



THE
ENVIRONMENT
PARTNERSHIP



FORVIVA WORKS DEPOT KNOWSLEY ARBORICULTURAL IMPACT ASSESSMENT MAY 2019

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Executive Summary

1. This report accompanies a planning application for the construction of new garage building at the Forviva Works Depot in Knowsley, Liverpool. It details the arboricultural impact of the proposed works, subsequent mitigation recommendations and protective measures.
2. Based on an objective assessment made in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations, there are 7 Category B (moderate quality) and 11 Category C (low quality) trees and groups of trees on or within influencing distance of the site.
3. A site survey and desktop searches identified no trees subject to Tree Preservation Order; no trees within a Conservation Area; no veteran trees and no ancient woodland.
4. The capacity of trees to support roosting bats should be confirmed by an ecologist prior to works. Arboricultural observations to inform this process are provided in Section 3.
5. 2 low quality trees would be removed to facilitate the proposed development. It will be possible to retain all other trees throughout the construction in accordance with BS 5837.
6. Temporary tree protection and procedural controls will be required in order to minimise damage to retained trees. This information is provided as an Arboricultural Method Statement at Appendix C and should form part of any future tender documentation and instructions to contractors.
7. A scheme of new planting has not been considered by this assessment. In order to achieve no net loss of long-term tree cover, a minimum of 4 new trees of medium to large mature size should be provided in space to the north of the new garage.
8. This report constitutes a valid basis for the evaluation of impacts on trees resulting from the proposed development for a period not exceeding 2 years. After this, it may be necessary to review survey data and conclusions to ensure reliability. Where the recommendations of this report have been followed, any future deterioration in tree condition may not be attributed to the development.

1.0 Introduction

- 1.1 TEP has been commissioned by John McCall Architects to conduct an arboricultural survey of land at Forviva Works Depot. This report details the arboricultural impact of developing the site, subsequent mitigation recommendations and protective measures.
- 1.2 The survey was carried out in February 2019 by means of inspection from ground level by a qualified Arboricultural Consultant. Trees were assessed in accordance with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.
- 1.3 Under the British Standard the assessment of trees is made objectively. The categorisation method identifies the quality and value of the existing tree stock.
- 1.4 A topographical survey was used to record the position of trees and vegetation (drawing reference: 110219CP-01). Where the age distribution and species mix of tree cover was relatively uniform, trees were plotted as groups. For the purposes of this report it is assumed that the detail on the drawing is accurate. A number of trees were not shown on the topographical surveys and their locations are estimated¹.
- 1.5 The nature of the soils on site was not assessed during the survey. The possibility of minor soil movement due to tree root activity cannot be discounted. Prior to the undertaking of foundation depth calculations any estimated tree locations should be resolved.
- 1.6 15 individual trees (T1-T15) and 3 groups of trees (G1-G3) were surveyed and mapped². All arboricultural information recorded during the survey is presented at Appendix A.
- 1.7 This report provides the results of the survey and includes the following:
 - A schedule of all trees located on, or within influencing distance of the proposed development site (Appendix A);
 - An assessment based on BS 5837:2012, of trees in terms of their potential value within any future development. On the basis of this assessment trees have been categorised into one of four categories: A, B, C or U (Appendices A & B);
 - An assessment, based on BS 5837:2012, of the requirement for protection of trees during the construction phase (Section 6);
 - Advice on removal, retention and management of trees (Sections 5 & 7);
 - A Tree Constraints Plan detailing tree quality categories, canopy spreads and Root Protection Areas (RPA) for all trees surveyed (Drawing 1);
 - A Tree Impact Plan detailing the development proposals and trees to be retained and removed; and
 - An Arboricultural Method Statement detailing temporary tree protection measures and procedural instructions to site workers necessary to minimise damage to retained trees (Appendix C).

¹ Estimated feature locations are marked on Drawing 1

² See Drawing 1: Tree Constraints Plan

2.0 The Site and Surroundings

- 2.1 The survey area is land adjacent north of Forviva Works Depot in Knowlsey. The site is bordered to the west by a public greenspace and residential area, to the north by a strip broadleaved trees, and to the east and south by the works depot, Stockbridge Village Primary School and Library and Waterpark Drive. The development area covers c.512m² centred on grid reference SJ424935.
- 2.2 The site location is shown on the map in Figure 1 below.

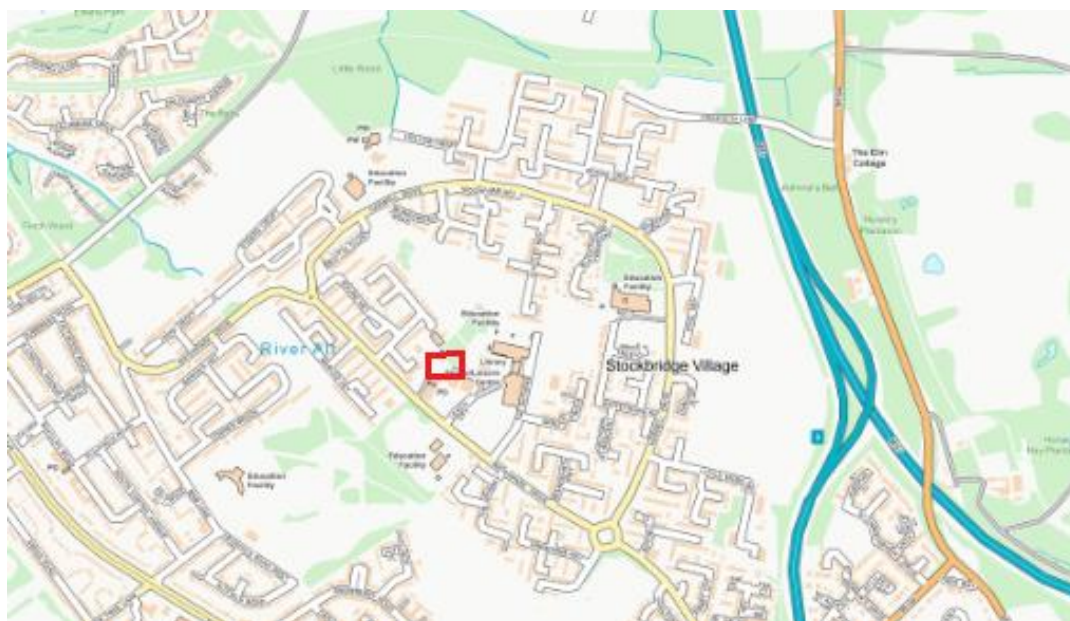


Figure 1 Site location and approximate boundary (OS Street View © 1:10 000 scale)

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- 2.3 The topography of the survey area is relatively flat with an access road, the works depot and hard-standing for car parking at the south with a grassed and wooded area to the north and trees along the depot site boundary at the west.
- 2.4 At the time of the survey, the site was in use as a works depot.
- 2.5 Weather conditions during the survey were sunny and dry.
- 2.6 Inspection of trees within groups G1 and G2 was restricted in some cases by dense vegetation. These trees were surveyed insofar as was possible from accessible areas of the site³.

Development Proposals

- 2.7 The proposed development includes construction of a single, freestanding garage building.
- 2.8 Detail of the proposals is shown on Drawing 2 and is based on the Planning Drawing (drawing reference: Project 1702, Drawing L03) supplied by John McCall Architects

³ Survey restrictions are noted in Appendix A

3.0 Statutory Protection and Guidance

National Planning Policy Framework (NPPF)

- 3.1 The NPPF assumes protection of all ancient woodland and veteran trees unless there are wholly exceptional reasons and a suitable compensation strategy exists. In this respect ancient woodland is defined as an area which has been wooded continuously since at least 1600 AD and a veteran as a tree that because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value.
- 3.2 On this site there are no ancient woodland or veteran trees.

Tree Preservation Orders & Conservation Area Designations

- 3.3 Where it is considered expedient to do so, local authorities can create Tree Preservation Orders (TPO) to protect the amenity value conferred to a location by a tree or group of trees. Where a TPO is in force, lopping, topping, felling, uprooting or wilful damage caused to a tree is prohibited and such actions may be prosecuted and incur an unlimited fine. Works to TPO protected trees must only be undertaken with the written consent of the local authority.
- 3.4 Section 211 of The Town and Country Planning Act 1990 (TCPA) relates to the preservation of trees in Conservation Areas. Under Section 211 anyone proposing to remove, uproot or destroy any tree within a Conservation Area is required to give the local planning authority six weeks' prior notice (a "section 211 notice"). During this period the Council may consider serving a Tree Preservation Order to prevent the proposed work from being undertaken.
- 3.5 Exceptions from the requirement to give a Section 211 notice are set out in The Town and Country Planning (Tree Preservation) (England) Regulations 2012. A person does not have to give the local planning authority six weeks' prior notice for, amongst other reasons, work to trees so far as such work is necessary to implement a planning permission (other than an outline planning permission).
- 3.6 A check was undertaken with Knowsley Council on 3rd May 2019. The online mapping software confirmed that no trees on or immediately adjacent to the site were subject to Tree Preservation Orders or within a Conservation Area.

Protected Species – Bats

- 3.7 Mature trees often contain cavities, crevices and hollows, which are a potential habitat for roosting bats. Bats are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as under Schedule 2 of the Conservation of Species and Habitats Regulations 2010, and as such causing damage to a bat roost constitutes an offence.

