

**ARBORICULTURAL  
IMPACT ASSESSMENT**

**65-69 PARKHURST ROAD,  
LONDON**

A Report to Parkhurst Road Limited

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Report Number: RT-MME-115349-05

November 2013

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IMPACT ASSESSMENT**

**65-69 PARKHURST ROAD,  
LONDON**

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1 OF 2

01 PARKHURST ROAD LIMITED  
02 MIDDLEMARCH ENVIRONMENTAL LTD

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*This report is the responsibility of Middlemarch Environmental Ltd,  
It should be noted, that whilst every effort is made to meet the client's brief,  
no site investigation can ensure complete assessment  
or prediction of the natural environment*

Contract Number C115349

November 2013

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## **1. INTRODUCTION**

### **1.1 PROJECT INTRODUCTION**

Middlemarch Environmental Ltd was commissioned by Parkhurst Road Limited to undertake an Arboricultural Impact Assessment in respect of the proposed development of land at 65-69 Parkhurst Road, Islington, London. Middlemarch Environmental Ltd completed an Arboricultural Survey of the site in September 2013 (Report Number RT-MME-115349-04).

Middlemarch Environmental Ltd was also commissioned to undertake the following reports:

- Extended Phase 1 Habitat Survey, Report Number RT-MME-115349-01.
- Initial Bat Survey, Report Number RTMME-115349-02.
- Code for Sustainable Homes Ecological Assessment, Report Number RT-MME-115349-03.

This report details the impact that the proposed development will have upon the sites existing tree stock and sets out recommendations for the subsequent mitigation or avoidance of impact and recommendations for suitable protection measures. The study has been completed in accordance with guidance contained within British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

### **1.2 SITE DESCRIPTION**

The site is located off Parkhurst Road in London and is centred at National Grid Reference TQ 303 859. The study site covers an area of approximately 0.58 ha and is irregular in shape. The site is situated in a residential area and it is bordered by Parkhurst Road to the south and by residential properties on the remaining three boundaries.

The northern and eastern boundaries are subject to a level change of between 1.0 m and 2.0 m falling away from the site to lower levels below which comprise public gardens and allotment areas. The site is bound by bricked built walls, metal fencing and razor wire. (The site is occupied by members of the armed forces on a regular basis).

At the time of the survey, the site was dominated by large areas of hardstanding with buildings towards the boundaries. A number of mature trees including Ash (*Fraxinus excelsior*) and Sycamore (*Acer pseudoplatanus*) were present along the northern and north-eastern edges of the study area.

The location of the trees surveyed can be found on Drawing Number C115349-05-01.

### **1.3 DEVELOPMENT PROPOSALS**

The proposed development of the site includes the construction of 150 mixed residential housing units (up to six storeys high) with associated hard and soft landscaping improvement works and a children's play area.

#### 1.4 DOCUMENTATION PROVIDED

This assessment is based upon the information provided by the client in addition to information collected by Middlemarch Environmental Ltd during a survey of the site undertaken in September 2013 Report Number RT-MME-115349-04. The documents and drawings considered are detailed within Table 1.1.

Author	Document	Drawing/Document Number	Date
Allford Hall Monaghan Morris	Ground Floor Plan	SK0075	22.11.13
Allford Hall Monaghan Morris	Elevations West - Section AA	13033	-
Allford Hall Monaghan Morris	Elevations East - Section BB	13033	-
Allford Hall Monaghan Morris	Massing Model with Context	1303-SK0065	11.13
AREA Landscape Architects	Landscape Layout	167-10 Rev B	27.11.13
Soil Technics	Ground Investigation Report	-	10.13

**Table 1.1: Documentation Utilised**

## 2. STATUTORY PROTECTION

### 2.1 TREE PRESERVATION ORDER AND CONSERVATION AREA DESIGNATIONS

Jon Ryan, (2013. *Pers. Comm.* Tree Officer, London Borough of Islington Council) confirmed in a telephone conversation on the 20<sup>th</sup> September 2013 that there are no Tree Preservation Orders within or closely surrounding the site.

