

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT BEECHWOOD AVENUE, BARNET, N3 3BB

Site Ref: 439

Arboricultural Constraints Assessment Report

OCTOBER 2017

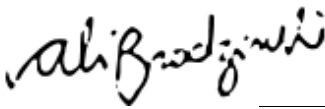

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LAND AT BEECHWOOD AVENUE, BARNET, N3 3BB

Author Aline Brodzinski/Beverly Smith  

Checker Brandon Murray 

Approver Martina Girvan 

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This report dated 02 October 2017 has been prepared for Transport for London (TfL) (the "Client") in accordance with the terms and conditions of appointment dated 02 May 2017 (the "Appointment") between the Client and **Arcadis (UK) Limited** ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party

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1 Introduction

1.1 Overview

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a Site on Land at Beechwood Avenue, Barnet, N3 3BB ('the Site').

TfL is aiming to divest a number of small Sites to enable prospective regeneration. The objective of the Small Sites Initiative is to provide robust and pragmatic advice that sensibly de-risks each of the sites such that unreasonable "abnormal" development costs are not included by developers.

The objective of this assessment is to present the potential constraints and future survey requirements with regards to trees and any proposed future development.

1.2 Site Location and Setting

The Site is located north of the A406 North Circular Road, in the London Borough of Barnet. The Site is centred at grid reference of 525193, 189457 and around the postcode of N3 3BB. It is approximately 0.58ha in area and is currently comprised of dense scrub with scattered broadleaved and coniferous trees. A denser area of trees and a row of roadside London Plane trees are present to the east of the Site. The immediate surrounding residential area is characterised by low rise housing. To the immediate south of the Site is the A406 main road, beyond which lies further residential housing.

An aerial screen shot illustrating the Site boundary is presented in Image 1-1. Photographs of the Site and trees can be found in Appendix C - Photographs.

Image 1-1 Site Location Plan



2 Methodology

2.1 Tree Survey Methodology

A Site walkover was undertaken by Brandon Murray BSc(Hons) on 19th May 2017 and by Beverley Smith FdSc MArborA 25th August 2017.

Observations were conducted from ground level from various vantage points within the study area (presented on Figure 1). The positions of trees were also estimated from accessible areas within the Site and from aerial images.

Approximate tree locations are presented in Figure 1 and Target Notes are used to describe individual trees.

The arboricultural constraint assessment was undertaken to estimate the likely arboricultural quality and value of the study area. A glossary of tree survey terms can be found in Appendix A - Explanation of Terms.

2.2 Survey Limitations

This survey does not constitute a full tree survey in line with BS5837:29012 as large tracts of the Site were not accessible due to dense scrub. The completion of the topographical base mapping was limited by the dense vegetation cover within the study area as was the ability to accurately locate and/or measure the trees. Therefore an arboricultural constraints walkover assessment was undertaken using the information that was possible to obtain from the walkover survey although not all areas of the Site were fully accessible.

Trees located immediately off-Site within third party land, were not assessed.

All mapping associated with this report is indicative only and should not be used for scaling or design.

Trees are living organisms and as such their health and condition are naturally subject to change over time. Unforeseen future circumstances such as neglect, wilful damage or severe/extreme weather conditions may affect the future health and condition of the trees included in this report.

2.3 Statutory Tree Protection

A TPO information request was submitted to the Development and Regulatory Services department of the London Borough of Barnet by TfL on 6 March 2017. A response was received on the 28th September 2017 which confirmed that the Site is not within a Conservation Area and no trees on Site have an applicable Tree Preservation Order.

3 Tree Scoping Survey Results

3.1 Tree Stock Assessment and Categorisation

The arboricultural constraints walkover found the study area to be covered in dense scrub with a scattering of young individual trees, the majority of which were less than 20 years old although some trees are likely have been planted and these may be in excess of 40 years old. Due to lack of positive management the trees were generally in poor condition. Figure 1 the Arboricultural Constraints Walkover Map shows the most significant trees identified. Photographs are presented in Appendix C.

