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Client: **Rosconn Strategic Land Ltd**

C/o: **Nick Carr**
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Site: **Land west of Robin Hood Road, Elsenham, Essex, CM22 6EB.**

Subject: **BS5837 Tree Constraints, Tree Impacts and draft Tree Protection Method Statement for OUTLINE Residential Development.**

Surveyor: Owen Hutchison.
Report:: Owen Hutchison. (professional-CV in Appendix VI).
Dates: Inspection 2018, updated 25th May 2023. Report: Stage 1: 14th June **Stage 2: 1st Sept & 9th Oct 2023**.

Summary:

- **The land west of Robin Hood Road contains negligible trees within the site. Just an overgrown hedge on the north-west and eastern boundaries, and a copse of riparian trees in the southern corner along the Stanstead Brook.**

- **The proposal for 40 homes respects most trees. But a length of the eastern-boundary hedge is replaced by a new roadside footpath.**

- **Section 5 of this report lists tree impacts, and section 6 shows methods to minimise impact on trees.**

Contents:

Notes:

1. Instruction.

1.1 Rosconn Strategic Land Ltd wish to develop land at the above address.

1.2 The local authority (Uttlesford District Council) will require a tree impact assessment and tree protection method statement for any proposal. The local authority may require mitigation by new planting for any trees lost as part of any development. Therefore, Rosconn has asked B J Unwin Forestry Consultancy Ltd to advise on trees for planning application purposes.

1.3 I have used a **topo survey Updated Survey, of December 2022, by Beacon Land Surveys 18-106-22-01,** for constraints plans. The Proposal**: JCN Design Development Layout BW289a-PL-02 Rev C of August 2023,** extract in section 5, shows the proposal, and guides our tree impact and tree protection sections 5 & 6 of this report.

1.4 Therefore methodology of the report below follows *BS5837:2012 Trees in Relation to Design, Demolition & Construction*.

2. Inspection.

2.1 Owen Hutchison visited the site on 25th May 2023, met with Nigel Holmes and made an un-accompanied inspection in clear weather conditions. Jim Unwin had inspected previously in 2018.

2.2 The survey was from ground level, involving visual observation (Visual Tree Assessment: Mattheck and Breloer, 1994 and Lonsdale, 1999). I measured dbh, (estimated for off-site and inaccessible trees) measured or estimated height, and measured or paced crown spread.

3. The Site.

3.1 The site inspected is an area of pasture-land.

3.2 The site falls gently from approximately 85m aod in the north, to 75m aod in the south. Woodland and higher ground to the south-west affords the site a degree of shelter from prevailing winds.

3.3 British Geological Survey website suggests geology for the site is:
Superficial deposits: Head - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.
Bedrock geology: Thanet Formation and Lambeth Group - Clay, silt and sand.
Sedimentary bedrock formed between 66 and 47.8 million years ago during the Palaeogene period.
Therefore, subsoils will be fine-textured with volume-change potential. This should be confirmed by soil investigation.

3.4 The site is set on the northern side of a shallow stream valley (the Stanstead Brook). Mill House is located at the site's south-western end, with associated gardens to its north-east and south-west. A small bridge links the house to an access drive and public footpath, which joins Rush Lane and runs adjacent to the site's north-western boundary. Robinhood Road and a railway line run adjacent to the site's south-eastern boundary. Residential development sits to the north and east, while open farmland sits south of the railway line.

4. The Trees.

4.1 Trees on site:-

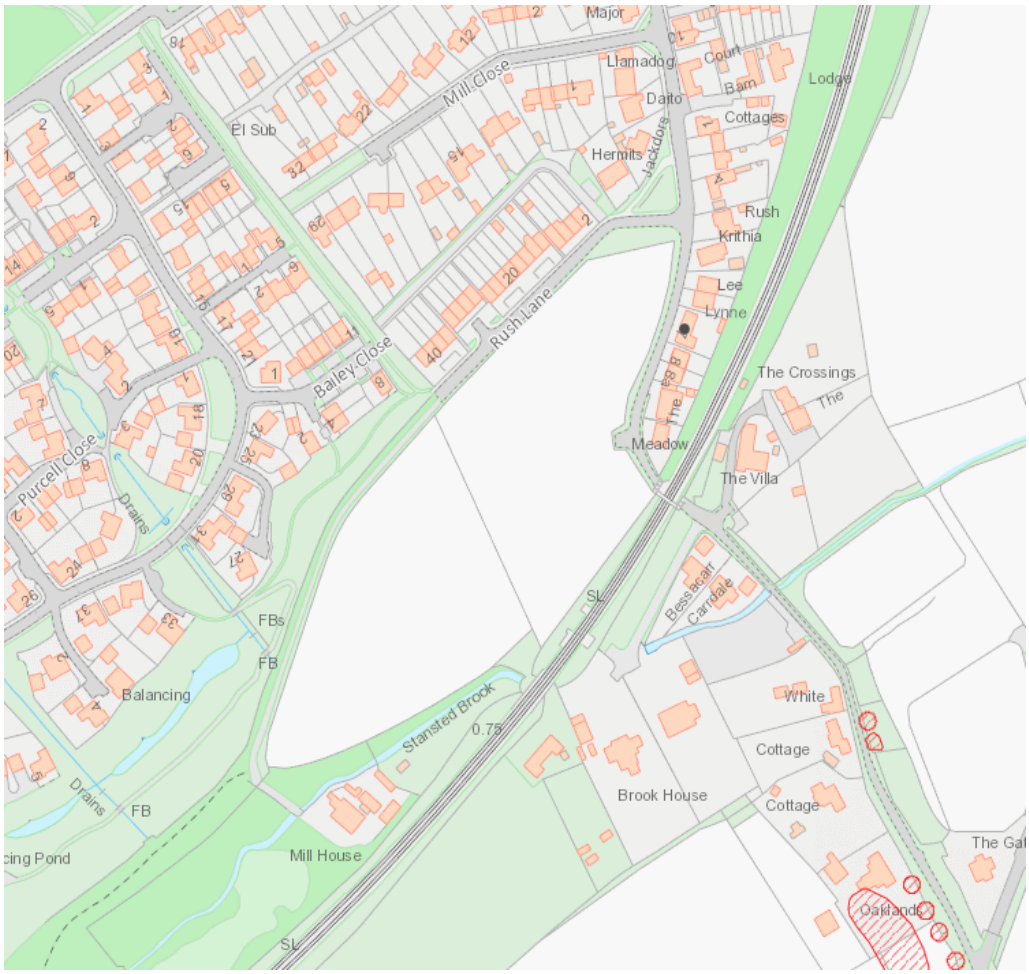
- Minimal trees on the site: only a handful of self-sown sapling ash and alder in the wet area on the north-east corner of the paddocks, T64, T67 etc.
- On the southern edge of the site, in the valley garden near Mill House, are many trees, some good and some large and good such as oak T86 and copper beech T19.
- The stream between house and railway line is edged by a linear copse of large alders. These have an understorey (G87) comprising holly, hawthorn elder and smaller self-sown alders.
- Rush Lane is edged on both sides by old, neglected hedges including some large hazels.
- The north-western edge of the site contains numerous trees: mostly ash grown up out of the hedge, completely un-managed, and many exhibit symptoms of ash dieback.
- There is an argument to coppice almost all of these ash on Rush Lane, in order to restore the hedgerow running along the north-western site boundary.
- Of note along the Rush Lane boundary are good oaks T43 & T53.

4.2 Off-site trees:-

- As noted above the north-western side of Rush Lane is an overgrown hedge.
- Also in this hedge are some big trees: the best being oaks T30, T31 & T32.

4.3 Amenity: This could describe an attractive tree, a screening function, habitat potential, or historic/veteran tree.

- The belt of trees and old overgrown hedge lining Rush Lane provides a large and interesting linear landscape feature and wildlife corridor.
- Garden trees around the Mill House, being in a valley bottom, cause some oppression.
- But trees along the brook including big alders, oak and beech mentioned above also provide a large linear copse feature.
- Trees and hedge H56, located along Robin Hood Road provide screening from the houses beyond. A number of the smaller ash exhibit symptoms of ash dieback.
  Ash T59 is the largest tree on Robin Hood Rd and currently exhibits no symptoms of dieback.
- Uttlesford District Council's constraints map (extract below) indicates that the site is not located within a conservation area, and contains no trees protected by TPO.



4.4 Photos below:

4.4.1 View east through garden trees T11 to T24.

4.4.2 View south-west along access road old hazel coppices G26 to the right.

4.4.3 View south-west along the access road. Many ash exhibiting various stages of ash dieback, particularly along the south-eastern edge.

4.4.4 View south-west along Rush Lane. Hedge H56 to the left and off-site birch T55 to the right.

4.4.5 View north from inside the site, showing trees along the south-eastern edge of the access track.

4.4.6 View south along Robinhood Lane. Smaller ash trees exhibiting symptoms of ash dieback.

4.4.7 View north-east along the rear garden of Mill House. Trees T68 to G87 located on both sides of the stream.

4.5 Detailed Tree Descriptions

4.5.1 Trees **on, or potentially influencing** the site, are individually described in the table below, and shown on the plans in Appendices.

Age class is described as:-

- Sap: Very young tree, or sapling, one-five years old.
- Y: Young tree less than fifteen years old and <1/3 fully grown.
- Sm: Semi-mature tree having attained 1/3 to 2/3 full stature and 1/3 to 1/2 estimated lifespan.
- Em: Early mature: tree at 2/3 to virtually full size, and halfway through its safe life.
- M: Mature: fully-grown tree with useful life expectancy.
- Lm: Late-mature: fully grown, of declining vigour, but still healthy.
- Om: Overmature tree: fully grown and starting to decline in health (but may still have years of safe life).
- Vet: Veteran: usually very old; of significant historic, habitat or cultural value.

Health & Structural condition:- Self-explanatory:- **Good, Fair, Poor or Dead.**

Remaining Contribution, in years
Prediction of safe useful life in its location, estimated as:-
<10 years, >10 years, >20 years, >40 years.

Retention *categories*, based on BS 5837 Section 4.5, and shown in Appendix I, are:-
Retain:

A =	*High quality or value >40yrs safe life*:	Light Green*
B =	*Moderate quality or value >20yrs safe life*:	Mid Blue*
C =	*Low quality or value >10yrs safe life or young trees <150mm stem diameter*:	Grey*

Remove:

U =	*<10yrs safe life or should be removed for sound arboricultural reasons*:	Dark Red*

(*Colour marking on relevant Tree plan).

Sub-category for retention:-
1 = Arboricultural Value
2 = Landscape Value
3 = Cultural and/or Habitat Conservation Value

***BS 5837:2012 Root Protection Area*:**
The estimated area rootable soil required to sustain the tree, centred on the tree's trunk. The RPA can be a varied shape enclosing the correct rootable area: but usually shown as a circle for convenience, unless obvious constraints stop rooting.
Radius calculated as:-
Single-stem tree, radial distance **=** 12 x stem diameter at 1.5m ht.
Multi-stem trees 1-5 stems = *Square root of (sum of individual stem diameters squared).*
> 5 stems = *Square root of (average dbh squared x number of stems).*
(Area can be calculated by $\pi \times r^2$.)