Jon also confirmed that the site is not situated within a Conservation Area. However, he did highlight that the study area has a shared boundary with 53-63 Parkhurst Rd which is situated within the Hillmarton Conservation Area. Off site Tree Group 4 is located within this Conservation Area. No works are proposed to this group and as such the presence of a Conservation Area is not notable in relation to the trees present.

### 2.2 PROTECTED SPECIES

#### Bats

Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process. Consequently causing damage to a bat roost constitutes an offence.

The Initial Bat Survey undertaken by Middlemarch Environmental Ltd in October 2013, Report Number RT-MME-115349-02, concluded that although a number of trees contained rot-holes at present they did not offer suitable features for roosting bats.

#### Birds

Trees and hedgerows offer potential habitat for nesting birds which are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties. This legislation makes it an offence to intentionally or recklessly damage or destroy an active bird nest or part thereof.

As the trees on and adjacent to the site provide potential habitat for nesting birds all tree work should ideally be completed outside the nesting bird season (March to September inclusive). If this is not possible then the vegetation should be subject to a nesting bird inspection by a suitably experienced ecologist prior to commencement of works. If any active nests are identified then the vegetation, and a defined buffer zone, will need to remain in place until the young have naturally fledged.

### **3. ARBORICULTURAL IMPACT ASSESSMENT**

All trees within and closely surrounding the site have been surveyed and each has been identified with a unique number. The location of the trees can be found on Drawing Number C115349-05-01. A schedule of the trees surveyed can be found within Appendix 1 and details of Root Protection Areas (RPAs) for trees surveyed is located at Appendix 2.

#### **3.1 DEVELOPMENT DESIGN AND LONG-TERM IMPACTS**

##### **3.1.1 Potential Impact on the Amenity Value of Trees**

###### Impacts

The proposed development will not require the removal of any of the retained trees. Crown reduction works will be required to Trees 1 to 5 and 8 to allow construction of the proposed residential units. The works will generally be limited in extent and consequently will not adversely impact the visual amenity of the trees.

In addition Trees 1 to 8 overhang proposed amenity areas/play areas. As such some minor crown lifting works are required to Trees 1, 2, 5 and 6 to provide a minimum of 3.0m clearance over the amenity areas. These works will not impact upon the visual amenity or vitality of these specimens.

###### Mitigation/Avoidance

Complete appropriate pruning works to prevent any impact damage during construction and reduce post-development pressure on the retained trees.

##### **3.1.2 Proximity of Trees to Proposed Structures**

###### Impacts

###### *Branch Spread*

Trees 1 to 4 are mature and early mature ash and the crowns of these specimens will be located in close proximity of the residential building in the north western corner of the site. The canopy of Tree 4 will require pruning works to allow construction of the building and also to prevent branches colliding with the structure post construction. Tree 8, a mature sycamore, is likely to have achieved around its maximum branch spread. Minor pruning works may be required to the canopy of this tree to allow installation of scaffolding to construct the adjacent residential building. It is considered that any issues posed by the ultimate branch spread of these trees can be appropriately managed through a cyclical pruning regime without adverse impact to the health or visual amenity of these specimens.

###### *Shading*

Some shading of the proposed development will occur due to the retention of the trees. This will mainly be restricted to the areas under the canopies of the trees as the trees are located to the north of the development. The shade cast by these trees may limit the amenity use of the gardens to the north of the residential development. It is considered that the benefits gained, such as the screening and presence of

mature landscape features, outweighs the potential issues relating to the shading of the amenity space. In addition the area will be subject to shading from the proposed six-storey building and as such the shading cast by the trees is not considered to be a notable issue.

*Fruits, Pollen, Sap etc.*

No significant problems with fruit fall, pollen dispersal or sap exudation are likely to occur across the site.

Mitigation/Avoidance

Complete appropriate crown reduction works to Trees 4 and 8 to allow installation of scaffolding for construction. Some minor lateral reduction of tree canopies maybe required in the future.

**3.2 POTENTIAL IMPACTS FROM CONSTRUCTION PROCESSES OF THE PROPOSED DEVELOPMENT**

**3.2.1 Potential Root and Canopy Protection**

To prevent harm occurring to retained trees during development it is recommended that construction works are excluded from the Root Protection Areas (RPA) of retained trees. Additionally works should not be undertaken beneath the canopy spread of retained trees where this can be avoided.