- 3.8 A preliminary ground level appraisal of the wildlife habitat value of each tree was undertaken by a trained layperson as part of the arboricultural survey. Where observations incidental to the primary purpose of tree surveying have a possible interest to bats they recorded below. This information should not be treated as comprehensive bat survey. However, an arboricultural view on the likely internal structure of any cavity or crevice may usefully inform a ground based bat habitat assessment. The extent of any bat roost potential in trees should be determined by the project ecologist.

Table 1 Features of possible interest to bats

Tree survey reference	Feature/s of note
G2	Some of the mature trees within the group were noted to have cavities.

- 3.9 If any works are to be carried out to trees identified in the table above, reference should be made to the results and recommendations of a competent bat assessment prior to commencement.
- 3.10 If the presence of a bat roost is suspected whilst undertaking works on any trees on site, operations must be halted until a licensed bat handler or ecologist can provide advice.

Protected Species - Birds

- 3.11 Trees are a potential habitat for nesting birds, which (as well as their nests and eggs) are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to intentionally or recklessly, damage or destroy an active nest or any part thereof.
- 3.12 Due to the suitability of the trees within the survey boundary for nesting birds, all tree work should ideally be undertaken outside the bird nesting season (March to August, inclusive).
- 3.13 If this is not possible then a detailed inspection of each tree should be undertaken by a qualified ecologist immediately prior to the arboricultural works. Should an active nest be found (being built, containing eggs or chicks), any work likely to affect the nest must be halted until the nest becomes inactive.

4.0 Tree Population

- 4.1 15 individual trees (T1-T15) and 3 groups of trees (G1-G3) were recorded within influencing distance of the site. A schedule of all trees and groups in terms of species, condition, age, management recommendations and BS 5837:2012 quality categories is provided at Appendix A.
- 4.2 Trees are present to the north and southwest of the site. To the southwest they form a line along the western edge of the access road; at the north they form a close growing group of young to mature trees recorded as several individuals and three groups. Species include English oak, sycamore and crack willow.



Figure 2 View northeast along site access road

- 4.3 T1 to T8 are located along the western edge of the access road into the site. All are middle aged except for a very small, young sweet chestnut (T8) and all are in good condition - with the exception of T3 which has a large piece of metal former railing embedded within its main stem. T4 has widened at the base to the extent it is growing through the adjacent metal fence. Collectively they serve to provide an amenity feature along the road and some degree of screening of the site from the adjacent greenspace; and due to the presence of native species also have wildlife value.
- 4.4 T9 is a middle aged sycamore in good condition, although previously crown lifted and with minor stem wounds. It is growing outside of the site within the adjacent greenspace to the west.
- 4.5 T10 to T13 are close growing trees comprising two middle-aged sycamores - one twin-stemmed and one multi-stemmed - with smaller ornamental pear and blackthorn growing beneath to the east.



Figure 3 View northeast across the site and existing hard-surfacing

- 4.6 Group G1 comprises a small close growing trees in generally good condition including tall common alder and ash, with one smaller English oak and holly understorey to the east.
- 4.7 G2 is a large group of mixed broadleaved trees, comprised of mostly middle-aged sycamore and silver birch to west and larger mature oak to the east. Several trees are in impaired condition with cavities. Many of the large oaks support extensive ivy cover which was recently severed without sufficient care resulting in some stem wounding.
- 4.8 G3 comprises a row of medium sized middle-aged goat willow with tall narrow stems along the south-eastern edge of G2. G1, G2 and G3 together form a copse with developing woodland characteristics at the north of the site providing amenity, screening and shelter with good habitat value.
- 4.9 T14 is a tall crack willow with imbalanced crown and ivy on its leaning stem with stem wounds where the ivy was previously severed. T15 is a multi-stemmed sycamore, also with an imbalanced crown weighted to the south and east growing close to the existing hard-surfacing and metal container. Together these trees provide limited amenity value.
- 4.10 Tree and group locations, their quality categories and canopy spreads are shown on Drawing 1.

Tree Quality Categorisation

- 4.11 Under BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations, trees and groups are objectively assigned a quality category to quantify their value within any future development. The table below contains a summary of the categories presented in the British Standard. The full table has been reproduced at Appendix B.

Table 2 Summary of BS 5837 tree quality categorisation criteria

Category A	Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value
Category B	Trees of moderate value including those that do not qualify as Category A due to impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value
Category C	Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits
Category U	Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infectious pathogens that threaten other trees

5.0 Impacts of the Proposed Development

- 5.1 This section describes the number and quality of trees that would be removed in order to facilitate the development proposals, and those that can be retained. This is the result of an assessment based on the proposed site plan and discussions with the client regarding their application strategy.
- 5.2 Hedgerows have not been afforded a quality value as they do not fall within the scope of BS 5837:2012.

Table 3 Arboricultural impacts by quality category⁴

	Category A	Category B	Category C	Category U	Hedge
Features that would be retained	-	T1, T2, T4, T6, G1, G2	T3, T5, T7, T8, T10, T11, T12, T13, G3	-	-
Total	0	6	7	0	0
Features that would be removed	-	-	T14, T15	-	-
Total	0	0	2	0	0
Features outside the application boundary	-	T9	-	-	-
Total	0	1	0	0	0

- 5.3 2 individual low quality trees would be removed to facilitate the development proposals.
- 5.4 T14 is a middle aged, single-stemmed goat willow with an imbalanced crown and stem lean as well as previous stem damage from severing of the extensive ivy covering the tree. T15 is a tall narrow multi-stemmed sycamore also with an imbalanced crown. Removal of these trees will constitute a relatively small reduction in inherent amenity and habitat values but would not significantly alter the character or value of the tree population as a whole.
- 5.5 Temporary tree protection and procedural controls will be required in order to deliver the tree retention schedule shown above. This information is provided as an Arboricultural Method Statement at Appendix C and should form part of any future tender documentation and instructions to contractors.

⁴ See Appendix 1, Arboricultural Survey Data for sub-categories

- 5.6 Where planning permission is granted, the retention schedule shown above and on Drawing 2 would normally form a part of that permission. Any change to this schedule may therefore require an application to vary the consent.

6.0 Tree Protection Requirements

- 6.1 The following information sets out the primary considerations in determining the requirement for tree protective measures and in the assessment of development impact.

Root Protection Areas

- 6.2 As per BS 5837:2012, the Root Protection Area (RPA) is calculated using each tree's diameter at 1.5 metres⁵ and represents the minimum area around each tree that must be left undisturbed to ensure its survival.
- 6.3 Tree roots typically spread two times the width of the crown, although this figure may be significantly increased for certain species and where specific ground conditions are present. The majority of tree roots are found in the top 600mm of soil and most of the fine roots that absorb water and nutrients are found close to the surface.
- 6.4 The morphology of roots is influenced by past and present site conditions (including roads, buried structures and underground services), soil type, topography and drainage. This means that a tree's roots may not be uniform in extent and the RPA may not be a circular area centred on the tree stem.
- 6.5 On this site, likely barriers to root growth include existing tarmacked access road, car park and edging as well as to a lesser degree the public footpath within the greenspace to the west of the site. Roots are unlikely to be absent in all these areas but where unfavourable conditions exist, growth will certainly be impeded.
- 6.6 The RPA has been adjusted or offset where appropriate to most accurately represent the likely spread of roots for each individual tree⁶.

Ground Contamination

- 6.7 Storage areas for liquids such as fuels, oil or paint should not be located within 10m of any tree due to the risk of soil contamination caused by accidental spillage.
- 6.8 Particular care must be taken when working on or close to sloping ground to avoid unintentional runoff into the rooting area of retained trees.

Underground Utility Issues

- 6.9 No utility drawings were provided and no assessment has been made of the juxtaposition of tree roots and the likely location of new services. It has been presumed for the purposes of this report that all utilities will be installed outside of the RPA shown on Drawing 2.
- 6.10 Where the installation of services within the Construction Exclusion Zone of retained trees is unavoidable, appropriate work methods will be required to ensure the safe long-term survival of those trees. This process will require additional consultation with a qualified Arboricultural Consultant and is likely to be more expensive than conventional trench installation.

⁵ Refer to Appendix A for RPA area calculations

⁶ See Drawing 1 for RPA shapes

Ground Level Changes

- 6.11 A rise or reduction in soil level can have major implications on the longevity and health of the trees. Minor changes (up to 100mm) can be tolerated in some cases but is heavily dependent on tree species, condition and growing environment.
- 6.12 Existing ground levels within the Construction Exclusion Zone should be maintained. The advice of a qualified Arboricultural Consultant should be sought if level changes are required.

Drainage & Storm Water Run-off Issues

- 6.13 Drainage and storm water run-off requires due consideration to prevent excessive and/or polluted run-off into the rooting area of trees to be retained.
- 6.14 The maintenance of existing water bodies and hydrology patterns will also be required where this relationship is important to tree health.

7.0 Recommendations

Tree Work

- 7.1 In addition to the tree removals proposed, the tree surgery operations presented below are recommended.

Table 4 Recommended tree surgery works

Tree survey reference	Tree works description
G1	Sever ivy, removing a 300mm section of each stem whilst avoiding damage to underlying tree bark.

