

Tree Categories

Trees are categorised in accordance with the cascade chart in Table 1 of the British Standard BS 5837:2005 'Trees in relation to construction - Recommendations'

- Category 'U' - Trees in such condition that they cannot realistically be retained as living trees in context of the current land use for longer than 10 years.
- Category 'A' - Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category 'B' - Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- Category 'C' - Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Root Protection Area

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Areas (RPAs) should be plotted around each of the category 'A', 'B' and 'C' trees. This is a minimum area in m² which should be left undisturbed around each retained tree.

The RPA is calculated using the British Standard BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.

The calculated RPA is capped to 707m², which is the equivalent to a circle with a radius of 15m. Where there appears to be restrictions to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

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 minimize 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 arboriculturist.

Root damage can be minimized 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 a slab for minor structures (e.g. shed base) is to be formed within the RPA, it should bear on the existing ground level, and should not exceed an area greater than 20% of the existing unsurfaced ground.

Slabs for larger structures (e.g. dwellings) should be constructed with a ventilated air space between the underside of the slab and the existing soil surface to enable gas exchange and venting through the soil surface. In such cases, a specialist irrigation system should be employed (e.g. roof run-off redirected under the slab). The design of the foundation should take into account of the effect on the load bearing properties of the underlying soil from the redirected roof run-off. Approval in principle for a foundation that relies on topsoil retention and roof run-off under the slab should be sought from building control authority prior to this approach being relied upon.

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 boarding. Use of the smallest practice piling rig is also important where piling within the branch spread is proposed, as this reduces 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 uncured concrete, e.g. sleeved bored piles or screw piles.

This information is compliant with British Standard BS5837:2012 'Trees in relation to design, demolition and construction - Recommendations', section 7.2 'Special engineering for foundations within the RPA'.

Hard surfacing within RPAs

Multi-dimensional confinement system.

Existing vegetation may be removed with hand tools or sprayed with an approved non residual herbicide such as 'Glyphosate'. The new hard surfacing will be constructed using a 'No Dig' surfacing situated entirely above the existing soil surface and where needed using a proprietary cellular confinement system (GeoWeb or similar) laid over a bi-axial geo-grid (tensar TriAx or similar). Prior to this any small hollows on the surface may be filled with clean sharp sand (not builders sand) to a maximum depth of 150mm. The 'GeoWeb' is to be back filled with hand with a no-fines aggregate of 20mm - 30mm. The area of 'GeoWeb' will be covered with a permeable geotextile fabric and the finished wearing course laid on top. Edge supports of an appropriate size and strength should be set above ground level and secured with haunching or steel pins driven into the ground. The outer edge of the supports may be banked up with clean top soil.

Road deck system.

Where the area of the RPA(s) is covered by the proposed hard surfacing exceeds 20% of the total area of the uncovered RPA. It is proposed that the section of the proposed roadway/drive will be suspended entirely above the existing ground level. This will be achieved by constructing the suspended road platform by the minimum number of mini pile required to provide a stable structure.

The design, materials and methodology of the 'road deck' are to be undertaken to an engineering specification in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected to; however the following principles should be followed:

- The road deck is to be suspended entirely above the existing ground level.
- Prevention of the void beneath the road deck being inhabited by rodents or other small mammals.
- A watering system is to be designed to either capture rain water and direct it onto the soil below the road deck or for the roadway to be permeable. These systems must take into account that if the surface is to be subjected to de-icing salt, an impermeable barrier or filtration system will be required to prevent contamination of the rooting area.
- Pile locations are to be designed in conjunction with advice of the project arboriculturist and as identified during the site investigations to allow for the retention of roots that are important to the trees stability.
- Piles should be lined and ground covered to prevent contamination of the rooting environment by concrete effluent run off.

Note: Proposed hard surfacing will be situated no deeper than the existing hard surfacing; the existing sub base will be retained where possible and **only** removed where necessary.

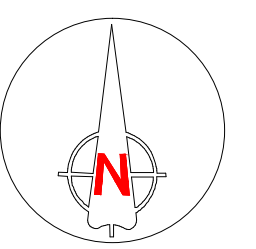
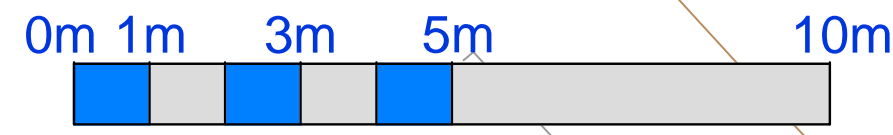
Note: Proposed excavations for the proposed basement adjacent to the RPAs of tree nos. 3 and 5 have the potential to cause soil collapse and loss of the rooting environment. To prevent this potential issue the line of basement adjacent to these RPAs should have sheet piling or a similar retaining system installed to retain the rooting environment, unless deemed unnecessary by the project engineers; if piling it is to be installed under arboricultural supervision.

