FLAC

Client
University of Reading

Instruction
Upper Redlands Road

Instruction ref.
CC31-1036

Dwg title
Tree Protection Plan

Dwg no.
31-1036.06-D

Rev. D Date
28.09.17

Scale
1:250 @ A1

Quality & value grades:

Category A — High
Category B — Moderate
Category C — Low
Category U — Unretainable

Crown outline coding:

- Tree removed to facilitate implementation of planning consent
- Trees remote from & not affected by proposals
- Trees for retention
- Trees for retention, special engineering required
- Trees for retention requiring pruning
- Indicative tree root protection area (retention trees only)
- Existing hard surface subject to careful replacement to grass
- Position 1 Alignment of tree protection fencing
- Position 2 Alignment of tree protection fencing
- Alignment of fencing for water main trench
- Temporary Ground Protection
- No-dig surface
- Temporary ground protection to be replaced with No-Dig surface

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Notes

Do not scale off dwg - refer to tree survey data schedule for crown spreads etc

Tree group outlines follow the topo survey base

Drawn to N unless otherwise indicated

Rev D to take account of water supply provision through trees adjacent service road

ARBORICULTURAL METHOD STATEMENT

A) PRELIMINARY MATTERS

1. Prior to any ground modelling, demolition or construction work on site, the approved tree works (see FLAC dwg. no.31-1036.05B) shall be undertaken by tree contractors (not unskilled personnel).

2. No plant access is permitted for tree work operations within the RPAs of retention trees, including areas identified for temporary ground protection

3. All approved tree removals shall be undertaken by tree contractors. Each tree shall be cut down to a low stump

4. Trees for removal within the RPA of retention trees shall have their stumps ground out (also by tree contractors)

4. Stumps from felled trees not in proximity to retention trees can be grubbed out.

B) INSTALLATION OF PHYSICAL TREE PROTECTION MEASURES

5. Following completion of enabling tree works, physical tree protection measures (barriers and ground protection) shall be installed in line with the provisions of BS5837:2012. These measures comprise:

- Tree Protection Fencing (TPF) to BS5837:2012 Figure 2 (see Inset Sketch 1) fitted with all-weather warning signs (see elsewhere on plan)
- Temporary Ground Protection / Temporary Ground Protection to be replaced by No-dig surfaces
- Existing hard surfaces within the RPA of retention trees

6. The TPF to be installed on the Position 1 alignment (as per the dwg key) prior to any demolition and construction operations. It is to be be left in situ throughout the redevelopment process except for temporary repositioning to Position 2 under arboricultural supervision by FLAC.

7. The Temporary Ground Protection will be installed at the locations shown by the relevant hatching (see key) prior to any demolition and construction operations. It is to be be left in situ throughout the redevelopment process.

8. Replacement of Temporary Ground protection with a No-Dig surface is to be carried out under arboricultural supervision by FLAC.

C) PROHIBITIONS & PRECAUTIONS

9. The fencing, ground protection and any existing hard surfaces within the root protection area comprise the Construction Exclusion Zone. Within this zone, the following activities are strictly prohibited during primary demolition (other than as described below):

- Excavation / lowering of levels into rootable soil: removal of surface organic matter using hand tools is acceptable; scraping or reduction in depth of topsoil is not
- Removal of existing hard surfaces (= 'secondary demolition': see below)
- Grubbing out of redundant buried structures (see below)
- Operation, transit or storage of plant, and storage of materials, including demolition arisings, other than on ground protection
- Storage or handling of any chemical substance injurious to trees, including fuels, oils, lubricants and cement washings

10. The Construction Exclusion Zone shall be established site-wide as set out above, and shall remain in place throughout the redevelopment process. No elements of the physical tree protection shall be removed or altered without prior written consent from the local planning authority

11. Demolition of superstructures within 3m of tree canopies and / or the construction exclusion zone is an operation with a high potential to damage retention trees ('high-risk operation'), and requires on-site arboricultural overwatch by FLAC

12. Within the Construction Exclusion Zone, break-out and replacement of existing hard surfaces and decommissioning of redundant services, including drainage structures, are also high-risk operations and shall be undertaken under site supervision by FLAC

