Arboricultural Method Statement

Proposed development comprising:

New entrance building
Footpath improvements

at

Coram Comunity Campus
Mecklenburgh Square
London
WC1N 2QA

for

The Coram Foundation
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1 Introduction

1.1 This method statement sets out measures for the protection of 17 individual and groups of trees in relation to a proposed development at Coram Community Campus, Mecklenburgh Square, London WC1N 2QA, before, during and after the permitted development.

1.2 The development in question comprises:

- The construction of a new two storey entrance building at the western (Brunswick Square) end of the site and associated improvements to the configuration of the western entrance to the Coram Community Campus.
- Improvements to the footpath along the southern boundary of the campus that connects the western, Brunswick Square, side of the site to the eastern, Mecklenburgh Square, side.

1.3 The measures contained in the statement are based on the advice and guidance set out in *BS5837: 2012: Trees in relation todesign, demolition & construction – Recommendations.*

1.4 This method statement was commissioned by the client, The Coram Foundation..

2 Scope and status

2.1 Scope

2.1.1 This method statement covers the protection and retention of 17 trees within and adjacent to the proposed development area – Trees 017, 020, 021, 021A, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 034, 035 and 036.

2.1.2 The locations of the trees are shown on the **tree protection plans** in **appendix a.** Details of their size and species are set out in tabular form in the **tree works schedule** in **appendix b** of this method statement together with a copy of the 2010 full-site tree survey plan (**drawing 128.01.01**)

2.2 Status

2.2.1 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.

2.2.2 A copy of the method statement should be available for inspection on site.

2.2.3 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**.

3 Preparatory works prior to construction

3.1 Phasing

3.1.1 Prior to the start of any construction works a phased programme of works will be agreed with the Client.

3.1.2 The tree protection measures in this method statement will follow the agreed programme with regard to timing of installation and removal

3.2 Enabling tree works

3.2.1 Tree 033 will be removed before construction works begin. This tree removal is listed in the **tree works schedule** in **appendix b**.

3.2.2 Preparatory remedial works to retained trees are also listed in the **tree works schedule** in **appendix b**.

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

3.2.4 All arisings are to be taken off-site to an approved tip.

3.3 Protective measures: ground protection layers.

3.3.1 Within the areas marked **Ground Protection Area** on the **tree protection plans** in **appendix a,** a ground protection layer will be installed prior to the start of works.

3.3.2 In addition if, within the **RPA** of any retained tree, existing tarmacadam hard surfacing is removed and not immediately replaced, the area affected will be covered with a ground protection layer of the appropriate type.

3.3.3 Where the ground protection layer has to carry vehicular traffic, it will consist of Eve K Trakpanel heavy duty interlocking aluminium temporary road sections (or equivalent). Where necessary, local irregularities in the ground surface will be made up with Type 1 fill prior to the installation of the ground protection layer

3.3.4 Elsewhere, ground protection will consist of side butted scaffold boards laid on a geo-textile membrane and a compressible layer (10mm Miothene or equivalent). Where necessary, local irregularities in the ground surface will be

made up with Type 1 fill prior to the installation of the ground protection layer. A typical detail is included in **appendix c**

3.3.5 Tracked or wheeled equipment used for installing ground protection layers will not exceed a ground bearing pressure of 0.3kgf/cm^2

3.4 Protective measures: fencing

3.4.1 The extent and location of protective fencing is illustrated on the **tree protection plans (Drawings 158.08.00 and 158.08.01** in **appendix a)**.

3.4.2 Protective fencing must be erected before any other site works take place. It is particularly important that no demolition, soil stripping, breaking out of existing hard surfaces (see **3.3** above), regrading or other excavation takes place before protective fencing has been erected.

