Ecological Appraisal and BNG Assessment

Proposed Care Home Development

Former Trinity Leisure Centre, Coventry Road, Hinckley, Leicestershire, LE10 0JR

27 March 2025

ENVIRONMENTAL AND SUSTAINABILITY CONSULTANTS

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Executive Summary

This ecological appraisal report provides an update on the survey, results and recommendations provided in the previous Ecological Appraisal Encon Associates completed in 2018 (1). It identifies and explains the potential ecological effects of the proposed development of the former Trinity Leisure Centre, Hinckley, where the construction of a new care home with associated landscaping and access is proposed.

The majority of the site was crushed aggregate from the demolition of the leisure centre and includes a formal garden area containing a number of mature ornamental trees, which was part of the leisure centre. There was also a small area of broadleaved woodland (national importance) and mature trees within the garden area (local ecological value). However, the habitats on the site are not considered of ecological value outside of the zone of influence. The site is likely to support common nesting birds and foraging or commuting bats, but unlikely to support other protected species.

There would be no significant ecological impacts as a result of its development. However, mitigation measures are required to avoid disturbing nesting birds and foraging or commuting bats. A wildlife-friendly lighting scheme is recommended. The development presents opportunities for ecological enhancements including woodland enhancement, native tree and shrub planting and erecting swift and other bird boxes.

The proposals should not result in the loss or damage of any habitats of ecological value. However, there is potential for nesting birds to be disturbed, trees of local value and the woodland of national importance to be damaged. Consequently, measures to protect these features are recommended.

A Biodiversity Net Gain calculation has been undertaken. The proposals show a net loss in the biodiversity of the site of -23.37% in habitat units and a net gain of 100% in hedgerows units. Off-site provision of habitat units would be required to achieve +10% gain of habitat units and to comply with trading rules. 1.34 units are required to meet the BNG legislation requirements.

Provided all of the recommended mitigation measures and some of the recommended ecological enhancement measures are implemented, the development would comply with relevant nature conservation legislation and planning policy regarding ecological enhancements.

1.0 Introduction

1.1 *Background*

This document details the ecological effects of a proposed residential development at the site of the former Trinity Leisure Centre, Coventry Road, Hinckley (see Figure 1.1 for the site location). In July 2018, Encon Associates were instructed by Green 4 Architects to complete an Ecological Appraisal for the site. The report was issued in July 2018 (1).

In January 2025, Encon Associates were instructed by Green 4 Architects to undertake an updated ecological survey of the site in order to provide information regarding the ecology of the site, its BNG requirements and inform plans for its development.

1.2 *Brief Description of the Proposed Works*

The proposals entail the construction of a care home with associated landscaping, parking and access.

1.3 *Scope*

This document aims to assess the likely ecological effects of the proposed development. The scope of this Ecological Assessment is to:

- Identify any potential biophysical changes as a result of the proposed development.
- Identify and provide a valuation of features of ecological interest on a site (such as habitats and protected species) and recommend further surveys should they be necessary.
- Assess the likely ecological effects of the development against relevant legislation and policy.

- Recommend avoidance and/or mitigation measures that are likely to be required to reduce the ecological impact of the proposals.

If no further surveys are recommended, this report can serve as full assessment of the ecological effects of the development in support of any planning application.

1.4 *Relevant Legislation*

1.4.1 *The Wildlife & Countryside Act*

The Wildlife & Countryside Act 1981 (as amended) (2) is the primary piece of legislation by which biodiversity in the UK is protected. The most relevant areas of the Act to development related activities are:

- The identification and subsequent protection of Sites of Special Scientific Interest (SSSIs), which prohibits damaging activities.
- The protection of certain species listed in Schedule 5, which prohibits killing, injury, disturbance, damage and/or destruction of breeding sites and/or resting places and sale (it should be noted that all parts of this protection do not apply to all Scheduled species).
- The protection of wild birds and their nests, which prohibits damage or destruction of nests whilst in use. Species listed in Schedule 1 of the act receive additional protection from disturbance whilst they are building a nest or are near a nest containing eggs or young. It also prohibits the disturbance of dependent young.

1.4.2 *The Conservation of Habitats and Species Regulations*

The Conservation of Habitats and Species Regulations 2017 (known as the 'Habitats Regulations') (3), pass two EEC Directives into UK law. The Regulations protect sites and

species deemed to be of conservation importance across Europe. The most relevant parts of the Regulations to development related activities are:

- The protection of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)
- The protection of species listed within Schedule 2 of the Regulations, which prohibits killing, injury, disturbance, damage and/or destruction of breeding sites and/or resting places and sale, this confers some level of habitat protection.

In order for activities that would be likely to result in a breach of species protection under the regulations to legally take place, a European Protected Species (EPS) mitigation licence must first be obtained from Natural England.

1.4.4 *The Natural Environment and Rural Communities Act*

The Natural Environment and Rural Communities (NERC) Act 2006 (4) requires that public bodies to have regard to the conservation of biodiversity. This means that Planning Authorities must consider biodiversity when reaching planning decisions. Section 41 of the act lists habitats and species that are conservation priorities in England.

1.5 *Planning Policy*

1.5.1 *National planning policy*

Government policy with respect to the protection of biodiversity is laid out in the National Planning Policy Framework (NPPF) (5). This places an onus on development to minimise impacts to biodiversity and where possible to provide net biodiversity gain. The NPPF provides guidance to Local Authorities in how to conserve and enhance biodiversity through local Planning Policies and when assessing planning applications.

1.5.2 *Local planning policy*

At a local level, planning policy within Hinckley is contained within *Hinckley & Bosworth Borough Local Development Framework Local Plan 2006-2026* (6). This is the same as when the 2018 Ecological Appraisal (1) was written, the text is provided below:

"The Plan's Core Strategy contains a number of Spatial Objectives which guide planning decisions across the Borough. *Spatial Objective 10: Natural Environment and Cultural Assets* requires the delivery of a "*linked network of green infrastructure, enhancing and protecting the borough's distinctive landscapes, woodlands, geology, archaeological heritage and biodiversity and encourage its understanding, appreciation, maintenance and development.*"

The Core Strategy's *Policy 20: Green infrastructure* is concerned with the implementation of a green infrastructure network throughout the borough for a variety of reasons including recreation, environmental resilience and ecology."

1.5.3 *Other nature conservation policy*

Biodiversity Action Plans (BAPs) were the UK's response to the 1992 Convention on Biological Diversity. The UKBAP (7) described the biodiversity of the UK and contained Action Plans for the most threatened habitats and species. It was implemented at a local level through regional and local BAPs. Whilst the UKBAP has expired, BAPs are still used at a more local level in some areas and species and habitats which were previously priorities within the UKBAP are now listed as Species of Principal Importance within Section 41 of the NERC Act 2006 (4). The site falls within the area covered by the *Leicester, Leicestershire & Rutland Biodiversity Action Plan* (8).

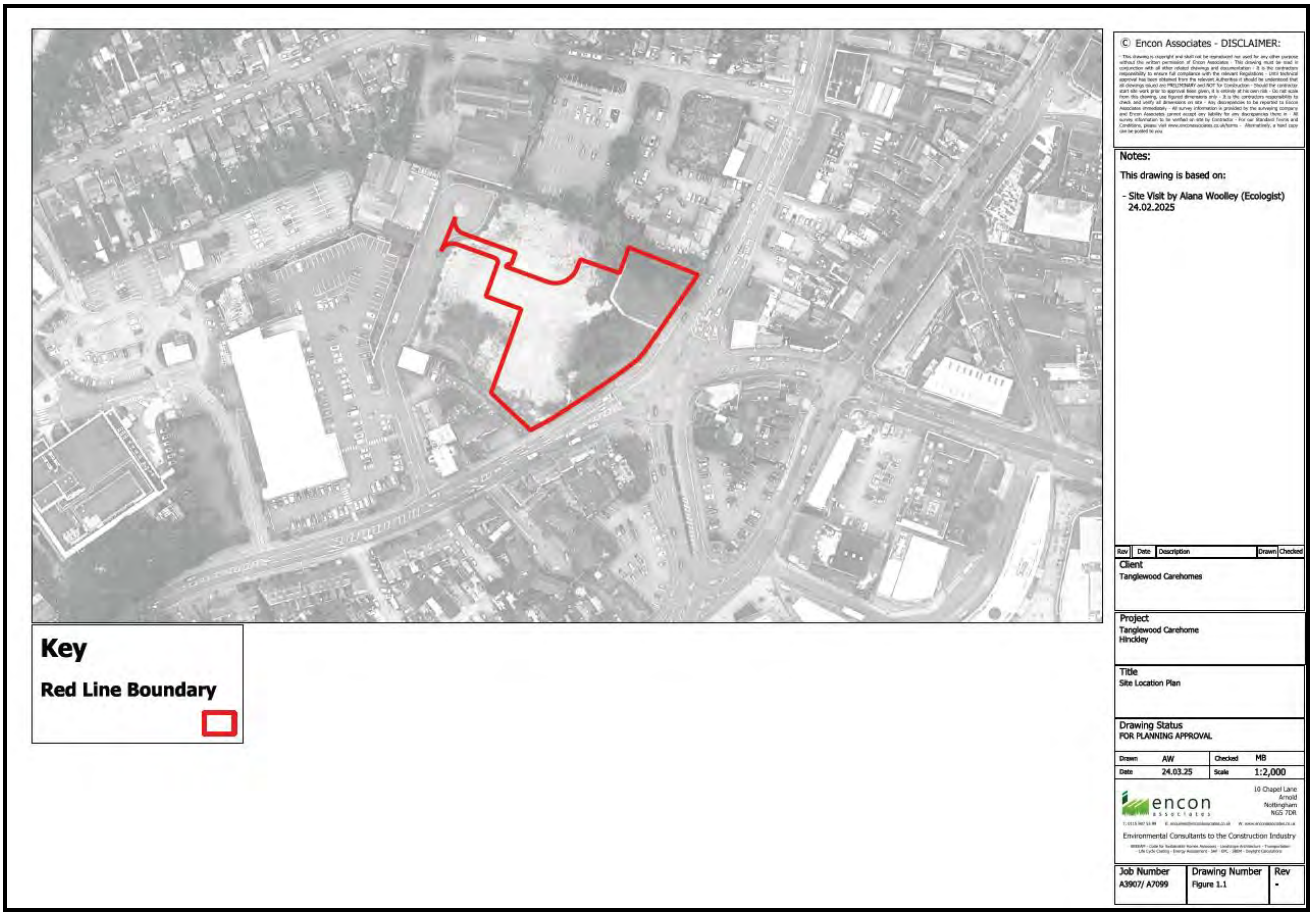

Figure 1.1: *Site location. Contains Ordnance Survey data © Crown copyright and database right 2025.*

2.0 Methodology

2.1 *Desk Study Methodology*

Available online resources such as the MAGIC (Multi-Agency Geographical Information for the Countryside) and NBN (National Biodiversity Network) websites were interrogated for relevant information, including statutory designated sites within 5km of the site. In addition, records of protected sites and protected and/or notable species from within 1km of the site was requested from the Leicestershire and Rutland Environmental Records Centre (LRERC).

2.2 *Field Survey Methodology*

The survey was carried out by Alana Woolley on behalf of Encon Associates Ltd on 24 February 2025. The survey followed CIEEM's Preliminary Ecological Appraisal guidance (9). The survey consisted of a site walkover (loosely based on the "Phase 1" methodology (10), modified to suit the situation) with all accessible areas of the site and adjacent land (where relevant) covered. The habitats present were generally described, with attention paid to their potential to support protected species. A general search for evidence of protected species was also undertaken.

All mature trees on the site were assessed for the presence of any features that could be used by roosting bats, such as woodpecker and rot holes, cracks, splits, loose bark and dense ivy cover. Any trees considered to be of "low" potential or higher, as defined by best practice guidance (11), were recorded.

2.3 *Assessment Methodology*

2.3.1 *Introduction*

The methodology for the assessment of the likely ecological effects of the proposed development is based on the principles of CIEEM's *Guidelines for Ecological Assessment in the UK, 2nd Edition* (12). Although this assessment does not constitute a formal Ecological/ Environmental Impact Assessment, the CIEEM guidelines provide a useful framework for assessing ecological impacts at any level.

2.3.2 *Valuation*

Features of ecological interest are valued on a geographic scale. Value is assigned on the basis of legal protection, national and local biodiversity policy and cultural and/or social significance.

2.3.3 *Identification of Potential Ecological Impacts in Absence of Mitigation*

A development may have ecological effects beyond its site boundaries, therefore the CIEEM guidelines require that the 'zone of influence' be identified. Due to the relatively small size of this development and urbanised area, for the majority of ecological features, the zone of influence is considered unlikely to extend beyond the footprint of the works and immediately adjacent habitat.

Without mitigation, the proposed development may result in the following biophysical changes during construction and/or operation:

- Loss of and damage to habitats within or adjacent to the footprint of the development and construction zone.
- Any loss or damage of habitats could result in death and/or injury to protected species should they be present.