The western side of the Site was largely covered with scrub and small young trees, which are likely to be between 15 and 20 years old which have arisen from natural regeneration. The canopy cover was approximately 5% comprised predominantly of ash (*Fraxinus excelsior*) and cherry (*Prunus* sp.) saplings, surrounded by dense bramble (*Rubus fruticosus* agg.) and butterfly-bush (*Buddleia davidii*). There are a few large trees within the scrub area to the west of the site, including an ash and cherry. At the northern boundary of the site there are a group of fruit trees including apple (*Malus* sp.) and pear (*Pyrus* sp.) (Target Note 6), which are older than the other trees on the site (and may be in excess 40 years old).

To the east of the Site the tree cover is more dense at approximately 85% cover although the majority of these trees are saplings which have arisen from natural regeneration, primarily sycamore (*Acer pseudoplatanus*), cherry, ash, tree of heaven (*Ailanthus altissima*), whitebeam (*Sorbus aucuparia*), elder (*Sambucus nigra*) and hawthorn (*Crataegus monogyna*) which are likely to be between 15 and 20 years old with some younger newly regenerated species. The understorey in this area is largely bramble, viburnum (*Viburnum* sp.) and butterfly-bush.

To the eastern end on the southern boundary of the Site adjacent to the A406 there is a row of heavily managed London plane trees (evidence of heavy pollarding, likely conducted to allow clearance for vehicles) that are older than the other specimens on the site, and have the potential to be in excess of 40 years old (TN 3). There are also several leylandii (*Cupressus × leylandii*) on the eastern boundary and a single large tree of heaven (TN 1).

From aerial imagery taken in the late 1990s and early 2000's it is clear that the majority of the Site was previously cleared with only a few boundary trees present, the majority of vegetation on Site appears to be from natural regeneration.

Trees present outside of the Site but potentially within the zone of influence of the Site, include some large eucalyptus trees (*Eucalyptus* sp.) off-Site within a residential garden to the north (TN 4) and a semi mature highway tree of London Plane (*Platanus × acerifolia*) in Beechwood Avenue (TN 11).

The majority of the trees are likely to be Category C (trees of low quality), as defined within BS5837:2012. Currently, the Site is a densely vegetated area that is publicly visible from all sides and currently provides screening from the A406 North Circular Road to the residential properties on Edge Hill Avenue and Beechwood Avenue. Despite heavy pollarding of the row of London plane trees located along of the south, these are visible from the A406 and provide a public visual amenity to the immediate and surrounding area.

The likelihood is that most of the trees on Site would be defined as Category C individual trees, and many of the trees would be below the threshold for BS 5837 2012 assessment (i.e. stem diameter under 750mm at breast height).

3.2 Tree Species Diversity

Twelve different species were recorded during the arboricultural constraints walkover. The assessment was limited by observations made from vantage points on Site, therefore no accurate number of species, number of individuals and percentage cover were calculated (Table 1)

A summary of the species recorded are presented in Table 1.

Table 1 Tree Species Recorded

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Tree Species
Ash (<i>Fraxinus excelsior</i>)
Apple (<i>Malus</i> sp.)
Cherry (<i>Prunus</i> sp.)
Elder (<i>Sambucus nigra</i>)
Eucalyptus (<i>Eucalyptus</i> sp.)
Hawthorn (<i>Crataegus monogyna</i>)
Leylandii (<i>Cupressus</i> × <i>leylandii</i>)
London plane (<i>Platanus</i> × <i>acerifolia</i>)
Pear (<i>Pyrus</i> sp.).
Sycamore (<i>Acer pseudoplatanus</i>)
Tree of heaven (<i>Ailanthus altissima</i>)
Whitebeam (<i>Sorbus aucuparia</i>)

3.3 Age Diversity

The majority of trees on Site have arisen from natural regeneration with an estimated maximum age of 20 years old although many are younger (approximately less than 10 years old) from recent regeneration. There are a few individual trees of that have been planted, these are presented in Figure 1 which have the potential to be in excess of 40 years old.

4 Conclusions

The Site was covered in dense scrub with only a few early mature and mature individual trees likely to be in excess of 40 years old. The majority of trees on Site were young with a maximum age of 20 years old, but many younger, which have arisen from natural regeneration. There is no positive management of the naturally regenerated trees leading to overcrowding and generally poor condition.

The western side of the Site is largely dominated by scrub with a few young trees, (canopy cover approximately 5%) between 15 and 20 years old. There is a small cluster of fruit trees to the north of the site which may be in excess of 40 years old.

To the east of the Site there is greater tree cover (canopy cover approximately 85%), with few semi-natural trees, the majority have arisen from natural regeneration.