3.4.3 Protective fencing will comply with the advice and guidance contained in BS 5837:2012 – *Trees in relation to design, demolition and construction – Recommendations.*

3.4.4 Existing site boundary fencing will be acceptable as a substitute for new tree protection fencing where it coincides with the protection fencing layout. Subject to the details of its design and installation, construction site boundary hoarding will also be acceptable as a substitute for tree protection fencing where it coincides with the tree protection fencing layout,

3.4.5 The British Standard recommends a scaffold framework with braced uprights at no more than 3m intervals. Subject to the agreement of the local authority fencing using temporary steel mesh fencing panels (for example Heras Roundtop or equivalent - also sometimes referred to as GS7 or HSG 151 fencing) or exterior-grade plywood is also fit-for-purpose as long as the panels are attached to scaffold uprights driven or dug into the ground at no more than 3m spacings. A 1:20 detail of The British Standard specification for protective fencing is included in **appendix c**.

3.4.6 Areas enclosed by tree protection fencing are **Construction Exclusion Zones (CEZs)**

3.4.7 Unless access is required for approved construction activities, each CEZ is a total exclusion area. 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

3.4.8 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.**

3.5 Inspection prior to start of works

3.5.1 Protective fencing will be inspected prior to the start of works by the Arboricultural Consultant and the local authority's Tree Preservation Officer and approval for its location, method and standard of construction will be given in writing by the local authority.

4 Works during development

4.1 General requirements

Storage of Materials

4.1.1 Phytotoxic materials (diesel for example) will be stored in a purpose-built containment compound at least 10m from the stem of any retained tree.

4.1.2 Details of the containment area and its proposed location will be submitted to the Client for approval, prior to its construction.

4.1.3 Detailed proposals for the storage of inert materials will form part of the Main Contractor's Programme (see 3.1 above).

Heavy lifting and handling equipment

4.1.4 Heavy lifting and handling equipment (eg cranes and excavators) must be of such a size and be located in such a position that, when in use, no part extends into the crown of any retained tree. The crown limits of retained trees (in terms both of spread and height clearance) are specified in the **tree works schedule** in **appendix b**

No fires on site

4.1.5 No fires will be lit anywhere on site at any time.

4.2 Working within the new building footprint

4.2.1 The new building footprint plus a 500mm working margin around it has been excluded from the RPAs of the adjacent trees.

4.2.2 Within this footprint, the protective measures specified in the structural engineering specification apply and in particular:

D30:005	maximum excavation clearances
D30:210	prevent leachate of toxic materials by containment and pile sleeving: comply with headroom restrictions
D30:300	extent and depth of piling mat and associated excavation
D30:445	Pile sleeving
D30:665	Pre-boring to confirm pile locations.

4.2.3 With regard to D30:665 (Preboring for Piles), in the area crosshatched in red on the appropriate **tree protection plan (Drawing No. 158.08.00)** in **appendix a** and identified as **'No excavation below floor slab level',** if below-ground obstacles are encountered during preboring, the relevant pile position will be moved to avoid the obstruction.

4.3 Working within CEZs

4.3.1 Construction Exclusion Zones (CEZs) are fenced enclosures where particular care must be taken to avoid damage to retained trees.

4.3.2 Access to CEZs for approved construction activities will be by permit issued by the Site Manager and personnel will receive appropriate induction training prior to being allowed to enter.

4.3.3 The Arboricultural Consultant will be notified in writing at least 48 hours before the start of approved works.

4.3.4 The general exclusions specified in 3.4.7 above apply to all CEZs.

4.3.5 Unless this section specifies otherwise, procedures set out below for working within the RPAs of retained trees also apply to works within CEZs

4.3.6 Within 500mm of the stem of any retained tree, all works will be carried out by hand, using hand operated tools only.

4.4 Working within RPAs

4.4.1 Root Protection Areas (RPAs) are areas where roots of retained trees are likely to be active and close to the surface. Within the Construction Area, RPAs are shown cloloured yellow on the **tree protection plans** in **appendix a.**

Use of phytotoxic materials

4.4.2 Where the handling and use of phytotoxic materials (concrete slurry for example) is unavoidable within the RPA of a retained tree, the Arboricultural Consultant will be notified in writing at least 48 hours beforehand.