Tree Protection

- 7.2 Temporary physical protection and procedural protection measures will be required where construction activities are proposed within or close to the Root Protection Area (RPA) of retained trees. Based on the current layout and tree retention proposal this applies to T10, T11, T12, T13 and G1.
- 7.3 An Arboricultural Method Statement (AMS) based on the principles BS 5837 is provided at Appendix C. The purpose of an AMS is to demonstrate that the proposed operations can be undertaken with minimal risk of adverse impact on trees to be retained. It sets the parameters within which construction will be undertaken and must guide the actions of site operatives. It should therefore form part of any future tender documentation.

Mitigation for the removal of trees

- 7.4 The National Planning Policy Framework (NPPF) is a material consideration in the planning process and promotes a presumption in favour of sustainable development. In terms of the natural environment, development should minimise impacts on biodiversity and provide a net gain in biodiversity where possible.
- 7.5 In respect of trees, a sustainable development will be one whereby the total number, value or function provided by trees is maintained or increased or where the long-term prospects of the existing tree stock can be substantially improved. Net gains in biodiversity may be demonstrated where the number of tree species, variety of tree ages or range of niche habitats can be increased.
- 7.6 A proposal for new landscaping and planting was not made available for the production of this assessment.
- 7.7 2 low quality trees would be removed to as part of the development proposal. It is recommended that a minimum of 4 trees are planted to the north of the new garage as mitigation for this loss. Appropriate species in-keeping with the existing composition of trees includes silver birch (*Betula pendula*), sycamore (*Acer pseudoplatanus*) and common alder (*Alnus glutinosa*).

- 7.8 Aftercare is vital to the survival of newly planted trees. Provision should be made for a minimum of two years' maintenance of newly planted trees and include watering, formative pruning and the checking of tree ties and stakes.
- 7.9 It is the recommendation of this report that mitigation in the form of tree planting has the potential to result in a net gain of long-term tree cover and quality (estimated at 40 years post-construction). This is wholly dependent on appropriate species selection, tree quality and high establishment rates.
- 7.10 The extent of mitigation planting will ultimately be determined in agreement with the LPA.

Post Construction Tree Care

- 7.11 Hazard recommendations are based on observations at the time of survey. Trees are dynamic living organisms whose structure is constantly changing. Even those in good condition can suffer from damage or stress. Following site development, regular (annual or biennial) inspections of all retained trees should be undertaken by a qualified Arboricultural Consultant.

APPENDIX A: Arboricultural Survey Data

APPENDIX A: Arboricultural Survey Data Sheets



Surveyor [Mark Levitt](#)
Date [07.02.2019](#)
Town [Stockbridge Village](#)
Site [Forviva Works Depot](#)
Dwg Ref [D7471.001](#)

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
Trees																			
T1	Sycamore	10.0	389	2.0	4.5	4.5	5.0	4.0	1.5	NE	Middle Age	Good	Bifurcate near base with narrow union. Growing in grass verge adjacent metal boundary fence. Good vigour. Epicormic growth at base, some removed.	B,1,2	4.7	68.4		Long	N
T2	English oak	10.0	400	1.0	4.0	3.5	4.0	5.5	2.0	S	Middle Age	Good	Slight imbalanced crown and lean to west. Growing in grass verge adjacent metal boundary fence. Good vigour. Epicormic growth at base, some removed.	B,1,2	4.8	72.4		Long	N
T3	Sycamore	8.0	269	2.0	1.5	2.0	1.5	2.0	2.0	S	Middle Age	Fair	Bifurcate at c. 0.5m with southern stem bent to vertical just after union. Growing in grass verge adjacent metal boundary fence. Large piece of railing/former fence embedded in stem. Good vigour. Epicormic growth at base, some removed.	C,1,2	3.2	32.8		Medium	N
T4	English oak	11.5	630	1.0	6.0	5.5	6.0	6.0	1.5	E	Middle Age	Good	Wide spreading fairly balanced crown. Good vigour. Growing in grass verge adjacent metal boundary fence. Base and buttress roots growing through and embedding around metal fence to west.	B,1,2	7.6	179.6		Long	N
T5	Sweet chestnut	4.0	175	7.0	2.0	2.0	2.0	2.0	0.5	E	Middle Age	Good	Small tree with good vigour and blanced form. Multi-stemmed at c. 1.5m.	C,1,2	2.1	13.8		Long	N
T6	Sycamore	10.5	527	6.0	4.5	5.0	5.0	4.0	2.0	W	Middle Age	Good	Multi-stemmed at base. Some branches removed with decay within one wound. Growing in grass verge adjacent metal boundary hedge. Good vigour.	B,1,2	6.3	125.5		Long	N
T7	Sycamore	10.0	300	1.0	3.5	1.0	4.5	4.0	2.0	W	Middle Age	Good	Suppressed by T1 to south - imbalanced crown. Growing in grass verge adjacent metal boundary hedge. Good vigour. Branch stub at c. 2.5m to east.	C,1,2	3.6	40.7		Long	N
T8	Sweet chestnut	2.0	41	2.0	1.0	1.0	1.0	1.0	0.5	E	Young	Good	Very small, squat tree with good vigour.	C,1,2	0.5	0.8		Long	N
T9	Sycamore	8.5	439	1.0	3.0	3.5	3.0	3.5	2.0	S	Middle Age	Good	Third party tree growing on edge of greenspace adjacent path outside of site. Previously crown lifted with pruning and stem wounds. Good vigour.	B,1,2	5.3	87.0		Long	N

APPENDIX A: Arboricultural Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)		Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,U (1,2,3)	(m)	(m2)		Long, Medium, Short	Y/N
T10	Ornamental pear	4.5	230	1.0	1.0	2.0	1.5	1.0	0.5	S	Middle Age	Fair	Small tree suppressed by T6 to north. Fairly dense, multi-branched crown to ground. Epicormic growth at base. One stem removed at c. 0.5m. Growing close to hard-standing. Good vigour.	C,1,2	2.8	23.9		Long	N
T11	Sycamore	11.0	382	2.0	2.0	4.0	4.0	4.0	2.0	S	Middle Age	Good	Twin stemmed from c. 0.5m. Epicormic growth from base. Suppressed to north by T7.	C,1,2	4.6	66.0		Long	N
T12	Sycamore	10.0	300	1.0	3.0	2.5	3.0	3.5	2.0	E	Middle Age	Good	Slightly suppressed to south by T6. Reasonable form and good vigour. Multi-stemmed at c. 2.5m	C,1,2	3.6	40.7		Long	N
T13	Blackthorn	3.0	112	2.0	1.0	1.0	2.0	1.0	1.5	E	Young	Fair	Very small twin stemmed tree to east of T11. Good vigour.	C,1,2	1.3	5.7		Long	N
T14	Crack willow	13.5	500	1.0	6.0	7.5	7.0	3.5	2.5	E	Middle Age	Fair	Bifurcate at c. 1.6m. 2 large stems removed at base. Stem lean to east. Ivy extensive on stem, recently severed with some stem damage as a result.	C,1,2	6.0	113.1		Medium	N
T15	Sycamore	12.5	346	4.0	1.5	4.0	4.0	2.0	2.0	S	Middle Age	Good	Multi-stemmed at base. Crown weighted to south and east. Epicormic growth profusive from removed stem stump at base.	C,1,2	4.2	54.3		Long	N
Groups																			
G1	Common ash; common alder; English oak; holly	to 12	c. 50-430	c. 10 trees							Young to Middle Age	Good	Smaller holly beneath larger common ash and alder and one smaller oak at west. Ivy on alder stems.	B,2,3	Refer to Drawing	n/a	Sever ivy, removing a 300mm section of each stem whilst avoiding damage to underlying tree bark.	Long	N
G2	Sycamore; English oak; silver birch	to 15.5	c. 50-800	c. 50 trees							Middle Age to Mature	Fair	Mainly sycamore and silver birch to west with larger mature oak trees to east. Trees in varying condition with large stem wounds at base of larger trees to west. Ivy extensive on some stems, wounds to oak tree stems where ivy has been severed. Smaller regeneration beneath. Several trees, some quite large removed to southwest between grass verge adjacent hard-surfacing and remaining trees.	B,2,3	Refer to Drawing	n/a		Long	N
G3	Goat willow	12.5	190-300	5 trees							Middle Age	Good	Row of trees with high canopies and good vigour. Ivy severed on stems. One tree separated out slightly to west.	C,2,3	Refer to Drawing	n/a		Long	N

APPENDIX B: Survey Method

APPENDIX B: SURVEY METHOD

The survey of trees is conducted from ground level only. The nature of the soils on site is not assessed.

Trees are dynamic living organisms with a constantly changing structure; even trees in good condition can suffer from damage or stress. The information recorded is presented as being correct at the time of survey.

The following features of each tree, group of trees or wood may have been recorded in the Arboricultural Survey Data Sheets at Appendix 1.