There are trees present outside of the Site but potentially within the zone of influence of the Site, including some large eucalyptus trees within a residential garden to the north of the Site and a semi mature London Plane in Beechwood Avenue.

No trees on Site were found to be within a Conservation Area and no trees on Site have an applicable Tree Preservation Order.

The majority of the trees are not likely to be a significant issue for development from an individual arboricultural amenity point of view. The larger trees are likely to be Category C (these have been identified on Figure 1) and the majority of the trees on Site are young, unmanaged and arising from natural regeneration. However, the Site as a whole if considered as a group is visible from all sides and currently provides screening from the A406 North Circular Road to the residential properties on Edge Hill Avenue and Beechwood Avenue.

The most significant trees are likely to be the row of heavily managed London Plane trees at the eastern end of the southern boundary of the Site adjacent to the A406 and any development should seek to retain these where possible. There are also several leylandii (*Cupressus × leylandii*) and a large tree of heaven on the eastern boundary, however these are unlikely to pose a constraint to the development.

The third party trees off-Site are not likely to be a significant constraint to development.

Consultation with the LPA, the Local Borough of Barnet, is advisable regarding the development of the Site as a whole.

Due to Site access limitations (dense vegetation) only an arboricultural constraint walkover and assessment was undertaken to inform this report. Following discussion with the LPA, it may be that a decision is made to clear enough of the dense scrub and natural regeneration to undertake a topographical survey. It would be advisable to undertake this clearance with arboricultural supervision to confirm which items should be removed during this process. Following this clearance of scrub and production of a topographical survey, an Arboricultural Survey in accordance with BS 5837:2012 should be undertaken. It is highly likely that an Arboricultural Impact Assessment (AIA) would also be required in support of any planning application.

The AIA should include a tree schedule, and a review of any specific proposed development should be undertaken to ensure that there are no additional trees within the zone of influence of the development. For example, parking requirements often extend the zone of influence. The AIA should state the trees to be removed due to the design and access requirements and any proposed tree facilitation pruning works. This should also be accompanied by an assessment of the likely impacts due to construction activity on the trees to be retained. Indicative arboricultural mitigation measures should be provided which would include recommendations for tree re-provisioning. The AIA should be accompanied by an updated Tree Constraints Plan and a Tree Impact and Protection Plan based on the proposed design. The AIA should also include a Tree Replacement Strategy which should take into consideration the landscape character, local treescape and biodiversity features of the immediate and adjoining areas. The species, number, size, type of stock, location and planting aids for the compensating planting should be chosen for landscape, wildlife and arboriculture values. To ensure that appropriate and sustainable planting is achieved advice should be sought from an ecologist and arboriculturist.

Tree protection would be required for trees to be retained and tree re-provisioning for any trees lost due to development are a material consideration for planning determination. If trees cannot be replaced on-Site due to development, off-Site options for tree re-provisioning to ensure no net loss should be considered. Furthermore, liaison with the LPA Tree Officer will be necessary during the planning process to agree an approved tree compensation and or landscape scheme plan.

All new tree planting should be in accordance with British Standard 8545: Trees: From Nursery to Independence in the Landscape – Recommendations, 2014 and all tree works must be carried out by a qualified contractor in accordance with BS3998:2010: Tree Work – Recommendations.

This document encloses a Preliminary Arboricultural Method Statement (AMS) (Appendix B) outlining tree protection measures. However following planning determination and when full construction measures are known a bespoke AMS may be required to ensure protection of the trees to be retained on and adjoining the Site.

5 References

British Standards Institution (2010) BS 3998:2010, Tree Work Recommendations.

British Standards Institution (2012) BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.

British Standards Institution (2014) BS 8545: Trees: From nursery to Independence in the Landscape – Recommendations.



