LANDSCAPE ARCHITECTURE

ARBORICULTURAL IMPLICATIONS ASSESSMENT AND METHOD STATEMENT

FOR

PROPOSED DEVELOPMENT

AT

LAND ADJACENT VIRGIL STREET
CORNBROOK
MANCHESTER
M15 4ED

March 2024

Job Number 5145

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TABLE OF CONTENTS

	Contents	Page No.
1.0	ARBORICULTURAL IMPLICATIONS ASSESSMENT	3
2.0	ASSESSMENT	3
3.0	IMPACT ASSESSMENT	4
4.0	MITIGATING PROPOSALS	5
4.1	Tree Losses and Replacement Planting	5
4.2	Development	5
5.0	DISCUSSION	6
6.0	METHOD STATEMENT	8
6.1	Demolition of Existing Building	8
6.2	Tree Works	8
6.3	Tree Protective Fencing	8
6.4	Additional Precautions Outside Fenced Areas	9
6.5	Site Buildings	9
6.6	Services	9
6.7	Methodology for the Construction of Permanent and Temporary Hard Surfaces within Root Protection Areas	10
6.8	Summary of Methodology for the Protection Trees	11
6.9	Conclusion	11

APPENDIX ONE - Tree Schedule & Tree Constraints Plan
APPENDIX TWO - NJUG 10 Section 4.0
APPENDIX THREE – Site Notice for Protective Fencing
APPENDIX FOUR – Example of Special Surface Construction
APPENDIX FIVE - Development Layout and Tree Protection Plans

Disclaimer
The tree(s) referred to in this report are living entities and are therefore subject to natural processes. They will also be subject to changes to their environment caused by human's activities and to exceptional weather conditions. The inspection undertaken by our qualified staff relies on visual attributes of tree health and structure which can be assessed from a ground based inspection. Hidden defects which are not readily visible may not be detected. We therefore cannot wholly guarantee the condition and safety of the trees inspected beyond what can be reasonably assessed from the procedure used. We would recommend that the trees are regularly inspected and our staff will advise on the suitable frequency of these inspections.

1.0 ARBORICULTURAL IMPLICATIONS ASSESSMENT

1.1 The purpose of this report is to: -

a) Assess the implications, if any, the proposed development will have on the trees identified in the Preliminary Tree Survey of 6th January 2023 carried out by DEP. The tree schedule and tree constraints plans from the initial survey are included within Appendix One of this report.

b) Advise on arboricultural measures, which would be likely to mitigate any damage resulting from the proposed development

1.2 All background information from which this report is based has been taken from the initial survey, as stated in point 4.1 (a), by DEP.

2.0 ASSESSMENT

2.1 The Site Layout Plans within Appendix Five identifies the trees in relation to the proposed development.

2.2 In order to fully assess the impact of the proposals an Implications Table has been created, which gives details of the proximity of the associated works to the trees.

2.3 The below Implications Table details the Root Protection Area (RPA) in accordance with the British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*. This is an area that should be left undisturbed in order to provide adequate rooting area for retained trees. This is also illustrated on the Site Plans of Appendix Five.

2.4 This information can then be used in accordance with BS 5837:2012 to determine whether the development will have a detrimental impact on the health of the trees. Once this has been determined remedial measures can be detailed to reduce the impact the proposals will have.

2.6 Implications Table: -

Tree No.	Species	Root Protection Area (m^2)	Circle Radius (m)	Distance to any proposed construction or surfacing (m)	Can the Tree be Successfully Retained
T1	Sycamore	58.63	4.32	Remove for development	
T2	Poplar x 2	72.38	4.80	Remove for development	
T3	Poplar	65.33	4.56	Remove for development	
T4	Norway Maple	91.61	5.40	Remove for condition	
T5	Sycamore	304.19	9.84	3.8	Yes see 4.0
T6	Whitebeam	76.05	4.92	n/a	Yes

Tree No.	Species	Root Protection Area (m^2)	Circle Radius (m)	Distance to any proposed construction or surfacing (m)	Can the Tree be Successfully Retained
T7	Whitebeam	58.63	4.32	n/a	Yes
T8	Whitebeam	46.32	3.84	n/a	Yes
T9	Bird Cherry	117.67	6.12	n/a	Yes
T10	Norway Maple	173.90	7.44	n/a	Yes
T11	Norway Maple	146.98	6.84	n/a	Yes
T12	Whitebeam	162.86	7.20	n/a	Yes
T13	Elm	289.53	9.60	7.9	Dead tree
T14	Bird Cherry	162.86	7.20	n/a	Yes
T15	2 x Sycamore	65.33	4.56	n/a	Yes
T16	Sycamore	72.38	4.80	n/a	Yes
T17	Norway Maple	58.63	4.32	n/a	Yes
T18	Sycamore	179.55	7.56	n/a	Yes
T19	Norway Maple	221.67	8.40	n/a	Yes
T20	Norway Maple	209.18	8.16	n/a	Yes
T21	Norway Maple	173.90	7.44	n/a	Yes
T22	Norway Maple	72.38	4.80	n/a	Yes
T23	Sycamore	173.90	7.44	n/a	Yes
T24	Poplar	58.63	4.32	n/a	Yes
T25	Sycamore	68.81	4.68	n/a	Yes
T26	Poplar	32.98	3.24	n/a	Yes
T27	Norway Maple	241.08	8.76	n/a	Yes
G1	Goat Willow	<113.10	<6.00	n/a	Yes
G2	2 Poplars	<40.72	<3.60	n/a	Yes
T28	Poplar	35.47	3.36	n/a	Yes
T29	Silver Maple	282.34	9.48	n/a	Yes
T30	Silver Maple	289.53	9.60	n/a	Yes
G3	Mixed	<72.38	<4.80	n/a	Yes

3.0 IMPACT ASSESSMENT

3.1 To assess the implications of the proposed development each tree can be categorised in the following way: -

	Trees to be Retained		Trees to be removed	
	With No Impact	**Impact within shown RPA**	**Due to Condition**	**Due to Development**
Tree No.	T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, T21, T22, T23, T24, T25, T26, T27, G1, G2, T28, T29, T30 & G3	T5	T4	T1, T2 & T3

4.0 MITIGATING PROPOSALS

4.1 Tree Losses and Replacement Planting

4.1.1 The loss of any tree is always regrettable, although in this instance the trees to be removed for development are low quality scrub trees and their removal would not impact on the amenity of the area as the adjacent groups of trees are to be retained.

4.1.2 It is considered that these losses can easily be compensate for within the new Landscape Scheme produced by DEP, which includes tree and hedge planting and provides an increase in the overall population.

4.2 Development

4.2.1 As shown above, the Implications Table identifies that T5 (Sycamore) is shown to have hard surfacing within its shown Root Protection Area (RPA).

4.2.2 However, the ground in this area is more or less level and the new surfacing can be constructed using a geo-textile material, such as 'Cellweb'. This will provide a permeable sub-base on top of the existing soil layer without the need to compact the ground, this usually requires a minor scrape of less than 100mm. A permeable surface such as gravel or paving can then be placed on top. An example of this can be found in Appendix Four of this report.

4.2.3 In order to facilitate the development of the parking spaces some remedial works will be required for T5.

4.2.4 A clear tree works specification and details of all tree protective measures can be found in the following Arboricultural Method Statement.

5.0 DISCUSSION

5.1 The majority of the root system, of a tree, is in the surface 600mm of the soil, extending radially for distances frequently in excess of the trees height. Beyond the main structural roots (close to the base of the trunk), the root system rapidly sub-divides into smaller diameter roots: off this main system, a mass of fine roots develops.

5.2 The shape of the main structural roots develops in response to the need for the tree to have physical stability. Beyond these major roots, root growth and development is influenced by the availability of water and nutrients. Unless conditions are uniform around the tree, which would be unusual, the extent of the root system will be very irregular and difficult to predict. It will not generally show the symmetry seen in the branch system.

