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Site Specific Arboricultural Survey, Impact & Method Statement Report

Land at 14 Highfields Grove, Highgate, London N6 6HN

Richard Wassell MIHort NDArb(RFS)Kew Diploma NEBOSHlevel3

29th October 2014

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Scope of Report

This document has been produced to provide a detailed survey of trees within, surrounding and nearby to the above site demise that may be affected by the proposed development.

The scope of this report follows the recommendations and guidance described within ***BS 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations*** which sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

The report will assess the quality, amenity and landscape value of all surveyed trees and describe the protection of all trees to be retained and where they are likely to be affected by the proposed development construction activities. The report will also indicate the likely impact the proposals may have on those trees in the future.

The report will also recommend any required tree works to enable access and also to mitigate potential damage in the future.

This is intended to support the planning application for development of this site.

The tree survey for the site can be found in Addendum 3 below

Abbreviations:

RPA = root protection area

CEZ = construction exclusion zone

CWA = construction working area (including materials storage)

AMS = arboricultural method statement

AS = arboricultural supervision

Arboricultural Impact Assessment

Proximity of Proposed Development to existing Trees

Ref: Addendum 1 -Table 1, Addendum 3 and Picture Gallery at end of report

All trees in or near the above site that could be potentially affected by the proposals have been surveyed and that information is shown in addendum 3 below.

The rear garden of 14 Highfields Grove is small in area with a high terrace to the back containing 8 Lombardy Poplar trees, spaced on average at 2 metre intervals.

These trees form the end of a long row of Lombardy Poplars that were planted along the top boundary of the estate site. Many trees in this line planting have been removed or reduced over the intervening years due to natural losses, proximity to houses and storm damage. They have all been planted very close together most likely to provide an instant screen for the site.

The garden is surrounded to the rear by higher ground, which contains a good cover of mature and semi-mature trees. The estate as a whole and surrounding this house has a very good treescape with high visual amenity.

The proposed improvement to the garden space will require removal of 5 trees and retention of 3.

The 3 retained trees will not be impacted by the development and there will not be a loss of visual amenity for the area with the removal of the other 5 trees, which are at the very end of the original line planting.

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Arboricultural Method Statement (Provisional)

Ref: Addendum 1 & 2

**** This method statement shall be seen as provisional for planning purposes and subject to a detailed submission and construction plan once proposals are agreed and to conform to any specific planning conditions made.**

Excavation within RPA of Retained Trees

Ref: Addendum 1

There is potential for root damage to tree T6 when removing tree T5 and constructing the new retaining wall. Care shall be required to minimise impact on the roots of tree T6 and AS is to be sought when carrying out this phase of the work.

* **Please see addendum 1 section on Excavation within RPA of retained trees.**

Tree Protection Barriers & Construction Exclusion Zone

The tree protection barrier for trees T6 to T8 shall be as shown in tree barrier specification – fig. 3 below

The barrier is to be erected prior to start on site and shall follow line of existing retaining wall and extend to the rear of the garden. This area will form the CEZ for the site.

***Please see specification for tree protection barriers shown below**

Ground Protection of Existing Surfaces within Root Protection Area (RPA) of Nearby Trees

Ref: Addendum 1

None required

* **Please see addendum 1 section on Ground Protection System**

Access Facilitation Pruning & Tree Works

Ref: Addendum 2

The schedule of recommended tree works is shown below.

Site Access and Construction Working Area (CWA)

The CWA shall be outside of the CEZ for the site and as defined by the tree protection barrier for trees T6 to T8 at the rear of the site

Site Storage and Accommodation

These areas shall be outside of the construction exclusion zones for the retained trees and not within the RPA of trees T6 to T8

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Installation of Services

Arrangements for this element of the development of the site are unknown as at time of writing this report but are likely to remain as existing.

Changes to the service routes will be carefully considered using the AS below to advise on protection of nearby trees prior to commencement on site.