FIGURE 1. Arboricultural Constraints Walkover Map

APPENDIX A. Explanation of Terms

Age Class

Young – Trees in the first fifth of full life expectancy

Semi-mature – Trees in the second fifth of full life expectancy

Early-mature – Trees in the third fifth of full life expectancy

Mature – Trees in the fourth fifth of full life expectancy

Over Mature – Trees having reached full life expectancy and trees in natural decline

Veteran – Trees of interest biologically, culturally and aesthetically because of their age

Stem Diameter

The diameter of the stem measured in millimetres (mm) at a height of 1.5m above ground level

Crown Spread

Average measured in metres using a ground tape where possible

Physiological Condition

Good – Healthy tree with no signs of ill health and signs of good extension growth for species

Fair – Trees with signs of disease, minor defects and decreased life expectancy due to physical damage

Poor – Trees with significant disease, significantly reduced life expectancy and/or under major physiological stress

Dead – Dead tree or trees with over 70% crown dieback

Structural Condition

Good – Trees with no significant defects

Fair – Trees with remedial defects which require minor tree surgery works

Poor – Trees with remedial defects which require significant tree surgery works or felling

Dead – Trees which require felling

APPENDIX B. Preliminary Arboricultural Method Statement

Overview

This Preliminary Arboricultural Method Statement provides generic best practice measures to be adopted in order to protect retained trees during the development process. It has been prepared in order to inform the planning and the construction/ development process.

Protective Fencing

The purpose of this fencing is to provide protection to the RPA of retained trees/groups and to protect trees and hedgerows prior to their translocation. The type of fencing used shall be appropriate to the level of adjacent construction activity and shall be agreed with the Local Authority tree officer. Weather-proof notices shall be attached to any protective fencing located adjacent to retained trees displaying the words "Construction Exclusion Zone" and listing restrictions which apply. All personnel must be made aware of these restrictions.

It is anticipated that three specifications for fencing would be employed during construction.

Low-use areas

The system illustrated in Figure C1 is adequate to define areas of protected vegetation and exclude traffic, and comprises Cleft Chestnut Pale Fence in accordance with *BS 1722 Part 4: Specification for cleft chestnut pale fences (British Standards Institution, 1991)* supported by 150mm wooden stakes. Assembled with galvanized 14-gauge (2 mm) wire, four strands per row, peeled and pointed one end. Approximate spacing of pales 75 mm.

