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ARBORICULTURAL REPORT:

ARBORICULTURAL IMPACT ASSESSMENT and ARBORICULTURAL METHOD STATEMENT

In relation to a Planning Application

at:

4 Langland Gardens, London, NW3 6PY

Compiled by:
David Clarke
BSc (Hons) Land Man, PD ARB (RFS), CMLI, M Arbor A

June 2015

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1.0 Instruction

1.1 I have been instructed by my client – Zen Developments Ltd - to provide an appraisal of the likely impact to, and implications for, trees on, and adjacent to, 4 Langland Gardens, London, NW3 6PY in relation to a planning application on the site. A recent planning decision (Ref 2015/0315/P, dated 17 March 2015) granted consent for a number of alterations and extensions to the property including extension of the ground floor flats into the basement below. This new Planning Application proposes to extend the basement accommodation under the full footprint of the extended building and to include light wells to the front and rear.

2.0 Introduction

2.1 Qualifications and Experience

2.1.1 I am David Clarke, I have a Bachelor of Science Honours Degree in Landscape Management from Reading University and I am a Chartered Landscape Architect and Chartered Member of the Chartered Landscape Institute (1998). I hold the Professional Diploma in Arboriculture (RFS) (2012) and I am a Professional Member of the Arboricultural Association. I have 23 year's experience of working in both the private and public sector in relation to arboricultural and landscape issues.

2.2 Scope of this Report

2.2.1 This Arboricultural Impact Assessment and Arboricultural Method Statement forms the Arboricultural Report for the Planning Application. They should be read in conjunction with Tree Protection Plan (TPP/4LGL/010 A) and Arboricultural Survey (Appendix A). The Arboricultural Report is aimed at identifying and addressing those matters concerning trees in relation to the proposed planning application. It will clarify these issues:

- The principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.
- The species, size, position and condition of those trees within the area of the proposed development where trees may potentially have some significance to the proposed development. The full survey schedule is set out in Appendix A.

- The impact of the proposed development upon these trees (and vice versa) including those trees to be removed due to the proposed development.
- Any measures that are required to protect retained trees during the proposed works.

2.2.2 The trees have been assessed (see Arboricultural Survey – Appendix A) as set out in BS BS5837: 2012 `Trees in relation to design, demolition and construction. Recommendations.' An Arboricultural Survey was undertaken by me in June 2015 in relation to the preparation of this report.

2.2.3 Tree numbers within the text (T1-T7 and G1) relate to numbers designated as part of the Arboricultural Survey unless otherwise stated. The trees are plotted on Tree Protection Plan - TPP/4LGL/010 A - which accompanies the planning application.

2.2.4 BS 5837: 2012 `Trees in relation to design, demolition and construction. Recommendations' provides recommendations for the assessment of trees on development sites and suggests four categories into which trees should be placed for assessment purposes. These categories have been used as part of the assessment of trees within this report.

2.3 Relevant Background Information

2.3.1 Planning Approval (Ref 2015/0315/P - March 2015) was recently granted consent. This included a number of alterations and extensions to the property including extension of the ground floor flats into the basement below.

2.3.2 It is understood that there are no Tree Preservation Order's (TPO's) on the site but trees are offered some protection by the sites location within the Redington and Frognal Conservation Area. This nominally protects all trees over 75mm stem diameter at 1.5 m above ground level.

2.3.3 It is recommended that the information on protected trees be confirmed by anyone proposing to undertake any works to trees on the site. This information should include trees adjacent to the site which may potentially be protected. This should be undertaken in writing with the Local Authority before proceeding with any tree works.

2.4 Documents and Information Provided

2.4.1 All plans within this report are based upon drawings supplied by Zen Developments Ltd, London.

2.4.2 This document has been prepared in accordance with guidance set out in British Standard BS 5837: 2012 `Trees in relation to design, demolition and construction. Recommendations' (BS 5837:2012).

3.0 Report Limitations

3.1 The report is for the sole use of the client and its reproduction or use by anyone else is prohibited unless written consent is given by the author.

3.2 The report observations are to be considered as correct at the time of inspection only. Trees are a growing, living organism, and are readily affected by many environmental factors. As such their condition and circumstances can change in a very short period of time. Therefore this report should be construed as valid for an absolute maximum of 12 months from the date of the Arboricultural Survey provided all factors remain unchanged.

3.3 This is an arboricultural report and as such no reliance should be given to comments relating to buildings, engineering, soils or other unrelated matters. The inspection of trees was undertaken from ground level and they were not climbed. No samples of wood, roots, soils or fungus were taken for analysis. Observations of the trees were confined to what was visible from within the site and surrounding public places. A full hazard risk assessment of the trees was not undertaken.

3.4 The presence of TPOs, a Conservation Area, or other designations, may affect the use of the site and the management of trees on the site. These designations can be served on the application, or adjacent, sites at any time. The landowner, or his representatives, should therefore satisfy themselves as to the presence (or absence) of these designations prior to:

- Undertaking any works to trees on, or adjacent to, the site. Where necessary written permission from the Local Authority will be required prior to undertaking tree works.
- Undertaking any of the works specified in this Arboricultural Report before planning permission is granted.