Arboricultural Supervision (AS)

AS shall be required during work within and adjacent to the RPA of retained trees. It must be undertaken at regular intervals with a written record of the meetings maintained with suitable photographic record in support.

The AS must include a pre-construction commencement site visit, to be arranged by the Site Manager under instruction from Architects, and thereafter at specific events that affect the retained trees on site to enable sign-off by the AS. These are typically as follows:

1. Erection of tree protection fencing
2. Installation of ground protection to retained trees whose RPA are affected by the CWA
3. Start of Excavation/piling of foundations within the RPA of retained trees
4. Tree pruning requirements to prevent crown damage from construction activity
5. Start of Excavation/installation of paths, roads and car parking within RPA of retained trees
6. Installation of underground services within the RPA of retained trees
7. Tree condition survey on completion of construction work

Conclusion

Provided the recommendations shown above and the methodology for protection of any retained trees are followed, there will not be an effect on the current or future condition of those trees that are retained as part of the proposed scheme.

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Tree Grading Categories

Reference:
Grading Category as per BS 5837:2012 Section 4.5 Table 1 & Table 2 - Tree quality assessment chart
Tree Survey Schedule in Addendum3 below for description of trees categorized

The grading categories are based on the following criteria:

A=high quality (1/2/3)
B=moderate quality (1/2/3)
C=low quality (1/2/3)
U=trees of such a condition that they cannot realistically be retained as living trees in the context of the current land use

1 = mainly arboricultural qualities
2 = mainly landscape qualities
3 = mainly cultural values, including conservation

Trees categorized within this report:

1 Category A trees = none

2 Category B trees = T1 to T8

3 Category C trees = none

4 Category U trees = none

Trees identified for removal on this site:

1 Trees = T1 to T5

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References

1. BS 5837:2012 Trees in Relation to Design, Demolition and Construction - Recommendations
2. BS3998:2010 Tree Work – Recommendations
3. NJUG Volume 4 Issue2 2007 – Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees.
4. NHBC Standards – Section 4.2 Building Near Trees
5. British Geological Survey – London & the Thames Valley
6. Principles of Tree Hazard Assessment – Lonsdale 2001
7. Diagnosis of Ill Health in Trees – Stouts & Winter 2004
8. Picture Gallery – at end of report
9. Tree Survey and protection Plan – at end of report
10. Moreno: Massey Architecture Studio – Existing and proposed drawings

Declaration

This Tree Survey, Impact Assessment and provisional AMS have been written and checked by Richard Wassell of Wassells Arboricultural Services Ltd. and are provided without prejudice as an objective and professional assessment of the trees described.

Signed: R.J.Wassell Date: 29.10.MMXIV

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Addendum 1 – Tree Protection

Ref: BS 5837:2012 in Tables C.1 & D.1of annex C & D

Table 1 -Tree protection measurements

Tree Number As per tree survey plan & schedule	Stem Diameter @ 1.5 metres agl. Millimetres	Root Protection Area (RPA) - Radius *measured from centre of stem* Metres	Tree/Root Protection Area (RPA) Sq. Metres	Affect of building proposal on the total RPA
T1	325	3.9	48	Proposed for removal to enable development of site
T2	350	4.2	55	Proposed for removal to enable development of site
T3	350	4.2	55	Proposed for removal to enable development of site
T4	400	4.8	72	Proposed for removal to enable development of site
T5	300	3.6	41	Proposed for removal to enable development of site
T6	350	4.2	55	Unlikely to be affected by proposed development but care shall be necessary to provide an engineering solution to minimise impact on root system when constructing new retaining wall
T7	400	4.8	72	Not affected
T8	400	4.8	72	Not affected

Protecting Root Zone of Trees (BS 5837:2012 section 6.2 Figs. 2 & 3):

The Root Protection Area (RPA)

This is the area surrounding a tree that is deemed to contain sufficient roots and rooting volume to maintain the trees viability in the future. The root system is typically concentrated in the uppermost 600 – 1200mm of the soil and is not necessarily symmetrical around the tree, being dependant on a number of factors such as water, nutrients, oxygen, soil penetrability and physical obstructions such as existing foundations or changes in level (terracing).

