

ARBORICULTURAL IMPACT ASSESSMENT REPORT & OUTLINE METHOD STATEMENT:

Flat 1, 15 Lindfield Gardens London NW3 6PX

INSTRUCTING PARTY:

Private Client c/o MATA Architects 65 Alfred Road London W2 5EU

REPORT PREPARED BY

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		(Client / Design Team)	
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1. SUMMARY

- 1.1 The existing site is a lower ground floor residential property with associated garden containing a number of trees potentially constraining development. The proposal includes the replacement of the existing lower ground floor extension.
- 1.2 There are 15 trees on the property and adjoining land outside of the application boundary that are within close proximity to the development and need to be assessed. These are judged mostly moderate and low-quality trees, with the exceptions poor-quality specimens T10 and T11.
- 1.3 The report has assessed the impacts of the development proposals and concludes there would be at most a low impact on the resource: a small portion of trees will be removed or pruned to facilitate construction. Those removed have more collective than individual specimen value, such that their loss could be mitigated with new planting, bringing its own benefits to a relatively unmanaged resource. Similarly, though pruning here is to serve development, if undertaken to best practice, the scale envisaged should not be altogether untoward in an occupied site.
- 1.4 Whilst the default position is that structures be located outside the Root Protection Area* (RPA) of trees to be retained, there are some modest encroachments that could not be avoided in the design of the scheme. The report has demonstrated that the tree(s) can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with the RPA; the report also proposes a series of mitigation measures to improve the soil environment that is used by the tree for growth. Net impacts are assessed therefore as being low.
- 1.5 Notwithstanding the above assurances, the report sets out a series of recommendations prior and during construction that will ensure impacts to trees are minimised. These are detailed in sections 6.3 and 8 of this report.
- 1.6 In conclusion, the proposal, through following the above recommendations, will have no, or very limited, impact on the existing trees and is acceptable.

* British Standards Institute: Trees in relation to design, demolition and construction BS 5837: 2012 HMSO, London

2. INTRODUCTION

2.1 Terms of Reference

- 2.1.1 MATA Architects instructed Landmark Trees (LT) to prepare this Arboricultural Impact Assessment and Outline Method Statement on behalf of their client, to support a full planning application submitted to the London Borough of Camden ('LBC').
- 2.1.2 The application relates to the replacement of the existing rear extension. Specifically, full planning permission is sought for:

"Demolition of existing Lower Ground Floor rear extension. New extension massing to extend 4.5m further than existing (width and height to match existing). Floor level of the rear section of the extension to be 1m lower than existing FFL. Further 1.5m projecting balcony which will cantilever from main extension. 2no. new paved areas adjacent to extension to match floor levels in extension."

- 2.1.3 This report will assess the impact on trees and their constraints, identified in our survey. Although the proposals were known at the time of the survey, Landmark Trees endeavour to survey each site blind, working from a topographical survey, wherever possible, with the constraints plan informing their evolution. The purpose of the report is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention.
- 2.1.4 Trees are a material consideration for a Local Planning Authority when determining planning applications, whether or not they are afforded the statutory protection of a Tree Preservation Order or Conservation Area. British Standard BS 5837:2012 Trees in Relation to Design, Demolition and Construction sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and new developments. The Standard recommends a sequence of activities (see Fig.1 overleaf) that starts in the initial feasibility and design phase (RIBA Stage 2 'Concept Design' as defined in 2012) with a survey to qualify and quantify the trees on site and establish the arboricultural constraints to development (above- and below-ground) to inform the design in an iterative process, and continues with an assessment of the arboricultural impacts of the final design and measures to mitigate such impacts should they be negative. Detailed technical specifications for mitigation and protection measures are devised in the design phase that follows (RIBA Stage 3-4 'Developed and Technical design'), and the sequence ends with the Implementation and Aftercare phase (RIBA Stages 5-7) with the implementation of those measures once planning permission is granted, guided by Arboricultural Method Statements (RIBA Stage 4-5, 'Technical Design and Construction) and professional guidance where appropriate.

2.1.5 This report is produced to support the Design Team to the Scheme Design Approvals stage in the process chart below.





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2.2 Drawings Supplied

2.2.1 The drawings supplied by the client and relied upon by Landmark Trees in the formulation of our survey plans are:

Existing site survey: J1806 – EX1 Proposals: P23-004 - 200 - Proposed Ground Floor Plan & P23-004 - 150 - Proposed Site Plan

2.3 Scope & Limitations of Survey

- 2.3.1 As Landmark Trees' (LT) arboricultural consultant, Ross Gamblin surveyed the trees on site on the 11th of July 2022, recording relevant qualitative data in order to assess both their suitability for retention and their constraints upon the site, in accordance with British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations [BS5837:2012].
- 2.3.2 Our survey of the trees, the soils and any other factors, is of a preliminary nature. The trees were SURVEYED on the basis of the Visual Tree Assessment method expounded by Mattheck and Breloer (The Body Language of Trees, DoE booklet Research for Amenity Trees No. 4, 1994). LT have not taken any samples for analysis and the trees were not climbed but inspected from ground level.
- 2.3.3 The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development. Tree surveys undertaken after a detailed design has been prepared can identify significant conflicts: in such cases, the nature of and need for the proposed development should be set against the quality and values of affected trees. The extent to which the design can be modified to accommodate those trees meriting retention should be carefully considered. Where proposed development is subject to planning control, a tree survey should be regarded as an important part of the evidence base underpinning the design and access statement
- 2.3.4 A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.
- 2.3.5 The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

2.4 Survey Data & Report Layout

- 2.4.1 Detailed records of individual trees are given in the survey schedule in Appendix 1. Recommendations for tree works that form the minimum requirements to facilitate development and which form part of the planning application are provided at Appendix 2.
- 2.4.2 A site plan identifying the surveyed trees, based on the Instructing Party's drawings / topographical survey is provided in Part 3 of this report. This plan also serves as the Tree Constraints Plan with the theoretical Recommended Protection Areas (RPAs), tree canopies and shade constraints, (from BS5837: 2012) overlain onto it. These constraints are then overlain in turn onto the Instructing Party's proposals to create a second Arboricultural Impact Assessment Plan in Part 3. Physical measures required to protect trees during construction are then added to this plan to create an Outline Tree Protection Plan. General observations, discussion, conclusions and recommendations follow, below.