- Disturbance of immediately adjacent habitats and any wildlife using them during construction.

2.4 *Limitations*

This survey comprised a single walkover. As such it is only possible to gain a snapshot of the ecology of the site and it is possible that some seasonal species could be missed. The survey was conducted during February, some species may not have been present at this time of year and therefore not recorded. However, given the location of the site, the high levels of disturbance, its history and the habitat types present, it is considered highly unlikely that any species or ecological features of significance would be missed. During the site visit, several people walked across the site and rubbish was burning in a large pile in the northern area of the site, therefore, the high amount of disturbance to the site was evident.

The ecology of a site can change quickly over time. Therefore, this survey is considered valid for two years from the date of the report.

3.0 Ecological Baseline

3.1 *Site Context*

As stated in the previous Ecological Appraisal (1): "The site is located within the centre of Hinckley (see Figure 1.1). Hinckley lies on the western edge of the Leicestershire Vales National Character Area. This is a large, relatively open, uniform landscape composed of low-lying clay vales interrupted by a range of varied river valleys. The city of Leicester dominates the northeast corner of the and other large to medium-sized settlements include Market Harborough, Lutterworth and Hinckley. The north of the area has a predominance of settlements which contrasts strongly with the more rural feel in the southern part of the area, where a mixture of arable and pastoral farmland is found (13).

The proposed development site is located within the centre of Hinckley, in a largely urban area. It is surrounded by residential and commercial development with the nearest significant greenspace, Clarendon Park, located approximately 400m to the west. The site is the location of the former Trinity Leisure Centre which was demolished in 2016, and also includes a car park located to the north."

3.2 *Protected Sites*

3.2.1 *Statutory sites*

There are two national statutory designated sites within 5km of the proposed development site; Burbage Wood and Aston Firs (SSSI), and Burbage Common & Woods (LNR). Both of these sites lie approximately 2.5km northeast of site. See Appendix 1 for a map of these designated sites. However, the site does not lie within the SSSI Impact Risk Zone and the proposed works are highly unlikely to affect either protected site.

3.2.2 *Non-statutory sites*

Eight non-statutory Local Wildlife Sites (LWS) were located within the search area:

- Three mature ash *Fraxinus excelsior* trees within Clarendon Park and the Clarendon Park Arboretum (mesotrophic grassland), approximately 500m northwest of site.
- Burbage Flood Retention area (area of wet grassland), Courting Stiles and Courting Stiles Scrub Extension are all located approximately 1km southeast of the site in a cluster.
- Sketchley Lake lies approximately 1km south of the site boundary.

See Appendix 1 for a map of these sites. It is considered highly unlikely that these sites would be affected by the proposed works, due to their distance from the site boundary and the site already being positioned within a highly urbanised area.

3.2.3 *Priority habitats*

According to the *Hinckley & Bosworth Local Plan - Scope, Issues and Options* (15), the *Leicester, Leicestershire and Rutland Biodiversity Action Plan* (9) was considered in the assessment for the local plan. As specific priority habitats couldn't be located in the local plan, the *Leicester, Leicestershire and Rutland Biodiversity Action Plan* (9) priority habitats were referred to for this report. Of the habitats onsite, Broadleaved woodland was considered to be of national importance. Mature trees and urban habitats were considered to be habitats of local importance.

No Habitats of Principal Importance listed in Section 41 of the NERC Act (4) were recorded on or within the vicinity of the site.

3.2.4 *Protected sites within the Zone of Influence*

It is possible for ecologically sensitive sites to be affected by development within their vicinity. However, the protected sites identified in this report are considered to be outside of the zone of influence. They do not fall within the site or directly adjacent to it and the SSSI Impact Risk Zone does not extend to the site. Therefore, no direct impacts in terms of habitat loss, damage or disturbance would occur. As they are considered to be outside of the zone of influence of the proposed development, these sites are not addressed further within this report.

3.3 *Description of Habitats Within the Zone of Influence*

The site remained very similar to when the 2016 survey was conducted, except some of the habitats had extended and progressed.

The majority of the site was still crushed, compacted aggregate (photo 1), some areas of which were being colonised by some ruderal, scrub and tree species (photo 2). Buddleia *Buddleia davidii* was still the most common species in this area, others recorded included creeping bent *Agrostis stolonifera,* bittercress *Cardamine sp.* and cat's ear dandelion *Hypochaeris radicata*.

The small area of the demolition aggregate on the bank in the eastern area of the site had developed into rank grassland with a number of ruderal and wildflower species, typical of disturbed ground, present (photo 3). This grassland area is referred to as Modified Grassland 2 (MG2). It was dominated by creeping bent and a fescue sp *Festuca* sp. Other plant species recorded included, cat's ear dandelion, bittercress, a dock sp. *Rumex* sp., lamb's lettuce *Valerianella locusta*, a speedwell sp. *Veronica* sp., common vetch *Vicia sativa* and ornamental species such as *Crocus* sp. Some scrub species including common

broom *Cytisus scoparius*, ornamental grasses, bramble *Rubus fruticosus* and young alder *Alnus glutinosa* trees were also present.

The eastern side of the site was a formal garden area which was split into two parts by a public access path. This area was evidently still being maintained and mostly comprised short, regularly mown grass. This area is referred to in this report as Modified Grassland 1 (MG1). The lawn was dominated by perennial rye-grass *Lolium perenne*, creeping bent and a fescue sp. with some other species scattered throughout including daisy *Bellis perennis*, white clover *Trifolium repens.*, red dead nettle *Lamium purpureum*, herb robert *Geranium robertianium*, creeping buttercup *Ranunculus repens*, speedwell sp., cleaver *Galium aparine* and bristly oxtongue *Helminthotheca echioides*.

A small area of broadleaved deciduous woodland (referred to as W1) was located in the northeastern area of the site. It was comprised of a cluster of native and ornamental trees included cherry *Prunus* sp., silver birch*,* Norway maple *Acer platanoides* and sycamore (photo 4).

The southern part of MG1 (photo 5) contained a variety of ornamental shrubs and trees including cypress *Cupressus* sp., cedar *Cedrus libani*, apple *Malus domesticus*, cherry, holly *Ilex aquifolium*, sycamore, *Mahonia*, lime *Tilia* sp., princess tree *Paulownia tormentosa,* silver birch*,* hazel *Corylus avellana*, ivy *Hedera helix,* cherry laurel *Prunus laurocerasus*, rose *Rosa* sp., ornamental *Hypericum*, *Cotoneaster*, as well as a variety of other ornamental shrubs. Native species included ground elder *Aegopodium podagraria* were present below the shrubs. This also formed the mixed scrub area (MS1) that formed the western border of the garden area.

Two small areas of developed land; sealed surface was present along the western boundary where the site meets the road and along the southernmost area of the site where an old, tarmacked path bordered the site.

A survey map of the site is provided at Figure 3.1.

3.3.4 *UKHabs definitions*

Habitats present on the site have been classified in accordance with UKHabs definitions, this system is used to evaluate habitats for BNG calculations using the Natural England/Defra methodology (15).

Most of the site is classified as *Vacant or derelict land* (82), with two small areas of *Developed land; sealed surface* (u1b). It also includes areas of *Modified grassland* (g4) in the eastern area of site, *Mixed scrub* (h3h) and *bramble scrub* (h3d) between the *vacant land* and the *modified grassland*, and *other woodland; broadleaved* (w1g) in the northeastern area of site.

3.4 *Protected or Notable Species*

3.4.1 *Introduction*

LRERC returned a number of records of protected species within the 1km of the site boundary. The majority of these are dependent on specific habitat types, such as those found on the designated sites within the search area, and therefore would be unlikely to occur on the habitats present on the site. Species which could occur within the habitat types found on, or adjacent to, the site, or which could be affected by the proposals in other ways, are considered in greater detail below.

3.4.2 *Bats*

LRERC returned a few records of bats within 1km of the site. Species recorded include brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctule* and common pipistrelle *Pipistrellus pipistrellus.* There are currently no buildings on the site and no potentially suitable roost features were recorded in any of the trees on the site (11). Therefore, bats are considered unlikely to be roosting on the site. Suitable foraging habitat is limited on the site, although the mature trees could provide cover for bats commuting and foraging within the urban environment.

3.4.3 *Amphibians and Reptiles*

LRERC returned records of common frog *Rana temporaria* within the search area. However, there are no suitable waterbodies on the site itself, the closest suitable waterbody is over 400m east of the site and there are busy roads between this waterbody and site. Therefore, it is considered unlikely for this species to be found onsite.

LRERC returned a single record for grass snake *Natrix helvetica*. The rank grassland at the edge of the formal garden area, and some parts of the hedge between the car park and rest of the site are suitable for reptile species. However, the extent of the habitat is too small to support a viable population and it is isolated from other areas of suitable habitat. LRERC had no records of reptiles within the search area. Consequently, it is considered unlikely that reptiles would be present on the site.

3.4.4 *Nesting birds*

Trees and shrubs on the site are suitable for a variety of common bird species to nest. LRERC returned records of bullfinch *Pyrrhula pyrrhula*, song thrush *Turdus philomelos* and starling *Sturnus vulgaris* within the search area.

3.4.6 *Terrestrial mammals*

Badgers *Meles meles* and hedgehogs *Erinaceous europaeus* have been recorded within the search area. No evidence of badgers using the site was found during the survey and it is of low suitability for the excavation of setts due to the high levels of disturbance. The vegetated habitat onsite is potentially suitable for hedgehogs.

3.5 *Ecological Valuation*

The ecological evaluation remains the same as in the former ecological appraisal (1):

"*The majority of habitats on the site are entirely artificial, with little or no vegetation, and which are likely to be commonplace within the local area. Other habitats on the site consist largely of non-native ornamental species. There are small areas of natural habitat on the site, however these are small, contain relatively common species and are likely to be common habitat types within the vicinity of the site. The site is unlikely to support protected species. Therefore, the site is not considered to be of ecological value outside of the zone of influence.***"**

Large trees were present within the formal garden area and the broadleaved woodland onsite. Trees are considered to be of local ecological value and broadleaved woodland of national importance.

Figure 3.1: *Habitats present on the site.*

Photographs

Photo 1: *Crushed aggregate with comprised the majority of the site area.*

Photo 2: *Vegetation colonising the crushed aggregate.*

Photo 3: *Aggregate bank colonised by rank grassland and scrub adjacent to public access path.*

Photo 4: *Broadleaved woodland area in northeastern area of site.*

Photo 5: *Ornamental trees within garden area in east of site.*

4.0 Assessment of Likely Impacts in Absence of Mitigation

4.1 *Introduction*

The CIEEM guidelines (12) require that the potential impacts of the proposals should be considered in absence of mitigation. In order for a significant adverse effect to occur, the feature being affected must be at least of local value. However, in some cases, features of less than local value may be protected by legislation and/or policy and these are also considered within the assessment. Although significant effects may be identified at this stage of the assessment, it is often possible to provide appropriate mitigation.

4.2 *Site Preparation and Construction Activities*

4.2.1 *Habitats*

The habitats on the site are not considered valuable outside of the zone of influence and are unlikely to support protected species. Therefore, there will be no significant ecological effects as a result of their loss. A number of trees of local ecological value and broadleaved woodland of national importance are present. These habitats will be retained as part of the development, however care must be taken to avoid damage to these habitats during construction through root compaction or crown damage.

4.2.2 *Nesting birds*

Trees and shrubs on the site are suitable for common bird species to nest. If any clearance of these occurred whilst birds were nesting, they could be disturbed, and their nests destroyed or damaged. The nests, eggs and nestlings of all wild birds are protected from disturbance, damage and destruction under the Wildlife & Countryside Act and therefore this could result in a legal offence.

4.3 *Site Operation*

The proposals will result in changes to the artificial lighting on the site. This could affect the behaviour of nocturnal wildlife, particularly bats and hedgehogs.

5.0 Mitigation, Compensation and Enhancements

5.1 *Introduction*

This chapter contains recommendations for further works needed to fully assess the ecological impacts of the proposals and to mitigate any potential adverse effects. In addition, recommendations for the enhancement of nature conservation and biodiversity on the site are included.

5.2 *Further Survey*

No further surveys are recommended in this report.

5.3 *Mitigation Measures*

5.3.1 *Protection of trees and woodland area*

Mature trees on site in the formal garden area and the woodland area should be protected during construction. This could utilise standard arboricultural tree protection measures, please refer to Appendix 8 for details on the '*Cellweb Root Protection System*'.

5.3.2 Protection of *nesting birds*

Vegetation clearance should be timed to take place outside of the nesting bird season (typically March to August inclusive). If it is necessary to undertake any vegetation clearance within this period, any vegetation to be cleared should be thoroughly checked for the presence of active nests. If any nests are found, they should be retained *in situ* with a suitable buffer of uncleared vegetation until the nestlings have fledged.

