

Ref: LAS_763
Date: 19.06.24.

Site: Bishopstoke Park Retirement Village: Access

Arboricultural Statement

1 INTRODUCTION

- 1.1 LandArb Solutions Ltd were instructed to carry out a tree survey at the Bishopstoke Retirement Village Access herein referred to as the site, to accompany a planning application for the re-instatement of a former vehicular access to create an in-out arrangement for vehicle movements to and from the retirement village.

2 TREE SURVEY

- 2.1 LandArb Solutions visited the site on 19.04.24 to carry out the tree survey.
- 2.2 A copy of the tree survey schedule and tree survey and constraints plan is shown in Appendix 1. A selection of site photographs is shown in Appendix 2.
- 2.3 The following provides a short description of tree cover at the site and should be read in conjunction with the tree survey schedule and tree constraints plan.
- 2.4 The site comprises the current access into Bishopstoke Park and the former historic access. Located within a soft landscaped island between the historic access and the current access is a large giant sequoia (T7).
- 2.5 To the north is a mixed group of trees (G8 and T9) located behind a retaining wall/fence.

- 2.6 To the south is a tarmac footpath and raised embankment where dense laurel and small tree species are located (G2, T3 and T4) as well as several large mature oaks (T1, T5) and multi-stemmed beech (T6).

3 STATUTORY PROTECTIONS

Conservation Area / Tree Preservation Orders

- 3.1 A review of Eastleigh Borough Council Online “TPO Maps” (accessed 19.04.24) shows that the site is not within a Conservation Area. However, trees within and adjacent to the site are subject to a Tree Preservation Order (TPO) reference TPO:417-E.
- 3.2 Notwithstanding specific exemptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of trees without the prior consent of the local planning authority.
- 3.3 Penalties for contravention of the legislation for the protection of trees subject to a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates’ Court, or an unlimited fine if the matter is determined by the Crown Court.
- 3.4 On many non-residential sites (excluding specific exemptions) there is a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

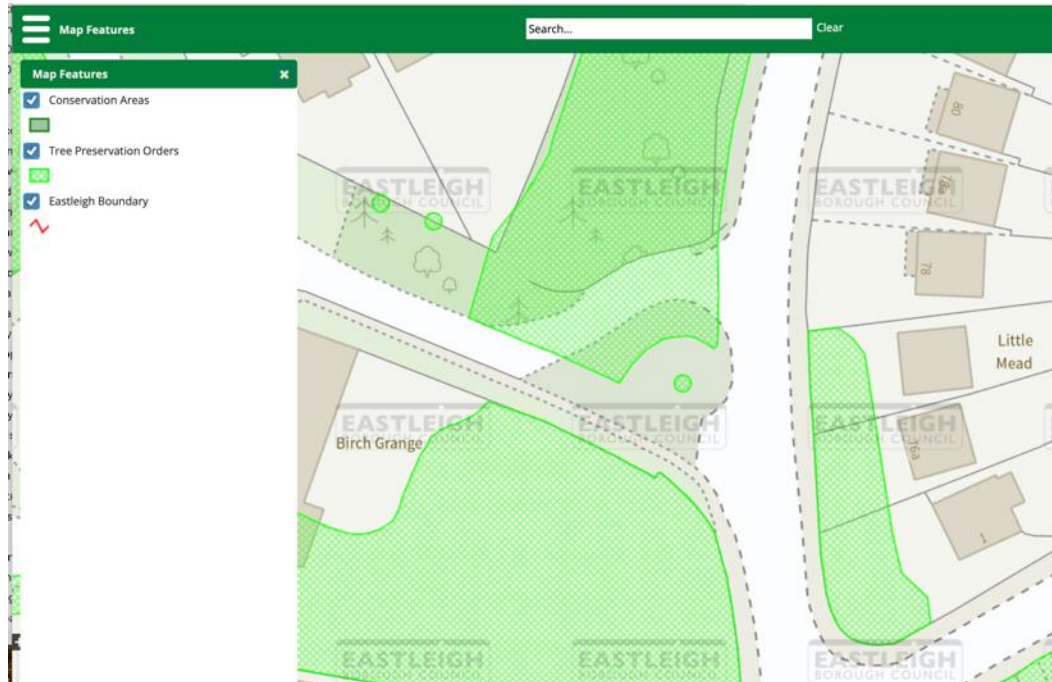


Fig 1: Extract of Eastleigh Borough Council TPO Maps.

Statutory Wildlife Protection

- 3.5 Although preliminary visual checks from ground level of wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside the remit of the survey.
- 3.6 Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for bats in addition to birds and small mammals. It is recommended that in line with any accompanying specialist advice, any tree works should only be carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the project manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by a Statutory Nature Conservation organisation such as Natural England.

- 3.7 It is advised that tree works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. Ideally, operations should be avoided during this period. Any necessary work should only be carried out following a preliminary check of the vegetation. For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in Britain.

4 DEVELOPMENT PROPOSALS

- 4.1 Development proposals are for the reopening of the former access to the site in order to create an in/out arrangement for vehicles entering and leaving the retirement village.
- 4.2 The existing / current access point is to be retained without alteration and will be changed via signage to become exit only. The former access to the south that was closed up post September 2020, is to be re-instated to become an entrance only.
- 4.3 A copy of the proposed site plan is shown in Appendix 3. A proposed section/levels detail is shown in Appendix 4.

5 ARBORICULTURAL IMPACT ASSESSMENT

- 5.1 The proposed site plan has been overlaid with the tree survey to prepare a Tree Retention/Loss and Protection Plan (Appendix 5). This has been used to inform this assessment in terms of the proposed site plan and relationship with trees.

Tree Retention/Loss

- 5.2 No trees require removal to enable development.

Impacts to retained trees

Tree works

- 5.3 No major tree work is required to enable development.
- 5.4 Any overhanging canopies are to be lifted to at least 5.4m over the re-instated access drive (if required) to ensure clearance for vehicular use.

Re-instatement of the former access

- 5.5 The former access to the site (Garnier Drive), comprised a tarmac single lane carriageway to the south of T7. This access point was closed up and tarmac hard surfacing removed at some point after September 2020, as it appears on Google Streetview in September 2020 but had been removed by March 2023.
- 5.6 The current access point to the north of T7 is to be retained and used as an exit only. It is proposed to re-instate the former access to the site (south side of T7) to be used as an entrance only.
- 5.7 Re-instating the former access would be within the default RPAs of neighbouring trees including T1, T5 and T7. However, the works would re-instate an access and hard surfacing that has previously existed in this location historically and up until relatively recently. In this context, hard surfacing would not be introduced in locations where it has not existed historically.
- 5.8 Given the previous hard surface has already been removed and the historic access is within the default RPAs of existing trees, it is proposed to construct the re-instated access using a no dig methodology and load bearing geocellular confinement system.
- 5.9 As shown in Appendix 4, it is proposed to construct the re-instated access within the alignment of the previous extent of hard surfacing, save for a very minor area of encroachment where there is a surface water drain. It is also proposed to use a load

bearing geocellular confinement system (no dig method) to avoid excavations that could sever any roots or cause long term compaction damage.

- 5.10 Given there is existing hard surfacing at the mouth of the old access and the current Garnier Drive, these areas can be graded up to match the proposed no dig reinstated access, without requiring excavation within the RPAs.
- 5.11 The adjacent footpath to the old access is also to be raised to match the level of the re-instated access. However, this would not result in hard surfacing being installed where it does not already exist.