4.0 Brief Description of the Application Site and the Proposed Development

4.1 Langland Gardens is situated off the east side of A41 Finchley Road, London and consists of large semi-detached buildings. The existing property is located in the Redington and Frognal Conservation Area but is not listed. The plot gently rises from the front boundary toward the rear so that the raised ground floor meets the rear garden on the same level. There is a general fall from north to south along Langland Gardens. Raised entrances are typical to Langland Gardens and a significant number of properties feature basement accommodation

4.2 There is a Cedar tree on the site boundary with the 2 Langland Gardens. This is a tree of moderate amenity but some prominence in the street scene which conveys on it a higher Category Grading under BS 5837:2012 (`B') than may otherwise have been used. Other trees within the garden area(s) are low quality or unremarkable `C' Category trees and are generally small or young trees. Those in the rear garden are screened from view by the general public due to intervening buildings and vegetation. All other trees within this report are located outside the site boundary.

4.3 A recent planning decision (Ref 2015/0315/P, dated 17 March 2015) granted consent for a number of alterations and extensions to the property including extension of the ground floor flats into the basement below. This new application has been prepared to extend the basement accommodation under the full footprint of the extended building and to include light wells to the front and rear.

5.0 General principles for protection of trees during development

5.1 It is equally important to ensure the protection of trees both above and below ground. Guidance is provided in BS 5837: 2012 `Trees in relation to design, demolition and construction. Recommendations' as to the protection of trees, before, during and after development.

5.2 The Arboricultural Impact Assessment will set out the potential impact of the proposals on trees and vice-versa. There is a need to protect trees and provide an Arboricultural Method Statement where proposals will impinge, or impact on the Root Protection Areas (RPAs) of retained trees. Root Protection Areas (RPAs) are a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated

as a priority. These are set out as Construction Exclusion Zones and have been calculated as part of the Arboricultural Survey.

5.3 The RPA for each tree is initially plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area will be produced. These factors include the morphology and disposition of the roots, when known to be influenced by past or existing site conditions - such as the presence of hard standing and structures - and site topography. Modifications to the shape of the RPA within this report reflect a soundly based arboricultural assessment of likely root distribution. The RPA may change its shape but not reduce its area whilst still providing adequate protection for the root system.

5.4 Proposals may impinge on RPAs but these should be minimal and construction techniques such as specialized foundation designs should be considered to reduce the impact of development. The proposals will relate specifically to the site conditions and each individual tree and its category within the BS 5837 grading system.

Photograph A - Looking towards the Application Site from Langland Gardens.

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ARBORICULTURAL IMPACT ASSESSMENT

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6.0 Arboricultural Impact Assessment (AIA)

6.1 As stated above British Standard recommendations (BS5837: 2012 `Trees in relation to design, demolition and construction. Recommendations.') provides a formula for calculating the Root Protection Area (RPA) recommended to protect existing trees that are to be retained. The shape of the root protection area and its exact location will depend upon arboricultural considerations but the area will normally be represented on a plan as a circle. The purpose of the RPA is to prevent physical damage to tree roots and to prevent damage to the soil structure in which they live by soil compaction, changes in soil levels or prevention of gas exchange to living roots.

6.2 These RPAs are shown on Tree Protection Plan (TPP/4LGL/010 A) which also forms part of the Aboricultural Method Statement. Where incursion within the RPA of a retained tree is necessary as part of the construction process then a methodology will be in place to prevent, or reduce to an insignificant level, damage to trees.

6.3 Below I have discussed the significance of the trees and the constraints that they are likely to pose to the proposed development (and vice-versa). Together with the Arboricultural Survey the AIA sets out any tree works required in order to facilitate the development as well as identifying works to trees (including removal) that should be undertaken as part of the management of trees on the site.

6.4 Summary of Tree Impact Assessment

6.5 There are 7 no. individual trees and 1 no. group of trees which form the basis for this report and which could potentially be affected by the proposal.

6.6 Trees recommended for removal for Arboricultural Reasons

Of the trees within this report none are recommended to be removed for arboricultural reasons irrespective of this planning application.

6.7 Schedule of trees recommended for removal for Arboricultural Reasons

Tree No.	Species (Common Name)	BS Category	Reason for recommended removal

None

6.8 Trees removed due to the application

The removal of 3 no. individual trees is proposed as part of the implementation of the development and changes to the rear garden area.

6.9 All these trees are `C' Category trees as set out in BS 5837:2012. They are low quality or unremarkable trees. They are relatively small and not readily visible to the general public due to intervening buildings and other vegetation. If required replacement planting could be undertaken to mitigate for the removal of these trees.

6.10 Overall the removal of these trees is not seen as significant within the potential to mitigate for their removal and should not prevent the granting of Planning Permission.

6.11 Schedule of trees removed due to the application

Tree No.	Species (Common Name)	BS Category	Reason for removal
T2	Cherry	C2	Due to the implementation of the development.
T3	Apple	C2	As part of changes to rear garden layout.
T6	Willow	C2	As part of changes to rear garden layout.

