

Category Grade Table & Percentages

Within the site area, 15 Trees were tagged individually and 1 Tree Group, 1 Tree Line, 1 Tree Belt and 4 Hedges were numbered numerically.

The following table gives a breakdown of the category grading allocation as per the cascade chart in BS:5837 2012.

Category Grade	Tree Nos.
Category U 3 Trees 1 Tree Line	0488, 0489, 0491, Tree Line No.1
Category C 12 Trees 1 Tree Group 4 Hedges	0481, 0482, 0483, 0484, 0486, 0487, 0492, 0493, 0494, 0495, 0496, 0498 Tree Group No.1 (3 Trees) Hedge Nos.1, 2, 3, 4
Category B 1 Tree Belt	Tree Belt No.1
Category A 0 Trees	
Grand Total	15 Trees, 4 Hedges, 1 Tree Group, 1 Tree Line, 1 Tree Belt

Arboricultural Impact Assessment

The objective here is to assess the impact of the proposed development layout on the existing tree and hedge vegetation and show how its impact can be mitigated.

- To facilitate the proposed development the following tree and hedge vegetation will need to be removed.
 - Tree Nos. 0481, 0482, 0483, 0484, 0486, 0487, 0488, 0489, 0490, 0492, 0493, 0494, 0495, 0496, 0498, Tree Group No.1, c.50m of Tree Belt No.1, Tree Line No.1, Hedge Nos4.
- The above tree and hedge vegetation is of a semi-mature age class, <20 years old, and was planted as part of the landscaping of this industrial estate, as such, it holds less value and its loss is more easily mitigated through replacement planting elsewhere.
- Tree Belt No.1, along the northern boundary, will be bolstered with 5875m² of native species understory planting to mitigate the loss of vegetation on site.
- Tree Nos. 1-11 are growing just outside of the site area but they contribute to the value of this area; therefore, care will need to be taken to avoid damage to these trees during the construction process i.e. avoid storing materials around their bases and/or causing mechanical damage with machinery.
- The proposed Grasscrete surfacing will allow for water permeability on site, benefiting the retained trees.
- Services will be kept as close to the building as practicably possible and trenchless solutions employed to avoid root damage to the Tree Belt No.1.

Storage of material, work yards and staff car parking:

- These areas must be identified on the work drawings prior to the construction works starting and they must be positioned outside the Root Protection Areas of the trees being retained.

Ground Protection, Installation for Pathways and Working Areas:

- Pathways and working areas should be outside of the Root Protection Area, where this is not possible, ground protection needs to be used. The ground protection should be a product such as 'Cell Web' to dissipate the vertical load and prevent soil contamination (see step by step instructions for 'Cell Web' installation below).

Step 1

- The existing ground cover vegetation (e.g., grass and weeds), if necessary, is to be killed off using an appropriate herbicide (see Pesticides Handbook [15]). Herbicides that can leach through the soil, e.g., products containing sodium chlorate, should not be used.
- The soil surface is not to be excavated to establish a subbase for the finished surfaces.
- Loose organic matter, woody vegetation and/or turf are to be removed carefully using hand tools.
- If there is a delay in installing the surface following clearing, the soil surface once prepared is to be covered immediately either with hessian sacking or plastic to prevent the surface drying out until the new surface is installed.

Step 2

- Place the geotextile, fleece, separation filtration layer over the prepared ground surface. Use a Fibretex F4M non-woven geotextile with dry joints overlapping by 300mm.

Step 3

- Place constraints along the edges to contain the fill material. These can be of such material as treated timber or railway sleepers.

Step 4

- Place the required cellular confinement system (Cell Web150-200mm) over the geotextile and pin and anchor the cell walls open for infilling.

Step 5

- Place the infill material of a 20-40mm clean sharp stone in the open cells of the Cell Web pushing the infill ahead of you so that the machinery is driving on the filled Cell Web. Compact the infill material to the desired density.

Step 6

- Slightly surcharge the Cell Web product with 25mm of 40-20mm clean angular stone.



Construction Works Stage:

- Once works have commenced on site, the project arboriculturist must be informed of any works that are required within the Root Protection Areas, so that a suitable protective plan can be put in place.
- The arboriculturist must monitor the trees for any decline during the development and make recommendations towards their health and safety as they arise.