4.4.3 In such cases, where there is a risk that phytotoxic materials can leach into adjacent unprotected ground, the Main Contractor will install appropriate containment measures before the start of works

Removal of existing vegetation

4.4.4 Within the RPAs of retained trees, clearance of existing vegetation will be by hand using hand operated tools only. Growth will be cut as close to ground level as practically possible. Roots will be left undisturbed.

Excavation

4.4.5 The Arboricultural Consultant will be notified in writing at least 48 hours before the start of all works that require the removal of existing hard surfacing or excavation for service trenches, drainage and foundations.

4.4.6 Excavation to a greater depth than:
Forecourt Area 70mm
Footpaths generally 50mm
Special Construction Areas (see the relevant **tree protection plan** in **appendix a)** all excavation
will follow the procedure set out immediately below.

1. Remove loose surface material by hand
2. Break up the exposed ground surface to 100mm depth using hand tools or an equivalent non-destructive excavation method(an Air Spade for example: a hand operated pneumatic breaker may be used for loosening existing hard surfacing and associated sub-bases). Identify and retain bridging roots of 25mm diameter or greater; clear loosened material round each one by hand. Wrap retained roots in cling film.
3 Within 300mm of any retained root remove remaining loosened subsoil by hand using hand operated tools only. Elsewhere, excavation equipment with a ground pressure not exceeding 0.3kgf/cm^2 can be used.
4. Roots of less than 25mm will cut cleanly flush with the appropriate surface of the excavation with a sharp saw or secateurs
5. Repeat stages 2 to 4 above to the full depth of the excavation
6. Protect all retained roots with 2 layers of cohesive bubble wrap with a bubble diameter in the range 6-10mm and thickness in the range 4-10mm to the full width of the excavation before service installation, foundation construction or backfilling takes place. In Special Construction Areas, retained roots will be protected with a layer of clean sharp sand at least 50mm deep above the retained root upper surface and extending 50mm to either side after removal of the cling fim protective layer and prior to backfilling.

Strip foundation construction

4.4.7 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 prior to the removal of its protective covering.

4.4.8 The bridging void within the foundation referred to immediately will be filled with clean sharp sand immediately after the removal of the bubble wrap protective covering and prior to general backfilling.

Installation of service pipes and cables

4.4.9 Prior to the removal of protective coverings around retained roots, service cables and pipes will be installed in sections below retained roots

Backfilling and consolidation in Special Construction Areas

4.4.10 In Special Construction Areas, retained roots will be surrounded by a protective layer of clean sharp sand extending at least 50mm in all directions from their outer surface before general backfilling takes place. It is acceptable for removal of bubble wrap protective coverings, placing of sharp sand and backfilling to take place simultaneously in an integrated sequence.

4.4.11 Within 300mm of any retained root in both the vertical and the horizontal axis, consolidation of backfill material will be by the use of hand operated equipment only.

4.4.12 Equipment used for excavation and backfilling will have a ground pressure not exceeding 0.3kgf/cm^2

Fence posts and pad foundations for signs and other street furniture

4.4.13 Excavation for single pad foundations for stand-alone signs and equipment will follow the general sequence set out in 4.4.6 above.

4.4.14 If roots over 25mm diameter are encountered the pad foundation location will be adjusted to avoid damaging them.

4.4.15 Fencepost holes will be excavated by hand or augur of the appropriate size.

4.4.16 Fence posts will be bedded in a dry mix concrete to avoid damage to surrounding roots from leachate contamination.

4.5 Relief of compaction

4.5.1 If any open ground area (final use) area becomes compacted in the course of construction activities, the area will be decompacted using appropriate specialist equipment (eg Teravent or equivalent).

4.6 Removal of protective fencing

4.6.1 When construction works are completed and all construction equipment has been removed from site, the protective fencing may be dismantled.