Species	The common name is given. The Latin name may also be given if further clarification is required.	
Height	Top height of tree recorded in metres.	
Stem Diameter	For single-stemmed trees the measurement is taken at 1.5 metres above ground level and recorded in millimetres. For multi-stemmed trees an average all stems measured at 1.5m above ground level is used. For tree groups a range from minimum to maximum diameters is provided based on measurements taken using one of the aforementioned methods.	
No. of Stems	A count of stems arising below a height of 1.5 metres.	
Crown Spread	The N, S, E and W branch spreads are recorded in metres to provide a representative crown shape.	
Height of Lowest Branch	Crown clearance above ground level recorded in metres.	
Direction of Lowest Branch	The direction of growth of the first significant branch from the point of attachment.	
Maturity	Young	Trees that can reasonably be relocated or replaced like for like, without undue cost;
	Middle Age	Trees in the established growth stage of their life with the potential to continue increasing in size;
	Mature	Trees that have reached their ultimate size, given their location and surroundings;
Condition	Good, Fair, Poor. An overall assessment of a tree's physiological and structural state in which factors that may increase its susceptibility to the effects of development are taken into account. Veteran. Trees that are in such a condition as to significantly increase their biological, cultural or aesthetic value. This is characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Comments	A brief evaluation and description of the tree with comments on form, vitality, health and any significant defects or symptoms of ill-health.	

BS 5837 Tree Quality Assessment

The tree quality assessment is based on Table 1 of BS 5837:2012 (See below). Four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention). Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category (the subcategories may be used in combination but do not accumulate collective weight).

Root Protection Area (RPA)

The RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m²) and as the radius of a circle (m) typically plotted from the centre of the stem.

The RPA is calculated using a mathematical equation included in BS 5837:2012 (Section 4.6 and Table D.1) and is based on a tree's stem diameter. In some cases the RPA may need to be adapted to best reflect the likely area and position of roots required to ensure survival; this may be based on criteria such as the tree's condition, species, crown spread and any barriers to growth. Any alteration must be justifiable but is made at the Arboricultural Consultants discretion.

Recommendations

Recommendations for arboricultural works, etc. are based on the **current** land use, and take into account the tree or group attributes without bias to the proposed development.

Estimated Remaining Contribution

An estimation of the life expectancy as healthy functioning tree. This will be influenced by species and the condition of the tree at the time of survey.

Long	> 40 years
Medium	20 – 40 years
Short	less than 20 years

APPENDIX B: SURVEY METHOD

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

British Standards Institute (2012) BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.
p.9

NOTES:

All young trees are assessed as quality category 'C' but this does not preclude their retention within a development.

For hedges the height, canopy spread and number of stems is recorded but they are not assigned a quality category.

APPENDIX C: Arboricultural Method Statement



FORVIVA WORKS DEPOT
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ARBORICULTURAL METHOD STATEMENT
v1, May 2019

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Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Forviva Works Depot, Knowsley

Arboricultural Method Statement

Introduction and Overview

This Arboricultural Method Statement (AMS) outlines the parameters within which construction and remediation must be undertaken in order to retain protected trees in satisfactory condition. This document gives a definitive account of the treatment of retained trees during the construction process and outlines approved construction and protection methods. The detail and requirements of this method statement comprise commitments to complete the construction phase of the development in a specific manner and must inform the production of all relevant tender documents and instructions to contractors.

Failure to adhere to the correct sequence, manner and timing of operations detailed below may result in irremediable damage to trees, and thereby breach of planning consent. Retained trees are protected by planning law and reckless damage or tree removal could result in a stop notice or prosecution.

GENERAL TERMS

- A. These documents should be reproduced in colour and at A3 size.
- B. The site manager will read and understand this Method Statement. It will be the responsibility of the site manager to ensure compliance with this Method Statement.
- C. A copy of this Method Statement will be made available for inspection on site and introduced to all relevant contractors.
- D. An arboricultural contractor will be appointed to undertake the removal of trees.
- E. An arboricultural consultant will be appointed to verify certain activities as specified by this document. They must be provided with contact details for the site manager and notified of the date of commencement of works.
- F. All areas that are protected by Tree Protection Fencing or Ground Protection will be collectively defined as a **Construction Exclusion Zone** (CEZ).
- G. Access, works or storage within the CEZ will be prohibited unless specified by this AMS.
- H. If unexpected large roots (>25mm diameter) are encountered during excavation works or if additional pruning of branches is required the arboricultural consultant will be contacted.
- I. The site manager will be responsible for contacting the arboricultural consultant as required by this AMS or any requirement to enter a protected area arises.
- J. Each of the elements within this Method Statement will be signed-off by the arboricultural consultant in the Operations Sign-off inset below.
- K. Any deviation from the approved scheme will be recorded below and reported to the Site Manager and local planning authority Tree Officer.

Sequence of Events

1.	Complete all Tree Removal according to <i>AMS 01: Tree Works</i> . This must be done before site access, set-up, compound creation, any delivery of materials or plant, and before commencement of ground works or construction.
2.	Install Tree Protection Measures (temporary fencing and ground protection) in locations according to <i>AMS 02: Site Setup and Tree Protection</i> . This must also be done before site access, set-up, compound creation, any delivery of materials or plant, and before commencement of ground works or construction.
3.	Install Tree Protection Fencing to specification shown on <i>AMS 03: Tree Protection Fencing Specification</i> . A bill of quantities has been estimated.
4.	Install Ground Protection to specification shown on <i>AMS 04: Ground Protection Specification</i> .
5.	Carry out supervised excavation and root pruning in accordance with <i>AMS 05: Supervised Excavation and Root Pruning</i> .
6.	Commence construction as per approved plans in all areas except CEZ (protected by Tree Protection Fencing and Ground Protection).
7.	After all external works are complete, remove remaining tree protection measures and undertake final Landscaping activities.

Arboricultural Consultant:

Telephone: | Email:

AMS 01	Date:	Initials:
AMS 02	Date:	Initials:
AMS 03	Date:	Initials:
AMS 04	Date:	Initials:
AMS 05	Date:	Initials:

The above Method Statement elements have been discharged in full to the best of my knowledge and professional assessment. Where there has been any deviation from the specification, I am satisfied that this has not been injurious to retained trees and that all such deviations have complied with the spirit of the instruction insofar as was reasonably practicable or were approved in advance by the proper authority.

Signed:

.....

Forviva Works Depot, Knowsley

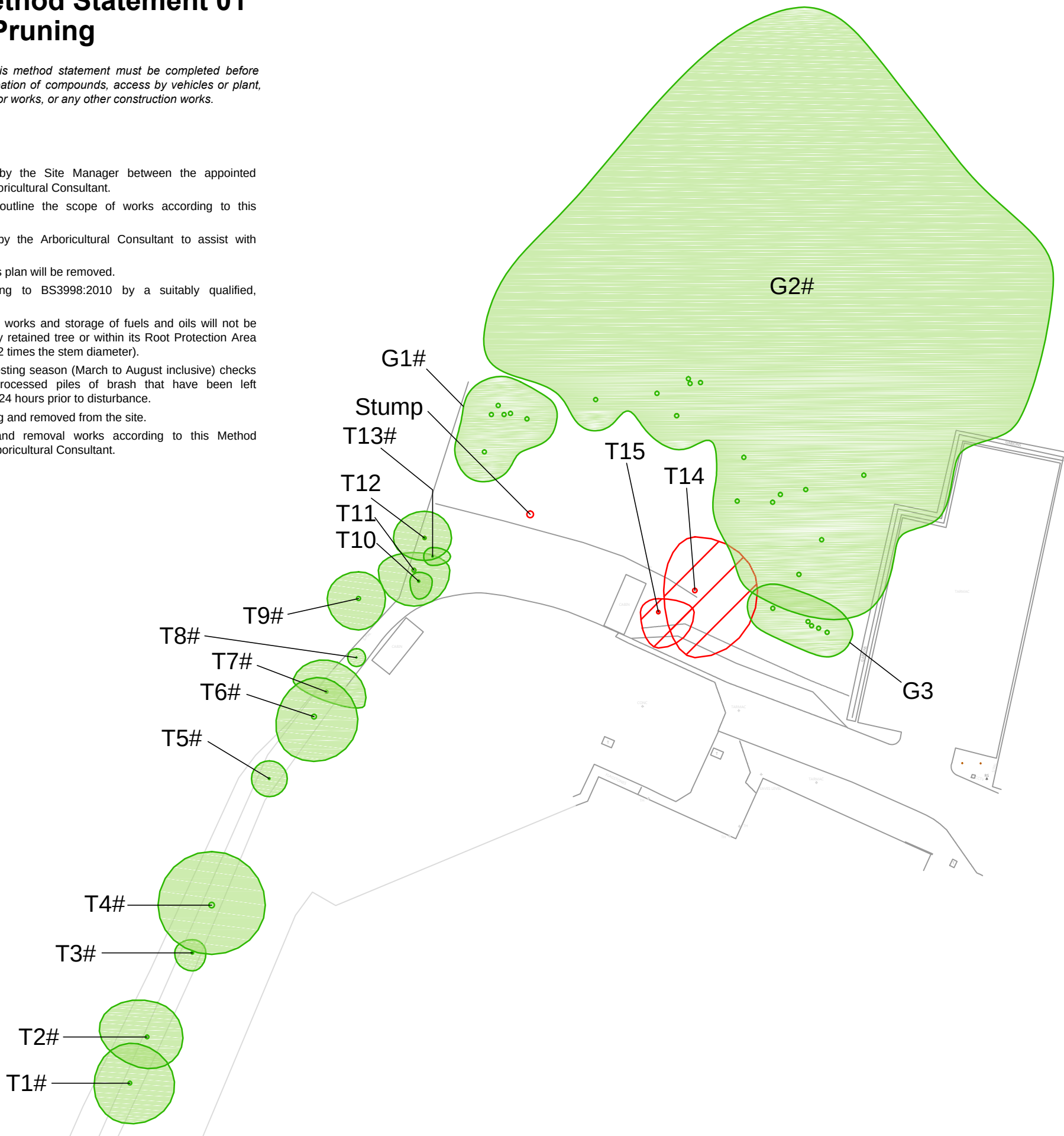
Arboricultural Method Statement 01

Tree Works and Pruning

Tree removal and pruning according to this method statement must be completed before commencement of works, including the creation of compounds, access by vehicles or plant, delivery of materials, ground investigations or works, or any other construction works.