D) METHODS FOR TREE FRIENDLY WORKING

13. Redundant buried structures are preferably disconnected / backfilled and retained in situ; further advice should be sought from FLAC before consideration is given to grubbing them out. Existing hard surfaces within the Construction Exclusion Zone are to be retained and not demolished / removed until completion of primary construction (see Phasing Schedule)

14. The recommendations of BS5837:2012 6.2.4.1 shall be strictly observed throughout the demolition and construction process:

BS5837:2012 6.2.4.1
Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without coming contact with retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times. Access facilitation pruning should be undertake where necessary to maintain this clearance

Note In some instances local planning authority consent for pruning might be required

15. No-dig new surfaces will be constructed in accordance with the principles set out in the Arboricultural Practice Note 12 *Through the trees to development* (APN12) using a 3 dimensional cellular confinement system of appropriate specification to the anticipated loading. The design of the cellular confinement system is to be produced by the Landscape Architects / Structural Engineers.

16. Existing hard surfaces that are scheduled for reversion to open ground (see key) is a high risk operation, including the repositioning of the tree protection fence to the secondary alignment, and will be carried out by hand and under arboricultural supervision. All materials, including the new top soil to replace the hard surface must be close to hand prior to commencement of the works. These works will be carried out to the recommendations of BS5837: 2012 7.2 (see below). Once the works are complete tree protection fence is to be erected around the new open ground.

BS5837:2012 7.2 Avoiding physical damage to roots during demolition or construction

7.2.1 To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ.However, limited manual excavation within the RPA might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.
NOTE Due to the demands that manual excavation places on a development project, and limitations arising from health and safety considerations, it is not realistic to plan for excavation using hand-held tools where there is a need for trench shoring or grading the sides of the excavation to a stable angle of repose.

7.2.2 Roots, whilst exposed, should immediately be wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.

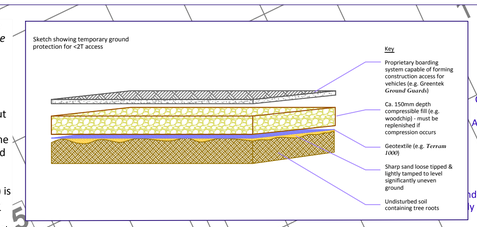
7.2.3 Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw), except where they occur in clumps. Roots occurring in clumps or of 25 mm diameter and over should be severed only following consultation with an arboriculturist, as such roots might be essential to the tree's health and stability.

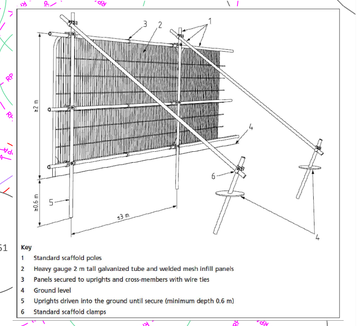
7.2.4 Prior to backfilling, retained roots should be surrounded with topsoil or uncompacted sharp sand (builders' sand should not be used because of its high salt content, which is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

E. ARBORICULTURAL SUPERVISION

17. All high risk operations require arboricultural supervision. Additionally ongoing inspection of the tree protection measures shall be provided throughout the redevelopment process. The minimum schedule of supervision is as follows:
Pre-start meeting with contractors (tree, dems, build)
Audit of enabling tree works & fencing etc
2x weekly visits
2x fortnightly visits
3x monthly visits
Quarterly visits until completion, inc. of soft landscaping

A WRITTEN & PHOTOGRAPHIC REPORT WILL BE MADE TO THE LPA WITHIN 5 WORKING DAYS OF EACH MONITORING VISIT





SPECIFICATION FOR TREE PRUNING & REMOVAL TO FACILITATE CONSTRUCTION

General
Insofar as is possible to do so, pruning cuts should be made in accordance with BS3998:2010 - Recommendations for Tree Work. Particular regard should be paid to the number and size of cuts for each tree (per BS3998 7.2.4 *Deciding where and how much to prune)*, and the position of final cuts (per BS3998 7.2.5 *Deciding where to make the final cut)*.

All arisings from the pruning work are to be removed from site.

Wildlife
Nesting birds, bats and bat roots are protected by law. It is the duty of the contractors to satisfy themselves prior to commencement that neither these, nor any protected species, shall be affected by the proposed work. Work should be undertaken in accordance with BS8596:2015: Surveying for bats in trees and woodland – Guide.