6.12 Trees potentially affected by the application

The alterations to the existing building (light wells) are within the RPAs and canopy spreads of 1 no. group of trees. Additionally the construction of the basement area will take place adjacent to the RPA of a tree. The removal and/or replacement of hard standing, construction activity and changes to the rear garden layout may take place within the RPAs or canopy spreads of retained trees.

6.13 These potential impacts are set out and evaluated below and measures to prevent, or reduce, the effects of the proposals on these trees are set out in the Arboricultural Method Statement. The impact on retained trees from this development will not be significant as long as the proposals set out in this report are followed.

6.14 Schedule of trees potentially affected by the application

Tree No.	Species (Common Name)	BS Category	Reason for potential impact
T1	Cedar	B2	• Removal and/or replacement of hard standing within RPA and canopy spread. • Potential construction activity associated with the storage of materials and plant and pedestrian movements within RPA and canopy spread.
T5	Plane	B2	• Changes to rear garden layout within a maximum of 3% of the RPA including possible erection of boundary treatments and installation of hard standing.
T7	False Acacia	B2	• Changes to rear garden layout within a maximum of 6% of the RPA including possible erection of boundary treatments and installation of hard standing.
G1	2 no. Cherry	C2	• Construction of light well within canopy spread and within 6% of RPA. • Removal and/or replacement of hard standing within RPA and canopy spread. • Potential construction activity associated with the storage of materials and plant and pedestrian movements.

6.15 Assessment of potential impacts on retained trees

6.16 Assessment of Distribution of Roots of Retained Trees

Cedar (T1) and G1 are located within a landscape area adjacent to an area of hard standing in the front garden. The RPAs at this point will have been affected by the pre-existing site conditions – in this instance the presence of the hard standing. Compared to open soil areas the capping of soils by the surfacing will reduce the availability of resources (such as water) to the trees and reduce gaseous exchange between the soils and the atmosphere. Additionally factors such as soil compaction and the physical presence of hard

standing materials may reduce or prevent rooting activity in these areas. This will depend on the type and depth of construction for the hard standing which is unknown at this stage. Whilst the exact distribution of roots cannot be known it is reasonable to state that these areas are inhospitable to root growth and rooting activity will be limited beneath the existing hard standing areas.

6.17 Plane (T5) appears to be located within a raised area within the adjacent garden area. This could not be confirmed as part of the Arboricultural Survey as access to this garden was not possible. If this tree is raised above the level of the application site then this may restrict rooting activity within the application site. There appeared to be no restriction on the rooting spread of offsite trees Oak (T4) and False Acacia (T7). The potential rooting spread of all these trees would need to be confirmed by a full inspection of the trees following access to their respective garden areas. Within this report the RPAs of T4-T5 and T7 are treated as if they are unrestricted. This allows for the full potential impact on these RPAs to be considered in relation to the development proposals.

6.18 Site Access

The site access will be located outside the RPAs and canopy spreads of retained trees.

6.19 Demolition

No buildings or other structures will need to be removed within the RPAs or canopy spreads of trees

6.20 Removal or Replacement of Hard Standing within RPAs

No new hard standing is proposed within the RPAs of trees except those considered below in relation to the changes to the rear garden area. However some hard standing in the front garden area may be removed and/or replaced as part of the Planning Application. If implemented with care the replacement of the hard standing should have no additional impact on trees than already exists.

6.21 Where hard standing is removed altogether it will then form part of the landscaped area of the site. This can be considered to be a benefit arising as a result of this planning application by increasing the potential rooting area available to retained trees. A methodology for these aspects of the work are set out in the Arboricultural Method Statement to prevent any damage to the roots, stems or branches of these trees.

6.22 Construction within RPAs

The proposed alterations to the existing building are outside the majority of RPAs of retained tree. However there will be an incursion of approximately 6% to excavate for a light well to the building. This incursion includes a small allowance for the excavation to be slightly wider than the width of the proposed light well as a tolerance during the excavation process. If undertaken in a controlled way this incursion is assessed to be minor and insignificant to the long term viability of the tree.

6.23 Additionally the construction of the basement area in the rear garden will take place adjacent to the RPA of an offsite tree (Plane T6). This could have an indirect impact on retained trees such as through the collapse of the soil profile which could affect the integrity of the RPA. A methodology has been proposed to prevent the excavation of the light wells and basement area having any significant impact on retained trees. A full methodology for the construction of these areas will be submitted as part of a Construction Method Statement for the site.

6.24 It is noted that care will also be taken during the Construction Phase of the works to ensure that retained trees are not damaged. This will include the use of Tree Protection Fencing and Ground Protection Measures as discussed below.

6.25 Canopy Spreads and Tree Management

The site access is outside the canopy spreads of retained trees. However the excavation of a light well will occur in relation to G1 and some pedestrian activity or storage of materials or plant could occur in relation to Cedar (T1) and G1. These are assessed to have a canopy clearance of 3.0 m and 1.7 m (respectively) above ground level at this point. If undertaken in a controlled and planned way it is assessed that there is a suitable separation distance between the excavation of the light well and the canopies of G1 for this element not to impact on these trees . It is currently proposed use Tree Protection Fencing to secure part of the front garden area and for no construction activity to take place underneath the canopies of T1 or G1. No tree works are therefore currently anticipated in relation to the implementation of the development.