 # - Denotes estimated stem diameter in mm at 1.5m height where measurement was not possible.

T = tree S = shrub H = hedge G = group HG = hedge group.

4.5.2 Elsenham - BS5837 Inspection - BJUFC – 25th May 2023

No. T=tree S= shrub H= hedge G= group	Species	Dbh (stem diam @ 1.5m ht) mm.	Total height. Ht to base of crown. Est Ht in 10 yrs. m.			Crown radii m.				Age class	Health	Structural Condition	SULE	Comment (All are in average to good health and condition, unless stated otherwise.)	Retention category A (best) to C. U = (remove) Sub-category 1, 2 or 3	BS 5837 Root Protection Area Radius. m.	Recommended WORK excluding development.
						NE	SE	SW	NW								
T1	Acer brilliant-issimum	260	6	2	6.5	4	4	4	4	Em	F	F	40+	Ornamental. In garden.	B1	3.1	
T2	Contorted willow	120, 160	4	1	6	3	3	3	2	Y	F	F	10+	Small. In garden.	C1	2.0	
T3	Flowering cherry	140, 250	9	2SE	10	6	4	4	6	Sm	F/P	F/P	10+	Lean north. Poor. In garden.	C1	3.4	
T4	Domestic apple	240 240	6	1	6	3	2	3	2	M	P	P	10+	Poor. In garden.	C1	3.4	
T5	Domestic pear	250	10	2SE	10	3	2	1	2	Em/ M	F	F	20+	Upright fruit tree. In garden.	C1	3.0	
T6	Domestic pear	250	9	2 NE	9	4	2	2	2	Em/ M	F	F	20+	Upright fruit tree. In garden.	C1	3.0	
T7	Ash	280 #	11	3 SW	13	3	4	2	3	Sm	F	F	20+	In garden.	B2	3.4	

T8	**Ash**	**290**	**11**	**3 SE**	**13**	**2**	**4**	**2**	**4**	**Sm**	**F**	**F**	**20-40**	**In garden.**	**B2**	**3.5**	
T9	**Tulip tree**	**510**	**12**	**2 SE**	**12**	**6**	**6**	**4**	**4**	**Sm/ Em**	**F**	**P/F**	**>40**	**Weak main fork. In garden.**	**B1**	**5.2**	**Add rod brace 0.3m above fork.**
G10	**Hawthorn x 2, field maple x 7**	**130 # Ave.**	**4-6**	**1-2**	**4-6**	**4**	**2**	**1**	**4**	**Y - M**	**F**	**P-F**	**20+**	**Two old hawthorns and planted field maples. On edge of garden.**	**C2**	**1.6**	**Trim back hard off footpath.**
T11	**Holly**	**400, 420**	**10**	**3**	**11**	**3**	**3**	**6**	**6**	**M**	**F**	**F**	**20+**	**In garden.**	**B1**	**5.8**	
T12	**Yew**	**700 #**	**11**	**2**	**12**	**6**	**6**	**7**	**6**	**M**	**F**	**F**	**40+**	**In garden.**	**A1**	**8.4**	
T13	**Lawson cypress**	**520**	**16**	**2**	**17**	**2**	**4**	**2**	**4**	**M**	**F**	**F/P**	**20+**	**Break-out wound east side. In garden.**	**B1**	**6.2**	
T14	**Lawson cypress cultivar**	**350, 410, 450**	**12**	**2 SW**	**12**	**4**	**4**	**4**	**5**	**M**	**F**	**P/F**	**20+**	**Spreading form. In garden.**	**C1**	**7.0**	
T15	**Box elder**	**390**	**12**	**2.5 SE**	**12**	**2**	**8**	**7**	**0**	**Em**	**F**	**F/P**	**20+**	***Acer negundo*** **Lean southeast. In garden.**	**B2**	**4.7**	
S16	**Hazel**	**400 basal #**	**4**	**0**	**8**	**2**	**2**	**2**	**2**	**M**	**F**	**F**	**20+**	**Big shrub. In garden. Copparded.**	**C2**	**4.0**	
S17, S18	**Hazels**	**400 basal #**	**9**	**0**	**10**	**5**	**5**	**5**	**5**	**M**	**F**	**F**	**20+**	**Big shrubs. In garden.**	**C2**	**4.0**	
T19	**Copper beech**	**990**	**20**	**0.5**	**21**	**9**	**9**	**8**	**9**	**M**	**F**	**F**	**40+**	**Good. In garden.**	**A1**	**11.9**	
T20	**Hawthorn**	**170, 220**	**9**	**3**	**8**	**3**	**7**	**3**	**2**	**M**	**F**	**F/P**	**10+**	**Lean southeast. In garden.**	**C2**	**3.3**	

T21	Hawthorn	140, 100, 240	6	1	6	3.5	3	2	2	M	F	P/F	10+	Suppressed. In garden.	C2	3.0	
T22	Horse chestnut	450, 670	16	1	17	7	7	7	8	Em	F	P	20+	Recovered from bacterial canker, but several narrow forks. In garden.	C1	8.1	
T23	Sycamore	400	11	2	13	3	5	5	7	Sm	F	P	10+	Severe squirrel damage. In garden.	C1	4.8	
T24	Silver birch	140, 190	10	1	11	0.5	3	3	3	Y/ Sm	F	F	20+	In garden.	C1	2.4	
G25	Blackthorn x 10	200 # Ave.	4	0	5	1.5	5	2	0	M	F	P	10	Leaning or fallen southeast out of hedge.	C2	2.4	Coppice all.
G26	Hazel x 8	300 # Ave.	9	1.5	9	5	6	5	9	Lm	F	P	20+	Overgrown hedge with heavy lean south east.	B2	4.8	
T27	Hornbeam	400	13	2	14	3	6	4	4	Em	F	F	>40	Hedgerow tree.	A1	4.8	
T28	Hornbeam	490	15	4 SE	16	4	7	4	4	Em	F	F/P	10+	Lean east out of hedge.	C1	5.9	
T29	Hornbeam	580	15	2	16	4	5	2	4	Em	F	F	40+	In hedge.	A2	7.0	
T30	Oak	800 #	16	5	16	0	1	7	7	M	F	P	20+	Northeast side of crown broken off.	B2	9.6	
T31	Oak	1100 #	24	6	24	8	11	6	9	M	F	P/F	40+	Big. Several broken or hung-up limbs. Future veteran tree.	A1/A2	13.2	

T32	Oak	700 #	15	4 SE	15	5	5	0	4	M	P/F	P/F	>40	Suppressed by T31.	B2	8.4	
T33	Ash	300, 300 #	18	5	19	4	1	5	5	Em	F	F	10+	Comprises two ivy-clad stems from base. Exhibiting sparse foliage and tip dieback. Possibly ash dieback.	C2	4.2	
T34	Ash	360 #	18	6	19	4	2	5	4	Em	F	F	10+	Rooting across ditch. Minor deadwood in lower canopy. Exhibiting sparse foliage and tip dieback. Possibly ash dieback.	C1	4.3	
T35	Hornbeam	100, 140, 170 #	8	2	10	3	4	3	4	Sm	F	F	>40	In hedge.	B2	2.4	
T36	Ash	300, 340 #	20	5	21	7	3	3	4	Sm	F	F	10+	Ivy-covered tree in hedge. Exhibiting sparse foliage and tip dieback. Possibly ash dieback.	C2	4.5	
T37	Ash	200, 300, 400	17	3	18	4	3	5	5	Em	P	P	<10	Clear evidence of ash dieback. One stem ringbarked.	U	5.8	Remove dead stem.
T38	Ash	150, 200, 250, 430 #	18	5	19	4	5	4	5	Em	F	F	10+	Four main stems from base. Exhibiting sparse foliage and tip dieback. Possibly ash dieback.	C2	5.6	
T39	Ash	200, 200	9	3	8	2.5	2.5	2.5	2.5	Sm/ Y	P	P	<10	Standing dead tree.	U	2.8	
T40	Swedish whitebeam	270 #	7	1.5	8	3	3	3	3	Y/ Sm	F	F	>40	Growing in off-site garden.	B2	3.2	

H41	Hawthorn, field maple, hazel, elder, and blackthorn	200 # Ave.	3-6	1-3	3-6	1-3	1-3	1-3	1-3	M	P-F	P-F	20+	Old, neglected hedge along track.	C2/C3 Habitat	2.4	
T42	Ash	550, 550 #	16	4	16	4	10	6	5	Em	P	P	<10	Multi-stem, one across field. Deadwood and epicormic in central canopy. Sparse foliage Likely ash dieback.	U	7.8	
T43	Oak	720	20	5	21	6	10	7	11	Em/ M	F	F	>40	Recent trench down field within rootzone.	A1/A2	8.6	
T44	Field maple	250, 250 #	7	2	7	4	5	0.5	0	Em	F	P/F	20+	Supressed under oak.	C1	3.5	
T45 - T47	Ash	400 basal #	18	6	10	4	6	5	5	Em	P	P	<10	Ash dieback. Leaning stem over field.	U	4.0	
T48	Ash	250, 350 #	18	4	18	5	8	5	2	M	F	P/F	<10	Lean southeast across field. Dense ivy cover. Exhibiting sparse foliage significant epicormic growth and tip dieback. Likely ash dieback.	U	4.3	
T49	Oak	400 #	10	3	11	2	7	2	0	Sm/ Em	F	P	40+	Pushed diagonally across field.	B2	4.8	Coppice three ash behind.
G50	Ash x 14	300 # Ave.	8-22	5	8-22	2	6	2	2 ext	Sm	P-F	P-F	<10	Slender ash of coppice origin, grown up in hedge. Many trees exhibiting ash dieback.	U	3.6	Coppice.

