Arboricultural method statement

Trees

adjacent to

Proposed Queen Elizabeth II Centre Coram Community Campus 41 Brunswick Square London WC1N 1AZ

for

The Coram Foundation

Skerratt

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1. Scope and status

1.1 Scope

- 1.1.1 This method statement sets out measures for the protection of 5 trees adjacent to the proposed Queen Elizabeth II Centre at Coram Community Campus, 41 Brunswick Square, London WC1N 1AZ, before and for the duration of the proposed works.
- 1.1.2 The locations of the trees are shown on the Tree protection plan in Appendixa. 5 trees (numbered 009, 010, 011, 012 and 038 in the Pre-contract tree works schedule) are directly affected by the proposals. Tree 038 stands offsite in the adjacent St George's Gardens.
- 1.1.3 The proposed works include:
 - Construction of a 3 storey building on piled foundations
 - Associated drainage works including the installation of an attenuation tank
 - External works including hard and soft landscaping
- 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 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 **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 On this site the extent and location of tree protection fencing coincides with the alignment of the main contractor's site hoarding. An indicative layout 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. 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.**

2.3 Protective measures: ground protection

- 2.3.1 Ground protection will be maintained over all areas marked **Special Construction Area** on the **Tree protection plan** in **Appendix a**
- 2.3.2 Ground protection of the appropriate specification will be installed at the same time as the site hoarding 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.
- 2.3.3 Existing hard surfacing is acceptable as a ground protection layer. Elsewhere a ground protection layer of the appropriate strength will be installed prior to the start of works

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Ground protection for heavy construction equipment

2.3.4 Where the ground protection layer will have to carry **heavy construction equipment** (ground bearing pressure exceeding 1kgf/cm²) 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
2.3.5 Ground protection will consist of interlinked ground protection boards (12mm Portatrak or equivalent) laid on 150mm of woodchip above a geo-textile membrane 9Terram T1000 or equivalent).

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



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.**
- 3.1.2 Within the **RPAs** of retained trees, the spread of surface slumps of concrete will be contained with a temporary barrier. Slumped material will be removed immediately to a location outside the **RPAs** of retained trees.

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

- 3.2.1 Heavy construction equipment (eg cranes, excavators and piling rigs) will be located in such a way that, when in use, no part extends into the crown spread of any retained tree.
- 3.2.2 Where heavy construction equipment is working beneath the crown spread of any retained tree, a banksman will be employed to guide operations and minimise the risk of damage to the tree's branch system.

3.3 No fires on site

3.3.1 No fires will be lit anywhere on site.

3.4 Special Construction Areas

3.4.1 Follow the procedures set out in this section within **Special Construction Areas** shown on the **Tree protection plan** in **Appendix a.**

General

3.4.2 Maintain a continuous ground protection layer over the full extent of **Special Construction Areas** except where its removal is immediately necessary for the purposes of carrying out approved works. Ground protection will be reinstated on the completion of the works or at the end of each working day, whichever is the shorter duration.

Arboricultural supervision

- 3.4.3 All ground works operations excavation to reduced levels, receiving trenches and pits for underground services, piling and casting of floor slabs and other sub-structure components will be subject to *arboricultural supervision* except where otherwise agreed by email with the Arboricultural Consultant.
- 3.4.4 The main contractor will provide the Arboricultural Consultant with a regularly updated programme of works to enable him to plan supervision visits and will give him at least 48 hours' notice by email of variations to the programme.

Excavation to reduced levels: floor slabs, manhole and inspection chamber pits

- 3.4.5 Excavation to reduced levels will be carried out from within the footprint of the proposed development or from a ground protection layer of the appropriate strength (see 2.3 above).
- 3.4.6 Roots exposed in the course of approved excavations will be cut back to their point of origin or to the excavation face from which they enter the working area, with a sharp saw or loppers, to promote rapid healing.
- 3.4.7 Within the **RPAs** of retained trees, additional excavation for the creation of temporary working space, will extend to a *maximum of 500mm* beyond the footprint of the approved structure.

Excavations for underground service trenches

- 3.4.8 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).
- 3.4.9 Within 500mm horizontal separation distance from retained tree stems and retained roots, excavation will be by hand using non-powered hand-operated tools only
- 3.4.10 Elsewhere tracked or wheeled equipment may be used under *arboricultural supervision*.
- 3.4.11 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.
- 3.4.12 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.

Installation, backfilling and consolidation

- 3.4.13 Service ducts, cables or pipes will be installed in sections or drawn through below retained roots.
- 3.4.14 Retained roots will be packed in a layer of washed sharp sand at least 50mm thick around each one's complete circumference in the course of backfilling.
- 3.4.15 The hessian protective layer (see 3.4.12 above) will be retained until immediately prior to the placing of the protective sand layer referred to above.
- 3.4.16 Within 500mm of any retained root in both the vertical and the horizontal axis, backfill material will be consolidated using hand-held, powered or non-powered equipment only.

3.4.17 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*.