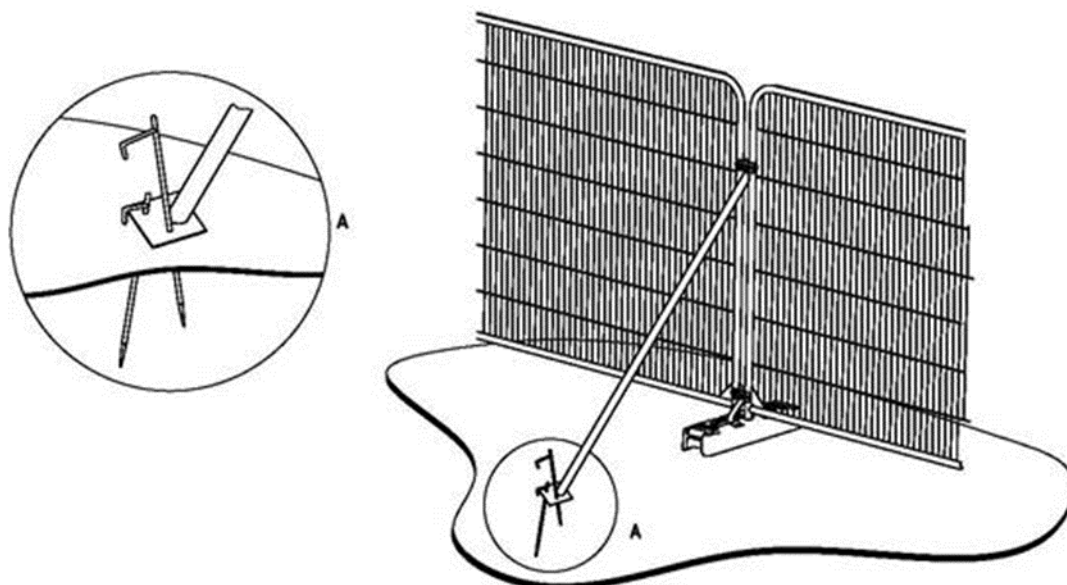


Figure C1 Tree Protection fencing example for low use areas

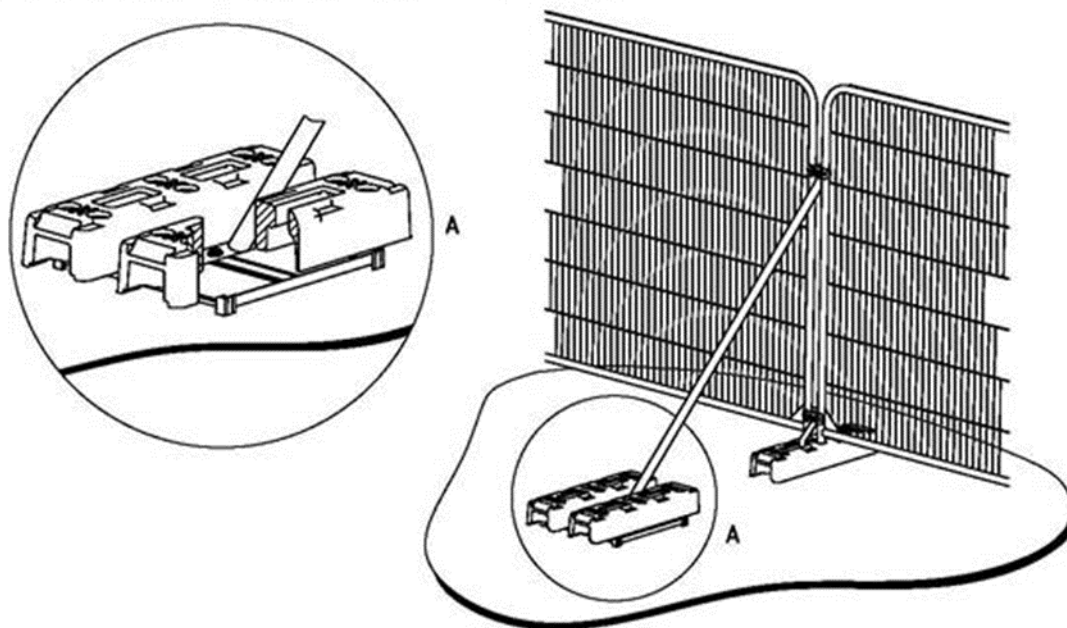
Medium-use areas

This system comprises anti-climb weldmesh panels connected by clamps and supported by rubber or concrete bases and bracing struts. The system is illustrated in Figure C2 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution,*

2012) (Ref 1) guidelines. This kind of system is robust enough to withstand occasional knocks by plant machinery.