5.1 conflicts and remedial actions

5.1.1 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 3.1, 3.3, 3.4 and 4.1.4: **tree protection plans**	026-030
Damage by surface compaction from site traffic/storage of materials	Observe restrictions applying to **RPAs:** relieve compaction after permitted works	Section 3.3, 3.4, 4.5 and **tree protection plans**	All
Damage from spillage of toxic materials	No phytotoxic materials to be stored within 10m of any tree stem	Section 3.4, 4.1 and **tree protection plans**	All
Damage to tree roots	Use sympathetic excavation methods in **RPAs**	Sections 3.3, 3.4, **4** and **tree protection plans**	All

Table 1: Summary of Potential Damage Sources and Remedial Measures

6 Replanting

6.1 Replanting proposals are covered in a separate submission.

7 Supervision and completion

7.1 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, the Project Manager and the Main Contractor's Site Manager to review arboricultural protection measures before and during the contract.

7.2 Prior to the start of works, the Arboricultural Consultant will provide induction training to the Site Manager and all on-site staff directly employed by the Main Contractor, 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

7.3 The Site Manger will be responsible for delivering this induction training to all sub-contractors prior to their starting work on site. A guidance leaflet summarising the key points of the induction process is contained in **appendix c.**

7.4 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.

7.5 The Arboricultural Consultant will make site visits as necessary and in particular at the start of the following stages:

- Pre-contract tree works
- Completion of tree protection fencing (together with the Local Authority's representative)
- Excavation of foundations close to trees
- Erection of scaffolding close to trees
- Start of the external works programme

7.6 The Arboricultural Consultant will circulate notes of his inspections by email, directly to the Local Authority and to the Project Team

7.7 The Arboricultural Consultant will notify the Local Authority immediately by email of any contractvariations that may affect retained trees.

7.8 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

7.9 After notifying the relevant persons (see 7.8) 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

7.10 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.

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

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

appendix a

tree protection plans

ROOT PROTECTION AREA
as defined in *BS5837:2005*
Trees in relation to construction
- Recommendations