3. SITE CHARACTERISTICS

3.1 Property Description & Planning Context



Photograph 1: Aerial view of application site (Source: Google Maps)

- 3.1.1 The property is arranged over 4 storeys from Lower Ground to Second floor and consists of no.5 self contained residential flats. Flat 1 occupies the lower ground floor. Flat 2 occupies the Ground Floor.
- 3.1.2 The site is relatively level throughout.
- 3.1.3 We are not aware of the existence of any Tree Preservation Orders*, but understand the site stands within the Redington Frognal Conservation Area, which will affect the subject trees: it is a criminal offence to prune, damage or fell such trees without permission from the local authority.
- 3.1.4 Relevant local planning policies comprise Policies G1 and G7 of the London Plan 2021 and Policies A3, D1 and D2 of the Camden Local Plan (adopted 3rd July 2017).

* If the client is aware of such, we ask that they confirm these details with us. A purchaser of a site will be informed of the existence of any TPOs during the conveyancing process; an existing owner of a site must be served with a copy of any TPOs made during their ownership. Landmark Trees can investigate the matter further on instruction from the client, but this is beyond our normal scope of instruction as it can take c. 28 days to fully discover this information (which is beyond our standard turnaround and will substantially delay the issue of the instructed report). Some LPAs maintain registers online and / or offer a more rapid telephone or email response. These services though are not wholly reliable and we have had experience of receiving incorrect advice.



Figure 2: Extract from the BGS Geology of Britain Viewer

- 3.2.1 In terms of the British Geological Survey, the site overlies the London Clay Formation (see indicated location on Fig.1 plan extract above). The associated soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such highly plastic soils are prone to movement: subsidence and heave. The actual distribution of the soil series are not as clearly defined on the ground as on plan and there may be anomalies in the actual composition of clay, silt and sand content.
- 3.2.2 Clay soils are prone to compaction during development with damage to soil structure potentially having a serious impact on tree health. The design of foundations near problematic tree species will also need to take into consideration subsidence risk. Further advice from the relevant experts on the specific soil properties can be sought as necessary.

3.3 Subject Trees

- 3.3.1 Of the 14 surveyed trees, 4 are category* B (Moderate Quality) 8 are category C (Low Quality) and 2 are category U (Poor Quality); none are category A (High Quality).
- 3.3.2 The tree species found on the site comprise Leyland cypress, sycamore, laburnum, eucalyptus, London plane, common ash, apple, holly and mixed shrubs.
- 3.3.3 In terms of age demographics there is a broadly even mix of young, semi-mature, early mature and mature trees present.
- 3.3.4 Full details of the surveyed trees can be found in Appendix 1 of this report.

*page 9 of: British Standards Institute: Trees in relation to design, demolition and construction BS 5837: 2012 HMSO, London



Photograph 2: Tree cover within rear garden

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Photograph 3: H1 with T3 behind



Photograph 4: The off-site holly T12

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4. DEVELOPMENT CONSTRAINTS

- 4.1 Primary Constraints
 - 4.1.1 BS5837: 2012 gives Recommended Protection Areas (RPAs) for any given tree size. The individual RPAs are calculated in the Tree Schedule in Appendix 1 to this report, or rather the notional radius of that RPA, based on a circular protection zone. The prescribed radius is 12-x stem diameter at 1.5m above ground level, except where composite formulae are used in the case of multi-stemmed trees.
 - 4.1.2 Circular RPAs are appropriate for individual specimen trees grown freely, but where there is ground disturbance, the morphology of the RPA can be modified to an alternative polygon, as shown in the diagram below (Figure 3). Alternatively, one need principally remember that RPAs are area-based and not linear notional rather than fixed entities.





4.1.3 In BS5837, paragraph 4.6.2 states that RPAs should reflect the morphology and disposition of the roots; where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution. This can be done as a desktop / theoretical exercise but is not altogether (scientifically) reliable and may also invite disagreement / differences of opinion as to that distribution.

- 4.1.4 LT prefer where possible and practical to raise the issue of modification but suspend judgment until such time as more reliable site investigations have been undertaken (Tree Radar scans and / or trial pits). Of course, the justification for these investigations will depend upon whether trees are (or are likely to be once modified) subject to impacts and also upon their quality / condition: it is generally not worth commissioning a radar study to locate the roots of a poor- or low-quality tree. On other occasions, there may not be the opportunity to commission investigations, either because the access is restricted by ownership / tenancy or the report's turnaround simply does not allow it, and they may need to follow on or be conditioned. **Notwithstanding the findings of the trial pits excavated, no a priori RPA modifications have been made in this instance.**
- 4.1.5 The quality of trees will also be a consideration: U Category trees are discounted from the planning process in view of their limited useful life expectancy. Again, Category-C trees would not normally constrain development individually, unless they provide some external screening function.
- 4.1.6 At paragraph 5.1.1. BS5837: 2012 notes that "Care should be exercised over misplaced tree preservation; attempts to retain too many or unsuitable trees on a site are liable to result in excessive pressure on the trees during demolition or construction work, or post-completion demands on their removal."
- 4.1.7 In theory, only moderate quality trees and above are significant material constraints on development. However, low quality trees comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting is generally considered appropriate.
- 4.1.8 In this instance, the moderate quality trees present have the potential to pose significant constraints to development of the site.

4.3 Secondary Constraints

- 4.3.1 The second type of constraint produced by trees that are to be retained is that the proximity of the proposed development to the trees should not threaten their future with ever increasing demands for tree surgery or felling to remove nuisance shading (Figure 4), honeydew deposition or perceived risk of harm.
- 4.3.2 The shading constraints are crudely determined from BS5837 by drawing an arc from northwest to east of the stem base at a distance equal to the height of the tree, as shown in the diagram opposite. Shade is less of a constraint on nonresidential developments, particularly where rooms are only ever temporarily occupied.



- 4.3.3 This arc (see Figure 5) represents the effects that a tree will have on layout through shade, based on shadow patterns of 1x tree height for a period May to Sept inclusive 10.00-18.00 hrs daily.
- 4.3.4 Assuming that they will be retained, the orientation of the trees closest to the rear of the building means they have the potential to provide a variety of secondary constraints, including shading, organic deposition and the potential need to maintain crown clearance in the future. The significance of these constraints will vary depending on the location and proximity to the proposed re-development which is considered below (in Sections 5 & 6). As specified by BS5837, this section (4) of the report considers only the site as it is, not in the light of pending proposals.

Note: Sections 5 & 6 below will now assess the impacts of the proposals upon constraints identified in Section 4 above. Table 1 in Section 5 presents the impacts in tabular form (drawing upon survey data presented in Appendices 1 & 2). Impacts are presented in terms of whole tree removal and the effect on the landscape or partial encroachment (% of RPA) and its effect on individual tree health. Section 6 discusses the table data, elaborating upon the impacts' significance and mitigation.