5.3.3 *Wildlife-friendly lighting*

New lighting associated with the proposals must be designed to minimse the effects on nocturnal wildlife, particularly bats, and should follow best practice guidance (16). The following principles will minimise the impact of lighting on nocturnal wildlife and should be applied to the lighting design across the site:

- Use of low-level bollard lighting to minimise light spill.
- Directing lights away from the edges of the site and the use of hoods or similar measures to direct light away from important habitats.
- Restriction of UV light frequencies through selection of suitable lighting elements or the use of filters.
- Use of warm white spectrum lighting elements.

It is noted that certain standards of lighting may be required in certain areas to allow safe working during hours of darkness. In these areas it is not necessary to comply with the best practice guidance where it would be safe to do so. However, directional lighting which will prevent throw onto the trees onsite should be used to ensure these remain at a similar level of darkness as before works began, to help retain the wildlife corridor.

5.4 *Recommendations for Ecological Enhancements*

5.4.1 *Introduction*

Planning policy requires development to provide some form of ecological enhancement. Due to the situation and existing ecological value of the site, opportunities for enhancements are limited. However, the following measures would provide some ecological enhancements within the proposed development.

5.4.2 *Woodland enhancement*

The existing area woodland in the northern area of the site should be retained and enhanced from poor to moderate condition. Enhancement measures should include fencing off the woodland area from pedestrians, planting young native trees, shrubs and ground flora. A minimum of five native tree and shrub species should be planted to increase the diversity of habitats for wildlife and reach the targeted habitat condition. Planting ground flora would also increase the condition of the woodland through providing additional habitats, pollinator opportunities, and adding an additional storey to the woodland habitat. Deadwood should be added to cover a minimum of 25% of the woodland area, trees removed from other areas of the site could be made into log piles for this purpose. This provides opportunities for a variety of invertebrates and small mammals. The woodland should also be maintained to allow between 0 and 20% of temporary open space, with an open canopy of over 80% native species in the canopy and scrub layer and ground flora.

5.4.4 *Native tree and hedgerow planting*

Landscaping proposals for the site include opportunities for planting new trees and hedgerows with trees. Species which produce fruits or berries should be preferentially selected in order to maximise the benefit for wildlife. Suitable species include (but are not limited to) hazel *Corylus avellana*, field maple *Acer campestre*, hawthorn *Crateagus monogyna,* silver birch *Betula pendula*, dogwood *Cornus europaeus*. Please see the landscaping scheme & biodiversity enhancement plan for more details (Appendix 9).

5.4.5 *Mixed scrub planting and benefiting pollinators*

Nectar-rich shrub species should be planted to provide a food source for a variety of urban/suburban pollinator species including bees. Native species are preferred as they will

benefit the widest range of species. However, due to the relatively urban location of the site, other beneficial species such as lavenders *Lavendula* spp., would also be appropriate in more formal landscaped areas. Please see the landscaping scheme & biodiversity enhancement plan for more details (Appendix 9).

The aim is to achieve moderate condition for the mixed scrub. Therefore, these parcels should be native and any invasive species in the ground or scrub layer should be removed. Shrubs in a variety of ages should be planted, seedlings, saplings, young shrubs and mature need to be present to achieve moderate condition. A single species shouldn't cover more than 75% of the habitat.

5.4.6 *Meadow Grassland Creation*

The development includes meadow grass areas on the majority of the landscaping areas on site. These will be sown with a grass mix containing wildflowers that are tolerant of mowing, and these areas will be managed with a reduced mowing frequency. Given the level of disturbance likely and the need to maintain them to a degree, it is unrealistic to create g3c *Other neutral grassland* (or similar). However, g4 *Modified grassland* in moderate condition is achievable. This would provide a resource for pollinating insects such as bees.

5.4.6 *Swift Boxes*

The height of the new care home building means that it is suitable for locating swift *Apus apus* nesting boxes. Swifts are an LRBAP priority species and many records were present in the local area and therefore, provided they are correctly installed, boxes would have a good chance of being occupied. At least four boxes could be installed on the

building, RSPB swift box or similar would be suitable. They should be located at roof level, ideally under soffits, avoiding directly south-facing aspects.

5.4.7 *Bird boxes*

A number of bird boxes should be erected on or incorporated into the new building. A variety of designs should be used so to be suitable for a number of species, including species such as house sparrow which has been recorded within the vicinity. At least four should be installed at roof level on the new building.

6.0 Biodiversity Net Gain

6.1 *Introduction*

In accordance with advice in the Biodiversity Supplementary Planning Guidance (17), a Biodiversity Net Gain (BNG) calculation has been undertaken for the site, using the Statutory Natural England/Defra Biodiversity Metric (18). The full calculation is provided on a separate spreadsheet, Appendix 9.

6.2 *Calculation*

6.2.1 *Habitat units*

The figures used in the BNG calculation for habitat units are provided in tables 6.1a, 6.1b and 6.1c. No off-site habitat creation and/or enhancement is proposed. Recommendations were made to include other neutral grassland and other medium distinctiveness habitats. Due to the prominence of the road frontage the client was concerned over the appearance of wildflower meadows and wanted the area available for residents to utilise. As neutral grassland requires reduced mowing and limited human disturbance, this was not a suitable recommendation for the site. In summary:

- The existing biodiversity value of the site is 4.04 habitat units.
- The post-development biodiversity value would be 3.09 habitat units, a decrease of -0.94 units (-23.30%).
- To achieve +10% net gain, 1.34 habitat units are required through either offsite compensation or buying habitat units.
- Due to the overall loss of medium distinctiveness scrub habitats, land and trees, along with loosing the majority of the low distinctiveness vacant or derelict land, trading rules are not satisfied.

6.2.2 *Hedgerow units*

The figures used in the BNG calculation for hedgerow units are provided in table 6.1d. There are no existing hedgerows on the site and no off-site habitat creation and/or enhancement is proposed. Native hedgerows will be created. In summary:

- The existing biodiversity value of the site is 0 hedgerow units.
- The post-development biodiversity value would be 0.61 habitat units, an increase of 0.61 units (100%).

6.3 *Conclusion*

The calculation demonstrates that proposals would result in a net loss of -0.94 habitat units (-23.30%) and a gain of 0.61 hedgerow units. Whilst the gain in hedgerow units is sufficient to achieve compliance with the 10% net gain target, off-site measures would be required to ensure no net loss of biodiversity and to meet the 10% target for habitat measures, as well as complying with trading rules. The client was looking for a site to use for offsite compensation or buy habitat units when this report was submitted.

Table 6.1a: *Habitat baseline. The* Hawthorn scrub *is within an area of strategic significance.*

Broad habitat	Habitat type	Area (ha)	Condition	Retained (ha)	Enhanced (ha)
Urban	Vacant or derelict land	0.2645	Moderate	0.2645	0
Urban	Developed land; sealed surface	0.0184	N/A - Other	0.0183	0
Grassland	Modified grassland	0.1129	Poor	0.1223	0
Heathland and shrub	Mixed scrub	0.0218	Poor	0.0217	0.0067
Heathland and shrub	Bramble scrub	0.0031	Condition Assessment N/A	0.0031	0
Woodland and forest	Other woodland; broadleaved	0.0369	Poor	0.0274	0
Individual Trees	Urban trees	0.0163	Poor	0.0163	0
Individual Trees	Urban Trees	0.2524	Moderate	0.1709	0
Individual Trees	Urban Trees	0.0366	Good	0.0366	0

Table 6.1b: *Habitat creation. The* Other woodland: broadleaved *and* Other neutral grassland *habitats are within an area of strategic significance on the M1 verge.*

Broad Habitat	Proposed habitat	Area (ha)	Condition
Urban	Developed land; sealed surface	0.2410	N/A - Other
Urban	Introduced Shrub	0.0135	Condition Assessment N/A
Grassland	Modified grassland	0.1225	Moderate
Urban	Urban tree	0.0814	Moderate
Heathland and shrub	Mixed Scrub	0.0451	Moderate
Woodland and forest	Other woodland; broadleaved	0.0012	Moderate

Table 6.1c: *Habitat Enhancement.*

Broad Habitat	Proposed habitat	Area (ha)	Condition
Woodland and Forest	Other woodland; broadleaved	0.0274	Moderate

Table 6.1d: *Hedgerow creation.*

Habitat Type	Length (km)	Condition
Native hedgerow	0.158	Poor

7.0 Summary and Conclusions

7.1 *Summary*

This ecological appraisal report provides an update on the details provided in the previous Ecological Appraisal from 2018 (1). It identifies and explains the potential ecological effects of the proposed development of the former Trinity Leisure Centre, Coventry Road, Hinckley, where the construction of a new care home with associated landscaping and access is proposed.

The majority of the site was crushed aggregate from the demolition of the leisure centre and includes a formal garden area containing a number of mature ornamental trees, which was part of the leisure centre. There was also a cluster of trees within the northern area of the site classified as broadleaved woodland. The mature trees within the garden area are considered to be of local ecological value and the woodland is considered to be of national importance. However, the habitats on the site are not considered of ecological value outside of the zone of influence. The site is likely to support common nesting birds and foraging or commuting bats, but isn't likely to support other protected species.

The proposals should not result in the loss or damage of any habitats of ecological value. However, there is potential for nesting birds to be disturbed, trees of local value and the woodland of national importance to be damaged. Consequently, measures to protect these features are recommended.

The development presents opportunities for ecological enhancements in line with local and national planning policy and biodiversity targets. This should include planting mixed scrub, meadow grassland, trees and installing swift and other bird nesting boxes.

7.2 *Biodiversity Net Gain*

Based on proposed planting measures, the BNG calculation shows a net loss in the biodiversity of the site of -23.37% (-0.94 units) in habitat units and a net gain of 100% in hedgerows units. Off-site provision of habitat units (1.34 units) will be required to achieve a 10% net gain of habitat units and to comply with trading rules. This could be done via offsite compensation or purchasing habitat units.

7.3 *Residual Impacts*

The proposals could result in impacts to nesting birds on the site and impact on the behaviour of foraging and commuting bats. However, it will be possible to mitigate these impacts through the implementation of the recommended mitigation measures. Therefore, provided these are implemented in full, there would be no residual impacts.

Provided some of the recommended ecological enhancement measures are implemented, the development would comply with all relevant nature conservation legislation and planning policy regarding ecological protection ad enhancement.

8.0 References

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Appendix 1 – Designated Sites Plan

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist) 24.02.2025

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Designated Sites Plan

Drawing Status
FOR PLANNING APPROVAL

Drawn	AW	Checked	MB
Date	24.03.25	Scale	1:45,000

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Job Number	Drawing Number	Rev
A3907/ A7099		-

Key

Red Line Boundary

1km Buffer

5km Buffer

Non-Statutory Designated Sites

Local Wildlife Site (LWS)

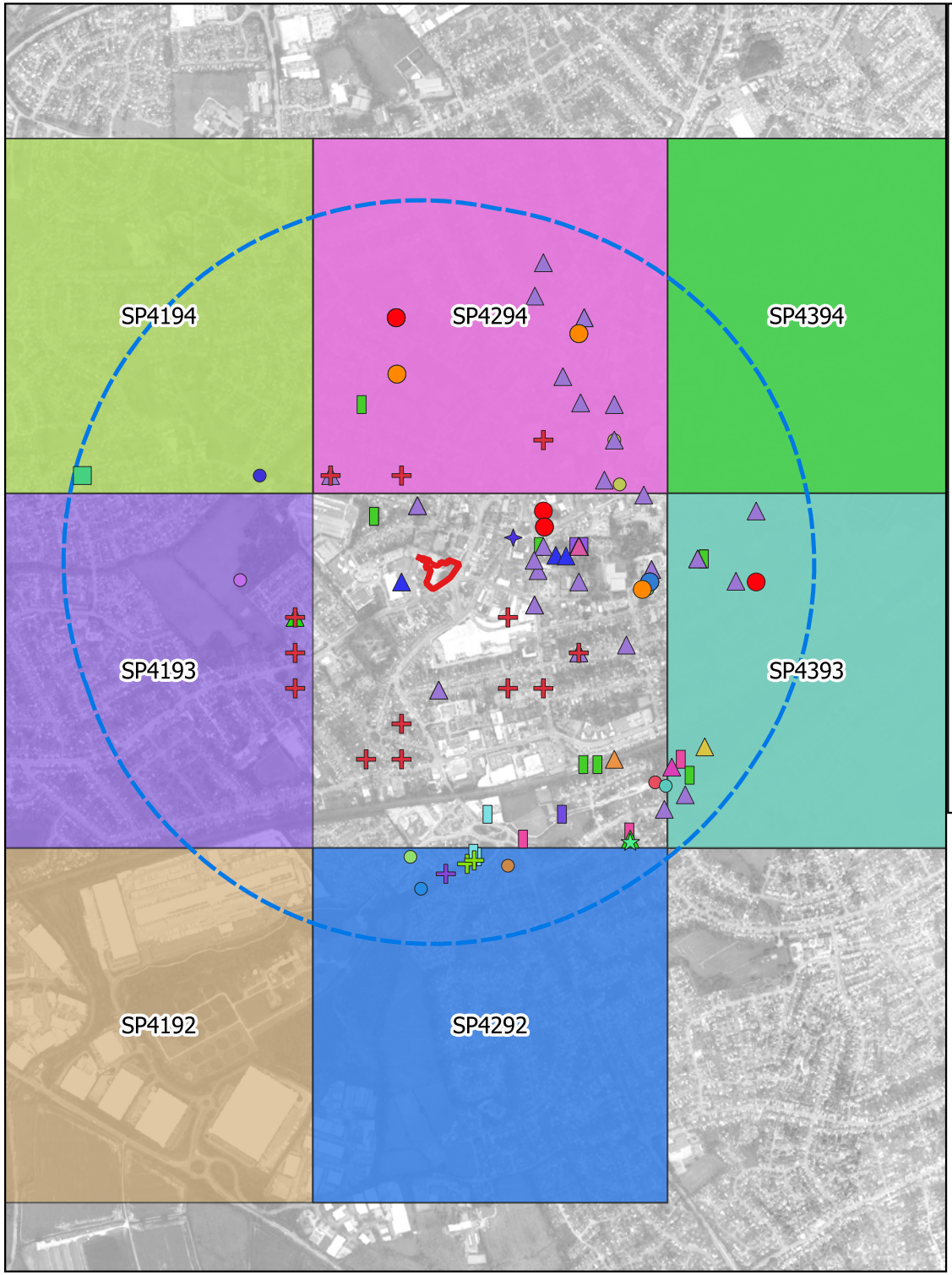
Statutory Designated Sites

Local Nature Reserve (LNR)

