LONDON IRISH CENTRE CAMBDEN SQUARE LONDON

ARBORICULTURAL IMPACT ASSESSMENT & METHOD STATEMENT

ACD ENVIRONMENTAL

Ecology
Archaeology
Arboriculture
Landscape Architecture

THE LONDON IRISH CENTRE

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1. Executive summary

1.1. The proposed layout is in line with recommendations of BS5837:2012 Trees in relation to design, demolition and construction. Adequate protection can be provided to ensure all retained trees are protected throughout development.

1.2. The design proposals encompass refurbishment of Nos. 50, 51 and 52 Camden Square, with the demolition and the erection of a part three/part four storey building with basement and roof level amenity space to the buildings along Murray Street & Murray Mews. The area of existing tiered hard surfacing on the property frontage is to be improved. This will include the removal of an existing footway, area of hard standing and decking adjacent to a TPO tree. Trees to be removed are limited to low quality trees, which have a limited life and current landscape value and can easily be replaced.

1.3. Some site supervision will be required during the proposed works around the TPO Lime tree no. T1;

- Removal of existing hard surface features and associated retaining structures.
- Removal of existing wooden decking and concrete slab.
- Installation of new hard surface bike storage area.

1.4. The relationship between the design proposals and retained trees is sustainable, similar to the existing juxtaposition and should not result in any situations that may result in unreasonable pressure to prune requests from future occupants.

1.5. The arboricultural method statement and tree protection plan include details of all tree protection measures required, including provision for site supervision where required.

1.6. Any fencing and other tree protection measures should be erected after tree surgery but before any demolition or construction contractor enter the site, and before any soil stripping takes place.

2. Introduction

2.1. The London Irish Centre instructed ACD Environmental in January 2020 to prepare the following arboricultural report which contains impact assessment and method statement elements.

2.2. Following the recommendations of the British Standard[1], this report includes the necessary information to support a planning application. It demonstrates that the impact, both direct and indirect, of the proposed development within the site, has been assessed and where appropriate, mitigation and tree protection proposed.

2.3. The implementation of any protection methods and special construction details recommended within this report are critical for ensuring the retained trees are successfully protected through the construction process and must be implemented prior to any work on site.

2.4. This assessment is based upon the supplied layout drawing and tree reference plan, drawing number PRI22682-01.

2.5. The controlling authority is Camden Council who can be contacted at: http://www.camden.gov.uk/planning or 02079744444.

2.6. This assessment considers the impact of the development on the constraints posed by the retained trees (both beneath ground: the root protection area (RPA), and above ground: the canopy).

2.7. Direct impact from development comes in six main forms: 1) Surface installation within RPAs, 2) Root loss from excavation for foundations, drainage and other utilities within RPAs, 3)Soil stripping, removal and level changes within RPAs, 4) Excessive access facilitation pruning to retained trees, 5) Soil compaction from storage and vehicle movements within RPAs, 6) Soil contamination.

2.8.

[1] *BS5837:2012 Trees in relation to design, demolition and construction- Recommendations,* London: British Standards Institute

3. Arboricultural Impact Assessment

3.1. Overview of proposed development

3.1.1. The design proposals encompass refurbishment of Nos. 50, 51 and 52 Camden Square, with the demolition and the erection of a part three/part four storey building with basement and roof level amenity space to the buildings along Murray Street & Murray Mews. The area of existing tiered hard surfacing on the property frontage is to be improved. This will include the removal of an existing footway, area of hard standing and decking adjacent to a TPO tree.

3.2. Planning context

3.2.1. **Tree Preservation Orders/Conservation Area:** A single Lime tree on the property frontage is the subject of a Camden Council tree Preservation Order.

3.3. Trees proposed for removal & surgery

3.3.1. The following trees are proposed for removal:

No.	Name	BS Cat
T2	Silver Birch	C

3.3.2. All the trees listed are of reduced quality and value which have only limited wider landscape significance with a reduced life expectancy. All are internal to the site apart from those on the southern boundary, primarily the group of conifers G4 and the beech T9. This group is really an overgrown boundary hedge and whilst it does provide a screen at present, they have a very limited useful life expectancy and will require replacing in the near future, regardless of any development. Therefore, it is proposed to remove them and replace with Western red cedar or similar, of about 2-3m in height. This tree grows quickly and establishes well, resulting in a new sustainable boundary screen in a few years.

3.3.3. All trees identified as being of moderate/high quality and value are shown to be retained and have been incorporated into the design proposals.