5.3 The parts of the root system, which are active in water and nutrient uptake, are very fine, typically less than 0.5mm diameter. They are short lived, developing in response to the needs of the tree, with the majority dying each winter. It is *essential* that conditions in the soil remain conducive to the healthy growth of these fine roots so that the water and nutrients necessary for healthy tree growth can be absorbed.

5.4 All parts of the root system, but especially the fine roots, are vulnerable to damage. Once they are damaged, water and nutrient uptake will be restricted until new roots have regenerated. Vigorous young trees will be capable of rapid regeneration, but over mature trees will respond slowly, *if at all*.

5.5 In order to live and grow, roots need oxygen from the soil. Respiration by the roots and other soil organisms depletes this oxygen and increases carbon dioxide levels in the soil; a correct balance of these gases is normally maintained by diffusion between the soil and the atmosphere. Anything, which disturbs this balance, will affect the condition of the root system.

5.6 The factors that most commonly affect this diffusion adversely, and therefore damage roots, are the following: -

a) Compaction of the ground, which reduces the space between soil particles. This is particularly important on clay soils. A single passage by heavy equipment on clay soils or storage of heavy materials can cause significant damage.
b) Changing soil levels, even for a few weeks.
c) Covering the root area with impervious surfaces.
d) A rise in the level of the water table. Roots can tolerate submersion for short periods. But a permanent rise will deplete the soil of oxygen.

5.7 Serious damage is often caused during preliminary site works by stripping the topsoil. For this reason, such works should be avoided until protective fencing has been erected.

5.8 Excavations in the rooting area can sever roots. As the majority of roots are in the surface 600mm, even shallow excavations can cause damage.

5.9 Excavations for foundations, landscaping or service trenches are usually sufficiently deep to sever most of the roots, and it should therefore be assumed that all parts of the root system beyond the excavation would no longer serve the tree.

5.10 Excavation or soil stripping which sever or damage the roots may impair the stability of the tree and make it dangerous.

6.0 METHOD STATEMENT

Before any form of development commences on the site the following works should be undertaken: -

6.1 Tree Works

Tree No.	Proposed Works
T1, T2, T3 & T4	Fell to ground level and grind out stumps.
T5	Prune to clear light column and crown lift to approx. 3m. Remove significant deadwood.

Recommended works should be carried out to the *British Standard Recommendations for Tree Work, BS 3998:2010*

6.2 Demolition of Existing Building

6.2.1 Prior to any works the tree protective fencing as mentioned below shall first be placed in the position as shown on the plans of Appendix Five for the purpose of protecting the trees during demolition and construction.

6.3 Tree Protective Fencing

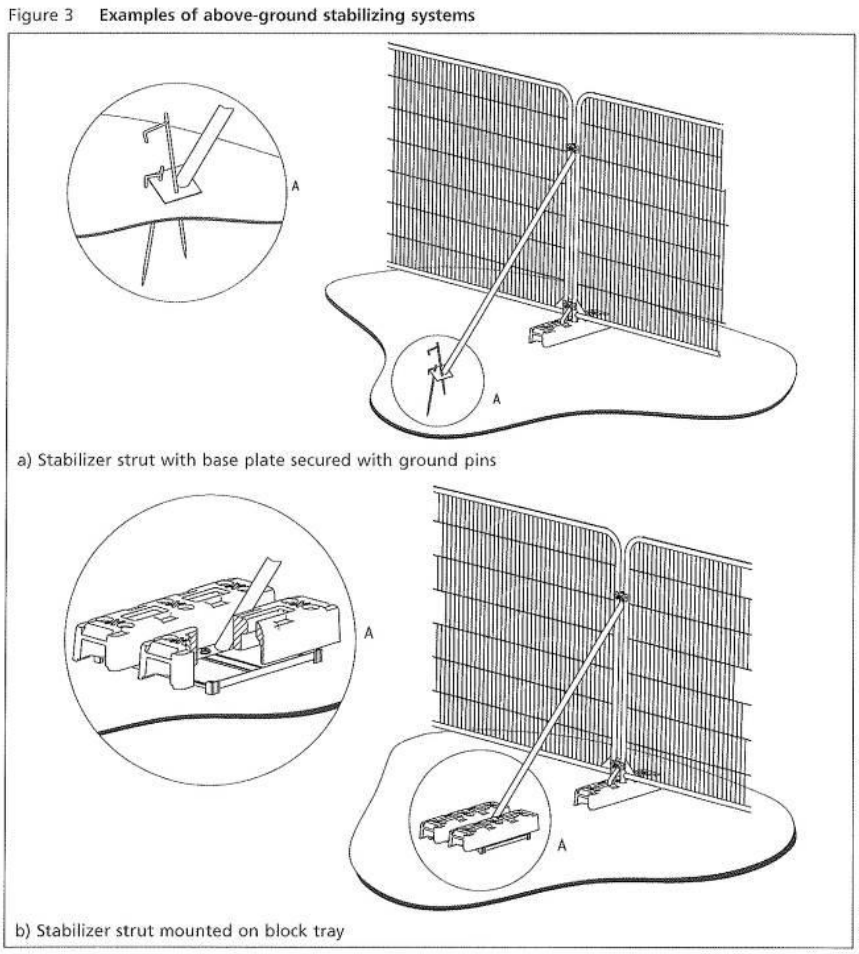
6.3.1 Construction Exclusion Zones (CEZs) shall be enclosed by Temporary Protective Fencing and/or, where necessary, Temporary Ground Protection. All fencing used on the site should fully comply with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*.

6.3.2 The fencing should be strong and suitable for local conditions. It should also take into account the degree of construction activity on the site.

6.3.3 In this circumstance the location for the protective fencing should be as shown on the Tree Protection Plan of Appendix Five and of the following specification:

6.3.4 Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height. The panels shall stand on rubber or concrete feet and butt together and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45º angle and extend back into the CEZ and shall be attached to a block tray base (Figure 3b). No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.

Figure 3(a): Type 2 Fencing (BS5837:2012 above-ground strut stabilising system with ground pins)



6.3.5 No storage of materials or any construction operations should occur within the fenced area. Additionally, when designing the site layout, account should be taken of the route/installation method of underground services/drains and, the route/construction method of new access roads/driveways in relation to the retained trees. It would be advisable to mark out the optimum position of the protective fencing on the ground prior to finalisation of any design proposal.

6.3.6 Notices should also be erected on the fencing stating, ‘Protected Area - No operations within fenced area’. An example can be found in Appendix Three, which should be laminated and attached to the fencing at regular intervals.

6.3.7 The positioning of the protective fencing is also very important and should be erected in the proposed location identified on the site plan of Appendix Five. Once the fence has been erected it should never be crossed and particular care should be taken not to store any materials or soil within the protected area.

6.4 Additional Precautions Outside Fenced Areas

6.4.1 Oil, bitumen, cement or other material likely to cause damage to the tree will not be stacked or discharged within 10m of the trees stem or within the protective area. Also, materials in general will not be stacked or discharged within the exclusion zone.

6.4.2 Concrete mixing and washing will not be carried out within 10m of any retained trees.

6.4.3 Fires will not be lit beneath the foliage or in a position where the flames could extend to within 5m of the foliage, branches or trunk. If the fire is large, then this may necessitate a distance of at least 20m.

6.4.4 Trees that are to be retained will not be used as anchorage for equipment.

6.4.5 Notice boards, telephone cables, or other services will not be attached to any part of the retained tree.

6.4.6 Care should be taken when using cranes or other equipment near the canopy of the retained trees. Also, any trees to be felled in proximity to the retained trees should be done so with particular care.

6.5 Site Buildings

6.5.1 Site cabins, compounds and welfare should all be placed outside of the protection areas of retained trees.

6.5.2 Where this is not possible further advice should be sought from the appointed arborist and in some circumstances, it may be possible to construct temporary ground protection and adjust fencing, but this is only to be considered as a last resort.

