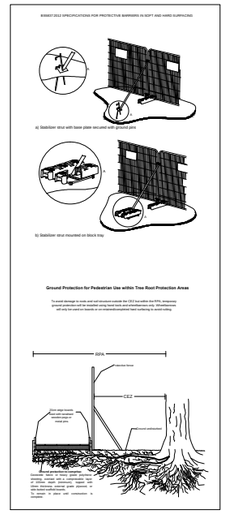
Category B
Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)



Category C
Trees 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.



Category U
Trees 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.



Ground Protection for Pedestrian Use within Tree Root Protection Areas

Title
Draft Tree Protection Plan

Client
Mr B. Berisha

Project
140 Linden Avenue, Ruislip, HA4 8UB

Date	Drawn by
April 2024	CS
Project Ref.	Scale
2149_Draft_TPP	1:200 @ A3

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Appendix 5 Cascade Chart Explaining Tree Quality Assessment

Key to Tree Schedule References

BS 5837:2012 Cascade chart for tree quality assessment (Table 1)

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected to collapse, including those that will become unviable after removal of other U category trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or stability of other nearby trees (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality. **NOTE:** Category U trees can have existing or potential conservation value which it might be desirable to preserve.			DARK RED
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are of particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B **Trees of moderate quality** with an estimated contribution of at least 20 years	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)	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	MID BLUE
Category C **Trees of low quality** with an estimated contribution of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	GREY

KEY TO TREE SCHEDULE REFERENCES

Prefix: **T –** Tree **S** – Shrub/Climber **TG/SG** – Group/Hedge of Trees or Shrubs **H** - Hedge **Dia.:** **N/A -** Tree less than 100mm (for shrubs: young, semi-mature or mature)

***** Estimated

Age Class:

Young:	Generally less than 10 years old and high life expectancy
Semi-mature:	Within first 30% of life expectancy and significant growth to be expected
Early-mature:	Typically 30-60% of life expectancy, full size almost reached
Mature:	Typically 60% or more of life expectancy, full size reached with very gradual, slight further increases in size
Veteran	A stage of development where intervention/management may be required to ensure the tree remains safe
Over-mature:	Where a tree is so senescent that management is not worthwhile

Life Expectancy: How many years before tree is likely to need removing (subject to human intervention)

Crown Radius: If crown is symmetrical, one dimension is given for the radius followed by "S"

B.S. Category: **See Appendix 2**

Physiological Condition:

Good:	Healthy tree with no symptoms of significant disease
Fair:	Some disease noted and/or vitality is below what would be expected
Poor:	Significant disease noted and/or very low vitality
Very Poor:	Tree is in severe decline

Structural Condition:

Good:	No significant structural defects
Fair:	Defects noted but not sufficient to warrant immediate work
Poor:	Significant defects. Monitoring and/or remedial works required
Very Poor:	Significant defects requiring immediate work or tree removal

Space Below Crown: A useful indicator to determine the practicality of developing below the crown. Rather than a measurement which can be misleading and open to interpretation.

Y	Potential to develop below the dripline with either no treework or removal of limbs that will not adversely affect the health and appearance of the tree
N	No scope to develop below the dripline of the tree
N/A	Tree to be removed

Treework: This is general since the report is not a tree-work specification. It indicates:

H	High priority. For trees to be retained and where work required to make safe
L	No urgent work required but would benefit from some intervention
N	No treework identified as necessary in the foreseeable future
P	Facilitation tree surgery advised
R	Remove – tree identified to be removed because “U” category tree
RA	Tree removed to accommodate development
WA	Treework to accommodate development
IV	Sever and remove ivy

B.S. Category:

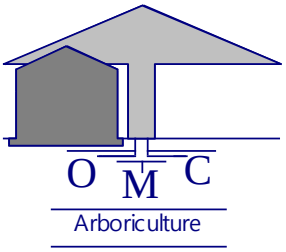
A - Those of high quality and value i.e. make a substantial contribution;

B - Those of good/moderate quality and value, might be Cat. “A” but slightly impaired

C - Those of low quality i.e. adequate to remain until new planting is established or young trees with a stem diameter less than 150mm at 1.5m height

U - Those of such poor condition that any existing value would be lost within 10 years

1 - Mainly Arboricultural value **2 - Mainly Landscape value** **3 - Mainly Ecological value**



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Appendix 6 Example of minimal-dig foundation system

TREESAFE

The tree friendly foundation solution

ABBEY PYNFORD

TREESAFE

Treesafe is our patented foundation system that allows construction close to or within a tree Root Protection Area (RPA).

