

MJD Architecture

**Approved Residential Development
Southbourne Gardens, Ruislip
Construction Logistics Plan**

June 2020

Armstrong House,
The Flemingate Centre,
Beverley,
HU17 0NW

📞 01482 679 911

✉ info@ltp.co.uk

🌐 www.local-transport-projects.co.uk

Registered No. 5295328

MJD Architecture

Approved Residential Development Southbourne Gardens, Ruislip Construction Logistics Plan

June 2020

Client Commission

Client:	MJD Architecture	Date Commissioned:	February 2020
---------	------------------	--------------------	---------------

LTP Quality Control

Job No:	LTP/20/4082	File Ref:	Southbourne Gardens Ruislip CLP Final Issue 1A
---------	-------------	-----------	--

Issue	Revision	Description	Author	Checked	Date
1	A	Added tree protection section	SW	-	29/06/2020
1	-	Final issue for planning submission	ZB	SW/AM	02/03/2020
Authorised for Issue:				AM	

LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown, and CVs are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Andy Mayo	Director (Project Manager)	BA(Hons) MSc CMILT FIHE FCIHT
Steven Windass	Head of Transport Planning	BSc(Hons) MSc(Eng) CEng FIHE MCIHT
Zoe Boote	Transport Planner	BA(Hons) AMIHE

The contents of this document must not be copied or reproduced, in whole or in part, without the written consent of Local Transport Projects Ltd.

Document Control

www.local-transport-projects.co.uk

APPROVED RESIDENTIAL DEVELOPMENT SOUTHBOURNE GARDENS, RUISLIP CONSTRUCTION LOGISTICS PLAN

CONTENTS

1.	INTRODUCTION	3
2.	SITE LOCATION & DEVELOPMENT DETAILS	4
2.1	Site Location	4
2.2	Development Proposals & Access Arrangements.....	4
3.	LOCAL HIGHWAY NETWORK	6
3.1	Southbourne Gardens	6
3.2	Field End Road	7
3.3	North View.....	8
3.4	Elm Avenue.....	8
4.	CONSTRUCTION TRAFFIC ROUTE	9
5.	CONSTRUCTION LOGISTICS PLAN.....	11
5.1	Vehicle Type.....	11
5.2	Vehicle Trips & Times of Working	11
5.3	Unloading/Loading Arrangements & Turning Provision.....	11
5.4	Construction Traffic Access Arrangements	12
5.5	Parking Arrangements for Construction Staff	12
6.	MITIGATION MEASURES	13
6.1	Measures to Control Demolition & Construction Noise.....	13
6.2	Measures to Control Dust & Dirt.....	13
6.3	Measures to Control Waste Storage, Recycling & Disposal.....	14
6.4	Measures to Protect Pedestrians	14
6.5	Measures to Avoid Road Damage	14
6.6	Measures to Protect Trees.....	15
7.	REFERENCES	16

APPENDICES

Appendix 1 – Site Layout Plan

Appendix 2 – Arboricultural Report

FIGURES

Figure 1: Site Location	4
Figure 2: Construction Traffic Routes	10

PHOTOS

Photo 1: Site Access	5
Photo 2: Southbourne Gardens	6
Photo 3: Field End Road	8

I. INTRODUCTION

1.1.1 Local Transport Projects Ltd (LTP) has been commissioned to produce a Construction Logistics Plan (CLP) for an approved residential development (ref: 72211/APP/2019/664) involving the construction of a three-storey block to provide 6 flats at land to the north of Southbourne Gardens in the London Borough of Hillingdon (LBH).

1.1.2 The planning application has been approved, subject to a number of conditions. A CLP is required by Condition 7 of the decision notice, which is outlined below:

“No development shall take place until a full and detailed Construction Logistics Plan (CLP) has been submitted to and approved in writing by the local planning authority. The CLP will be a requirement given the constraints and sensitivities of the local residential road network in order to minimise/avoid potential detriment to the public realm.

To ensure the proposed development will preserve and enhance the visual amenities of the locality and provide adequate facilities in compliance with policies BE13, BE38 and AM14 of the Hillingdon Local Plan: Part Two Saved UDP Policies (November 2012) and the London Plan (2016).”

1.1.3 The scope of this CLP has been produced to meet the requirements of the above planning condition.

2. SITE LOCATION & DEVELOPMENT DETAILS

2.1 Site Location

- 2.1.1 The development site is located in Southbourne Gardens, Ruislip in the London Borough of Hillingdon. The site is bound by residential properties to the north, east and west, with a mixture of Southbourne Gardens and residential properties fronting onto Southbourne Gardens to the south. The site currently accommodates two garage blocks, with a total of 18 garages. The approximate boundary of the development site is highlighted within Figure 1.

Figure 1: Site Location



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

2.2 Development Proposals & Access Arrangements

- 2.2.1 The planning application (ref: 72211/APP/2019/664) for the development was submitted in February 2019 and was subsequently approved in January 2020 for the erection of a 'three storey building comprising of 6, two bed flats with associated parking and amenity space, involving demolition of existing garages'. Following a S106 agreement the site had been granted approval subject to a number of planning conditions, which includes the production of this CLP as outlined in Section 1.1.

- 2.2.2 Vehicular access to the site during and after the construction phase of the development is to be via an existing access on Southbourne Gardens, between plots 58/60 and 62. It is understood that pedestrian and cycle access to the site is also to be via this access, by staff during the construction phase, and residents and visitors once the development is occupied. It is understood that the internal site access road is to remain private and is not up for adoption as public highway.
- 2.2.3 As highlighted in the application's supporting Design & Access Statement the 3.7m wide access road is sufficient to facilitate the forward movements and turning of a fire truck. Therefore, it is considered that the site access road will be capable of facilitating the turning movements of similar sized vehicles associated with the demolition and construction at the site.

Photo 1: Site Access



3. LOCAL HIGHWAY NETWORK

3.1 Southbourne Gardens

- 3.1.1 As mentioned in Section 2.2, access to the site is to be provided via the existing access located between plots 58/60 and 62 Southbourne Gardens which is understood to have formally served the two existing garage blocks. Southbourne Gardens is a two-way single carriageway that measures approximately 7m in width and is subject to a 30mph speed limit within the vicinity of the site access.
- 3.1.2 Southbourne Gardens forms part of Controlled Parking Zone (CPZ) E, restricting on-street parking Monday to Saturday between 09:00 and 17:00 to permit holders only. Formal parking bays are provided on the northern side of the carriageway directly east of the access junction which extend to the Field End Road junction approximately 150m east. White advisory H-bar markings are in place adjacent to the access road, and also some driveways on the southern side of the carriageway to the east of the Green Lawns junction to discourage parking. Approximately 100m east of the access junction parking/waiting restrictions are in place Monday to Saturday between the hours of 07:00 and 19:00, which forms double yellow lines before the Field End Road junction.
- 3.1.3 Approximately 600m to the west of the site access junction, Southbourne Gardens connects with Chelston Road which is a residential street subject to a 30mph speed limit that does not have any parking/waiting restrictions other than junction protection.