Piling: Piles P31 and P40

- 3.4.18 Piles P31 and P40 or any replacement or additional piles within 2000mm of their locations, will be sleeved to a depth of 3000mm with steel sleeves to prevent leachate from curing concrete spreading into the root zones of retained trees.
- 3.4.19 The sides and bases of the receiving excavations for the caps to these piles will be lined with a geo-textile membrane (Terram T1000 or equivalent) prior to casting to prevent leachate from curing concrete spreading into the root zones of retained trees.

3.5 Making good

- 3.5.1 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.
- 3.5.2 Elsewhere, cultivation will be carried out with hand-operated tools (powered or non-powered) only.
- 3.5.3 Roots exposed in the course of cultivation will be retained and immediately recovered.
- 3.5.4 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	Remedial actions	See	Trees at risk
damage			
Damage to tree	Erect protective	Sections:	009, 010, 011,
stems and foliage	fencing; plan	2.1, 2.2, 3.2, 3.3.	012
	construction	Tree protection	
	activities to avoid	plan	
	damage to		
	overhead		
	branches:		
Damage by	Maintain ground	Sections:	009, 010, 011,
surface	protection layers	2.3, 3.4	012
compaction from		Tree protection	
site traffic/storage		plan	
of materials			
Damage from	No phytotoxic	Sections:	All
spillage of toxic	materials to be	3.1	
materials	stored within 10m	Tree protection	
	of any CEZ	plan	
Damage to tree	Observe Special	Sections:	All
roots	Construction	3.4, 3.5	
	Area procedures	Tree protection	
		plan	

Table 1: Summary of Potential Damage Sources and Remedial Measures

5. Inspection and supervision

- 5.1 Prior to the start of the works, the nominated representative of the Local Authority (hereafter referred to as the Local Authority) will meet on site with the Arboricultural Consultant and the Main Contractor's Site Manager to review arboricultural protection measures before and during the contract.
- 5.2 Prior to the start of works, the Arboricultural Consultant will review the details of this method statement with the Main Contractor's Site Manager and, where necessary, provide induction training to on-site staff, covering the following subjects:
 - Damage to trees by direct mechanical damage above and below ground
 - Damage to trees through spillage of phytotoxic liquids and powders and from contaminated run-off.
 - The effects of soil compaction upon trees caused by the storage of heavy materials and by construction traffic
 - Minimising risk through the use of safe working practices
- 5.3 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.
- 5.4 The Arboricultural Consultant will make site visits as necessary and in particular at the start of the following stages:
 - Pre-contract tree works
 - Ground works
 - Start of the external works programme
- 5.5 The Arboricultural Consultant will provide arboricultural supervision where ground work operations take place within the **RPAs** of retained trees
- 5.6 The Arboricultural Consultant will circulate notes of his inspections by email, directly to the Local Authority and to the Project Team
- 5.7 The Arboricultural Consultant will notify the Local Authority immediately by email of any contract variations that may affect retained trees.
- 5.9 Unscheduled incidents affecting retained trees will be reported immediately, verbally and in writing, to the Arboricultural Consultant by the Site Manager. The Arboricultural Consultant will immediately forward the information to the Local Authority and the Project Manager, verbally and in writing
- 5.10 After notifying the relevant persons (see 5.8) the Arboricultural Consultant will visit the site and report in writing on his findings and recommendations for remedial action to the Local Authority and the Project Manager

- 5.11 On completion, the Local Authority will meet on site with the Arboricultural Consultant, the Project Manager and the Main Contractor's Site Manager to sign-off on tree protection measures.
- 5.12 If post-contract remedial works are required they will be specified at the completion meeting and confirmed in writing.
- 5.13 After sign-off, protective fencing may be removed in its entirety.

Appendix a

Tree protection plan



Appendix b

Pre-contract tree works schedule

Pre-contract tree works schedule

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Tree No.	Species	Height (m)	Diam (cm)	Crown Spread (m)			m)	Crown Height (m)	Item
				Ν	Е	S	W		
009	London Plane (<i>Platanus x hispanica</i>)	29	114	7	10	7	10	8	No action required
010	London Plane (<i>Platanus x hispanica</i>)	31	130	8	10	13	8	6	Lift crown to provide 2000mm clearance above and to the side of the proposed building
011	London Plane (<i>Platanus x hispanica</i>)	33	126	14	15	7	10	5	No action required
012	London Plane (<i>Platanus x hispanica</i>)	24	114	8	3	12	7	9	No action required
038	London Plane (<i>Platanus x hispanica</i>)	28	99	9	10	9	9	4	No action required

Pre-contract tree works schedule

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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 execced 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

Where necessary to avoid pruning wounds in excess of 30% of the diameter of the parent branch or stem, shorten rather5.3 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

Appendix c

BS protective fencing detail 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]

Skerratt arboricultural advice 158 MALDEN ROAD LONDON NW5 4BT 07768 398776

QUEEN ELIZABETH II CENTRE CORAM COMMUNITY CAMPUS 41 BRUNSWICK SQUARE LONDON WC1N 1AZ

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