Summary

- 5.12 Overall with regard to proposals the following is noted:
- Proposals will not require any tree loss.
 - No inappropriate tree work is required to enable development.
 - Retained trees can be adequately protected by fencing and considerate working methods.
 - Proposed works have been designed to use an above ground method of construction to avoid potential damage to any tree roots. The location of the proposed access would reinstate a historic access that previously existed in this location. However in this case, it would be of an above ground construction and have a permeable surface, as opposed to an impermeable surface that previously existed.

6 TREE PROTECTION AND METHOD STATEMENT

- 6.1 Tree protection measures are shown on the TPP in Appendix 5. Protection measures will rely on temporary fencing and considerate working methods.

Protection fencing

- 6.2 Given proposed works for re-instating the former access would be in the RPAs of existing trees, it would not be feasible to fully fence off all RPAs using BS5837:2012 heras fencing.
- 6.3 Fencing is to be installed in areas shown on the TPP to prevent access into soft landscaping areas around T7 and along the embankment to G2 to prevent accidental damage to the embankment and contact with stems T1 and T5.
- 6.4 The majority of G8 is protected behind an existing wall and fence with RPAs protected by existing hard surfacing that is retained. Areas further west that are not behind the retaining wall would need protection fencing.
- 6.5 Temporary fencing is to be installed prior to works and remain in place for the duration.

General rules for tree protection

- 6.6 The following activities are not permitted within a RPAs unless detailed in this statement:
- No mixing of cement.
 - No soil/turf stripping, raising/lowering of ground levels, deposit or excavation of soil or rubble.
 - No storage of materials, waste materials, spoil, machinery fuel, chemicals or other materials of any other description (unless on ground protection).
 - No parking/use of tracked or wheeled machinery unless on ground protection/existing driveway).
 - No lighting of fires or disposal of liquids.
 - No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained trees.

- 6.7 All materials, equipment and contractor parking/compound must be located within existing hard surfaced areas and must not be stored within exposed ground of the historic access to be re-instated.

Considerate Working Methods

- 6.8 The final method of tree protection will be carrying out works considerately and being tree aware. All contractors must be made aware that trees are subject to a Tree Preservation Order (TPO) and of tree protection requirements at the site and ensure works are carried out in accordance with this statement.
- 6.9 With regard to works in the RPAs of T1, T5 and T7, for the re-instatement works, the following working method should be used with regard to hard surfacing installation.
- Ensure protection fencing is in place as per the TPP.
 - Remove existing low timber fencing using hand tools.
 - Any hollows or ground depressions are to be filled using sharp sand or clean angular stone (4/20) to create level ground.
 - A geotextile membrane should be installed on the prepared base.
 - A load bearing cellular confinement system, Cellweb TRP or similar 200mm is to be installed and filled using clean angular stone type 4/20mm (no fines). Installation works in this area should be carried out by hand.
 - The above ground no dig cellular confinement (cellweb) must be topped with a permeable surface finish.
 - All works are to be carried out using hand tools only. No heavy machinery is to enter any exposed ground.
 - Edge support where in the RPA must avoid excavation, and instead use edging set above ground.
- 6.10 A Cellweb detail/manufacturers method statement is including in Appendix 6 and the proposed construction detail/section shown in Appendix 4.

Existing footpath build up

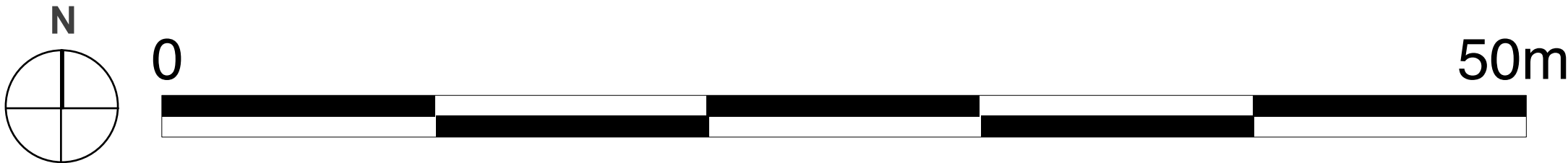
- 6.11 The existing footpath adjacent to the former access is to be raised to match the level of the re-instated access.
- 6.12 It is envisaged that works would involve building up off the existing tarmac that is kept in situ. Although this would not affect the existing trees, there would be a potential opportunity for betterment if it was removed and replaced with a permeable no dig alternative.
- 6.13 If viable from an engineering perspective, it would be beneficial to remove the existing tarmac layer and replace the footpath with a permeable build up and surfacing, as follows:
- Existing tarmac hard surfacing to be broken up and lifted out using hand tools or lightweight plant operating from hard surfaced areas.
 - Breakup works should either begin closest to Church Road and work backwards towards the site OR begin closest to T1 and work backwards towards Church Road. This is to ensure works do not progress over exposed ground.
 - No machinery, materials or excavations are to occur on the exposed ground following tarmac removal.
 - Following hard surface removal, the sub-base is to be retained and made good where needed. Any hollows or depressions to be filled using clean topsoil or sharp sand to ensure level surface. Existing subbase level must be retained and not excavated.
 - To build up to match the new access level, the footpath is to be raised using MOT type 3 or clean angular stone (i.e. be permeable). The surface finish should be permeable.
- 6.14 If on site conditions would allow, works should look to replace the footpath with a load bearing build up (such as cellweb). Where this would be viable the following method should be used once existing hard surfacing has been removed:

- Where viable build up should use a load bearing geocell such as cellweb or terram. In this scenario, a geotextile membrane should be installed on the prepared sub-base. Then a load bearing cellular confinement system, such as (Cellweb TRP or similar) 75mm as suited to pedestrian loading is to be installed and filled using clean angular stone type 4/20. Installation works in this area should be carried out by hand.
- The above ground no dig cellular confinement (cellweb) must be topped with a permeable surface finish.
- All works are to be carried out using hand tools only. No heavy machinery is to enter an RPA or exposed ground.

6.15 An example cellweb detail/manufacturers method statement is including in Appendix 6.

**Appendix 1:
Tree Survey and Constraints Plan and Schedule**

	Tree Category A - High Quality
	A Category - Hedgerow, Group, Woodland
	Tree Category B - Moderate Quality
	B Category - Hedgerow, Group, Woodland
	Tree Category C - Low Quality
	C Category - Hedgerow, Group, Woodland
	Tree Category U - Unsuitable for Retention
	Default Root Protection Area to BS:5837:2012
	Adjusted Root Protection Area to BS:5837:2012
	Shrub Mass / Offsite Tree
	Tree Preservation Order (TPO)