6.26 Should this position change following the commencement of the development then all proposed pruning works would follow guidance set out in the relevant British Standard (BS 3998:2010 - `Tree work - Recommendations'). They would be carried out by a qualified tree surgeon/arboricultural contractor to ensure that the health, amenity and viability of the trees

is maintained. All tree works would need to be agreed with the Local Planning Authority prior to being carried out.

6.27 Construction Activity

Uncontrolled construction activity could lead to direct or indirect damage to trees - both above and below ground. Therefore Tree Protection Fencing is proposed within the Arboricultural Method Statement to restrict and control construction activity and protect retained trees during the works.

6.28 It is currently proposed to prevent access within the majority of the RPAs of Cedar (T1) and G1 through the use of Tree Protection Fencing. However pedestrian movements and the storage of materials or plant could be required within the RPAs of these trees as part of the development. These activities have the potential to cause soil compaction and root damage. As set out above it is assessed that the existing hard standing within the RPAs of these trees will have limited root activity. Also this hard standing offers some protection to any roots which are present. This existing surfacing will therefore be retained as Ground Protection Measures as part of the development. If required additional measures will be introduced. These measures are set out within the Arboricultural Method Statement. The subsequent use of this hard standing area would need to be agreed with the Local Planning Authority.

6.29 Shading

The retained trees will have a similar relationship to the new site layout as they do to the existing site layout. Retained trees are located to the north of the site or do not create a dense screen or obstruction to light reaching the dwelling or garden areas. Trees will not have a negative or oppressive impact on the site and there will be no future pressure to prune or fell retained trees due to the implementation of the project.

6.30 Levels

No ground level changes are proposed or should take place within the RPAs of retained trees except any discussed and assessed within this report.

6.31 Herbicides and Pesticides

The use of herbicides and pesticides is not proposed within the RPAs of retained trees as part of this application. Should this change then chemicals will be specified which will not have an impact on retained trees.

6.32 Utility Routes

The exact location of services is not known at this stage. However it is assumed that these will connect to existing service runs to the existing building and can be located outside the RPAs of trees. If required a plan showing the layout of services and an installation methodology could be a Planning Condition as part of any Planning Approval.

6.33 Site Buildings and Storage of Materials and Plant

The poor positioning and installation of temporary site buildings (such as site huts and latrines) and storage of materials and plant can lead to direct damage to retained trees or indirect damage such as through the compaction of soils. The layout and operation of the project has therefore been considered and planned at this early stage to reduce or prevent any potential and significant damage to retained trees. This includes the erection of Tree Protective Fencing and the use of Ground Protection Measures as set out above and in the Arboricultural Method Statement.

6.34 Changes to Rear Garden Area

The existing rear garden area may be altered as part of this Planning Application. This may include the erection of new or replacement boundary fencing and changes in level though the exact alterations have not been confirmed. These alterations may take place within the RPAs or canopy spreads of Plane (T5) and False Acacia (T7). The incursions will be to a maximum of 3% and 6% (respectively) of the RPAs of these trees. The canopies of both trees are over 5.0 m above the application site and are not considered to be relevant to the garden design proposals. All these incursions are assessed to be minor and insignificant in relation to the long term viability of these trees. It is noted that changes to the garden layout could be undertaken at any time within the ongoing use of this building. The changes may not require planning approval. It is recommended that the final garden design or layout is discussed with an Arboriculturist to limit any potential impact on retained trees. A methodology for the erection of boundary fencing is set out in the Arboricultural Method Statement.

6.35 End Use of the Proposal

The proposals will have a residential use at the end of the project.

7.0 Recommendations

7.1 All tree works - removal of trees - set out within this report should be undertaken prior to the commencement of the project.

7.2 Existing trees can be easily damaged directly through root severance and, inadvertently, through soil compaction which disrupts the soil structure causing asphyxiation of roots and subsequent root dysfunction. Spillage of toxic materials can also cause root death. Protection for trees selected for retention is essential to ensure they are not affected by the development. All trees to be retained should therefore be protected as set out in the Arboricultural Method Statement. This would include the use of Tree Protection Fencing and Ground Protection Measures.

7.3 The location and siting of all utilities should be outside of the RPAs of retained trees as enforced on site. If incursions within RPAs are unavoidable then specialised installation techniques will need to be agreed with an arboriculturist before proceeding.

7.4 The final garden design or layout should be discussed with an Arboriculturist to ensure that any impact on trees is considered at an early stage. Where possible the design would be modified to reduce any potential impact on trees.

7.5 An arboriculturist should be the main contact with the Local Authority Tree Officer and will notify them of the proposed schedule prior to work commencing on site. An Arboriculturist should be consulted on all elements of the development which may affect retained trees. In this instance this particularly relates to the excavation for the basement and light wells and the storage of materials and plant.

