Arboricultural method statement (Draft)

Trees

adjacent to

Proposed development site
New End Square
Hampstead
London
NW3 1LS
for

Dominic McKenzie Architects

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1. Scope and status

1.1 Scope

1.1.1 This method statement sets out measures for the protection of 3 trees in relation to the proposed development of a site at New End Square, Hampstead, London NW3 1LS before, during and after permitted works have been completed.

1.1.2 The locations of the trees are shown on the **Tree protection plan** in **Appendix a.** Their species and dimensions are listed in the **Pre-contract tree works schedule** in **Appendix b.**

1.1.3 The proposed development comprises:

- Demolition of 6 garages and their replacement with a detached dwelling on 4 levels – basement, lower ground floor, upper ground floor and first floor, including an integrated garage
- Associated external works including the construction of a walled garden

1.1.4 The measures contained in this method statement are based on the advice and guidance set out in *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.*

1.2 Status

1.2.1 This method statement forms a part of the building contract and its requirements are an integral part of the contract specification and schedule of works.

1.2.2 A copy of the method statement must be available for inspection on site at all times.

1.2.3 All persons working on site should be aware of the importance of avoiding damage to trees and should observe the necessary precautions. A guidance leaflet is included in this method statement in **Appendix c**.

2. Preparatory works prior to construction

2.1 Tree works

2.1.1 Preparatory tree works to retained trees are listed in the **Pre-contract tree works schedule** in **Appendix b** and should be carried out prior to the start of the main contract

2.1.2 All works will be carried out in accordance with *BS3998:2010 Recommendations for Tree Work,* by an appropriately qualified tree work contractor.

2.1.3 Unless otherwise specified, all arisings are to be taken off-site to an approved tip.

2.2 Protective measures: tree protection fencing

2.2.1 The extent and location of tree protection fencing is shown on the **Tree protection plan** in **Appendix a**. Fencing must be erected before any site works take place. It is particularly important that no demolition, soil stripping, breaking out of existing hard surfaces, re-grading or other excavation takes place before protective fencing has been erected.

2.2.2 Tree protection fencing will comply with the advice and guidance contained in *BS5837:2012 – Trees in relation to design, demolition and construction – Recommendations.*

2.2.3 The British Standard specifies 2000mm high panels with a galvanised tubular frame and welded mesh infill (eg Heras round or square top panels or equivalent), attached to a scaffold framework with braced uprights at no more than 3m intervals. Subject to the agreement of the local authority, plywood panels are also fit-for-purpose as long as the panels are attached to uprights driven or dug into the ground at no more than 3m spacings and braced as specified in the British Standard. A 1:20 detail of the current British Standard specification for protective fencing is included at the end of this statement in **Appendix c.**

2.2.4 Areas separated from the construction site by protective fencing are **Construction Exclusion Zones (CEZ).**

2.2.5 **CEZs** are total exclusion areas. All of the following will be excluded:

- Animals
- Pedestrians
- Vehicles and construction equipment
- Materials and equipment storage
- Contamination from materials used outside the **CEZ** – (for example spillage of diesel or other toxic liquids)
- Surface water runoff from outside the **CEZ**

2.2.6 Clearly legible, weatherproof signs will be fixed to the perimeter fencing of the **CEZ** clearly setting out the access restrictions set out above. An example is included at the end of this statement in **Appendix c.**

2.3 Protective measures: ground protection

2.3.1 A ground protection layer of the appropriate specification will be installed where specified in Section 3 of this method statement and shown on the **Tree protection plan** in **Appendix a,** at the same time as protective fencing for the phase in question (see 2.2 above) is erected. It is particularly important that no demolition, soil stripping, breaking out of existing hard surfaces, re-grading or other excavation takes place before ground protection layers have been installed.

2.3.2 Existing concrete hard surfacing is acceptable as a ground protection layer.

Ground protection for heavy construction equipment

2.3.3 Where the ground protection layer will have to carry **heavy construction equipment** (with a ground bearing pressure exceeding 1kgf/cm^2) it will consist of Eve K Trakpanel heavy duty interlocking aluminium temporary road sections (or equivalent) laid on an average 50mm deep layer of Type 1 fill to provide a level surface.