Revision	Description	Date
-	First issue	25/4/24

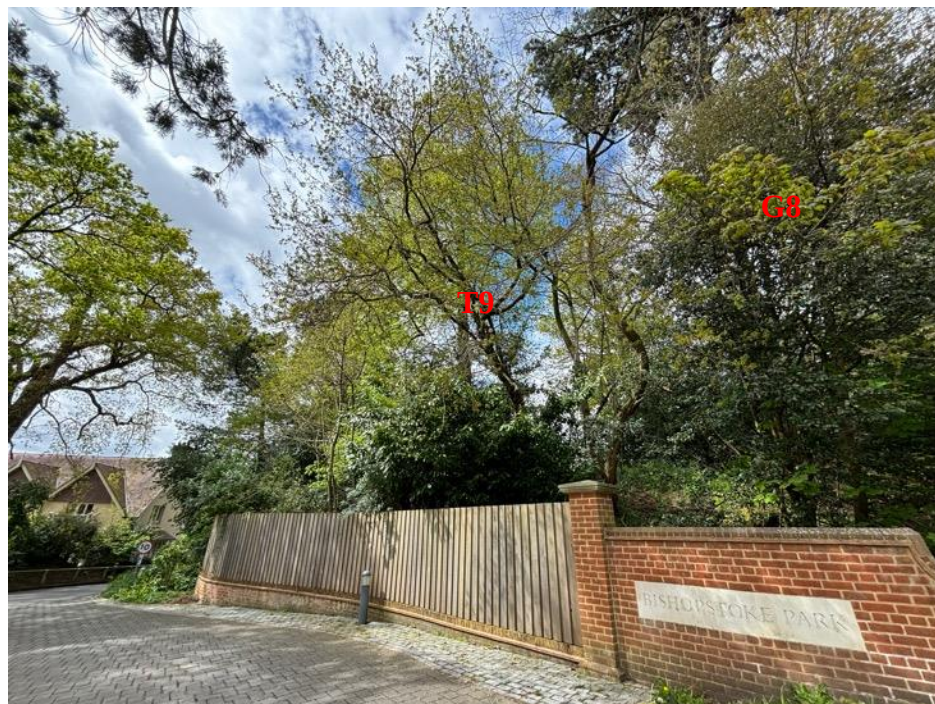
Job Number: **LAS 763** Drawing Number: **01** Revision: **-**

Ref no.	Species	Ht. (m)	Stem				Category Grading	Crown Spread (m)								Life stage	ULE	Physiological Condition	Structural Condition	General Observations and Notes
			Stem Count	Stem dia. (mm)	RPA radius	RPA area		N	E	S	W	Ht. 1st Br. (m)	Est.	1st Br. Direction	Ht. Can. (m)					
T1	Oak	18.0	1	1250+	15.0	707	B1	10.0	7.0	8.0	9.0	N/A	-	N/A	5.0	M	20+	Fair	Fair	Large oak, pruned in past, large limb tear out in last east side of north stem, cavity at base south side, included bark or split in branch union north side needs inspecting.
G2	Laurel	4.0	5+	80	1.0	3	C2	As on plan				N/A	-	N/A	0.0	EM	10+	Fair	Fair	Laurel shrubs on embankment, some self set holly within.
T3	Sycamore	12.0	1	100	1.2	5	C1	2.5	2.0	2.0	2.0	N/A	-	N/A	4.0	SM	10+	Poor	Poor	Thin canopy structure, drawn up, kinked stem. Self set.
T4	Beech	14.0	1	120	1.4	7	C1	2.5	2.0	2.0	2.5	N/A	-	N/A	4.0	SM	10+	Fair	Fair	Self set, drawn up, set on embankment.
T5	Oak	18.0	1	870	10.4	342	B1	10.0	9.0	6.0	9.0	N/A	-	N/A	4.5	M	20+	Good	Fair	Large oak, canopy weighted north side set on embankment dense crown, past branch losses, minor to moderate deadwood
T6	Beech	18.0	5+	857	10.3	333	B1	9.0	6.0	5.0	6.0	N/A	-	N/A	4.0	M	10+	Good	Poor	Multi stem from base, drawn up, fused stems pruned east side way from overhead wires, set on embankment, dense crown.
T7	Wellingtonia	20.0	1	1250+	15.0	707	C1	3.0	5.0	5.0	3.0	N/A	-	N/A	2.5	M	10+	Poor	Fair	Canopy is thin with dieback and bare patches throughout crown. Deadwood throughout. Needle coverage patchy. Appears to be declining,
G8	Laurel, oak, sycamore, holy	8.0	5+	200	2.4	18	B2	As on plan				N/A	-	N/A	0.0	SM	10+	Fair	Poor	Laurel shrubs with occasional semi to early mature oak and sycamore, oak and false acacia poor form as then lean east with kinked stems. Quality is in the group but many are low quality individually. Some larger pine, lime and beech within. RPAs of larger trees plotted separately.
T9	Lime	16.0	1	900	10.8	366	B1	5.5	5.0	5.5	5.0	N/A	-	N/A	0.5	M	20+	Good	Fair	Large lime, dense canopy, dense suckering around base.

Appendix 2: Site Photos



Photoview 1: View looking south-west along the existing site access.



Photoview 2: View looking north at off-site G8.



Photoview 3: View west along the historic site access.



Photoview 4: View west along the access to the retirement village.



Photoview 5: View east along the historic access.



Photoview 6: View south at T5 and T1.



Photoview 7: View west at T7.



Photoview 8: View looking north-west from within G2.

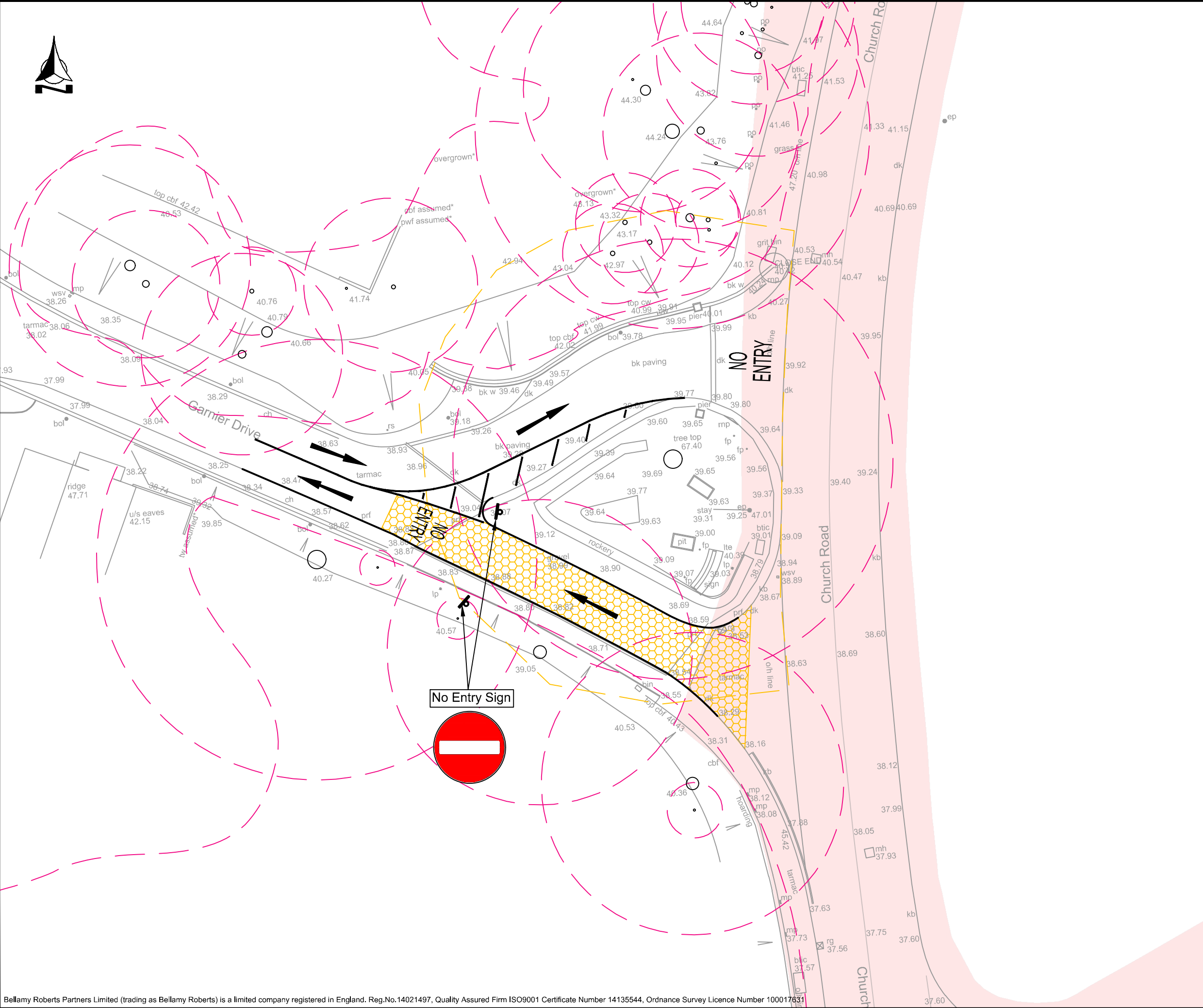


Photoview 9: View north from within G2.