Photo 2: Southbourne Gardens



3.2 Field End Road

- 3.2.1 Field End Road is a two-way single carriageway that measures approximately 10m in width and is subject to a 30mph speed limit which reduces to a 20mph speed limit approximately 250m north of the Southbourne Gardens junction. There are a number of one-way, two-lane service roads, all measuring approximately 4.5m in width and accessible via a simple priority T-junction with the Field End Road central carriageway, located approximately 90m north of the Southbourne Gardens junction on the eastern and western side of the carriageway, and approximately 60m south of the junction on the eastern side of the carriageway.
- 3.2.2 Parking/waiting restrictions are in place on both side of Field End Road's central carriageway, operational Monday to Saturday between the hours of 09:00 to 17:00 in Zone E (adjacent to and south of the Southbourne Gardens junction) and between the hours of 08:00 and 18:30 in Zone E1 (approximately 100m north of the Southbourne Gardens junction). On-street parking bays are provided on both service roads to the north of the Southbourne Gardens junction subject 'Pay at Machine' restrictions (maximum stay 4 hours, no return within 1 hour) within the Zone E1 operational hours.
- 3.2.3 To the south of the Southbourne Gardens junction there are on-street parking bays on the western side of the central carriageway restricted to permit holders only during the Zone E hours of operation, there are also advisory white H-bar markings adjacent to a number of driveways on the western side of the carriageway. On-street parking bays and waiting/parking restrictions are present on the adjacent service road also subject to the Zone E hours of operation.
- 3.2.4 To the north Field End Road provides access to a number of residential streets including North View and Elm Avenue approximately 400m from the Southbourne Gardens junction respectively that both provide access to 'A' classified roads. Approximately 1km north of the Southbourne Gardens junction Field End Road connects with High Road Eastcote (B466) and Joel Street (B472) via a 3-arm roundabout. Approximately 3.5km south of the junction Field End Road meets Mandeville Road (A312) which provides access to the A40 approximately 1km further south.

Photo 3: Field End Road



3.3 North View

- 3.3.1 North View is accessible approximately 550m north of the site via Field End Road and is a two-way single carriageway that measures approximately 6.5m in width and is subject to a 30mph speed limit. The road is covered by a CPZ with restricted parking/waiting Monday to Saturday between the hours of 09:00 and 17:00 west of the Ivey Close junction. Imperial Drive (A4090)/Alexander Avenue (A4090) are accessible approximately 2.5km east of the site via North View, Eastern Avenue, Village End and Village End East. Imperial Drive provides a connection to Pinner Road (A404) approximately 1km south of the junction with Village Way East.

3.4 Elm Avenue

- 3.4.1 Elm Avenue is accessible approximately 550m north of site via Field End Road and is a two-way single carriageway that measures approximately 6.5m in width and is subject to a 30mph speed limit. NWAAT restrictions are in place on southern side of the carriageway between Field End Road and the Oak Grove junction (approximately 350m west of the Field End Road junction) and on the northern side of the carriageway for the entire length of the road. Approximately 750m to the west of the Field End Road junction Elm Avenue forms Park Way which provides access to Pembroke Road via the Windmill Hill/Park Way/Victoria Road junction approximately 1km west of the Elm Avenue/Field End Road junction. Approximately 650m further west Pembroke Road provides access to West End Road (A4180).

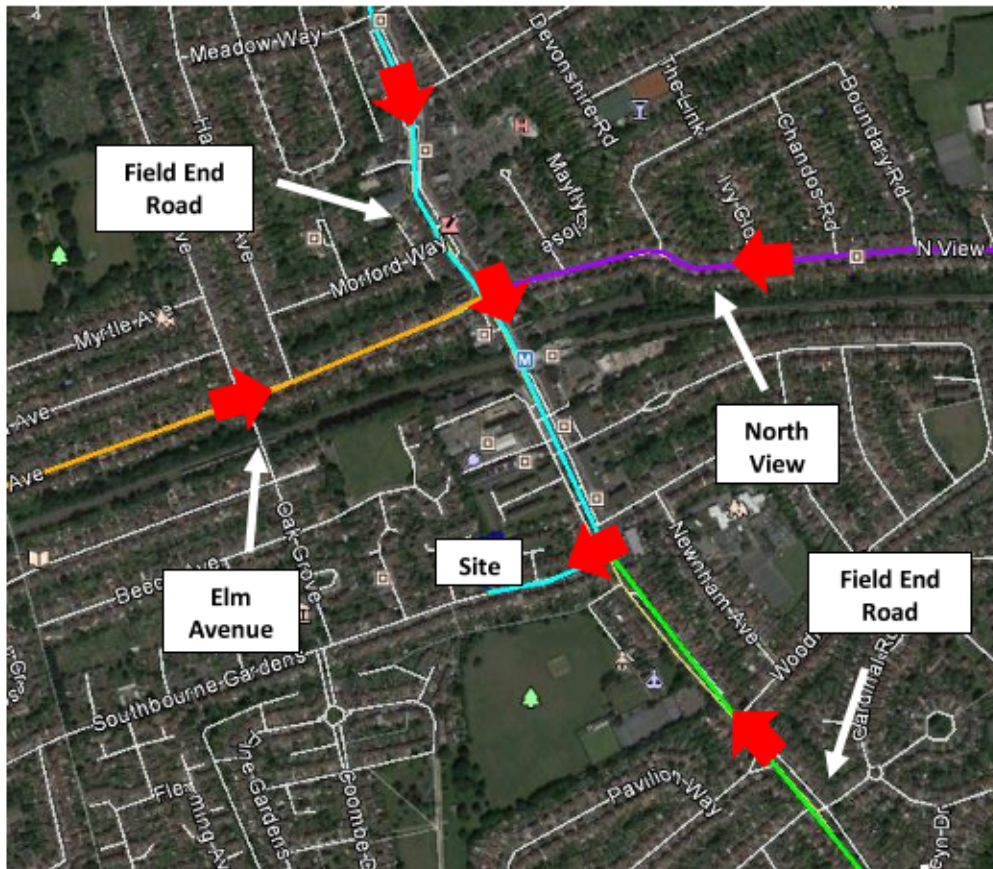
4. CONSTRUCTION TRAFFIC ROUTE

4.1.1 All construction vehicles accessing the site would be required to do so via Field End Road with the preferred routes for construction traffic being as follows:

- **Approaching from the north:** Vehicles travelling southbound on Field End Road are to take at right turn into Southbourne Gardens, vehicles accessing the site will then be required to make a right turn onto the site access road.
- **Approaching from the east:**
 - Vehicles traveling westbound on North View are to turn left at the Field End Road/Elm Avenue junction, vehicles accessing the site are to make a left turn manoeuvre into Southbourne Gardens followed by a right turn onto the site's access road.
 - Alternatively, vehicles approaching from the east could follow the 'approaching from the north' or 'approaching from the south' directions, depending on the wider routing.
- **Approaching from the south:** Vehicles travelling northbound on Field End Road are to take a left turn onto Southbourne Gardens accessing the site via a right turn manoeuvre onto the site access road.
- **Approaching from the west:** Vehicles travelling eastbound on Elm Avenue are to turn right at the Field End Road junction, now travelling southbound. Vehicles accessing the site will be required to make a right turn manoeuvre into Southbourne Gardens followed by another right turn manoeuvre onto the site's access road.
- **Egress routes:** Information provided by the client highlights that all vehicles involved in the construction of the site would be able to turn within the site curtilage. Therefore the egress routes from the site will be the same as above but in reverse.