The RPA represents the minimum area around trees that must be left undisturbed to ensure their survival. The roots typically occupy the top 600 mm of soil and the fine roots which absorb water, oxygen and nutrients are situated in the top 100 mm of soil. Any incursion into the rooting zone of a tree can cause a notable impact upon a trees health.

Impacts

Generally the proposed development of the site has been arranged so that major works are not required within the RPAs of retained trees. However the proposed construction requires that works are undertaken in proximity to retained trees, Trees 1 to 8. Works to construct the building, and its foundations, will be located within the RPA of Trees 4, 7 and 8 and in proximity to the canopy of Trees 4, 5, 7 and 8. In addition new hard surfacing and bike sheds are proposed within the RPAs of Trees 1 to 4.

It will not be possible to erect tree protection fencing to the full extent of the trees RPA to allow for scaffold and construction access. With the combined use of tree protection barriers and suitable ground protection (or retention of existing hardstanding during development) it is considered that the potential for harm to occur to the trees canopies and root system will be adequately controlled.

Mitigation/Avoidance

To minimise the potential for harm to occur to the root systems and canopies of retained trees during development it will be necessary to implement Construction Exclusion Zones throughout the site. These are areas surrounding the trees' RPAs and canopies in which no construction works, or related activities, will be

undertaken. It is recommended that the exclusion zones are to be afforded protection at all times through the use of tree protection barriers and/or ground protection (specified in accordance with BS5837:2012). Some access facilitation pruning to allow for a working area beneath trees will be required to Trees 1 to 8.

Drawing C115349-05-01 provides a draft Tree Protection Plan indicating the potential location of protective barriers and ground protection.

### **3.2.2 Site Construction Access**

#### Impacts

Site Construction Access will be located from the existing access off Parkhurst Road. This is outside the RPAs and canopies of the retained trees and as such no impact is anticipated.

#### Mitigation/Avoidance

All trees surrounding the proposed access route should be adequately fenced and ground protection installed (where required) to ensure that no damage to the retained trees occurs during construction.

An Arboricultural Method Statement should be prepared to detail the tree protection measures to be implemented on the site.

### **3.2.3 Contractors Parking**

#### Impacts

The location of contractor parking is yet to be determined but it is understood that it be located offsite or outside of the RPAs of the retained trees. Consequently no impact on the retained trees is anticipated.

#### Mitigation/Avoidance

Installation of barriers to ensure no parking occurs within the exclusion zones.

### **3.2.4 Site Cabins and Toilets**

#### Impacts

The location of the contractor's compound is yet to be determined but it is understood that it will be outside the RPAs of the retained trees. Consequently no impact on the retained trees is anticipated.

#### Mitigation/Avoidance

Installation of protective barriers to ensure that trees are protected from physical damage resulting from works to establish a site compound. Where they can be located upon existing hard surfaces site cabins may be used to form part of the protective barrier.

### **3.2.5 Delivery and Storage of Materials**

#### Impacts

The proposed location for site deliveries and materials storage is yet to be determined. However it can be seen that there are ample opportunities to accommodate delivery and storage of materials within the site in areas away from retained trees. Consequently no impact on the retained trees is anticipated from material delivery or storage.

#### Mitigation/Avoidance

Ensure no storage occurs upon un-surfaced ground within the defined RPAs of the retained trees via the installation of protection barriers.

### **3.2.6 Demolition of Existing Structures**

#### Impacts

The proposed development of the site involves the demolition of a number of buildings and structures across the site. No structures proposed for demolition are located in close proximity to the retained trees and as such with appropriate protective barrier installation, no impacts to the retained trees is anticipated.

#### Mitigation/Avoidance

Trees should be protected by the installation of tree protection barriers as shown on draft Tree Protection Plan (Drawing Number C115349-05-01). Hard surfacing should be retained where it is laid over the RPAs to provide ground protection during this exercise.

### **3.2.7 Removal of Hard Surfaces**

#### Impacts

The removal of the existing hardstanding across the site will result in works being undertaken within the RPAs of Trees 1, 2, 3, 4, 6, 7 and 8.