Photoview 10: View of T6.

Appendix 3: Proposed Site Plan



- Notes
- Site
 - Approximate Highway Boundary
 - Root protection area
 - Adjusted root protection area
 - No dig construction (cellweb or similar)

B	Topo and layout updated	MB	MT
A	Tree survey added	MB	MT
REVISION	AMENDMENT	DRN	DATE

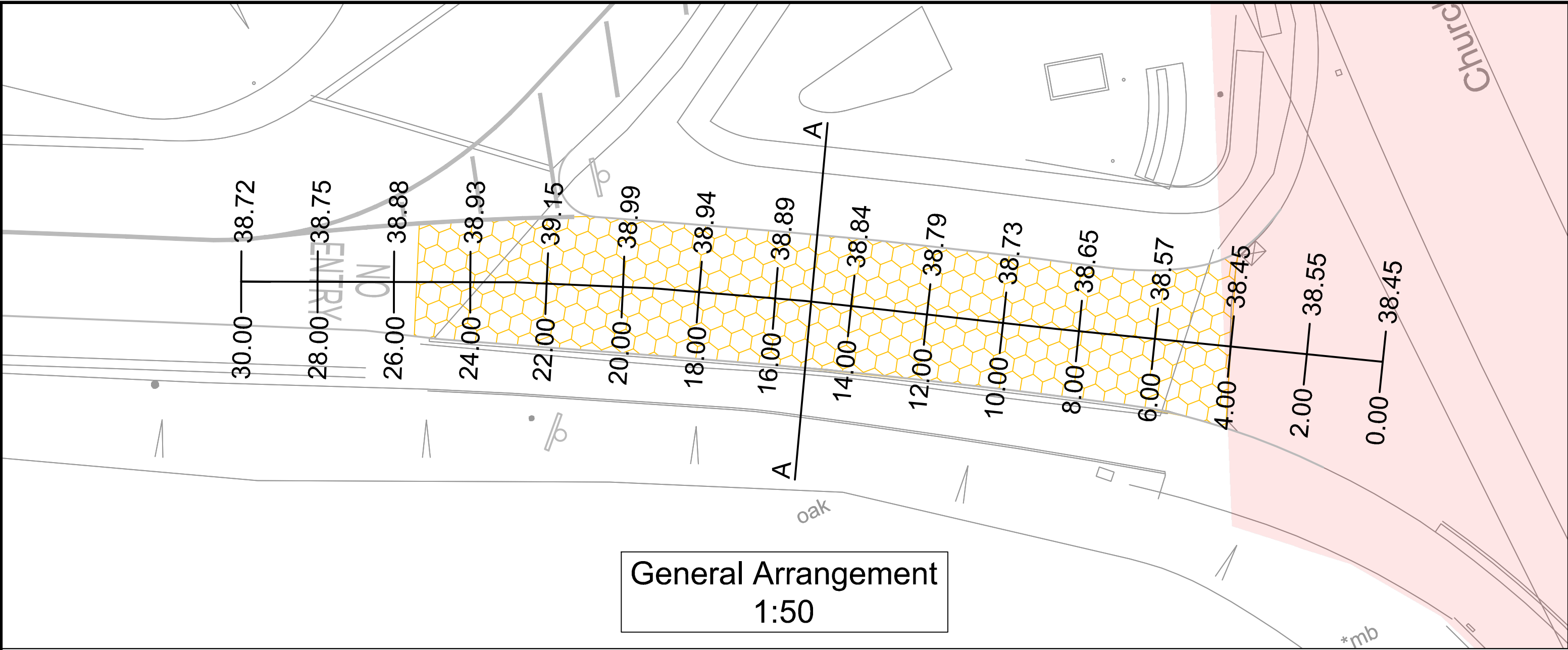


Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

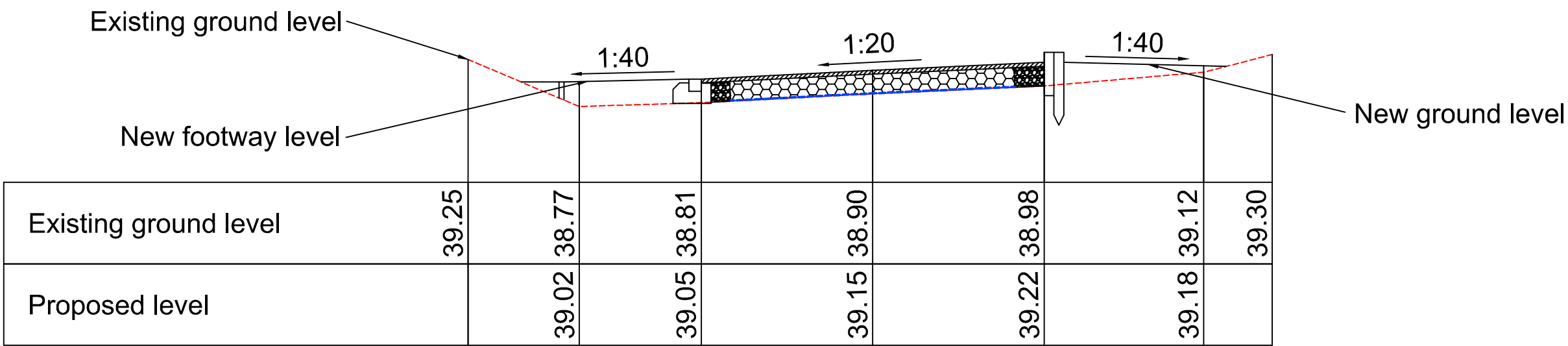
CLIENT	Anchor
PROJECT	Bishopstoke Park Access
TITLE	Proposed Access Plan