The RPA is a design layout tool that is deemed to be a minimum area around a tree where the protection of roots and soil structure are treated as a priority. This area is envisaged as and portrayed with a circle around each tree but where there appears to be restrictions to root growth the circle is reshaped to reflect more accurately the likely distribution of the rooting area of the tree concerned.

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Key Points

1. AVOID building works within the RPA if at all possible but if not then carefully consider the following: where the RPA is likely to be severely affected because of site design constraints then felling and planting replacement(s) trees in a more suitable location on the site will need to be considered.
2. Where possible do not use strip foundations within the RPA, if absolutely necessary consider using a trenching saw or excavate by hand to avoid 'shatter damage' to the root system.
3. Consider using piling techniques for foundations @ maximum 350 mm diameter with ground beams on or above the surface of the root zone.
4. Unless unavoidable, do not exceed entering the root zone by more than one fifth of RPA radius.
5. Do not trench tangentially across the root zone for footings and services unless it cannot be avoided.
6. Consider 'no dig' techniques for services installation, with radial service lines being preferable to tangential across the root zone. Where this is undertaken then boring must be carried out below 600mm deep.
7. Any hard surfacing, paths and roads need to have the same considerations for the RPA and as in the above points. Where possible paths and hard surfacing (patios etc) need to be surface constructed (cellular) and semi-porous to allow water penetration and gaseous exchange into the root system of trees.

Excavation within Root Protection Area of trees

Where trees are to be retained then any proposed foundation, underground services work and hard surfacing such as roads/paths falling within the RPA of trees that are to be retained shall be kept as far away from tree stems as possible(SEE NOTE 1 ABOVE). Where any such works are necessary within the RPA there will be a requirement to dig carefully by hand and ensure any roots encountered of maximum 25mm in diameter shall be exposed and correctly pruned back by a competent Arborist. Where larger roots are encountered of above 25mm in diameter then advice from the Arboricultural Supervisor (AS) for the site must be sought prior to any work being undertaken.

Any roots exposed/ pruned back as part of the above operation shall NOT be left exposed to drying out. All roots exposed/pruned shall be either covered with damp Hessian sacking prior to backfill or backfilled/covered immediately with a suitable open and free draining compost/loam.

Site Hoarding

Site hoarding shall be no closer than 1.5 metres away from the stem of retained trees and consist of 20mm plywood sheets supported by minimum 100mm square posts and 100 x 50mm rails with posts at 2.5 metre centres.

Post holes for site hoarding that are required within the RPA of nearby trees shall be dug by hand and are to be a maximum of 300 x 300mm and 450mm deep

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Ground Protection System Specification:

- Level area of RPA concerned by blinding with sharp sand at maximum depth of 50mm
- Lay geo-textile membrane such as 'Terram' to cover area concerned
- Cover geo-textile with maximum of 100mm MOT Type 1 sub-base
- Retain MOT type 1 with edge restraint such as 30 x 100mm edging board pegged every 2 metres to prevent migration of the sub-base

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Addendum 2 – Tree Works

Ref: Addendum 3

Schedule of Tree Works

Trees and vegetation recommended identified for removal:

Tree number	Species	Tree work
T1	Lombardy Poplar Populus nigra "Italica"	Fell to ground level and grub out stump and roots
T2	Lombardy Poplar Populus nigra "Italica"	Fell to ground level and grub out stump and roots
T3	Lombardy Poplar Populus nigra "Italica"	Fell to ground level and grub out stump and roots
T4	Lombardy Poplar Populus nigra "Italica"	Fell to ground level and grub out stump and roots
T5	Lombardy Poplar Populus nigra "Italica"	Fell to ground level and grub out stump and roots