Benefits

Increased footprint - Treesafe creates the opportunity to increase the footprint of your site into RPA, allowing getting greater yield from your plot.

Cost certainty - By reducing the programme, prelims and eradicating the elements stated to the right, we can offer cost certainty for your project.

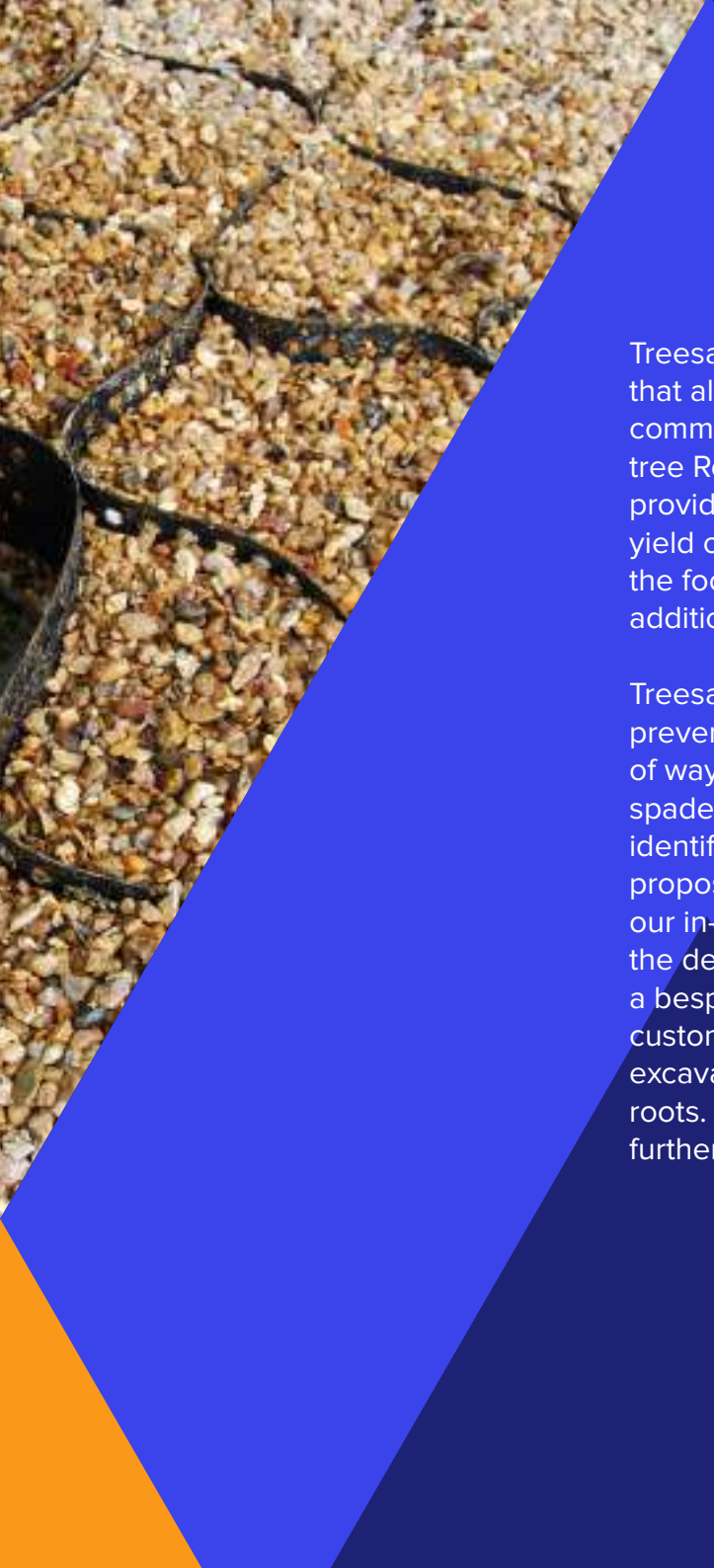
Faster - Treesafe is up to 70% faster than traditional methods and offers improved program certainty.