Issue: Proposed basement construction and replacement single storey extension are situated within the existing building footprint immediately adjacent to the RPAs of tree nos.3 and 5. Solution: Proposed excavations for the replacement extension adjacent to these RPAs are to be undertaken under arboricultural supervision.

Issue: Proposed garden room is situated within the RPAs of tree nos.7 - 10. Solution: Foundations for the proposed garden room are to be designed in conjunction with an arboriculturist so that it can be constructed entirely above the existing soil level.

Issue: Proposed hard surfacing is situated within the RPAs of tree nos.4 - 11 and 13. Solution: Proposed hard surfacing is to be designed in conjunction with an arboriculturist so that it can be constructed entirely above the existing soil level.

Issue: Proposed pergola is situated within the RPAs of tree nos.7 - 11 and 13. Solution: All excavations for the support posts are to be undertaken under direct onsite arboricultural supervision. Individual posts may need to be relocated to preserve roots that are important to the stability of the trees.



Arboricultural Impacts

Impacts	Nos. of trees
Trees to be removed	2
Groups to be removed	0
Trees with proposed incursions into RPAs	11
Groups with proposed incursions into RPAs	0
Trees that will pruning	6
Groups that will pruning	0

Arboricultural Impacts

No.	Species	Proposed structure	Incursion
3	Lime	Basement & hard surfacing	RPA
4	Holly	Hard surfacing	RPA / Canopy
5	Norway maple	Basement & hard surfacing	RPA
6	Holly	Hard surfacing	RPA / Canopy
7	Maidenhair tree	Garden room, hard surfacing & pergola	RPA
8	Lime	Garden room, hard surfacing & pergola	RPA
9	Lime	Garden room, hard surfacing & pergola	RPA
10	Lime	Garden room, hard surfacing & pergola	RPA
11	Holly	Hard surfacing & pergola	RPA / Canopy
13	Laburnum	Hard surfacing & pergola	RPA
17	Silver birch	Replacement hard surfacing	RPA

Tree Work Schedule

No.	Species	Works	Category
3	Lime	Crown lift to 8m over site	U
4	Holly	Crown lift to 3.5m above hard surfacing	C
5	Norway maple	Crown lift to 5m over site	A/B
6	Holly	Crown lift to 3.5m above hard surfacing	C
11	Lime	Crown lift to 4m	C
15	Lime	Fall to ground level, remove stump	C
16	Lime	Fall to ground level, grind out stump	C/U
17	Lime	Crown lift to 4m over site	U

All tree work is to be undertaken in accordance with British Standard BS 3998:2010 'Tree work - Recommendations'. All arisings are to be removed and the site is to be left as found. Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

No. of Trees to be Removed

U	A	B	C
0	0	0	2

Arboricultural Method Statement

All tree work is to be undertaken in accordance with British Standard BS 3998:2010 'Tree work - Recommendations'. Please refer to Arbtch Consulting Ltd. Tree Schedule, Arboricultural Method Statement and Tree Protection Plan, for full details on all surveyed trees and how all aspects of the development may be implemented without detriment to retained trees.



Project:
2 Akenside Road,
London,
NW3 5BS.

Client:
Georgia Masters

Drawing:
Arboricultural Impact Assessment

Based on:
Pre App with Landscape Plan

Drawing No:
Arbtch AIA 01

Date: Feb 2015
Scale: 1:100 @ A1
Drawn: MGM

Key:

Tree Nos.:	1	Tree Canopies:	Trunks:
RPAs:	Category 'U' trees:	Category 'A' trees:	Category 'B' trees:
Category 'C' trees:	Category 'C' trees:	Incursions - garden room:	Incursions - hard surfacing:
Incursions - extension & basement:	Incursions - pergola:	Incursions - garden room:	Incursions - hard surfacing:

All dimensions should be checked on site. No dimensions are to be scaled from this drawing. Please note that any discrepancies found, Arbtch Consulting Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based. This drawing is designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees. This drawing is not to be read as a definitive part of the engineering or construction design or method statement. An architect or structural engineer should be consulted over any matters of construction, detailing or specification and for any standards or regulatory requirements relating to proposed structures, hard surfacing or underground. This drawing was produced in colour - a monochrome copy should not be relied upon. © Arbtch Consulting Ltd, 2012