The removal of existing hard surfaces has the potential to result in root damage, particularly where roots are found to be growing at shallow depths beneath the existing surfaces. During the site visit some disturbance of the existing hardstanding by tree roots was noted. This indicates that the roots of the trees are located close to the surface and as such the potential for harm without careful work practices is high. To minimise the potential for root damage to occur it will be essential that works within this area are supervised and completed in accordance with a specific working methodology and guidance. The removal of hard surfacing should occur after the demolition of the existing buildings.

#### Mitigation/Avoidance

It is advised that the removal of exiting hard surfacing within the RPAs/crowns should be carried out using hand tools or appropriate machinery working backwards over the area so that the machinery is not moving over the exposed ground. All works to remove or alter hard surfaces within the RPAs of retained trees should be completed under supervision and in accordance with a detailed specification to be set out in an

Arboricultural Method Statement for the site. If new hard surfacing is to be laid then it may be preferable to leave any existing sub-base in situ, augmenting where required.

Once the hard surfaces have been removed the protective fencing should be relocated to the 'Phase 2' construction position (see the Draft Tree Protection Plan, Drawing Number C115349-05-01).

### **3.2.8 Construction of Buildings**

#### Impacts

The majority of the proposed development is located outside the RPAs and crowns of the retained trees. Small sections of the building require construction within the RPAs of Trees 2, 4, 7 and 8. The extent of encroachment is limited (<10%) and it is considered that the impact upon these specimens will be minimal due to their species, age and condition. As a basement is proposed for the structure the use of alternative foundation designs to reduce the potential impact is not considered appropriate.

The proposed construction of the residential buildings will require the erection of scaffolding and the provision of working space within the RPA of Trees 2, 3, 4, 6, 7 and 8. The area likely to be affected by this work is to the south of each of the trees. The use of tree protection barriers in conjunction with suitable ground protection will ensure that the potential for harm to the trees root system is minimal.

#### Mitigation/Avoidance

The foundation/basement extent should be accurately marked out and excavation works beyond this line should be avoided. Any roots encountered that measure <25mm should be cleanly cut. All excavation works within the RPAs of the retained trees should be supervised by a suitably experienced arboriculturist and fully detailed within an Arboricultural Method Statement for the site.

To protect the trees and allow for the necessary access for construction, tree protection barriers should be erected to provide construction exclusion zones. The proposed location of the tree protection barriers are shown on draft Tree Protection Plan (Drawing Number C115349-05-01).

### **3.2.9 Construction of Roads, Footpaths and Hardstanding Areas**

#### Impacts

New hard surfacing comprising permeable resin-bound gravel is proposed within the RPAs of Trees 1 to 4. This area currently comprises bare ground. The proposals indicate that this area of hardstanding will be constructed using a 'no dig' technique to prevent impact on the rooting systems from excavation.

The presence of hard surfaces within the RPA of a tree can cause problems with gaseous exchange and water penetration and absorption. BS5837:2012 advises that no hard surface should exceed 20% of any existing un-surfaced ground within the RPA. The proposed area of hardstanding beneath Trees 1 to 5 will exceed the 20% guidelines. Although the new hard surfacing will cover areas that are

currently unsurfaced this is compensated for by the removal of large extents of existing hardstanding and replacement with soft landscaping within the rooting zones of the trees. This will result in a smaller area of the rooting zone being covered by hardstanding than there was previously which will be of benefit to the trees. In addition the existing hardstanding is impermeable and the new hardstanding will have a permeable surface treatment which will allow gaseous exchange and water penetration. It is therefore considered that the proposed works, subject to their completion in accordance with a 'no-dig' methodology, are unlikely to cause harm to the retained trees.

#### Mitigation/Avoidance

To allow for the construction of hardstanding within the RPAs of Trees 1 to 4 the tree protection barrier should be removed and all works should occur under arboricultural supervision. The construction of the new hardstanding should be constructed to be permeable and using a 'no dig' technique.

A summary highlighting the precautions that must be taken to maintain the condition and health of trees root systems is as follows.