6.5.3 On larger sites of more intensive development where this is little open spaces for site buildings then alternative arrangements off site should be considered or part of the site should remain undeveloped until the final stages when less site storage is needed.

6.6 Services

6.6.1 Where possible all service trenches should be dug outside of the Root Protection Area.

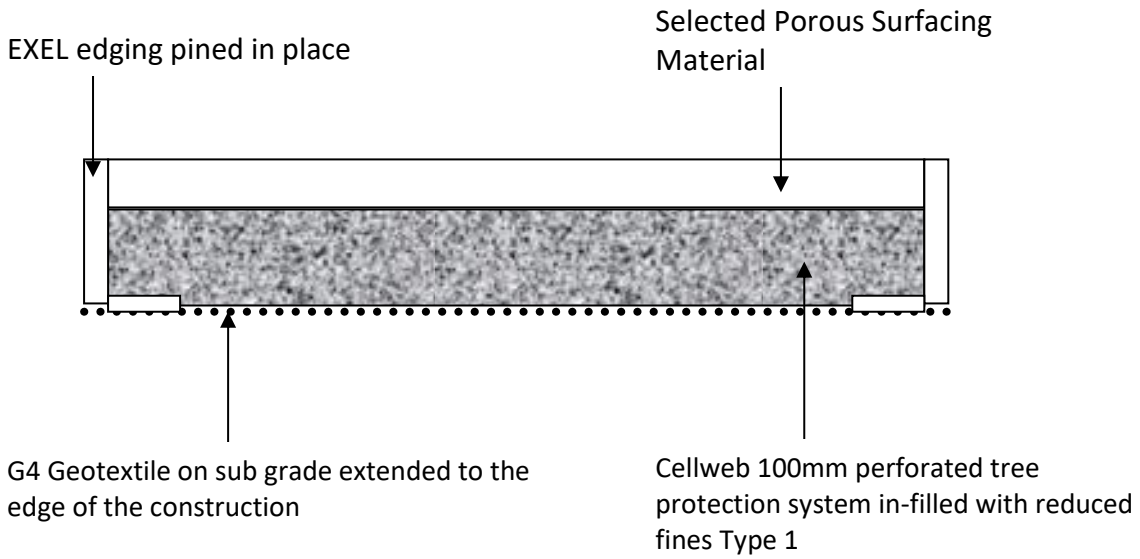
6.6.2 Should this not be possible then the guidelines within 'NJUG 10' *Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees* should be adopted, in particular Section 4.0, which is included within Appendix Two of this report.

6.7 Methodology for the Construction of Permanent and Temporary Hard Surfaces within Root Protection Areas

The following methodology supports the below drawing indicating the construction of the proposed 'no dig' surfaced area as mentioned in section 4.2.4 above with regard to T5 (see Appendix Four and Five). The methodology is prepared on the basis of the sequence of operations necessary to complete the construction of the hard surfaces with the minimum damage to the trees proposed for retention.

- Surface layer to be scrapped off by no more than 50-100mm. This can be done either by hand or by very small machinery but may not be needed at all in this instance.
- Spread a sub grade material over the areas to fill any small ruts.
- Lay G4 Geotextile over area to be surfaced.
- Position EXEL metal edging pinned in place. This may also not be necessary for a temporary surface.
- Extend the Cellweb 100mm perforated tree root protection system over the area to be surfaced.
- Fill the voids within the Cellweb with reduced fines Type 1 material working into the site over the top of the Cellweb.
- Surface over the Cellweb such that the construction binds itself together.

CELLWEB BASED SPECIAL SURFACE CONSTRUCTION – (INDICATIVE ONLY)



6.8 Summary of Methodology for the Protection Trees

1. **Remedial tree works carried out in accordance with this report and by a competent and fully insured arboricultural contractor and in accordance with BS 3998:2010.**

2. **The installation of protective fencing as shown above and, in the location, as shown within Appendix Five.**

3. **Demolition of existing buildings.**

4. **The construction of the new development including the supervised installation of the no dig surfacing adjacent to T5 as detailed above.**

5. **The removal of Protective Fencing is only to be done with the agreement of a competent arborist or the LPA.**

6. **Installation of the new landscape scheme including tree and hedge planting.**

6.9 Conclusion

Provided that all the above measures are put into practice this development should not have a detrimental effect on the overall amenity of the area as the most significant groups of trees surrounding the development can be retained and protected. The new landscape scheme adequately compensates for any losses caused by the development.

Signed

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APPENDIX ONE

Preliminary Tree Schedule & Tree Constraints Plan

APPENDIX B – Arboricultural Data

Arboricultural Data Sheet: Land adjacent Virgil Street, Cornbrook, Manchester, M15 4ED **Date of Survey**: 06/01/23 **Weather**: Overcast **Surveyor**: PM

Crown C = Crown Clearance; Cond R = Condition Rating; ERC (Yrs) = Estimated Remaining Contribution; TQRA = Tree Quality Category Rating; RPA (m^2) = Root Protection Area (m^2)
Recommended works should be carried out to the *British Standard Recommendations for Tree Work, BS 3998:2010*

Tree No.	Species	Dbh (mm)	Height (m)	Age	Crown Spread				Crown C	Cond R	Observations and Comments	Preliminary Recommendations	ERC (Yrs)	TQC R	RPA (m^2)	RPA Circle Radius (m)
					N	E	S	W								
T1	Sycamore	360	12	EM	4	5	4	4	3	B/C	A scrub tree close to the existing building. Swamped in Ivy. No clear view of stem or base. High crown.	**n/a**	10+	C2	58.63	4.32
T2	Poplar x 2	400	13	EM	7	7	7	7	4	B/C	A scrub tree, which is two stems formed from ground level. Swamped in Ivy with a high crown. No view of stem or base. Previous breakouts in the crown and evidence of Squirrel damage.	**n/a**	10+	C2	72.38	4.80
T3	Poplar	380	11	EM	7	5	2	5	2	B/C	A scrub tree, swamped in Ivy. Low branches over adjacent green area. No view of stem or base. Previous breakouts in the crown and evidence of Squirrel damage.	**n/a**	10+	C2	65.33	4.56
T4	Norway Maple	450	14	M	8	7	7	8	2.5	B/C	Locate close to the building. Significant fire damage on the stem, which will rapidly decay. Reasonable overall form and vigour. Minor deadwood present. Very low potential.	**Fell to ground level.**	5-10	U	91.61	5.40
T5	Sycamore	820	17	M	8	9	9	9	2.5	B	A large specimen within group exhibiting minor crown asymmetry. Fluted buttress with some minor damage and minor bark damage on the stem. Some deadwood present and several hanging pieces. Minor broken branch stubs. Scrub around base. Foliage close to light column.	**Remove significant deadwood and crown lift to approx. 4m.**	20+	B2	304.19	9.84
T6	Whitebeam	410	9	M	6	4	4	6	2	B/C	A reasonable tree within the group although it does have a significant wound at base, which will reduce its longevity. Minor deadwood in the crown and foliage close to adjacent light column. Slight crown suppression due to group.	**Prune to clear light column and crown lift to approx. 3m. Remove significant deadwood.**	10+	C2	76.05	4.92