SEQUENCE OF EVENTS

1. A site meeting will be arranged by the Site Manager between the appointed Arboricultural Contractor and the Arboricultural Consultant.
2. The Arboricultural Consultant will outline the scope of works according to this approved document.
3. Trees will be marked with spray by the Arboricultural Consultant to assist with identification where necessary.
4. Trees indicated by a red hatch on this plan will be removed.
5. Works will be completed according to BS3998:2010 by a suitably qualified, experienced and insured contractor.
6. Plant and vehicles used for the tree works and storage of fuels and oils will not be permitted beneath the canopy of any retained tree or within its Root Protection Area (calculated as a circle with a radius 12 times the stem diameter).
7. If works are completed within bird nesting season (March to August inclusive) checks of all trees, shrubs and any unprocessed piles of brash that have been left unattended will be undertaken within 24 hours prior to disturbance.
8. Arisings will be processed by chipping and removed from the site.
9. The completion of tree pruning and removal works according to this Method Statement must be verified by the Arboricultural Consultant.



KEY

[This drawing must be reproduced in colour]

-  Trees and groups to retain
-  Trees to remove
-  Approximate location
(Feature not shown on topo)



Rev	Description	Drawn	Approved	Date
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Project
Forviva Works Depot, Knowsley
Arboricultural Method Statement

Title
AMS 01: Tree Works

Drawing Number
D7471.003

Drawn	Checked	Approved	Scale	Date
ML	HEE	JGS	1:500 @ A3	07/05/2019

Forviva Works Depit, Knowsley

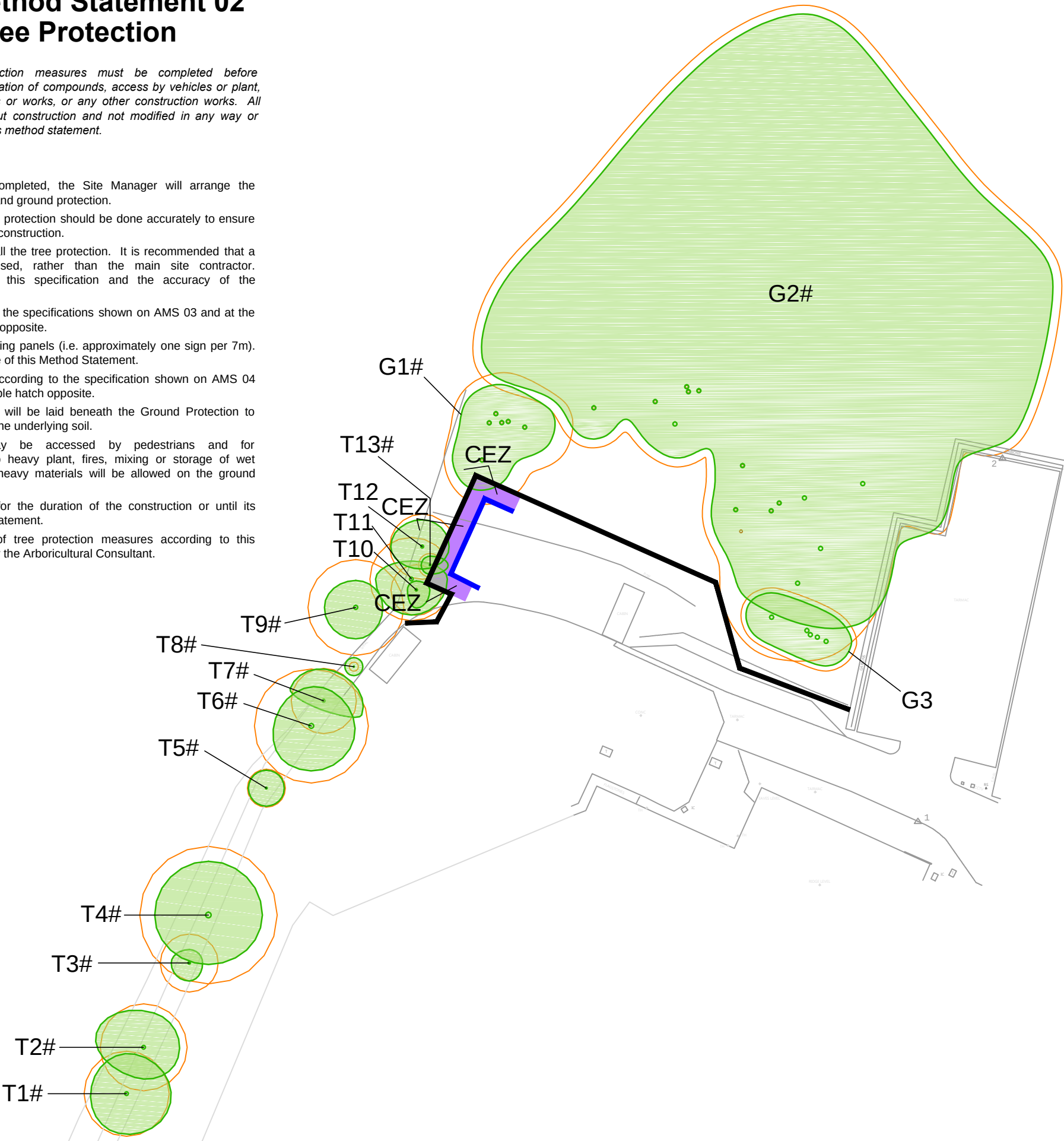
Arboricultural Method Statement 02

Site Setup and Tree Protection

The installation of physical tree protection measures must be completed before commencement of works, including the creation of compounds, access by vehicles or plant, delivery of materials, ground investigations or works, or any other construction works. All tree protection must be retained throughout construction and not modified in any way or removed except in strict compliance with this method statement.

SEQUENCE OF EVENTS

- Once all tree works have been completed, the Site Manager will arrange the installation of tree protection fencing and ground protection.
- The alignment of fencing and ground protection should be done accurately to ensure that tree protection does not obstruct construction.
- A contractor will be engaged to install the tree protection. It is recommended that a specialist contractor should be used, rather than the main site contractor. Responsibility for compliance with this specification and the accuracy of the installation will lie with the installer.
- Fencing will be installed according to the specifications shown on AMS 03 and at the alignment shown by a thick black line opposite.
- Signs will be affixed to alternate fencing panels (i.e. approximately one sign per 7m). An example is shown on the last page of this Method Statement.
- Ground protection will be installed according to the specification shown on AMS 04 and the location shown by a solid purple hatch opposite.
- Terram T1000 geotextile membrane will be laid beneath the Ground Protection to prevent ingress by fines and dirt into the underlying soil.
- Areas of ground protection may be accessed by pedestrians and for pedestrian-operated tools only. No heavy plant, fires, mixing or storage of wet materials, outriggers or storage of heavy materials will be allowed on the ground protection.
- Tree protection will remain in situ for the duration of the construction or until its removal is specified by this method statement.
- The installation and maintenance of tree protection measures according to this Method Statement must be verified by the Arboricultural Consultant.



KEY

[This drawing must be reproduced in colour]

- Retained trees and groups
- Retained hedgerow
- Approximate location (Feature not shown on topo)
- Tree Protection Fencing (c. 84m or 24 Heras panels) (See D7471.005 - AMS 03 for specification)
- Ground Protection (c. 37m²) (See D7471.006 - AMS 04 for specification)
- Supervised Excavation and Root Pruning (See D7471.007 - AMS 05 for specification)