3.4. Demolition, site clearance & archaeology

3.4.1. To ensure damage does not occur to trees highlighted for retention, tree protection fencing must be erected before any plant/vehicles entering site whatsoever. This should be subject to a pre-commencement site meeting between the developer, their project arboriculturist and a representative from Camden Borough Council.

3.4.2. A detail specification for the works proposed around and adjacent to the TPO lime tree no. T1 is detailed within section 3.8 of this report. No other special demolition procedures need be observed on this site, other than respecting the tree protection fencing.

3.5. Tree protection fencing and alternative forms of protection

3.5.1. Figure 2 of the British Standard recommends a standard fencing design for tree protection. This is a weld mesh panel design, mounted upon a well-braced scaffold framework. The limited construction working room makes standard specification fencing difficult to implement. Therefore, a series of alternative tree protection measures are proposed.

3.5.2. Given the scope of works proposed around the TPO lime tree a wooden hoarding box will be installed. This will ensure suitable construction space is perfectly adequate for this site and all the retained trees can be suitably protected by its erection before any works start on site whatsoever.

3.6. Construction footprint and new hard surfaces within RPAs

3.6.1. The construction footprint of proposed refurbishment and new part three/part four storey building is contained within the existing, being sited outside the RPAs of trees identified for retention.

3.7. Services

3.7.1. Full details of the service and utility provisions for the site remain to be finalised. However, there is adequate space for utility trenches to access the site whilst avoiding RPAs and exclusion zones.

3.7.2. It is fundamental to tree protection that infrastructure design is sensitively approached, as trenching close to trees may damage roots and affect tree health and stability. Details of services have not been provided at the time of writing. The Tree Protection Plan, showing the constraints posed by retained trees will be passed to the infrastructure engineers to inform their design, ensuring that all services avoid areas of potential conflict. As per Figure 1 of the British Standard, once further details become available as part of the detailed/technical design for the site, the TPP and AMS may need to be revised to incorporate service details for inclusion in the tender documentation.

3.8. **Refurbishment of site frontage within RPA of TPO Lime tree**

3.8.1. The property frontage is to be redesigned to increase available bike storage space. The existing area of bike storage is within the RPA of the TPO Lime tree no. T1.

3.8.2. To avoid potential impact to the underlying rooting environment sensitive methodology is proposed for all works within the RPA. These identified works are to be carried out under on-site supervision of the project arboriculturist.

3.8.3. Phased works for refurbished works:

1. The existing concrete slab and adjacent decking area to be removed using hand tools only.

2. Retaining structures to north and south of tree, paving slabs and timber boards to be removed. If soil retention an issue and engineering specification allows hen retaining structures to be retained in situ.

3. Assumed hardcore sub-base to be removed or if levels allow utilised within makeup of new 'no-dig' surface.

4. Cavity formed of old footway to be partially filled with good quality soil to increase available rooting area for adjacent TPO tree.

5. Installation of 'no-dig' cellular containment system over new levelled bike storage area.

6. Installation of new permeable hard surface around tree. Ne surface should achieve following criteria;

   Maintain oxygen diffusion through new surface to rooting area (5-12% by volume[2])
   Maintain sufficient passage of water to the rooting area (12-40% by volume[3])
   Avoid compaction by maintaining a soil structure sufficient to sustain root growth (soil bulk density below 1.4g/cc[4]).

7. Any street furniture to be installed for bike storage etc will need to be designed so it is attached to new hard surface, bolted/pinned etc.

3.8.4. The adopted design must be approved for use by the project arboriculturist, detailed in the arboricultural method statement, and installed under their supervision

[2] Smith, R. J. (2006). *Tree Roots in the Built Environment.* HSO
[3] Coder, D. K. (2000). *Tree Root Growth Requirements.* University of Georgia
[4] Harris, C. M. (2004). *Arboriculture, Tree Management of Shade Trees and Vines.*

4. Arboricultural Method Statement

TO BE READ INCONJUNCTION WITH THE APPENDED TREE PROTECTION PLAN REF: PRI22682-03

4.1. Phasing of operations & site supervision

4.1.1. The tree protection and other arboricultural related works must be carried out in the following order:

Phase		Operation	Present	Notes
Preliminary	1	Tree removals & surgery	Tree contractor	See Tree Protection Plan for trees to be removed
	2	Protection barriers erected	Fencing contractor	See Tree Protection Plan for position and type of barriers
	3	Pre-start meeting	Tree officer, site manager, groundwork, foreman	To 'sign-off' protection prior to any plant activity, demolition & groundworks on site
Construction phase	4	Phased works adjacent to TPO tree as detailed with section 3.8 of AIA section	Groundwork team, site manager, project arboriculturist	See section 3.8 phased works and associated construction method statement
	5	Removal of protection measures		Sign off to LPA tree officer to confirm cessation of works around TPO tree

4.1.2. Supervision is also required should any unplanned access and/or work be required in the construction exclusion zone.