Site of Special Scientific Interest (SSSI)

Label	Designation	Name
1	LWS	Mature Ash in Clarendon Park
2	LWS	Mature Ash in Clarendon Park
3	LWS	Mature Ash in Clarendon Park
4	LWS	Burbage Flood Retention Area
5	LWS	Clarendon Park Arboretum
6	LWS	Courting Stiles
7	LWS	Courting Stiles Scrub Extension
8	LWS	Sketchley Lake
9	SSSI	Burbage Wood and Aston Firs
10	LNR	Burbage Common & Woods

Appendix 2 - Protected Species Plan



Grid Squares

SP4192:
- Plants - Giant Hogweed

SP4193:
- Invertebrates - Harlequin Ladybird

SP4194:
- Bat - common pipistrelle
- Bird - house sparrow
- Invasives - variegated yellow archangel

SP4292:
- Plant - bluebell, black poplar, yellow loosestrife

SP4294:
- Plants - Caper Spurge

SP4393:
- Bat - Pipistrelle sp.
- Bird - Swift
- Invertebrate - Harlequin Ladybird
- Plant - common/spanish bluebell hybrid

SP4394:
- Invertebrate - Cinnabar
- Plant - scarlet pimpernel, himalayan honeysuckle

Notes:

This drawing is based on:

- Records returned from Leicestershire & Rutland 24.03.2025

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Designated Sites Plan

Drawing Status
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Job Number	Drawing Number	Rev
A3907/ A7099		-

Key

Red Line Boundary

1km Buffer

Amphibians

- Common Frog

Bats

- Brown Long-eared Bat
- Common Pipistrelle
- Noctule

Birds

- Barn Owl
- Black Redstart
- Bullfinch
- Common Scoter
- Crossbill
- Curlew
- Fieldfare
- Hawfinch
- Herring Gull
- Hobby
- House Martin
- House Sparrow
- Lapwing
- Little Ringed Plover
- Peregrine
- Quail
- Red Kite
- Redwing
- Reed Bunting
- Skylark
- Song Thrush
- Starling
- Swift
- Tree Pipit
- Willow Tit

Invasives

- Muntjac
- Ring-necked Parakeet

Invertebrates

- Cinnabar
- Grey Dagger
- Harlequin Ladybird
- Small Heath

Plants

- Bee Orchid
- Caper Spurge
- Cherry Laurel
- Chicory
- Common Cornsalad
- Cornflower
- Grass Vetchling
- Medlar
- White Stonecrop

Reptiles

- Grass Snake

Terrestrial Mammals

- Hedgehog
- Otter
- Water Vole

Appendix 3 - Baseline Habitats Plan

Key

Red Line Boundary

Habitats Baseline

- Bramble scrub
- Developed land; sealed surface
- Mixed scrub
- Modified grassland
- Other woodland; broadleaved
- Vacant or derelict land

Individual tree Baseline

- Existing Large Urban Tree
- Existing Medium Urban Tree
- Existing Small Urban Tree

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist) 24.02.2025

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Baseline Habitats

Drawing Status
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Date	27.02.25	Scale	1:825

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Job Number	Drawing Number	Rev
A3907/ A7099	Appendix 3	-

Appendix 4 - Proposed Habitats Plan

Key

Red Line Boundary

Habitats Proposed

- Developed land; sealed surface
- Introduced shrub
- Mixed scrub
- Modified grassland
- Other woodland; broadleaved

Hedgerows Proposed

- Native hedgerow with trees

Individual tree Proposed

- Proposed Small Urban Tree
- Retained Large Urban Tree
- Retained Medium Urban Tree
- Retained Small Urban Tree

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist) 24.02.2025

- Proposed Site Ground Floor Plan. Green 4 Architects. Recieved 25.02.25.

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Proposed Habitats

Drawing Status
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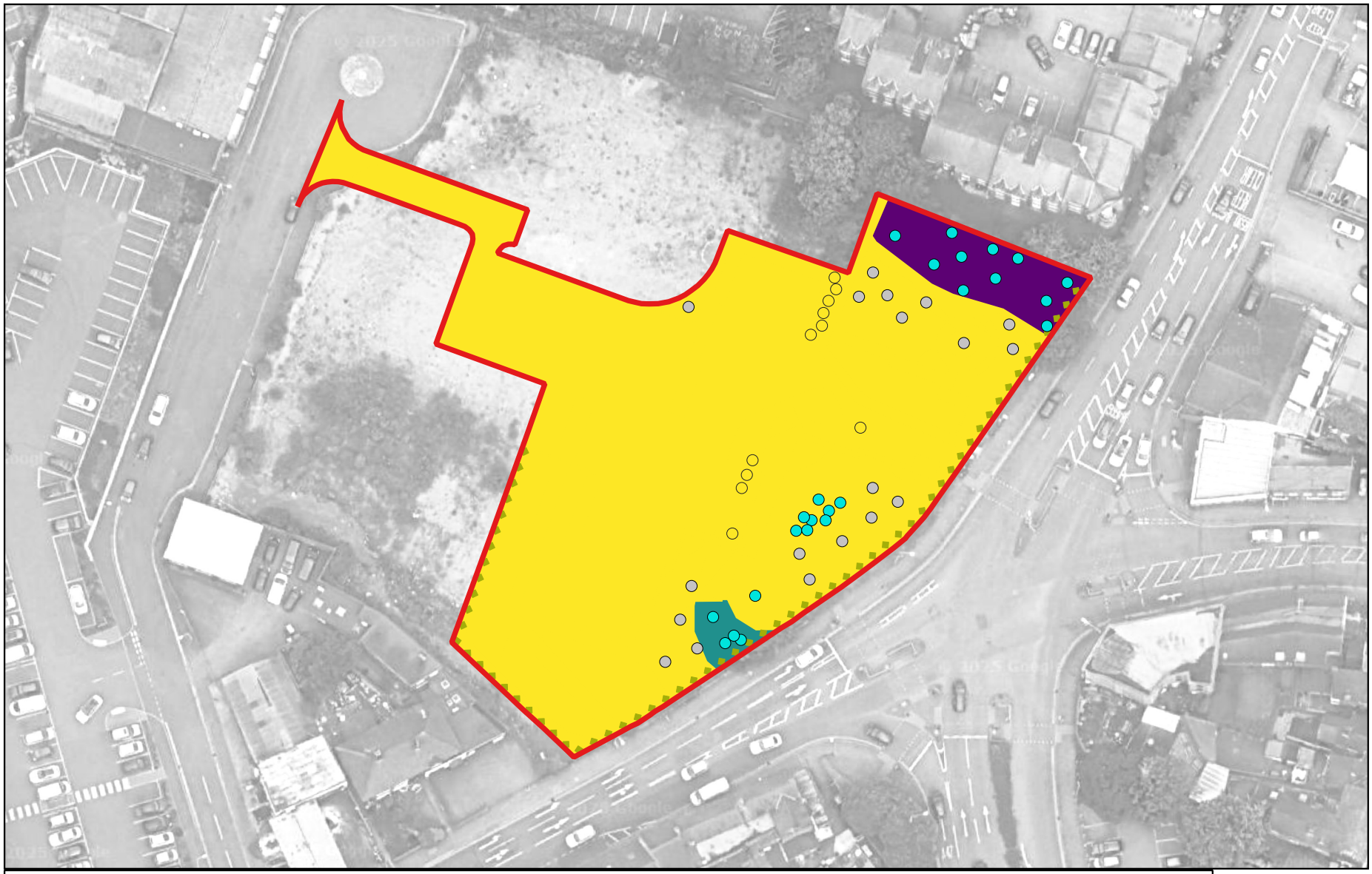
Job Number	Drawing Number	Rev
A3907/ A7099	Appendix 4	-

Appendix 5 - Habitats Retention Plan



Key

Red Line Boundary

Habitats Retention

- Enhanced
- Retained
- Lost

Hedgerow Retention

- Created

Individual tree Retention

- Created
- Retained
- Proposed Lost

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist). 24.02.2025

- Proposed Site Ground Floor Plan. Green 4 Architects. Recieved 25.02.25.

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
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Title
Retained Habitats

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Job Number	Drawing Number	Rev
A3907/ A7099	Appendix 5	-

Appendix 6 - Baseline Habitats Condition and Distinctiveness Plan

Key

Red Line Boundary

Habitat Condition	Habitat Distinctiveness	Individual tree Condition
Moderate	Medium	Poor
Poor	Low	Moderate
N/A - Other	V.Low	Good

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist) 24.02.2025

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Baseline Habitats Condition and Distinctiveness

Drawing Status
FOR PLANNING APPROVAL

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Job Number	Drawing Number	Rev
A3907/ A7099	Appendix 6	-

Appendix 7 - Proposed Habitats Condition and Distinctiveness Plan

Key

Red Line Boundary

Habitats Condition

- Moderate
- Poor
- N/A - Other

Habitats Distinctiveness

- Medium
- Low
- V.Low

Hedgerow Condition

- Poor

Hedgerow Distinctiveness

- Medium

Individual tree Condition

- Good
- Moderate
- Poor

Notes:

This drawing is based on:

- Site Visit by Alana Woolley (Ecologist) 24.02.2025
- Proposed Site Ground Floor Plan. Green 4 Architects. Recieved 25.02.25.

Rev	Date	Description	Drawn	Checked

Client
Tanglewood Carehomes

Project
Tanglewood Carehome
Hinckley

Title
Proposed Habitats Condition and Distinctiveness

Drawing Status
FOR PLANNING APPROVAL

Drawn	AW	Checked	MB
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Job Number	Drawing Number	Rev
A3907/ A7099	Appendix 7	-

Appendix 8 - Cellweb Root Protection System

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.

Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

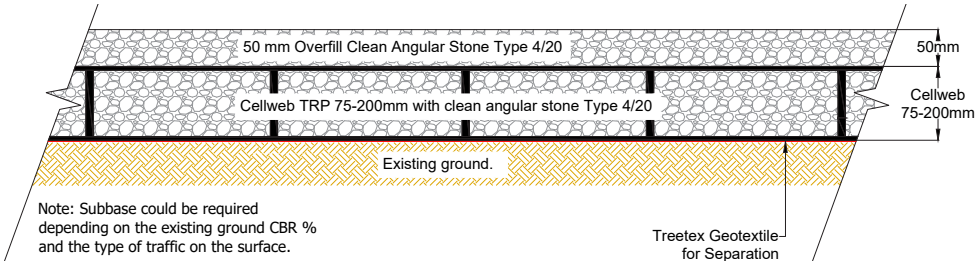
Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill



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Tree Root Protection Using Cellweb TRP®

Fact Sheet 1: Use of Cellweb TRP® in Root Protection Areas (RPA's)

Introduction

Cellweb TRP® is a cellular confinement system that confines aggregate materials and makes them stronger. This behaviour allows the depth of pavement construction to be reduced. It also minimises compaction of soils below road pavements constructed using the Cellweb TRP® tree root protection system. Cellweb TRP® is used around the world to provide cost effective road and railway construction, as well as Tree Root Protection.

Cellular confinement was developed by the US Army Corps of Engineers during the 1970s to allow construction of roads for military equipment quickly and easily using whatever local soil material was available (especially across beaches). Since then the method has been developed and it is now routinely used in road and rail construction as well as in tree root protection. There is an extensive research base that demonstrates the performance of cellular confinement and it is a method of pavement construction that is recognised by the US Federal Highways Administration.