Safer - Treesafe has many features that enhance a safer environment on site, and comes with warranty provider approval: NHBC, Premier Guarantee and LABC.

Less environmental impact - Treesafe uses less concrete, requires less spoil removal, and significantly reduced vehicle and plant movement. Reducing the carbon footprint of your site.

Treesafe does not require the following elements:

- Piling mats (in 95% of projects)
- Excavations for ground beams
- Ground beam construction
- Pre-cast floor
- Sub-structure brickwork blinding within footprint
- Resources to manage the above



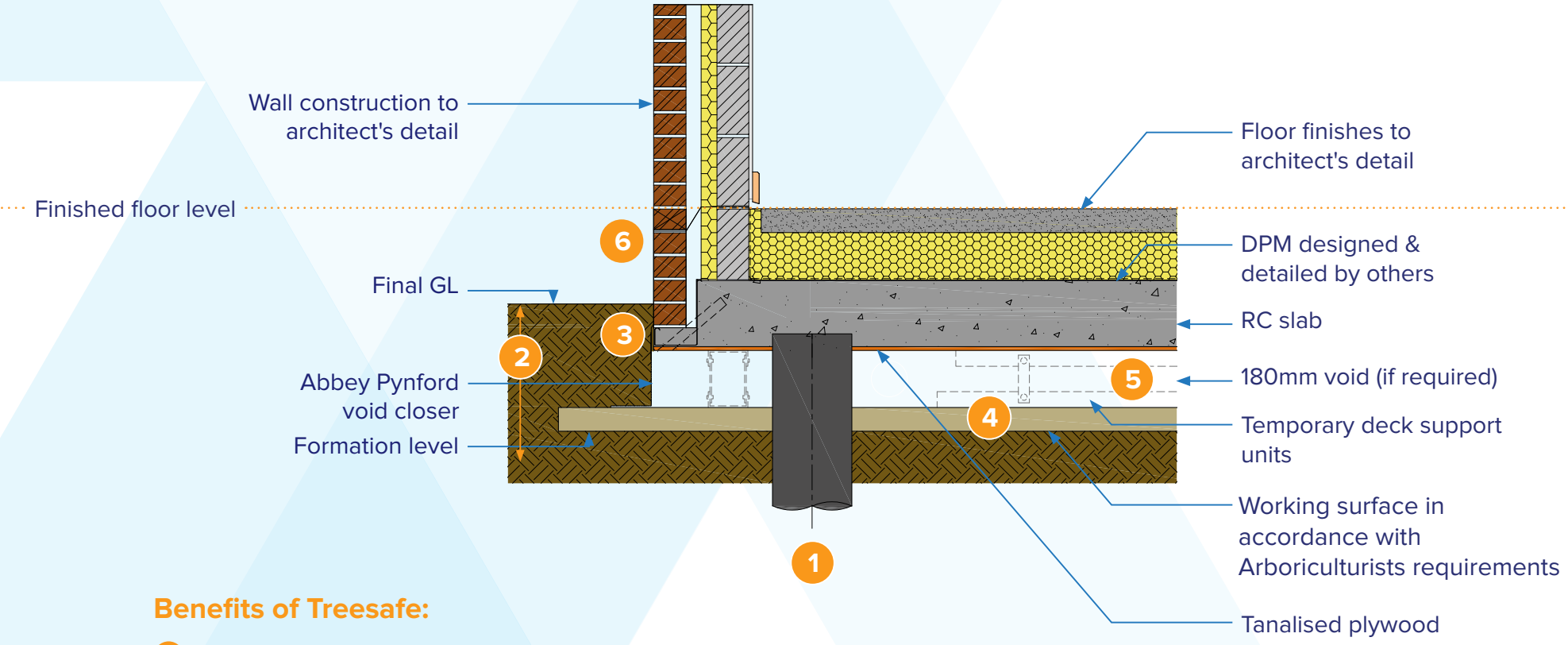
Treesafe is our patented foundation system that allows construction of residential or commercial structures close to, or within a tree Root Protection Area (RPA). Treesafe provides the opportunity to increase the yield of your site by allowing an increase in the footprint of your structure and/ or adding additional plots to your development.