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Tree No.	Species	Dbh (mm)	Height (m)	Age	Crown Spread				Crown C	Cond R	Observations and Comments	Preliminary Recommendations	ERC (Yrs)	TQC R	RPA (m^2)	RPA Circle Radius (m)
					N	E	S	W								
T7	Whitebeam	360	8	M	6	4	0	5	2	C/D	Exhibits major stem decay, imminent risk of complete failure.	**Fell to ground level, grind out stump and replace.**	0-5	U	58.63	4.32
T8	Whitebeam	320	10	M	4	4	4	3	3	C/D	Exhibits major stem and basal decay, imminent risk of complete failure.	**Fell to ground level, grind out stump and replace.**	0-5	U	46.32	3.84
T9	Bird Cherry	510	11	FM	8	7	3	6	1.8	B/C	A large specimen with reasonable vigour but has some decay present in the lower stem and base. There is also the presence of the decay fungus *Ganoderma spp* on the eastern side at base. Crown asymmetry due to group. Low potential.	**Fell to ground level, grind out stump and replace.**	5-10	U	117.67	6.12
T10	Norway Maple	620	16	M	8	6	9	5	4	C	Has suffered major limb loss at 2m on the northern side and western side resulting in extensive stem decay, which will be rapidly hollowing out. Exhibits major crown asymmetry with very low potential.	**Fell to ground level, grind out stump and replace.**	5-10	U	173.90	7.44
T11	Norway Maple	570	16	M	9	9	5	4	3	C	A poor specimen with an acute northern lean. Exhibits major stem decay on the eastern side, most likely due to fire damage. Hollowing out near base. Very low potential.	**Fell to ground level, grind out stump and replace.**	5-10	U	146.98	6.84
T12	Whitebeam	600	11	FM	6	5	6	4	2.5	B	A large specimen with reasonable form and vigour. Minor stem wounds with no apparent defects. Minor deadwood in the crown. Bird nest present.	**n/a**	10+	C1	162.86	7.20
T13	Elm	800	10	M	4	5	7	6	3	D	A dead tree multi-stemmed at base.	**Fell to ground level and replace.**	n/a	U	289.53	9.60
T14	Bird Cherry	600	10	FM	5	7	8	6	1.8	C	A large specimen with reasonable vigour but has stem decay present. Broken lower branch. There is also the presence of the decay fungus *Ganoderma spp* on the northern side at base. Crown asymmetry due to group. Low potential.	**Fell to ground level, grind out stump and replace.**	5-10	U	162.86	7.20

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Tree No.	Species	Dbh (mm)	Height (m)	Age	Crown Spread				Crown C	Cond R	Observations and Comments	Preliminary Recommendations	ERC (Yrs)	TQC R	RPA (m^2)	RPA Circle Radius (m)
					N	E	S	W								
T15	2 x Sycamore	380	13	EM	7	7	6	6	1.5	B	Two self-sown trees on boundary with fence, slightly pushing it out. Reasonable overall forma and vigour. Minor deadwood. Basal shoots and debris present.	**Crown lift to approx. 3m and remove basal shoots and debris.**	20+	B2	65.33	4.56
T16	Sycamore	400	13	EM	6	6	7	6	1.5	B	A self-sown tree on boundary with fence, slightly pushing it out. Multi-stemmed at base with poor structural form but good vigour. Insignificant deadwood. Large basal shoots present.	**Crown lift to approx. 3m and remove basal shoots.**	20+	B2	72.38	4.80
T17	Norway Maple	360	10	EM	5	5	7	8	1.8	B/C	A minor specimen with poor structural form and several weak forks including the main union near base. Several rubbing fused branches. Deadwood present. Decay at base. This tree is right next to an informal footpath. Low potential.	**Fell to ground level, grind out stump and replace.**	10+	C2	58.63	4.32
T18	Sycamore	630	17	M	8	8	6	8	2.5	B	A co-dominant specimen within group. Exhibits minor crown asymmetry and good vigour. Some deadwood present. Regular activity beneath crown.	**Remove significant deadwood and crown lift to approx. 4m.**	20+	B2	179.55	7.56
T19	Norway Maple	700	16	M	7	8	1	8	1.8	C/D	This tree has suffered major limb loss due to included union. The remainder of the stem is fragile and there is significant decay present.	**Fell to ground level, grind out stump and replace.**	0-5	U	221.67	8.40
T20	Norway Maple	680	17	M	6	6	9	9	2	B	A co-dominant specimen within group. Exhibits major crown asymmetry and good vigour. Some deadwood present. Regular activity beneath crown. Several fused limbs present. Poor structural form.	**Remove significant deadwood.**	10+	C2	209.18	8.16
T21	Norway Maple	620	16	M	7	8	8	3	2	B	A co-dominant specimen within group exhibiting major crown asymmetry due to group. Good vigour. Wound at 1m, not thought significant. Fluted buttress. Insignificant deadwood.	**n/a**	20+	B2	173.90	7.44

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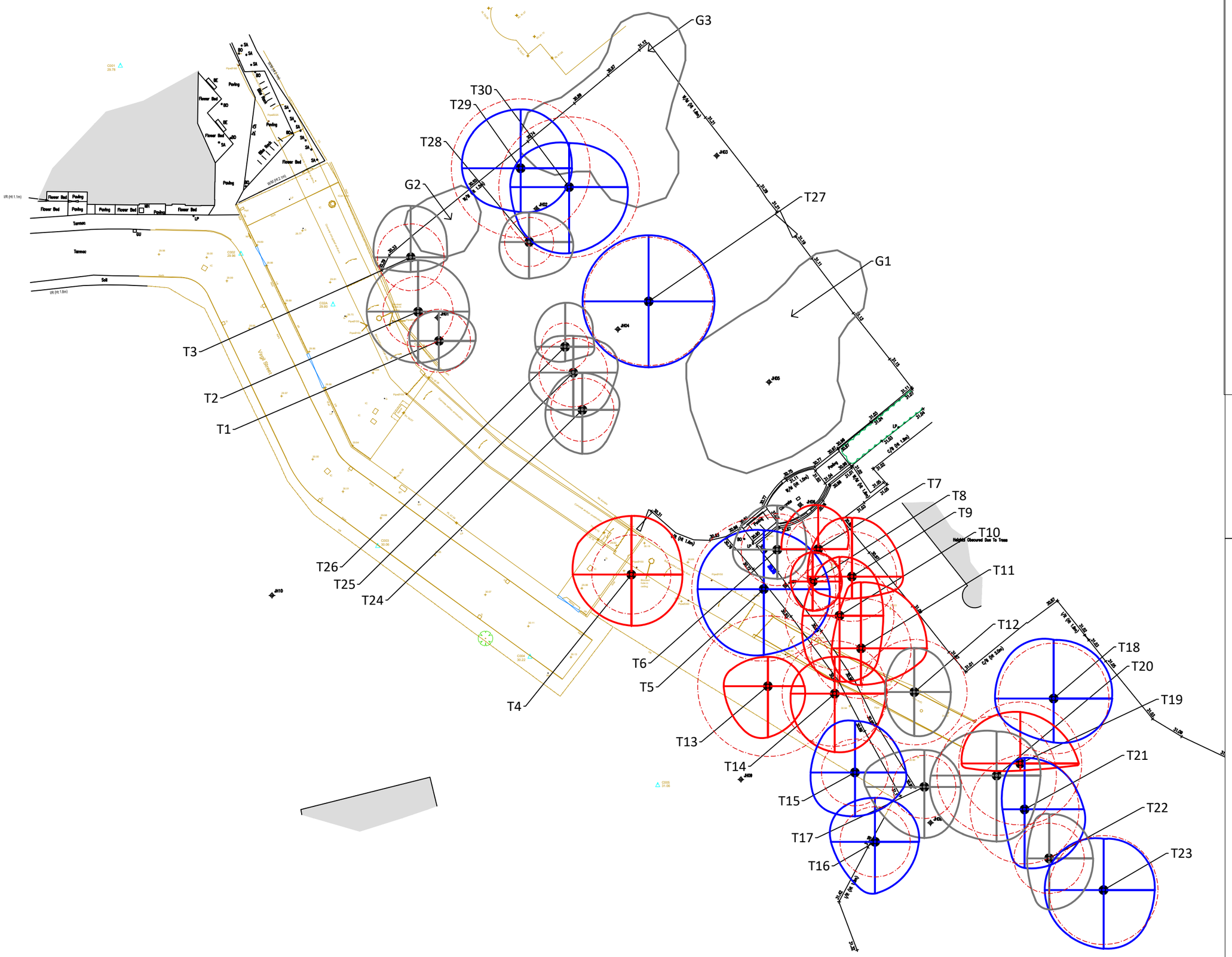
					N	E	S	W								
T22	Norway Maple	400	12	EM	6	6	7	3	2	B/C	A minor specimen within the group exhibiting minor crown asymmetry. Wounds at base not though significant. Minor deadwood present.	**n/a**	10+	C2	72.38	4.80
T23	Sycamore	620	16	M	7	7	8	8	2.5	A/B	A co-dominant specimen within group exhibiting reasonable crown symmetry. Reasonable vigour with some deadwood present. Fluted buttress. Previous removal of lower branches. Basal shoots present.	**Remove significant deadwood and basal shoots.**	20+	B2	173.90	7.44
T24	Poplar	360	10	EM	5	5	6	5	3	B/C	A scrub milt-stemmed specimen with low vigour and signs of decline. Possibly due to Poplar Canker. Low potential. Bird nest present.	**n/a**	10+	C3	58.63	4.32
T25	Sycamore	390	12	EM	5	6	6	6	2	A/B	A vigorous young scrub specie man forked at 3m. Reasonable form.	**n/a**	10+	C2	68.81	4.68
T26	Poplar	270	11	EM	6	4	2	4	3	C	A poor scrub tree with signs of low vigour and decline. Possibly due to Poplar Canker.	**n/a**	10+	C3	32.98	3.24
T27	Norway Maple	730	16	M	9	9	9	9	2	B	A large spreading specimen within scrub area. Good overall forma and vigour. Typical deadwood present. Fluted buttress.	**n/a**	20+	B2	241.08	8.76
G1	Group - Goat Willow	<500	<15	SM-EM	7	7	7	7	1	B	A scrub group of Willow of varying sizes, several multi-stemmed. The group seems to surround a natural depression in the ground that can fill up with water.	**n/a**	10+	C2	<113.10	<6.00
G2	Group - 2 Poplars	<300	<12	EM	6	6	6	6	1	B/C	Two scrub trees with low vigour and swamped in Ivy.	**n/a**	10+	C3	<40.72	<3.60
T28	Poplar	280	10	EM	4	6	5	4	2	B/C	A poor scrub tree with signs of low vigour and decline. Possibly due to Poplar Canker.	**n/a**	10+	C3	35.47	3.36