Ground protection: pedestrian traffic and light wheeled or tracked equipment

2.3.4 Ground protection will consist of interlinked ground protection boards (12mm Portatrak or equivalent) laid on 150mm of woodchip above a geo-textile membrane.

2.3.5 Each successive section of ground protection will be laid by personnel and machinery working from the immediately preceding section or from existing hard surfacing.

2.4 Approval prior to start of works

2.4.1 Approval for the location, method and standard of construction of tree protection fencing will be obtained from the local authority prior to start of works.

3. Works during development

3.1 Storage, handling and use of materials

3.1.1 Phytotoxic materials (diesel or cement for example) must be stored off-site or in a bunded container outside the extent of retained tree **RPAs** as shown on the **Tree protection plan** in **Appendix a.**

3.2 Safe positioning of heavy lifting, handling and other construction equipment

3.2.1 Heavy construction equipment (eg cranes, excavators and piling rigs) must be located in such a way that, when in use, no part extends into any **CEZ** or the crown spread of any retained tree.

3.3 No fires on site

3.3.1 No fires will be lit anywhere on site.

3.4 Excavation: general requirements

3.4.1 Outside **Special Construction Areas** and **CEZs** (as shown on the **Tree protection plan)**, if roots are encountered in the course of approved excavation works, they will be cut cleanly at their point of origin or flush with the face of the excavation from which they enter the working area, with a sharp saw or loppers to minimise damage and promote rapid recovery.

3.5 Special Construction Areas

3.5.1 Follow the procedures specified in this section within the **Special Construction Area** shown on the **Tree protection plan** in **Appendix a.**

Excavation to reduced levels for slabs and sub-bases

3.5.2 Within the **Special Construction Area,** approved excavation to reduced levels will be carried out by hand using hand-operated tools (powered or non-powered) or with the use of tracked or wheeled machinery of appropriate size ***under direct arboricultural supervision***.

3.5.3 Within the **Special Construction Area,** tracked or wheeled machinery will at all times work from a ground protection layer of the appropriate strength or from outside the **Special Construction Area** boundary.

3.5.4 Roots of under 25mm diameter that are uncovered will be cut cleanly at their point of origin or flush with the face of the excavation from which they enter the working area, with a sharp saw or loppers to minimise damage and promote rapid recovery.

3.5.5 Where roots of larger than 25mm diameter are encountered they will be retained, immediately re-covered and final levels in their vicinity will be adjusted as necessary to ensure their safe retention.

Excavations for strip and pad foundations and underground service trenches

3.5.6 Excavation will be carried out in 100mm layers and the ground surface will be probed before the start of each layer to identify the locations of large diameter roots (25mm diameter or greater), using hand tools or an equivalent non-destructive excavation method (an Air Spade for example).

3.5.7 Within 500mm horizontal separation distance from retained tree stems and retained roots, excavation will be by hand using non-powered hand-operated tools only

3.5.8 Elsewhere tracked or wheeled equipment may be used ***under direct arboricultural supervision.***

3.5.9 All roots over 25mm diameter will be retained and protected during excavation and backfilling in accordance with the recommendations of *BS3998 (2010) Recommendations for Tree Work*.

3.5.10 Roots with a diameter of less than 25mm will cut cleanly, preferably at their point of origin, with a sharp saw or loppers to minimise damage and promote recovery.

3.5.11 Any tree root exposed which is in excess of 50mm in diameter shall be reported to the Arboricultural Consultant within 48 hours of exposure in order that advice may be obtained with regard to the need for special treatment measures.

3.5.12 Retained roots will be securely wrapped in hessian sacking and kept moist with clean water from the time they are exposed to the time that backfilling takes place.

3.5.13 Excavation for single pad foundations will follow the general sequence set out above, but if a root of over 25mm diameter is encountered during excavation the pad foundation location or configuration will be adjusted to avoid damaging it.

Backfilling and consolidation

3.5.14 Within 500mm of any retained root in both the vertical and the horizontal axis, backfill material will be consolidated using hand-held, hand operated equipment only.

3.5.15 Strip foundations will be poured by hand within 500mm of any retained protected root. An aperture at least twice the diameter of the retained root in both the vertical and the horizontal axis will be constructed around each retained root and filled with clean sharp sand, prior to completion of construction and backfilling.