Rev	Description	Drawn	Approved	Date
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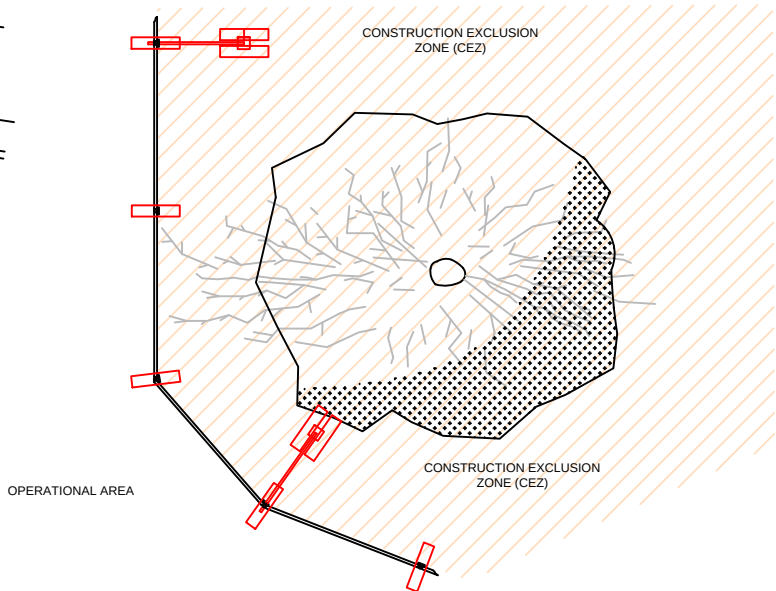
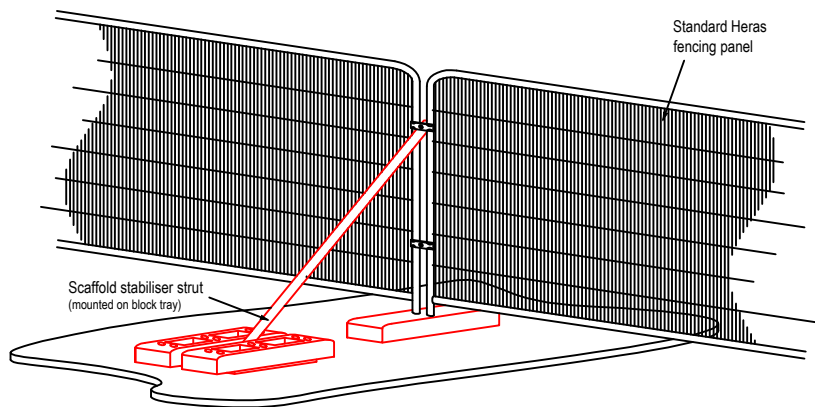
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Project
Forviva Works Depot, Knowsley
Arboricultural Method Statement
Title
AMS 02: Site Setup and Tree Protection

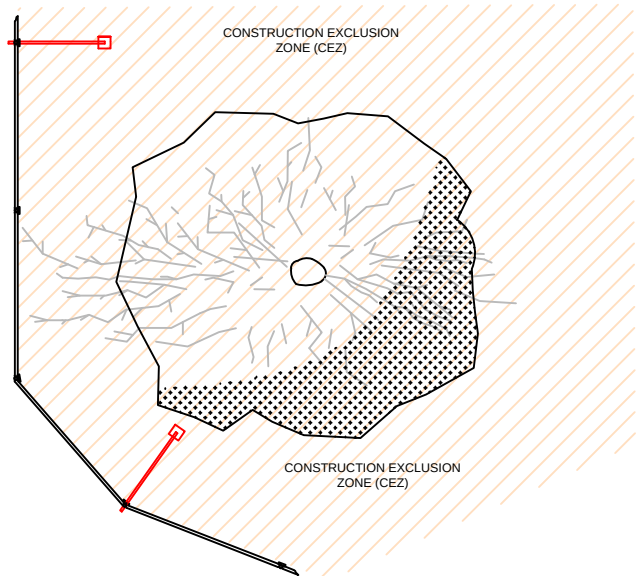
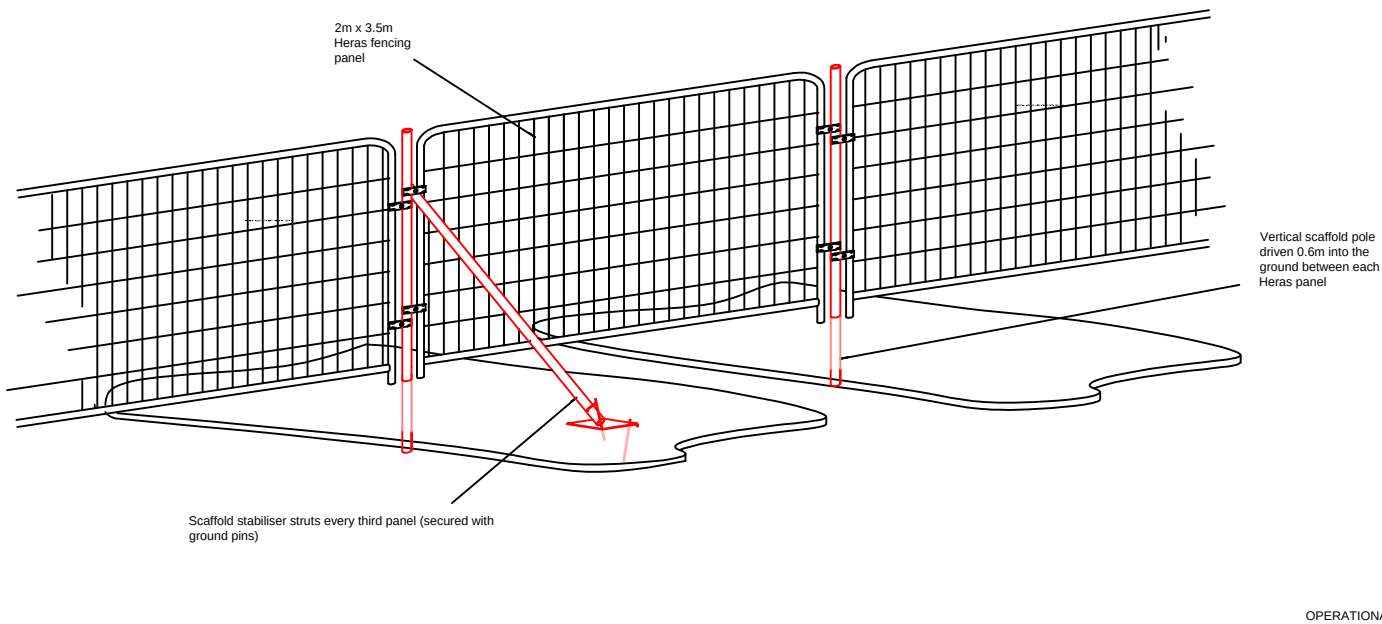
Drawing Number
D7471.004

Drawn	Checked	Approved	Scale	Date
ML	HEE	JGS	1:500 @ A3	07/05/2019

Per 3No. Heras panels (10.5m)	
Component	Quantity
2m x 3.5m Standard Heras panels	3
3m Galvenised steel scaffold pole	3
Heras fecurity fence clip	12
Heras stabilising support bar	1
Stabilising pin	2
Tree protection notice	2



Tree Protection Fencing for use on soft dig



Rev	Description	Drawn	Approved	Date
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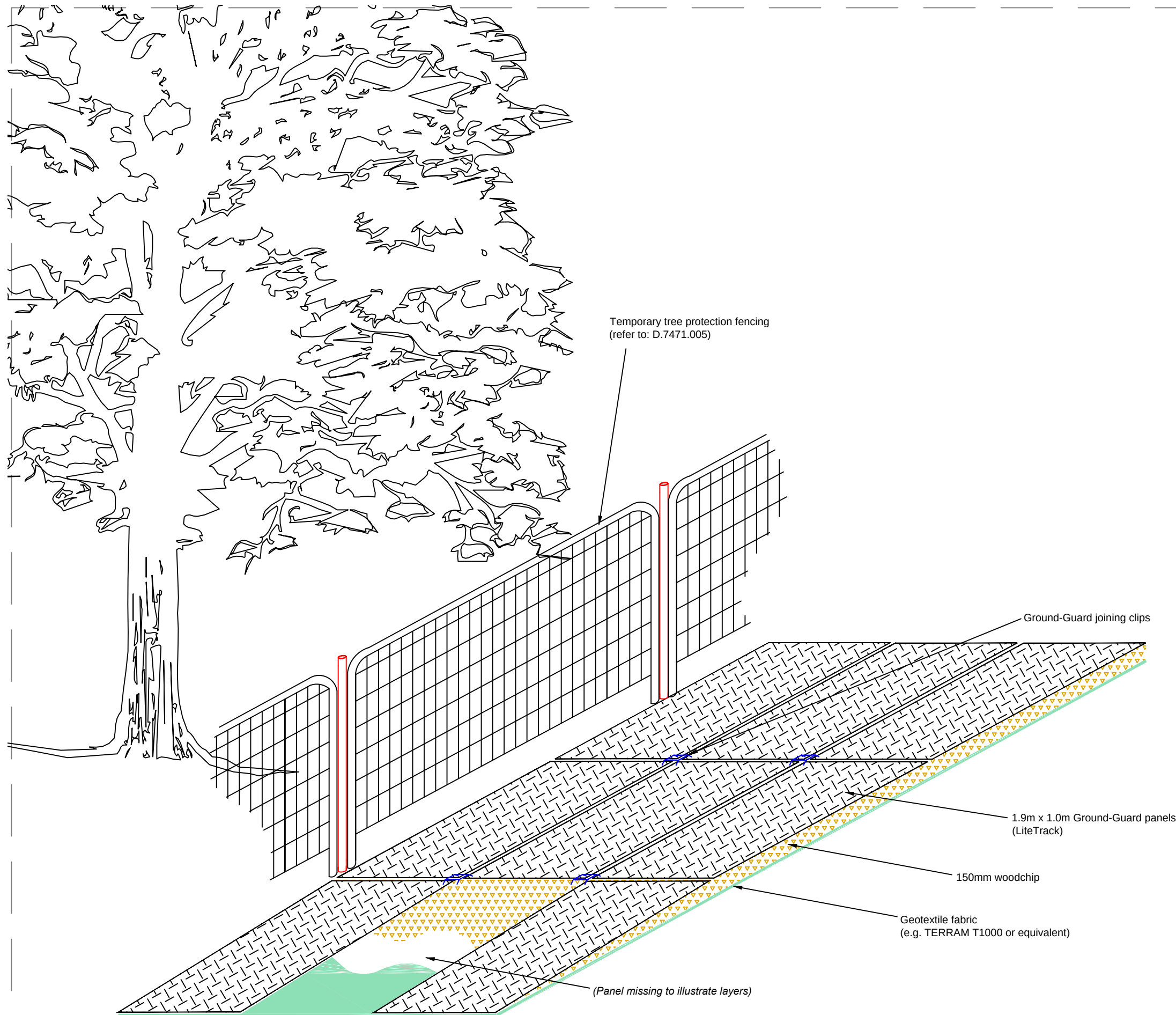