Characteristics of Cellweb TRP®

Pokharel et al (2009) stated that about one fifth of pavement failures in the US occur due to either weak subgrades or inefficient load transfer from the sub-base. Cellweb TRP® can improve the strength of road pavement construction to deal with these problems. It is a three dimensional interconnected honeycomb of cells made from HDPE. The cells are filled with aggregate sub-base and laterally confine the material when it is loaded, thus increasing the bearing capacity of the layer. This results in a thinner layer of aggregate being required to achieve the same performance.

It also allows uncompacted open graded aggregate to be used in the sub-base construction which is a vital part of any tree root protection system.

Cellweb TRP® is available in a range of height and aspect ratios to suit different load applications.

Use of Cellweb TRP® in RPAs

The use of Cellweb TRP® tree root protection system for building roads, car parks and other vehicular pathways includes a sub-base infill material of clean angular stone which does not need to be compacted. This immediately provides a layer of material that will absorb compaction energy applied to the top of materials placed over it. Compaction of soils by construction machinery does not extend to a great depth. This is the reason why earthworks materials are normally placed in thin layers because compaction only occurs in the top few hundred mm at most. With the lightweight compaction plant used on most development sites the maximum depth that compaction will extend to is between 150mm and 200mm. Thus, if an 80mm layer of asphalt is placed over a 150mm deep Cellweb TRP® system the compaction reaching the base of the construction and the natural soil will be minimal. This effect was demonstrated by Lichter and Lindsey (1994) where a trial area was trafficked by a front-end loader and only suffered significant compaction of the soil to a depth of 100mm.

The use of Cellweb TRP® also spreads the wheel loads from traffic. There has been extensive research published on the performance of these systems from the original work by the US Army Corps of Engineers (Webster 1981) to more recent studies such as that by Emersleben and Meyer (2008).

Figure 1 - In situ density test prior to construction of pavement

The research shows that Cellweb TRP® acts as a stiff raft to distribute wheel loads and reduce their magnitude at the base of the construction by 30% to 36% (without any asphalt or other surfacing). Once the surface is taken into account, the pressure applied by traffic to soil below roads or pavements constructed using no-dig methods will be significantly reduced and thus compaction will also be reduced. Note, compaction is not prevented but it is reduced, thus maintaining the soil bulk density at levels that are suitable for tree root growth.

The effectiveness of the Cellweb TRP® no-dig construction in reducing soil compaction has been demonstrated in trials carried out by the Environmental Protection Group Limited. Two parking bays were constructed over a fine sand soil, one with a Cellweb TRP® cellular confinement sub-base. The parking bays were surfaced with asphalt and then used by cars for four weeks on a daily basis. It is well known that compaction of soils occurs in the first few passes of a vehicle, so the maximum adverse effects on compaction of soil below the pavement should have been achieved. In situ density tests were carried out on the sand below the pavement before and after construction (Figure 1).

Tree Root Protection Using Cellweb TRP®

Fact Sheet 1: Use of Cellweb TRP® in Root Protection Areas (RPA's)

Figure 2 - Cellweb TRP® in construction.

Figure 3 - In situ density tests post-trafficking.

The results in Figure 4 show that compaction of the soil below the Cellweb TRP® pavement was noticeably lower than that below the normal pavement. The increase in compaction below the normal pavement is similar to the increase found on a number of construction sites by Alberty et al (1984).

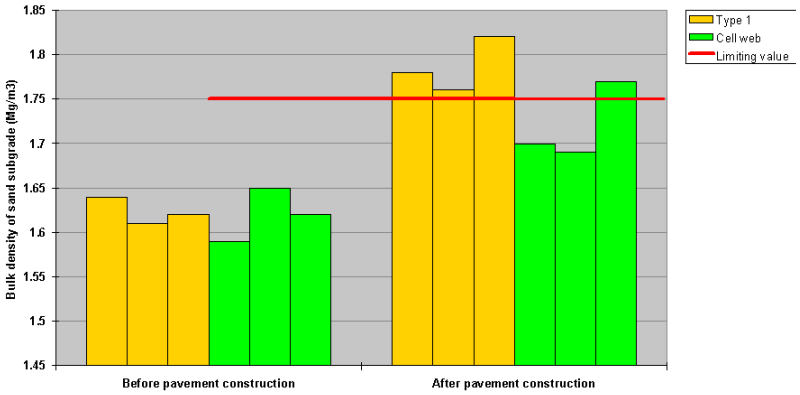

Figure 4 Comparison of soil compaction below pavements

The use of layers of uncompacted material has also been shown by others to reduce compaction of natural soil by construction plant (Lichter and Lindsay 2004). However, these were temporary layers intended to be removed after construction was finished and they are not suitable for incorporation into a permanent car park surface. Nonetheless, it does demonstrate the effectiveness of no-dig techniques using Cellweb TRP®. It is important to note that the specific properties of cellular confinement systems (eg material type, strength, welding at joints, perforations, etc) will affect how each one behaves in trials such as this. Therefore the results are only applicable to the Cellweb TRP® system.

Note

So called tree root protection systems that use Type 1 sub-base or any similar material that requires compaction will not prevent compaction of soils around the tree roots. Type 1 is also not very permeable to air and water and will limit the availability to roots. Therefore geogrid reinforced Type 1 is not suitable for tree root protection.

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Tree Root Protection Using Cellweb TRP®

Fact Sheet 2: Water and Oxygen Transfer Through the Cellweb TRP® System

Water and Oxygen Transfer Through the System

Water and oxygen are the lifeblood of trees without which they will wither and die. It is important to design developments in and around the root protection area (RPA) of existing trees to maximise the availability of water and oxygen to the roots. This can be achieved in a number of ways using the Cellweb TRP® tree root protection system.

The main causes of reduced water and oxygen availability for tree roots are:

- Compaction of the soil around the roots
- Covering the ground surface with impermeable cover which prevents water infiltration.

Both of these effects can be reduced or prevented by using Cellweb TRP® tree root protection within an appropriately designed road or car park surface.

Compaction of Soil

The use of Cellweb TRP® tree root protection system for building roads, car parks and other vehicular pathways includes a sub-base infill material of 20mm to 40mm or 4mm to 20mm clean angular stone which does not need to be compacted. This immediately provides a layer of material that will absorb compaction energy applied to the top of materials placed over it. Cellweb TRP® also spreads the wheel loads from traffic which reduces compaction, thus maintaining the soil bulk density at levels that are suitable for tree root growth.

The effectiveness of the Cellweb TRP® no-dig construction in reducing soil compaction has been demonstrated in trials carried out by the Environmental Protection Group Limited (See Fact Sheet 1).

Water and Oxygen Availability

The Cellweb TRP® tree root protection system is constructed using 20mm to 40mm or 4mm to 20mm gravel infill and has perforated cell walls. The pore spaces between the aggregate particles are greater than 0.1mm in diameter and are therefore defined as macropores (Roberts 2006). This open structure is far more permeable than typical soils and allows the free movement of water and oxygen within it so that supplies to trees are maintained as shown in Figure 1. The use of continuous permeable surfacing and intermittent gaps in impermeable surfacing are recognised ways of providing water and air infiltration pathways through a pavement surface into the tree root zone (Ferguson 2005).

The Cellweb TRP® system incorporates the Treetex® geotextile at the base. This is a very robust geotextile that is resistant to puncturing. Crucially for tree root protection it does not have a water breakthrough head that other geotextiles may have. Therefore it will always be free draining and will not limit oxygen availability to the roots.

Breakthrough Head

All geotextiles are by their nature permeable, however in order to develop optimum water-flow performance, some types of geotextiles (eg, thermally bonded types) require a minimum depth of water to develop over them.

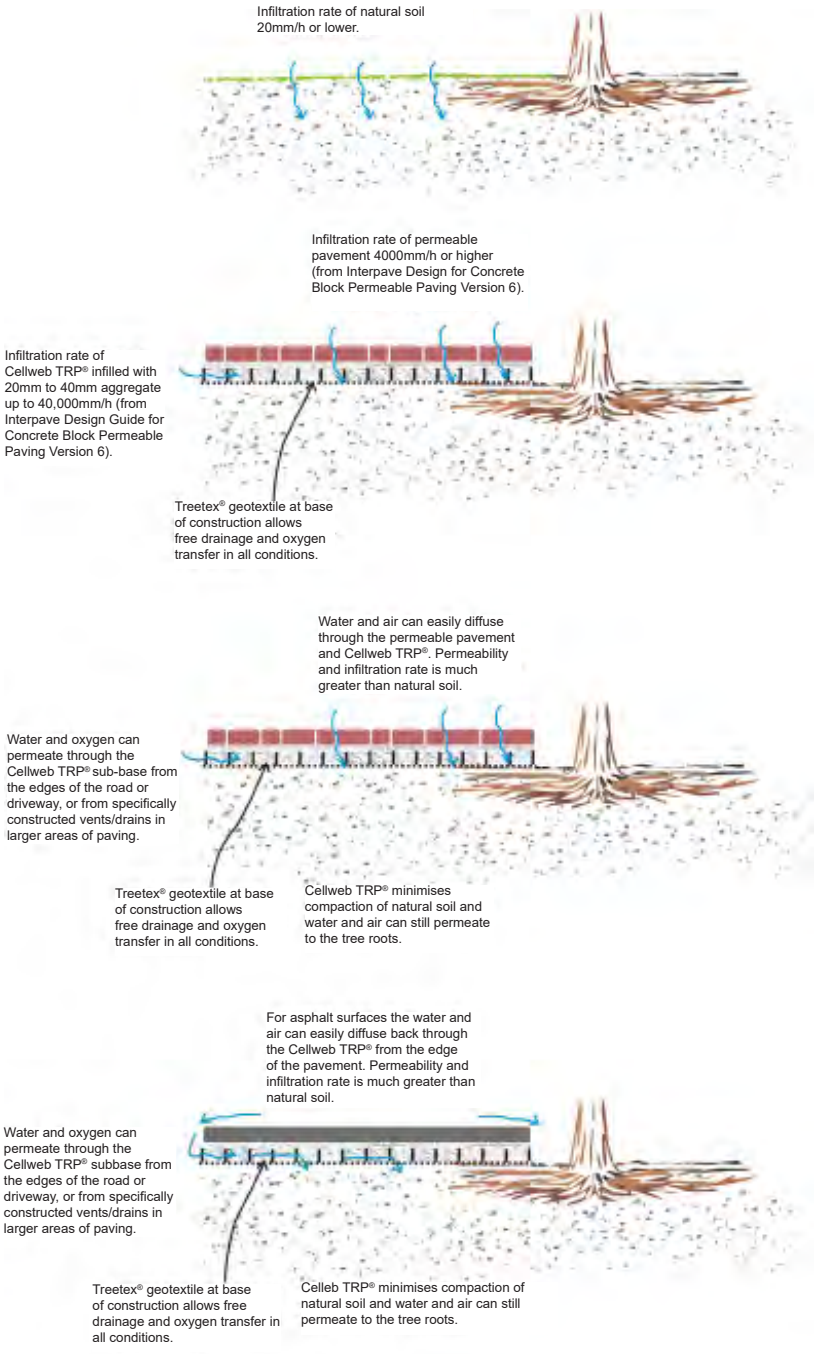
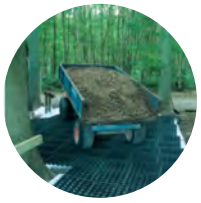


Figure 1 Water and oxygen availability in Cellweb TRP® tree root protection pavements

Therefore a layer of up to 50mm of water can build-up over some geotextiles after rainfall. Treetex® needle punched geotextiles however remains free draining at all times as it has "zero breakthrough head" which means it does not require a build up of water to permeate.

Tree Root Protection Using Cellweb TRP®

Fact Sheet 2: Water and Oxygen Transfer Through the Cellweb TRP® System



If the Cellweb TRP® sub-base layer is covered by a layer of permeable block paving the rate of oxygen transfer through the system is estimated to be around 1 x 10-4 g/s/m² using simple diffusion theory. For a natural sandy soil the rate of transfer to the same depth is around 7 x 10-5 g/s/m². Therefore even on the most aerated of natural soils the Cellweb TRP® tree root protection system does not restrict oxygen supply to tree roots.

Water ingress will also be maintained at the levels similar to a natural sites as water simply passes through the pavement. Permeable block paving and porous asphalt have infiltration rates that are very large (typically > 2500mm/h) in comparison with most rainfall events. The infiltration rate is also far higher than natural soils (infiltration rate for sand is quoted as >20mm/h by Hillel 1998). Thus the pavement allows rainfall to soak into the soil as it would naturally (there will be some reduction as some water soaks into the blocks and gravel as the rainfall passes through).