Tree pruning specification
1. 3031 Hornbeam - Reduce lowest limbs between ground level and 4 metres, pruning to sub-ordinate growth points to leave new crown profile at, or very close to, the alignment of tree protection fencing to abate risk of damage during demolition operations

2. 3064 Yew - Minor pruning back of lower lateral branch tips between ground level and 6 metres that project beyond tree protection fencing, amounting to no more than 1 metre maximum to provide clearance from passing high-sided vehicles

3. 3085 + 3089 Common lime (x2) - Minor pruning back of lower lateral branch tips between ground level and 6 metres that project beyond tree protection fencing, amounting to no more than 1 metre maximum to provide clearance from passing high-sided vehicles

Tree removal
4. 3014 Hornbeam - Deemed necessary to provide crane access. Suitable replacement proposed upon completion

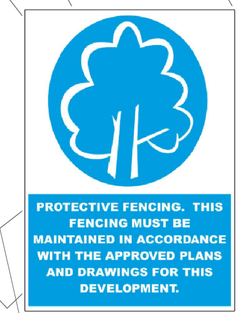
Queries
Any queries regarding this specification should be addressed to FLAC. Contact details are:

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Example alert & prohibition signage for attaching to tree protection fencing



INSTALLATION OF WATER SUPPLY

The method below relates to tree protection measures necessary to facilitate the formation of a short hand-excavated trench through the extremities of the RPAs of individual tree 3019 and tree group TG3012. This work will result in an incursion upon the notional root protection areas but the precautions set out below will minimize the potential for tree damage.

The trench is anticipated to be 300mm wide x 900mm deep to accommodate a 50mm diameter polypipe.

The new water supply will be picked up from the existing supply on the south side of the driveway, this location falls within the RPAs of trees beyond the tree survey envelope, albeit at distances of approximately 8 and 10 metres from the trees, so the excavation here will also be carried out in accordance with the same precautions set out below.

F) ADJUSTMENT OF TREE PROTECTION FENCING

18. The tree protection fencing shall be adjusted to the alignment shown by the dark blue lines to provide a corridor of access for the trench formation whilst maintaining exclusion to the remainder of the construction exclusion zone (CEZ).

G) EXCAVATIONS WITHIN THE RPAs

19. **Excavations within the RPA may proceed only under arboricultural supervision**. Personnel must be briefed on the precautions to be taken by FLAC at the start of the operation; supervision will be carried out to ensure that the method statement is understood and complied with.

20. No mechanical excavation shall occur within the RPA; this is because where roots are encountered by excavators the roots can sustain longitudinal shattering which causes extensive damage to the tree.

21. Excavations associated with any construction activities within the RPA shall be carried out carefully and by hand tools only e.g. spades, shovels, trowels etc, this may include a hand held pneumatic breaker where sub-surface structures are encountered and their removal is essential. Air excavation tools may be employed where operatives have an understanding of the use of these tools in proximity to roots and soil conditions allow. Care must be taken to avoid damage to the bark of parts of roots that will be retained.

G) ROOT TREATMENT

22. The chief objective of the hand excavation is to avoid root damage. In practice this may be problematic and some root pruning is likely to be necessary depending upon the quantum of roots encountered. The following guidance must be adhered to: roots over 25mm in diameter should be retained; roots below 25mm in diameter may be pruned at 90 degrees to the direction of the root if their retention is not practicable.

23. Sharp proprietary cutting tools only shall be used to prune roots i.e. secateurs and pruning saws.

24. Should pruning of any roots over 25mm diameter be necessary this may only occur following consultation with FLAC with regard to the tree's health and stability.

25. The works associated with excavations for the water supply within the RPAs of retained trees will be carried out to the recommendations of BS5837: 2012 7.2 (see principal AMS on this drawing).

H) REINSTATEMENT OF TREE PROTECTION FENCING

26. Once the water supply pipe has been installed and the trench backfilled the tree protection fence is to be reinstated at its original alignment excluding access into the CEZ.

CAUTION: THIS DRAWING IS INTENDED TO BE READ IN COLOUR

5m 10m 20m