DRAWN BY	MB	DESIGN BY	-	CHK BY	MT
DATE	11/01/24	DRAWING No.	6027 / 002	REV No.	B
SCALE	1:250 @ A3				

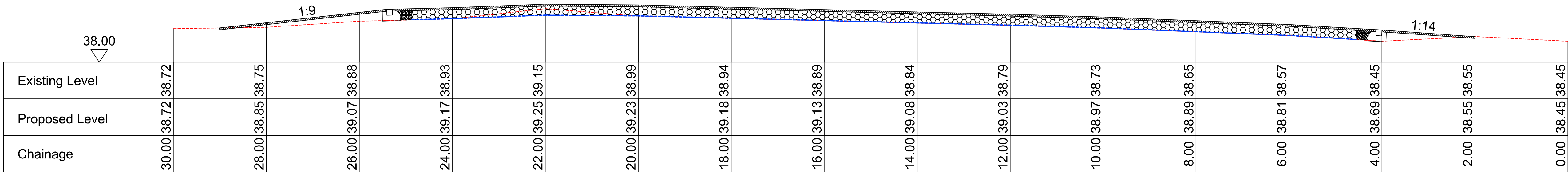
Appendix 4: Section/ Levels Details



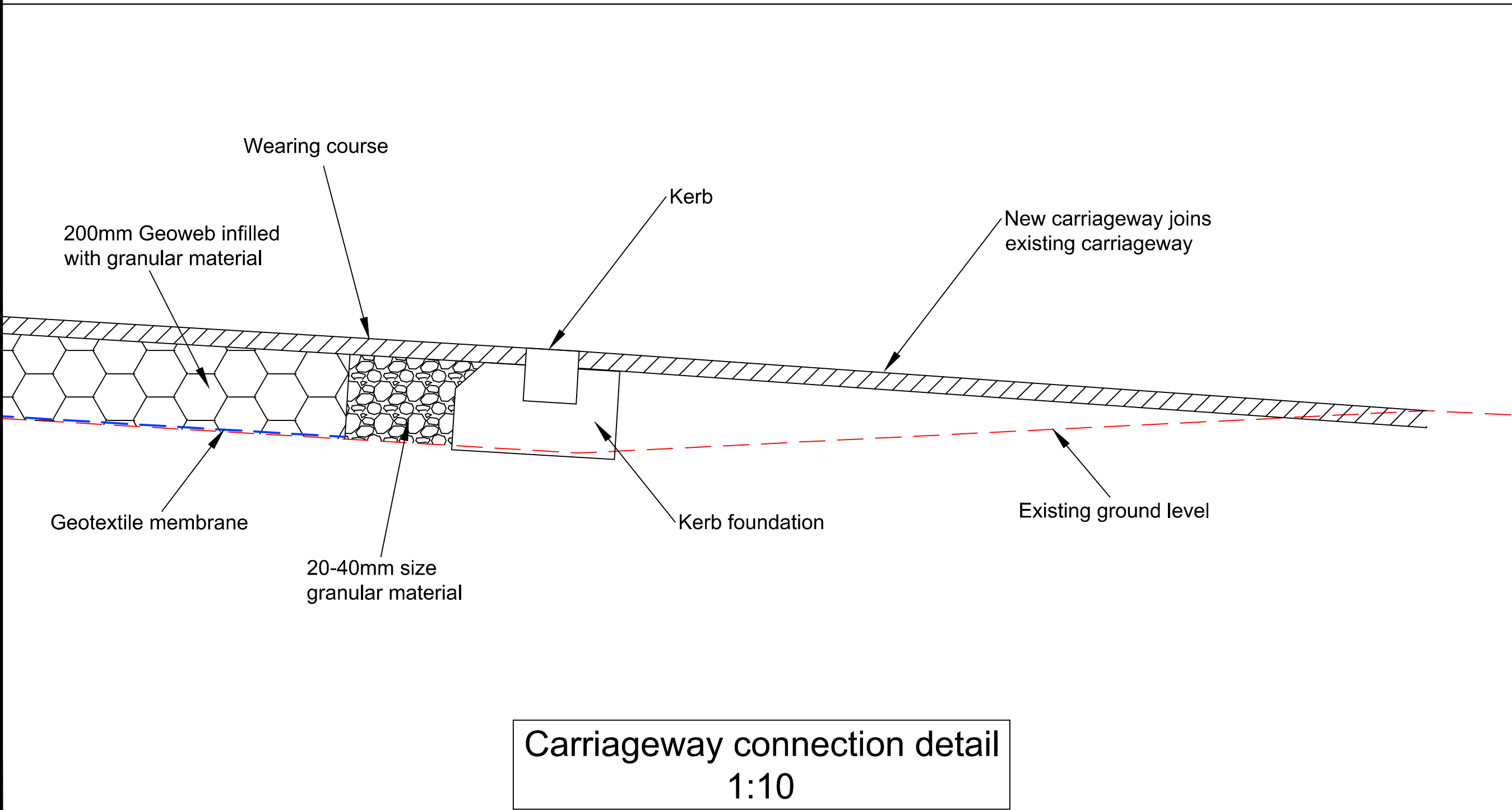
General Arrangement
1:50



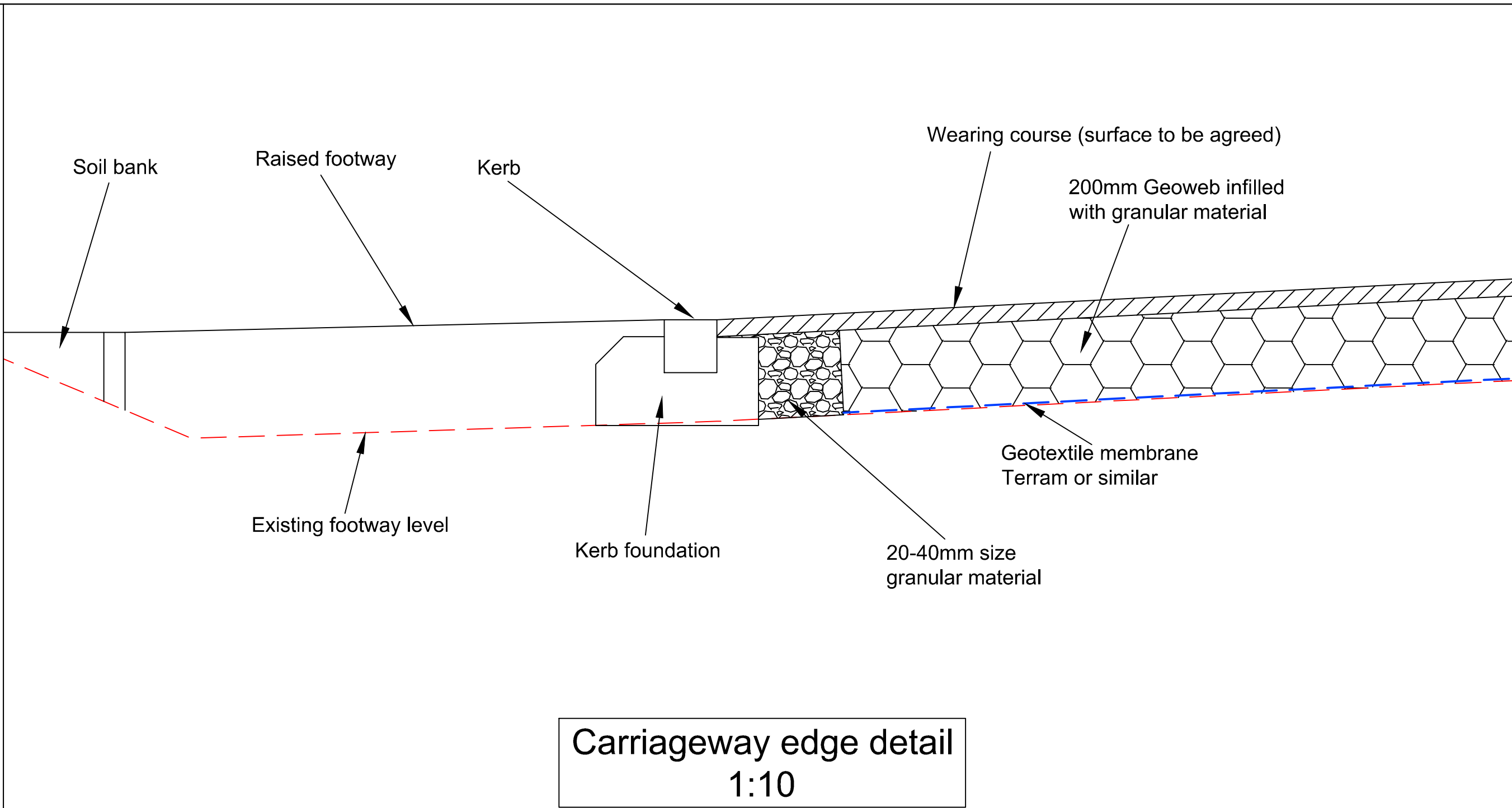
Cross Section A-A
1:50



Long Section
1:50



Carriageway connection detail
1:10



Carriageway edge detail
1:10

Notes



Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT
Anchor Lifestyle Developments Ltd