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Project
Forviva Works Depot, Knowsley
Arboricultural Method Statement
Title
AMS 03: Tree Protection Fencing Specifications

Drawing Number
D7471.005

Drawn	Checked	Approved	Scale	Date
ML	HEE	JGS	1:500 @ A3	07/05/2019



Rev	Description	Drawn	Approved	Date
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Project

**Forviva Works Depot, Knowsley
Arboricultural Method Statement**

Title

AMS 04: Ground Protection Specification

Drawing Number

D7471.006

Drawn	Checked	Approved	Scale	Date
ML	HEE	JGS	1:500 @ A3	07/05/2019

Forviva Works Depot, Knowsley

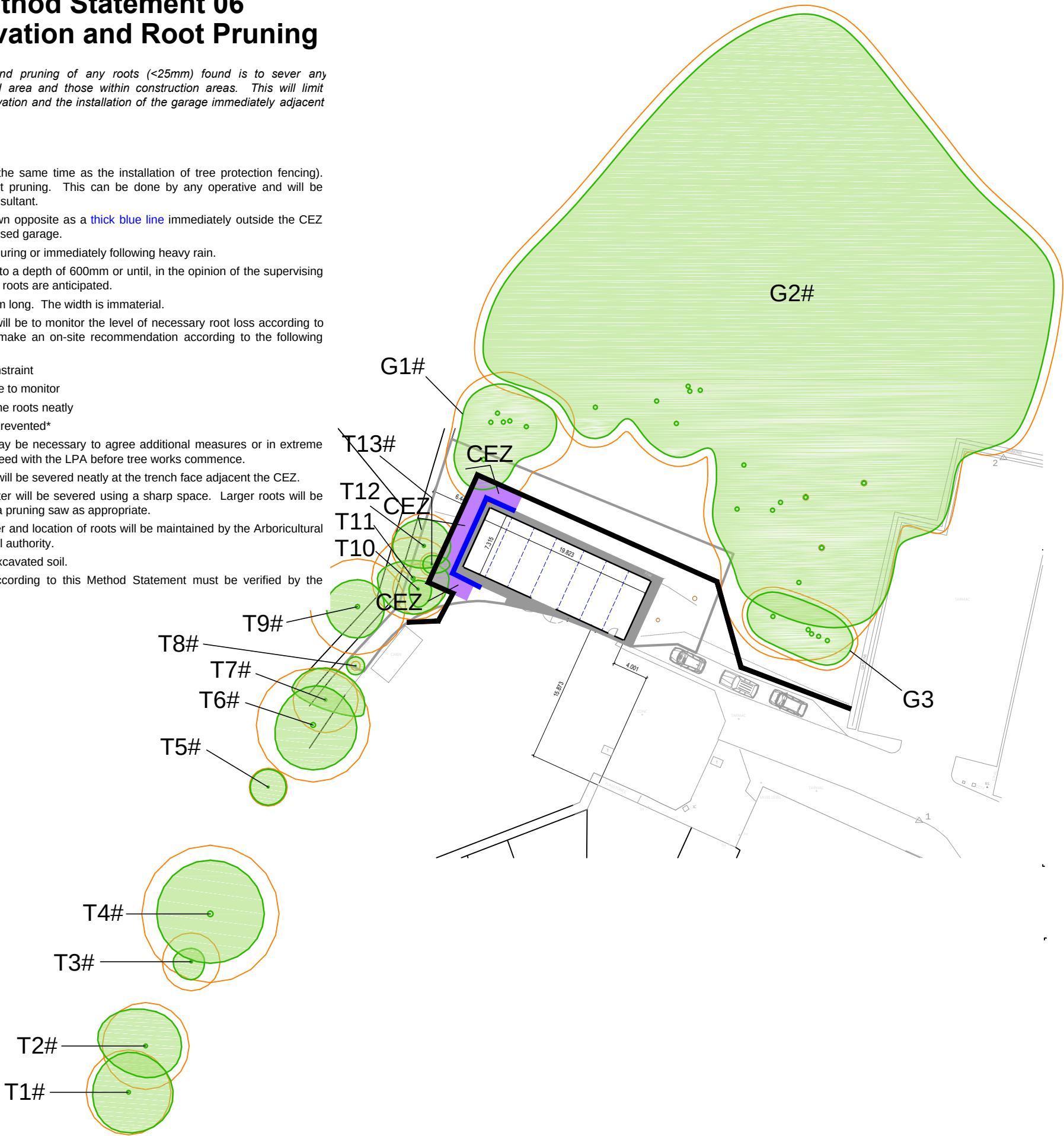
Arboricultural Method Statement 06

Supervised Excavation and Root Pruning

The purpose of supervised excavation and pruning of any roots (<25mm) found is to sever any connection between roots in the protected area and those within construction areas. This will limit damage to the remaining roots during excavation and the installation of the garage immediately adjacent to the protected area.

SEQUENCE OF EVENTS

- As soon as practicable (ideally at the same time as the installation of tree protection fencing). The Site Manager will arrange root pruning. This can be done by any operative and will be supervised by the Arboricultural Consultant.
- The location of root pruning is shown opposite as a **thick blue line** immediately outside the CEZ around the western end of the proposed garage.
- Root pruning will not be completed during or immediately following heavy rain.
- A trench will be excavated by hand to a depth of 600mm or until, in the opinion of the supervising Arboricultural Consultant, no deeper roots are anticipated.
- The trench will be approximately 16m long. The width is immaterial.
- The purpose of the watching brief will be to monitor the level of necessary root loss according to the size and density of roots and make an on-site recommendation according to the following findings:
 - No roots - Continue without constraint
 - Minor roots (<10mm) - Continue to monitor
 - Moderate roots (>10mm) - Prune roots neatly
 - Major roots (>25mm) - Works prevented*
- *Where major roots are found, it may be necessary to agree additional measures or in extreme cases, tree removal. This will be agreed with the LPA before tree works commence.
- Where roots are encountered, they will be severed neatly at the trench face adjacent the CEZ.
- Roots smaller than 10mm in diameter will be severed using a sharp space. Larger roots will be severed using bypass secateurs or a pruning saw as appropriate.
- A photographic record of the number and location of roots will be maintained by the Arboricultural Consultant for inspection by the local authority.
- The trench will be backfilled using excavated soil.
- The completion of root pruning according to this Method Statement must be verified by the Arboricultural Consultant.



KEY

[This drawing must be reproduced in colour]

- Trees and groups to retain
- Approximate location (Feature not shown on topo)
- Tree Protection Fencing (to remain in-situ throughout construction)
- Temporary Ground Protection (to remain in situ throughout construction)
- Supervised Excavation and Root Pruning



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Project
Forviva Works Depot, Knowsley
Arboricultural Method Statement
Title
AMS 05: Supervised Excavation and Root Pruning

Drawing Number
D7471.007

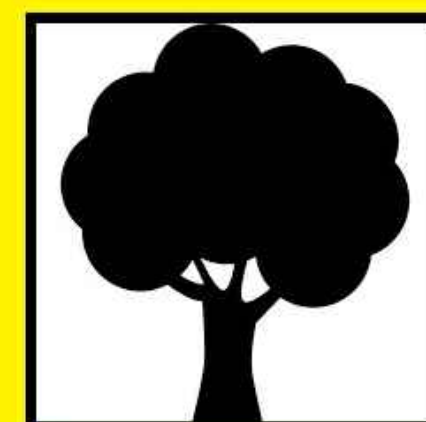
Drawn	Checked	Approved	Scale	Date
ML	HEE	JGS	1:500 @ A3	07/05/2019



ATTENTION

TREE PROTECTION AREA

KEEP OUT!



