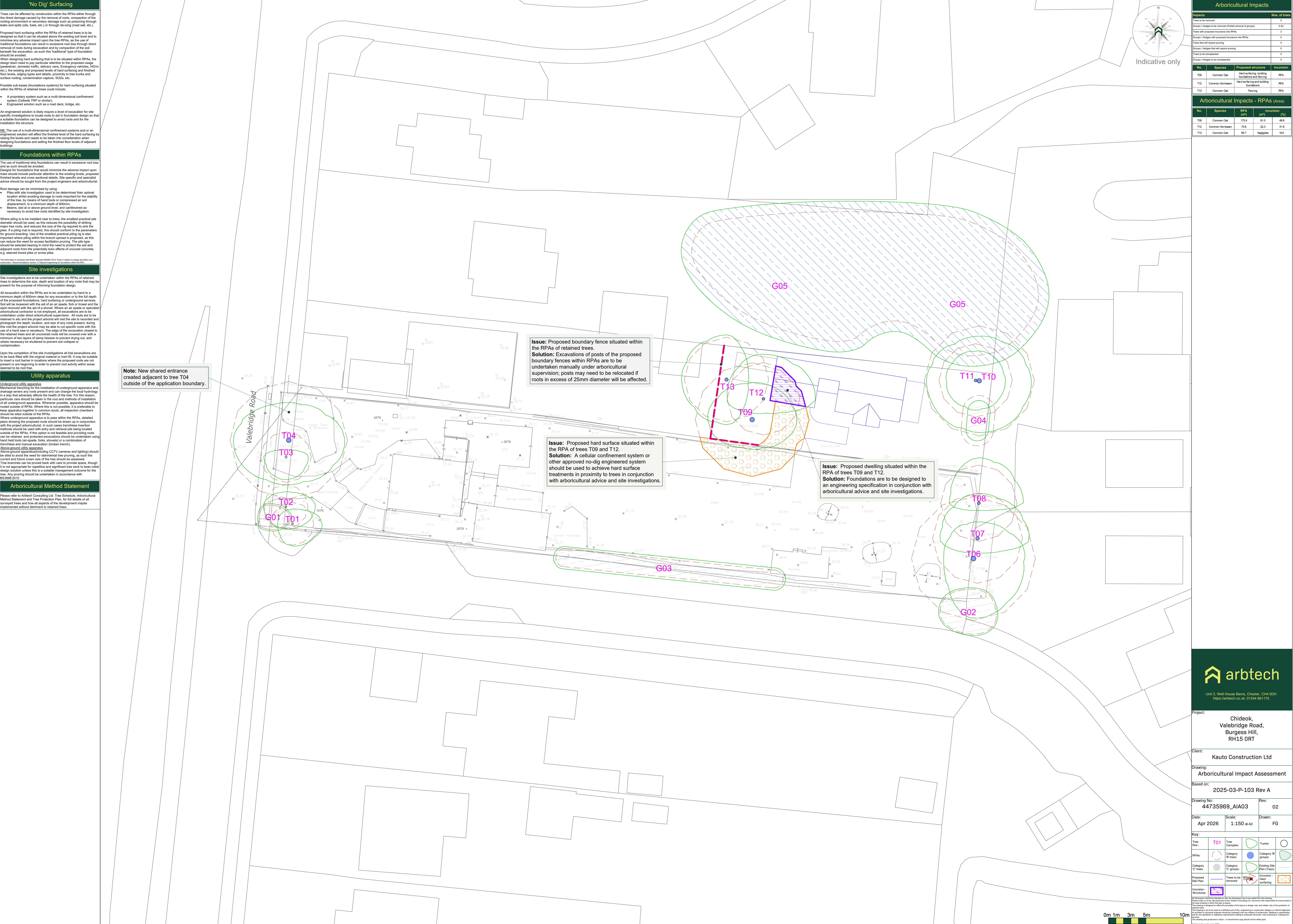




'No Dig' Surfacing

Trees can be affected by construction within the RPAs either through the direct damage caused by the removal of roots, compaction of the rooting environment or secondary damage such as poisoning through leaks and spills (oil, fuel, etc.) or through deviating (road salt, etc.).

Proposed hard surfacing within the RPAs of retained trees is to be designed so that it can be situated above the existing soil level and to minimise any adverse impact upon the trees RPAs. As the use of traditional foundations can result in excessive root loss through direct removal of roots during excavation and by compaction of the soil beneath the excavation, as such this 'traditional' type of foundation should be avoided.

When designing hard surfacing that is to be situated within RPAs, the design team need to pay particular attention to the proposed usage (pedestrian, domestic traffic, delivery vans, Emergency vehicles, HGVs etc.), the existing and proposed levels of hard surfacing and finished floor levels, existing trees and details, proximity to tree trunks and surface rooting, contamination capture, SUDs, etc.

Possible sub-bases (foundations systems) for hard surfacing situated within the RPAs of retained trees could include:

- A proprietary system such as a multi-dimensional confinement system (Calweb TRP or similar).
- Engineered solution such as a road deck, bridge, etc.