Recommended work to trees identified for retention:

Tree number	Species	Tree work
T6	Lombardy Poplar Populus nigra "Italica"	Crown clean and reduce crown back to previous points in next 2 years
T7	Lombardy Poplar Populus nigra "Italica"	Crown clean and reduce crown back to previous points in next 2 years
T8	Lombardy Poplar Populus nigra "Italica"	Crown clean and reduce crown back to previous points in next 2 years

Tree work to be carried out to the following standards and guidelines:

1. BS 3998:2010 Recommendations for Tree Work

2. Tree pruning cuts will be carried out using the 'Natural Target Pruning' technique as defined by: *BS 3998:2010 section 7.2.5 and Fig. 2 The Pruning of Trees, Shrubs and Conifers: George E. Brown & Tony Kirkham – 2nd edition revised & enlarged 2004 and Section 3.1.27 of The Arboricultural Association Specification for Tree Works June 2008.*
3. Crown clean involves removal of dead, diseased & dying wood from tree crown, thinning of overcrowded crown, and removal of Ivy and all epicormic growth within crown including stem & basal epicormic growth.

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Addendum 3 - Schedule of Tree Survey Information – BS5837:2012 section 4.4

SITE: 14 Highfields Grove, London N6 6HN DATE: 10th October 2014

Tree Number	Species	Diameter mm	Height metres	Crown Spread metres	Age Class	Grading Category	Estimated Future Lifespan	Structure	Physiology, Condition & other factors	Management recommendation
T1	Lombardy Poplar Populus nigra "Italica"	325	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Remove to allow proposed development
T2	Lombardy Poplar Populus nigra "Italica"	350	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Remove to allow proposed development
T3	Lombardy Poplar Populus nigra "Italica"	350	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Remove to allow proposed development
T4	Lombardy Poplar Populus nigra "Italica"	400	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Remove to allow proposed development
T5	Lombardy Poplar Populus nigra "Italica"	300	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Remove to allow proposed development
T6	Lombardy Poplar Populus nigra "Italica"	350	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Retain and maintain as reduced form at 10 metres every 4/6 years

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Tree Number	**Species**	**Diameter** mm	**Height** metres	**Crown Spread** metres	**Age Class**	**Grading Category**	**Estimated Future Lifespan**	**Structure**	**Physiology, Condition & other factors**	**Management recommendation**
T7	Lombardy Poplar Populus nigra "Italica"	400	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1.6 M high) @ average 1 metre away	Retain and maintain as reduced form at 10 metres every 4/6 years
T8	Lombardy Poplar Populus nigra "Italica"	400	14	N =1 S = 1 E = 1 W =1	M	B2	20-40	M	A Reduced @ 10 metres. Growing in confined space with retaining wall (1 M high) @ average 1 metre away	Retain and maintain as reduced form at 10 metres every 4/6 years

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TREE SURVEY KEY:

Tree Number and Species = number of tree on plan and Common Name/botanical name

Height = estimated height of tree from surrounding ground level +/- 3 metres

Diameter = diameter of main stem @ 1.5 metres above ground level

Crown Spread = maximum extent of branches measured radially from the base of the tree, trees with asymmetrical crowns are shown with distances in relation to compass points. N = north etc.

Crown Height (CH) = height of canopy and/or first major branch above ground level

Age Class = Young(Y): age less than 1/3rd life expectancy | Semi-mature(SM): 1/3rd to 2/3rd life expectancy | Mature (M): Over 2/3rd life expectancy | Over mature (OM): mature and in state of decline | Veteran (V): Surviving beyond typical age range for species

Grading Category: As per BS 5837:2005 Table 1 – Tree quality assessment, which refers to tree quality and landscape/amenity value; A=high, B=moderate, C=low, NG= not graded

Estimated Future Lifespan = estimated useful and remaining contribution to the site in years - <10, 10-20, 20-40 & >40