4.1.2 It is advised that all construction vehicles accessing the site would do so via Field End Road and a short (approximately 170m long) section of Southbourne Gardens. The routes described above (and illustrated in Figure 2) form appropriate routes for use by construction vehicles.

Figure 2: Construction Traffic Routes



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

- 4.1.3 It is considered that Field End Road offers excellent connections to the wider highway network to the north and south. Although accommodating two-way construction vehicle movements on Southbourne Gardens to the west of the site is unlikely to be a major problem, to reduce the potential for conflict on the route it is recommended that construction vehicles avoid travelling through this residential areas by utilising the above routes and turning within the site.

5. CONSTRUCTION LOGISTICS PLAN

5.1 Vehicle Type

- 5.1.1 Information provided by the client suggests that small vehicles including “cars, pickup trucks and short/long wheel based vans” can be expected on-site during the construction phase of the development. These are typically expected to be commercial vans and belong to members of the building trade (e.g. electrical/plumbing contractors etc.).
- 5.1.2 In addition to the above “24ft flat back Lorries and standard skip vehicles” associated with the delivery/removal of materials are expected to be used during the construction period. It is not expected that any deliveries to the site will be abnormal or exceptional loads that require larger vehicles such as HGVs.

5.2 Vehicle Trips & Times of Working

- 5.2.1 Information provided by the client has highlighted that daily movements of small vehicles associated with the arrival and departure of construction staff and twice weekly movements of larger vehicles associated with the delivery of parts and construction materials are expected at the site.
- 5.2.2 In order to protect local amenity, it is proposed that all construction and demolition activities which are audible at the site boundary shall only be carried out between the hours 08:00 and 18:30, Monday-Friday and between the hours of 08:00 and 13:00 on Saturdays. No demolition or construction activities should take place on a Sunday, Public or Bank Holiday.

5.3 Unloading/Loading Arrangements & Turning Provision

- 5.3.1 The unloading of materials will take place on-site by either mechanical equipment or by construction staff. Materials will not be delivered onto or stored on the public highway. Due to the location of the development it is unlikely that the unloading or loading of materials will compromise the safety of the public highway.
- 5.3.2 All vehicles associated with the construction of the development are to access the site via Southbourne Gardens, preform a turn manoeuvre on site and egress via Southbourne Gardens in a forwards gear.
- 5.3.3 Contractors will work with reference to best practice guidance including the ‘*Considerate Constructors Scheme – Code of Considerate Practice*’ (CCS, 2017), which makes specific reference to minimising the impact of deliveries, parking and working within the highway.
- 5.3.4 It is proposed that all deliveries to the site shall be between the hours 08:00 and 18:30, Monday-Friday and between the hours of 08:00 and 13:00 on Saturdays, in order to protect the local amenity. No demolition or construction activities should take place on a Sunday, Public or Bank Holiday.

5.4 Construction Traffic Access Arrangements

- 5.4.1 The proposed access for the construction phase will be via Southbourne Gardens, and this will be utilised for all vehicles (staff and construction) that are arriving to and departing from the site during the construction period.
- 5.4.2 Staff will only be permitted to access the site working areas after receiving an induction and site notice boards will be displayed at the site entrance displaying the project particulars, contact details, access and egress procedure, site rules and all necessary health and safety information.

5.5 Parking Arrangements for Construction Staff

- 5.5.1 As highlighted in the Transport Letter (Yes Engineering, 2019) submitted to support the application the site has a PTAL rating of 2 (poor) meaning the site has a poor accessibility to public transportation. Therefore, staff are likely to travel to the site in cars or small vans and these trips would typically occur at the start and end of the working day and therefore are not to coincide with the movement of goods vehicles. Car sharing amongst staff is to be promoted at the site and could form a realistic travel mode for those staff employed by the same company.
- 5.5.2 Information provided by the client suggests that there is to be a maximum of 10 people on site at any given time, vehicle parking for all site workers will be accommodated on-site within the temporary compound area, to ensure staff do not park on nearby residential streets.

6. MITIGATION MEASURES

6.1 Measures to Control Demolition & Construction Noise

6.1.1 Given the residential location of the site, the following measures should be implemented to reduce noise during the demolition and construction phases of the development:

- Vehicles and mechanical plant will be maintained in a good and effective working order and operated in a manner to minimise noise emissions. The contractor will ensure that all plant complies with the relevant statutory requirements;
- All tools will be fitted with silences/mufflers where possible;
- Care would be taken when unloading vehicles to avoid unnecessary noise;
- Reduce the speed of vehicle movements;
- Local hoarding, screens or barriers should be erected to shield particularly noisy activities; and
- The times in which construction and demolition activities can be carried out, outlined in Section 5.2, will be adhered to.

6.2 Measures to Control Dust & Dirt

6.2.1 The following measures are to be implemented by the Principal Contractor in order to avoid/reduce dust pollution and other airborne debris:

- Ensure that all materials transported to and from site are in enclosed containers or fully sheeted;
- Ensure materials have a minimum of packaging;
- Ensure all polystyrene and similar lightweight materials are weighted down;
- Making sure all dust generating materials are adequately packaged;
- Ensure loads are covered where spoil or demolition material is being removed;
- Ensure that the Southbourne Gardens carriageway is suitably swept if required;
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site; and
- Ensure all vehicles switch off engines when stationary - no idling vehicles.

- 6.2.2 A wheel cleaning procedure is to be used in order to reduce the amount of mud/dirt that could potentially be deposited on the highway by vehicles exiting the site. Prior to exiting the site, vehicles will be inspected for heavy deposits on their wheels and if present the deposits will be removed, either manually or with a power washer. Any excess mud/dirt will be collected and appropriately disposed of. It is understood that mechanical sweepers will be regularly used to clean the highway within the vicinity of the site in order to limit mud/dirt being transported out of site onto the local highway network.

6.3 Measures to Control Waste Storage, Recycling & Disposal

- 6.3.1 In line with best practice, the Principal Contractor will minimise and reduce waste generation and recycle as much waste as possible. To help reduce trips, vehicles delivering construction materials to the site will leave with waste where possible, to reduce empty running.
- 6.3.2 The Principal Contractor will undertake a segregation system to separate waste on site in order to maximise the reuse of construction and demolition waste within the development.
- 6.3.3 The collection and removal of waste and refuse from the site will also be coordinated by the Principal Contractor to avoid conflicts with other deliveries to site. All waste to be removed from the site will be undertaken by fully licenced waste carriers and taken to licenced waste facilities.

6.4 Measures to Protect Pedestrians

- 6.4.1 The location of the site away from the public highway means that the construction is unlikely to significantly impact on pedestrians using the Southbourne Gardens footways. A banksman will direct larger vehicles in and out of the site and therefore ensure that pedestrians are adequately protected within the vicinity of the access. The footways on Southbourne Gardens within the immediate vicinity of the site access are to be kept clear of obstruction throughout the construction period. The footways will also receive regular sweeping to ensure that any debris is cleared from pedestrian areas. Although it is not expected to be required, temporary signing/barriers could also be provided to further safeguard pedestrians.