Treesafe is approved by Arboriculturists and prevents damage to tree roots in a number of ways. In preparation for piling we use air spades and hand augering techniques to identify any roots that may conflict with the proposed pile locations. If roots are present our in-house design team review and adjusted the design to accommodate them. We use a bespoke working surface to support our custom lightweight piling rigs, minimising excavation that could cause damage to tree roots. Each pile position is also sleeved, and further precautions are taken when pouring the slab to prevent concrete leaching into the protected ground, that could cause harm to roots.

Treesafe can support a range of piling techniques, depending on ground conditions. We also offer alternative piling options, such as stone columns or reduced diameter piles.

Treesafe is a version of our Housedeck and Comdeck systems, both are BBA certified and warranty provider approved: NHBC, Premier Guarantee and LABC. All engineered solutions are fully underwritten.

Typical Treesafe detail_



Benefits of Treesafe:

1. Allows construction within Root Protection Areas.
2. Significant reduction in excavation.
3. Significant reduction in under build.
4. Bespoke working surface in place of piling mat.
5. Clear void to mitigate heave risk (if required).
6. No venting required.

Construction process_

Stages of typical slab build

Working within protected trees creates very site specific requirements. The Treesafe system is tailored to your site and specific arboricultural needs. The following covers some of our most common approaches, but not all.

Setting Out

We start by setting out the pile locations, as per the Abbey Pynford design. This takes place either directly on to the prepared ground or over a breathable geotextile membrane.

Bespoke Working Surface

Once setting out is complete a bespoke working surface is laid. We use three types of working surface: Cellweb (pictured), a concrete working surface (pictured) or granular mat. The surface type is dictated by the site requirements in conjunction with the Arboriculturist.

Hand augering

Hand augering is undertaken at all pile positions within the RPA. If roots greater than 10mm diameter are found, our in-house design team re-analyse the slab. A new pile position is proposed and re-augered. Once all positions are confirmed to be root free, piling can commence.

Piling

The piles are driven using our custom made light weight rigs. which can be supported by the bespoke working surface. This prevents the need for deep excavation for a piling mat, which would cause root damage. Each pile is then sleeved to prevent concrete leaching into the RPA.

Drainage & Services

After the piles are trimmed to cut off level the drainage and services are installed. This can be done by us or the client, project dependant.

Deck Support Units

Our patented temporary Deck Support Units (DSU) are laid out to create the void, upon which the raft will be built.

Edge Shuttering & Fix Reinforcement

Next, our patented edge system is installed on plywood, followed by the steel reinforcement to create the raft.

Concrete pour

Once final levelling is complete the concrete is poured, taking precautions to prevent concrete leaching into the RPA.

Finished structural slab

Once the slab is cured a membrane will be attached to prevent materials entering the void.

The finished slab is ready for trades on average 5-7 days after the concrete pour.

About us_

At Abbey Pynford we provide a more integrated approach to our services, offering a one stop shop to commercial contractors and private developers. Founded in 1988, Abbey Pynford Group has 30+ years of industry experience to support you through your project.

We offer a wide range of services ranging from our patented engineered foundation systems, various types of piling and underpinning.

We have our own in-house design team comprised of Structural and Geotechnical Engineers, providing underwritten design solutions across all our services.

We also have our own plant hire business providing specialist and bespoke equipment to the group and wider external market.