- Works shall be conducted in such a manner as to prevent physical damage to roots during construction, such as soil compaction or root severance.
- Provision for water and oxygen to reach the roots must be made and the soil structure must not be disturbed.
- Provision must be made for future root growth and precautions taken to ensure that such root growth does not cause unacceptable levels of damage to the finished construction.
- The soil must not be compacted and soil bulk density must be maintained at suitable levels for tree root growth and function. In this respect a soil bulk density of over  $1.8\text{g/cm}^3$  is likely to impede root growth and function.

To achieve the above requirements for tree root growth and function the proposed new hard surfaces shall be designed so that:

- No excavation of bare ground is required for their installation; to ensure that physical root damage does not occur.
- The surface can be installed without compaction of the existing soils; thus ensuring damage to the soil structure does not occur.
- The surface is permeable; thus ensuring that oxygen and water can reach the root system and that  $\text{CO}_2$  can diffuse vertically out of the soil as high concentrations can cause root suffocation.

There are various methods of creating such a surface however one that is commonly in use and is therefore recommended here is the use of a three dimensional cellular confinement system, such as CellWeb produced by Geosynthetics, to provide for load suspension above the existing soil grade and reducing vertical loads on the underlying soils.

In summary mitigation measures shall be to utilise a 'no dig' construction technique to construct all areas of hard surface within the RPA of Trees 1 to 4.

In accordance with BS5837:2012 all areas of construction activity within the RPA should be supervised by a suitably experienced arboriculturist.

### **3.2.10 Boundary and Ancillary Structures**

#### Impacts

##### *Boundary Structures*

The development involves the installation of timber fences within the RPAs of Trees 1 to 5. The use of fencing rather than walls will result in a reduced potential for damage to the trees. If the fence posts are appropriately positioned to avoid any major roots (>25 mm) and the works occur under arboricultural supervision then the trees should not be adversely impacted by the fence installation.

##### *Bike Sheds*

Bike sheds/storage areas are proposed within the RPA of Trees 1 to 5. The exact nature of these structures is currently unknown. It is considered that if they are constructed without excavation for the foundations exceeding the depth of the current hardstanding hardcore base then impacts to the trees can be avoided.

##### *Play Area*

The area below Trees 6 to 8 is proposed as a Doorstep Play Area. The surface treatments within this area comprise a mix of bark mulch, biodiversity planting and rubber crumb play surface. No impact on the retained trees is anticipated if the mulch is a minimum of 150 mm in depth and its installation does not involve excavation below the existing hardcore base of the hard surface currently occupying this area.

It is understood that the rubber crumb surface can be installed without excavation below the existing hardcore base of the current hardstanding. No impact upon the trees is anticipated as a result of the rubber crumb surface installation.

The play area will have a number of play items within the RPAs of Trees 6 to 8. Securing these items to the ground will entail excavations within the RPA of these trees. If excavation is carried out using hand-dig methodology and any the equipment is relocated to avoid any major roots (>25 mm), then no impact upon the trees is anticipated.

#### Mitigation/Avoidance

##### *Boundary Structures*

A cautious approach should be adopted during excavation of the fence post holes. The location of any concrete foundations and posts needs to be carefully considered to ensure no damage to the adjacent trees occurs. In particular new fence posts should not be constructed within 1.0 m of the stem of any retained tree. This will reduce the amount of excavation for post foundations required within the RPAs of the retained trees. Excavation in these areas will need to occur by hand and under arboricultural supervision to ensure no root damage occurs. The post holes should be lined with a plastic membrane to prevent the leaching of toxic concrete into the rooting zones of the trees.

Special construction techniques may be required where fence posts and/or other fixed structures are likely to sever significant roots (in order to 'bridge' these areas and avoid severance of any significant roots close to trunks).

#### *Bike Sheds*

The foundations of the bike sheds/storage areas should utilise the existing hardcore base present or any excavation should not exceed the depth of the current hardcore. Works to install the foundations for the sheds within the RPAs of the trees should occur under arboricultural supervision.

#### *Play Area*

Construction of the children's play area should be carried out using hand-dig methodology. New hard surfacing should be laid taking in to account future growth of tree stems and roots. The hard surface installation should not exceed the depth of the existing hardcore base. The post holes used for securing the play equipment should be lined with a plastic membrane to prevent the leaching of toxic concrete into the rooting zones of the trees. The installation of the play area should be carried out under the supervision of a suitably qualified arboricultural consultant.