Photograph B – Showing Cedar (T1) to the front of the Application Site.

Photograph C – Showing Cedar (T1) and G1 to the front of the Application Site.

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8.0 General

8.1 This document sets out the methodology for proposed works that affect trees on, and adjacent to, the site. Compliance with this (and subsequent) method statement will be a requirement of all relevant contracts associated with the development proposals. Copies of this document will be available for inspection on site. The developer will inform the local planning authority if the arboricultural consultant is replaced. This method statement should be read in conjunction with Tree Protection Plan (TPP/4LGL/010 A).

9.0 Phasing of the Works

9.1 The works are proposed to be undertaken in the following phases:

- Undertake Pre-Development Tree Works including trees to be removed as part of the Planning Application.
- Installation of Tree Protection Measures - Fencing and Ground Protection Measures - prior to commencement of the Construction Phase. Place temporary site structures - such as latrines - outside the Construction Exclusion Zones or on Ground Protection Measures.
- Commence Construction Phase.
- Completion of Construction Phase and removal of any temporary site structures.
- Removal of Tree Protection Fencing and Ground Protection Measures.
- Landscaping including the removal and/or replacement of hard standing and erection of boundary fencing.

9.2 It is noted that some phases of the work may overlap. For instance some landscaping of the site may occur whilst Tree Protection Measures are still in place.

10.0 Construction Site Access

10.1 Access for contractors will follow the Designated Access Route which is outside the RPAs and canopy spreads of retained trees.

11.0 Tree Protective Fencing

11.1 Root Protection Areas (RPAs) are the minimum areas (in m^2) which should be left undisturbed around each retained tree as Construction Exclusion Zones. These areas have been calculated as part of the Arboricultural Survey. The protective distances where possible will be enforced by the use of robust protective fencing as outlined in BS 5837: 2012. The fencing will be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree.

11.2 In this instance it is generally proposed to use 2.0 m high metal mesh panels on supporting rubber blocks filled with high density concrete. Examples would include Heras fencing (See Photograph D below). The panels will be joined together using a minimum of two anti-tamper couplers to prevent access except for maintenance operations. The distance between the fence couplers will be at least 1.0 m and they will be uniform throughout the fence. Where space does not allow for a full panel to be erected then panels may overlap each other to fill a gap. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins. Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray.

11.3 It is proposed to utilise the existing site boundaries as Tree Protection Barriers in the rear garden. No additional fencing is proposed to protect trees outside the rear garden boundaries.

11.4 The exact composition of the soil is unknown. Clay soil, for instance, compacts very easily when wet, so it is essential that fenced areas remain undisturbed before and during construction to prevent root asphyxiation.

Photograph D - Tree Protective Fencing

11.5 Laminated site warning signs will be attached to the fencing. These signs will state:

'CONSTRUCTION EXCLUSION ZONE – NO ACCESS

No storage of materials or use of machinery should take place within this area. These fences should remain intact unless under instruction from the site foreman following consultation with an Arborist.'

11.6 Tree Protection Fencing will be erected before the start of the project. The position of the fencing is shown on Tree Protection Plan (TPP/4LGL/010 A). Fencing will then not be removed or relocated - except to allow for grounds maintenance operations - until the project is complete.

12.0 Ground Protection Measures

12.1 Pedestrian movements and the storage of materials or plant may be required within the front garden within the potential RPAs of Cedar (T1) and G1. As set out in the AIA rooting activity will be limited by the presence of the existing hard standing areas to the frontage. Initially the majority of these areas will be protected with Tree Protection

Fencing (see above). However should these areas be required as part of the operation of the development Ground Protection Measures will be used to protect the remaining RPAs and protect the underlying soil structure and prevent potential root damage during construction activity. At this stage it is assumed that the existing hard standing materials will be suitable as Ground Protection Measures during the project. These will be retained until the project is complete. Should further investigations show that the hard standing is not suitable additional materials as set out below will also be used.

12.2 Pedestrian Access and Storage of Materials and Plant

- For pedestrian movements and storage of materials and plant only, a single thickness of scaffold boards placed on top a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane will be used. Alternatively a timber framework such as pallets would also be suitable for the storage of certain materials.

12.3 Ground Protection Measures will be in place prior to the project commencing. These surfaces will only be removed once the development is complete.

13.0 Construction of Basement Area and Light Wells

13.1 The following initial methodology has been proposed to prevent the excavation of the light wells and basement area having an indirect impact on retained trees such as through the collapse of the soil profile which could affect the integrity of an RPA. A more detailed methodology is set out in the Construction Method Statement which accompanies this Planning Application.

13.2 Some pruning of roots may be required during the excavation of the light wells and basement. A trench will be dug along the line of the proposed excavation to expose any roots. These roots will be pruned back, preferably to a side branch, using a proprietary cutting tool such as bypass secateur or handsaws. They will be pruned back to just beyond the line of excavation prior to the main excavation works commencing. Excavation of these areas can then be undertaken without damaging any roots to be retained and will limit any potential impact on roots.