PROJECT
Bishopstoke Park Access

TITLE
Access Sections

DRAWN BY
MB

DESIGN BY
-

CHK BY
MT

DATE
14/06/24

DRAWING NO.
6027 / 003

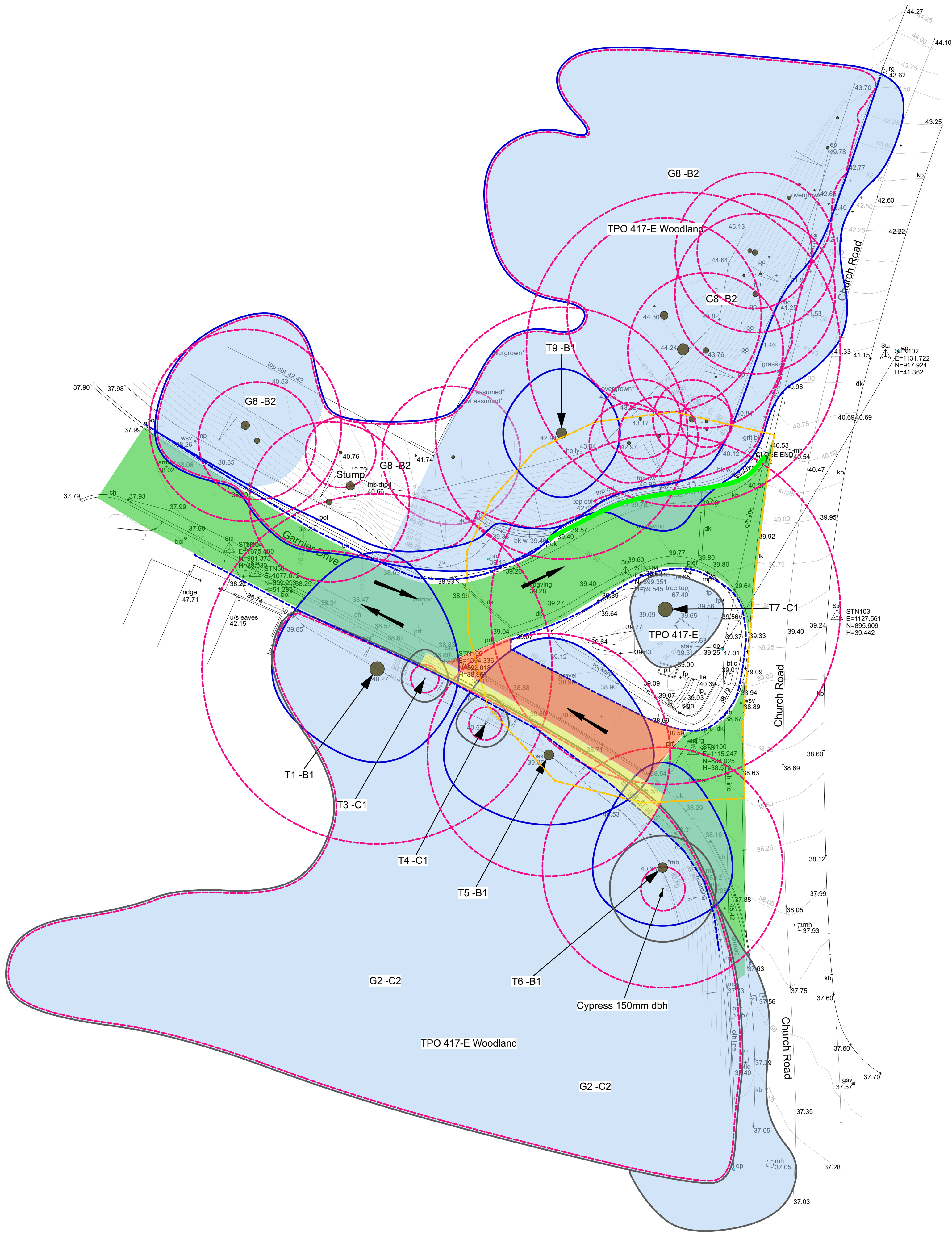
REV NO.

SCALE
As Shown @ A1

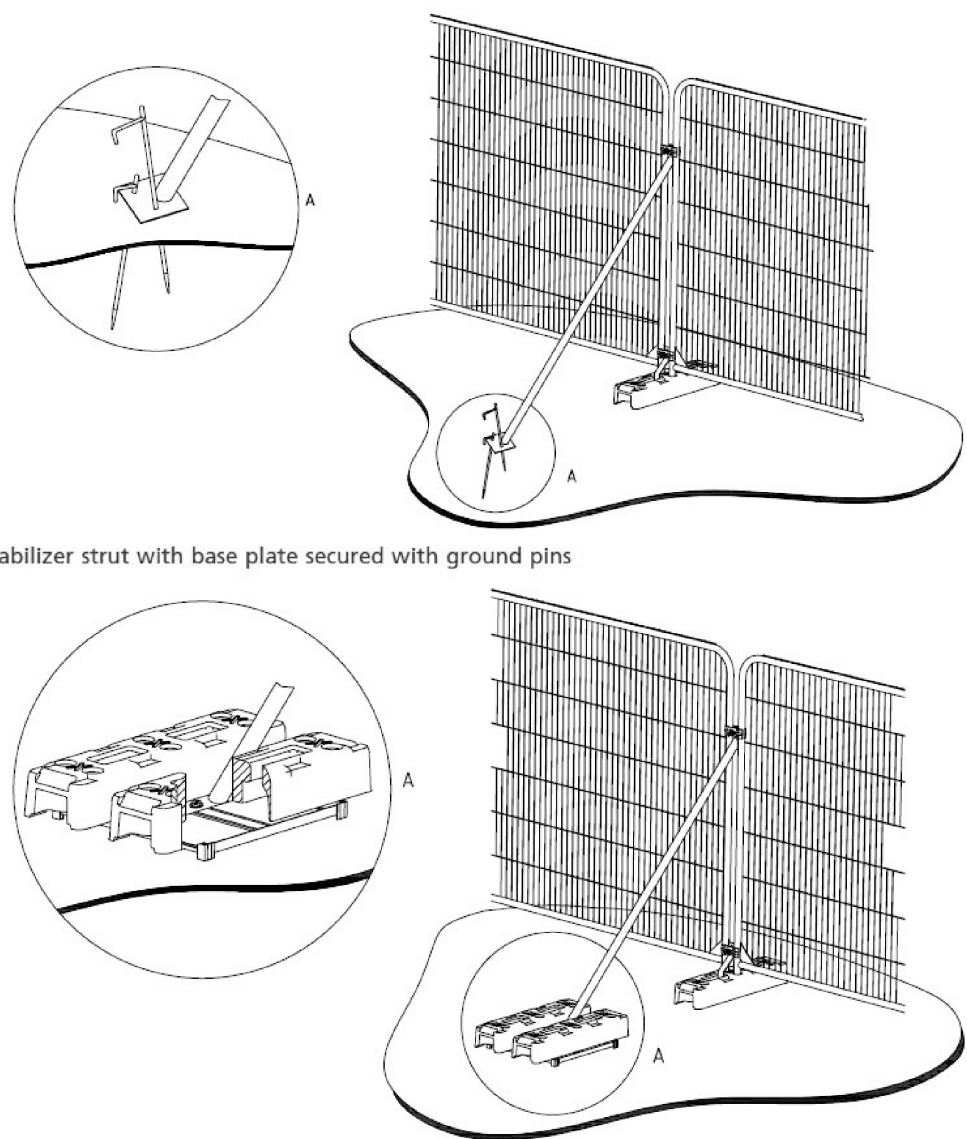
Appendix 5: Tree Retention and Protection Plan