Our ethos is to provide a fully integrated service for our customers, providing support from conception through to construction. We always seek to provide the most cost-effective solution for your project, through innovation, product development, and a wealth of experience gained from 30+ years working in the industry.

Area of operation

Our services_

HOUSEDECK

COMDECK

TREESAFE

FLOODSAFE

PILING

UNDERPINNING

Health & Safety, Quality & Environmental Overview_

Certified H&S management system.

Certified H&S, Quality & environmental management system.

Home Builders Federation members.

ASUC founding members. Assured professional & technical competence.

Certified quality management system.

Certified quality management system.

Assured sustainability & H&S procedures. Certified quality audit beyond IOS 9001.

Backed quality assured SSIP scheme.

Certified H&S management system.

Backed quality assured SSIP scheme.

We send less waste to landfill by reducing dig and spoil removal with our foundation solutions.

We use less concrete with our foundation solutions than traditional techniques.

Through our reduced vehicle and plant movement we produce significantly less $C0_2$ emissions.

Treesafe offers a tree friendly way to build in Root Protection Areas. Approved by Arboriculturists.

We have 30+ years industry experience to support your project.

In-house design team and all designs and engineered solutions are fully underwritten.

Certified H&S, Quality & environmental management system and insurance.

Certified quality management system.

IMS Certified H&S, quality & environmental management systems.

Constructionliine Gold members.

Certified quality management system.

Our commitment to you_

- You will receive the same attention and quality of service whether you are a small developer or corporate builder.
- We will provide you with a fully documented proposal within two weeks after receiving all required information.
- Our dedicated in-house design team, using the latest software finite element analysis, ensures that each project is value engineered.
- We will always operate in the best practice, complying with health, safety and environmental legislation.
- We promise to serve in your best interests and if we believe that one of our foundation systems is not the most appropriate scheme for your needs, we will advise you accordingly.

Our clients_

> The Treesafe product is such a simple but effective method. From design through to completion Abbey Pynford offer a second to none service with excellent health and safety.

Colm O'Boyle, Surveyor, T&B Contractors

> Abbey Pynford's system is the complete package offering a straightforward fully designed solution, saving us money and 6 weeks from our original programme.

Nick Jude, Construction Manager, Willmott Dixon

> We have used Housedeck before and as usual this project ran very smoothly and was completed swiftly. Both the piling crew and the slab crew were excellent – nothing was too much trouble for them and the site was kept clean and tidy throughout.

Tony Draper, Architect & Project Manager, Carrington Fox

> Abbey Pynford worked fantastically well with us. Through solid communication and collaboration the construction has been a success. I would strongly recommend them for future projects.

Sam Kemp, Project Manager, Morgan Sindall Construction

ENGIE · OCTAGON · Bellway · Osborne · LOVELL HOMES · Taylor Wimpey · WILLMOTT DIXON

thomas sinden · THAKEHAM · Conlon · Castlemead · BARRATT · REDROW · CAREYS NEW HOMES

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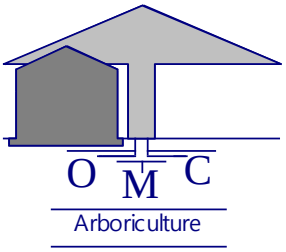
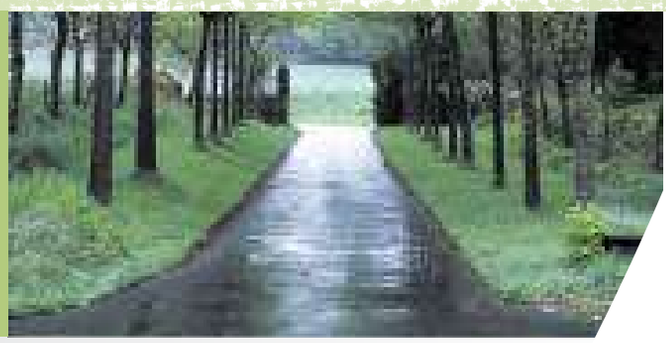