3.5.16 Elsewhere, retained roots will be packed in a layer of washed sharp sand at least 50mm thick around its complete circumference in the course of backfilling.

3.5.17 The hessian protective layer (see 3.5.12 above) will be retained until immediately prior to the placing of the protective sand layer referred to above.

3.5.18 Where topsoil is used for backfilling, it must be of good quality, free of contaminants and conform to the requirements for multi-purpose topsoil set out in *BS3882:2007*.

3.5.19 Service ducts, cables or pipes will be installed by hand below bridging roots installed in sections or drawn through below retained roots.

3.6 Making good

3.6.1 Within 1000mm of any retained tree stem, cultivation for the purposes of making good or marrying in to adjusted levels will be carried out by hand using hand-operated, non-powered tools only.

3.6.2 Elsewhere, cultivation will be carried out with hand-operated tools (powered or non-powered) only.

3.6.3 Roots exposed in the course of cultivation will be retained and immediately re-covered.

3.6.4 If imported topsoil is used for minor adjustments to levels or for the preparation of soft landscaping areas, it must be of good quality, be free of contaminants and foreign bodies and conform to the requirements for multi-purpose topsoil set out in *BS3882:2007*.

4. Summary of methods

4.1 Conflicts and remedial actions

4.1.1 The main potential sources of damage to trees are listed in **Table 1** below together with the remedial measures that should be adopted to minimise or avoid damage.

Source of damage	**Remedial actions**	**See**	**Trees at risk**
Damage to tree stems and foliage	Erect protective fencing; plan construction activities to avoid damage to overhead branches:	Sections: 2.1, 2.2, 3.2, 3.3 **Tree protection plan**	001, 002
Damage by surface compaction from site traffic/storage of materials	Install ground protection layers where indicated	Section: 2.3, 3.5 **Tree protection plan**	001, 002
Damage from spillage of toxic materials	Phytotoxic materials to be stored in a bunded compound/ container outside RPA	Section: 3.1	All
Damage to tree roots	Observe working restrictions and remedial measures	Sections: 3.4, 3.5, 3.6 **Tree protection plan**	001, 002

Table 1: Summary of Potential Damage Sources and Remedial Measures

5. Supervision and completion

5.1 The Arboricultural Consultant will meet the nominated representative of the Local Authority (hereafter referred to as the Local Authority and the Main Contractor's Site Manager prior to the start of works, to review arboricultural protection measures before and during the contract.

5.2 The Main Contractor's Site Manager will have overall responsibility for the protection of retained trees from the start of works through to completion. No powers will be delegated to others in relation to this responsibility.

5.3 Prior to the start of works the Main Contactor will submit a detailed programme of works which will be used as the basis for agreeing a schedule of inspection, supervision and monitoring visits by the Arboricultural Consultant

5.4 The Arboricultural Consultant will circulate notes of his inspections by email, directly to the Local Authority and to the client.