G51	Ash x many	400 # Ave.	16	3	16	4	6	5	3	Em	P-F	P-F	10+	Slender ash of coppice origin, grown up in hedge. Many exhibiting symptoms of advanced ash dieback.	C2	4.8	Coppice dieback affected stems as necessary.
H52	Hawthorn etc.	200 # Ave.	2-6	1-3	2-6	2	2	2	2 ext	M	P-F	P-F	20+	Neglected, gappy hedge. Suppressed under ash trees.	C2	2.4	
T53	Oak	800	16	4	17	6	7	7	6	M	F	F	40+	Good tree. Dense ivy cover up main stem and scaffold branches.	A1/A2	9.6	Sever ivy at base.
T54	Ash	400, 400 #	14	3	15	9	6	9	5	Em	F	F	20+	Dense ivy. Slightly thin canopy with some tip dieback. Possible early ash dieback.	B2	6.8	
T55	Kashmir birch	220 #	8	2	11	2.75	2.75	2.75	2.75	Y	F	F	20+	Off-site in garden.	C1	2.6	
H56	Hawthorn etc.	250	5	0	5		3		1.5	M	F	F	40+	Overgrown hedge. Dense bramble on field side. Mixed planted hazel, field maple, dogwood and hawthorn at northern end.	C2	3.0	
G57	Mixed species	70 # Ave.	1.5	2	3	0.5	0.5	0.5	0.5	Sap	F	F	40+	Multiple newly planted hawthorns, hazel, dogwood and apples.	C1	1.0	
T58	Field maple	150, 150, 150 # Ave.	7	4	8	4	4	4	4	Em	F/P	F/P	10+	Growing in dense hedge with hazel coppice beneath.	C2	2.6	

T59	Ash	4 stem 400 # Ave.	15	4	15	5	7	5	7	M	F	F	10+	Dense ivy throughout. Easterly stem topped at approximately 5m. Dense ivy cover. Four stems from old coppice stool. Power and telephone lines within central canopy. No symptoms of ash dieback observed.	B1	8.0	Sever ivy at base.
T60	Ash	5 stem 350 # Ave.	10	5	10	4	4	4.5	4	Em/ M	F	F	20+	Dense ivy cover. Comprises five stems from coppice origin. Exhibiting symptoms of ash dieback.	U	7.8	
G61	Ash X2	150 # Ave	6	5	0	2	2	2	2	Y	P	P	<10	Two ivy-clad ash stems exhibiting advanced ash dieback.	U	1.8	
T62	Ash	300, 300	11	5	11	2.5	2.5	2.5	2.5	Sm/ Em	P	P	<10	Ash dieback. Ivy.	U	4.2	
T63	Ash	300 #	8	2	10	2.5	2.5	2.5	2.5	Sm	F	F	10+	In hedge. Exhibiting sparse foliage and tip dieback. Possibly ash dieback.	C2	3.6	
G64	Beech	200 # Ave	4	2	4	1.5	1.5	1.5	1.5	Sm	F	F	20+	Three beech located in front garden. Trimmed to conical form .	C2	2.4	
T65	Ash	150 #	6	1	8	1	1	1	1	Y	F	F	20-40	Growing within dense hedgerow.	C1	1.8	
T66	Alder	100, 100, 100 #	4	1	8	2	2	2	2	Y	F	F	40+	Growing in dense bramble.	C2	1.7	
T67	Alder	120, 170, 230	7	1	10	3	3	3	3	Y	F	F	40+	In boggy spring area.	C1	3.1	

T68 - T80	Alders	550 # Ave.	15	4	15	5	7	5	5 ext	M	F	F	20+	Big alders either side of stream.	B2	6.6	
T81	Sycamore	300 #	12	3	12	4	4	4	4	Sm	F	P	20+	Squirrel damage.	C1	3.6	
T82	Ash	420	10	2	12	4	4	4	3	Sm/ Em	F	F	10+	On railway boundary.	C2	5.0	
T83	Alder	400 #	12	4	12	5	5	5	5	M	F	F	20+	Ivy-covered alder on stream edge.	B2	4.8	
T84	Hawthorn	200, 200 #	5	2	6	5	5	3	0	Lm	F/P	F/P	10+	Two stems originating from a decayed base.	C2	2.8	
T85	Field maple	200, 200 #	7	2	7	4	5	2	2	M	F	F/P	10+	Two stems from base. Suppressed form.	C2	2.8	
T86	Oak	1200 #	23	4	23	11	11	11	11	M	G	G	>40	Very good tree.	A1/A2	14.4	
G87	Mixed species	200 # Ave.	1-5	0	1-5	2	2	2	2	Y - M	F/P	F/P	10+	Holly, hawthorn, elder and self-seeded alder, forming an understorey.	C2, 3	2.4	

End of table.

4.5.3 Trees are listed in the table above, and coloured on the Tree Constraints Plans, to indicate their retention categories A,B,C,U: with the colours explained in the keys of the table (4.5.1) & plan, and Appendix I (A = best to U = remove).
This allows the site designer to plan around important trees, and ignore lesser trees.

5. Proposed Development & Tree Impacts.

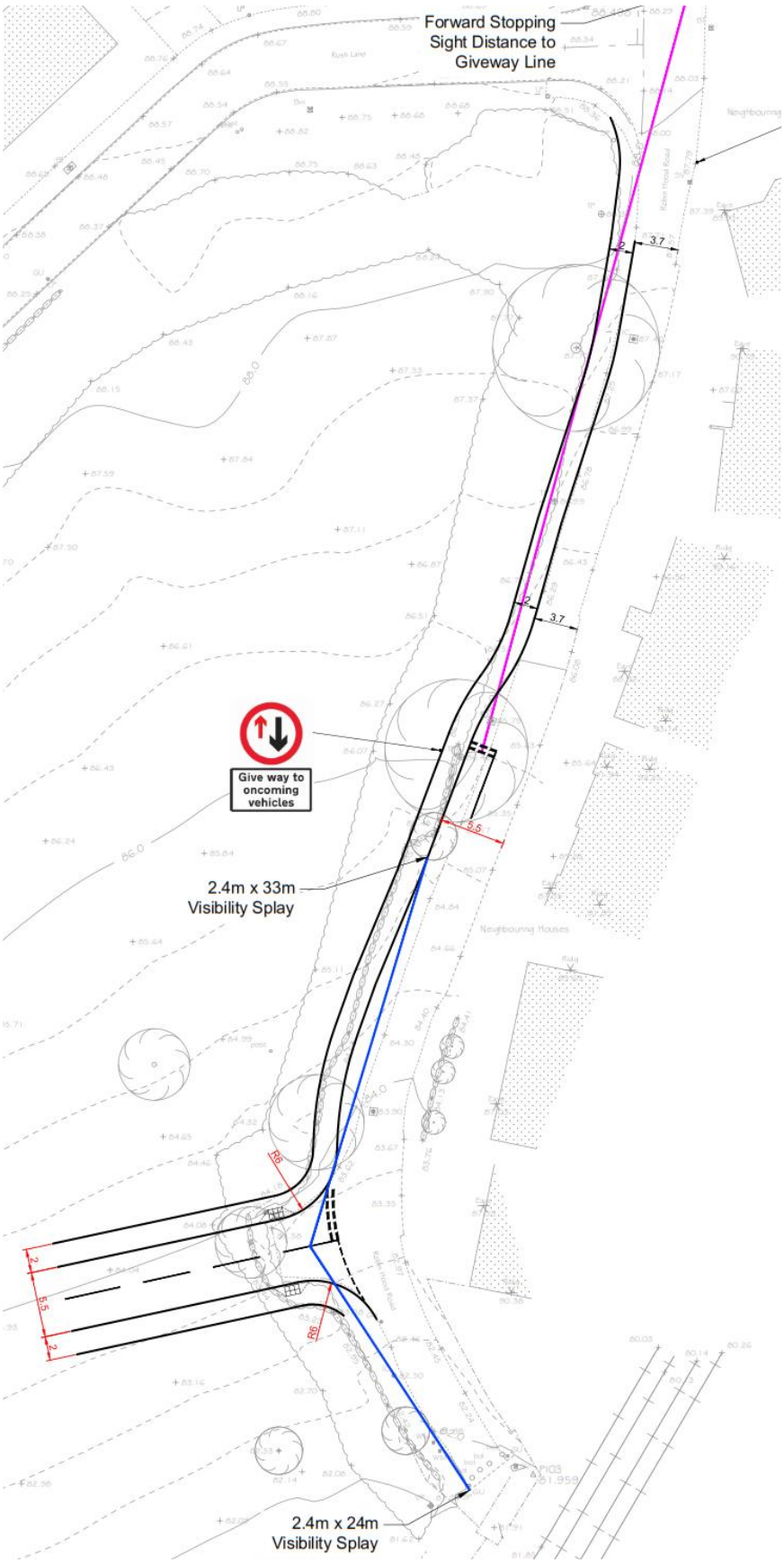
5.1 The proposal.

5.1.1 The proposal, **JCN Design Development Layout BW289a-PL-02 Rev C of August 2023,** extract below, shows the development.

5.1.2 Forty dwellings are created within the site.

5.1.3 A footpath halfway along the north-western boundary links the site to Rush Lane.

5.1.4 The existing access off Robin Hood Road is improved, with a footway along the western side of the road. Indicative footway shown on Savoy Consulting DWG-05 Rev C, extract below:



5.2 Potential Tree Impacts (considered below).

5.2.1 There are six potential arboricultural impacts caused by re-development of the site:

- **physical contact above-ground**,
- **below-ground conflicts (roots),**
- **shading,**
- **over-bearing, and falling material,**
- **subsidence/heave, and damage from root growth,**
- **impact on amenity value.**

These are assessed below:

5.3 Physical contact with above-ground parts of trees.

5.3.1 General:-

Buildings, roads, paths and associated structures can replace trees or intrude into canopy zones. Tree removal and pruning is listed in table 6.2.3 below.

5.3.2 Specific above-ground impacts:-

- The proposal to accommodate a new 2m footway on the road edge requires pruning the Robin Hood Road hedge H56 back to stems in its northern 45m, and removal of about 60m of hedge further south along Robin Hood Road.
- About 4m of Rush Lane's H56 need removing to make a new footpath access.
- H56 needs pruning back for construction access behind plot 1 house.
- Some small trees (alders and hawthorns) may be removed to allow new drain outfall and headwall in G87 on the southern edge.
- Some of G87 may be replaced by attenuation pond on the southern edge of the site.

5.4 Below-ground root spread.

5.4.1 General:-

BS5837 defines a tree's Root Protection Area as a circular area of 12 x stem diameter: required to maintain long-term health of a full-canopied tree. We show it as an idealised circle. Rooting areas are never symmetrical. At the discretion of an arboriculturalist, where rooting is restricted on one side, the RPA can be offset to provide the same protection area. This is shown on the RPA plan.

Ground disturbance within the RPA zone should be avoided. But, the structural rootplate of a tree to resist windthrow is usually smaller than the RPA. Therefore tree stability should not be affected by some planned disturbance within the RPA.

5.4.2 Specific Rootzone Impacts:-

- The Robin Hood Road path needs special elevated construction so close to H56 and ash T59. See 6.9 below for overview of working method. An elevated section of footway would minimise any impact on hedgerow trees.

- Parking by oak T53 for plot 13 needs careful root pruning. See 6.9 below.

5.5 Light Interception & Shading.

5.5.1 General:-

The sun rises to about 60^0 at mid-day in mid-Summer when trees are in leaf (ratio of 16m vertical height to 10m horizontal distance).

The sun only rises to 12^0 in mid-Winter. However, in winter deciduous trees are leafless, so light interception is much reduced.

Theoretical shadows of arcs equal to estimated tree height in ten-years' time are illustrated on our Shading Plan. This is the shadow pattern for the period from May to September inclusive, from 10.00hrs to 18.00hrs daily.

5.5.2 Specific Shading Impacts:-

- The houses are all situated on a south-facing bank. Bigger trees are either set on lower ground on the southern boundary or along the north-western edge. So shading impacts are modest.

5.6 Over-bearing and Falling material.

5.6.1 General:-

Trees drop detritus in the form of flower parts, leaves, twigs, fruits or needles throughout the year. These can be an annoyance to persons living nearby. Bird droppings and honeydew from aphids can be difficult to clean off, or can spoil car paintwork. Big trees make adjacent dwellers nervous.

