

avoid contamination of the rooting area

toxification of soil by uncured/curing leachate

- Any use of uncured concrete within RPAs/VTBs must be shuttered with

1000 micron polythene sheeting to protect roots from the chemical

4. DESIGN AND CONSTRUCTION PRINCIPLES

New hard surfacing is to be constructed to an engineer's

specification with regard to the anticipated loading. The

design must be in accordance with the principles set out in

the developer & contractor liable to criminal

prosecution under Town & Country Planning Act 1990

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. 34-1036.02) shall be undertaken by tree contractors (not unskilled personnel).

2. No plant access is permitted for tree work operations within the RPAs or VTBs 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

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

4. Stumps from felled trees not in proximity to retention

trees can be grubbed out.

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)

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

7. If required by planning condition, the vehicular access area NW of 3015 will be installed as a no-dig surface. In this event, an additional run of tree protection fencing shall be provided as shown on this drawing (pink line).

C) PROHIBITIONS & PRECAUTIONS

8. Tree protection fencing and any existing hard surfaces within root protection areas 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

 Removal of existing hard surfaces (= 'secondary demolition': see below)

- Grubbing out of redundant buried structures (see - Operation, transit or storage of plant, and storage of materials, including demolition arisings

injurious to trees, including fuels, oils, lubricants and cement washings -No services/drainage to be formed through RPAs/ VTBs

except by trenchless methods No level changes within RPAs/ VTBs Boundary features must avoid continuous excavations or trenching within RPAs/ VTBs (fences on posts are preferable)

9. 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.

10. Demolition of superstructures within 3m of tree canopies and/ or the construction exclusion zone is an operation with a high potential to damage retention

from the toxic effects of uncured concrete leachate

retained trees.

There must be no storage or mixing of concrete within the RPAs of

trees ('high-risk operation'), and requires on-site arboricultural supervision by FLAC

11. 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

12. 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

13. 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 into 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 undertaken where necessary to maintain this clearance

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

14. No-dig new surfaces shall 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 engineers.

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.

15. Boundary treatments within RPAs/ VTBs shall preferably comprise timber fences fixed to posts (see risk/control methodology for fence post installation elsewhere on this drawing). Any walls within RPAs/ VTBs will require tree-friendly, non-invasive design avoiding trench footings by, for example, brickwork founded upon pile supported lintels born above the existing ground level, pile hole locations avoiding major tree roots and ground-truthed under arboricultural supervision.

D) EXCAVATIONS WITHIN THE RPAS

16. Excavations within the RPA may proceed only under arboricultural supervision. Personnel must be briefed on the precautions to be taken by the arboricultural

consultant at the start of an operation; supervision will be carried out to ensure that the method statement is understood and complied with.

17. No mechanical excavation including lowering of levels shall occur within the RPA.

18. Excavations of the top 600mm 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.

E) ROOT TREATMENT

19. Root pruning operations may proceed only under arboricultural supervision.

20. Typically, where roots are encountered they are first assessed primarily for size; roots over 25mm in diameter should be retained (or referred for further arboricultural advice) and those below 25mm in diameter should be pruned at 90 degrees to the direction of the root.

21. Proprietary cutting tools only shall be used to prune roots i.e. secateurs and sharp pruning saws.

22. Should any roots over 25mm be discovered they should only be severed following consultation with the arboricultural consultant with regard to the tree's health and stability.

23. Where roots are to be left exposed for any period of time they shall be protected from the drying effect of wind and sunlight, e.g. wrapped in clean dry Hessian to prevent desiccation.

24. Prior to backfilling retained roots should be unwrapped and surrounded by sharp sand (not builder's sand because of the high salt content which is toxic to tree roots) or another loose granular material before

soil is replaced. 25. Any imported topsoil for backfilling must be of good quality and free of contaminants and foreign bodies, it must be well graded and friable to promote good growing conditions and perform as a suitable rooting medium. The topsoil to be used must satisfy the requirements of a multipurpose topsoil as is described

within BS3882:2007. 26. All materials, including any new topsoil 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

27. Any use of uncured concrete within RPAs/VTBs must be shuttered with 1000 micron polythene sheeting to protect roots from the chemical toxification of soil by uncured/curing leachate

F) ARBORICULTURAL SUPERVISION & REPORTING

28. All high risk operations (i.e. intra-RPA /VTB) require arboricultural supervision. Additionally ongoing inspection of the tree protection measures shall be provided whilst works are in progress. A schedule of supervision is provided elsewhere on this drawing.

A WRITTEN & PHOTOGRAPHIC REPORT WILL BE PROVIDED WITHIN 5 WORKING DAYS OF EACH MONITORING VISIT

OUTLINE ARBORICULTURAL MANAGEMENT PLAN

The tree stock site wide shall require management in the interests of both trees and users of the surrounding land both on and off site. The overarching objectives are as

a. Discharge duty of care obligations owed to residents, visitors and neighbours imposed by both common law and Owners and Occupiers Liability Act

b. Preserve and enhance arboricultural attributes within the constraints of best practice and the controlling statutory protection

The second bullet at (b) captures all trees within the site but this necessarily includes a subset of veteran trees that shall require specific considerations (see sub-heading Veteran tree management below)

Tree risk and general management It is acknowledged at (a) above that reasonable measures must be taken to minimize the risk of tree failures resulting in harm or damage. This shall be achieved by cyclical tree inspections to provide:

c. A risk-assessed and prioritized schedule of tree works recommendations as deemed necessary to achieve an acceptable level of risk

d. A schedule of ancillary works if considered advisable in the interests of sound arboricultural management

Best practice and legislative control It is acknowledged at (b) above that statutory tree protection is in force and accordingly tree management requires adherence to legislative controls affecting tree works ordinarily by application to Cheltenham Borough Council for consent, this shall be achieved by:

e. Preparation of documentation appropriate for submission to CBC's Trees Section in pursuit of consent to undertake works to trees under statutory tree protection, as necessary

Veteran tree management

The cohort of veteran trees by virtue of their age, size and condition confer attributes of exceptional biodiversity, cultural or heritage value. Maintaining these attributes is a primary objective of the management plan, sitting alongside the general objectives listed above.

Heads of terms for management of veteran trees f. Condition and maintenance of veteran tree crown

radius knee-rail g. Condition and maintenance of veteran tree deterrent planting

Maintenance of land within veteran tree buffers Arboricultural risk-facing inspection and preparation of works schedule for application to CBC Assessment of veteran attributes (i.e. structural and conditional features of ecological potential - please

refer to RAVEN) including works advisable in the interests of optimizing habitat k. Assessment of works advisable in the interests of preservation, for example to prevent major mechanical failures and preserving the oldest parts of veteran trees

Inspection cycles, qualifications and review The first inspection shall take place immediately

prior to first occupancy m. The period between inspections as described above

shall be every two years Inspections shall be undertaken by suitably qualified, trained and experienced arboriculturists (i.e. ideally qualified to level 6) with reference to suitable

ecologists as appropriate. At each inspection a detailed works specification shall be prepared as Tree work shall be undertaken by qualified and experienced arboricultural contractors and they shall

be briefed by the project arboriculturist prior to commencing works

p. Tree work shall be undertaken in accordance with BS3998:2010 Tree work - recommendations. Care shall be taken to ensure that nesting birds and bats are not disturbed, and that bat roosts are not damaged during tree work. Pre-work surveys for bats shall be undertaken in accordance with BS8596:2015 Surveying for bats in trees and woodland - Guide

review the management plan particularly in light of

tree condition and emerging information relating to tree management.

q. Cycles of inspection provide an opportunity to