Structure = structural condition of the tree based on roots, trunk, and major stems/branches along with the presence of any structural defects and decay organisms. Categories are: Very Good (VG); Good (G); Moderate (M); Poor (P); Hazardous (H)

Physiology/Condition = Overall health, condition and function of the tree in comparison to a 'normal' specimen of its species and age. Categories are: Above average (AA); Average (A); Declining (D)

Other factors = any other physical/environmental factors that could influence the tree now/in the future

Management Recommendations: N = no work required**. CC** = removal of dead, diseased & dying wood from tree crown, thinning of overcrowded crown, removal of Ivy from crown & stem and removal of all epicormic growth within crown including stem & basal epicormic growth on Lime trees.**LC** = lift crown. **TC** = thin crown. **RC** = reduce crown. **P** = pollard. **SP** = scaffold pollard. **RE** = remove epicormic and basal growth. **FP** = Formative prune **F** = fell to ground level. **FG** = fell and grind out stump. **R** = carry out replacement planting. **AI** = 3 yearly arboricultural inspection

N/K = not known

 # = estimated data

NDG = Next door garden

g.l. = ground level

Alan Mitchell System = Estimate of tree age based on open grown tree with full crown. Age in years = Girth (circumference) in centimeters measured at 1.5 metres above ground level and divided by 2.5 i.e. Tree of girth 250 cm = 100years old

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PLAN OF SITE & TREES

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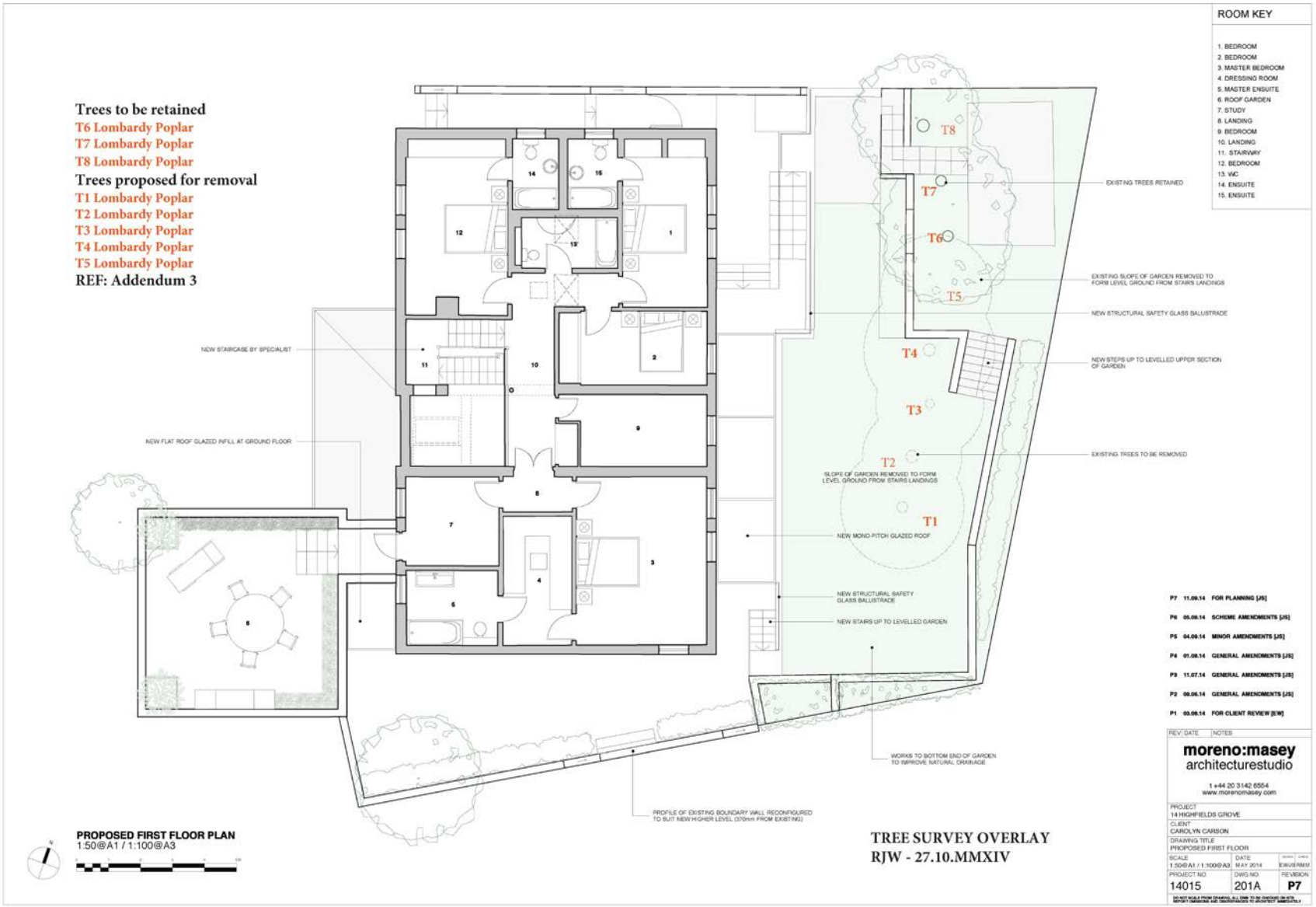