T005

RPA WITHIN CONSTRUCTION AREA

GROUND PROTECTION AREA

NO EXCAVATION BELOW FLOOR SLAB FORMATION LEVEL

TREE PROTECTION FENCING

T030

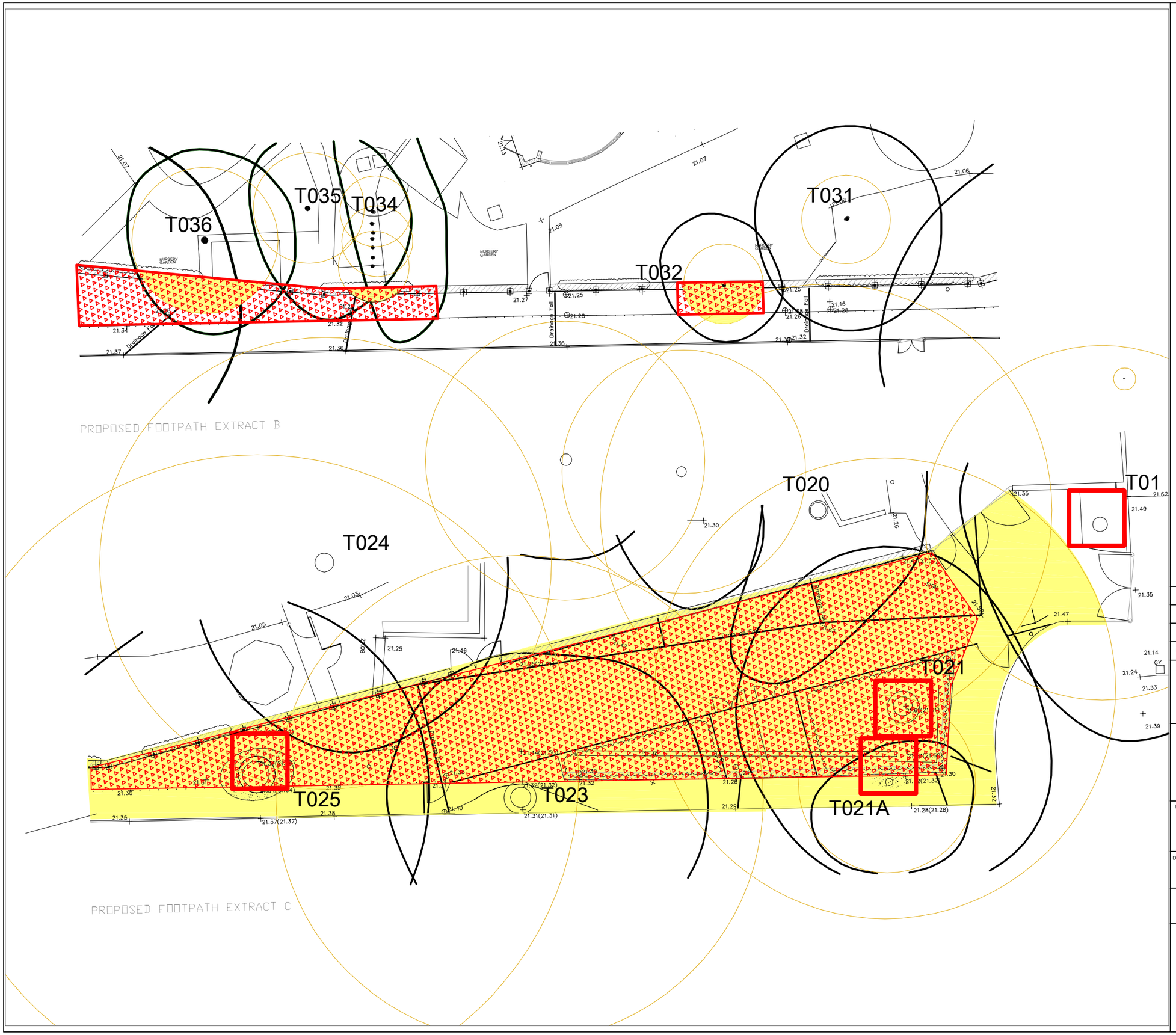
T029

T028

T027

T026

Client: THE CORAM FOUNDATION	Drawing Title: PROPOSED TREE PROTECTION PLAN - FORECOURT (DRAFT)	Skerratt arboricultural advice
Job Title: CORAM COMMUNITY CAMPUS NEW ENTRANCE BUILDING & FOOTPATH IMPROVEMENTS	Date: 03.09.12 / Scale: 1 : 200 [A3] / Drawing Number: 158.08.00 / Drawn by: RS	GREENMOUNT 36 PRIESTTHORPE ROAD BINGLEY WEST YORKSHIRE BD16 4LL 01274 566539



KEY

T005

ROOT PROTECTION AREA
as defined in *BS5837:2005*
Trees in relation to construction
- Recommendations

SPECIAL CONSTRUCTION AREA

TREE PROTECTION FENCING

RPA WITHIN CONSTRUCTION AREA

CORAM COMUNITY CAMPUS

REVISION	CHCK'D	APP'D	DATE

Client:
THE CORAM FOUNDATION

Job Title:
CORAM COMMUNITY CAMPUS
NEW ENTRANCE BUILDING & FOOTPATH IMPROVEMENTS

Drawing Title:
PROPOSED TREE PROTECTION PLAN - FOOTPATH
(DRAFT)

Drawing Number:	Scale:
158.08.01	1 : 200 [A3]
Date: 20.08.12	Drawn by: RS

Skerratt
arboricultural advice
GREENMOUNT 36 PRIESTTHORPE ROAD BINGLEY
WEST YORKSHIRE BD16 4LL 01274 566539