Tree Protective Fencing:

- During the works, the tree protective fencing must remain in place, upright and rigid. It must be checked daily by the main contractor or foreman and any faults immediately fixed.
- The project arboriculturist must be consulted when works are to occur behind the tree protective fencing so that ground protection measures can be employed e.g., track mats or plywood sheets bunted together so that no soil compaction is caused.
- The protective fencing and all other tree protection measures must only be removed when all the works are complete.

Excavations:

- Ideally, no excavations should occur within a tree's Root Protection Area.
- Ground levels must be built up where possible instead of excavated and ground protection, such as Cell-Web, must be used to protect the soil and roots beneath.
- Excavations that are to occur near retained trees should first be viewed on site by the development team and the project arboriculturist, so that any potential impacts can be assessed and mitigated.
- If excavations in the Root Protection Area are unavoidable, an Air Spade should be employed to displace soil without causing root damage.
- Excavations can only commence once all the of the tree protective measures have been put in place.
- Where excavations for foundations are to occur within the Root Protection Area, piling methods with elevated beams must be used instead of trenching.

- Pilot holes using an Air-Spade or hand tools must be made prior to installing such piles so that large roots (over 25mm diameter) can be avoided.
- Roots should not be severed during construction works. The project arboriculturist must be consulted if roots are encountered, so that they can be properly pruned out of the excavation zone; if root pruning is not deemed possible, then alternative methods must be employed.
- Any exposed roots need to be covered with soil or with hessian sacking to prevent roots drying out; hessian sacks need to moist, particularly during prolonged dry periods.
- See BS:5837 2012, section 7.7, Table 3 for trenchless solutions for differing utility apparatus installation requirements.

Working within the RPA (Root Protection Area):

- The project arboriculturist must be consulted if works are planned within the RPA. All works must be carried out manually and no machinery should be within the RPA. Root pruning is to be undertaken by an arboriculturist using proprietary cutting tools such as a secateurs or hand pruning saw.
- The ground within the RPA of the trees must be protected from damage as per the recommendations of section 6.2.3 of BS:5837 2012 (see 'Ground Protection Examples' below).

Finished Ground Levels & Landscaping:

- The existing ground levels of the RPA must be maintained and incorporated into the finished development. If there is a change in ground level between the finished landscape and the existing RPA, the levels should be graded into each other, starting where the RPA zone ends. Where this is not possible, retaining walls are to be used to compensate for the change in levels.
- Any landscaping to occur with the RPA must be done manually, ground levels are not to be altered and soil and/or root damage is to be avoided.
- All finished surfaces must be porous to allow gas and water movement.
- See 'sections 8' of BS:5837 2012 for landscape operations around trees.

Services:

- Services should be always routed around the RPA to avoid soil and root damage.
- The project arboriculturist must be informed of the planned location for services and mitigation measures must be put in place to avoid soil and root damage.
- Service routes should be achieved through No-Dig methods (see 'No-Dig' example below), and where soil displacement is required, an Air Spade should be used.
- See National Joint Utilities Group (NJUG) *Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees*. Volume 4, Issue 2 London NJUG 2007, and BS:5837 2012, section 7.7, Table 3 for trenchless solutions for differing utility apparatus installation requirements.

Boundary Treatments:

- The boundary treatments within the root zone of the tree vegetation being retained must be protected with fencing using small diameter holes for the uprights.
- These holes are to be dug manually with no machinery allowed inside the Root Protection Areas.
- Work zones within the Root Protection Areas for these trees will need to be protected during the construction of the boundary fences by boarding, as per BS:5837 2012 section 6.2.3.

The following is a list of additional activities that are not allowed within the RPA or within the vicinity of the trees being retained:

- Storage of equipment, fuel, construction material which can contaminate the soil, e.g., concrete mixings, diesel oil and vehicle washings, or the stockpiling of soil or rubble.
- Burning rubbish.
- Washing of machinery.
- Attaching notice boards, cables, or other services to any part of the tree.
- Using neighbouring trees as anchor points.
- Care is required when using machinery such as Tele-porters, cranes or other equipment close to trees so as not to damage the crown or any other parts.

Post Construction Works:

- This project is not to be considered complete until all retained trees have been re-examined by the project arboriculturist and he is satisfied that they can be safely implemented into the finished development.
- This report is for the sole use of the above-named client and refers to only those trees and hedgerows identified within. Its use by any other person(s) in attempting to apply its contents for any other purpose renders the report invalid for that purpose.