4.1.3. Supervision will require the arboriculturist to be present throughout the task, to ensure all the arboricultural objectives are met. If the task is to take a long period of time, provided the arboriculturist is satisfied, and after an initial 'tool-box talk', the supervision may be reduced to telephone contact between the site foreman/contractor and arboriculturist.

4.2. Site storage, parking, welfare facilities, etc.

4.2.1. The site will require provision for; site storage, contractor parking, welfare facilities, temporary services/drainage, material drop off points, etc.

4.2.2. None of the above provisions will be sited within RPAs of retained trees without the input of the project arboriculturist and the consent of the local planning authority.

4.3. Tree surgery and removal

4.3.1. Trees identified for removal are shown on the TP with a red dashed crown line and red dashed cross on trunk position.

4.3.2. Tree surgery works are not anticipated at time of report writing. However, should surgery works be proposed, it will be submitted to, and approved by Camden Borough Council, before being carried out.

4.3.3. All work will be carried out in accordance with BS3998[5] industry best practice and in line with any works already agreed with the council.

4.3.4. The tree surgeon shall ideally be chosen from The Arboricultural Association's Approved Contractor list. All work shall be undertaken at the appropriate time and with the consent and approval of the Site Agent.

4.3.5. The statutory protection[6] [7] will be adhered to. If further advice is required, particularly if bats are discovered during tree work, it will be obtained from Natural England or other competent persons and recommendations adhered to.

4.3.6. The stumps of any trees removed from within the Construction Exclusion Zone or the RPAs of retained trees will be either; cut flush to ground level and left in situ or ground out using a stump grinder. They will not be winched out.

4.3.7. All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.

[5] *BS3998:2010- Recommendations for Tree Work.* London: British Standards Institute
[6] *WIldlife and Countryside Act.* (1981) London: HMSO.
[7] *Countryside and Rights of Way Act.* (2000) London: HMSO.

4.4. Tree protection areas

4.4.1. Based on tree survey data, tree protection areas have been determined for every retained tree. These areas are designed to protect at least a functional minimum of tree root mass in order to ensure that the trees survive the construction process.

4.4.2. Some trees on this site are subject to statutory protection by Tree Preservation Order. Damaging them is a criminal offence and is also contrary to planning conditions that, if breached, could lead to all work on site being stopped by the local authority.

4.4.3. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

4.4.4. Inside the exclusion area of the fencing, the following shall apply:

- No mechanical excavation whatsoever
- No excavation by any other means without arboricultural site supervision
- No hand digging without a written method statement having first been approved by the project arboriculturist.
- No lowering of levels for any purpose (except removal of grass sward using hand tools)
- No storage of plant or materials
- No storage or handling of any chemical including cement washings
- No vehicular access
- No fire lighting

4.4.5. In addition to the above, further precautions are necessary adjacent to trees:

- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builders sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees
- No fire shall be lit such that flames come within 5m of tree foliage.

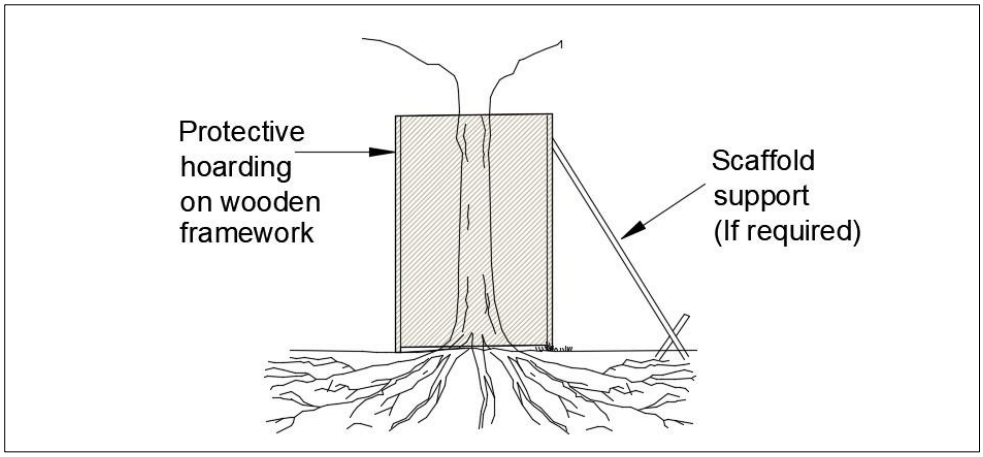
4.5. Tree protection measures

4.5.1. Given the existing site frontage topography and extensive hard surfacing a bespoke specification of tree protection measures (see the latest revision of: PRI22682-03) These measures should be installed prior to any of the following taking place.:

- Demolition
- Plant and material delivery
- Soil stripping
- Utility installation
- Construction works
- Landscaping

4.5.2. The following specification is proposed for individual trees;

- Lime tree T1 and off-site Maple tree T4; A wooden hoarding box is to be installed around the trunk. This should be free standing and not affixed to the tree. A specification is proposed below



- Once erected, all tree protection measures will be regarded as sacrosanct, and will not be removed or altered without prior recommendation by the project arboriculturist and approval of the local planning authority.

4.5.3. If any alternative method of protection construction is proposed, consultation with the project arboriculturist will be obtained to clarify the efficacy of the revised design prior to informing the local planning authority and obtaining their consent.

4.6. Installation of underground services

4.6.1. Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

4.6.2. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routeing should be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods should be used: Microtunnelling, Surface-launched directional drilling, Pipe ramming or Impact moling (see BS5837:2012 Table 3), with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected, excavation using hand-held tools might be acceptable for shallow service runs. If this is case, the following methodology must be followed:

4.6.3. Stages for installing services by hand within tree protection areas:

No plant machinery to be used in the area for whatever reason

1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work
2) Remove just enough tree protection fencing to allow access to area and facilitate trenching
3) Remove any surface vegetation or existing hard surfaces using hand tools
4) Using and air-pick excavate the trench, keeping to minimum dimensions required
5) Roots occurring in clumps of 25 mm diameter and over are encountered they will be retained and kept damp by covering with hessian (re-wetted as required). If required, these should be severed only following consultation with an arboriculturist, as such roots might be essential to the tree's health and stability
6) Feed in services.
7) Back fill trench with 200-300mm depth of excavated soil, or a mixture of excavated and imported top-soil to BS3882 (BSI, 2007), firming down with heels
8) Repeat step 7 until trench is filled
9) Re-erect tree protection fencing as per approved plan

4.6.4. The method of excavation above, for trenching within RPA's, is using air excavation. This tool utilises compressed air to remove soil from around tree roots causing minimal damage and can be run of a typical site compressor. ACD can provide details of contractors supplying air excavation services if required.

4.6.5. Alternatively, trenchless technology, such as thrust boring can be used in some instances and is particularly effective as it can pass directly under the tree, at a depth which is likely to avoid almost all impact on roots of the subject tree. As no access/thrust pits will be located within the RPAs of the subject trees, the need for arboricultural supervision is limited.

4.7. Existing hard surface removal

4.7.1. No hard surface removal within RPAs will occur without arboricultural supervision.

4.7.2. Stages for hard surface removal within tree protection areas:

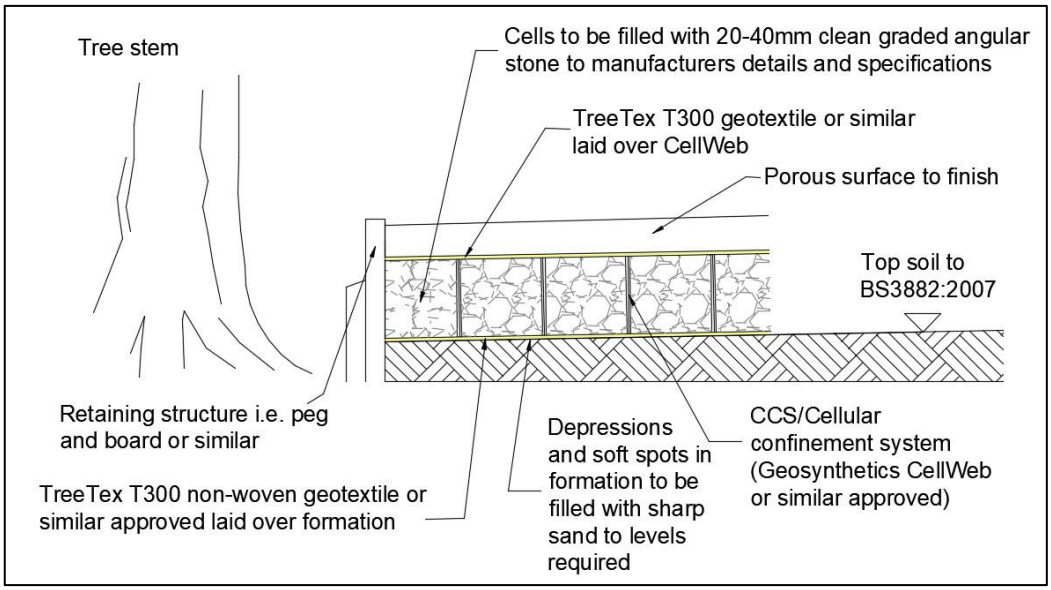
1) No plant machinery to be sited on any exposed rooting area
2) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work
3) Ensure tree protection measures are in situ.
4) Existing surfaces to be removed by hand (decking and concrete hard surface etc.)
5) Where any subbase is not likely to contain roots, and only on approval from project arboriculturist, it may also be carefully removed.
6) Underlying ground levels to be retained. No excavation to occur.
7) Any exposed roots and surrounding newly exposed areas to be covered with up to 100mm of topsoil, from elsewhere on site, or imported top-soil to BS3882[8] Soil may be placed in area by plant but must be spread by hand.