appendix b

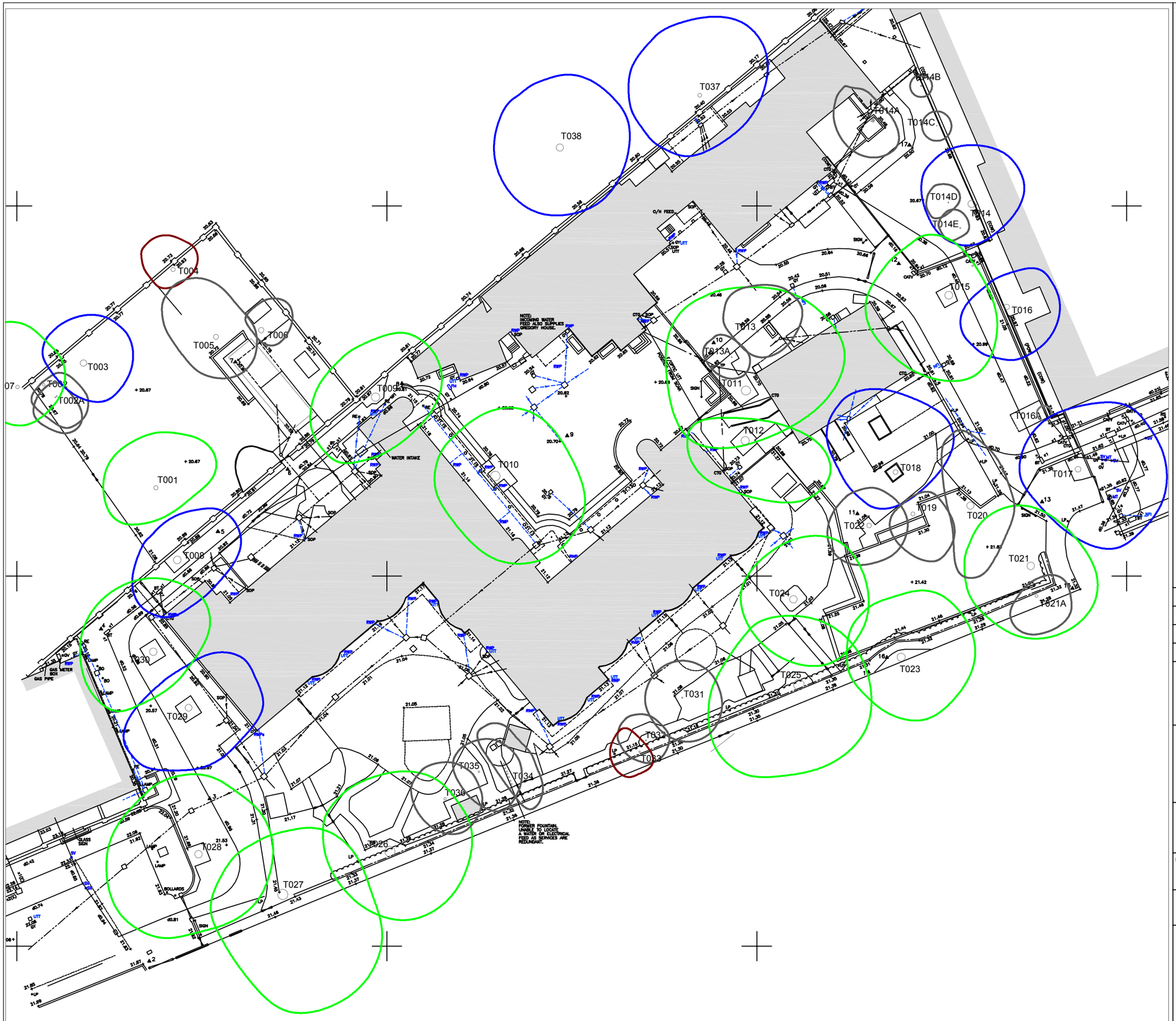
tree works schedule

Pre- Contract Tree Works Schedule

Tree No.	Species	Height (m)	Diam (cm)	Crown Spread (m)				Crown Height (m)	Item
				N	E	S	W		
008	London Plane (*Platanus x hispanica*)	23	103	5	9	6	8	9	No action reuired
014	London Plane (*Platanus x hispanica*)	30	101	8	8	5	6	6	Lift crown overhang to 6m above existing ground level, where possible within the following constraint; no limb with a diameter of more than 150mm at point of origin to be removed
014D	Holly (*Ilex aquifolium*)	6	15	3	2	1	2	1	No action required
014E	Holly (Ilex aquifolium)	6	15	3	2	1	3	1.5	No action required
015	London Plane (*Platanus x hispanica*)	36	107	9	5	11	11	7	Lift crown overhang to 6m above existing ground level, where possible within the following constraint; no limb with a diameter of more than 150mm at point of origin to be removed
016	London Plane (*Platanus x hispanica*)	29	75 est	4	7	7	7	10	No action required
017	London Plane (*Platanus x hispanica*)	24	80	8	11	12	7	2	No action required
018	London Plane (*Platanus x hispanica*)	25	68	12	10	4	6	8	Lift crown overhang to 6m above existing ground level, where possible within the following constraint; no limb with a diameter of more than 150mm at point of origin to be removed
019	London Plane (*Platanus x hispanica*)	25	55	2	4	7	4	12	Lift crown overhang to 6m above existing ground level, where possible within the following constraint; no limb with a diameter of more than 150mm at point of origin to be removed
020	London Plane (*Platanus x hispanica*)	26	102	10	6	10	3	12	Lift crown overhang to 6m above existing ground level, where possible within the following constraint; no limb with a diameter of more than 150mm at point of origin to be removed