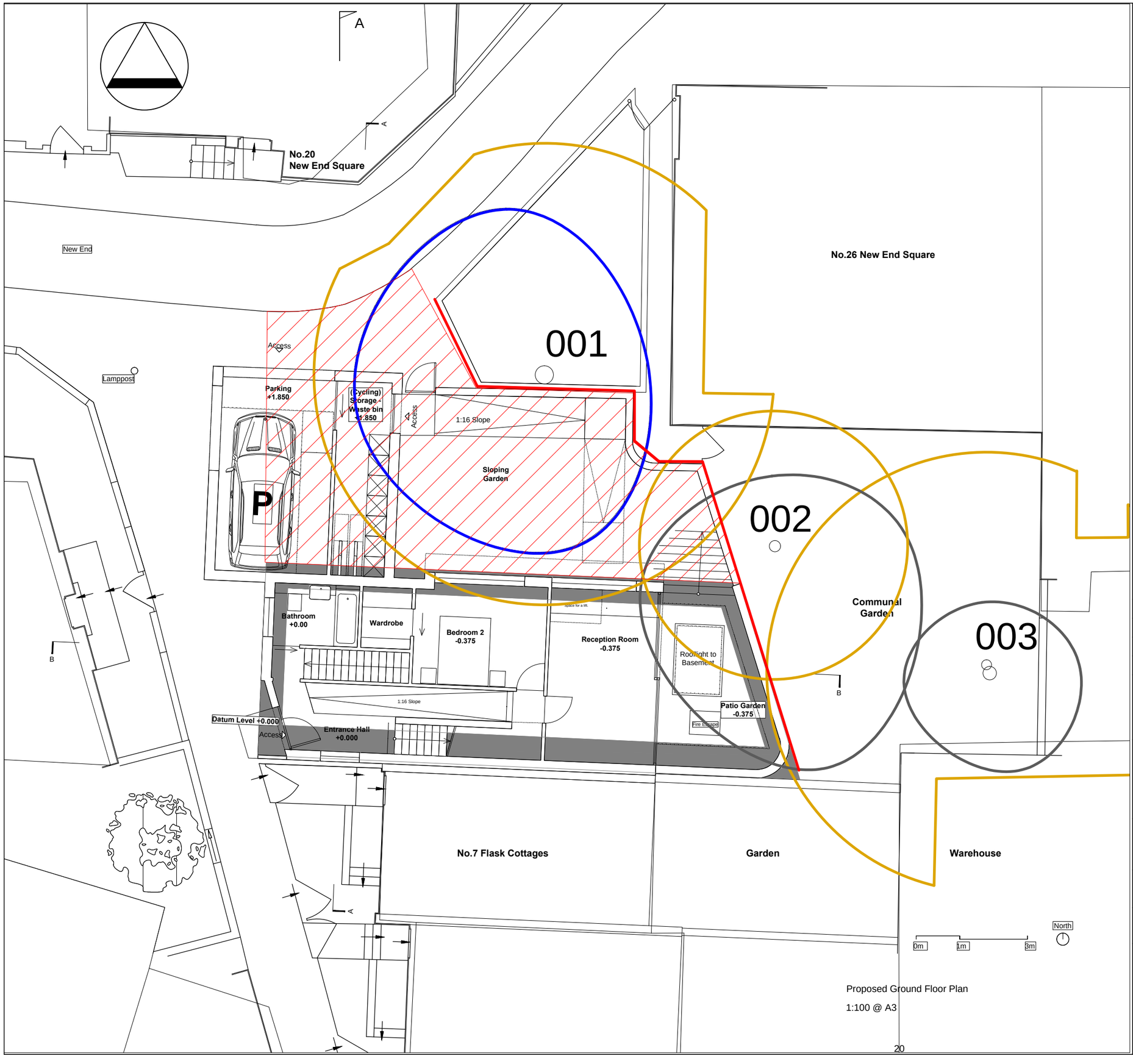
5.5 On completion the Arboricultural Consultant and the Main Contractor's Site Manager will meet on site to sign-off on tree protection measures.

5.7 If post-contract remedial works are required they will be specified at the completion meeting and confirmed in writing.

5.7 After sign-off, protective fencing may be removed in its entirety.

Appendix a

Tree protection plan



Proposed Ground Floor Plan

1:100 @ A3

KEY

EXISTING TREE

001

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 Trees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

ROOT PROTECTION AREA as defined in *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

003

PROPOSED BASEMENT FOOTPRINT

SPECIAL CONSTRUCTION AREA

TREE PROTECTION FENCING/ SITE HOARDING

REVISION	CHCK'D	APP'D	DATE

Client:

DOMINIC McKENZIE ARCHITECTS

Job Title:

PROPOSED DEVELOPMENT
NEW END SQUARE
HAMPSTEAD
LONDON
NW3 1LS

Drawing Title:

TREE PROTECTION PLAN (DRAFT)

Drawing Number:	Scale:
360.03.00	1:100 (A3)
Date: 12.02.16	Drawn by: RS

Skerratt
arboricultural advice

158 MALDEN ROAD, LONDON NW5 4BT
01274 566539

Appendix b

Pre-contract tree works schedule

Specification

General

All works must be carried out in accordance with the provisions of *BS3889:2010 Tree works*

1. Felling

1.1 Where necessary to avoid damage to neighbouring trees and vegetation, trees for removal will be dismantled in sections and lowered under controlled conditions