4.7.3. If the area around the retained trees is to be left following the removal of the existing hard surface, before a new hard surface is laid or soft landscaping implemented, then a line of protective fencing MUST be installed around entire area.

[8] *BS3882:2007- Specification for topsoil and requirements for use.* London: British Standards Institute.

4.8. **Installation of 'no-dig' surface for bike storage**

4.8.1. To ensure the underlying rooting environment beneath this proposed surface, continue to survive during and after construction a cellular system such a CellWeb[9] of 20-75mm depth is to be used .



'No-dig' cross-section

4.8.2. Stages for Installation of the cellular confinement surface:

1) Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work

2) Remove any existing hard surfaces (decking and concrete hard slab etc.) Hand tools should be used where possible. If machinery is required for this operation, it must be used only on existing surfaces or outside the protection areas and tree canopies (approval from project arboriculturist must be sought before using machinery). The subbase of existing surfaces or foundations should be left in situ where possible to avoid unnecessary root disturbance and provide a base for the new surface.

3) Retain all original ground levels after vegetation removal. No excavation whatsoever.

4) Existing footway cavity to be part filled with good quality top soil.

5) Install a non-woven Geotextile (such as TreeTex T300) directly over soil grade level (levelled where necessary, by non-compacted washed sand) and fix in place.

[9] Geosynthetics Ltd, 01455 617139, www,geosyn.co.uk

6) Lay the cellular system over the Geotextile, which is secured open under tension during the infill process with steel staples or wooden pegs.

7) Install retaining features on top of existing soil grade level. For light structures, a treated peg and board may be acceptable. For more substantial structures, railway sleepers, haunched concrete with road pins, drilled kerbstones, gabions or cast in situ kerbs will be appropriate.

8) Fill the cellular system ensuring any machinery works only on already filled areas. Typical infill consists of no fines angular granular material 20-40mm, which will remain un-compacted.

9) Cover with a non-woven Geotextile (such as TreeTex T300).

10) Install porous wearing surface.

- Small Block Paving
- Porous Asphalt

4.8.3. Any variation to the above specification must meet the following design criteria for low-invasive surfaces to provide the conditions for continued tree survival and growth:

- Maintain oxygen diffusion through new surface to rooting area (5-12% by volume[10])
- Maintain sufficient passage of water to the rooting area (12-40% by volume[11])
- Avoid compaction by maintaining a soil structure sufficient to sustain root growth (soil bulk density below 1.4g/cc[12]).

4.8.4. Site analysis of the soil type and its structural characteristics will be required prior to determining the specific depth of products to be adopted for example, footpaths normally require a depth of 75mm and, 100mm to 200mm depths are used for residential driveways, while greater depths may be required for the passage of heavier traffic such as for construction access and delivery vehicles.

[10] Smith, R. J. (2006). *Tree Roots in the Built Environment.* HSO
[11] Coder, D. K. (2000). *Tree Root Growth Requirements.* University of Georgia
[12] Harris, C. M. (2004). *Arboriculture, Tree Management of Shade Trees and Vines.*

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23rd February 2020

Appendix 1: Tree Protection Plan

PRI22682-03

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ARBORICULTURAL SITE MONITORING AND SUPERVISION * ARCHAEOLOGY
LANDSCAPE & VISUAL IMPACT ASSESSMENT * LANDSCAPE AUDIT * PROJECT MANAGEMENT
EXPERT WITNESS* LANDSCAPE DESIGN & PLANNING LANDSCAPE MANAGEMENT