OMC Associates

Appendix 7 Example of minimal-dig sub-base

CellWeb TRP®



Tree Root Protection Guaranteed

Geosynthetics

www.geosyn.co.uk

CellWeb TRP® System

Tree Root Protection System

The Consquences Of Tree Root Damage During Construction

It is an offence to cut down, lop, uproot, top, wilfully damage or destroy a protected tree without authorisation. Trees can be protected under the Town and Country Planning Act 1990 and the Town and Country Planning (Trees) Regulations 1999. Trees are protected when they are the subject of Tree Preservation Orders (T.P.O) or within Conservation Areas, subject to certain exemptions. Retention and protection of trees on development sites is also secured through the use of planning conditions.

On a construction site all trees with a Tree Preservation Orders need to be managed in accordance with BS5837 2012 (Trees in relation to construction); failure to comply with these orders can be a costly affair as many parties have discovered.

Fishponds, Ketton

There are two offences which apply equally to trees protected by Tree Preservation Orders and those within Conservation Areas:

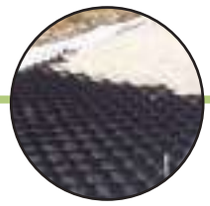
- Firstly, anyone who cuts down, uproots or wilfully destroys a tree, or who lops, tops or wilfully damages it in a way that is likely to destroy it is liable, if convicted in the Magistrates Court, to pay a fine of up to £20,000. If the person is committed for trial in the Crown Court, they are liable on conviction to an unlimited fine. The Courts have held that it is not necessary for a tree to be obliterated for it to be "destroyed" for the purposes of the legislation. It is sufficient for the tree to have been rendered useless as an amenity.
- Secondly, anyone who carries out works on a tree that are not likely to destroy it is liable, if convicted in the Magistrates Court, to a fine of up to £2,500. In addition to directly carrying out unauthorised works on protected trees, it is an offence to cause or permit such works.

Developers and building contractors are often completely unaware that 'compaction of soils within the Root Protection Area (RPA)' constitutes wilful damage to the tree. When vehicular or pedestrian access within the RPA is necessary, either for the construction operation or final site access, the effects of this activity must be addressed and the ground must be protected. When tracked or wheeled traffic movements are involved, the ground protection system should be designed by an engineer and take into account the loading involved.

Shelton Road, Shewsbury

The Solution:

Geosynthetics CellWeb TRP® System


The Solution According to BS 5837:2012

"Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems ....."

(BS 5837 2012 section 7.4.2 Note 1)

The CellWeb TRP® Solution

CellWeb TRP® is the market leader in the United Kingdom and Ireland for tree root protection. CellWeb TRP® cellular confinement system protects tree roots from the damaging effects of compaction and desiccation, while creating a stable, load bearing surface for vehicular traffic. CellWeb TRP® complies with BS 5837:2012 and APN 12. It provides a no-dig solution, is tried and tested having been used successfully since 1998. It is the only tree root protection system which has been independently tested and it is the only tree root protection system which is guaranteed for 20 years. See page 6 for the full terms and conditions of the guarantee.

Fishponds, Ketton

Field Trials

Geosynthetics Limited are the only company in the UK and Ireland to carry out live, completely independent field tests on the performance of a 3 dimensional cellular confinement system when used in a no-dig tree root protection system application. The results prove that CellWeb TRP® significantly reduces the compaction of sub-soils within the root growth limiting parameters established by K D Coder, 'Soil damage from compaction'. University of Georgia. July 2000. A copy of the report is available upon request.

CellWeb TRP® Product Guarantee

Geosynthetics Limited prides itself on a providing a reliable, consistent service; including technical advice, on site support and installation guidance. Geosynthetics Limited provides a 20 year guarantee for the CellWeb TRP® tree root protection system. This guarantee gives the client, the tree officer and arboricultural consultant the confidence that the designed system will perform as intended without damaging the health of the tree.

See page 6 for the full terms and conditions of the guarantee.