KEY - BS 5837 : 2012 Categories

-  Tree Category A - High Quality
-  A Category - Hedgerow, Group, Woodland
-  Tree Category B - Moderate Quality
-  B Category - Hedgerow, Group, Woodland
-  Tree Category C - Low Quality
-  C Category - Hedgerow, Group, Woodland
-  Tree Category U - Unsuitable for Retention
-  Default Root Protection Area to BS:5837:2012
-  Adjusted Root Protection Area to BS:5837:2012
-  Shrub Mass / Offsite Tree
-  Tree Preservation Order (TPO)
-  Tree Protection Barrier to BS:5837:2012 Primary Position
-  Existing Retaining Wall and Fence
-  Existing Hard Surfacing Retained
-  Reinstated Access/No Dig
-  Existing Footpath Built Up/Replaced/No Dig



BS:5837:2012 Figure 3 Examples of above-ground stabilizing systems



Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Revision	Description	Date
-	First issue	18/6/24

LANDARB SOLUTIONS

Project:
Bishopstoke Park Access, Eastleigh

Description:
Tree Protection Plan

Status:
For Planning

Scale:
1:200 @A1

Drawn I
DP

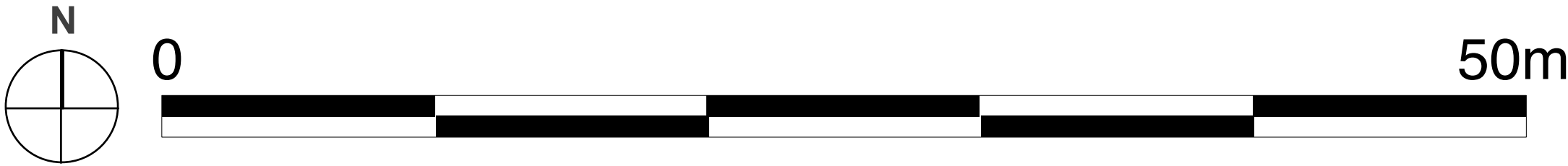
Checked
MP

Date:
18/06/2024

Job Number:
LAS 763

Drawing Number:
02

Revision:
-



Appendix 6: Cellweb Installation guide/method

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.

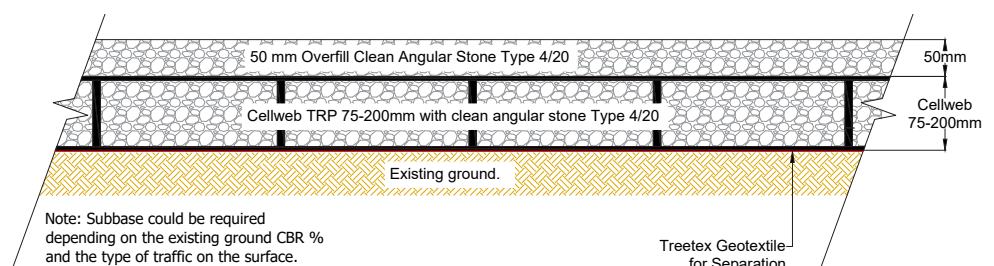
Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

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



Cellweb® TRP Installation Guide



Step 1: Prepare Surface



Step 2: Lay out Treetex™



Step 3: Lay out Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
 - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
 - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

1. Prepare the Surface

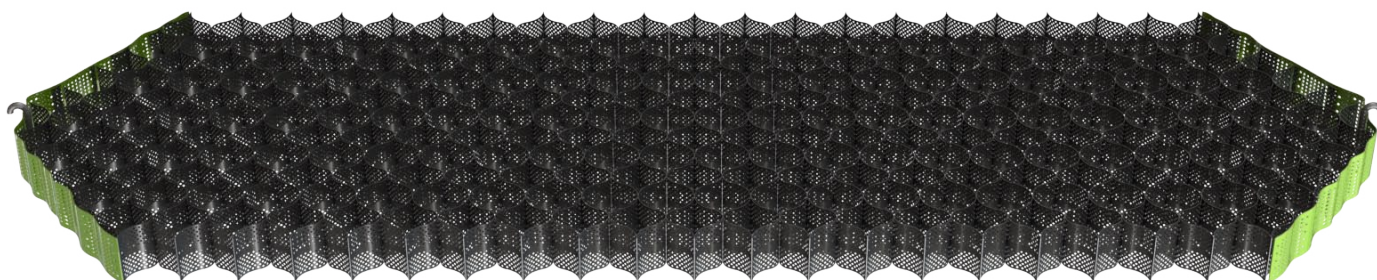
- Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
- Remove any surface rocks, debris and organic material.
- Create a level surface by filling any hollows with clean angular stone or sharp sand.
- Do not level off high spots or compact the soil through rolling.

2. Lay out the Treetex™ Non-Woven Geotextile

- Lay out the Treetex™ over the prepared area, overlaying the edges of the required area by 300mm.
- Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).

3. Lay out the Cellweb® TRP Cellular Confinement System

- Lay out the collapsed Cellweb® TRP on-top of the Treetex™.
- Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.



Cellweb® TRP - Installation Guide

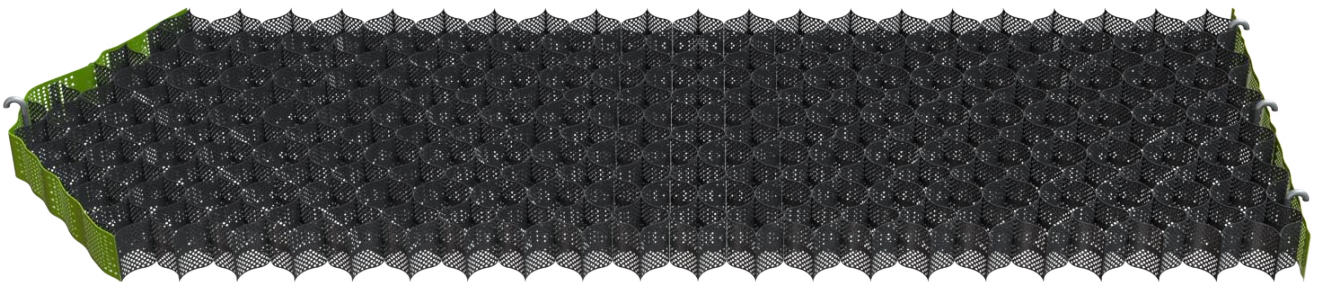


Step 3: Pinning Cellweb® TRP

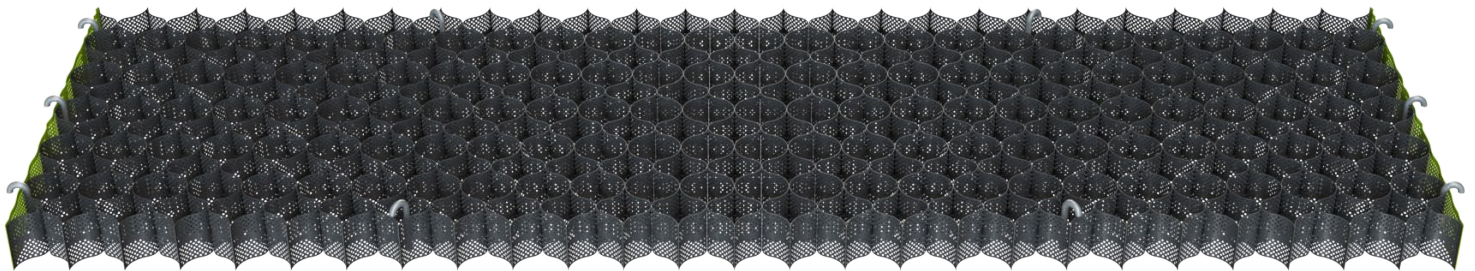


Step 3: Stapling Cellweb® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.