5.6.2 Specific Impacts:-

- Ash T54 is 6.6m west from plot 5 house. This tree has some dieback, so may need removing by the time construction starts. Or prune back east side by 2m to increase clearance.
- Ash trees in the Rush Lane boundary such as G51 are suffering dieback. I would advise removing all leaning stems, and all stems showing any dieback.

5.7 Subsidence/heave & root growth.

5.7.1 Subsoil and upper geology are most-likely fine-textured-draining, with some volume-change potential.

5.7.2 These must be assessed by an engineer. Structures near trees will need foundations designing according to NHBC Chapter 4.2, or equivalent guidance.

5.8 Amenity impact.

5.8.1 Amenity can be *visual landscape, functional landscape, habitat or heritage/historic.*

- The proposal requires removal of most of the hedge along Robin Hood Lane.
- Some of the lost habitat can be replaced by new hedging within the site.
- Screening can be restored with new hedging.

6. DRAFT Arboricultural Method Statement in sequential order for proposed development at Robin Hood Road site.

6.1 Supervision

6.1.1 We would recommend the following arboriculturist supervision on this site:-

- A **pre-start site meeting** between architect, building / groundwork contractor, Council Tree/Landscape Officer, and retained arboriculturist to agree tree protection and working methods.
- **Check that site management has approved tree protection report and plans, and copies are available on site.**
- **Check installation of protection fencing.**
- **Exact route of drainage outfall through G87 to be agreed by project arboriculturist and marked out on site.**
- **Direct arboricultural oversight of path construction along Robin Hood Road past T59.**

6.1.2 All inspections to be followed within three working days with emailed supervision log with action points and photos, copied to client and tree/landscape officer.

6.2 Tree Management

6.2.1 Tree Work prior to ground work:-

Table overleaf……..

6.2.2 Treework informatives, included for general information:-

6.2.2.1 Disturbance to wildlife.

It is essential to check for nesting birds, bat roosts, badgers and hibernating animals such as hedgehogs under trees, before pruning or removing trees, as negligent disturbance is an offence under the EC Habitats Directive 92/43/EEC, Countryside and Rights of Way Act 2000, Protection of Badgers Act 1992. The Conservation (Natural Habitats, & C) (Amendment) Regulations 2007 make ***any*** damage or destruction of a breeding site or resting place of a European Protected species (mainly bats in a tree context) an offence.
In general, autumn tree work: **September, October and November** is least disruptive to bats and birds. Work on very ivy-clad trees may need a formal pre-start bat assessment by a trained bat worker.

6.2.2.2 Permission

Trees may be protected by a TPO, or could lie within a Conservation Area.
Trees may be owned by third-parties.
Trees may be protected by planning conditions.
Therefore, a contractor must satisfy himself that all necessary permissions from the local planning authority or tree owners are in place before touching trees.
A Felling Licence may be needed to clear non-domestic areas.

6.2.2.3 Quality of Tree Work

All off-ground tree work should be done by insured tree surgeon with certificates in aerial chainsaw use (new designations:- NPTC 020-04, 0020-05, 0020-07, 0021-01, 0021-07; LANTRA 600/5703/8, 600/5717/8, 600/5715/5, 600/5704/X, 600/5714/2), and working to BS3998:2010, and *"Treework at Height"*, the Arboricultural Association's ICoP.
(Stumps can be left to shoot again, ground out, or grubbed out, or poisoned, depending on location.)

6.2.3 Treework for development at Robin Hood Road site:-

No	Species	RPA radius m.	Work for landscape / tree health.	ADDITIONAL WORK FOR DEVELOPMENT	
				Specification.	Reason for additional work for development.
T1	Acer brilliantissimum	3.1			
T2	Contorted willow	2.0			
T3	Flowering cherry	3.4			
T4	Domestic apple	3.4			
T5	Domestic pear	3.0			
T6	Domestic pear	3.0			
T7	Ash	3.4			
T8	Ash	3.5			
T9	Tulip tree	5.2	Add rod brace 0.3m above fork.		
G10	Hawthorn x 2, field maple x 7	1.6	Trim back hard off footpath.		
T11	Holly	5.8			
T12	Yew	8.4			
T13	Lawson cypress	6.2			
T14	Lawson cypress cultivar	7.0			
T15	Box elder	4.7			
S16	Hazel	4.0			
S17, S18	Hazels	4.0			
T19	Copper beech	11.9			
T20	Hawthorn	3.3			
T21	Hawthorn	3.0			

T22	**Horse chestnut**	**8.1**			
T23	**Sycamore**	**4.8**			
T24	**Silver birch**	**2.4**			
G25	**Blackthorn x 10**	**2.4**	**Coppice all.**		
G26	**Hazel x 8**	**4.8**			
T27	**Hornbeam**	**4.8**			
T28	**Hornbeam**	**5.9**			
T29	**Hornbeam**	**7.0**			
T30	**Oak**	**9.6**			
T31	**Oak**	**13.2**			
T32	**Oak**	**8.4**			
T33	**Ash**	**4.2**			
T34	**Ash**	**4.3**			
T35	**Hornbeam**	**2.4**			
T36	**Ash**	**4.5**			
T37	**Ash**	**5.8**	**Remove dead stem.**		
T38	**Ash**	**5.6**			
T39	**Ash**	**2.8**			
T40	**Swedish whitebeam**	**3.2**			
H41	**Hawthorn, field maple, hazel, elder, and blackthorn**	**2.4**			
T42	**Ash**	**7.8**			
T43	**Oak**	**8.6**			
T44	**Field maple**	**3.5**			
T45 - T47	**Ash**	**4.0**			

T48	**Ash**	**4.3**			
T49	**Oak**	**4.8**	**Coppice three ash behind.**		
G50	**Ash x 14**	**3.6**	**Coppice.**		
G51	**Ash x many**	**4.8**	**Coppice dieback affected stems as necessary.**		
H52	**Hawthorn etc.**	**2.4**			
T53	**Oak**	**9.6**	**Sever ivy at base.**		
T54	**Ash**	**6.8**			
T55	**Kashmir birch**	**2.6**			
H56	**Hawthorn etc.**	**3.0**		***Remove about 60m***	***4m for new footpath access off Rush Lane. The rest for new footpath along Robin Hood Road.***
G57	**Mixed species**	**1.0**			
T58	**Field maple**	**2.6**			
T59	**Ash**	**8.0**	**Sever ivy at base.**		
T60	**Ash**	**7.8**		***Remove.***	***For new footpath.***
G61	**Ash X2**	**1.8**		***Remove.***	***For new footpath.***
T62	**Ash**	**4.2**		***Remove.***	***For new footpath.***
T63	**Ash**	**3.6**		***Remove.***	***For widened access.***
G64	**Beech**	**2.4**			
T65	**Ash**	**1.8**		***Remove.***	***For new footpath.***
T66	**Alder**	**1.7**			
T67	**Alder**	**3.1**			
T68 - T80	**Alders**	**6.6**			

T81	**Sycamore**	**3.6**			
T82	**Ash**	**5.0**			
T83	**Alder**	**4.8**			
T84	**Hawthorn**	**2.8**			
T85	**Field maple**	**2.8**			
T86	**Oak**	**14.4**			
G87	**Mixed species**	**2.4**		***Remove some.***	***For attenuation pond and outfall Ito stream.***

(Treework following development see 6.10 below.)

6.3 Tree Protection

6.3.1 Requirement

The most important tree-protection measure is effective protective fencing, erected as close as possible to the Root Protection Area (RPA) boundary before any other work starts on site including demolition in the vicinity of trees. It must be maintained until all work is completed, except final soft landscaping. Here tree protection is proposed for retained trees, and for areas of possible new planting where this is feasible: called **landscape protection zones**.

6.3.2 Vertical Tree Protection

6.3.2.1 Tree Protection fencing **locations** are shown on Tree Retention & Protection Plan (TRP) in Appendices.

6.3.2.2 Two **specifications** for suitable protective fencing are suggested in BS5837. **Suitable specification is given in Appendix III.**

6.3.2.3 Within the fenced off **CEZ** Construction Exclusion Zone: there must be:-

- no construction access,
- no storage of materials, including soil,
- no ground disturbance.

6.3.2.4 Fencing to remain until all demolition, construction and hard landscaping work is completed, and removed only for final soft landscaping.

6.3.2.5 Fence may need lifting temporarily across G87 to make drainage outfall.

6.3.3 Temporary Ground Protection (TGP) within RPAs:-

6.3.3.1 IF work is required to be closer than the all-round protection zone, then the fenced off zone can be made smaller on that side, or entered temporarily, subject to permission from retained arboriculturalist.

Within such zones, temporary horizontal ground protection plus temporary fencing would be essential.

TGP is required for current proposal to protect RPA of T59 by Plot 1 and T54's RPA by plot 5.

Obvious options for temporary ground protection would be:-

-Temporary ground protection plates such as aluminium "Eve Trakway" or plastic interlocking-plate ground protection; both on 50mm depth of woodchip or bark mulch, as shown in Appendix IV.

-Butted scaffold boards or 22mm plyboard laid on bearers on 50mm depth woodchip or bark mulch (pedestrian access only).

-A layer of woven geo-textile under minimum 250mm depth of graded aggregate which is lifted after work.

6.4 Construction Access.

6.4.1 General points:-

- Initial access can use gateway off Robin Hood Road.
- All retained trees and hedges need protection.
- No pedestrian, vehicle, plant or machinery to enter RPAs without temporary ground protection, as detailed in para 6.3.3 above.

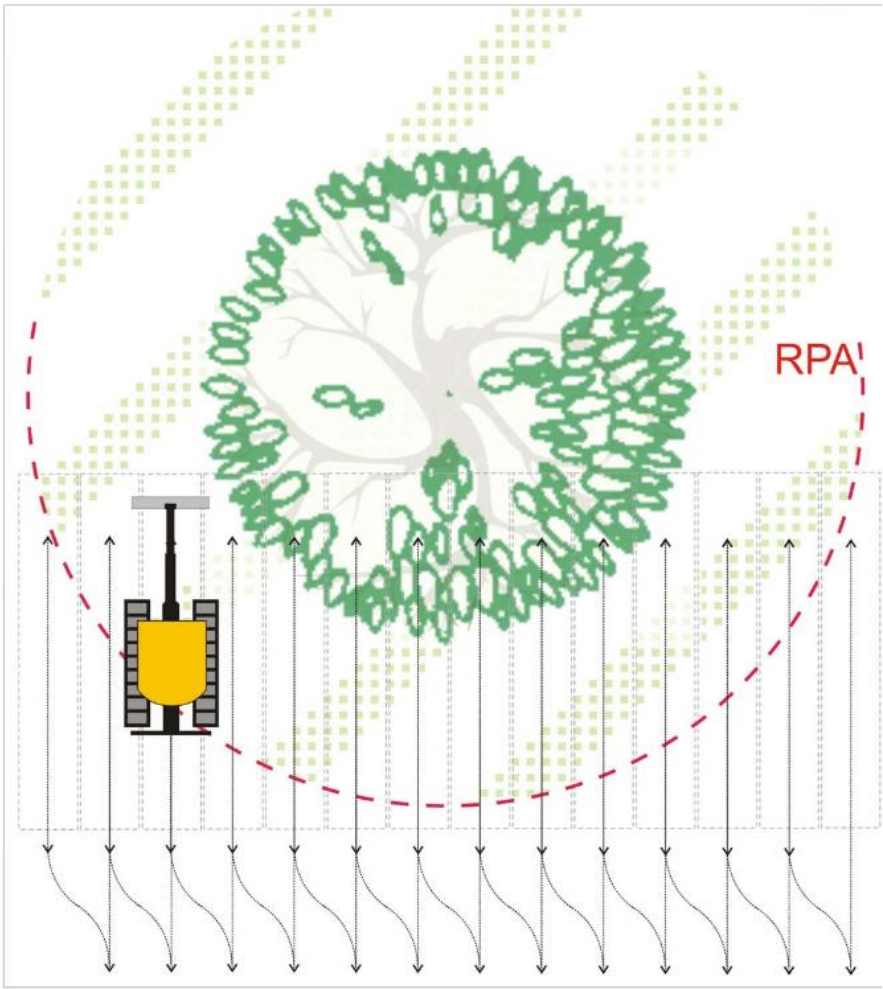
6.4.2 Site huts could be placed within RPA of trees and hedges; provided they stand elevated on stilt feet, no excavation is required for temporary services, and pedestrian and vehicle access is ground protected as detailed in 6.3.3 above. SITE HUTS COULD be located in the existing entrance.