Table 1: Arboricultural Impact Assessment

(Impacts assessed prior to mitigation and rated with reference to Matheny & Clark (1998))

Hide irrelevant Show All Trees

Ref: MATA_15LDF_AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
В	3	Sycamore	LGF Construction within RPA	7.2 m ² 2.91 %	Mature	Normal	Moderate	Very Low	Very Low	Hand dig top 750mm of LGF line thro' RPA
			Note: trial pits on outer line of LGF found no roots							
U	11	Apple, Ornamental	Felled to Facilitate Development	m² N/A %	Young	Moderate	N/A	N/A	Very Low	New planting <i>/</i> landscaping
С	G14	Mixed shrubs	Felled to Facilitate Development	m² N/A %	Semi-mature	Normal	N/A	N/A	Low	New planting <i>/</i> landscaping

6. ARBORICULTURAL IMPLICATIONS

- 6.1 Rating of Primary Impacts
 - 6.1.1 The principal impact in the current proposals arises from the removal of the low quality shrubs that make up G14 and the poor quality apple T11. In terms of resource management, these comprise a relatively small portion of the whole. Those removed generally have more collective than individual specimen value such that their loss could be mitigated with new planting, bringing its own benefits of enrichment and diversification to a relatively unmanaged and subsisting resource. The immediate reduction in canopy cover through felling is therefore rated as a low impact unlikely to harm either the resource or the wider conservation area.
 - 6.1.2 Further impacts to retained trees comprise the encroachment of T3 by the extended LGF level. In order to accurately identify the impact to the tree, a trial trench was excavated along the outer line of the encroachment. The findings of this are detailed in Appendix 4 but in short, no significant roots from T3 will be impacted.
 - 6.1.3 In order to achieve the desired levels for the new decking, the middle section is to be lowered within the RPA of T3. As above, trial trenches were excavated to determine any impact of this and found no roots significant roots from the tree. Whilst a number of roots from H1 were encountered, even if this posed a planning constraint, we would not consider their severance likely to significantly affect the ongoing health of the affected stem(s). The lower deck will require construction using a low-invasive system comprising ground-screws / mini-piles supporting a suspended structure.
 - 6.1.4 In our view, the tree(s) are of a species, age and condition sufficient to remain viable in the circumstances, given that the area lost to encroachment can be compensated for elsewhere, contiguous with the RPA, and provided the series of mitigation measures outlined below are followed to both reduce the immediate impact of working methods and also improve the soil environment that is used by the tree for growth. Supervision and monitoring of such measures will also be essential. Subject to these provisos the net impacts are assessed as being low.

6.1.5 There is no set RPA encroachment that is immediately permissible. However, at para 5.3.a of BS5837, the project arboriculturist is charged with demonstrating that the tree(s) will remain viable in the instance of RPA encroachment. Whilst there is little research on RPA encroachment itself, there have been various commonly cited studies of root severance (see overleaf). Whilst the RPA is not coextensive with the wider root system, one can make some correlations after Thomas (2014): in average (sic) conditions, a straight line tangential with a tree's canopy would transect 15% of the root system, for another mid-way to the trunk that figure would be 30%. In the current cases, the impacts would be below the lower of these two parameters as can be seen in Plan 2 in the Appendix or where more irregular in profile, can be gleaned from the percentage RPA encroachments in Table 1. There is no precise correlation between % RPA and root impairment or loss. However, in our experience, most RPA tend to exceed the free-grown canopy spread a little (c. x 1.2 -1.5), suggesting by reference to both Thomas and Fig. 6a - 6c overleaf, RPA encroachments marginally understate the percentage root loss. The informal 20% RPA threshold may equate to c. 30% root loss, and 10% RPA encroachment to c. 20% root loss. The assumptions made here are relatively crude and apply more to open grown trees but are nonetheless illustrative.



Figure 5a: approximate correlation between RPA encroachment and actual root loss on a free-grown tree of 5m RPA radius (after Thomas (2014))





- 6.1.6 Published references suggest healthy trees tolerating up to 30-50% root severance in general (Coder, Helliwell and Watson in CEH 2006). "In practice 50% of roots can sometimes be removed with little problem, provided there are vigorous roots elsewhere. Inevitably, this degree of root loss will temporarily slow canopy growth and even lead to some dieback" (Thomas 2014). Clearly, it is not the purpose of this report to sanction impacts to test a tree's physiological tolerance, where the guidance recommends the avoidance of impact / RPA encroachment as the default position. However, it has not proved possible at the design stage to avoid such encroachment altogether, and in that regard, the project arboriculturalist has determined that the retained trees can remain viable in the scheme before planning.
- 6.1.7 The trees in question are shown in Table 1 above to be healthy specimens of species with a good resistance to development impacts, and of an age quite capable of tolerating these limited impacts. Nor do the site characteristics suggest specific soil anomalies (e.g. heavy clay) having a bearing on such considerations, provided appropriate measures (e.g. ground protection) are taken.
- 6.1.8 As per BS5837 recommendations (at 5.3.1a), the above assessment demonstrates that the tree(s) can remain viable and as per the equivalent hatching in Plan 2 of the Appendices that the area(s) lost to encroachment can be compensated for elsewhere. The guide also recommends (at 5.3.1b) the arboriculturist propose a series of mitigation measures (to improve the soil environment that is used by the tree for growth). These are provided at 6.3 below.

6.2 Rating of Secondary Impacts

6.2.1 There will always be marginal secondary impacts of honeydew / litter deposition and partial shade on this site, regardless of development. The juxtaposition of the proposals to retained trees mena that the status quo is unlikely to change with further development, which is the salient point for planning to consider. Thus, the secondary impacts of development are minimal.

6.3 Mitigation of Impacts

- 6.3.1 The replanting scheme will offer considerable enhancement and replaces low / poor quality trees. Replacement trees will have the advantage of being specifically selected for the proposed site, healthy and fit-for-purpose. Design can provide for a diverse range of native and ornamental species that will complement rather than conflict with the proposals, so providing a more sustainable long-term resource for the future. A selection of tree species and cultivars for open and constricted sites is provided in Appendix 3.
- 6.3.2 RPA encroachments of >5% area are shown in Plan 2 compensated for elsewhere on contiguous land. Soft ground within the unaffected parts of encroached RPAs will be treated with a 75mm layer of mulch which will be maintained in place throughout the duration of construction activities.
- 6.3.3 All plant and vehicles engaged in demolition works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure. The demolition of the building should proceed inwards in a "pull down" fashion. Hard surfacing will be first broken up with manual power tools and then carefully lifted with caution by a skilled machine operator again working away from the tree
- 6.3.4 The limits of excavation within RPAs will be undertaken manually; any roots encountered will be cleanly pruned back to an appropriate junction with a sharp pruning saw or secateurs. Roots larger than 25mm diameter may only be cut in consultation with an arboriculturalist and with the prior approval of the Local Authority.
- 6.3.5 The lower deck section will require construction using a low-invasive foundation system such as ground-screws or mini-piles supporting a suspended structure.
- 6.3.6 Nuisance deposition can be further mitigated with routine maintenance, light pruning / deadwooding and the fitting of filtration traps on guttering (see Figure 7 below).