6.5 Measures to Avoid Road Damage

- 6.5.1 Care must be taken during the demolition and construction phases of the development to ensure no damage is caused to any footpaths or carriageways within the vicinity of the site and therefore no large vehicles (i.e. delivery vehicles) are to overrun the footways on Southbourne Gardens (other than to access the site). Any damage caused to footways and/or carriageways within the vicinity of the site as a result of the development is to be rectified to the Council's satisfaction, at the cost of the applicant.

6.6 Measures to Protect Trees

- 6.6.1 The retained and protected trees and vegetation are to be protected throughout the course of the development, and as such Condition #5 of the planning consent requires the following:

“Trees, hedges and shrubs shown to be retained on the approved plan(s) shall not be damaged, uprooted, felled, lopped or topped without the prior written consent of the Local Planning Authority. If any retained tree, hedge or shrub is removed or severely damaged during (or after) construction, or is found to be seriously diseased or dying, another tree, hedge or shrub shall be planted at the same place or, if planting in the same place would leave the new tree, hedge or shrub susceptible to disease, then the planting should be in a position to be first agreed in writing with the Local Planning Authority and shall be of a size and species to be agreed in writing by the Local Planning Authority and shall be planted in the first planting season following the completion of the development or the occupation of the buildings, whichever is the earlier. Where damage is less severe, a schedule of remedial works necessary to ameliorate the effect of damage by tree surgery, feeding or groundwork shall be agreed in writing with the Local Planning Authority. New planting should comply with BS 3936 (1992) 'Nursery Stock, Part 1, Specification for Trees and Shrubs'. Remedial work should be carried out to BS 3998:2010 'Tree work - Recommendations' and BS 4428 (1989) 'Code of Practice for General Landscape Operations (Excluding Hard Surfaces)'. The agreed work shall be completed in the first planting season following the completion of the development or the occupation of the buildings, whichever is the earlier.”

- 6.6.2 The planning application for the approved development was supported by an Arboricultural Report (ADTC, 2017), which incorporates a Tree Survey, an Arboricultural Impact Assessment, a Tree Protection Plan and an Arboricultural Method Statement. The construction of the development is to be undertaken in accordance with condition #5 and the Arboricultural Report, which should be read in conjunction with this CLP and has been provided as Appendix 2.

7. REFERENCES

CCS (Considerate Constructors Scheme), 2017. Considerate Constructors Scheme – Code of Considerate Practice’.

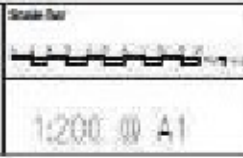
Yes Engineering, 2019. Land at Garage Block, Southbourne Gardens, Ruislip, HA4 9SQ (Reference 72211/APP/2017/3911) – Transport Letter (15.04.19).

AMENDMENTS	
A	Scheme revised 01/02/19



**PROPOSED
SITE PLAN**

Southbourne Gardens, Ruislip, HA4 9SW



Dwg. No.	18/3217/103A	REVISION
Scale	1:200	A
Date	06/11/18	
Drawn by	S.Bieszozad	C

Appendix I – Site Layout Plan



Arboricultural Report incorporating:

Tree Survey

Arboricultural Impact
Assessment

Tree Protection Plan

Arboricultural Method
Statement

Site:

Garages at Southbourne
Gardens, Ruislip, London,
HA4 9SW

Produced by:

Alastair Durkin BSc (Hons) MArborA

Reference: AIA/003/2017/Rev1
Dated: 28th October 2017

Table of Contents

EXECUTIVE SUMMARY	1
1.0 Instruction and Purpose of Report	1
2.0 Documents Supplied	1
3.0 Scope and Limitations	2
4.0 Qualifications and Experience	2
5.0 Tree Survey Method	2
6.0 Site Description	3
7.0 The Proposal	4
8.0 Subject Trees	4
ARBORICULTURAL IMPACT ASSESSMENT	6
9.0 Tree Retention, Removal and Mitigation	6
10.0 Tree Pruning Works	6
11.0 Root Protection Area Incursion	7
12.0 Post Development Pressure	7
13.0 Conclusions	7
ARBORICULTURAL METHOD STATEMENT	9
14.0 Introduction to AMS	9
15.0 Pre-commencement Meeting	9
16.0 Protection of Trees During Development	9
17.0 Tree Protection Fencing	10
18.0 Ground Protection	10
19.0 Excavation within RPAs	10
20.0 Underground Services	11
21.0 Site logistics	11
22.0 Sequencing of Works	11
23.0 Further Recommendations	12
24.0 List of Contacts	12
APPENDIX A: Tree Survey Schedule	13
APPENDIX B: Tree Survey & Tree Protection Plan	14
APPENDIX C: Tree Protection Fencing Detail	15
APPENDIX D: Root Protection Area Table	16
APPENDIX E: Protected Trees Sign	17

EXECUTIVE SUMMARY

Four trees and one group of shrubs/trees of low landscape importance are to be removed from within the site and from within neighbouring property in order to facilitate development.

Retained trees will be protected in accordance with BS 5837.

Improvement to the rooting area of T1 by removal of hard standing and replacement with soft landscaping will be to the benefit of the tree and will help to ensure that the amenity it provides to the local area will continue for many years to come.

It is anticipated that the arboricultural impact of the proposal will be neutral overall due to a combination of the measures put in place to protect the existing trees, rooting environment enhancements within the RPA of T1, and the mitigation for tree loss by well designed replanting of high quality trees.

1.0 Instruction and Purpose of Report

- 1.1 This report has been commissioned by Mr Vincent O’Sullivan of VOSS Construction.
- 1.2 I have been instructed to visit the garages site at Southbourne Gardens, Ruislip and to survey the existing trees and those growing nearby in order to assess the arboricultural implications of the proposed development scheme.
- 1.3 I am to provide details of any necessary tree protection measures and produce any necessary arboricultural method statements for the purposes of planning submission.
- 1.4 I am to include any further information within my report, which I deem may add clarity to the information gathered on site and presented within the report.
- 1.5 I am to submit details of any necessary tree management, mitigation, amelioration or working methods that are considered necessary in order to facilitate the development proposals, whilst retaining a healthy tree stock.

2.0 Documents Supplied

- 2.1 Of the documents supplied, those considered most pertinent to this report are:
 - Topographical survey (BA22961216_01)
 - Proposed block plan (637-102 Rev H)
 - Proposed ground floor plan (637-L103)
 - Proposed first floor housing plan ()
 - Proposed elevations (E1-E2; E3-E4; E5-E7)

3.0 Scope and Limitations

- 3.1 This report relates only to the arboricultural elements of the proposed development site.
- 3.2 The contents of this report are based only on the information available at the time of the site visit.
- 3.3 A full detailed tree hazard inspection and risk evaluation is beyond the scope of this report and no detailed assessment has been undertaken.
- 3.4 It is understood via an online search using the lbhillingdon.maps.arcgis.com function that there are no Tree Preservation Orders or conservation area controls in place at the proposal site.
- 3.5 The survey was undertaken in accordance with the recommendations contained within *BS5837: 2012 Trees in relation to design, demolition and construction – Recommendations* (BS5837).
- 3.6 Where feasible any pruning proposals will accord with the recommendations contained within *BS3998: 2010 Tree work – Recommendations* (BS3998).
- 3.7 The authority of this report ceases after one year from the date of the inspection or when any site conditions change, or pruning or other works unspecified in this report are carried out to, or affecting, the subject tree(s), whichever is the sooner.