6.5 Demolition / Excavation within RPAs:-

6.5.1 General specification to demolish existing surfacing or digging anywhere near trees:

Method below….

- Parallel tracking with slewing outside the RPA:-
- Use maximum 3-tonne rubber-tracked mini-digger with toothed bucket.
- Slew outside RPA.
- Heap spoil outside RPA, for dumper to collect and run outside RPA.
- Replace sub-surface with new soil to landscape specification.



6.6 Foundations within RPAs:-

6.6.1 No special measures needed for houses to protect trees. But see 6.9 for parking areas and footpath.

6.7 Drainage.

We are unaware of a drainage design, but general tree protection principles must be followed:

6.7.1 Storm-water drainage: Any soak-away system must be designed to avoid significant increase and no decrease of ground water in trees' rooting zones. See 6.8 below for drain pipe location through G87. Divert into soakaways outside RPAs, or store for greywater recycling.

6.7.2 Foul Drainage: Keep out of RPAs. Link to existing wherever possible.

6.7.3 Sustainable Urban Drainage System: Any SUDS scheme, to reduce the load on local mains drainage, must not significantly add to, or reduce, the soil water in trees' root zones. Drain into ponds, store for greywater re-use, or allow percolation into landscaped or parking areas.

6.8 Service Trenches within RPAs.

6.8.1 We are unaware of proposed services, but service trenches (electric lights, utilities, telecoms, drains etc) must be d**esigned** to run as far from trees as possible.

6.8.2 Trenches **within RPAs should be avoided.** But if there is no other option:-

6.8.3 Drainage outfall through G87:

- Project arboriculturist to agree exact location and access required.
- All trenching, hand root pruning and restoration under direct arboricultural supervision.

6.8.3 Any trenching within an RPA ideally uses a **trenchless boring** system.

6.8.4 Otherwise use onerous **hand digging** method:-

- If soil is coarse-textured and friable use an air-spade to reveal roots (Appendix VI).
- No roots >25mm diameter or bundles of smaller roots must be exposed or severed without express written permission of local authority tree officer or retained arboriculturalist.
- Retain roots >25mm diameter or bundles of smaller roots within service trenches. Thread service pipe underneath.
- Any root pruning must use a sharp saw or loppers, and not ripped by digger bucket.
- Any excavation within the RPA of a tree must be covered immediately after digging with damp hessian, topped by tarpaulin & plyboard, to prevent root desiccation.
- Hole must be backfilled within five days of opening.
- Wrap exposed roots >20mm or bundles of smaller roots with hessian, and surround by 50mm depth sand, as part of backfill medium.
- Tamp backfill material by hand thumper or whacker plate only.

6.9 Minimal-dig construction for new access drives, parking & paths

6.9.1 If roads, footpaths, cycle-ways, yards or parking are required near trees, they can be constructed in two ways:-

Conventional construction:- If outside a tree's RPA, as here.
Minimal-dig construction:- If within a tree's RPA. Not needed here.

6.9.2 Parking bays by oak T53:

- Use mini-digger to carefully dig narrow trench along kerbline
- Max depth of dig 0.5m.
- Banksman to sever roots by hand with loppers as soon as exposed.
- Cover tree side of trench with damp hessian and sheet material to prevent desiccation & slumping.
- Dig out rest of parking area.
- Install kerb or retaining structure within two weeks of opening ground.
- Backfill on tree side with excavated topsoil.

6.9.3 Footway past ash T59 & H56.

- A new footway 1.5-2m wide with adequate construction depth would need slight elevation for 10m past T59, so an elevated section on a frame secured by screwpiles would need installing between road edge and tree.
- Excavation at the western (tree) edge of the footway should be limited to 50mm depth max, to minimise root pruning.
- If any roots were exposed, they would need careful pruning under arboricultural supervision. Roots >25mm diam should be retained.
- Given the fact that road level is likely to be raised by about 150mm, a handrail may not be needed.
- Below is an example of a ***Green Grid Systems'*** footpath elevated on screwpiles at 1m centres on each side. This results in insignificant RPA disturbance.
- The rest of the footway would also need hand pruning to trim off hedge roots, but could be set into the ground at only standard 100mm above road level.

Green Grid Systems *RootBridge Variant*

RB Pedestrian 3.5kN

There are areas in the cities, in urban areas where a lot of people traverse the streets. These areas, being the hotspots for people movement are often designed around the trees which soften the hard landscaping, bring cooling benefits and to give the area a pleasant look and feel. Integrating with trees amongst this continuous area of footfall however can be tricky as space needs to be maximized as well as consideration given for the needs of the tree. The pedestrian version of RootBridge comes into its own here, providing a thin bridge over the RPA (65mm total depth) and suitable to take heavy pedestrian loading.

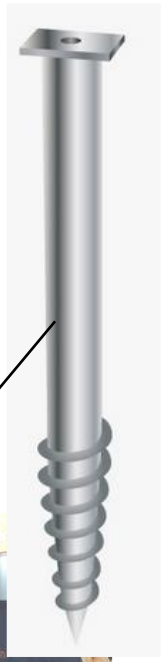
Where can it be used?

The RootBridge system as a system is very adaptable. Different length groundscrews are used to accommodate a wide range of soil conditions and the low overall depth ensures that overall levels are kept as low as possible. This version can be finished with heel-safe mesh grids for a contemporary look or can be overlaid with paving or asphalt.

Possible scenarios are as follows:

- *Walkways between trees*
- *Around trees in paved areas such as city centres*
- *Use with pavements*

Depth	*65mm*
Configuration	*1mx1m sections*
Loading capacity	*3.5kN point load/pedestrian only*
Surface finish	*Heel-safe mesh, pave over or GRP*



Green Grid Systems

The Nursery/Littleton Lane
Winchester
Hampshire
SO21 2LS
United Kingdom
Contact Details
01962 433460
sales@greengridsystems.com

6.9.4 **No minimal-dig construction is required for this design proposal.** Appendix V gives examples of materials for minimal-dig, porous, build-up.

6.10 Tree work following construction.

6.10.1 Trees should be re-inspected at completion of construction and hard landscaping. This inspection would reveal the need for remedial tree work for the following reasons:-
-to rectify damage occurring during construction (regrettable but possible),
-to allow additional clearance.
-or complete tree removal if trees were considered too close for safe retention.

6.10.2 All additional work subject to further local authority agreement if trees are protected by planning conditions, TPO, or location within a Conservation Area.

6.11 New Planting.

6.11.1 The proposal requires extensive hedge removal: so additional planting is needed. Particularly to re-screening along Robin Hood Road.

6.11.2 If additional planting is desired, useful web-based guide: ***Tree Species Selection for Green Infrastructure – A guide for specifiers by Dr Andrew Hirons & Dr Henrik Sjoman Issue 1.3 of 2019***, advises on tree selection and size.
Any planting and maintenance must comply with: **BS 8545 "*Trees: from nursery to independence in the landscape* – Recommendations". BSI 2014.**

6.11.3 Any planting must be provided with adequate long-term soil-moisture.
To remind architects and engineers, we reproduce below, Stockholm Tree Pits' (www.stockholmtreepits.co.uk) table of root volumes for a given final size of tree:

Table 1: Minimum requirements for tree pit specifications.

	Mature Size of Tree*†				
	Very Small (<5m)	**Small** (5–10m)	**Medium** (10–15m)	**Large** (15-25m)	**Massive** (>25m)
Recommended minimum volume of **uncompacted loam soil**	**6m³** (5m³ if shared)	**12m³** (9.5m³ if shared)	**20m³** (16m³ if shared)	**28m³** (24m³ if shared)	**36m³** (30m³ if shared)
Recommended minimum volume of **stone-based structural soil**	**8m³** (6m³ if shared)	**15m³** (12m³ if shared)	**26m³** (20m³ if shared)	**36m³** (28m³ if shared)	**45m³** (35m³ if shared)
Recommended number of **air/water inlets‡**	**1** (0.5 if shared)	**1** (0.5 if shared)	**1**	**2** (1.5 if shared)	**2**

†Fastigiate trees will require less rooting space than trees with wide canopy shapes. As a rule of thumb, one should assume that a tree with a narrow and columnar crown form would require half as much soil volume as a tree of the same height that has a wide crown.

‡Ideally the surface of the tree pit should be open, rough in texture, and protected from compaction. If there is hard surfacing above the tree pit designers must provide pathways for water ingress and gaseous exchange. This could be provided by a permeable surface over the whole of the tree pit or by using a non-permeable surface with specially designed inlets. Suitable inlets would be substantially larger than an irrigation tube and service the whole of the tree pit.

Author:

B J Unwin Forestry Consultancy.

References:

"The Body Language of Trees". Claus Mattheck and Helge Breloer. HMSO 1994.

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"Tree Species Selection for Green Infrastructure – A guide for specifiers" Dr Andrew Hirons & Dr Henrik Sjoman Issue 1.3 2019.

"*Treework at Height"* Industry Code of Practice. Arboricultural Association. 2020.

"The use of Cellular Confinement Systems near Trees". Practice Guidance Note 12. Arb Association. Sept 2020.

Appendix I

BS 5837 section 4.5 Tree Categorisation Method.

Table 1 overleaf:

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Appendix II

Site location, shows local roads and public rights of way.

Google Earth aerial. Taken 2023.

Appendix III

Vertical Tree Protection Fencing, from BS5837.