Figure 7: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

7. CONCLUSION

- 7.1 The potential impacts of development are all relatively low in terms of both quality of trees removed and also RPA encroachments of trees retained. In the latter case, the report has demonstrated as per BS5837 paragraph 5.3.1 (a) that the tree(s) can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA; the report also proposes as per paragraph 5.3.1 (b) a series of mitigation measures to improve the soil environment that is used by the tree for growth.
- 7.2 The full potential of the impacts can thus be largely mitigated through design and precautionary measures. These measures can be elaborated in Method Statements in the discharge of planning conditions.
- 7.3 The species affected are generally tolerant of root disturbance / crown reduction and the retained trees are generally in good health and capable of sustaining these reduced impacts.
- 7.4 The trees that are recommended for felling are of little individual significance, such that their loss will not affect the visual character of the area.
- 7.5 Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape thereby complying with Policies G1 and G7 of the London Plan 2021 and Policies A3, D1 and D2 of the Camden Local Plan (adopted 3rd July 2017). Thus, with suitable mitigation and supervision the scheme is recommended to planning.

8. **RECOMMENDATIONS**

8.1 Specific Recommendations

- 8.1.1 Recommendations for works required to facilitate development are found in Appendix 2 and a selection of columnar tree species cultivars for constricted sites provided in Appendix 3. Any tree removals recommended within this report should only be carried out with local authority consent.
- 8.1.2 Excavation and construction impacts within the RPAs of trees identified in Table 1 above, will need to be controlled by method statements specifying mitigation methods suggested in para 6.3 above and by consultant supervision as necessary. These method statements can be provided as part of the discharge of conditions.
- 8.1.3 Replace felled tree T1 with native ornamental nursery stock under current best practice; i.e. conforming to and planted in accordance with the following:
 - BS8545: 2014 Code of Practice for Trees from Nursery to Landscape
 - BS 3936-1: 1992 Nursery stock. Specification for trees and shrubs; and
 - BS 5236:1975 Cultivation and Planting of Trees in the Advanced Nursery Stock Category.
 - All replacement stock should be planted and maintained as detailed in BS 4428:1989 (Section 7): Recommendations for General Landscape Operations.

9. METHOD STATEMENT

- 9.1 Outline Method Statement (to be read in conjunction with Tree Protection Plan)
 - 9.1.1 This outline method statement has been prepared in support of a planning application made regarding development at Flat 1, 15 Lindfield Gardens. The statement will address the precautions that will be undertaken to protect the trees on and around this site during the proposed construction works.
 - 9.1.2 This section of the report lays down the methodology for any proposed works that may have an effect upon the retained trees. It is essential within the scope of any contracts related to the development proposals that this method statement is observed and adhered to. It is recommended that this section form part of the work schedule and specification issued to the building contractors and can be used to form part of the contract.
 - 9.1.3 Copies of this method statement and the Tree Protection Plan (see Appendix 9) will be available for inspection on site. The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.
- 9.2 Sequence of Works
 - 9.2.1 The sequence of works will be as follows:
 - initial tree works felling and stump grinding for working clearances
 - installation of Tree Protection Barrier (TPB) & ground protection
 - demolition of existing extension & landscaping
 - installation of underground services
 - main construction
 - removal of TPB
 - hard landscaping
 - soft landscaping

9.3 Site Supervision & Monitoring

- 9.3.1 On this site, a site manager will be nominated to be responsible for all arboricultural matters on site. A pre-commencement site briefing/meeting between the site manager and arboricultural consultant will be held (see Table 1 below). The site manager's details will be issued to the London Borough of Camden in the minutes / site monitoring report for this meeting. During this meeting all the tree protection methods below will be studied and familiarization with requirements of this AMS. The site manager will also:
 - be present on site for the majority of the time;
 - have the authority to stop any work that is causing, or has the potential to cause harm to any tree;
 - be responsible for ensuring that all site operatives are aware of their responsibilities toward trees on site and the consequences of the failure to observe these responsibilities;
 - make immediate contact with the Arboricultural consultant in the event of any tree related problems occurring, whether actual or potential, in accordance with a tree protection protocol (see section 1.6 below).
 - 9.3.2 At this stage, the nominated Key Personnel are as follows:

Adam Hollis Arboricultural Consultant Landmark Trees info@landmarktrees.co.uk Tel: 0207 851 4544

- 9.3.3 Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the development. As noted above Adam Hollis MSc (Arb) is the key contact, with monitoring occasionally undertaken by Conor Fitzpatrick (subject to any new staff intake). Site supervision will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed time intervals as indicated in Table 1 below. In addition to specific task supervision, general monitoring of protection measures will be undertaken at least once per month, coordinated where practical with visits detailed in Table 1.
- 9.3.4 Routine visits will generally be unannounced. However, the arboriculturalist will also visit subject to advance notification (2 weeks) and agreement to supervise any agreed works within the RPA, in accordance with table 1 below.

9.3.5 A tree protection protocol for contingencies will be integrated into the site induction process at a pre-commencement meeting involving the developer, the arboricultural consultant, the site manager and the Council tree officer as appropriate. The protocol will be that, in the event of any unplanned incursion / accident / spillage within the RPA, the site agent should notify (by telephone) the retained arboricultural consultant immediately. The consultant will provide advice and attend site as soon as possible. This may require the stoppage of all or part of the works in the vicinity of the tree. The consultant will notify the LPA Tree Officer of the nature and extent of damage, the mitigation strategy and likely prognosis. The contact details of the LPA Tree Officer are:

Nick Bell Tree and Landscape Officer London Borough of Camden nick.bell@camden.gov.uk

Tel: 0207 974 4444

- 9.3.5 The site monitoring sheet in Appendix 3 will be used to provide photographic evidence, indicate the remedial action required and timescales for remediation completion. The consultant and officer will further liaise as necessary (perhaps meeting on site) until the officer is satisfied that protection measures are again satisfactory. The action in response to incidents will be commensurate with and appropriate to the nature of any such incident. Any breach of the stipulated timescale for remediation will trigger a further monitoring report.
- 9.3.6 Supervision will require the arboricultural consultant to be present during the key elements of proposed incursions into the protection areas, and likewise for any unplanned incursions which the LPA have approved. If the arboricultural consultant is satisfied and that the specific task is proceeding in accordance with the methodology set out in the AMS, after an appropriate briefing, the supervision for the task may be reduced to telephone and email contact between the site manager and arboricultural consultant. Ongoing routine site monitoring continues as per Table 1.