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PICTURE GALLERY

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Trees T1 to T8 looking north from southern end of garden and showing high terrace to rear

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Retaining wall in rear garden showing stems of trees T 5 back to T1 and identified for removal as part of the proposed design

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TREE BARRIER SPECIFICATIONS

TREE CARE FLOW CHART

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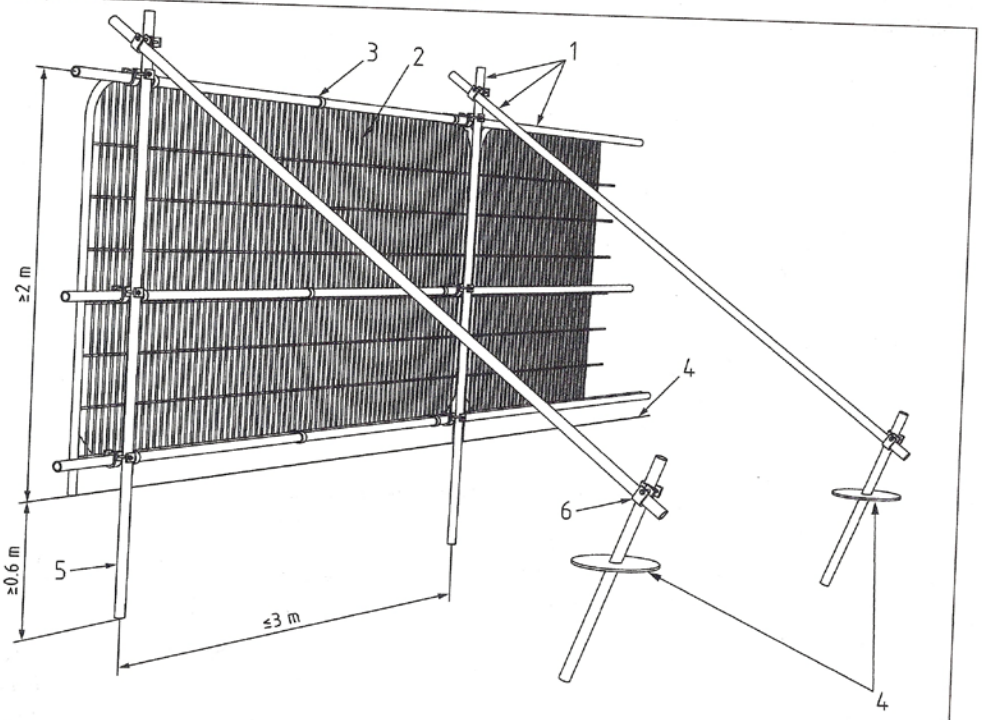
6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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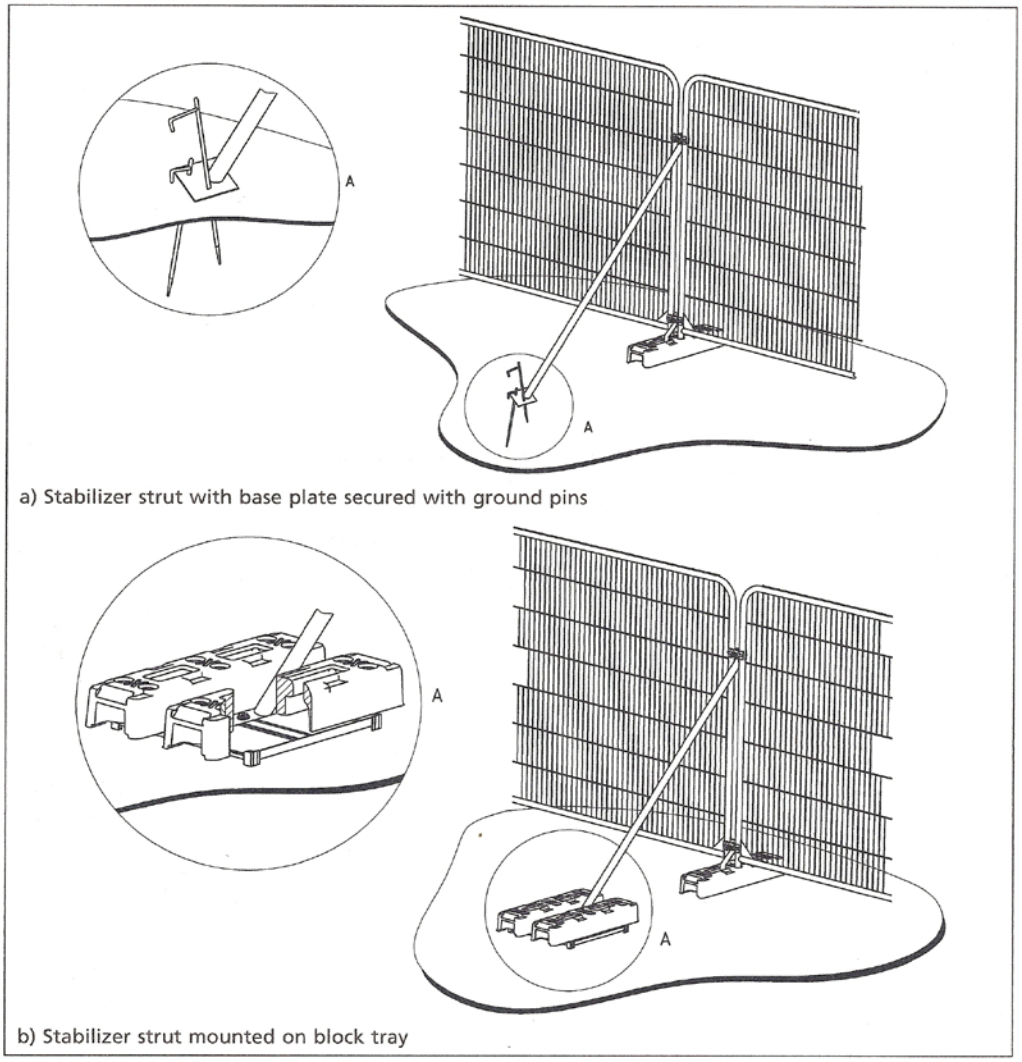
Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