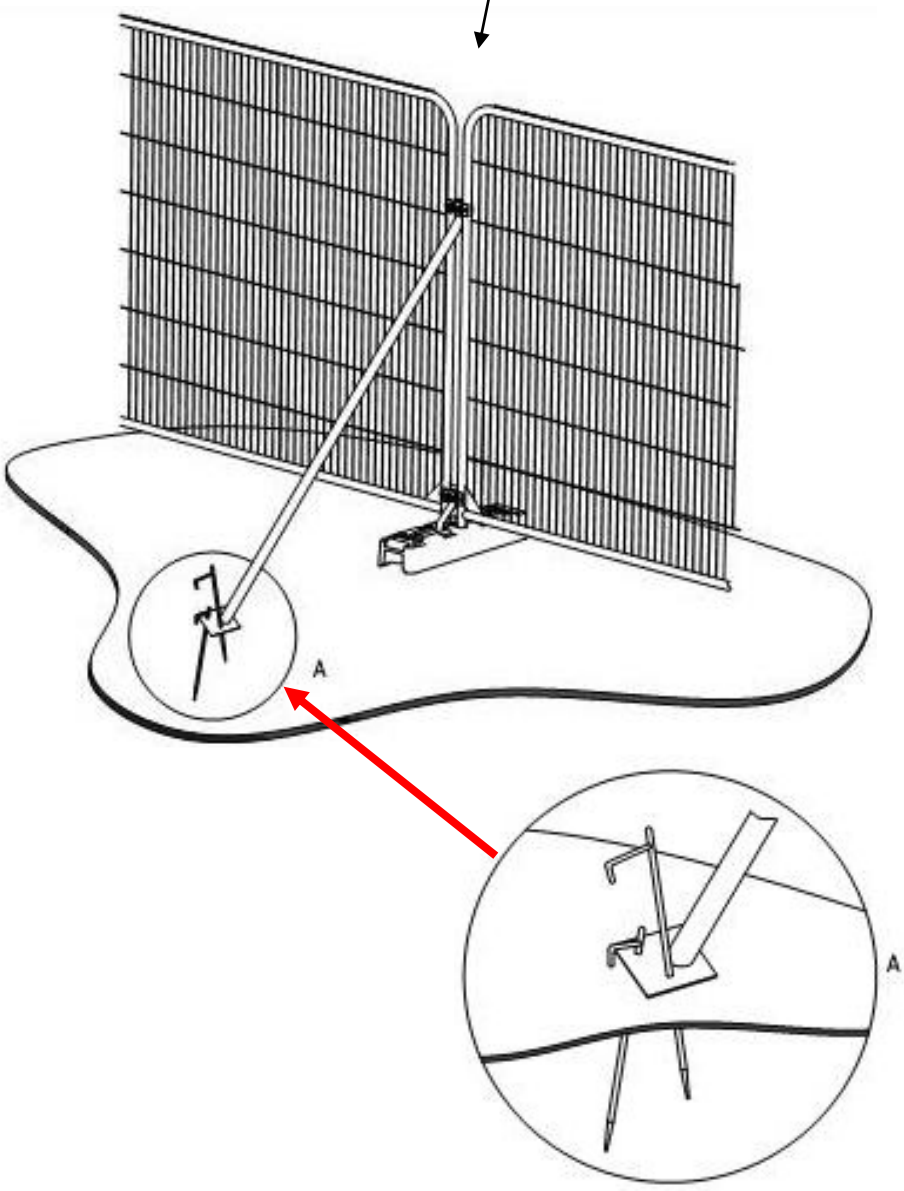
Vertical protective fence: location on plan:

Lightweight: in situ for < 3 months or constrained site-

Heras panels joined by two clamps, on feet, with pegged strut on each panel.

Apply signs at maxm 20m spacing:

TREE PROTECTION - Construction Exclusion Zone. NO ACCESS



Example of Barrier stakes & heavy-duty tape, use three strands, for tree protection on a modest site.

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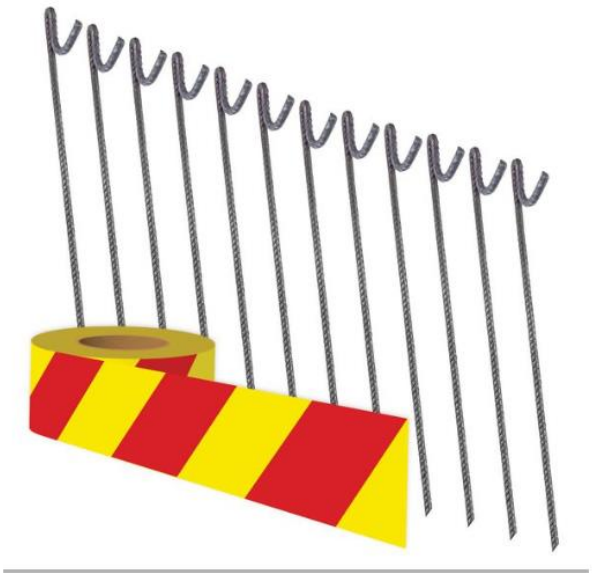

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- Durable fence pins hold your barrier in place outdoors
- Non-adhesive tapes come in a variety of colours

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Description Red/Yellow stripe extra strong tape & pins kit

› View all available options (7)

Appendix IV

Horizontal Ground Protection x 2 examples

Example of aluminium temporary ground protection.

EVE TRAKWAY

Roadways - Medium Duty Trakpanel

The Medium Duty Trakpanel, or 'Box' panel, is ideal for where both pedestrian and vehicle access is required. This versatile panel can be laid with either a smooth or corrugated surface uppermost. The smoother surface finish provides excellent support underfoot, whilst the construction of the panel maintains a high load bearing capacity. Due to the way these panels fit together, a smooth joint is created therefore reducing trip hazards.

The Benefits:-

Pedestrian friendly upper surface

Suitable for heavy vehicles Ideal for where both pedestrians and vehicles require safe passage.

Technical Specifications	
Dimensions	**2.5 x 3m (when installed 2.44m x 3m due to overlap)**
Weight	**274.7 kg**
Carrying Capacity	**A more pedestrian friendly roadway, this system is capable of taking any road going loads.**

The following Roadways are available.

Please select an item to view more information:

Other Roadways products:-

Heavy Duty Trakpanel-

LD20-

Roadway Ramps-

Multi-Directional Trakpanel

Example of plastic temporary ground protection.

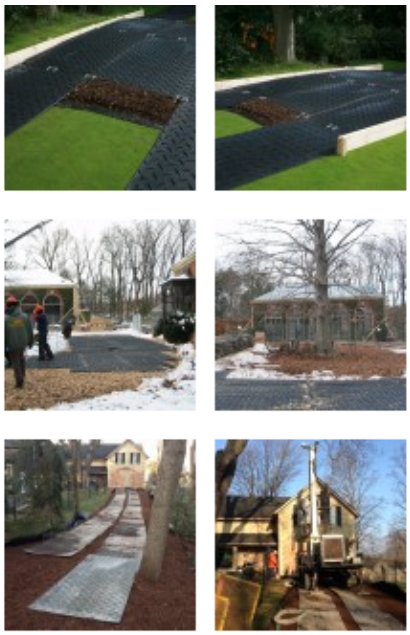
Ground-Guards Tree Root Protection

Tree root protection for construction projects

Planning Departments may often need to stipulate that site access roads will not involve any excavation because of the proximity of tree roots on the site. Furthermore, that they will also provide additional ground cushioning when passing over the immediate areas where there are tree roots beneath. This is very important to prevent compaction of the ground, and long-term damage to the soil structure, the tree roots, and ultimately, to the health of the trees themselves.

An effective means of protecting tree roots is to use a double layer of Ground-Guards. Panels with 150mm of wood chips sandwiched in-between which creates a suitably cushioned roadway for this purpose.

The Ground-Guards system is so durable and versatile that whatever your need, the team will be delighted to work with you to provide an effective solution. Please just call our team on 0113 267 6000 for friendly advice on any difficult site conditions that you need assistance with.



Appendix V

Two Examples of 3-dimensional cellular confinement build up for minimal-dig roading or parking.

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.

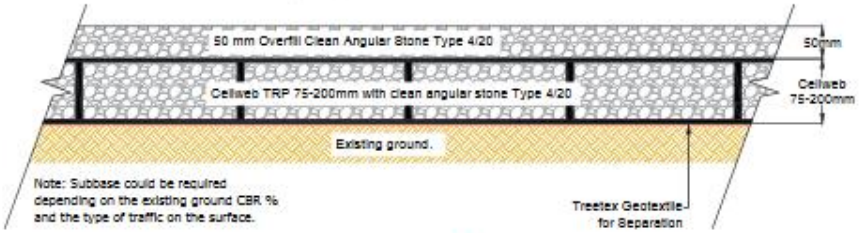
Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

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?

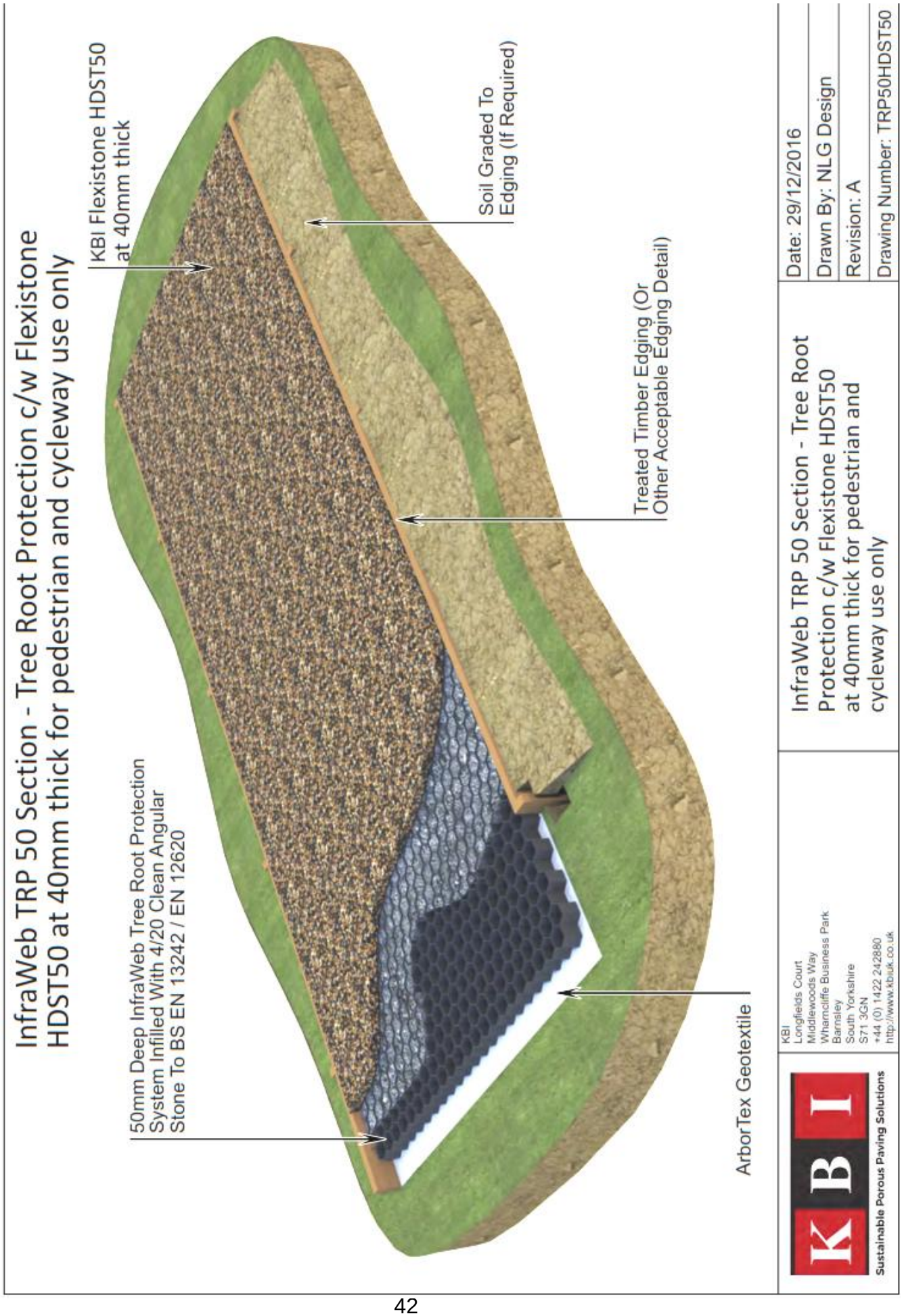
The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical 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