- 9.3.7 The Local Authority will be accorded free access to the site subject to H&S requirements; as noted at 1.6.3, any problems will be reported directly to Arboricultural consultant, who will then visit the site and make recommendations to the developer on how best to rectify the situation and ensure implementation. As noted in Table 1 below, a final sign-off visit will be carried out at the end of the development and a formal letter sent to both the client the London Borough of Camden indicating an end to the monitoring period. It is the client's duty to notify LT that the project has been completed, in order to facilitate such an inspection.
- 9.3.8 Landmark Trees will be instructed to provide the above monitoring. In the absence of routine payment (as per our business terms), routine monitoring will cease (temporarily or permanently) and the London Borough of Camden will be informed of the cessation of monitoring. The client will also reserve the right to dismiss Landmark Trees and replace with another arborist, but must inform the London Borough of Camden.

Table 1: Site Monitoring Visits

Supervision Visit No:	Details	Lead in Time Required by LT	Action
Visit 1: Pre-Development Site Inspection (S.2.3 of AMS) <u>To be repeated prior</u> <u>to Construction</u> <u>Phase</u>	 To include Site Agent briefings (S.1.5) prior to both demo <u>AND</u> construction phases. To confirm position of protective fencing and that it has been erected in accordance with AMS (S.2.2 and Tree Protection Plan in Appendix 4); To check any pre-demolition/construction ground protection is in place. To check any tree works have been undertaken in accordance with this AMS (S.2.1. and Appendix 1). Determine if further tree work is required and seek required permission if necessary. To check site facilities/access are in accordance with the AMS (S.3.3). 	Minimum 2 weeks	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days of site supervision visit (Site Monitoring Sheet in Appendix 3).
Visit 3: Installation of foundations within RPA	 Attend any excavation within RPA's where arboricultural supervision is prescribed by the AMS to ensure work is undertaken in accordance with its specification. Date to be confirmed following formal project planning. 2 weeks prior notice required. 	Minimum 2 weeks	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days as per visit 1
Visit 3: Alterations of levels within RPA	 Attend any excavation within RPA's where arboricultural supervision is prescribed by the AMS to ensure work is undertaken in accordance with its specification. Date to be confirmed following formal project planning. 2 weeks prior notice required. 	Minimum 2 weeks	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days as per visit 1
Ongoing Monitoring Visits	 Periodically during 12 months (or longer) of entire project and prior to construction phase. Visits will be based on intensity of site operations, but at a minimum of monthly visits. Attend site at least once per month to confirm protective measures are still in place / can be removed at appointed times. Ensure attendance is timed for any other key elements of proposed (and any other unplanned) incursions into the protection areas. <u>Pre-start landscape meeting</u> with main contractor to confirm ongoing tree protection measures. 	TBC as project develops	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days as per visit 1
Final Site Visit - Completion of construction phase supervision visit (S.5)	After it has been confirmed that the construction phase is complete, allow removal of temporary protective fencing and ground protection. Specify any remedial work if necessary.	Minimum 2 weeks	Issue a brief report with findings to Architect, Tree Officer and Main Contractor within 5 days as per visit 1

9.4.1 Pre- Development Site Preparation

- 9.4.2 All works must be carried out by a competent arborist in accordance with BS 3998: 2010 and any other prevailing good professional practice including BS 8545:2014 Trees: from nursery to independence in the landscape. Recommendations.
- 9.4.3 Specific works recommended to facilitate development are the felling of T11 and G14.These specific works to facilitate development are listed in Appendix 3.
- 9.4.4 The Root Protection Area (RPA) indicates 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. The default position is for the RPAs to be fully fenced off to form the boundary of the Construction Exclusion Zone (CEZ), an area based on the RPA, from which access is prohibited for the duration of the project, including the storage of any works materials and equipment.
- 9.4.5 A Tree Protection Barrier [TPB] comprising steel mesh panels of 2.4m in height ('Heras') shall be erected to protect retained trees within the rear garden. These panels will be mounted on a scaffolding frame as shown in Figure 8 below (this is also Figure 2 of BS5837: Trees in Relation to Design, Demolition and Construction in paragraph 6.2.2.2). T13 will have self-supporting boxed hoarding, 2.4m in height, around its planting pit to protect against site access collision. This hoarding shall be at least 19mm in thickness, no part of this hoarding may be affixed to the trees themselves.
- 9.4.6 The TPBs are to be erected before any work (other than tree surgery) commences on site, are to remain 'in situ' undamaged for the duration of all work or each phase, and only to be removed once all work is completed. If any work is deemed necessary prior to the erection of fencing a Landmark Trees representative should be informed to enable their presence to oversee the work being carried out.
- 9.4.7 The location of the RPAs and TPBs are shown in the Tree Protection Plan in Part 3



Fig. 8 Tree Protection Barrier Specification (Source: Figure 2 from BS5837 - Default specification for protective barrier)

- 9.4.8 Extant areas of RPA that cannot be fenced off and therefore lie outside the CEZ must be protected with fit-for-purpose ground protection. The location and type of ground protection is shown in the Tree Protection Plans at Appendix 4. As per paragraph 2.2.3, this ground protection is to be installed before any work (other than tree surgery) commences on site, is to remain 'in situ' undamaged for the duration of all work until the landscape phase and only to be removed once all construction work is completed.
- 9.4.9 In order to provide a greater level of protection to T13 than the existing surfacing, it will be reinforced with Ground Guards Multitrack mats or similar. These shall be secured in place using their integral fasteners.

9.4.10 In order to provide a sufficient level of protection to T3, unfenced parts of its RPA will be protected as per Figure 9 below: treated timbers (100mm x 80mm) will be placed onto the paving to act as bearers at no more than 1m spacings. The area between the bearers will be filled with woodchip over which 19mm thick marine plyboards will be placed. The plyboards will be screwed onto the bearers to retain them in place. It is ESSENTIAL that a briefing is held with the retained arboriculturalist prior to removal of the ground protection.