Arboricultural Data Sheet: Land adjacent Virgil Street, Cornbrook, Manchester, M15 4ED **Date of Survey**: 06/01/23 **Weather**: Overcast **Surveyor**: PM

Crown C = Crown Clearance; Cond R = Condition Rating; ERC (Yrs) = Estimated Remaining Contribution; TQRA = Tree Quality Category Rating; RPA (m^2) = Root Protection Area (m^2)
Recommended works should be carried out to the *British Standard Recommendations for Tree Work, BS 3998:2010*

Tree No.	Species	Dbh (mm)	Height (m)	Age	Crown Spread				Crown C	Cond R	Observations and Comments	Preliminary Recommendations	ERC (Yrs)	TQC R	RPA (m^2)	RPA Circle Radius (m)
					N	E	S	W								
T29	Silver Maple	790	22	M	8	7	6	8	2.5	A/B	A very large tree on the boundary exhibiting reasonable form and vigour, Several included unions and deadwood present. Evidence of previous minor failures. Basal shoots present.	**Remove basal shoots.**	20+	B2	282.34	9.48
T30	Silver Maple	800	22	M	6	8	9	8	3	A/B	A very large tree on the boundary exhibiting reasonable form and vigour, Forked at 4m. Deadwood present. Evidence of previous minor failures. Basal shoots present.	**Remove basal shoots.**	20+	B2	289.53	9.60
G3	Group - Whitebeam, Cherry & Ash	<400	<12	Y-EM	5	5	5	5	1.5	B	A mixed group with profuse Cherry suckers present. Several trees swamped in Ivy. Whitebeam and Cherry near boundary. Ash in corner with Ivy on stem and signs of decline due to Ash Dieback.	**Consider removal of Ash.**	10+	C2	<72.38	<4.80



KEY

TREE SURVEY

- T1 — Retention Category A trees and groups of high quality
- T1 — Retention Category B trees and groups of moderate quality
- T1 — Retention Category C trees and groups of low quality
- T1 — Category U trees and groups of poor quality
- Root Protection Areas: Calculated inline with BS5837:2012 to show a circular RPA which does not take into consideration site conditions

N

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Client
Generation Ltd.

Project
Virgil Street, Cornbrook, Manchester

Description
Tree Constraints Plan

Status
PLANNING

Scale	Drawn		
1/500@A3	PM		
Job number	**Drawing number**	**Date**	**Revision**
5145	01	14.01.23	x

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All levels and dimensions to be checked on site by contractor prior to commencement; Any variations to be reported to the client. This drawing is to be read in conjunction with all others relating to the project and all information derived accordingly; any anomalies to be reported to the client. Do not scale from this drawing. Use figured dimensions only. Work shown on this drawings to be carried out in accordance with current British Standards and Codes of Practice.

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APPENDIX TWO

NJUG 10 Section 4.0

Telecommunications Code (Schedule 2). Paragraph 19 of the Telecommunications Code enables operators to require the lopping of trees which overhang the street and obstruct or interfere with the working of their lines.

4. HOW TO AVOID DAMAGE TO TREES

This section gives general guidance on methods of work to minimise damage to trees. The local authority (or for privately owned trees, the owner or their agent), should be consulted at an early stage prior to the commencement of any works. This will reduce the potential for future conflict between trees and apparatus.

4.1 Below Ground

Wherever trees are present, precautions should be taken to minimise damage to their root systems. As the shape of the root system is unpredictable, there should be control and supervision of any works, particularly if this involves excavating through the surface 600mm, where the majority of roots develop.

4.1.1 **Fine Roots**

Fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them e.g. frost and extremes of heat. It is therefore important to protect exposed roots where a trench is to be left open overnight where there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.

4.1.2 **Precautions**

The precautions referred to in this section are applicable to any excavations or other works occurring within the Prohibited or Precautionary Zones as illustrated in Figure 1 – ‘Tree Protection Zone’.

4.1.3 **Realignment**

Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone.

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The appropriate method of working within the Precautionary Zone should be determined in consultation with the local authority (or for privately owned trees the owner or their agent) and may depend on the following circumstances;

- the scope of the works (e.g. one-off repair or part of an extensive operation)
- degree of urgency (e.g. for restoration of supplies)
- knowledge of location of other apparatus
- soil conditions
- age, condition, quality and life expectancy of the tree

Where works are required for the laying or maintenance of any apparatus within the Prohibited or Precautionary Zones there are various techniques available to minimise damage.

Acceptable techniques in order of preference are;

a) Trenchless

Wherever possible trenchless techniques should be used. The launch and reception pits should be located outside the Prohibited or Precautionary Zones.
In order to avoid damage to roots by percussive boring techniques it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement.

b) Broken Trench - Hand-dug

This technique combines hand dug trench sections with trenchless techniques if excavation is unavoidable. Excavation should be limited to where there is clear access around and below the roots. The trench is excavated by hand with precautions taken as for continuous trenching as in (c) below. Open sections of the trench should only be long enough to allow access for linking to the next section. The length of sections will be determined by local conditions, especially soil texture and cohesiveness, as well as the practical needs for access. In all cases the open sections should be kept as short as possible and outside of the Prohibited Zone.

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c) Continuous Trench - Hand-dug

The use of this method must be considered only as a last resort if works are to be undertaken by agreement within the Prohibited Zone. The objective being to retain as many undamaged roots as possible.

Hand digging within the Prohibited or Precautionary zones must be undertaken with great care requiring closer supervision than normal operations.

After careful removal of the hard surface material digging must proceed with hand tools. Clumps of roots less than 25mm in diameter (including fibrous roots) should be retained in situ without damage. Throughout the excavation works great care should be taken to protect the bark around the roots.