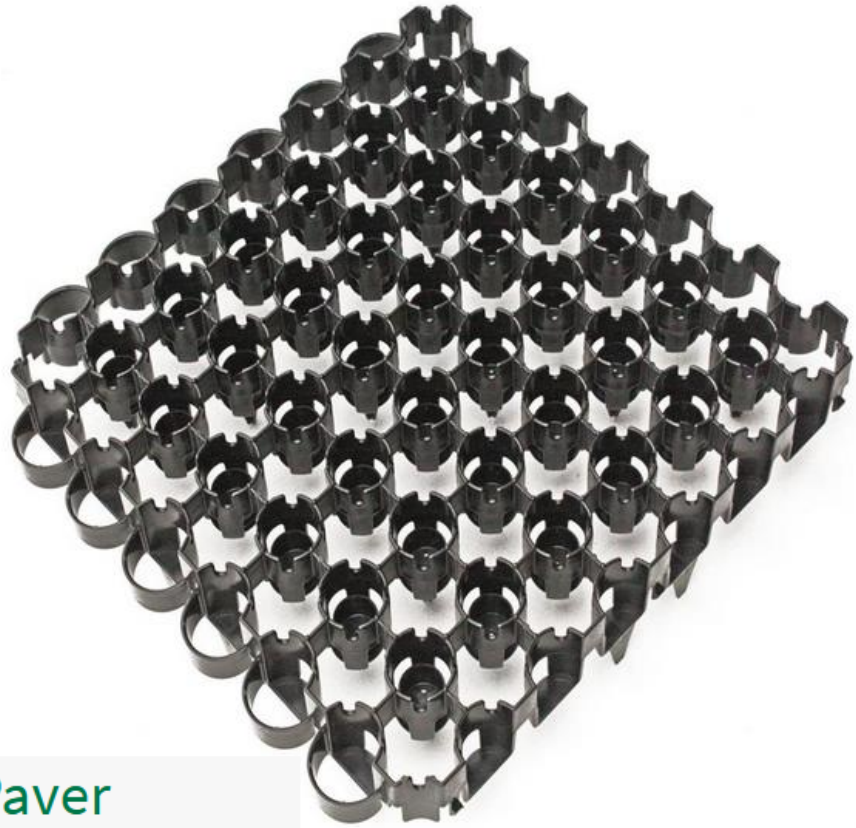


Web: www.geosyn.co.uk | Tel: 01455 617139
Fax: 01455 617140 | Email: Sales@geosyn.co.uk

Geosynthetics
Engineered Solutions


InfraWeb TRP 50 Section - Tree Root Protection c/w Flexistone
HDST50 at 40mm thick for pedestrian and cycleway use only
KBI Flexistone HDST50
at 40mm thick
Soil Graded To
Edging (If Required)
Treated Timber Edging (Or
Other Acceptable Edging Detail)
50mm Deep InfraWeb Tree Root Protection
System Infilled With 4/20 Clean Angular
Stone To BS EN 13242 / EN 12620
ArborTex Geotextile
KBI
Longfields Court
Middlewoods Way
Wharncliffe Business Park
Barnsley
South Yorkshire
S71 3GN
+44 (0) 1422 242880
http://www.kbiuk.co.uk
Sustainable Porous Paving Solutions
InfraWeb TRP 50 Section - Tree Root
Protection c/w Flexistone HDST50
at 40mm thick for pedestrian and
cycleway use only
Date: 29/12/2016
Drawn By: NLG Design
Revision: A
Drawing Number: TRP50HDST50

Trays for strengthening gravelled or grassed areas over tree roots.
Or for <u>surfacing</u> porous, minimal-dig, build-up.
GOPLPA 40mm thick or 85mm thick Bodpave, below.



Bodpave 85 Plastic Paver

PRODUCT CODE: 150WW4080-PRO

Bodpave® 85 porous pavers can be installed with either a grass or gravel filled surface. Bodpave® 85 pavers/grids are strong interlocking 100% recycled cellular porous plastic paving grid systems for grass reinforcement, ground stabilisation and gravel retention for regular trafficked surfaces (pedestrian and vehicles) BodPave® 85 permeable pavers are manufactured in the UK from UV Stabilised 100% recycled HDPE and are very strong, chemically inert and non-toxic. Bodpave® 85 porous paving provides a durable, safe and environmentally friendly surface for trafficked areas with a very low carbon footprint. BodPave® 85 is a cost effective solution to worn and rutted grassed areas, displaced gravel and for source control of surface water run-off. Bodpave® 85 offers a load bearing capacity of up to 400t/m^2, will cope with static axle loads up to 60kN.

Appendix VI

Example of Air-spade.

Courtesy of Ruskins Trees & Landscapes

Appendix VII

- B J UNWIN FORESTRY CONSULTANCY Ltd. -

Head office: **Parsonage Farm, Longdon, Tewkesbury, Gloucestershire. GL20 6BD.**
Tel / Fax: 01684 833538. Home Tel: 01684 833795. Mob: [redacted]. **E-mail:** [redacted]
Satellite Offices: - Haley Ridge, Highcliffe**, Nr. Wadebridge, Cornwall**, PL27 6TN.
-105 Charfield Court, 2 Shirland Road, **London**, W9 2JR.
Associate office: - 1 Market Place Mews**, Henley-on-Thames, Oxfordshire,** RG9 2AH.
Principal: **Jim Unwin BScFor, MICFor, FArborA, CEnv.**
Chartered Forester - ICF Registered Consultant - Fellow of the Arboricultural Association - Chartered Environmentalist.

From:	**Jim Unwin**	*To:*	**Prospective Client**
Date:	**July 2023**	*No. of pages:*	**2**
Subject:	**Professional CV**		

Below are set out **B J Unwin Forestry Consultancy**'s competences and experience.

Insurance:-

£5m Public Liability & **£2m Professional Indemnity (renewed June)**.

Personnel:-

B J Unwin (born 1956) started his forestry career as a tree surgeon and landscape contractor in 1975. He studied forestry at Aberdeen University from 1977 to 1981, worked for Unilever as a Forestry Manager in the Solomon Islands from 1981 to 1983. Since then he has been based in Gloucestershire assisting clients to manage their woodland, trees and vegetation throughout Southern Britain, and occasionally in northern England, Scotland and Northern Ireland.

In the mid-1980s to mid-1990s for a period of about ten years he taught chainsaw, tree felling and tree surgery courses at Worcestershire Agricultural College on a part-time basis. He was assessed and passed as a LANTRA assessor in these skills, and held NPTC certificates of competence in chainsaw use on the ground and up trees.

He now works as a tree consultant / adviser to a range of clients listed below.

For tree decay testing we have a **PICUS II ULTRASOUND** tomograph with electronic callipers and a **RESISTOGRAPH-R400** micro-drill.

A secretary/ plan technician assists; plus calling in extra help as required (eg ecologist or arboricultural assistant). On bigger projects he regularly works as a part of a multi-disciplinary team.

Current BJUFC qualifications are:-

BSc Forestry Hons 1st Class, Aberdeen 1981.

Chartered Forester No. 0330064, 1986.

Fellow of the Arboricultural Association, 1995.

Licensed Subsidence Risk Assessor, 1997-2001 (scheme closed in 2001).

Completed Training in September 2002 to Prepare Native Woodland Plans for CCW and FC in Wales.

Arboricultural Association Registered Consultant No. 42, from 2004 to May 2021.

LANTRA certificate for Arboriculture and Bats, BJU in 2005.

Examined and approved to submit Welsh WGS as Management Planner and PAWS Assessor, 2006.

Joined Utilities Vendor DataBase, Supplier No: 88101 in Feb 2006 (left 2010).

Training and Certification in basic CAD operation 2006.

Chartered Environmentalist April 2008.

Woodfuel Production and Supply : LANTRA Certificate of Training Dec 2008.

Training in CAVAT amenity tree asset valuation October 2010.

Company Safety Policy:- We were successfully assessed by Safety Management Advisory Services (SMAS) for many years as meeting CDM Regs 2015 Core Criteria Stage 1, as a ***Worksafe Consultant No. 75950.*** expired 09/2020. Not renewed.

CITB *Health, Safety & Environment Test for Managers & Professionals* passed 22/01/2015.

First-aid at work June 2013.

DBS Basic Certificate P0003GX9B7C dated 28th Nov 2022 Certificate 001100238741.

ROSPA Routine Playground Inspection Certificate valid from 20/10/2022 to 20/10/2025.