021	London Plane (*Platanus x hispanica*)	29	104	9	7	10	9	6	No action required
021A	Lime (*Tilia x europaea*)	16	40	2	3	5	5	3	No action required
022	London Plane (*Platanus x hispanica*)	26	63	5	5	5	6	12	No action required
023	London Plane (*Platanus x hispanica*)	33	110 est	8	10	9	7	8	No action required
024	London Plane (*Platanus x hispanica*)	36	102	7	10	10	7	6	No action required

Pre- Contract Tree Works Schedule

Tree No.	Species	Height (m)	Diam (cm)	Crown Spread (m)				Crown Height (m)	Item
				N	E	S	W		
025	London Plane (*Platanus x hispanica*)	31	145	10	9	11	14	6	No action required
026	London Plane (*Platanus x hispanica*)	31	1400	10	11	10	8	3	No action required
027	London Plane (*Platanus x hispanica*)	31	140	8	11	16	10	5	No action required
028	London Plane (*Platanus x hispanica*)	27	102	11	10	10	13	6	No action required
029	London Plane (*Platanus x hispanica*)	30	95	5	10	8	10	6	No action required
030	London Plane (*Platanus x hispanica*)	31	102	10	10	5	10	12	No action required
031	Flowering Cherry (*Prunus 'Kanzan'*)	5	20 est	5	5	6	5	1.5	No action required
032	Field Maple (*Acer campestre*)	7	18 max est	4	3	3	3	2	Fell to near ground level; grind out stump to 300mm below ground level
033	Sycamore (*Acer pseudoplatanus*)	8	22	4	1	3	4	3	Fell to near ground level; grind out stump to 300mm below ground level
034	Willow (*Salix species*)	7	16 max	7	4	6	1	2	No action required
035	Kashmir Birch (*Betula jacquemontii*)	4	25 @ 1m	4	5	6	3	2.5	No action required



KEY

T005

EXISTING TREE

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 05 Trees in relation to construction - Recommendations* as follows:

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

REVISION		CHCK'D	APP'D	DATE

Client:

THE CORAM FOUNDATION

Job Title:

PROPOSED MASTER PLAN

Drawing Title:

TREE SURVEY PLAN

Drawing Number:	Scale:
128.01.01	1:500 (A3)
Date:	Drawn by:
08.02.10	RS

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arboricultural advice

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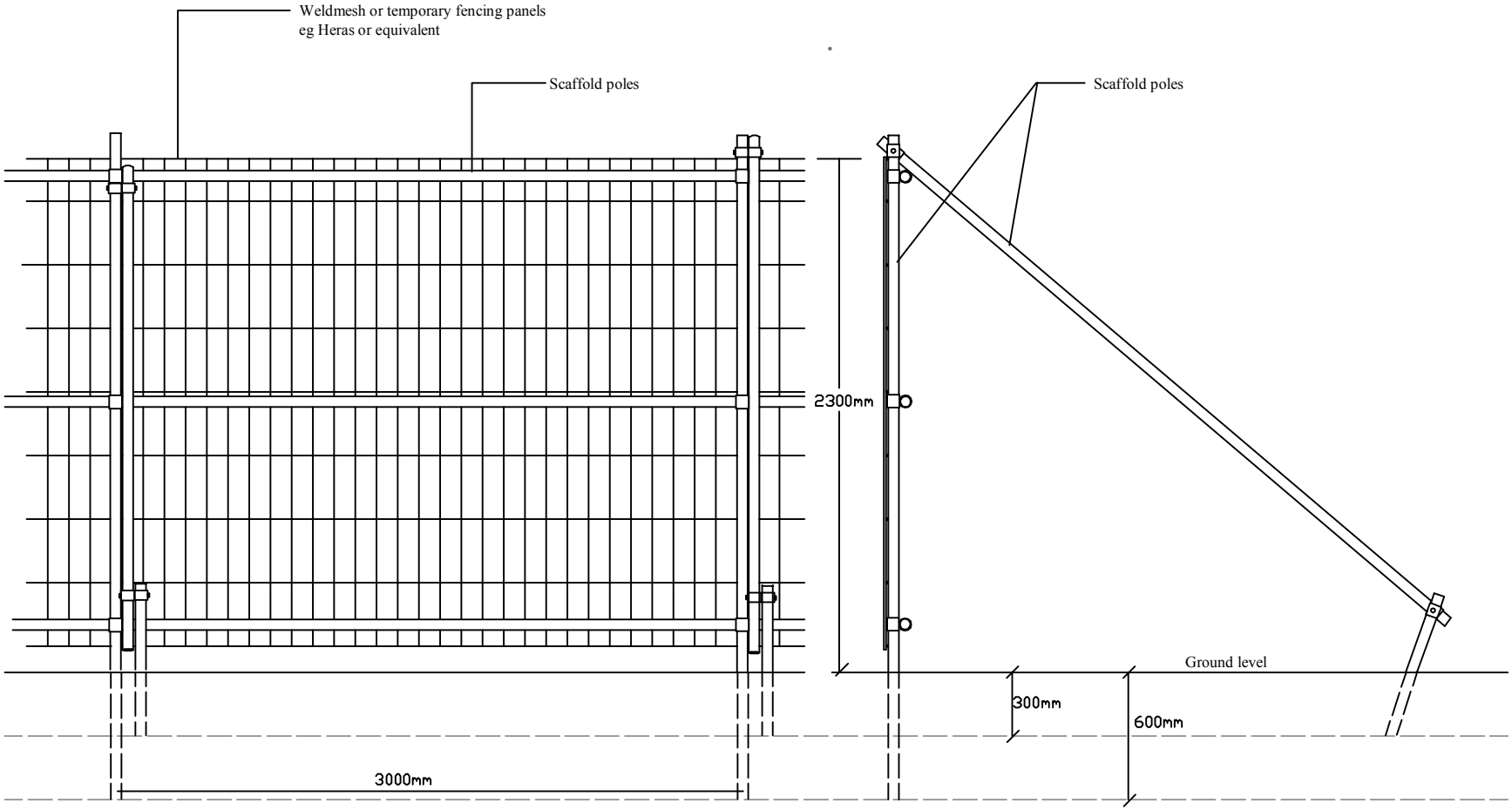
WEST YORKSHIRE BD16 4LL 01274 566539

appendix c

BS protective fence detail
tree protection notice
tree protection notes



Excerpt from *BS5837:2005 Trees in relation to construction - Recommendations*

Barriers should consist of a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m.

Onto this, weldmesh panels should be securely fixed using wire or scaffold clamps. Weldmesh panels on concrete or rubber feet are nor resistant to impact and should not be used

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

BS5837:2005 Protective Fencing Detail
Scale: 1:20 [A4]

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CONSTRUCTION EXCLUSION 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

CORAM COMMUNITY CAMPUS

CARE OF 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.

Make sure that you are familiar with the Arboricultural Method Statement and follow its guidance

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