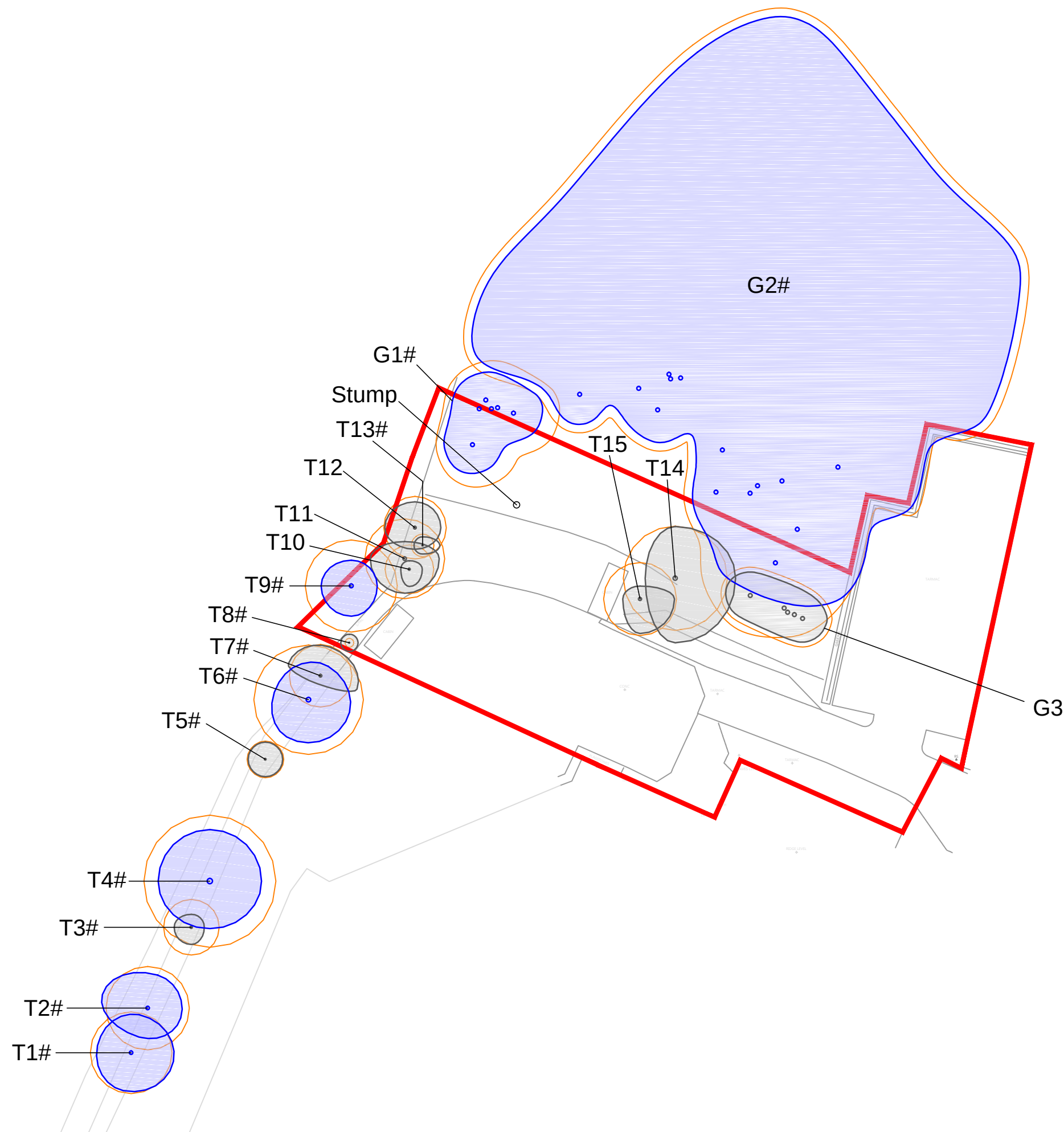
**YOU MAY NOT ENTER THIS AREA
OR USE IT FOR STORAGE**

**YOU MUST NOT MOVE OR DAMAGE
THIS PROTECTION FENCING**

**IF YOU REQUIRE ACCESS
TO THE TREE PROTECTION AREA
PLEASE CONTACT 01925 844004**

DRAWINGS

Drawing 1 - Tree Constraints Plan
Drawing 2 - Tree Impact Plan



KEY
[This drawing must be reproduced in colour]

- T1 Individual trees
- G1 Groups of trees
- Root Protection Area (RPA)
- Approximate Development Boundary
- # Approximate location
(All or part of feature not shown on topo)

Tree Quality Categorisation
(Based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations)

- Category A (High quality)
- Category B (Moderate quality)
- Category C (Low quality)
- Category U (Unsuitable for retention)

NOTE: This drawing should be read in conjunction with the respective Arboricultural Survey Data (Appendix A).



Rev	Description	Drawn	Approved	Date
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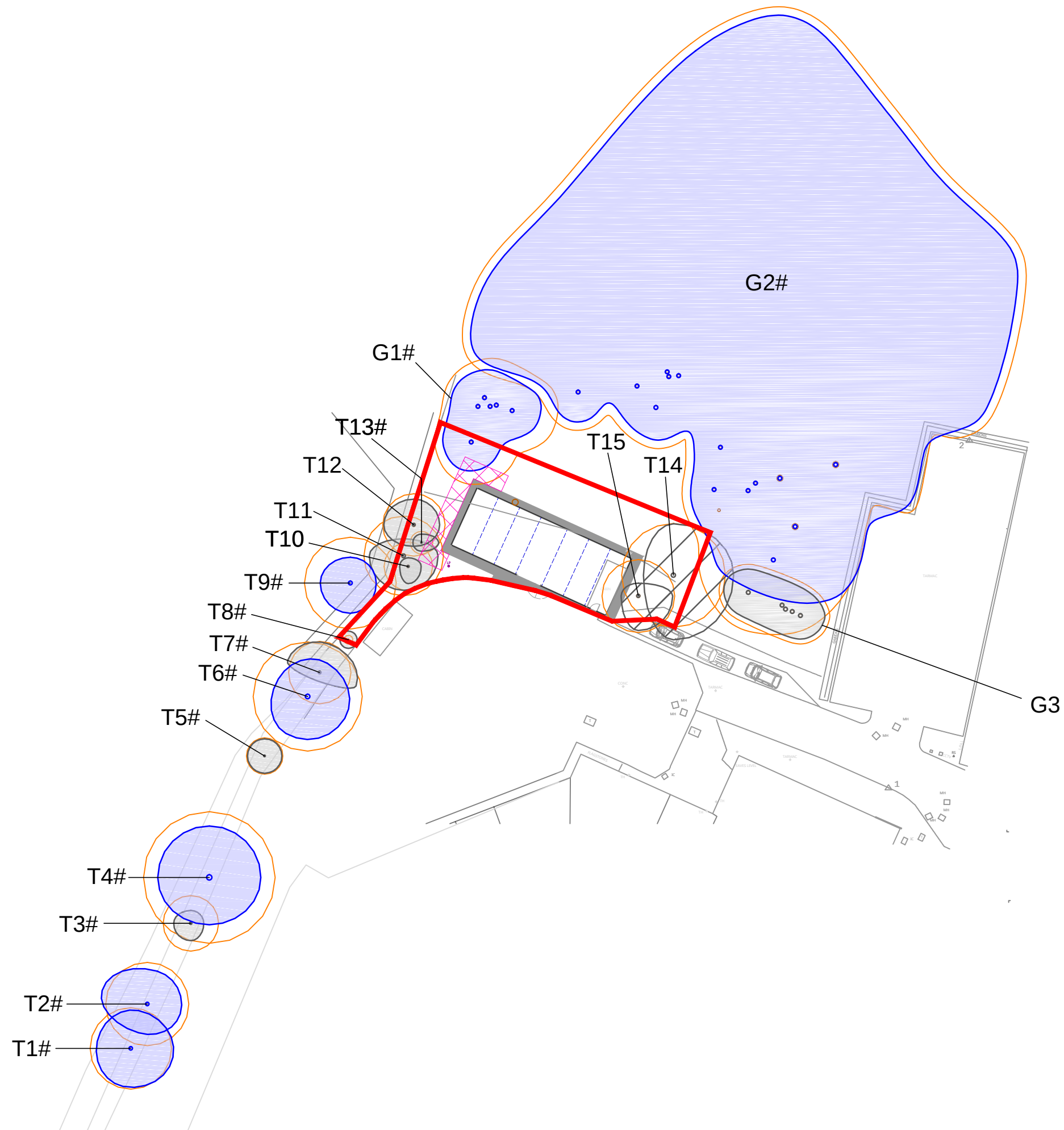
THE ENVIRONMENT PARTNERSHIP
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Project
Forviva Depot Works - Arboricultural Impact Assessment

Title
Drawing 1 - Tree Constraints Plan [EXISTING]

Drawing Number
D7471.001

Drawn ML	Checked HEE	Approved JGS	Scale 1:500 @ A3	Date 20/03/2019
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KEY

[This drawing must be reproduced in colour]

-  T1 Individual trees
-  G1 Groups of trees
-  Development Boundary
-  # Approximate location
(All or part of feature not shown on topo)
-  Special Mitigation Construction
(Refer to Arboricultural Method Statement - D7471.003-007)

Trees to be retained

-   Category A
(High quality)
-   Category B
(Moderate quality)
-   Category C
(Low quality)
-   Category U
(Trees with existing or potential conservation value)

Trees to be removed

-   Category A
(High quality)
-   Category B
(Moderate quality)
-   Category C
(Low quality)
-   Category U
(Unsuitable for retention)

NOTE: Tree quality assessment based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations.

NOTE: This drawing should be read in conjunction with the respective Arboricultural Data Sheets (Appendix A).



Rev	Description	Drawn	Approved	Date
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Project

Forviva Depot Works - Arboricultural Impact Assessment

Title

Drawing 2 - Tree Impact Plan [PROPOSED]

Drawing Number

D7471.002

Drawn	Checked	Approved	Scale	Date
ML	HEE	RMG	1:500 @ A3	03/05/2019



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