Figure 9: Woodchip and plywood ground protection detail

9.5 Development Phase

- 9.5.1 The following general precautions will apply:
 - No fires shall be made on any part of the site, or within 20m of any tree to be retained.
 - No spilling or pouring of fuels, oils, solvents, tar shall be made on any part of the site.
 - No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10 metres of the trunk of a tree that is to be retained.
 - No spillage or discharge of wet mortar or concrete shall be made on any part of the site.
 - No storage of materials shall be made within the protective fences.
 - No breaching or moving of the protective fences without the approval of an arboriculturist.
 - Alterations in levels within the tree protection fence areas shall be avoided.
- 9.5.2 The procedures for dealing with variations and incidents are detailed in S 9.3.
- 9.5.3 Site access will be as per the layout within our Tree Protection Plan. Site accommodation and material storage will utilise the site interior / protected ground within the rear garden.

9.5.4 Delivery lorries will be excluded from RPAs by hoarding and ground protection. Adequate allowance must be made for vehicle heights and ground clearance, where tree canopies overhang access routes. Any further pruning for working clearances must be discussed first with the arboriculturalist; once agreed in principle these works should be approved by the appropriate tree officer and approved in writing by the LPA. Materials can be unloaded onto protected ground (forecourt) within RPAs and stored throughout the interior of the site(s) away from protected trees.

9.6 Routing & Installation of Services

9.6.1 Every effort should be made to ensure that the routing and installation of services avoid the RPA at the design stage; however if unavoidable then it may be possible, with written permission from the LPA, to implement the provisions of BS5837 and NJUG VOLUME 4 (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

9.7 Changes in Grade

9.7.1 The outer limits of the middle decking section will be manually excavated in conjunction with pre-emptive root pruning under arboricultural supervision. Roots encountered will be cleanly cut back to an appropriate junction using a sharp handsaw / secateurs.

9.8 Demolition & Construction Measures

- 9.8.1 All plant and vehicles engaged in demolition works (removals only) will either operate outside the RPA, or work from protected ground. It will be necessary to undertake demolition inwards within the footprint of the existing extension (often referred to as "top down, pull back").
- 9.8.2 Should levels of dust build-up on trees occur, it may be necessary to seek the advice of Landmark Trees on remedial measures, e.g. hose down the tree(s) immediately following any significant accumulation of dust.
- 9.8.3 The limits of the new extension within the RPA of T3 will be manually pre-excavated to a min. 1m depth and root-pruned (as applicable) under arboricultural supervision. In the unlikely event of discovering roots >25mm diameter, they may only be cut in consultation with the retained arboriculturalist and with the approval of the Local Authority Tree Officer.

- 9.8.4 The lower deck section will be constructed using a low-invasive foundation system comprising discontinuous piles / ground screws supporting a suspended structure. Proposed piling points will be manually pre-excavated under arboricultural supervision. Roots with a diameter of less than 25mm may be cleanly pruned back but if roots above 25mm diameter are encountered, it will be necessary to shift the piling position to a root-free area.
- 9.8.5 During the construction phase and throughout dry periods on site regular hosing down will be carried out to control dust pollution. In the event of dust build up on trees occurring arboricultural advice will be sort and if necessary remedial measures such as hosing down the trees will be taken.
- 9.8.6 Where scaffolding needs to be installed within the RPA the proposed boarded woochip will provide sufficient ground protection.
- 9.9 Removal of Tree Protection and Post Construction Landscaping and Treatment
 - 9.9.1 The tree protection may be removed upon completion of the construction phase and any site machinery has been removed from the RPA.
 - 9.9.2 The number, species, form and size of new plants and other landscaping detail will be specified within a landscape plan.
 - 9.9.3 All landscaping and associated ground works within RPA will be carried out manually and carefully with due regard for soil and root protection, avoiding changes of ground levels or deep digging. Mechanised cultivation must not be used within any RPAs. If existing soft vegetation is to be removed, this shall be done using hand tools only.

9.10 Completion

9.10.1 Following completion of the works listed above, a Landmark Trees consultant will conduct a walkover survey of the trees to review any defects or signs of ill-health, and inform the local authority in a final report as per Table 1. It is the client's duty to notify LT that the project has been completed, in order to facilitate such an inspection. A separate LT post-development tree inspection is recommended to facilitate a constructive meeting.

10 COMPLIANCE: Trees and the Planning System

- 10.1 Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.
- 10.2 The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term "minimum detail" is intended to reflect information that local authorities are expected to seek, whilst the term "additional information" identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.
- 10.3 This report delivers information appropriate to a full planning application and to these specific proposals as per BS5837 Table B.1 below, providing both minimum details and further additional material in the form of general tree protection recommendations and constructional variation.

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
Reserved matters/ planning conditions	Arboricultural impact assessment Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a transform	Arboricultural site monitoring schedule
	method	Tree and landscape management plan
	Dimensioned tree protection plan	Post-construction remedial works
	Arboricultural method statement – detailed	Landscape maintenance schedule
	Schedule of works to retained trees, e.g. access facilitation pruning	
	Detailed hard and soft landscape design	

Table B.1 Delivery of tree-related information into the planning system

11.0 REFERENCES

- Barlow JF & Harrison G. 1999. Shade By Trees, Arboricultural Practice Note 5, AAIS, Farnham, Surrey.
- British Standards Institute. 2012. Trees in Relation to Design, Demolition and Construction Recommendations BS 5837: 2012 HMSO, London.
- Centre for Ecology & Hydrology. 2006. Tree Roots in the Built Environment, HMSO, London.
- Helliwell R (1980) Provision for New Trees; Landscape Design; July/August issue
- International Society of Arboriculture (ISA). 1994. The Landscape Below Ground. ISA, Champaign, Illinois. USA.
- Lonsdale D 1999. Research for Amenity Trees No.7: Principles of Tree Hazard Assessment and Management, HMSO, London.
- Matheny, N; Clark, J. R.1998. Trees and Development: A Technical Guide to Preservation of Trees during Land Development. ISA, Champaign, Illinois. USA.
- Mattheck C. & Breloer H. 1994. Research for Amenity Trees No.2: The Body Language of Trees, HMSO, London.
- Thomas P, 2000 & 2014. Trees: Their Natural History, Cambridge University Press, Cambridge.
- Trowbridge J & Bassuk N (2004) Trees in the Urban Landscape: Site Assessment, Design, and Installation; J Wiley & Sons inc.
 NJ USA



Caveats

This report is primarily an arboricultural report. Whilst comments relating to matters involving built structures or soil data may appear, any opinion thus expressed should be viewed as qualified, and confirmation from an appropriately qualified professional sought. Such points are usually clearly identified within the body of the report. It is not a full safety survey or subsidence risk assessment survey. These services can be provided but a further fee would be payable. Where matters of tree condition with a safety implication are noted during a survey they will of course appear in the report.