13.3 The body of the excavation machinery will operate from outside the RPAs of retained trees. The basement will be excavated to the underside of the proposed floor slab. The retaining wall for the basement will be constructed at the earliest possible opportunity to

ensure that the retained soil profile does not collapse and that retained roots are not indirectly affected such as through the dehydration of the soil profile. Roots which are exposed, but are to be retained, will be wrapped in dry, clean hessian sacking to prevent desiccation and to protect from rapid temperature changes. This hessian will be kept damp. Prior to backfilling, any Hessian wrapping will be removed and retained roots should be surrounded with sharp sand or other loose granular fill, before soil or other material is placed over the roots. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

13.4 Where basement access is required adjacent to RPAs this will be via ramps or steps within the basement area, This will avoid increasing the proposed excavated area by grading back or `battering' of the soil profile.

13.5 Care will be taken during the works to prevent compaction of soils and therefore to ensure that roots are not damaged

14.0 Removal and/or Replacement of Hard Standing

14.1 The site consists of existing surfaces within the RPAs of retained trees (T1 and G1). These surfaces may be removed and either replaced or formed into the landscaped areas of the site. Hand held tools or appropriate machinery (under arboricultural supervision) will be used to remove the existing hard standing materials within the RPAs of trees. Excavation will be undertaken to existing construction depths and no deeper.

14.2 As soon as the existing hard standing is removed measures must be put in place immediately to protect the underlying soil structure and protect roots from direct and indirect damage (such a desiccation). This will mean that either replacement hard standing or topsoil is laid within the areas immediately the existing top surface and sub-base is removed.

14.3 The topsoil will conform to BS 3882 (2007) - a good quality medium to light loam, free of perennial weeds. Stone content 20% dry weight. The soil will be delivered and stored outside the RPAs of the trees. The area will be lightly forked to break up any existing soil compaction. The soil will be tipped onto the landscaped area in small loads so as to

avoid damage to roots or compaction or smearing of the underlying soil profile. The spreading of soil within the RPAs of retained trees will be undertaken by landscape operatives using hand held tools such as rakes and forks.

14.4 This element will be undertaken at the end of the development as the hard standing materials may be utilised as part of Ground Protection Measures during the development.

15.0 Site Organisation and Storage of Materials and Plant

15.1 During the proposed construction works attention will be paid to the protection and well being of retained trees. The site will be organised in such a manner so as to minimise the effects of the construction work on trees. To this end all large deliveries will be dropped at the `kerb' side in Langland Gardens and then moved into the site.

15.2 All materials and plant to be used during the Construction Phase will be stored outside the enforced tree protection areas or on Ground Protection Measures. The operation of the site will be undertaken within the constraints imposed by the protection of retained trees. Where necessary materials will be brought to site in small loads which are applicable to that phase of the works.

15.3 All toxic substances such as oils, bitumen's and residues from concrete mixing will be retained by effective catchment areas. No toxic material will be discharged within 10 m of a tree stem. No fires will be lit within 10 m of a tree stem.

15.4 All access onto the site will be via the Designated Access Route. All contractors parking, temporary latrines and any other temporary structures will be outside the Construction Exclusion Zones.

16.0 Tree Protection and Utilities

16.1 The exact location of services is not known at this stage but due to the existing site layout in relation to trees it should be possible to install services without impacting on retained trees. A methodology has therefore not been set out in this Arboricultural Method Statement but may be required as a Planning Condition as part of the Planning Approval.

17.0 Landscape Proposals Including Erection of Boundary Fencing

17.1 Any landscaping will avoid soil re-grading and unnecessary disturbance within the RPAs of retained trees. Any ground works, such as planting of trees or shrubs or the spreading of top soil, within the RPAs of retained trees will be undertaken using hand held tools.

17.2 Erection of Boundary Fencing

Fencing or other boundary treatments may be erected through part of the RPAs of trees to define the garden boundaries. In part this may replace existing boundary fencing.

17.3 Care will be taken when digging new holes and these will be undertaken by hand within these RPAs. Where roots larger than 25 mm are encountered the post hole (where possible) will be moved to ensure the roots are not affected. Where it is not possible to move the post hole roots larger than 25 mm will only be severed following consultation with an arboriculturist, as they may be essential to the tree's health and stability. Roots smaller than 25 mm may be pruned back to create a clean cut, preferably to a side branch, using a proprietary cutting tool such as bypass secateur or handsaws.

17.4 Roots which are exposed, but are to be retained, will be wrapped in dry, clean hessian sacking to prevent desiccation and to protect from rapid temperature changes. Prior to backfilling, any Hessian wrapping will be removed and retained roots should be surrounded with sharp sand or other loose granular fill, before soil or other material is placed over the roots. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

17.5 Fencing will be erected at the end of the project once the final garden layout has been confirmed.

18.0 Conclusion

18.1 This Planning Application proposes to extend the basement accommodation under the full footprint of the extended building (Planning Approval Ref 2015/0315/P) and to include light wells to the front and rear.

18.2 As part of the proposed development 3 no. individual trees will be removed. All the trees to be removed are `C' Category trees as set out in BS5837: 2012 `Trees in

relation to design, demolition and construction. Recommendations'. They are small, low quality or unremarkable trees which are of limited amenity value within the wider landscape and are not readily visible to the general public. If required replacement planting could be undertaken to mitigate for the removal of trees.