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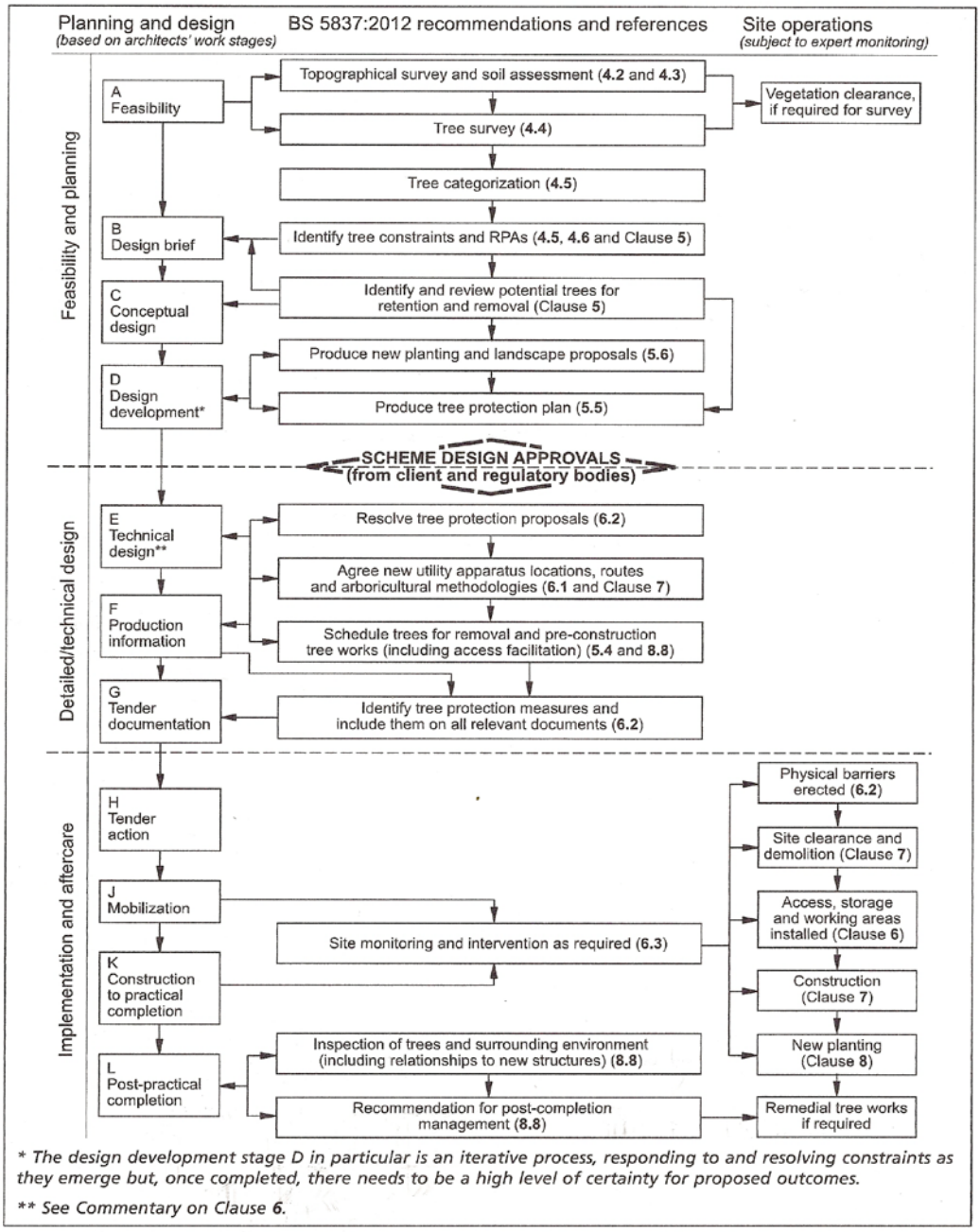
Figure 1 **The design and construction process and tree care**



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause 6.*

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