

Protection of Existing Trees

Tree retention and protection is often a condition of planning approvals. The most vulnerable part of a tree during site construction is the one hidden below the ground - the root system. This is far more extensive than the more visible tree canopy, and needs water and oxygen to function. The chief threats to this underground environment are compaction from heavy loading, root severance through site stripping, utility trench excavations, and chemical pollutants such as fuel oils and cement and additives runoff. To minimise these risks, British Standard "Trees in relation to Construction - Recommendation" (B.S. 5837 2012) requires a fenced tree protection area and, in special circumstances, superimposed ground protection to be implemented prior to commencement of works.



An unprotected site with excavations causing severe harm

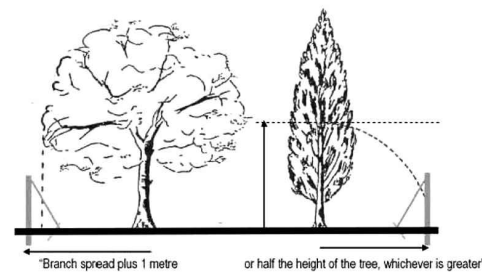


Properly specified and positioned tree protection

Establishing the Tree Protection Zone

- All features to be protected should be fenced along a line 1m beyond the vegetation or tree crown spread, with 2.3m height steel mesh or panel fencing, mounted on scaffold framework set 600mm into the ground as anchoring, with backstays at 3m centres.

"Rule of thumb" fencing location



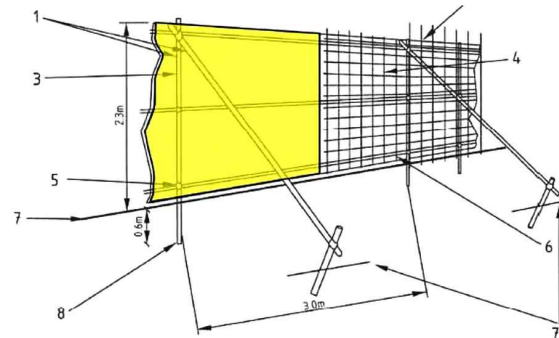
Alternative method of calculation of root protection area

$$\text{Root protection area} = \frac{(\text{Trunk diameter}^* \text{ (in mm)} \times 12)}{1000} \times 3.142$$

- No equipment, machinery or materials are to be brought on site for the purposes of development until written consent is obtained from the Council Planning Department that the fencing and ground protection has been constructed in a satisfactory manner. Site cabins may form part of the tree protection, provided their delivery is controlled to prevent any crown damage during craning, and that no trenches are excavated for utility services within the Root Protection Area.
- Materials must not be stored within any fenced area and the ground levels within these areas should not be altered, or any excavation made (including any underground services) without the written consent of the Council Development Department. No fires should be burnt within 15 metre distance of the edge of a tree canopy.
- Protective fencing and ground protection must be retained in position until all equipment, machinery or materials have been removed from the site or until trees in landscaped areas have been enclosed with permanent fencing. Topsoil delivery / spreading within fenced areas should be done by wheelbarrow & hand spreading.

PROTECTIVE BARRIER TO RETAINED TREES

ADAPTED FROM FIG 2 BS 5837



- Scaffold pole framework
- Uprights driven into the ground
- Ply or corrugated sheet metal panels secured to uprights with standard clamps or wires, or
- Weldmesh panels wired to uprights & horizontal:
- Standard clamps
- Wire twisted and secured on inside of fencing to avoid easy dismantling
- Existing ground levels maintained
- Pole depth approximately 0.6m driven into the ground

Note: demountable block and mesh panel systems (e.g. "Heras" are not acceptable)

SITE NOTICES ON FENCING

Pre-printed laminated waterproof signs A3 in size should be fixed securely to fencing panels on each enclosure at 9 metre minimum intervals.

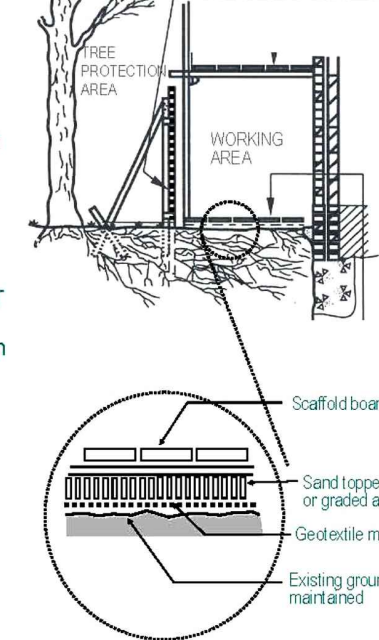
PROTECTED TREE ZONE
NO STORAGE OR OPERATIONS
WITHIN FENCED OFF AREAS

GROUND PROTECTION

Where the need for ground protection is identified, the following ground protection measures should be installed:

- for pedestrian access, ground protection with scaffold boards laid butt jointed on a 50mm cushioning layer of bark or single size gravel, spread on top of a porous geotextile membrane or
- for access haul roads or close construction involving heavy loading, a reinforced concrete slab or a proprietary cellular confinement system, laid on a geotextile membrane over existing ground levels, designed by a civil/structural engineer for the specific purpose
- both the above are to be removed and surface decompaction and rootzone enhancement measures undertaken such as spiking, aeration and / or injection of rhizobium innoculants

GROUND PROTECTION IN SCAFFOLD ACCESS AREA



During the construction phase all operations listed below are to be avoided within the tree protection zone;

- Compaction of the soil**
Do not store materials within the protected area. There should be no vehicle movements within the area.
- Excavations**
Do not excavate within the protected area without the written permission of the local planning authority.
- Ground level changes**
Do not raise or lower ground levels, even slightly, within the protected area.
- Impact damage**
Keep machinery and equipment away from trees and outside the protected area.
- Soil contamination**
Do not mix cement near trees. Store all materials in a safe storage area.
- Fires**
Keep fires well away from trees.

Notes:

- Protective fencing must be erected before any works commence on site - including site clearance.
- Any tree surgery that is required should be carried out prior to any other site works where possible (see tree survey report).
- All contractors and sub contractors must be made aware of the requirements of the protected zone.
- The protected zone must be maintained intact at all times.
- Fencing should be robust and not easily taken down, (see detail opposite).
- Proposed planting areas should be protected during development to ensure that a good soil structure is maintained.
- If service location under canopy spread is unavoidable it must be thrust bored or excavated by hand. Retaining all roots greater than 25mm in diameter intact and bridging the trench.
- Driveways may be positioned near trees only when absolutely necessary. Paths, lightly trafficked areas and driveways near trees should be constructed at existing ground level with a compaction absorbing base and have a permeable surface.
- Detailed tree survey to be carried out prior to commencement of development and all trees identified to be clearly marked on site with a tree tag and logged on plan. Trees identified for retention, arboricultural work or felling to be clearly marked on plan along with agreed position of tree protection measures. (See example key below)

key:

- 075 existing tree to be retained
- 049 tree to be felled to facilitate development
- 052 tree to be felled due to poor health
- location of temporary protective fencing

Tree Protection Detail

Dwg.18.130.300

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