18.3 The alterations to the existing dwelling will take place within the RPAs and canopy spreads of 1 no. group of trees (G1) and adjacent to the RPA of offsite Plane (T5). These incursions are assessed to be minor and insignificant to the long term viability of these trees. There will also be limited incursions within the RPAs and canopy spreads of retained trees in relation to the removal and/or replacement of hard standing, construction activity and alterations to the rear garden layout. All these incursions have been assessed within the Arboricultural Impact Assessment and specifications for the implementation of these specific elements within the site development are set out within the Arboricultural Method Statement. These will ensure that the development has a minimal and insignificant impact on retained trees.

18.5 Retained trees will be protected during the Construction Phase. This report sets out how retained trees are an important part of the development of the site and how protection and retention of trees will be achieved. The effect on trees from the proposals will be minimal given the proposed site layout and conditions and providing that the Arboricultural Method Statement is implemented.

18.6 The development is therefore acceptable in arboricultural terms and should receive planning consent.

Photograph E - Looking north towards Plane (T5) from within the Application Site.

Appendix A
Arboricultural Survey
4 Langland Gardens, London, NW3 6PY

1.0 Introduction

1.1 I visited the application site in June 2015 to inspect trees in relation to a Planning Application on the site. These trees are within the area of the proposed development and may potentially have some significance to the proposed development. The survey includes the species, size, position and condition of these trees. A full list and description of Survey Terms is given below. Where possible trees were assessed as individual specimens, however, where trees formed distinctive groups within the landscape these were assessed and graded as groups. The position of these trees – together with relevant hedges and shrub masses - has been noted on the accompanying Tree Protection Plan.

1.2 This survey has been prepared following guidance set out in BS 5837: 2012 `Trees in relation to design, demolition and construction. Recommendations'. It seeks to offer guidance in relation to planning application discussions or designs for the site. As suggested by BS5837: 2012 all trees with a stem diameter of less than 75 mm at 1.5 m above ground level were excluded from the survey.

2.0 Description of Survey Terms

2.1 **Tree Reference Number** is the number allocated as part of this Arboricultural Survey. This may be different from other surveys undertaken on the site and the tree may, or may not, be tagged on site.

2.2 **Height** of the tree is measured in metres to the centre of the crown or the highest point of the tree. There is a tolerance of plus or minus 1.0 m.

2.3 **Crown Spread** is taken at compass points N, E, S and W from the centre of the tree stem. This is to the nearest 0.5 m. Where tree canopies spread off-site then estimations (est) have been made. With regard to groups the average canopy spread is given. Where individuals within the group are significantly different from this these are shown on the plan and the maximum spread stated within the report.

2.4 **Stem Diameters** are taken at 1.5 m above ground level unless otherwise stated. Where measurements of trunk diameter are not possible then estimations (est) have been made. This may be due to ivy on the trunk or where trees are not on the application site. The annotation ms refers to multi-stemmed trees.

2.5 **Root Protection Areas** (RPAs) are calculated from stem diameter measurements as set out in BS5837: 2012 `Trees in relation to design, demolition and construction. Recommendations'. RPAs are the areas (in m^2) around each retained tree which contain sufficient rooting volume to ensure the survival of the tree. The area will normally be represented on a plan as a circle or polygon. If shown as a circle the **Radius of Root Protection Area Zone** is included.

2.6 **Age Class -** A young tree (Y) is within its first 1/3rd of life expectancy. A middle aged tree (MA) is within its second 1/3rd of life expectancy and a mature tree (M) is within its final third of life expectancy. An Over Mature tree (OM) is beyond its average life expectancy and a Veteran (V) is usually beyond the typical age range for the species but of biological, cultural or aesthetic value.

2.7 **Physiological and Structural Condition -** Trees in a Good Physiological or Structural Condition have no visible problems or significant defects. Those in a Fair Condition have remedial symptoms or defects or where these symptoms or defects are not remedial but will not affect the **Estimate Remaining Useful Contribution** and those in a Poor Condition have defects which are not remedial and removal of the tree should be considered.

2.8 **Comments** give a description of the tree including its general form, description of any physical defects, disease or decay and other appropriate details based on the health, vitality and overall structural integrity. It also includes the environment in which the tree is growing. **Recommendations** for the management of the tree or group will be given where required.

2.9 A tree of good form has a shape that is typical of the species or has amenity in its own right. A tree with moderate form has been affected by its environment and is not typical of the species and has limited amenity value on its own right though it may have a collective amenity with adjacent trees. A tree with poor form has low quality and may also have structural defects which will affect its long term retention. **Canopy height above ground level** is given where this is applicable.

2.10 **Estimated Remaining Useful Contribution** is the estimated number of years that the tree will continue to make a safe and useful contribution to its surroundings, taking into account its current age, physiological and structural condition and its current location or environment. This assumes that there will be no changes within its immediate environment.