An engineered solution is likely require a level of excavation for site specific investigations to locate roots to aid in foundation design so that a suitable foundation can be designed to avoid roots and for the installation the structure.

NB: The use of a multi-dimensional confinement systems and or an engineered solution will affect the finished level of the hard surfacing by raising the levels and needs to be taken into consideration when designing foundations and setting the finished floor levels of adjacent buildings.

Foundations within RPAs

The use of traditional strip foundations can result in excessive root loss and as such should be avoided.

Designs for foundations that would minimise the adverse impact upon trees should include particular attention to the existing levels, proposed finished levels and cross sectional details. Site specific and specialist advice should be sought from the project engineers and arboricultural.

Root damage can be minimised by using:

- Piles with site investigation used to be determined their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm.
- Beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for ground boring. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncoated concrete, e.g. shrouded bored pile or screw pile.

This information is compiled with British Standard BS5837:2012 Trees in relation to design, installation and maintenance. Please refer to the full standard for further information.

Site investigations

Site investigations are to be undertaken within the RPAs of retained trees to determine the size, depth and location of any roots that may be present for the purpose of informing foundation design.

All excavation within the RPAs are to be undertaken by hand to a minimum depth of 600mm deep for any excavation or to the full depth of the proposed foundations, hard surfacing or underground services. Soil will be loosened with the aid of an air spade, fork or trowel and the soil removed with the aid of a shovel. Where an air spade or specialist arboricultural contractor is not employed, all excavations are to be undertaken under direct arboricultural supervision. All roots are to be retained in situ and the project arboret will visit the site to record and photograph the depth, location, and size of any roots present, during this visit the project arboret may be able to cut specific roots with the use of a hand saw or secateurs. The edge of the excavation closest to the retained trees and all uncovered roots will be covered over with a minimum of two layers of damp hessian to prevent drying out, and where necessary be sheltered to prevent soil collapse or contamination.

Upon the completion of the site investigations all trial excavations are to be back filled with the original material or inert fill. It may be suitable to insert a root barrier in locations where the proposed roots are not present or are beginning to enter to prevent root activity within areas deemed to be root free.

Utility apparatus

Underground utility apparatus

Mechanical trenching for the installation of underground apparatus and drainage serves any roots present and can change the local hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the root and methods of installation of all underground apparatus. Whenever possible, apparatus should be routed outside of RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts, all inspection chambers should be sited outside of the RPAs.

Where underground apparatus is to pass within the RPAs, detailed plans showing the proposed route should be drawn up in conjunction with the project arboricultural. In such cases trenchless insertion methods should be used with entry and retrieval pits being located outside of the RPAs. If this option is not feasible and providing roots can be retained, protected excavations should be undertaken using hand held tools (air-spade, forks, shovels) or a combination of trenchless and manual excavation (broken trench).

Above ground utility apparatus

Above-ground apparatus (including CCTV cameras and lighting) should be sited to avoid the need for detrimental tree pruning, as such the current and future crown size of the tree should be assessed. Tree branches can be pruned back with care to provide space, though it is not appropriate for repetitive and significant tree work to be an initial design solution unless this is a suitable management outcome for the tree. Any pruning should be undertaken in accordance with BS3998:2010.

Arboricultural Method Statement

Please refer to Arbtch Consulting Ltd. Tree Schedule, Arboricultural Method Statement and Tree Protection Plan, for full details of all surveyed trees and how all aspects of the development might be implemented without detriment to retained trees.

Arboricultural Impacts			
Impacts		Nos. of trees	
Trees to be removed		0	
Groups A/Hedges to be removed (Partial removal of groups)		0/0/1	
Trees with proposed incursions into RPAs		3	
Groups A/Hedges with proposed incursions into RPAs		0	
Trees that will require pruning		0	
Groups A/Hedges that will require pruning		0	
Trees to be translocated		0	
Groups A/Hedges to be translocated		0	
No.	Species	Proposed structure	Incursion
T09	Common Oak	Hard surfacing, building foundations and fencing	RPAs
T12	Common Hornbeam	Hard surfacing and building foundations	RPAs
T13	Common Oak	Fencing	RPAs

Arboricultural Impacts - RPAs (Area)				
No.	Species	RPA (m ²)	Incursion (m ²)	%
T09	Common Oak	175.9	81.0	46%
T12	Common Hornbeam	19.8	22.1	11%
T13	Common Oak	95.7	Negligible	N/A

No.	Species	RPA (m ²)	Incursion (m ²)
T09	Common Oak	175.9	81.0
T12	Common Hornbeam	19.8	22.1
T13	Common Oak	95.7	Hedge/line

No.	Species	RPA (m ²)	Incursion (m ²)
T09	Common Oak	175.9	81.0
T12	Common Hornbeam	19.8	22.1
T13	Common Oak	95.7	Hedge/line

No.	Species	RPA (m ²)	Incursion (m ²)
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T12	Common Hornbeam	19.8	22.1
T13	Common Oak	95.7	Hedge/line

No.	Species	RPA (m ²)	Incursion (m ²)
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T12	Common Hornbeam	19.8	22.1
T13	Common Oak	95.7	Hedge/line

No.	Species	RPA (m ²)	Incursion (m ²)
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