All roots greater than 25mm diameter should be preserved and worked around. These roots must not be severed without first consulting the owner of the tree or the local authority tree officer / arboriculturist. If after consultation severance is unavoidable, roots must be cut back using a sharp tool to leave the smallest wound.

4.1.5 **Backfilling**

- Any reinstatement of street works in the United Kingdom must comply with the relevant national legislation (see: **Volume 6 – 'Legislation and Bibliography'**). In England this relates to the requirements of the code of practice – 'Specification for the Reinstatement of Openings in Highways' approved under the New Roads and Street Works Act 1991. Without prejudice to the requirements relating to the specification of materials and the standards of workmanship, backfilling should be carefully carried out to avoid direct damage to roots and excessive compaction of the soil around them.

- The backfill should, where possible, include the placement of an inert granular material mixed with top soil or sharp sand (not builder's sand) around the roots. This should allow the soil to be compacted for resurfacing without damage to the roots securing a local aerated zone enabling the root to survive in the longer term.

- Backfilling outside the constructed highway limits should be carried out using the excavated soil. This should not be compacted but lightly "tamped" and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.

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4.1.6 **Additional Precautions near Trees**

- Movement of heavy mechanical plant (excavators etc.) must not be undertaken within the Prohibited Zone and should be avoided within the Precautionary Zone, except on existing hard surfaces, in order to prevent unnecessary compaction of the soil. This is particularly important on soils with a high proportion of clay. Spoil or material must not be stored within the Prohibited Zone and should be avoided within the Precautionary Zone.

- Where it is absolutely necessary to use mechanical plant within the Precautionary Zone care should be taken to avoid impact damage to the trunk and branches. A tree must not be used as an end-stop for paving slabs or other materials nor for security chaining of mechanical plant. If the trunk or branches of a tree are damaged in any way advice should be sought from the local authority tree officer / arboriculturist.

See TABLE 1 –'Prevention of Damage to Trees Below Ground' below for summary details regarding causes and types of damage to trees and the implications of the damage and the necessary precautions to be taken to avoid damage.

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APPENDIX THREE

Site Notice for Protective Fencing

TREE PROTECTION AREA
KEEP OUT!

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND ARE SUBJECTS OF A TREE PRESERVATION ORDER
(TOWN & COUNTRY PLANNING ACT 1990)

CONTRAVENTION OF TREE PRESERVATION ORDER MAY LEAD TO **CRIMINAL PROSECUTION**

THE FOLLOWING **MUST** BE OBSERVED BY ALL PERSONS:-

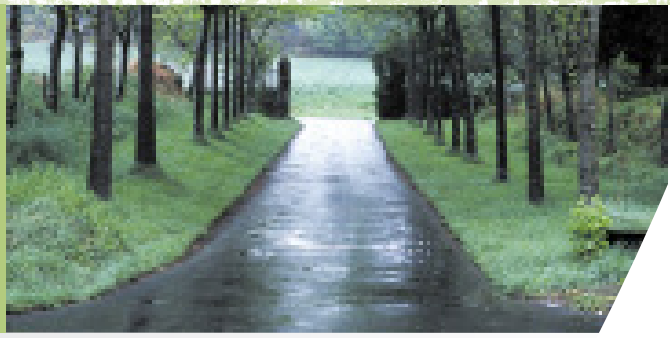
- THE PROTECTIVE FENCING MUST NOT BE REMOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA
- NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

APPENDIX FOUR

Example of Special Surface Construction

CellWeb TRP®



Tree Root Protection Guaranteed

Geosynthetics

www.geosyn.co.uk

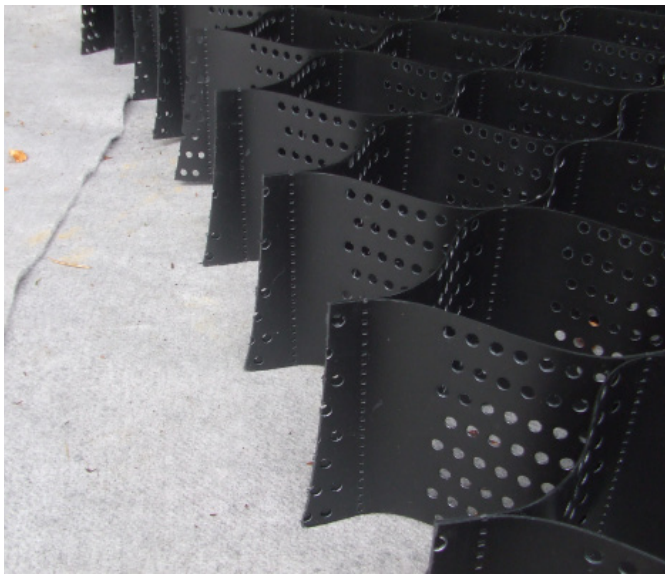
CellWeb TRP® System

Tree Root Protection System

The Consquences Of Tree Root Damage During Construction

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

On a construction site all trees with a Tree Preservation Orders need to be managed in accordance with BS5837 2005 (Trees in relation to construction); failure to comply with these orders can be a costly affair as many parties have discovered.



Fishponds, Ketton

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

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

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

Shelton Road, Shewsbury

The Solution:

Geosynthetics CellWeb TRP® System

The Solution According to BS 5837:2012

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

(BS 5837 2012 section 7.4.2 Note 1)

The CellWeb TRP® Solution

CellWeb TRP® is the market leader in the United Kingdom and Ireland for tree root protection. CellWeb TRP® cellular confinement system protects tree roots from the damaging effects of compaction and desiccation, while creating a stable, load bearing surface for vehicular traffic. CellWeb TRP® complies with BS 5837:2005 and APN 1. It provides a no-dig solution, is tried and tested having been used successfully since 1998. It is the only tree root protection system which has been independently tested and it is the only tree root protection system which is guaranteed for 20 years. See page 6 for the full terms and conditions of the guarantee.