2.11 **Category Grading -** trees have been categorised in accordance with the cascade chart set out within BS5837: 2012 `Trees in relation to design, demolition and construction. Recommendations'.

2.12 The trees inspected as part of this report were inspected from the ground only and were not climbed. No samples of wood, roots, soils or fungus were taken for analysis. Observations of the trees were confined to what was visible from within the site and surrounding public places. A full hazard risk assessment of the trees was not undertaken.

2.13 Where access to trees is not possible and/or a certain identification is not possible then these trees are classified as `unidentified'.

Photograph F – Showing cavity at main branch junction within Cherry (T2).

Tree Schedule

Tree Ref No.	Species Common Name (Latin Name)	Height (m)	Stem Diameter (mm) ***Root Protection Area (m^2)***	Radius of Root Protection Area zone (m)	Branch Spread (m)	Age Class	Physiological/ structural Condition	Comments ● Preliminary Management Recommendations	Estimated Remaining Useful Contribution (years)	Category Grading
T1	Atlas Cedar (Cedrus atlantica)	14	420 est **25.4**	5.0	N - 5.0 E - 6.0 est S - 5.0 W - 7.5	MA	Fair/Good	Moderate amenity value but relatively prominent in the street scene. Growing to the site boundary with fence running to centre of tree. Ownership uncertain. Growing adjacent to the hard standing at the front of the property. Full inspection of tree not possible. Previously pruned with central leader removed from tree. Ivy to base of tree. Canopy is to 3.0 m above ground level over the site at the lowest point. ● No preliminary management recommendations recommended at time of survey.	20+	B2
T2	Cherry (Prunus spp)	4	210 **20.0**	2.5	N - 2.5 E - 4.0 S - 3.0 est W - 3.0	MA	Fair/Fair	Growing to the southern site boundary. Cavity below main branch junction to centre of tree at approximately 1.7 m. Misshapen form with some branches tight forks as they grow back into the tree from a main branch. Damage at some branch junctions with some branches being removed or lost. Overall this tree has a squat form. Canopy to ground level from suckers to the base of the tree. ● No preliminary management recommendations recommended at time of survey.	10+	C2
T3	Apple (Malus spp)	3	140 est **8.9**	1.7	N - 3.0 E - 3.0 S - 2.5 W - 2.5 est	MA	Fair/Fair	Tree of moderate form. Some damage in crown. ● No preliminary management recommendations recommended at time of survey.	10+	C2

T4	Oak (Quercus spp)	10	300 est **40.7**	3.6	N - 3.5 E - 3.5 S - 4.0 W - 5.0 All est	MA	Fair/Fair	Offsite tree - full inspection of the tree not possible. Epicormic growth to some branches and covered in ivy. Some damage in the crown. Crown is weighted to the west. Previously pruned. ● No preliminary management recommendations recommended at time of survey.	10+	C1
T5	Plane (Platanus spp)	19	900 est **366.5**	10.8	N - 9.0 E - 9.0 S - 10.0 W - 9.0 All est	M	Good/Good	Offsite tree - full inspection of the tree not possible. Covered in ivy. Previously reduced to the west with extended growth from reduction points. The Canopy of the tree is offsite and appears to be under a management regime. may be raised above the level of the application site ● No preliminary management recommendations recommended at time of survey.	20+	B1
T6	Goat Willow (Salix spp)	8	90 **3.8**	1.1	N - 2.5 est E - 3.0 est S - 3.0 W - 2.5	Y	Good/Fair	Growing to rear of the garden. Trunk breaks at 1.8 m and again at 2.5m. Some bark damage in crown. First Significant Branch at 1.7 m above ground level to north-west. Canopy to 1.5m above ground level over application site at lowest point. ● No preliminary management recommendations recommended at time of survey.	10+	C1
T7	False Acacia (Robinia pseudoacacia)	12	400 est **72.4**	4.8	N - 5.0 E - 5.0 S - 4.5 W - 5.0 All est	MA	Fair/Good	Offsite tree - Full inspection of tree not possible. Golden form of tree. First Significant Branch below 1.8 m above ground level. Canopy over 5.0m above ground level over application site at the lowest point. ● No preliminary management recommendations recommended at time of survey.	20+	B1

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Tree Ref No.	Species Common Name (Latin Name)	Height (m) range	Stem Diameter (mm) **Root Protection Area (m^2)** *Radius of Root Protection Area zone (m)*	Branch Spread - general (max) **(m)**	Age Class (general)	Physiological/ Structural Condition (general)	Comments (general) • Preliminary Management Recommendations	Estimated Remaining Useful Contribution (years)	Category Grading
G1	2 no. Cherry (Prunus spp)	8-11	200 - 210 **18.1 - 20.0** *2.4 – 2.5*	N – 4.0 E – 3.5 S – 3.5 W – 4.0 all est	MA	Fair/Fair	Trees of moderate form growing to southern boundary. Covered in ivy. Growing adjacent to the hard standing at the front of the property. One tree has been topped at 3.0 m and re-grown from this point. Canopies to 1.7 m above ground level at the lowest point. • No preliminary management recommendations recommended at time of survey.	10+	C2