Current clients and typical work include:-

English Heritage	Tree safety inspection contract 2007-2013 for East Midlands, East Anglia, London and SE England. Tree safety inspection contract for West of England & Midlands 2008 - 2021.
Planning Inspectorate (**PINS**) & Dept for Communities and Local Government. 2000-2017.	**Arboricultural Inspecting Officer** in South-West England, South East England, West Midlands and East Midlands; advising the First Secretary of State on TPO appeals since 2000. Contract with DCLG expired April 2008 when transferred to PINS. Contract continued with PINS, as Non-Salaried **Arboricultural Inspector, determining TPO appeals and High Hedge appeals. All non-salaried inspectors released in 2017.**
Architects / Developers / Planning Appeals	Complete Tree Constraints, Impact Assessment & Tree Protection advice for planning, working with other professionals to input arboriculture into more complex development schemes. Recent assignments in Liverpool to Cornwall, Kent, Norfolk & London. All using BS5837:2012. FULL CAD CAPABILITY.
Amey Mouchel Ltd	Overseeing Amey Tree Officer on motorway and trunkroad tree inspections throughout Midlands and Marches to 2012. Amey Mouchel are agents for Highways Agency.
CRH Tarmac Ltd, + Midland Quarry Products + Quarryplan (in Northern Ireland).	Since 1990 working with Estates staff, quarry managers and Landscape / ecological consultancies organising and managing contracts for tree and woodland planting both pre- and post- quarrying. Also preparing landscape restoration schemes for straightforward sites plus landscape management on sites throughout southern England, East Anglia and south and south-west Wales. (Commendations for Land Restoration and Environmental improvements from Spelthorne Borough Council 2003.) Also in England & Northern Ireland ongoing tree consultancy for Quarryplan.
Land Agents	Assisting Bruton Knowles clients' with woodland management and other tree issues since 1984. We also assist clients of Fisher German and Savills on a regular basis.
Tarmac Central now CRH Tarmac Ltd.	1988-2018 woodland management of Hopwas Hays Wood, Tamworth.
Rural estates in Herefordshire, Worcestershire and Gloucestershire, plus private woodland owners in southern England and Wales.	Since 1983 woodland management, tree management, hedgerow management. Many are Ancient woodlands and SSSI's requiring detailed ecological management plans produced in consultation with ecologists. About forty Farm Woodland Premium Schemes and about twenty Native Woodland Plans prepared to date in England and Wales. On-going EWGS grant applications. Input into Tir Gofal (and its successor) and Stewardship schemes. Better Woods for Wales (BWW) applications.
British Waterways	Ten-year Tree and Vegetation Management Plans along canals and around reservoirs in London, Hertfordshire, Berkshire, Birmingham, Staffordshire, Worcestershire, Gloucestershire, Shropshire, Llangollen Canal, etc: plus help in dispute with riparian owners. This work ceased around 2011.
Stroud District Council	Management of 49Ha woodland since 1989 on FC schemes plus grassland on DEFRA Stewardship Schemes, including HLS. Retired Nov07.
One–off clients	Since 1983 assisting tree owners, developers, lawyers etc throughout southern or midland Britain, including Wales, on a wide range of tree-related issues including planning, planning appeals, subsidence, health & safety, disputes, vegetation control, expert witness, valuation of woodlands, standing and felled timber, Christmas trees etc, and tree and landscape planting schemes. Recently High Hedge issues and BS5837 are hot topics.
Malvern Hills District Council. South Oxfordshire District Council	BJU Stand-in part-time Consultant Tree Officer Summer 2003. JF-D stand in Consultant Tree Officer summer 2009 to spring 2010.
Golf course & leisure facilities	Assistance with development of Carden Park golf course in Cheshire. Management advice for trees on other golf courses: Eg Ross Golf Club, Swindon Golf Club .
Farm management	Management of own 95Ha farmland since 1985.

Please do not hesitate to ask for further information. B J Unwin END.

Appendix VIII

Constraints plans:-

- **Tree Plan**

***Retention categories*, based on BS 5837 Table 1:-**

A = *High quality & Value (>40yrs life)*: Green.

B = *Moderate quality & Value (>20yrs life)*: Blue.

****C = *Low quality & Value (>10yrs life):* Grey.**

U = *Trees to be removed (<10yrs life)*: Red.

****PLEASE NOTE. FOR CLARITY, C-CATEGORY TREES MAY NOT BE COLOURED.**

and

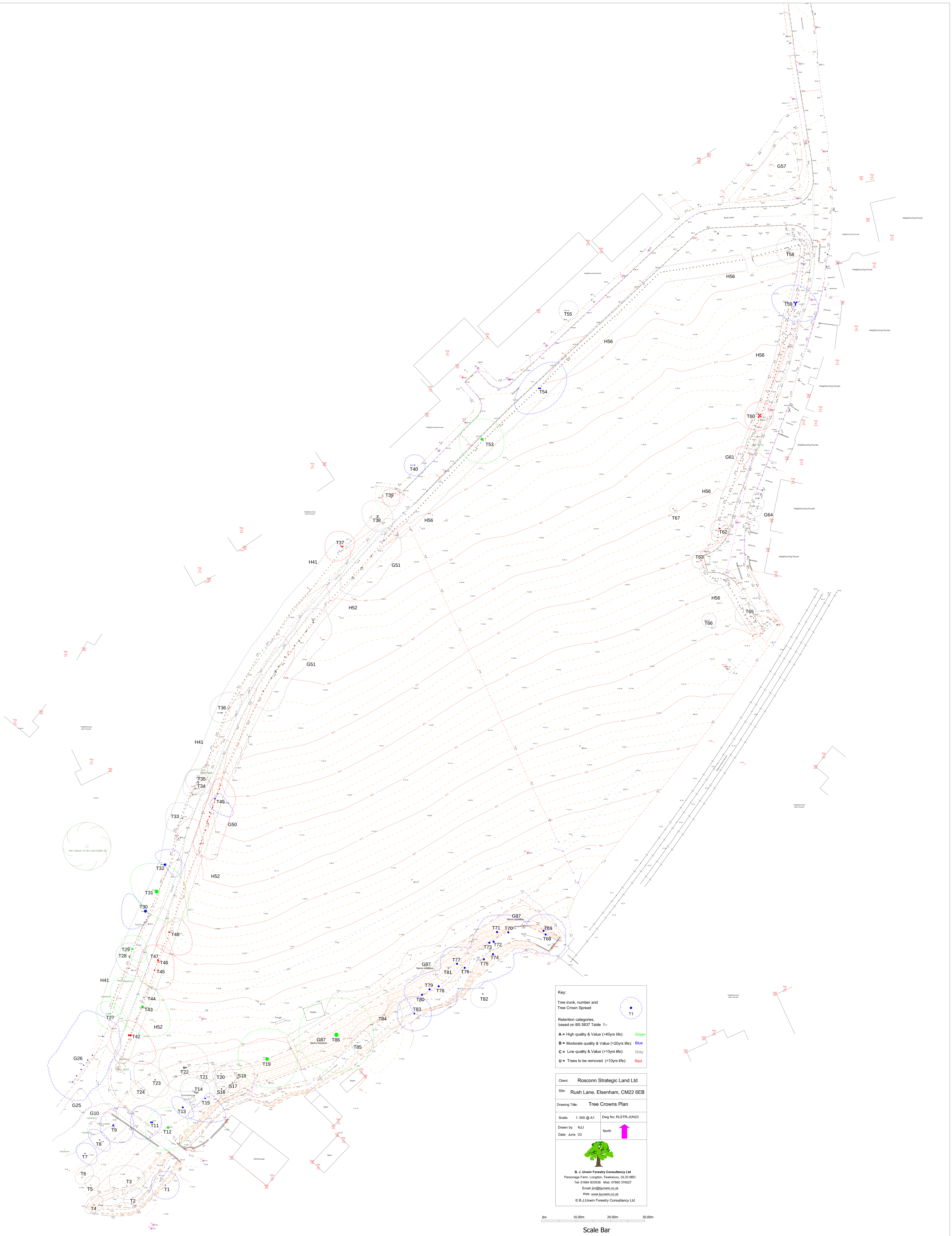
- **Root Protection Areas Plan**

RPA = circles.
See Tree Table for dimensions.

and

- **Theoretical Shading Plan**

= quadrant of tree height in ten years' time from north west (mid-morning) to due east (evening).
This is a shadow pattern for 1 x tree height
from 10.00-18.00hrs from May to September.



Key:

Tree trunk, number and Tree Crown Spread — T1

Retention categories, based on BS 5837 Table 1:-

A = High quality & Value (>40yrs life): Green

B = Moderate quality & Value (>20yrs life): Blue

C = Low quality & Value (>10yrs life): Grey

U = Trees to be removed (<10yrs life): Red

Client: Rosconn Strategic Land Ltd	
Site: Rush Lane, Elsenham, CM22 6EB	
Drawing Title: Tree Crowns Plan	
Scale: 1: 500 @ A1	Dwg No: RLETR-JUN23
Drawn by: NJJ Date: June '23	North

B. J. Unwin Forestry Consultancy Ltd
Parsonage Farm, Longdon, Tewksbury, GL20 6BD.
Tel: 01684 833538 Mob: 07860 376527
Email: jim@bjunwin.co.uk
Web: www.bjunwin.co.uk

0m 10.00m 20.00m 30.00m

Scale Bar

Key:

Tree trunk, number and Root Protection Areas (RPA) — T1

Retention categories, based on BS 5837 Table 1:-

A = High quality & Value (>40yrs life): Green

B = Moderate quality & Value (>20yrs life): Blue

C = Low quality & Value (>10yrs life): Grey

U = Trees to be removed (<10yrs life): Red

Client: Rosconn Strategic Land Ltd	
Site: Rush Lane, Elsenham, CM22 6EB	
Drawing Title: Root Protection Areas Plan	
Scale: 1: 500 @ A1	Dwg No: RLERPA-JUN23
Drawn by: NJJ Date: June '23	North

B. J. Unwin Forestry Consultancy Ltd
Parsonage Farm, Longdon, Tewksbury, GL20 6BD.
Tel: 01684 833538 Mob: 07860 376527
Email: jim@bjunwin.co.uk
Web: www.bjunwin.co.uk

0m 10.00m 20.00m 30.00m

Scale Bar

Key:

Tree trunk, number and Theoretical shading — T1

Theoretical shading = for estimated tree height in 10 years time from mid morning to early evening at May and September.

Client: Rosconn Strategic Land Ltd	
Site: Rush Lane, Elsenham, CM22 6EB	
Drawing Title: Theoretical Shading Plan	
Scale: 1: 500 @ A1	Dwg No: RLESH-JUN23
Drawn by: NJJ Date: June '23	North

B. J. Unwin Forestry Consultancy Ltd
Parsonage Farm, Longdon, Tewksbury, GL20 6BD.
Tel: 01684 833538 Mob: 07860 376527
Email: jim@bjunwin.co.uk
Web: www.bjunwin.co.uk

0m 10.00m 20.00m 30.00m

Scale Bar

Appendix IX

Tree retention & Tree Protection Plan.

(TRP)

Path detail here, see "Site Access" Savoy Consultancy DWG-05 Rev C July 22.

Temporary ground protection, see section 6.3.3 of BJUFC report.

Hand sever roots, see section 6.9 of BJUFC report.

Elsenham 28

Elsenham 29

Shared Surface Road 6.0m

6m Shared Surface Road

5.5m Road

2m Footpath link

Private drive

Grasscrete
Emergency
Turning area

Attenuation

For drain outfall: see section 6.8 of BJUFC report.

CEZ

0m 10.00m 20.00m 30.00m

Scale Bar

Key:

Tree Protection Fence

CEZ = construction exclusion zone

Root Protection Areas

Trees removal for safety

Trees removed for development

Hand sever roots

Temporary ground protection

Note: New underground services may require changes to this tree retention & protection plan.

Client:	Rosconn Strategic Land Ltd
Site:	Rush Lane, Elsenham, CM22 6EB
Drawing Title:	Tree Retention and Protection Plan
Scale: 1: 500 @ A0	Dwg No: RLETRP-AUG23
Drawn by: NJJ Date: June '23	North

B, J. Unwin Forestry Consultancy Ltd
Parsonage Farm, Longdon, Tewksbury, GL20 6BD.
Tel: 01684 833538 Mob: 07860 376527
Email: jim@bjunwin.co.uk
Web: www.bjunwin.co.uk

End.