### **3.2.11 Site Gradients**

#### Impacts

It is understood that any level increases within the RPAs of the trees will only occur on areas currently occupied by hardstanding and that the level changes will be kept to a minimum. It is considered that minor increases in levels in areas that are currently occupied by hardstanding will have no adverse impact upon the retained trees. The proposals do not involve any reduction in soil levels within the RPAs of the trees.

#### Mitigation/Avoidance

Should any subsequent changes in levels within the defined RPAs of the retained trees be required then a suitably experienced arboriculturist should be consulted.

### **3.2.12 Service Requirements**

#### Impacts

The combined services for the new build are currently being developed and plans are yet to be issued. Should best practice guidelines detailed within NJUG (Volume 4 (2007) Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees) be followed then conflict with the tree roots will be avoided.

Mitigation/Avoidance

It is advised that the installation of new services and drainage occur outside the RPAs of the retained trees. It is also advised that CCTV and lighting columns should not be situated in locations which will place future pressure on trees for crown pruning due to visibility/ shadowing.

Where the installation of services is proposed within the RPAs of the retained trees all works should follow best practice guidelines detailed within NJUG (Volume 4 (2007) Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees). All excavation works within the RPAs of the retained trees should be supervised by a suitably experienced arboriculturist and fully detailed within an Arboricultural Method Statement for the site.

#### **4. ARBORICULTURAL METHOD STATEMENT**

An Arboricultural Method Statement will be required for the site as various aspects of the proposed development will require works to be undertaken within the RPAs of retained trees.

The purpose of a method statement is to ensure that all site operations can occur with minimal risk of adverse impact upon trees that are to be retained. The document will identify all areas where specific working methods will be required to ensure protection to trees. The document will also specify the location and extent of tree protection barriers and ground protection.

In relation to this development the method statement should address the following:

- Suitable material storage, parking and site compound locations.
- Protective barrier and ground protection locations and specifications.
- Combined utility service run locations and drainage locations.
- Method for removal and alteration of existing hard surfaces within RPAs.
- Method for construction of new hard surfaces within RPAs.
- Method for construction of ancillary and boundary structures within RPAs.
- Proposed tree works.
- Pre-commencement site meeting.
- Schedule of arboricultural supervision.

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Ryan, J. (2013). *Pers. Comm.* Tree Officer, London Borough of Islington Council.

## **DRAWINGS**

Drawing Number C115349-05-01- Draft Tree Protection Plan



C115349-05-01

**Legend**

- Category B tree
- Category C tree
- Current canopy extent
- Root Protection Area
- Category B group
- Category C group
- Timber fence
- Protective barrier to BS5837 (2012), Phase 2 - Placed during construction phase
- Protection barrier to BS5837 (2012), Phase 1 - Placed during demolition and hardstanding removal
- Ground protection
- No dig construction - Resin-bound gravel
- Proposed buildings
- Rubber crumb plan surface - Excavating will not exceed existing hardsurface base
- Retained area
- Survey area

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

Project 65-69 Parkhurst Road, London

Draft TPP

Client Parkhurst Road Limited

Drawing Number	C115349-05-01	Revision	00
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Scale @ A3	1:500	Date	November 2013
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Approved By	MB	Drawn By	CD
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This drawing is based on the proposed landscape layout "167\_10\_B\_131127.dwg", supplied by the client.