a) Stabilizer strut with base plate secured with ground pins

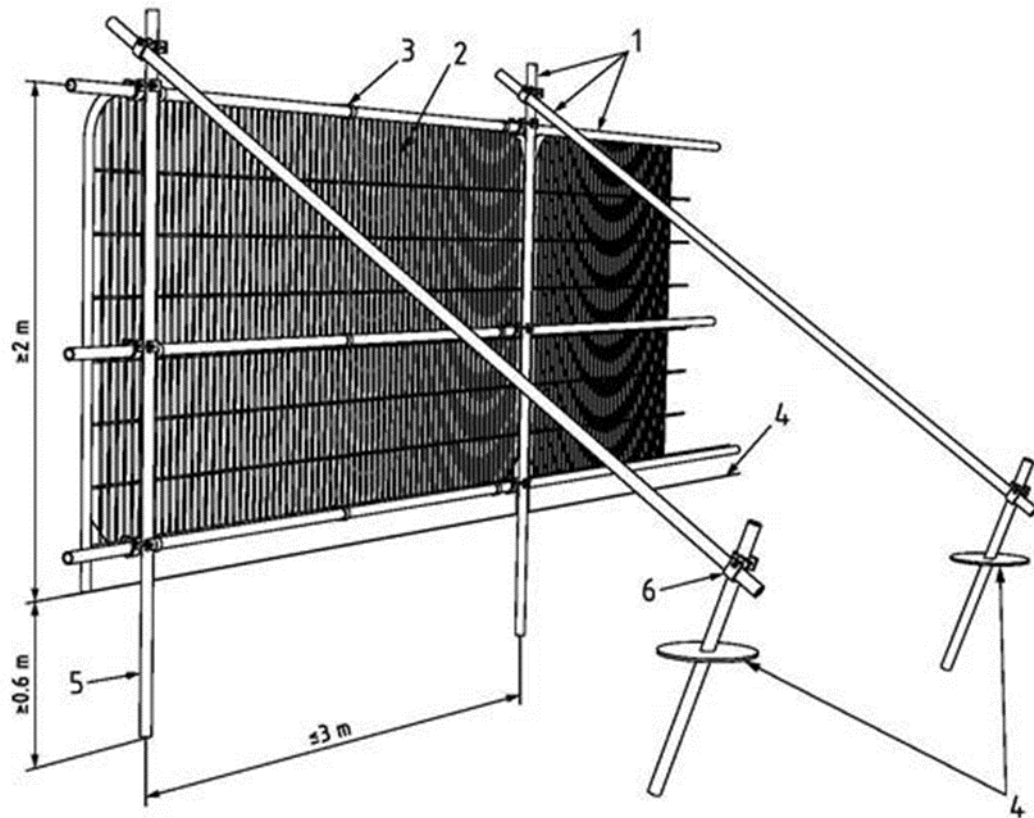


b) Stabilizer strut mounted on block tray

Figure C2 Tree Protection Fencing specification (extract from BS 5837)

High-use areas

This system involves driving scaffold poles into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Anti-climb weldmesh panels are secured to this scaffold framework using standard scaffold clips or wire. The system is illustrated in diagram Figure. C3 and is based on *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* (British Standards Institution, 2012) (Ref 1) guidelines. This kind of system provides the highest level of security.



Key

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

Figure C3 Tree Protection Fencing specification (extract from BS5837)

Construction Exclusion Zone (CEZ)

The Construction Exclusion Zone (CEZ) is the area identified by an arboriculturist to be protected during development, including Site clearance and construction work, through the use of barriers and/or ground protection fit-for-purpose to ensure the successful long-term retention of a tree. The area within the construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time.

All areas excluded by protective tree fencing shall be treated as CEZs, and the following restrictions shall apply:

- No construction activity whatsoever must occur within these areas.
- No tree works, without the written consent from the Local Authority.
- No alterations of ground levels or conditions.
- No chemicals or cement washings.
- No excavation.
- No temporary structures. *
- No storage of soil, rubble or other materials.
- No vehicles or machinery to be used or parked without appropriate ground protection measures as per BS5837 recommendations. This will require the use of a proprietary system of reinforced concrete slabs/steel road plates on a compressible layer, or side butting scaffold boards/ 18mm plywood sheets on a compressible layer. The type of ground protection used shall be appropriate for the likely loading applied.
- No fixtures (lighting, signs etc.) to be attached to trees.
- No fires within 10 metres of the canopies of any tree or hedgerow.

1

**Sales Cabins or Site huts, provided they are of the Jack Leg type, can be sited to act as ground protection for the duration of the construction.*

General construction activity

Since the canopies of retained trees may be in close proximity to areas of crane operation, the following restrictions will apply:

- All cranes will be sited outside the defined RPAs of retained trees / groups, and the appointed contractor will ensure all relevant personnel shall be made aware of the location of branches and the need to avoid causing damage to them.
- Prior to the implementation of lifting operations, a representative from the equipment supply company shall visit the Site and ensure all operations can be completed without causing damage to retained trees. A lifting plan will be prepared and submitted for approval prior to all lifting operations. The lifting plan will make provision for the potential for damage of retained trees.
- All lifting operations will be completed under the close direction of a qualified banksman, who will be briefed by the appointed contractor as to the need to avoid damage the stems and branches of retained trees.
- Should additional tree removal or pruning be required the Local Authority Tree Officer shall be contacted and the scope of works agreed in writing.
- All materials will be stored within designated areas and no materials shall be stored within any RPA.

Hazardous materials



Any mixing of cement-based materials is to take place outside the RPAs of all trees. Provision shall be made to ensure that the mixing area is contained so that no water runoff enters the RPAs of any trees. All mixers and barrows shall be cleaned within this dedicated mixing area.

All other chemicals hazardous to tree health, including petrol and diesel, are to be stored in suitable containers as specified by the Control of Substances Hazardous to Health (COSHH) Regulations (2002) (Ref 4), and kept away from the RPAs.




Example of Protective Fencing Signs



APPENDIX C. Photographs

Target Note	Description	Photograph
TN3	Row of pollarded London plane trees	
TN1	Tree of Heaven	

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Target Note	Description	Photograph
N/A	Young ash tree	
N/A	Cherry species sapling	
TN6	Fruit Trees	

Arcadis (UK) Limited

Arcadis House,
34 York Way,
London, N1 9AB
United Kingdom

www.arcadis.com