1.2 No retained tree will be used as an anchorage point for any tree removal operation

2. Stump grinding

2.1 Stump grinding will be to a sufficient depth to extend through the base of the central part of the stump

2.2 Chippings from stump grinding will be treated as arisings and removed from site to an approved disposal location

3. Pruning: General

Active Target pruning

3.1 Pruning cuts will be made close to the point of origin of the branch or branchlet to be removed (to avoid stubs which can inhibit wound occlusion)

3.2 Where there is a visible branch bark ridge and branch collar, pruning cuts will be made between the outer edge of the branch bark ridge and the outer edge of the branch collar

3.3 Where no branch collar is visible, cuts should be made from the outer edge of the branch ridge at right angles to the grain of the branch to be removed

Size and location of pruning cuts

3.4 The size and number of all pruning cuts will be kept to a minimum consistent with the specified management objective

3.5 Preference will be given to the removal of a larger number of seconday branches rather than the removal of larger primary branches (to minimise pruning wound diameter) to achieve the specified management objective

3.6 Pruning cuts will not exeeced 30% of the diameter of the parent branch or stem

4. Remove dead wood (safety)

4.1 Remove dead secondary branches and branchlets of 25mm diameter or greater at their point of origin following the principles of Active Target pruning

5. Crown lift (to a specified height)

5.1 Achieve the clearance specified between ground level and the lowest point of overhanging crown

5.2 Achieve the specified increase in headroom by removing secondary branches with the smallest possible diameter in accordance with the principles of Active Target pruning

5.3 Where necessary to avoid pruning wounds in excess of 30% of the diameter of the parent branch or stem, shorten rather than remove the limb to be pruned back to a healthy lateral with the largest possible diameter in relation to its parent branch. .

5.4 Shortening cuts will be made distal to the union with the lateral branch using Active Target pruning principles

Pre-contract tree works schedule

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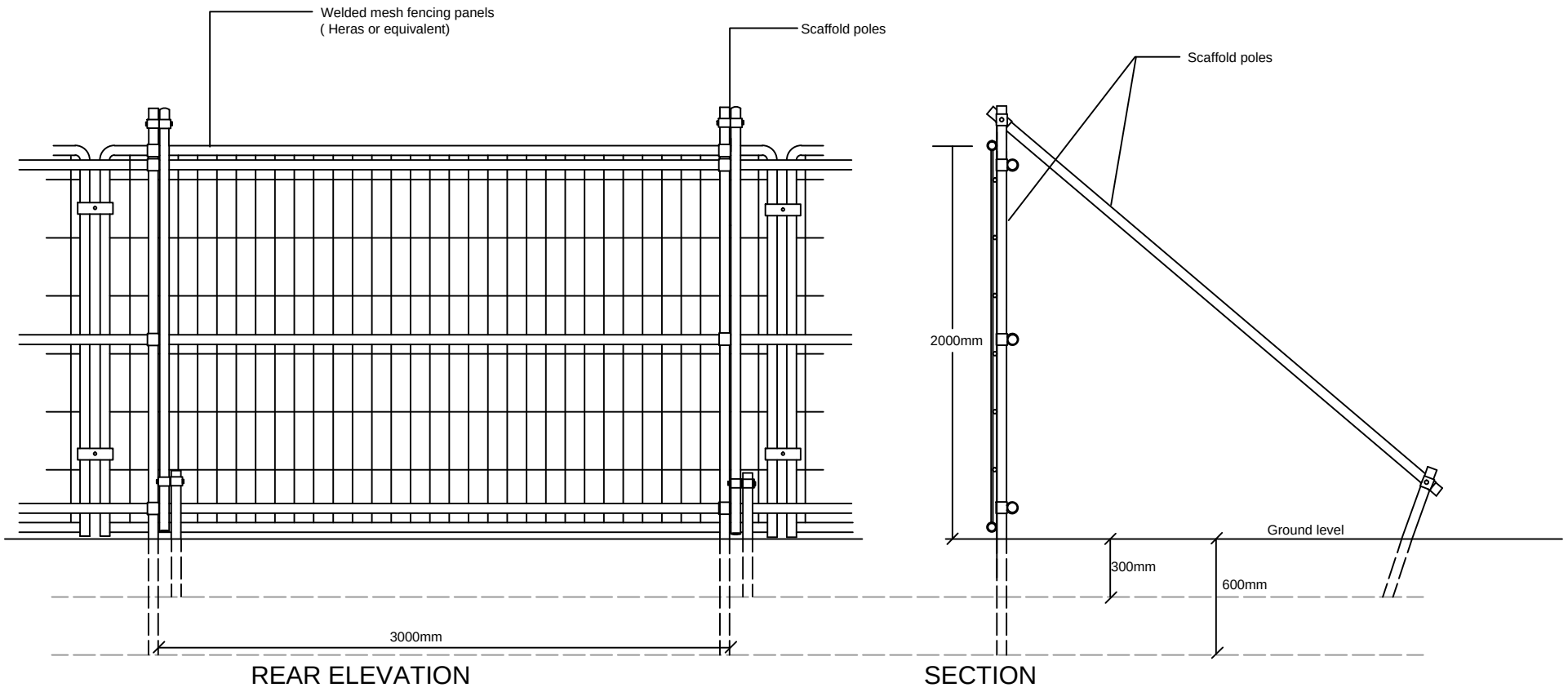
Tree No.	Species	Height (m)	Diam (cm)	Crown Spread (m)				Crown Height (m)	Item
				N	E	S	W		
001	Pedunculate Oak (*Quercus robur*)	17	540	5	2.5	5	5.5	4/4	Lift crown to 5m above ground level on site side
002	Flowering Cherry (*Prunus 'Kanzan'*)	11	330	2	4	6.5	4	1/3	Reduce crown spread on site side by 1000mm
003	Sycamore (*Acer pseudoplatanus*)	12	290/ 400	2	2.5	3	2.5	0/4	No action required