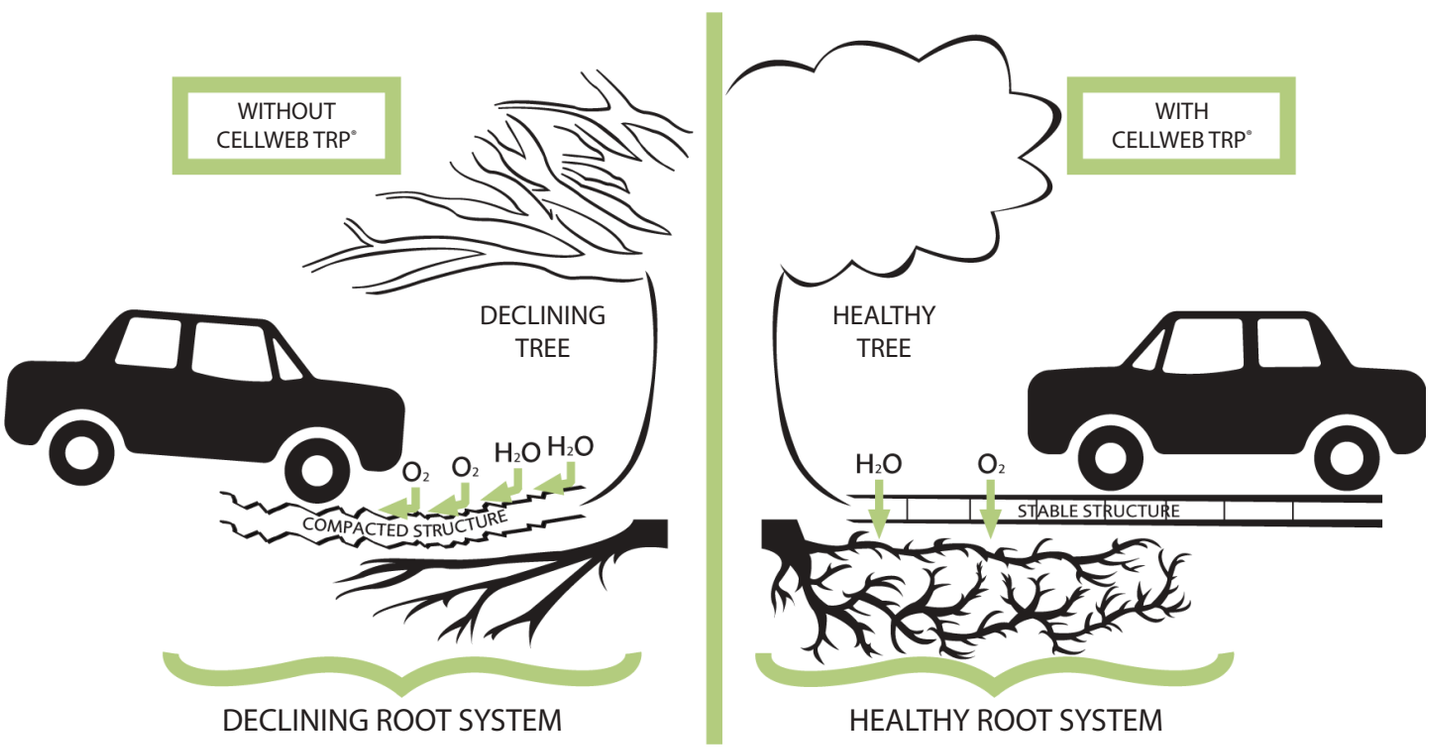
CellWeb TRP® System

How the System Works

How CellWeb TRP® Works

CellWeb TRP® is a cellular confinement system that confines aggregate materials and makes them stronger, thus increasing the bearing capacity of the sub base materials. Research shows that CellWeb TRP® acts as a stiff raft to distribute wheel loads and reduce their magnitude at the base of the construction, thus maintaining the soil bulk density at levels that are suitable for tree root growth.

CellWeb TRP® is used around the world to provide cost effective hard surface construction over tree roots and is the system of choice for Tree Officers and Arboriculturists. For more information on this subject see CellWeb TRP® Fact Sheet No 1.