4.0 Qualifications and Experience

- 4.1 This report is based on my observations at the time of my visits, in the context of my own experience. A summary of my qualifications, training and experience can be viewed at <http://www.adtrees.co.uk>, or found within my LinkedIn profile: <https://uk.linkedin.com/in/adtreeconsulting>

5.0 Tree Survey Method

- 5.1 All my observations were conducted from ground level. No detailed inspection of the subject trees was undertaken.
- 5.2 The weather at the time of my survey was fair.
- 5.3 All observations were conducted from within the site boundaries or public places. No access was made to private properties and therefore any commentary on trees within neighbouring sites was made in the context of what could be observed at distance and with buildings obstructing the view.
- 5.4 The positions of the subject trees detailed within the schedule (Appendix A) and within the tree protection plan (Appendix B) are those plotted on the topographical survey.

- 5.5 The subject trees measured at over 75mm stem diameter were categorised in accordance with the recommendations contained within Table 1 of BS5837. Large shrubs and hedges have only been plotted on the plans where they are considered to be important amenity features, such as where they provide boundary screening.
- 5.6 Heights were estimated using a laser rangefinder unless otherwise specified.
- 5.7 Stem diameters (SD) were measured in accordance with the recommendations contained within Annex C of BS5837.
- 5.8 Crown diameters were measured by pacing, or with a laser rangefinder where sight lines allowed. Where access was difficult or unavailable distances were estimated.

6.0 Site Description

- 6.1 The site is situated within a mixed residential and commercial use area within Thornton Heath (Figure 1).



Figure 1 – 'Birds Eye' view of the approximate site boundary facing north

- 6.2 According to the Geology of Britain viewer¹ the underlying bedrock consists of Lambeth Group – clay, silt and sand. The Landis Soilscales Viewer² further indicates that like much of the inner London area this bedrock is overlaid in the upper 30cm horizon with loamy and clayey deposits. In urban areas, however, soils are frequently disturbed to considerable depth due to intensive development. As such, no great reliance should be placed on the information currently available.
- 6.3 The loamy, clay soils are not free draining in this area and can be prone to compaction - where the passage of surface traffic causes the loss of pore spaces

¹ <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

² <http://www.landis.org.uk/soilscales>

within the soil, and deterioration of the soil structure. This can lead to damage or death of underlying tree roots as a consequence. The protection of areas where roots proliferate is therefore a priority.

- 6.4 In general loamy clay soils are of high fertility and are a good medium for tree root growth, provided drainage is adequate. At the proposal site there are few if any locations where normal root distribution can be expected, due to impedance by subterranean obstructions and the existence of hard standing. Nevertheless, where roots do proliferate within the indicated soil type I would expect a healthy root mass to be present. In the hard landscaped areas I would expect root distribution to be erratic and unpredictable with roots exploiting areas outside their open grown range in places. As such great care must be taken during development activities to avoid harm being caused.

7.0 The Proposal

- 7.1 The proposal is for the demolition of the existing garage buildings and the erection of an apartment building comprising 6 x 2 bed residential flats with associated communal amenity space and parking.

8.0 Subject Trees

- 8.1 A schedule of the 16 individual trees and one group of trees growing on and immediately adjacent to the proposal site is included at Appendix A.
- 8.2 The trees have not been tagged, as positions are readily identifiable on site from the tree survey/tree protection plan at Appendix B.
- 8.3 Each of the trees surveyed has been given a category in accordance with the recommendations within of Table 1 of BS5837. These categories are colour coded for plan purposes.
- 8.4 In summary the four categories as defined within BS5837 are:

A – Trees of high quality with an estimated remaining life expectancy of at least 40 years (shown green).

B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 years (shown blue).

C – Trees of low quality with an estimated remaining life expectancy of at least 10 years, or trees with a stem diameter below 150 mm (shown grey).

U – Trees to be felled irrespective of development proposals, as they are in such a condition or location that they cannot realistically be retained in the context of the current land use for longer than 10 years (shown red).

- 8.5 If considered relevant in the context of the proposals subcategories to the grades A, B and C are provided by the addition of suffixes 1, 2 or 3. The definitions can be summarised as:

- 1 – Mainly arboricultural qualities
- 2 – Mainly landscape qualities
- 3 – Mainly cultural values, including conservation

- 8.6 In accordance with BS5837, A and B category trees should be considered as a constraint to the development of the site and they should therefore provide a substantial contribution to the site. As a result, A and B category trees should be retained and incorporated into the scheme where possible.
- 8.7 In general, C and U category trees are considered to be of relatively low quality, or are young specimens that can be easily replaced. A balance should therefore be struck between the objectives of the development and the retention of lower value C category trees. Category U trees should not be considered as a constraint on development.
- 8.8 Notwithstanding the BS5837 categorisation it is generally considered desirable to retain trees wherever reasonably possible to ensure continuity of tree cover and to provide a mature landscape to the development. Where trees are removed, if feasible, they should be replaced in such a way that they can achieve their full growth potential.
- 8.9 Of the trees surveyed I have defined 14 x trees as 'C' category and 2 x trees as 'B' category. The group of Portuguese laurel (G1) has been given a 'C' category (Table 1). However, without the benefit of close inspection, due to restricted access to the offsite trees, this categorisation could be subject to change.

Table 1 - Summary of Tree survey BS5837 categorisation

	Total	A	B	C	U
Trees	16	0	2	14	0
Groups	1	0	0	1	0

- 8.10 T1 is a mature and reasonably healthy, although heavily ivy clad, Lime tree (*Tilia platyphyllos*) growing within the site, or possibly straddling the site boundary, and to the north east of the existing garage buildings. It is the most visually important tree in close proximity to the proposal site and neighbouring properties but it is nevertheless a tree of reduced overall landscape importance due to its building locked location. It does, however, afford considerable value as an amenity to the proposal site. I have assigned this tree a BS5837 category of 'B1'.
- 8.11 The remaining trees surveyed have all been given a BS5837 category of 'C' or 'U'. These trees are relatively low quality specimens or are outgrowing their location, as in the case of T5 (Lawson Cypress). The generally poor quality of the tree stock can be attributed to poor growing conditions, suppression by other nearby trees, or both limiting factors together.