A tree survey is generally considered invalid in planning terms after 2 years, but changes in tree condition may occur at any time, particularly after acute (e.g. storm events) or prolonged (e.g. drought) environmental stresses or injuries (e.g. root severance). Routine surveys at different times of the year and within two - three years of each other (subject to the incidence of the above stresses) are recommended for the health and safety management of trees remote from highways or busy access routes. Annual surveys are recommended for the latter.

Tree works recommendations are found in the Appendices to this report. It is assumed, unless otherwise stated ("ASAP" or "Option to") that all husbandry recommendations will be carried out within 6 months of the report's first issue. Clearly, works required to facilitate development will not be required if the application is shelved or refused. However, necessary husbandry work should not be shelved with the application and should be brought to the attention of the person responsible, by the applicant, if different. Under the Occupiers Liability Act of 1957, the owner (or his agent) of a tree is charged with the due care of protecting persons and property from foreseeable damage and injury.' He is responsible for damage and/or nuisance arising from all parts of the tree, including roots and branches, regardless of the property on which they occur. He also has a duty under The Health and Safety at Work Act 1974 to provide a safe place of work, during construction. Tree works should only be carried out with local authority consent, where applicable.

Inherent in a tree survey is assessment of the risk associated with trees close to people and their property. Most human activities involve a degree of risk, such risks being commonly accepted if the associated benefits are perceived to be commensurate.

Risks associated with trees tend to increase with the age of the trees concerned, but so do many of the benefits. It will be appreciated, and deemed to be accepted by the client, that the formulation of recommendations for all management of trees will be guided by the cost-benefit analysis (in terms of amenity), of tree work that would remove all risk of tree related damage.

Prior to the commencement of any tree works, an ecological assessment of specific trees may be required to ascertain whether protected species (e.g. bats, badgers and invertebrates etc.) may be affected.



PART 2 – APPENDICES

APPENDIX 1

TREE SCHEDULE

Botanical Tree Names

Ash, Common Cypress, Leyland Eucalyptus Holly, Common/English : Malus sp : Fraxinus excelsior : Cupressus × leylandii : Eucalyptus spp : Ilex aquifolium Laburnum, Common Plane, London Sycamore : Laburnum anagyroides : Platanus acerifolia : Acer pseudoplatanus

Notes for Guidance:

- 1. Height describes the approximate height of the tree measured in metres from ground level.
- 2. The Crown Spread refers to the crown radius in meters from the stem centre and is expressed as an average of NSEW aspect if symmetrical.
- 3. Ground Clearance is the height in metres of crown clearance above adjacent ground level.
- 4. Stem Diameter (Dm) is the diameter of the stem measured in millimetres at 1.5m from ground level for single stemmed trees. BS 5837:2012 formula (Section 4.6) used to calculate diameter of multi-stemmed trees. Stem Diameter may be estimated where access is restricted and denoted by '#'.
- 5. Protection Multiplier is 12 and is the number used to calculate the tree's protection radius and area
- 6. Protection Radius is a radial distance measured from the trunk centre.
- 7. Growth Vitality Normal growth, Moderate (below normal), Poor (sparse/weak), Dead (dead or dying tree).
- Structural Condition Good (no or only minor defects), Fair (remediable defects), Poor Major defects present.
- Landscape Contribution High (prominent landscape feature), Medium (visible in landscape), Low (secluded/among other trees).
- 10. B.S. Cat refers to (British Standard 5837:2012 section 4.5) and refers to tree/group quality and value:
 'A' High, 'B' Moderate, 'C' Low, 'U' Unsuitable for retention. The following colouring has been used on the site plans:
 - High Quality (A) (Green),
 - Moderate Quality (B) (Blue),
 - Low Quality (C) (Grey),
 - Unsuitable for Retention (U) (Red)
- 11. Sub Cat refers to the retention criteria values where 1 is Arboricultural, 2 is Landscape and 3 is Cultural including Conservational, Historic and Commemorative.
- 12. Useful Life is the tree's estimated remaining contribution in years.

Landmar	Site: Date	15 Lin 11/07/	dfield G 22	ardens		BS583	37 Tree	Apr Const	pendix traints	a 1 Survey	/ Sch	edule)	Landma 020 785 Surveyc Ref:	ark Trees 1 4544 or(s):	Ltd Ross Gamblin MATA_15LDF_AIA
Tree No.	English Nan	ie	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comme	ents	
H1	Cypress, Leyl	and	5.5	0.5	0.0	150	Semi- mature	1.8	Normal	Fair	С	2	10+	Screening hedge 15 stems		

H2	Cypress, Leyland	3.5	0.5	0.0	150	Semi- mature	1.8	Normal	Fair	С	2	10+	Screening hedge 22+ stems
3	Sycamore	15	5/4/5/4. 5	4.0	740	Mature	8.9	Normal	Good	В	1	20+	Pollarded
4	Laburnum	3	1.5	0.5	140	Semi- mature	1.7	Moderate	Fair	С	2	10+	Part of wider linear shrub group
5	Eucalyptus	12	2/3.5/4/ 0		360	Early Mature	4.3	Normal	Fair	С	1	20+	Poor form Crown offset from base Previously reduced
6	Cypress, Leyland	9	2.5/1/2/ 2		200	Semi- mature	2.4	Normal	Fair	С	2		Apical growth removed Co-dominant @1.6m

Date: 11/07/22

Landmark Trees

Appendix 1

Landmark Trees Ltd 020 7851 4544

BS5837 Tree Constraints Survey Schedule

Surveyor(s):Ross GamblinRef:MATA_15LDF_AIA

Tree No.	English Name	Height	Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
7	Cypress, Leyland	11	3.5/3/3/ 1.5		260	Semi- mature	3.1	Moderate	Fair	С	1	10+	
8	Plane, London	22	9559	9.0	1050	Mature	12.6	Normal	Fair	В	1	>40	Remote survey only (RS) End weighted limbs
9	Ash, Common	23	6/6/1/6	10.0	625	Mature	7.5	Moderate	Good	В	2	20+	Remote survey only (RS) Crown offset from base Lean to NE, historically reduced, Old Daldinia brackets present in lower crown
10	Apple, Ornamental	2.5	1/3/1.5/ 2	0.5	110	Young	1.3	Moderate	Poor	U		<10	Heavily suppressed Leaning to SE, poor form Dominated by adjacent vegetation
11	Apple, Ornamental	2.5	0/2.5/1/ 0	0.5	90	Young	1.1	Moderate	Poor	U		<10	Heavily leaning to SW Suppressed & poor form Dominated by adjacent vegetation
12	Holly	8	2.5/1/2. 5/3	2.0	250	Early Mature	3.0	Moderate	Fair	С	2	<10	Remote survey only (RS) A sparser than normal canopy Recent lateral reduction on application site