TABLE 1 - CHARACTERISTICS OF ROOT SYSTEMS OF MATURE EUROPEAN BROADLEAVED AND CONIFEROUS TREE SPECIES GROWING ON WELL AERATED, SANDY SOILS

Species	Tolerance to Oxygen Deficiency	Species	Tolerance to Oxygen Deficiency
Ash	Medium-high	Japanese Larch	Medium
Aspen	High	Lime	Low
Birch	Low	Norway Maple	Medium
Beech	Low	Norway Spruce	Very low
Common Alder	High	Red Oak	Medium-high
Corsican Pine	--	Scots Pine	Medium
Douglas Fir	Medium-low	Sessile Oak	High
English Oak	High	Silver Fir	High
European Larch	Medium	Sycamore	Low
Hornbeam	Medium	White pine	Very low

From Roberts et al (2006)

If the Cellweb TRP® is covered by impermeable asphalt or similar materials the aeration of the sub-base can be promoted from the side of a paved area. This is achieved using gravel filled conduits to connect the sub-base to the surface, allowing oxygen into the layer from where it can freely travel to the root area. Open areas that are normally provided immediately around the tree will also be beneficial in allowing oxygen into the Cellweb TRP® layer. Oxygen can flow horizontally through the Cellweb TRP® because of the perforated walls.

Notwithstanding the above, some trees are more tolerant than others to a deficit of oxygen (Table 1). The use of permeable surfaces over the Cellweb TRP® is advisable where pavements are to be constructed over trees with a low tolerance to oxygen deficit.

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Tree Root Protection Using Cellweb TRP®

Fact Sheet 3: How the Cellweb TRP® System Deals With Oil and Other Pollution

Pollution in Urban Runoff

It has been suggested that pollution from run-off could damage tree health in certain concentrations. Pollution is present in runoff from car parks, roads and even roofs. There are a wide variety of pollutants including heavy metals, oil, fertilisers, pesticides, salts, pathogens and sediment that can cause environmental damage if discharged into rivers or groundwater (CIRIA 2007).

Where permeable pavements are constructed over the Cellweb TRP® the pavement construction will filter out and retain most pollutants. This fact sheet will discuss the extensive evidence base that demonstrates how effective permeable surfaces are at removing pollution. It will explain how they remove pollution from runoff before it reaches the soil below and how robust trees are to the levels of pollution found in runoff.

The effects of de-icing salt on trees are discussed in a separate Fact Sheet No 5.

There is research available which reveals that the pollutant loads from small areas of car park or small roads, where the majority of no-dig installations are used, are much less than for main roads or larger car parks (CIRIA 2003). Such low levels are unlikely to damage tree health. Sustainable drainage systems positively encourage the use of trees and other plants to treat the pollution that is present in run-off from hard surfaces.

Pollution Removal in Permeable Pavements

The effective removal of pollution from runoff by permeable surfaces has been well known since the late 1990s. This early work is summarised in CIRIA Report C582 (CIRIA 2002) and it showed that permeable pavements filter out sediment and act as bio reactors to degrade oil based pollutants. The sediment is filtered as it passes through the fine pores in the surface (either in porous asphalt or in the grit jointing material between blocks) which is where the majority of pollution is trapped (Legret and Colandini 1999, Shackel and Pearson 2005). If it passes this surface filtration layer it will be trapped on geotextiles either within or at the base of the construction. The Cellweb TRP® system will always have a Treetex™ geotextile at the base over the subgrade. This has properties that make it robust enough to survive in contact with the clean angular aggregate.

Worldwide research has generally shown that runoff that has passed through permeable pavements has low concentrations of pollutants, especially metals, oils and bacteria (Wilson 2007). This includes research in countries where the geotextile is generally only provided at the base of the construction. The percentage removal of various contaminants from a permeable pavement is shown in Figure 1. In this case the pavement was sealed and the water collected from a manhole at the outfall. It did not have an upper geotextile in the pavement. Similar findings have been reported by Mullaney and Jefferies (2011).

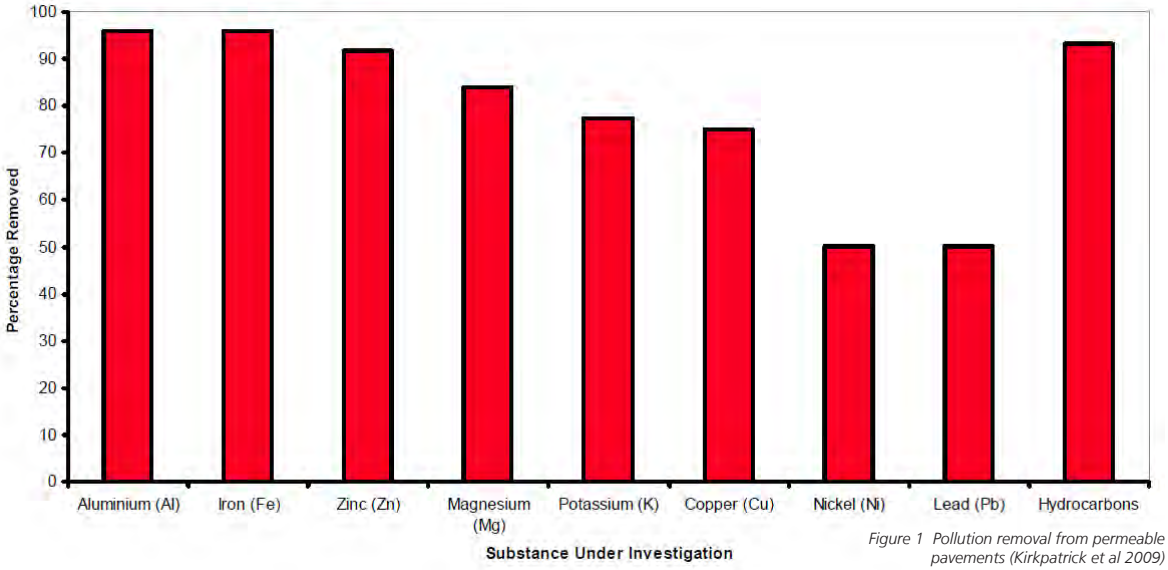

Figure 1 Pollution removal from permeable pavements (Kirkpatrick et al 2009)

All permeable pavements tend to use an open graded sub-base that is similar to the clean angular aggregate used in the Cellweb TRP®and therefore this material will help remove pollution in a similar manner. More recent research has confirmed that day to day pollution removal does not depend on a geotextile at high level in the pavement (Mullaney and Jefferies 2011) but that geotextiles in the construction can be beneficial if there are larger spills of oil (Puehmeier and Newman 2008). The Treetex™ geotextile provided at the base of Cellweb TRP® pavements will reduce the risk of any excessive pollution passing through the system into the soil below. Because of the pollution load and treatment that clearly occurs within the pavement there will not be a significant build up of pollutants within the soil below it.

Tree Root Protection Using Cellweb TRP®

Fact Sheet 3: How the Cellweb TRP® System Deals With Oil and Other Pollution

Ability of Trees to Deal with Pollution

Many trees are able to remove a wide variety of pollutants from soil. One of the more recent developments is stormwater forestry (United States Department of Agriculture (USDA) 2006). The USDA states that 'Trees also show enormous potential to remove other pollutants, such as metals, pesticides, and organic compounds.' The report does go on to suggest that some tree species may be damaged by pollutants in stormwater and this will require consideration on a site-by-site basis. However, these adverse effects can be minimised by careful design of the pavement drainage; for example, by using no-dig permeable pavements that filter out most pollutants before they reach natural soils.

Contaminates in runoff are typically not at concentrations that can adversely affect most riparian tree species. Excess nitrogen and phosphorus in soils are quickly taken up by trees with oxygen rich rhizospheres, because osmosis can happen freely. When nutrients are available trees take advantage of the windfall. Additionally, robust resilient trees are able to metabolize contaminates (heavy metals, inorganic and organic compounds) into their carbon rich heartwoods.

Bioretention areas are widely used in North America to collect and treat runoff in landscaped areas. A study by Toronto and Region Conservation (2009) involved extracting and testing soil cores extracted from three bioretention facilities in the Greater Toronto Area. These varied in age from 2 to 5 years and showed metal and PAH levels comparable to nearby reference sites that were not affected by runoff. The pollution concentrations were below Ontario background concentrations. The testing was repeated at one facility after two years which showed no change in contamination levels. This tends to suggest that pollutant loads from small paved areas will not significantly affect trees.

Benefits of Permeable Paving with Cellweb TRP® Tree Root Protection

Research has clearly shown that the majority of pollution is removed from runoff within the permeable pavement structure (which will include the Cellweb TRP® tree root protection system). Thus the low levels of pollution that are realised from the base of a Cellweb TRP® tree root protection system are unlikely to damage tree health.

The reduced compaction and highly permeable nature of the Cellweb TRP® tree root protection system (see Fact Sheet 1) will help to preserve the health of trees within developments. In addition there are clear benefits in attenuating and treating rainfall runoff using permeable pavements combined with the Cellweb TRP®.

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Tree Root Protection Using Cellweb TRP®

Fact Sheet 4: Treetex™ Geotextile and Oil Pollution

Introduction

The Cellweb TRP® tree root protection system traps pollution in a number of different locations. This makes it robust and minimises the risk of pollution passing into the ground below when it is used as part of a permeable pavement. The Treetex™ geotextile is one part of this system that helps trap and treat oil pollution, especially when an unexpected larger oil spill occurs.

Treetex™

Treetex™ is a heavy duty needle punched non-woven geotextile fleece manufactured from polypropylene. Treetex™ is ideal for use in the tree root protection system as it is easily moulded to the shape of the aggregates used in the pavement and does not form a plane of weakness in the pavement construction. Elvidege and Raymond (1999) found that the greater the mass per unit area of a geotextile the less it is likely to be damaged. The Treetex™ is unlikely to be damaged by the traffic loads it will be subjected to.

Oil Pollution

Day to day small drips of oil pollution in permeable pavements generally trapped and treated in the joints and in the aggregate. However larger spills of oil can overcome this element of the system and the oil retaining capability of these systems has been shown to fail under certain circumstances (e.g. Puehmeier et al. 2004). This is where the Treetex™ geotextile can help trap the excess oil and allow it to degrade aerobically within the pavement construction. Tests have shown that Treetex™ will absorb 1.7 litres of oil per m^2. It provides a substrate on which bacteria necessary for oil degradation can survive.

Product Testing

Tests undertaken at Coventry University have concluded that the Treetex™ will absorb 1.7 litres of oil per m^2, which is four times more effective than standard geotextiles.

References

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Tree Root Protection Using Cellweb TRP®

Fact Sheet 5: Cellweb TRP® and Road Salt Pollution

Introduction

Road salt is applied to roads and pavements to help manage ice and snow and maintain safe access. It is commonly referred to as "gritting" and has been used in increasing quantities since the late 1940's. Although it provides safety benefits and minimises disruption to travel, the adverse impact that road salt can have on trees in some situations is well known (Transportation Research Board 1991 and Forest Research 2011). Road salt is the most commonly used de-icing chemical in the UK. It is crushed rock salt and the main component is sodium chloride. Both sodium and chloride ions can be harmful to some trees if there are excessive quantities in the soil.

The amount of salt applied to roads has reduced over recent years. This is due to generally milder winters (although severe winters can still occur as in 2010/2011) and better management of where and when gritting is carried out.

Salt damage occurs to trees through contamination of the soil around roots or by salt spray. Salt spray is much more likely on roads with fast moving traffic such as motorways and trunk roads. It is likely to be less of a problem where vehicles are moving at low speeds. These low speed areas are where the majority of Cellweb TRP® is installed. Damage to trees occurs most frequently where large volumes of salt are used to de-ice the roads and pavements (Forest Research 2011).

Where the Cellweb TRP® system is used below a permeable surface rainfall will carry the sodium chloride into soil around the roots. The same will happen on traditional impermeable surfaces if the water is allowed to flow off the edge of pavement, for example into a swale. Permeable surfaces (and swales) will not remove sodium or chloride ions from surface water runoff (SPU, 2009). Neither will any other form of sustainable drainage system (swales, etc). However, the difference is that permeable surfaces and the Cellweb TRP® system do not concentrate the polluted water around tree roots. This dissolved pollution is therefore spread out over a wider surface so the load of sodium and chloride ions per m² of soil is reduced. This effect reduces the risk of salt damaging trees.

For example assume that salt is applied to a 10m by 10m area (100m²) at the rate of 20/gm² and this is washed off an impermeable area towards a tree root zone that has 1m² of exposed soil (1m by 1m). The load of salt being washed into the tree root zone will be 2000g/m². If th same area is constructed using permeable pavement the salt load into the soil below the pavement is only 20g/m² (Figure 1).

There is also evidence that permeable paving systems have the capacity to store and then distribute the chloride load over a longer time period than would be observed on a standard, impermeable asphalt pavement, therefore reducing acute levels at trees (Houle 2006).