Fishponds, Ketton

Field Trials

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

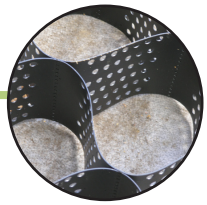
CellWeb TRP® Product Guarantee

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

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

CellWeb TRP® System

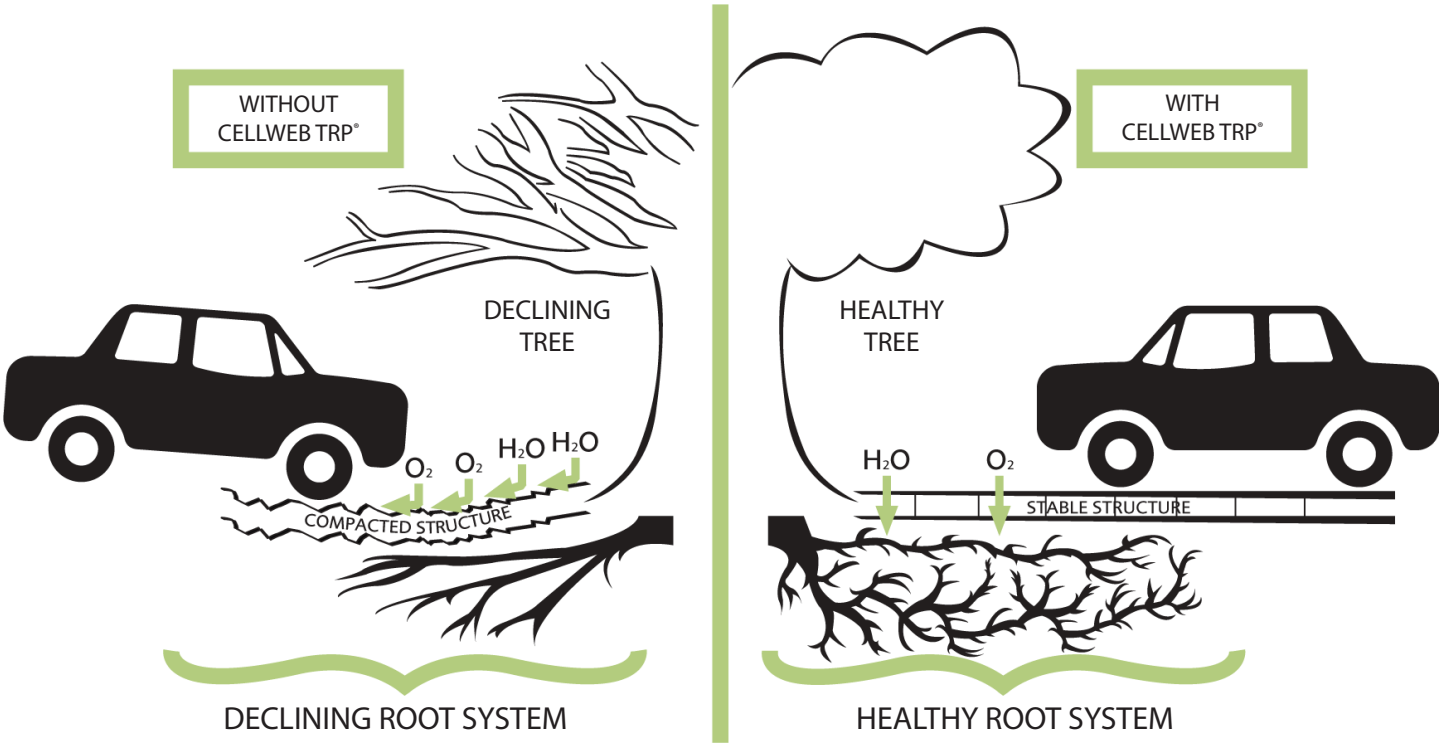
How the System Works



How CellWeb TRP® Works

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

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



Water and Oxygen Transfer Through the CellWeb TRP® System

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

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

CellWeb TRP® and Pollution

How CellWeb TRP® Deals With Catastrophic Oil Spills

How CellWeb TRP® Deals With Pollution

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

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

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

Castle Gardens

Ambleside Lake District

Harcourt Aboretum

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

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

Please see page 6 for full details of the guarantee.

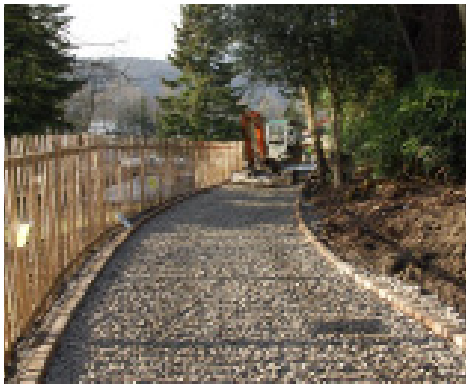
Geosynthetics CellWeb TRP® System:

A Proven No Dig Solution

Advice, Design and Product Selection

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

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



Fallbarrow Park, Windermere:
Prior to CellWeb TRP® Installation

Fallbarrow Park, Windermere:
CellWeb TRP® Installation

Fallbarrow Park, Windermere:
Completed CellWeb TRP® Installation

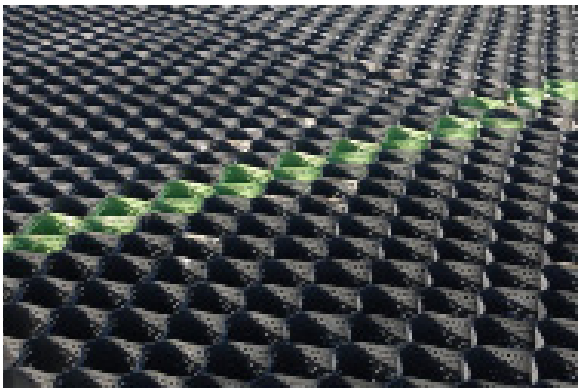
Final Surfacing

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

Always Use CellWeb TRP®

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

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



Woodcock Hall, Yorkshire

CellWeb TRP® Product Guarantee

Geosynthetics

We hereby guarantee CellWeb TRP® against the death of any tree caused by a failure of CellWeb TRP® which its installation was intended to protect for a period of 20 years starting from the date of this guarantee.

Conditions of Guarantee

1. The details set out below must be correct in all respects.

2. We can only guarantee CellWeb TRP® where its installation has been carried out to high standards. Therefore our guarantee will only be applicable where:

(a) we have provided the designs in relation to the installation,
(b) the installation has been carried out by suitably proficient contractors,
(c) the installation has been carried out strictly in accordance with the installation specification/method statement available at the time of the installation,
(d) CellWeb TRP® has been incorporated into the installation above (and where specified as necessary, below) a Treetex® T300 Geotextile (or such updated replacement product as we may recommend), and
(e) the installation has been carried out using pins and panel staplers purchased from us or using similar products which are of the same or a higher quality.

3. If you experience any problems with the installation, you must tell us immediately. You must allow us onto the site at all reasonable times so that we can inspect the site and the installation to determine whether the CellWeb TRP® as failed.

4. As we need to determine whether the CellWeb TRP® has failed or whether the tree has been killed or damaged by another cause, you must not allow anyone else to examine the installation before we have the opportunity to inspect it as damage could be caused to the installation by any other inspection. If you do let third parties onto the site or you or your agents interfere with the installation this guarantee will lapse.

5. Your use of the surface and the traffic flow over the installation must be (and at all times have been) in accordance with the information provided to us at the time of the design of the installation. We can only provide designs based on the information you give to us and will have recommended the relevant CellWeb TRP® product according to that information.

6. This guarantee is for the benefit of the landowner of the site from time to time provided that you give us notice of the new owner on any transfer of ownership. We suggest you provide a copy of this guarantee to your solicitor when transferring the property.

7. Where a tree which was intended to be protected by the installation dies and we conclude that this was caused by a failure of CellWeb TRP® then we shall:

- replace the dead tree with a tree as close to the dead tree (as available generally in the marketplace) as possible subject to a maximum replacement cost of £10,000; and
- replace the CellWeb TRP® which has failed (but not any other part of the installation where the CellWeb TRP® has not failed) subject to a maximum replacement cost of £50,000.

8. Our total liability to you under the terms of this guarantee shall be limited to our obligations set out above and our liability to you for any other losses you may suffer is excluded to the fullest extent permitted by law. For the avoidance of doubt, we shall have no liability to you whatsoever for any damage to trees or a CellWeb TRP® installation caused by anything reasonably beyond our control, including for instance pollution.