Client: Dominic McKenzie Architects
Location: New End Square, Hampstead, London NW3 1SL
Date: 12.02.16
Job No.: 360

Appendix c

BS protective fencing detail
Tree protection notice
Tree protection notes



Excerpts from *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

(*For barriers*) the default specification should consist of a vertical and horizontal scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m and driven securely into the ground.
Onto this framework, welded mesh panels should be securely fixed. using wire or scaffold clamps.
Care should be exercised when locating the vertical poles to avoid underground services and, in the case of bracing poles, also to avoid contact with o structural roots

NOTE: The above is preferred because it is readily available, resistant to impact, can be re-used and enables inspection of the protected area

BS5837:2012 Protective Fencing Detail
Scale: 1:20 [A4]

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arboricultural advice

158 MALDEN ROAD
LONDON NW5 4BT
07768 398776

TREE PROTECTION ZONE

KEEP OUT

NO DIGGING OR TRENCHING
NO STORAGE OF PLANT AND MATERIALS
NO VEHICULAR ACCESS
NO FIRES TO BE LIT
NO CHEMICALS TO BE STORED OR HANDLED IN THE VICINTY OF THIS ZONE
AVOID PHYSICAL DAMAGE TO TREES

REPORT DAMAGE TO TREES OR FENCING IMMEDIATELY

NEW END SQUARE
HAMPSTEAD
LONDON
NW3 1SL

CARING FOR TREES

TREE PROTECTION NOTES

Trees are thin skinned and easily damaged

Their roots spread widely and run close to the ground surface.

All of the following can cause serious damage:

- Heavy traffic over and the storage of heavy materials above tree roots
- Direct damage to stems and branches from badly handled construction equipment,
- Root damage caused by unnecessary excavation
- Leakage of toxic liquids and powders above roots and close to tree stems.

Please keep the trees on site safe by following these simple rules carefully and in full.

There is a protective fence round each retained tree. These fenced-off areas are CONSTRUCTION EXCLUSION ZONES (CEZ). Don't enter any CEZ unless authorised to do so

In Construction Exclusion Zones

- Don't store any materials
- Don't use heavy machinery
- Don't handle toxic materials
- Stick to the planned work programme. Don't undertake unscheduled variations
- Don't light fires
- Report any damage to protective fencing to the Site Manager

Work Planning

Plan your work so that construction machinery does not come into contact with and cause damage to branches and stems of retained trees.

Appoint someone to supervise movement of machinery and equipment close to CEZs

Tell the Site Manager if tree pruning is needed to get machinery in, out or around the site. Don't do it yourself