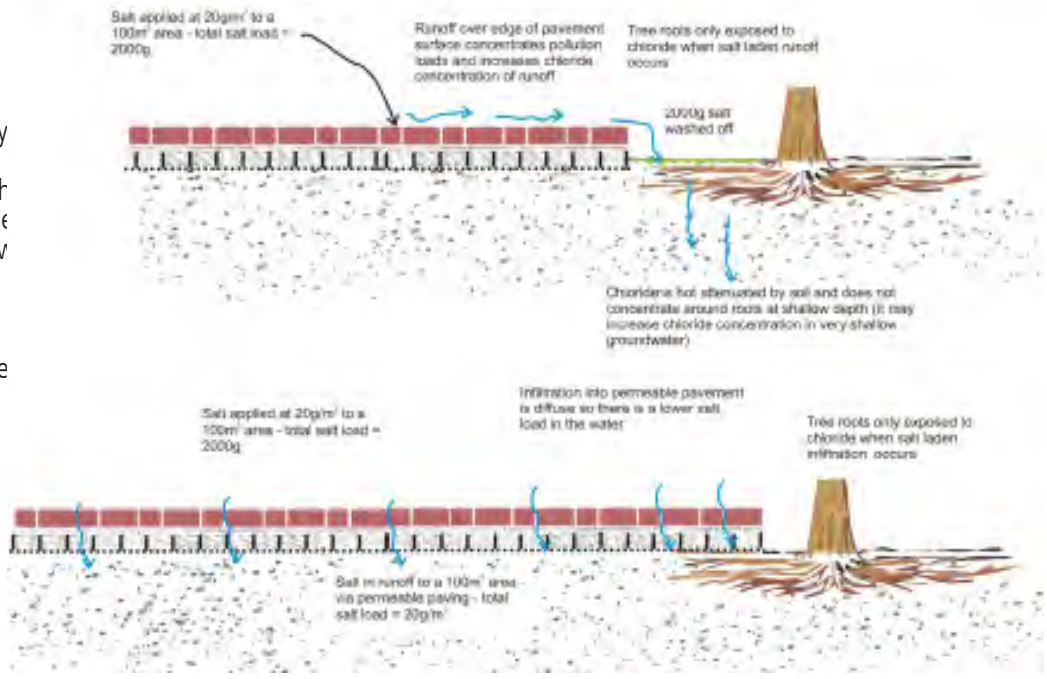

Figure 1: Use of permeable paving over Cellweb TRP® to reduce salt load to trees

Behaviour of Chloride in the Ground

Sodium chloride in runoff is a dissolved contaminant and is not removed by filtration or absorption in the pavement or soil. It does not accumulate in sediments or soils around infiltration systems (Datry 2003) and will pass straight through the vadose zone to the groundwater table (Pitt 1994). Having said that a study in Pennsylvania, USA (where there is frequent salting of pavements in winter) found that the level of chloride in infiltrating groundwater reduces rapidly when salt is not applied. The study concluded that it should not pose a risk to groundwater because of dilution.

Therefore chloride will not accumulate in soil around trees and shallow roots will only be exposed to chlorides during runoff events. The less frequently salt is applied the lower the exposure of trees to chloride.

Trees generally take up less water in winter and therefore if exposed to only a few instances of chloride contaminated water the effects may be minimal, for example in a small car park in the south of the UK. Greater exposure may be expected in a large supermarket car park in a more northerly location such as Scotland where salt treatment may be more frequent. In such instances the salt tolerance of the trees being protected should be considered (Table 1).

Tree Root Protection Using Cellweb TRP®

Fact Sheet 5: Cellweb TRP® and Road Salt Pollution

Icing on Permeable Surfaces

The nature of permeable surfaces means that hoar frosts occur more frequently on permeable surfaces but ice layers are thinner (CIRIA 2002). Snow also settles earlier and stays longer. More frequent hoar frost has also been observed in trial areas of various types of surface constructed as part of a Highways Agency research project. However because surfaces are well drained and generally do not have standing water more recent experience indicates that ice forms less frequently on the surface (Houle 2006).

Pervious concrete has been found to reduce the occurrence of freezing puddles and black ice. Melting snow and ice infiltrates straight down into the pavement facilitating faster melting which will reduce the number of salt applications required (Gunderson, 2008).

De-icing on Permeable Surfaces

Permeable surfacing and tree root protection is used in many cases where surfaces will have much lower levels of salt application than the main road network (e.g. car parks, courtyards, tertiary roads). A study in New Hampshire, USA, found that overall less salt was used on permeable surfaces. When compared to salt application on traditional pavements there was a 75% reduction in annual use on a porous asphalt car park (Houle 2006).

TABLE 1 - TOLERANCE OF COMMON TREE SPECIES TO SALT (FOREST RESEARCH 2011)

Tolerance	Species	Tolerance	Species	Tolerance	Species
Tolerant	Alnus Glutinosa	Intermediate	Acer Campestris	Sensitive	Acer Pseudoplatanus
Tolerant	Elaeagnus Angustifolia	Intermediate	Alnus Incana	Sensitive	Aesculus Species
Tolerant	Gleditsia Triacanthos	Intermediate	Crataegus Monogyna	Sensitive	Betula Pubescens
Tolerant	Pinus Nigra (all varieties/subspecies)	Intermediate	Carpinus Betulus	Sensitive	Cornus Species
		Intermediate	Fagus Sylvatica	Sensitive	Corylus Species
Tolerant	Picea Pungens	Intermediate	Fraxinus Excelsior	Sensitive	Larix Decidua
Tolerant	Quercus Robur	Intermediate	Picea Abies	Sensitive	Platanus X Hispanica
Tolerant	Robinia Pseudoacacia	Intermediate	Pinus Contorta	Sensitive	Prunus Avium
Tolerant	Salix Alba	Intermediate	Pseudotsuga Menziesii	Sensitive	Tilia Cordata
Tolerant	Ulmus Glabra	Intermediate	Sorbus Aucuparia	Sensitive	Tilia Platyphyllos
		Intermediate	Thuja Occidentalis		

Conclusion

Although permeable surfaces and the Cellweb TRP® tree root protection system do not prevent chloride and sodium ions reaching the soil around trees the evidence indicates that they will reduce the load of chloride that tree roots are exposed to. This is due to less frequent applications of salt and the fact that water infiltration from the pavement is diffuse and does not concentrate the chloride load.

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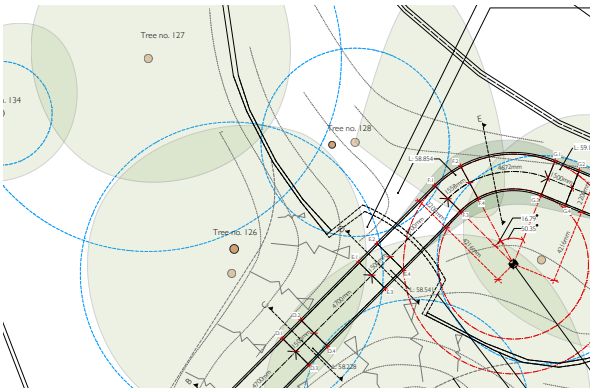
Cellweb® TRP

The Contractors Guide

Complies with BS:5837 | No Dig Solution | Adopted by Councils | 100% Success Rate | Cellweb®TRP Guaranteed | Independently Tested

What is Cellweb®TRP?

Cellweb®TRP is a cellular confinement system specifically designed for tree root protection. The system creates a stable load bearing surface for traffic or footfall whilst eliminating damage to roots through compaction and desiccation. The Cellweb®TRP system comprises of three specific elements; Cellweb® TRP, Treetex pollution control geotextile and an infill of clean angular stone. The system has been designed to combine the best possible products to create an unparalleled solution for tree root protection applications.



What is a Root Protection Area (RPA)?

The Root Protection Area is the minimum area around a tree which is deemed to contain sufficient roots and soil to maintain the trees viability. The RPA is calculated as 12 times the diameter of the tree trunk and 1.5m off the ground; for example a tree has a trunk that is 500mm in diameter and is measured 1.5m above the ground. This calculates that the RPA will have a radius of 6m (500mm x 12 = 6,000mm). The RPA is a radius relative to the tree trunk, but the calculation is based on the trunk diameter. This is used to protect all of the retained trees within and around the development.

What is a Tree Preservation Order (TPO)?

Tree Preservation Orders are put in place by local planing authorities in England to protect specific trees and woodlands in the interest of amenity. Preservation orders prohibit; cutting down, topping, lopping, uprooting, wilful damage and wilful destruction of trees as per The Town And Country Planning (Tree Preservation, England) regulations 1990 and 2012. If found guilty of tree cutting offences in the UK, the court can fine up to £20,000. In serious circumstances, a person can face unlimited fines if found guilty by the Crown Court.

How Cellular Confinement Works?

By confining the infill material, 3D Cellular Confinement Systems work by altering the angle of load distribution, reducing the load on the soil and increasing its bearing capacity. This ultimately minimises soil compaction and maintains an open soil structure. This is crucial for continued water permeation and gas exchange in the rooting environment.

What makes Cellweb®TRP the best solution?

- Cellweb®TRP is the only established guaranteed tree root protection system on the market in the UK.
- It Complies with BS 5837: 2012, Trees in relation to design and demolition/construction recommendations.
- It is the only independently tested system, ensuring compliance with recommendations made in BS 5837: 2012.
- Cellweb®TRP has had a 100% success rate on thousands of projects.
- Our in house tree root protection team will provide technical support both over the phone and on site.
- Our in house qualified civil engineers will provide site specific technical recommendations.
- An extensive bank of case studies is available to download for free.
- We offer free educational tree root protection seminars across the UK.
- Cellweb®TRP has been adopted by a number of local authorities throughout the United Kingdom.

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Fax: 01455 617140 | Email: Sales@geosyn.co.uk

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What the Guarantee covers and how to get your project guaranteed?
The guarantee covers the replacement of the dead tree(s) up to the value of £10,000 per tree. In the unlikely event the Cellweb®TRP System fails, the guarantee will also cover the replacement of the system up to £50,000.

To obtain the guarantee you will need to provide a copy of the arb report. Geosynthetics Ltd will then send a complementary technical recommendation. A scoping agreement will then be signed to clarify what tree(s) are guaranteed.

For more information please contact the team on 01455 617 139.

Why is stone so important, how can I source it and how much will I need?
In conjunction with Cellweb®TRP we recommend using 4-20mm of clean angular stone. Having an angular stone allows the stone to bind together providing rigidity throughout the cells and also allows pore spaces for the diffusion of water and gasses. Having a clean stone will ensure that fines do not clog the Treetex layer.

If you would like more information on the stone specification, please contact the team on 01455 617 139 however this can be sourced from your local quarry.

What is Treetex and what does it do?
Treetex is a pollution control geotextile developed to work in harmony with the Cellweb®TRP System. The heavy duty needle punched geotextile fleece is manufactured from polyproplyene. Treetex is ideal for use in a Tree Root Protection system as it is easily moulded to the shape of the aggregate and has been independently tested by Coventry University. The product has been proven to absorb 1.7 litres of oil per m^2 ensuring that the roots are not damaged by pollutants from the surface.

Do I need any specialist equipment for installation?
The system is very easy to install and simply requires a stapler, staples and pins to hold the panels down during installation. Please note on larger scale projects for speed of installation, a hydraulic stapler may be used.

What applications can Cellweb®TRP be used for?
Cellweb TRP is likely to be required in the following scenarios:

- For the construction of any new hard surface within the RPA of any retained tree on or bordering the site.
- For the construction of temporary ground protection where construction and foot traffic must pass through the RPA during construction. BS 5837 2012 – Trees in relation to design, demolition and construction recommendations states that: “New temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.”
- Where the use of ‘No Dig’ construction has been specified by an arboricultural consultant within the tree protection plan.
- Where Cellweb TRP has been specified in the architects or engineers plans and drawings.

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Complies with BS:5837 | No Dig Solution | Adopted by Councils | 100% Success Rate | Cellweb®TRP Guaranteed | Independently Tested

Free technical support from Geosynthetics Ltd is available

Our tree root protection team can offer support and advice in the following areas.

- Installation
- Overcoming changes in levels and other site specific challenges
- The Cellweb infill material – 'What stone and how much'
- Surfacing options for the Cellweb®TRP system
- Edging the Cellweb system
- Quantifying and pricing

All of the above services are free of charge and have been developed to ensure that you are provided with the required levels of tree root protection for your site. The advice and services have been given to ensure that you are able to provide an excellent service to your clients and do not fall foul to the tree protection law or planning conditions.

What is the delivery turn around time as standard?

Delivery turn around for the Cellweb®TRP system is 24-48 hours* dependent on location and volume purchased.

Which depth of Cellweb®TRP do I need?

Depth of Cellweb®TRP	Unit	Gross Vehicle Weight (GVW)	Application
200 mm	Kg	< 60,000	HGV & Unusual - Crane / piling rig
200 mm	Kg	< 50,000	Heavy Construction Traffic
150-200 mm	Kg	< 30,000	Standard Construction Traffic & Refuse vehicle
150 mm	Kg	< 16,000	Emergency Access & Tractors
100-150 mm	Kg	< 9,000	Delivery Vans
100-150 mm	Kg	< 6,000	Car Park: Cars & Light van
100mm	Kg	< 3,000	Domestic Traffics: Cars
75mm	Kg	< 1,000	Pedestrians (with cyclist) path

Can I use an alternative system?