## APPENDICES

Appendix 1: Table A1 - Tree Survey Schedule

Appendix 2: Table A2 - Root Protection Areas of Category A, B and C trees

**APPENDIX 1:**

Table A1 - Tree Survey Schedule

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Ht 1 <sup>st</sup> Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
1	Ash	1	550	14.0	2.0 S	<u>6.0</u>	3.0	7.0	6.0	2.5	3.0	2.5	2.5	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>• Growing within tarmac base.</li> <li>• Growing next to existing boundary wall and fence.</li> <li>• Approx. 1.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>• Woodpecker hole in stem at approx. 3.0m above ground level.</li> <li>• Old pruning wounds occluding.</li> <li>• Crown shape distorted due to pressure from Tree 2.</li> </ul>	-
2	Ash	1	660	15.0	2.0 N	<u>7.0</u>	4.0	6.0	3.0	2.0	3.0	2.0	2.0	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>• Growing within tarmac base.</li> <li>• Growing next to existing boundary wall and fence.</li> <li>• Approx. 1.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>• Razor wire occluding to stem.</li> <li>• Squirrel drey in crown – occupied.</li> <li>• Tall and etiolated due to group pressure.</li> </ul>	-
3	Ash	1	390	15.0	4.5 N	<u>6.0</u>	3.0	4.0	2.0	3.0	4.0	3.0	4.0	EM	F	G	10+	C1	<ul style="list-style-type: none"> <li>• Growing within tarmac base.</li> <li>• Growing next to existing boundary wall and fence.</li> <li>• Approx. 1.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>• Tall and etiolated due to group pressure.</li> <li>• Asymmetrical crown.</li> <li>• Bark wound to stem at ground level – exposed heartwood.</li> </ul>	-
4	Ash	1	780	16.0	2.5 N	<u>9.0</u>	7.0	9.0	4.0	3.0	3.0	4.0	5.0	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>• Growing within tarmac base.</li> <li>• Roots lifting tarmac around base.</li> <li>• Growing next to existing boundary wall and fence.</li> <li>• Approx. 1.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>• Bark wound on stem at ground level to west – exposed heartwood.</li> <li>• Crown shape distorted due to pressure from Tree 3.</li> </ul>	-

Table A1: Tree Survey Schedule (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Ht 1 <sup>st</sup> Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
5	Silver Birch	1	340	14.0	3.0 E	6.0	6.0	6.5	4.0	1.5	2.0	2.0	5.0	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>Off site tree.</li> <li>Limited access to survey.</li> <li>Exposed surface roots.</li> <li>Bifurcated at approx. 2.5m above ground level.</li> <li>Crown shape distorted due to pressure from Tree 4.</li> </ul>	-
6	Ash	1	660	16.0	2.0 E	7.0	5.0	4.0	6.0	3.0	2.0	2.0	2.0	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>Growing within tarmac base.</li> <li>Approx. 2.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>Cavity in old pruning wound at approx. 2.2m above ground level on stem.</li> <li>Growing next to existing boundary wall and fence.</li> <li>Necrosis on secondary stem at approx. 8.0m above ground level to east with woodpecker damage.</li> <li>Crown shape distorted due to pressure from Tree 7.</li> </ul>	-
7	Sycamore	1	690	14.0	2.5 E	6.0	4.0	5.0	4.0	4.0	3.0	7.0	4.0	M	G	G	20+	B3	<ul style="list-style-type: none"> <li>Growing within tarmac base.</li> <li>Roots lifting tarmac around base.</li> <li>Growing next to existing boundary wall and fence.</li> <li>Approx. 2.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>Bifurcated at 1.8m above ground level.</li> <li>Crown shape distorted due to group pressure.</li> </ul>	-

Table A1: Tree Survey Schedule (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Ht 1 <sup>st</sup> Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
8	Sycamore	2	640	14.0	2.0 S	<u>8.0</u>	7.0	5.0	6.0	4.0	7.0	3.0	3.0	M	G	F	10+	C1,2	<ul style="list-style-type: none"> <li>• Growing within tarmac base.</li> <li>• Roots lifting tarmac around base.</li> <li>• Growing next to existing boundary wall and fence.</li> <li>• Evidence of damage to wall as stem pushes upon it.</li> <li>• Approx. 2.0m drop in level beyond wall; &lt;1.0m distance from stem.</li> <li>• Bifurcated at ground level.</li> <li>• Suckers at base.</li> <li>• Exposed surface roots.</li> <li>• Crown and stem shape distorted due to group pressure.</li> <li>• Major deadwood in crown.</li> </ul>	Remove major deadwood in crown.
G1	Ash Elder	1	100	6.0	<u>1.0</u> N	2.0	<u>2.0</u>	2.0	<u>2.0</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	Y	G	G	10+	C1,2	<ul style="list-style-type: none"> <li>• Restricted access limits survey.</li> <li>• Group of developing Ash trees with Elder understorey.</li> <li>• Growing next to an existing boundary wall (approx. 3.0m high).</li> </ul>	-
G2	Ash	1	300	11.0	2.5 S	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	EM	G	G	20+	B2,3	<ul style="list-style-type: none"> <li>• Off site group.</li> <li>• Limited access to survey.</li> <li>• Crown shapes distorted due to group pressure.</li> <li>• Growing next to existing boundary wall.</li> <li>• Crowns overhang study area by approx. 2.0m.</li> </ul>	-
G3	Ash, Silver Birch	1	230	10.0	3.5 S	3.0	3.0	3.0	3.0	4.0	6.0	4.0	4.0	Y EM	F	G	10+	C3	<ul style="list-style-type: none"> <li>• Off site group.</li> <li>• Limited access to survey.</li> <li>• Crown shapes distorted due to group pressure.</li> <li>• Growing next to existing boundary wall.</li> <li>• Tall and etiolated due to pressure of proximity to wall and building.</li> <li>• Crowns overhang study area by approx. 1.0m.</li> </ul>	-