ARBORICULTURAL IMPACT ASSESSMENT

9.0 Tree Retention, Removal and Mitigation

- 9.1 Of the 4 individual trees and 1 group surveyed that are growing within the proposal site, only the most important Lime tree (T1) is to be retained. This is a tree of significant stature and its retention is therefore a priority. The tree has been substantially reduced in the past leaving truncated branches and multiple weak branch attachments, but with careful management and cyclical pruning this tree can afford considerable amenity to the development for many years to come.
- 9.2 Of the trees surveyed a total of 4 trees are to be removed including the offsite T6 (Lawson cypress) with the landowner's permission (Table 2). This tree is not a high value specimen and is already outgrowing its location, causing light loss to main habitable rooms of the neighbouring dwellings. Its retention is also incompatible with the access width necessary to serve the development. Similarly the retention of T3, T4 and T5 cannot be achieved whilst gaining the access width necessary to serve the development. All of the trees to be removed fall within the 'C' BS5837 category. Although T3, T4 and T5 are visible from Southbourne Gardens they are not of high quality and have little overall landscape value, or long-term retention potential.
- 9.3 G1 is a group of Portuguese laurel shrubs/trees growing very close to the western boundary. Visually this group is of moderate quality, but its retention cannot be achieved whilst providing the necessary parking for the proposal, and allowing for the necessary working area around the footprint of the main construction area.
- 9.4 Notwithstanding the relatively low value of the trees to be removed, provision can be made for replacement planting with high quality, small garden variety trees, and low lying shrubs within a detailed landscaping scheme. These trees could be located within the amenity space to the east of the proposed apartment block.
- 9.5 It is also proposed to improve the growing conditions of the Lime tree (T1) by the creation of a soft landscaped area, where the majority of the RPA to the south of the tree is currently laid to concrete. This will provide the tree with superior growing conditions, reduce levels of stress associated with poor rooting environments and will therefore help to ensure its long-term retention.
- 9.6 In summary none of the trees to be removed should pose a significant constraint on development of the site, particularly considering the scope for replacement planting.

10.0 Tree Pruning Works

- 10.1 No tree pruning works are required in order to facilitate development.

Table 2 – Tree works proposed

Tree works proposed	Tree ID
Trees to be removed to facilitate construction	T3, T4, T5, T6, G1

11.0 Root Protection Area Incursion

- 11.1 Redevelopment of the site will require works within the RPA of T7-T16.
- 11.2 In respect of T10-T16 only replacement of the existing hard standing surface will be undertaken. No disturbance of the sub base is necessary. As such it is highly unlikely that significant roots will be harmed, in the unlikely event that they are present at all, due to the inhospitable rooting environment associated with hard standing areas. During the main development phase the hard standing will act as effective ground protection for the trees.
- 11.3 Some works may be necessary within the RPA of T9, an offsite *prunus sp.* tree. However, the rooting of this tree is already heavily restricted by the existing access road and it is unlikely that major roots have proliferated in the area affected. Furthermore the ample room available within the garden for roots to proliferate means that should roots need to be removed then the tree is likely to be able to adapt within in a short timeframe. In any case as the tree is BS 5837 'C' category and not of high landscape value it is not considered reasonable for technical measures such as no dig surfacing to be put in place in order to protect the RPA.

12.0 Post Development Pressure

- 12.1 The term 'post development pressure' in relation to retained trees can be described as a situation where potentially harmful or inappropriate tree works are likely to be considered necessary by any future occupiers in order to improve the relationship between the tree and nearby structures. Works may be required in order to reduce apprehension and the perception of risk associated with tree failure, to reduce shading, or to reduce the nuisance associated with debris falling from trees. Where these trees are protected by virtue of the planning process, or through statutory protection such as TPOs, the local authority may find the requirements for tree works difficult to resist. As a consequence, officers can raise concerns within the planning process in order to prevent situations where potential exists for these problems to arise.
- 12.2 In the case of the current proposal, by virtue of the building design it is not anticipated that any significant post development pressure for tree removal will occur.

13.0 Conclusions

- 13.1 Four trees and one group of shrubs/trees of low landscape importance are to be removed from within the site and from within neighbouring property in order to facilitate development.
- 13.2 Where possible with regard to the layout of the proposal the trees to be retained will be protected in accordance with BS 5837 (see AMS).

- 13.3 The improvement to the rooting area of T1 by removal of hard standing and replacement with soft landscaping will be to the benefit of the tree and will help to ensure that the amenity it provides to the local area will continue for many years to come.
- 13.4 It is anticipated that the arboricultural impact of the proposal will be neutral overall due to a combination of the measures put in place in order to protect the existing trees and enhance the rooting environment of T1, and the mitigation for tree loss by well designed replanting of high quality trees.

ARBORICULTURAL METHOD STATEMENT

14.0 Introduction to AMS

- 14.1 In order to safeguard both the above and below ground parts of the retained trees during development works, it will be necessary to implement tree protection measures as detailed below.
- 14.2 All site personnel should be made aware of the contents of this AMS and be given an arboricultural induction by the Site Manager based on its contents.
- 14.3 Local planning Authorities (LPAs) have the power to serve **Temporary Stop Notices** in order to protect trees that are being harmed by development because tree protection measures are not being carried out. Adhering to the requirements of the AMS will ensure that tree protection related enforcement action is avoided.

15.0 Pre-commencement Meeting

- 15.1 A pre-commencement site meeting involving representatives of the Development Company, the LPA and the Arboricultural Consultant can be held if deemed necessary by the LPA in order to ensure that the tree protection process, sequence and methods of construction are understood and agreed.

16.0 Protection of Trees During Development

- 16.1 The BS5837 recommends a Root Protection Area (RPA) is provided for each retained tree. The RPA is based on an area equivalent to a circle with a radius of 12 times the stem diameter, measured at 1500mm above ground level (Appendix D), and a more complex calculation is used for multi stemmed trees. The RPA represents the minimum area of the root system that must be retained in order to ensure that trees suffer no significant adverse effect if all the roots outside the RPA were to be severed. In practice it is highly unusual for all roots outside the RPA to be lost, and as such the mass of roots retained outside the RPA can frequently compensate for relatively low-level RPA encroachments. In all cases, however, an individual assessment should be made.
- 16.2 The RPA for each retained tree is initially plotted as a circle centred on the stem of the tree. Where pre-existing subterranean features or other factors indicate that root distribution has occurred asymmetrically, a polygon equivalent to the defined area can be produced to more accurately represent the more likely root distribution. In the case of T1, where roots may have been constrained by the existing hard standing, the polygon has been retained as a circle due to the slightly broken up and therefore permeable nature of the hard standing. In the case of T7-T16, as there is little further RPA encroachment than the existing hard standing and no development activity is to occur outside the site boundaries it is not considered necessary to adjust RPAs.
- 16.3 In order to protect trees from damage caused by the passage of vehicles and machinery, or the storage of materials during the development process, it will be necessary to form a construction exclusion zone (CEZ) based on the RPA of the trees

identified during the tree survey and indicated on the Tree Protection Plan (TPP) (Appendix B).

- 16.4 In this case the formation of a CEZ will be achieved by using a combination of fencing and ground protection utilising the existing hard surface around T1 and T10-T16. An example of the protective fencing design is given at Appendix C and will be utilised as indicated on the TPP.
- 16.5 During development it can become necessary to phase certain stages or methods of tree protection between the demolition, construction and landscaping phases, and to improve access generally. If this becomes necessary the fencing will be adjusted back and further ground protection installed in its place in order to allow a greater working area. No such phasing of works has been anticipated in this instance, however.
- 16.6 In any event it must be made clear to all parties entering the site that the purpose of the tree protection is to prevent any unsupervised development activities within the CEZ, and that the tree protection, whether barriers or ground protection, must be retained intact and fit for purpose without exception, unless otherwise specified by a supervising Arboricultural Consultant in consultation with the LPA Tree Officer. Once barriers are removed any landscaping activities must also be carefully controlled within RPAs.