Water and Oxygen Transfer Through the CellWeb TRP® System

The CellWeb TRP® system is constructed using open aggregate infill and CellWeb TRP® has perforated cell walls. The pore spaces between the aggregate particles are greater than 0.1mm in diameter. This open structure is far more permeable than typical soils and allows the free movement of water and oxygen so that supplies to trees are maintained.

For more information on this subject see CellWeb TRP® Fact Sheet No 2.

CellWeb TRP® and Pollution

How CellWeb TRP® Deals With Catastrophic Oil Spills

How CellWeb TRP® Deals With Pollution

Where possible a permeable pavement system should always be constructed above the CellWeb TRP® system. The effective removal of pollution from runoff by permeable pavements is well known. Worldwide research has shown runoff that has passed through permeable pavements has low concentrations of pollutants.

Small spills of oil will be dealt with within the joints between the paving blocks and in the aggregate used within the system. However, large catastrophic spills are a different matter.

For more information on this subject see CellWeb TRP® Fact Sheet No 3.

Castle Gardens

Ambleside Lake District

Harcourt Aboretum

The Treetex® geotextile used in the CellWeb TRP® system has two functions. Treetex® separates the sub base aggregates from the soil beneath and it traps oil within its structure and allows it to degrade aerobically within the pavement construction. The structure, thickness and weight of Treetex® creates the perfect environment for this to happen. Most importantly tests prove that Treetex® will absorb 1.7 litres of oil per square metre, this is 4 times more effective than standard geotextiles.

Treetex® is an intrinsic part of the CellWeb TRP® system; and must be in conjunction with the CellWeb TRP® in order to guarantee the success of the system.

Please see page 6 for full details of the guarantee.

Geosynthetics CellWeb TRP® System:

A Proven No Dig Solution

Advice, Design and Product Selection

Geosynthetics Limited has been supplying the CellWeb TRP® system since 1998 and has vast experience in its application. No two contracts are the same and we understand the factors that need to be taken into account to specify the correct CellWeb TRP® product.

We provide a free consultation, design and advisory service to find the solution that is most cost effective and beneficial for your site. Our service includes product selection, engineering calculations, CAD drawings and full instructions to help you from project conception to completion.

Fallbarrow Park, Windermere: Prior to CellWeb TRP® Installation

Fallbarrow Park, Windermere: CellWeb TRP® Installation

Fallbarrow Park, Windermere: Completed CellWeb TRP® Installation

Final Surfacing

The benefits of the CellWeb TRP® system can only be maintained if a suitably porous final surface is selected. An ideal surfacing is the Golpla grass reinforcement and gravel retention system, a visually attractive surface that has the advantage of being fully porous. Alternatives include block paviors, porous asphalts and loose or bonded gravel.

Always Use CellWeb TRP®

The CellWeb TRP® system is the only research backed system of its kind in the UK with a 100% success rate. CellWeb TRP® has been specifically developed for the Tree Root Protection market. The system is supported by 15 years of data and thousands of installations making it the system of choice for the majority of Tree Officers and Arboriculturists in the UK.

CellWeb TRP® is uniquely identifiable. It is manufactured with a bright green panel on each side. When installed the green panels are laid adjacent, creating a green band across the construction.

Woodcock Hall, Yorkshire

Geosynthetics Limited

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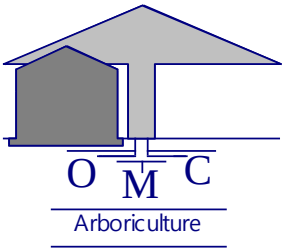
or email sales@geosyn.co.uk for more technical advice.

Visit our website www.geosyn.co.uk for further information.



OMC Associates

Appendix 8 Photographs

Above: view of the trees and site from the west

Below: view of trees from the east (Columbia Avenue Field)

Above: view of the trees from outside the existing property and overhang within the garden

Above: view of the trees from the south western corner of the property's rear garden