Table A1: Tree Survey Schedule (continues)

Tree No.	Species	No. Stems	Diam (mm)	H't (m)	Ht 1 <sup>st</sup> Branch (m)	Branch Spread (m)				Crown Clearance (m)				Age	Phys Cond	Struc Cond	Est. Remain Contrib (Years)	Cat	Comments	Preliminary Management Recommendations
						N	E	S	W	N	E	S	W							
G4#	Jasmine Rose Hawthorn	1	130	6	0.1 N	1.5	1.5	1.5	1.5	0.1	0.1	0.1	0.1	Y EM	G	G	10+	C3	<ul style="list-style-type: none"> <li>Off site group.</li> <li>Limited access to survey.</li> <li>Crown shapes distorted due to group pressure.</li> <li>Growing next to existing boundary wall.</li> <li>Crowns overhang study area by approx. 1.5m.</li> </ul>	-

**Key**

Age Class

Y: Young = tree within first third of average life expectancy  
 EM: Early mature = tree within second third of average life expectancy  
 M: Mature = tree within final third of average life expectancy  
 OM: Over mature = tree beyond average life expectancy

Physiological Condition

G: Good = no health problems  
 F: Fair = symptoms of ill health that may be remedied  
 P: Poor = poor health

Structural Condition

G: Good = no structural defects  
 F: Fair = remedial structural defects  
 P: Poor = significant structural defects

000: Estimated measurement due to access restrictions  
 #: Within Hillmarton Conservation Area

Major deadwood: branches in excess of 50 mm diameter  
 Minor deadwood: branches/twigs less than 50 mm diameter

**Table A1: (cont'd) Tree Survey Schedule**

**APPENDIX 2:**

Table A2 - Root Protection Areas of Category A, B and C trees

Tree No.	Species	Diam (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m <sup>2</sup> )
1	Ash	550	6.6	137
2	Ash	660	8.1	206
3	Ash	390	4.8	72
4	Ash	780	9.6	290
5	Silver Birch	<u>340</u>	4.2	55
6	Ash	660	8.1	206
7	Sycamore	690	8.4	222
8	Sycamore	640	7.8	191
G1	Ash Elder	100	1.2*	5*
G2	Ash	300	3.6*	41*
G3	Ash Silver Birch	230	3.0*	28*
G4#	Jasmine Rose Hawthorn	130	1.8*	10*
<p><u>Key:</u>            *: Around centre of each tree within group.  <u>000</u>: Estimated measurement due to access restrictions            #: Within Hillmarton Conservation Area</p>				

**Table A2: Root Protection Areas of Category A, B and C trees**

MIDDLEMARCH ENVIRONMENTAL  
QUALITY ASSURANCE  
ARBORICULTURAL IMPACT ASSESSMENT

65-69 Parkhurst Road,  
London

A Report to Parkhurst Road Limited

Contract Number: C115349

Report Number: RT-MME-115349-05

Revision: -

Description: Final

Date: November 2013

Checked by:

Ed Lusk  
**Senior Arboricultural Consultant**

Approved by:

Dr Philip Fermor  
**Managing Director**