- Now measure its width to 2.56m and secure in each of the corners with the J pins.
- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m.



- This will produce a cell size of 259mm x 224mm which is the required cell diameter. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- All cells must be fully opened to the required diameter.

Cellweb® TRP - Installation Guide



Step 4: Clean Angular Stone



Step 5: Edge Restraints



Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- Minimum 25mm overfill of clean angular stone when used in conjunction with a hard surface.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.
- Encourage settlement of the stone with the use of a light roller or with 2-3 passes of the construction plant used for installation.
- If the clean angular stone is being used as the final surface; regular maintenance will be required to ensure a minimum overfill of 50mm.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- All surfaces in Root Protection Areas must be porous. Surfaces can include block paving, asphalt, loose gravel, grass and gravel retention systems (e.g Golpla), resin bound gravel, concrete etc.

NOTES

- 1. Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
- 2. Geotextile:** We recommend the installation of a Treetex™ under the Cellweb® TRP, or under the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
- 3. Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
- 4. Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.



Appendix 7: Tree Survey Method

The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Trees were not tagged.

Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups/woodlands were also surveyed as individuals

Tree survey findings are recorded in the tree survey schedule.

APPENDIX 1 – TREE SURVEY SCHEDULE

Within the tree survey schedule, each surveyed tree (T), hedgerow (H), group (G), woodland (W) on or adjacent to the site is given a reference number which refers to its position on the tree survey plan.

APPENDIX 1 – TREE SURVEY AND CONSTRAINT'S PLAN

Also shown on the tree survey plan are quality grading and preliminary tree constraints: root protection areas.

Tree species: listed by common name.

Heights: measured in metres. They are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.

Trunk diameters: measured in millimetres and are rounded to the nearest 10mm. Single stemmed tree diameters are measured at 1.5m above ground level or, where a fork or swelling makes this impractical, at the narrowest point beneath. Diameters of multi-stemmed trees are calculated as 'combined stem diameters' according to specific guidance set out within BS5837:2012 (p.10, para 4.6.1 a and b).

Crown spreads: taken at the four cardinal points to derive an accurate representation of the tree crown. They are recorded up to the nearest half metre for dimensions up to 10m and to

up the nearest whole metre for dimensions over 10m. For trees assessed as groups or woodland, an estimated mean radial crown spread in metres is taken for trees at the 80 percentile size.

Crown clearance: expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall canopy. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.

Estimates: where any other measurement has had to be estimated, due to inaccessibility for example, this is indicated by a “#” suffix to the measurement as shown in the tree survey schedule.

Life stage:

- Y – young (stake dependent);
- SM - Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature);
- EM – Early Mature (not yet having reached 75% of expected mature size);
- M – Mature (anything else up to normal life expectancy for the species);
- OM – Over Mature (anything beyond mature and in natural decline); and
- V – Veteran (any tree displaying characteristics described by Natural England).

Management Recommendations: recorded in relation to a tree’s structural and/or physiological condition (e.g. the presence of any decay and physical defect) and /or any preliminary management recommendations that may be appropriate. This is NOT intended to comprise a specification for tree work; further advice should be sought prior to implementation. Trees

assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practical.

Physiological condition:

- Good (Generally in healthy condition. No indications of impaired physiological function and in optimum condition for age and species);
- Fair (Condition satisfactory though below mean species performance, with indicators of reduced vitality. Some intervention may be required);
- Poor (Tree in decline/retrenching, with significantly impaired physiological function for age and species); and
- Dead (self-explanatory).

The above are informed by the following;

- Leaf size and colouration – unless otherwise state, leaf size and colouration is typical of the age and species; and
- Canopy density – unless otherwise stated, the canopy density of trees is typical of the age and species.

Structural Condition & Notes:

- Good (without any observable significant biomechanical structural weaknesses);
- Fair (with minor biomechanical structural flaws. Some remedial action may be required); and
- Poor (with significant biomechanical weaknesses requiring intervention particularly where risk management is required).

Notes on the apparent structural integrity of the tree are based upon visual tree assessment, including notes on form, taper, forking habit, storm damage, wood decaying fungi, pests and disease etc. plus other pertinent observations.

Anticipated useful life expectancy (ULE): the length of time a tree is estimated to be able to make a safe useful contribution to local amenity is expressed in years as: <10, 10+, 20+, 40+.

Category Grading: individual trees, hedgerows, groups of trees, and woodlands are assessed in terms of quality and benefit within the context of proposed development and graded into one of four categories (U, A, B, and C) which are differentiated on the tree survey plan by the colours indicated below:

Category U (Red)

Unsuitable for retention. Trees in such a poor condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Retention Implications to a site

Not a material consideration in the planning process but may have other benefits i.e. ecological benefits/importance.

Category A (Green)

Trees of high quality with an estimated remaining life expectancy of 40 years.

Retention Implications to a site

Tree should be retained and amendments to a proposed scheme should be identified in preference to tree removal.

Category B (Blue)

Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

Retention Implications to a site

Where possible amendments to a proposed scheme should be considered in preference to tree removal.

Category C (Grey)

Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Retention Implications to a site

The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.

A, B and C trees have also been given a sub-category of 1, 2 or 3 which reflects their arboricultural, landscape or cultural and conservation values respectively. Each subcategory has an equal weight, for example an A1 tree has the same retention priority as an A3 tree.

Trees have been assigned 'U' or category grading A-C in accordance with the cascade chart given in BS: 5837:2012.

In addition to the category, the tree survey schedule also describes each tree's root protection area (RPA) in terms of radius (metres) and overall area (sq metres).

Limitations

This report has been undertaken in compliance with BS: 5837:2012 and is not intended to be a tree safety survey. This report is prepared for planning application purposes only and does not evaluate the degree of risk posed by trees. Any notes offered regarding structural integrity of trees are to be considered incidental. Our recommendations given for immediate intervention should be put in the hand of the owner/site manager as soon as reasonably practicable.

Trees are dynamic living organisms as well as self-supporting dynamic structures, capable of achieving considerable size and structural complexity. Their physiological and structural condition can change rapidly in response to a wide range of biotic/abiotic factors. They are exposed to and can become damaged by the elements and by human activity, and have co-evolved with decay causing organisms that can degrade and sometimes destroy their structural integrity. The laws and forces of nature dictate a natural failure rate even among trees that appear healthy and structurally sound. They therefore have the potential to fail structurally, without prior manifestation of any reasonably observable symptoms. By their very nature, therefore, it is not possible to categorically state that any tree is 'safe' or hazard free.

Tree surveys and/ or tree inspections are inherently a snap shot in time of the structural and physiological conditions of the trees concerned.

It is beyond the scope of this report to comment in relation to structural damage – direct or indirect, existing or potential – that might be associated with vegetation growth, or vegetation-related soil subsidence or heave.

Unless otherwise stated, all such surveys/inspections are undertaken from ground level and no internal inspections or tests have been undertaken.

Any management recommendations set out within this report are of an advisory and preliminary nature only and relate to trees within the context of current site use.

The findings and recommendations of this report should be considered time-limited for planning purposes to a maximum of 24 months from the date of the tree survey (absent revisions of BS5837, which render pre - existing data obsolete).