Cellweb® TRP has a number of unique attributes and once this has been specified by architects and designers, please be aware that no other system can comply. For guidance on ascertaining if another system is suitable, please contact our team for assistance. A system failure can ultimately bring about the demise of the protected tree(s) and could lead to prosecution and unlimited fines.

Please be aware that if Geosynthetics Ltd have completed site specific calculations and provided a full technical recommendation, use of another product will void our engineered solution and the guarantee will no longer be applicable.

For further information and assistance with Cellweb Tree Root Protection, please contact Geosynthetics Ltd on 01455 617 139.

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Reinforcement with Cellweb® TRP

Application [11 RUR-CEL] Information For Calculation

Geosynthetics

Date:	
Client / End user:	
Designer / Specifier:	
Planning Authority:	
Project Title:	
Location:	
Application (or any additional information):	

Traffic information	
Vehicle Type (nb of axles)	
Axle Load: P (kN/axle)	
Wheel load: (kN/wheel)	
Vehicle Weight:(kg or Ton)	
Number of traffic passages:	

Area	
Area approx (m2) and/or Dimensions (m x m)	

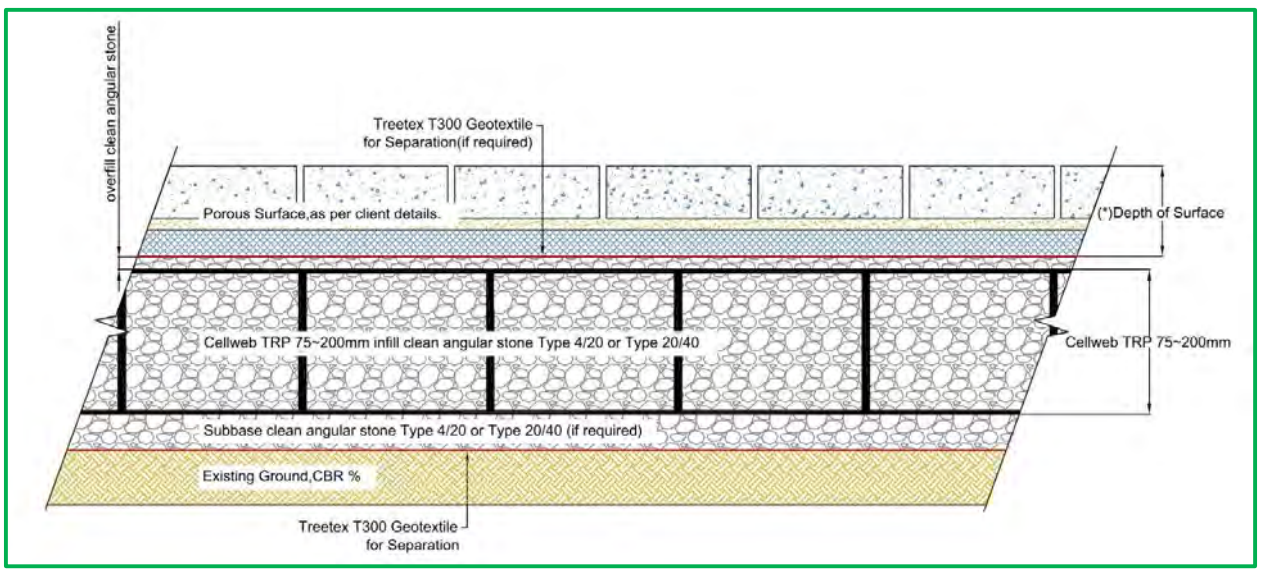
Traffic (Please Tick)	
Regular HGV use	
Occasional HGV use	
No HGV use	
Unusual load e.g. crane or piling rig	
Occasional fire engines	
Bin lorries	

Existing Ground	
CBR (%)	

Existing ground	
Type of soil	
Granular Soil	
Cohesive Soil	
Peat Soil	

Type of Surfacing (Porous surface always recommended for TRPA)	**Surface to be used** during construction	after construction
Block Paving+Sand Bedding		
Porous Tarmac		
Resin bound gravel + Porous Binder course Asphalt		
Loose Gravel		
Golpla System infill gravel		
Golpla System infill grass		
Sudscape		
Other		
Depth of Surface *		

*See drawing below



Appendix 9 - Encon Associates (2025). A7099-04D Landscaping Scheme & Biodiversity Enhancement

KEY TO LANDSCAPE PROPOSALS

Existing Site

Existing Trees to be Retained

Existing trees on site to be retained and protected from damage during construction. Refer to Tree Survey Report for details

Existing Trees to be Removed (11 no.)

Existing trees on site to be removed to enable construction of the new development. Refer to Tree Survey Report for details

Existing Woodland & Vegetation to be Retained and Enhanced (311m²)

Areas of existing vegetation to be retained and enhanced as per Ecologist Recommendations (see separate report for details). Enhancements to include planting of additional understorey shrub species to increase diversity including hawthorn, hazel, holly and rowan, improve ground flora by planting of other additional woodland ground cover species

Application Boundary (4,603m²)

Site Area for Biodiversity Net Gain Assessment

Proposed Planting Details

All areas of new landscaping to have the existing topsoil and subsoil decompacted by hand digging or rotorvator. If any imported topsoil is required it should be placed to a depth of 450mm minimum in shrub beds and be free of weeds or any detritus/stones larger than 50mm.

Planting should take place during the dormant planting season ie 1st October to 28th February. Tree planting shall be implemented as per British Standard 8545 (Trees: from nursery to independence in the landscape - Recommendations.

Grass Verges & Meadow

Areas of grassland to be established in landscaped verges around the site. Cultivate and grade soil, bring top 150mm to a fine tilth, rake and bring to given levels, remove all stones and debris over 50mm, lay turf in stretcher bond, firm turves using wooden turf beater.

Species Rich Turf (305m²)

New areas of grass verge to be established using Species Rich Turf supplied by wildflowerturf.co.uk (or similar). To be mown like a regular lawn and to maintain a mown edge surrounding the building.

Proposed Meadow Grassland (958m²)

Proposed meadow created with EM3 General Purpose Meadow Mixture supplied by Emorsgate Seeds (or similar approved). Subject to a reduced mowing regime with a more frequently mown margin along side footpaths and seating areas.

Ornamental Shrub & Herbaceous Planting

Areas of shrub planting for ecological enhancement to be planted in groups around the perimeter of the site. Cultivate and grade soil, bring top 150mm to a fine tilth prior to planting.

Shrubs & Herbaceous Planting - Mix 1 (70m²)

Shrubs to be pit planted 4 per m². Planted to provide colourful, groundcover with ecological value. All plants to be 5 litre pot grown stock, planted in random groups of 5, 7 or 9 plants of same species throughout the planting bed. 240 plants in total

Alchemilla mollis
Allium afiatunense 'Purple Sensation'
Bergenia 'Bressingham White'
Carex testacea 'Prairie Fire'
Hebe 'Pink Elephant'
Heuchera 'Plum Pudding'
Lavandula angustifolia 'Hidcote'
Liriope muscari
Persicaria amplexicaulis pendula
Salvia nemorosa 'Sensation Rose'
Sarcococca hookeriana 'Purple Stem'
Stachys byzantina 'Silver Carpet'
Stipa tenuissima

Shrubs & Herbaceous Planting - Mix 2 (80m²)

Shrubs to be pit planted 4 per m². Planted to provide colourful, groundcover with ecological value. All plants to be 5 litre pot grown stock, planted in random groups of 5, 7 or 9 plants of same species throughout the planting bed. 320 plants in total

Aster 'Little Carlow'
Ceanothus 'Blue Mound'
Choisya ternata
Cornus sanguinea 'midwinter fire'
Deschampsia cespitosa
Escallonia 'Apple Blossom'
Pachysandra terminal
Perovskia Blue Spire
Sarcococca confusa 'Kew Green'
Skimmia japonica 'Rubella'

Native Mixed Scrub Planting

Native trees and shrubs to be planted to create a buffer of mixed scrub along the southern and western boundary to provide an increase in biodiversity.

Excavate planting pit 300mm x 300mm x 400mm deep (or larger to suit root ball), backfill with topsoil mixed with peat free compost and secure trees in an upright position with a single timber stake and rubber tie and spacer.

Native Mixed Scrub Planting (405m²)

All plants to be bareroot Whips, 125-150cm in height (except Ilex aquifolium to be 2 litre container, 40-60cm) protected with spiral rabbit guard secured with a cane. Planted randomly in the following mix across the whole area as individuals and groups of 3 of the same species. 100 plants in total.

Salix viminalis (Osier) x 10no.
Crataegus laevigata (Midland Hawthorn) x 10no.
Crataegus monogyna (Hawthorn) x 10no.
Corylus avellana (Hazel) x 10no.
Prunus spinosa (Blackthorn) x 10no.
Sorbus torminalis (Wild Service Tree) x 10no.
Sambucus nigra (Elder) x 10no.
Cornus sanguinea (Dogwood) x 10no.
Ilex aquifolium (Holly) x 10no.
Viburnum lantana (Wayfaring tree) x 10no.

Specimen Tree Planting

Heavy Standard specimen trees planted in locations indicated as per the following specification:

Excavate tree pit 900mm x 900mm x 900mm deep (or larger to suit root ball), backfill topsoil mixed with 80 litres of peat free compost and secure tree in an upright position with a single timber stake and rubber tie and spacer.

Specimen Tree Planting (20 no.)

Ar

4.5m high, 18-20 cm girth Extra Heavy Standard root balled trees (supplied by Barcham Trees or similar approved) to be pit planted as per above specification in locations shown

3 x Acer campestre (Field Maple) - Ac
3 x Betula pendula (Silver birch) - Bp
3 x Prunus 'Umineko' (Upright Cherry) - Pu
2 x Sorbus aucuparia (Mountain Ash) - Sau
2 x Sorbus torminalis (Wild Service Tree) - St
3 x Liquidambar styraciflua (Sweetgum) - Ls
4 x Amelanchier lamarckii (Juneberry) - Al

Native Linear Tree Planting

Heavy Standard specimen trees planted in locations indicated as per the above specification:

Ac

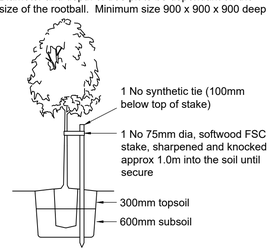
Native Linear Tree Planting (15 no.)

4.5m high, 18-20 cm girth Extra Heavy Standard root balled trees (supplied by Barcham Trees or similar approved) to be pit planted as per above specification in locations shown

3 x Acer campestre (Field Maple) - Ac
2 x Alnus gutinosa (Alder) - Ag
3 x Betula pubescens (Downy birch) - Bpu
2 x Malus sylvestris (Crab apple) - Ms
2 x Sorbus aria (Whitebeam) - Sar
3 x Sorbus aucuparia (Mountain Ash) - Sau

Tree Pits & Support

Diameter and depth of tree pit to be dependant on the size of the rootball. Minimum size 900 x 900 x 900 deep



Native Hedge Planting

A new native hedgerow to be established and maintained at 1.5m high. Native species selected to provide ecological enhancement and seasonal interest.

Hedge Planting (160 linear metres)

60-80cm high, bareroot transplants, pit planted in double staggered row including organic compost to backfill pits at 5 plants per linear metre. Spiral rabbit guards to each plant. 800 plants in total.

40% Crateagus monogyna (Hawthorn) x 320no.
20% Corylus avellana (Hazel) x 160no.
10% Salix caprea (Goat Willow) x 80no.
10% Cornus sanguinea (Dogwood) x 80no.
10% Sambucus nigra (Elder) x 80no.
10% Prunus spinosa (Blackthorn) x 80no.

Proposed Surfacing

Refer to Architects drawing for full details of all new surfacing

Access Road

New tarmacadam surfaced access road

Car Park

New tarmacadam surfaced car park

Pedestrian Circulation

New block paving surfaced footways

Patios

New paving slab surfaced patios

Notes:

- Topographical survey by CLB Surveys, 1104-1C dated April 2010
- 250318 G40003 A002 Proposed Site Ground Floor Plan by Green 4 Architects, March 2025
- Site visit by Encon Associates, 24.02.25

Rev	Date	Description	Drawn	Checked
D	31.03.25	Fence type and bin collection point amended	MJB	GM
C	26.03.25	Bin collection point added	MJB	GM
B	26.03.25	External seating area adjusted	MJB	GM
A	25.03.25	Updated in line with comments	MJB	GM

Client
Tanglewood Care Homes

Project
Tanglewood
Coventry Road
Hinckley

Title
Landscaping Scheme &
Biodiversity Enhancement

Drawing Status
FOR PLANNING APPROVAL

Drawn	MJB	Checked	LB
Date	24.02.25	Scale (A1)	1:250

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- BREEAM - Code for Sustainable Homes Assessors - Landscape Architecture - Transportation - Life Cycle Costing - Energy Assessment - SAP - EPC - SBEM - Daylight Calculations

Job Number	Drawing Number	Rev
A7099	04	D