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

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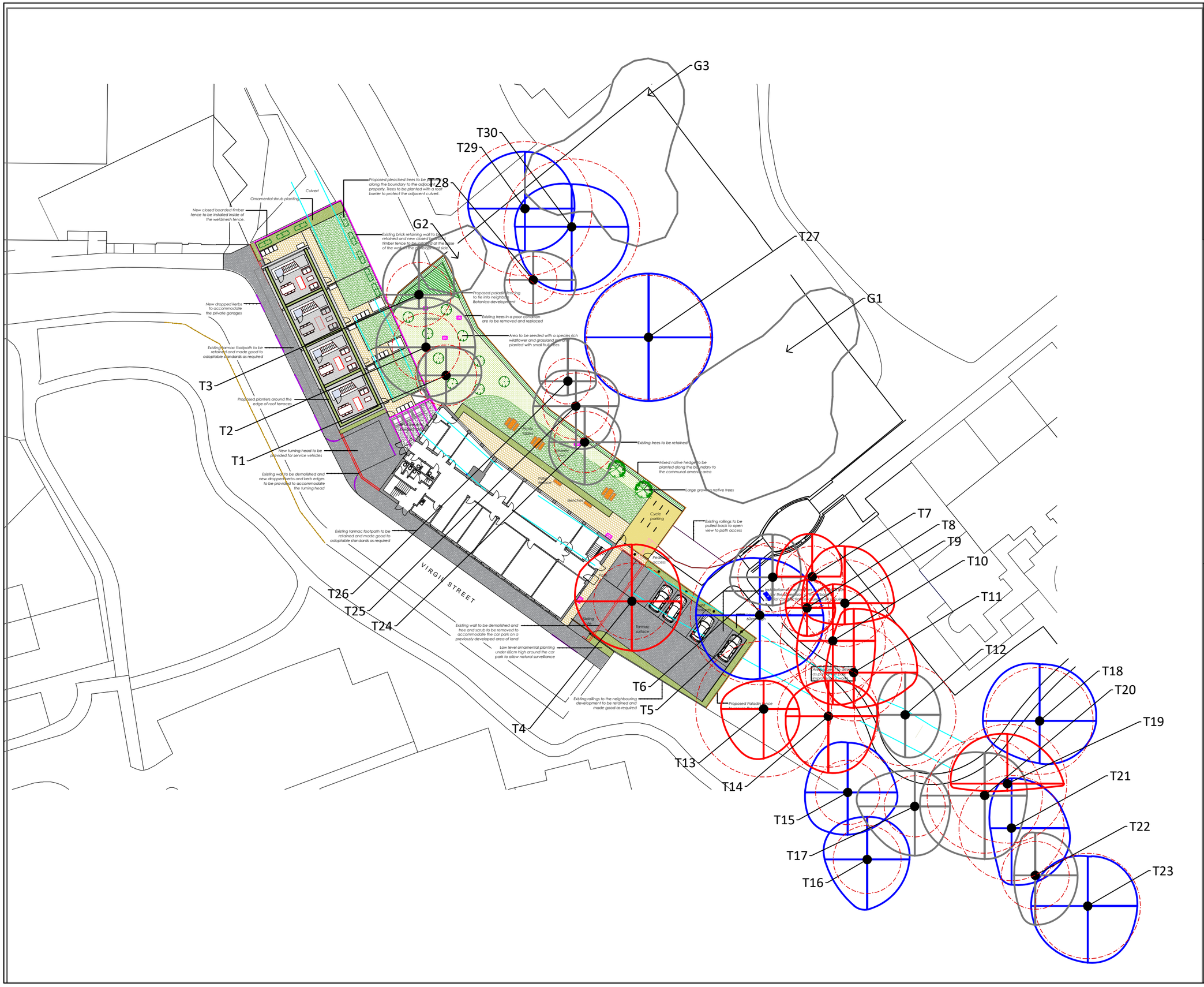
DR: 54/V1/20.11.13

APPENDIX FIVE

Development Layout & Tree Protection Plans



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Client
Generation Ltd.

Project
Virgil Street, Cornbrook, Manchester

Description
Development Layout Plan

Status
PLANNING

Scale	Drawn		
1/500@A3	PM		
Job number	**Drawing number**	**Date**	**Revision**
5145	02	12.07.23	A

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All levels and dimensions to be checked on site by contractor prior to commencement; Any variations to be reported to the client. This drawing is to be read in conjunction with all others relating to the project and all information derived accordingly; any anomalies to be reported to the client. Do not scale from this drawing. Use figured dimensions only. Work shown on this drawings to be carried out in accordance with current British Standards and Codes of Practice.

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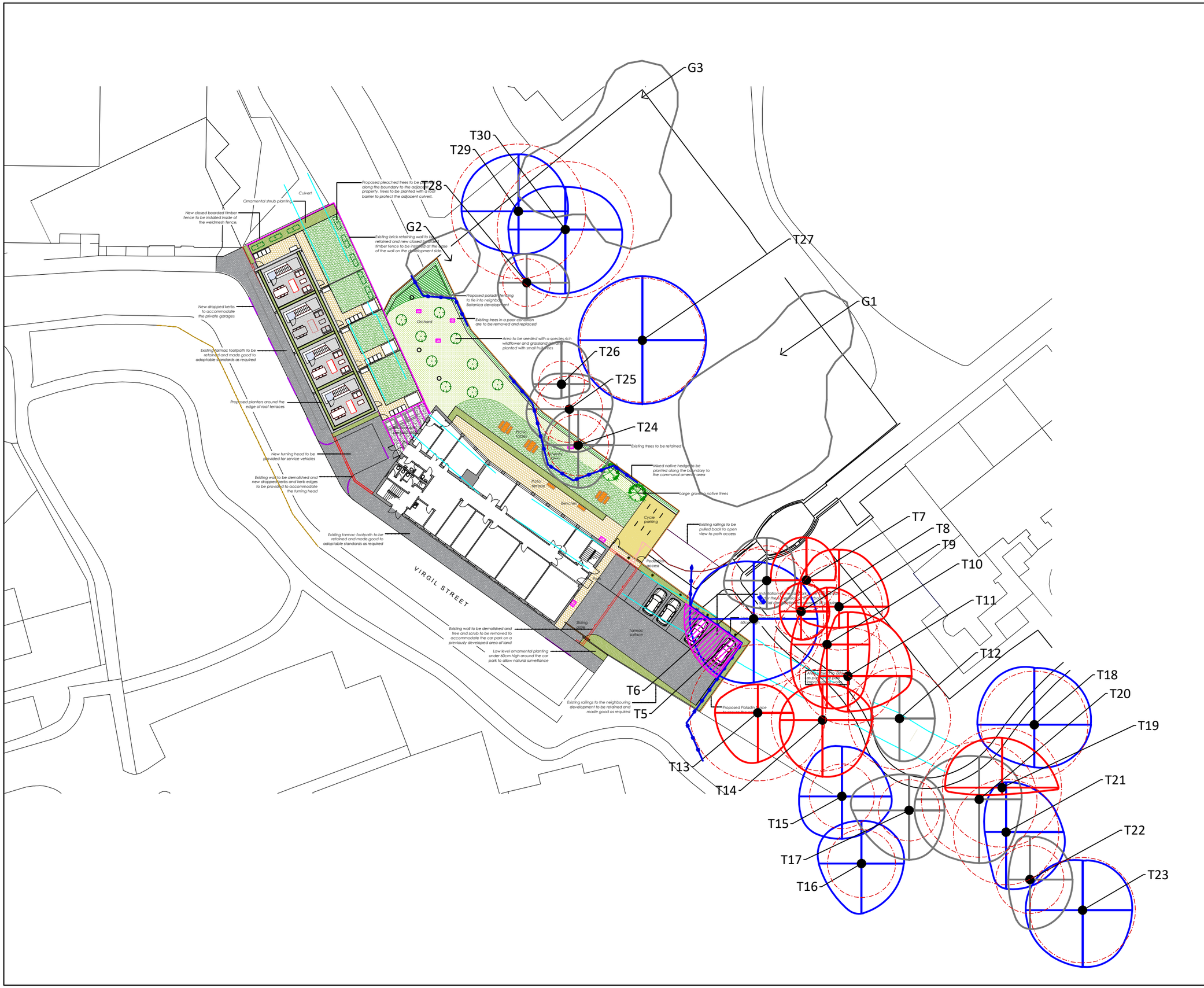

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- Root Protection Areas: Calculated inline with BS5837:2012 to show a circular RPA which does not take into consideration site conditions
- Tree Protection Fencing
- Areas of no Dig Surfacing

N

DEP LANDSCAPE ARCHITECTURE LTD

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Client
Generation Ltd.

Project
Virgil Street, Cornbrook, Manchester

Description
Tree Protection Plan

Status
PLANNING

Scale	Drawn		
1/500@A3	PM		
Job number	**Drawing number**	**Date**	**Revision**
5145	03	20.03.24	A

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All levels and dimensions to be checked on site by contractor prior to commencement; Any variations to be reported to the client. This drawing is to be read in conjunction with all others relating to the project and all information derived accordingly; any anomalies to be reported to the client. Do not scale from this drawing. Use figured dimensions only. Work shown on this drawings to be carried out in accordance with current British Standards and Codes of Practice.

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