17.0 Tree Protection Fencing

- 17.1 The location of protective fencing to be installed on site is detailed within the TPP (Appendix B).

17.2 Alternative specification

- 17.3 Protective fencing shall consist of a 2.m high welded mesh panels on rubber or concrete feet, joined together with a minimum of two anti-tamper couplers with one metre separation, installed so that they can only be removed from inside the fence. The panels are to be supported on the inner side by stabilizer struts and attached to a base plate secured with ground pins in accordance with *figure 3* of BS 5837. 'Tree Protection Area – Keep Out!' signs shall then be fixed to every forth panel (Appendix E).

18.0 Ground Protection

- 18.1 Ground protection will take the form of the retention of existing hard surfacing during the main stages of construction.

19.0 Excavation within RPAs

- 19.1 Where excavation is undertaken within the root protection area (RPA) of T9 in order to construct the access a trench will be carefully dug by hand along the nearest line of RPA encroachment. This will minimise the potential for root severance and damage associated with machine bucket excavation.

- 19.2 Any roots encountered will be carefully and neatly cut back to the face of the excavation nearest the tree using a sharp pruning saw, loppers or secateurs.

Note: All hand excavation and pruning of roots will be supervised by the Site Manager, following an induction by the appointed Arboricultural Consultant, or directly supervised by the appointed Arboricultural Consultant.

- 19.3 Once the roots have been cut back any further excavation can continue with the use of machinery, provided any remaining RPA is either securely fenced off or is protected from compaction by the use of ground protection as detailed at Section 18 of this report.

20.0 Underground Services

- 20.1 Where possible all new services will be laid outside the RPAs of the retained trees. However, it is likely that some incursion will be required within the RPA of T1. If this is the case then all works will be undertaken in accordance with the guidelines contained within the National Joint Utilities Group publication *NJUG Volume 4 – Guidelines for the Planning, Installation and maintenance of Utility Apparatus in Proximity to Trees*.

21.0 Site logistics

- 21.1 Site logistics; including plant parking and storage of materials will be undertaken from the existing hard standing or temporary ground protection. Any ground protection required for piling rig placement will be specified by the piling company within a detailed method statement prior to construction.

22.0 Sequencing of Works

Table 3 - Sequencing of works, personnel and responsibilities

Stage	Action	Personnel
1	Issue arboricultural report and Tree Protection Plan and AMS to Site Manager	Client/Project Manager
2	Give Arboricultural Consultant (AC) at least one weeks notice of pre-commencement meeting if required	Client/Project Manager
3	Pre-commencement meeting (if required)	Site Manager, Tree Officer (if available) and AC
4	Arboricultural induction	All site personnel
5	Undertake tree removal	Site Manager to monitor
6	Erect protective fencing	AC to inspect
7	Construction phase	Site Manager
8	Removal of protective fencing and existing ground protection	Site Manager
9	Soft landscaping stage	Site Manager/landscaping company

23.0 Further Recommendations

24.1 The successful integration of the proposal with the retained trees will need to take account of the following recommendations:

- a) Underground service route locations.
- b) Site logistics; including piling rig placement if used, plant parking and storage of materials.
- c) All works and sequencing of work should be undertaken as specified within the method statements included within this report.

24.0 List of Contacts

Table 4 - List of contacts pertinent to the report

Contact	Name	Company/LPA	Contact	Report issued to?
Client	Vincent O'Sullivan	VOSS Construction Management Services Ltd	Vinosullivan14@gmail.com	Yes
Architect	Steve Badger	Studio 303 Ltd	stevebadger@studio303.co.uk	Yes
Planning Consultant	Georgia Barrett	Maddox Planning Consultants	Georgia@maddoxassociates.co.uk	Yes
Arboricultural Consultant	Alastair Durkin	AD Tree Consultants	alastair@adtrees.co.uk	N/A
Tree Officer	John Bartlett	London Borough of Hillingdon	jbartlett@hillingdon.gov.uk	No

APPENDIX A: Tree Survey Schedule

Appendix A - Tree Survey Schedule

Date: 3rd February 2017

Site: Southbourne Gardens, Ruislip

Surveyor: A. Durkin

Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)				Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (M ²)
T1	Lime	13	800 est	6	4	6	6	3	LM	N	Av	>40	B	9.6	289.5
Comments: heavily ivy clad to crown break (which prevented SD measurement). Substantially reduced in past, leaving truncated branches and multiple weak attachments. Recommendations: Remove ivy to allow inspection of stem and basal area. Continuation of cyclical pruning within 3 years to prevent failure of branches at weak attachment points and maintain manageable size.															
T2	Holly	7	280	2	2	2	2	2	EM	N	Av	>10	C	3.4	35.5
Comments: Small garden tree. Attractive, but very close to existing garage structure and will outgrow location circa 10 years growth.															
T3	Ash	8	360	3	3	3	3	3	EM	N	Av	>40	B	4.3	58.6
Comments: Weak fork at 2.2m with bark inclusion & associated compensatory growth. Pruning wounds partially occluded.															
T4	Pine	12	360	2	2	2	2	3	M	P	P	>10	C	4.3	58.6
Comments: Suppressed by T3 & T5. Clad with dead ivy. Forks at 3m. Poor quality tree.															
T5	Lawson cypress	13	390	2	3	2	3	3	M	N	Av	>20	C	4.7	68.8
Comments: Weak fork at 4m – higher chance of future failure at union. Roots starting to dislodge curb stone.															
T6	Lawson cypress	9	200	2	2	2	2	0	EM	N	Av	>10	C	2.4	18.1
Comments: Will soon outgrow its location close to front elevation of dwelling, with circa 10 years growth.															
T7	Portuguese Laurel	3.5	200	2	1	2	1	1	EM	N	Av	>40	C	2.4	18.1

Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)	Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (m²)			
Comments: Heavily reduced, forming hedge															
T8	Portuguese Laurel	6	200	3	1	2	1	1	EM	N	Av	>40	C	2.4	18.1
Comments:															
T9	Prunus sp.	7	300	3	3	3	3	2	M	N	Av	>40	C	3.6	40.7
Comments: Offsite tree															
T10	Lawson cypress	9	180 est	2	2	2	2	1	EM	N	Av	>20	C	2.2	14.7
Comments: Offsite tree															
T11	Lawson cypress	9	150 est	2	2	2	2	1	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T12	Holly	5	5 x 80 est	1	1	1	1	1	EM	N	Av	>20	C	2.1	14.5
Comments: Offsite tree															
T13	Lawson cypress	9	200 est	2	2	2	2	1	EM	N	Av	>20	C	2.4	18.1
Comments: Offsite tree															
T14	Holly	5	150 est	1	1	1	1	1	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T15	Holly	7	150 est	2	2	2	2	2	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T16	Hawthorn	8	300 est	4	4	4	4	2	M	N	Av	>40	C	3.6	40.7
Comments: Offsite tree															

Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)			Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (m ²)
G1	4 x Portuguese Laurel	7	250 av				2	EM	N	Av	>40	C	3	28.3
Comments:														

Notes	
	Y - Newly planted/Young - <i>Not fully established and capable of being transplanted or easily replaced</i> SM - Semi-mature – <i>In first quarter of usual life expectancy for species (LES)</i> EM - Early-mature - <i>In first third of LES</i> M - Mature - <i>Approximately half LES</i> LM - Late-mature - <i>In last third of LES</i> VA - Veteran/ancient – <i>Over usual LES</i>
Physiological Condition (PC)	(N) Normal / (S) Stressed / (P) Poor (leaf size, colour and density; shoot extension growth and the volume of deadwood present)
Structural Condition (SC)	(G) Good (no major defects observed) / (Av) Average (remediable defects) / (P) Poor (irremediable defects)
Height/Crown Spread (N,E,S,W) / Dimensions	Measured in metres (with laser or estimated (*)) when line of sight is poor)
BS Category	British Standard 5837:2012 Table 1 category. Refers to tree/group quality and value: A – High, B – Moderate, C – Low, U – Trees that cannot realistically be retained in the context of the current land use for longer than ten years. Sub category (1, 2, 3) is given if considered appropriate.
Stem diameter	Measured at 1.5m above ground level and used to calculate the root protection area (RPA). For multi-stemmed trees a cross-sectional area is calculated from the sum of the diameter of each stem to give a notional overall stem diameter.
Root Protection Radius (RPR)	A minimum radius from the tree trunk that should ideally be left undisturbed during the development process. Derived from a 12 x multiple of the stem diameter. Used to calculate the Root Protection Area (RPA)

APPENDIX B: Tree Survey & Tree Protection Plan

APPENDIX C: Tree Protection Fencing Detail

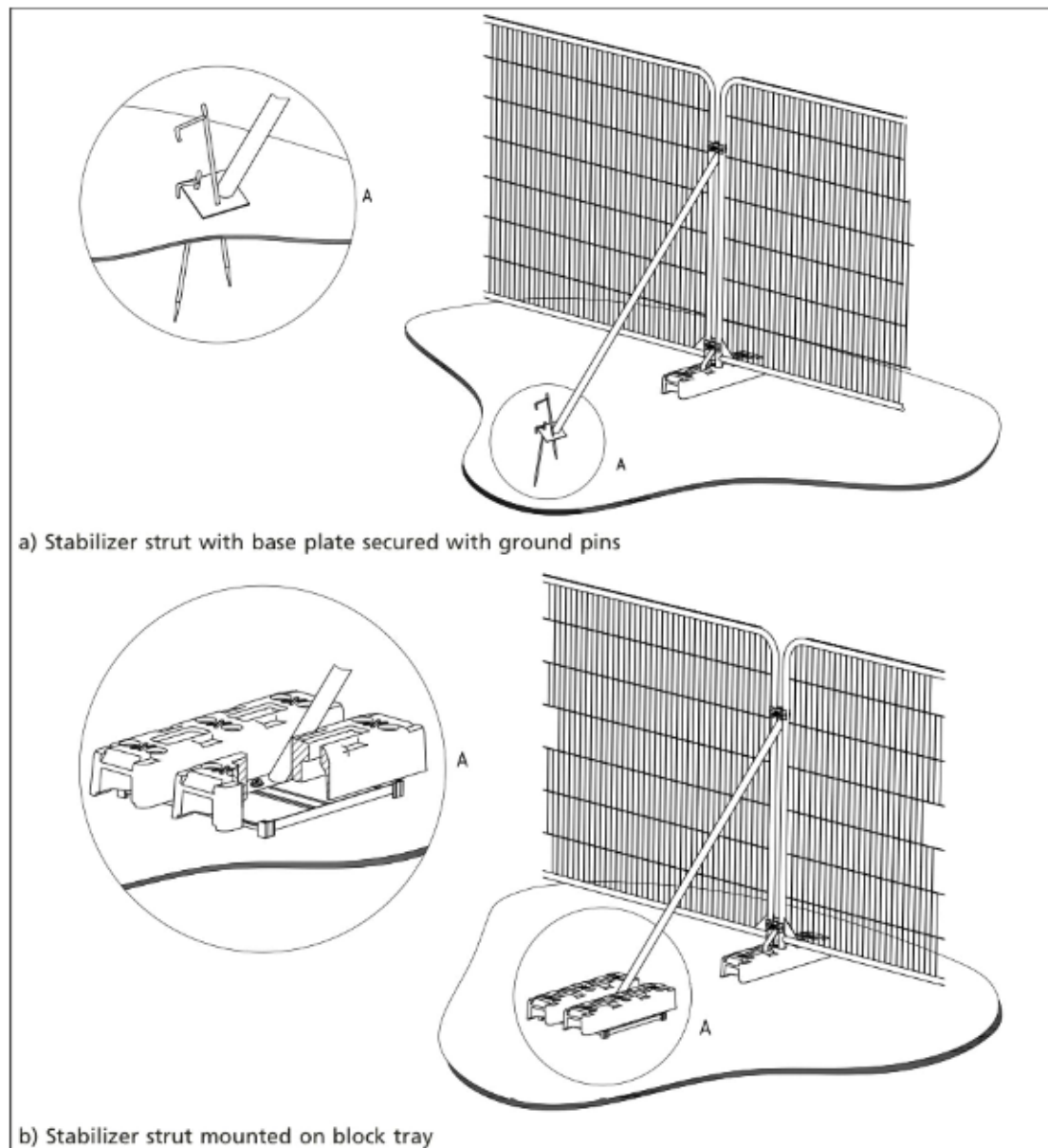


Figure 1 – Alternative specification for protective barrier

APPENDIX D: Root Protection Area Table

Table 4 – Root protection area (RPA) for single stemmed trees

Single stem diameter mm	Radius of nominal circle m	RPA m ²	Single stem diameter mm	Radius of nominal circle m	RPA m ²
75	0.90	3	675	8.10	206
100	1.20	5	700	8.40	222
125	1.50	7	725	8.70	238
150	1.80	10	750	9.00	255
175	2.10	14	775	9.30	272
200	2.40	18	800	9.60	290
225	2.70	23	825	9.90	308
250	3.00	28	850	10.20	327
275	3.30	34	875	10.50	346
300	3.60	41	900	10.80	366
325	3.90	48	925	11.10	387
350	4.20	55	950	11.40	408
375	4.50	64	975	11.70	430
400	4.80	72	1 000	12.00	452
425	5.10	81	1 025	12.30	475
450	5.40	92	1 050	12.60	499
475	5.70	102	1 075	12.90	519
500	6.00	113	1 100	13.20	547
525	6.30	124	1 125	13.50	573
550	6.60	137	1 150	13.80	598
575	6.90	150	1 175	14.10	625
600	7.20	163	1 200	14.40	652
625	7.50	177	1 225	14.70	679
650	7.80	191	1 250+	15.00	707

APPENDIX E: Protected Trees Sign



Appendix 2 – Arboricultural Report