Site:	15 Lindfield Gardens	

Date: 11/07/22

Landmark Trees

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Ross Gamblin Surveyor(s):

Landmark Trees					BS5837 Tree Constraints Survey Schedule						Ref: MATA_15LDF_AIA		
Tree No.	English Name	Height	t Crown Spread	Ground Clearance	Stem Diamete	Age Class	Protection Radius	Growth Vitality	Structural Condition	B.S. Cat	Sub Cat	Useful Life	Comments
13	Ash, Common	22	8/7/6/6. 5	6.0	745	Mature	8.9	Normal	Good	В	1	10+	Bifurcated @2.5m Deadwood (minor) throughout crown Historically reduced. Retaining walls displaced at base
G14	Mixed shrubs	2	0.5	0.0	50	Semi- mature	0.6	Normal	Fair	С	2	10+	Including laburnum, photinia, cypress, yew, rose etc

APPENDIX 2

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT (See Table 1)

Notes for Guidance:							
 RP - Pre-emptive root pruning of foundation encroachments under arboricultural supervision. CB - Cut Back to boundary/clear from structure. CL# - Crown Lift to given height in meters. CT#% - Crown Thinning by identified %. CCL - Crown Clean (remove deadwood/crossing and hazardous branches and stubs)*. CR#% - Crown Reduce by given maximum % (of outermost branch & twig length) DWD - Remove deadwood. Fell - Fell to ground level. Flnv - Further Investigation (generally with decay detection equipment). Pol - Pollard or re-pollard. Mon - Check / monitor progress of defect(s) at next consultant inspection which should be <18 months in frequented areas and <3 years in areas of more occasional use. Where clients retain their own ground staff, we recommend an annual in- house inspection and where practical, in the aftermath of extreme weather events. Svr Ivy / Clr Bs - Sever ivy / clear base and re-inspect base / stem for concealed defects. 							
*Net we well a second for the second se							

*Not generally specified following BS3998:2010

W	Site: 15 Lind Date: 11/07/2	field Gar 2	dens		A	ppendix 2	Surveyor(s): Ref:	Ross Gamblin MATA_15LDF_AIA
Landmark Trees Recommended Tree Works To Facilitate Development Hide irrelevant Show All Trees								
Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reason	S
11	Apple, Ornamental	U	2.5	0.5	0/2.5/1/ 0	Fell	Heavily leaning to SW Suppressed & poor form Dominated by adjacent veg To facilitate development	jetation
G14	Mixed shrubs	С	2	0.0	0.5	Fell	Including laburnum, photini To facilitate development	a, cypress, yew, rose etc

APPENDIX 3: TREE SELECTION FOR URBAN LOCATIONS

Common Name	Species	(Columnar Form for discrete usage)
Hawthorn	Crataegus monogyna	Stricta
Cockspur	Crataegus prunifolia	Splendens
Cherry	Prunus x hillieri	Spire
Bird cherry	Prunus padus	Albertii
Rowan / Mountain ash	Sorbus aucuparia	Cardinal Royal
Swedish whitebeam	Sorbus intermedia	Brouwers
B. whitebeam	Sorbus x thuringiaca	Fastigiata

Table A4.1: Small Ornamental Tree Species

Table A4.2: Medium Specimen Tree Species

Common Name	Species	(Columnar Form for discrete usage)
Chinese red bark birch	Betula albosinensis	Fascination
Mongolian lime	Tilia mongolica	
Hornbeam	Carpinus betulus	Fastigiata Frans Fontaine
Turkish hazel	Corylus colurna	
Maidenhair tree	Gingko biloba	
Pride of India	Koelreuteria paniculata	Fastigiata
European larch	Larix decidua	Sheerwater Seedling
Tulip tree	Liriodendron tulipfera	Fastigiata

Table A4.3: Larger Specimen Tree Species

Common Name	Species	(Columnar Form for discrete usage)
English oak	Quercus robur	f. Koster
American elm	Ulmus americana Princeton	
Cedar of Lebanon	Cedrus libani	



Figure A4.1: Trial pit locations for LGF encroachment. Trial pits 3 & 4 were fallback positions if significant roots were found in trial pit 1 or 2, as none were pits 3 & 4 were not excavated



Photograph A4.1: Trial pit 1 findings - roots present are from adjacent yew (see Photograph A4.2)



Photograph A4.2: Roots present in trial pit 1 emanating from adjacent yew



Photograph A4.3: No roots found in trial pit 2



Figure A4.2: Trial pits excavated in proposed decking area – note no excavation is required along TP3 so this trench was not dug. Dashed lines indicate locations / assumed paths of roots encountered – see photographs below for details



Photograph A4.4: Overview of trial pit 1



Photograph A4.5: Root from adjacent Leyland cypress H1 within trial pit 1



Photograph A4.6: Overview of trial pit 2



Photograph A4.7: 40mm root and sub-25mm roots encountered. Orientation would indicate they emanate

from T3.



PART 3 – PLANS

PLAN 1

TREE CONSTRAINTS PLAN



NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).



Site: 15 Lindfield Road

Landmark Trees Landmark Trees. Landmark Trees. London W1T 4JU Landmark Trees Landmark Trees. London W1T 4JU Tel: 0207 851 4544 Mobile: 07812 989928 e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk





awin	July 2022				
ey:	Category A High Quality Category B Moderate Quality Category C Low Quality Category U	Category – Root Protection – Area	13- Birght B2	Cro Tre Spe Cat Tree Positio (not shown	wn Spread e Number ecies egory on Approximate on original
	Trees Unsultable for Rele	nuon		survey)	

PLAN 2

ARBORICULTURAL IMPACT ASSESSMENT PLAN (S)

- i. Lower Ground Floor
- ii. Ground Floor



NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).



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1:200@ A1

Site: 15 Lindfield Road







NOTE:

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Drawing Title: Arboricultural Impacts Assessment Key: Category -Category A High Quality Root Category B
 Moderate Quality Protection — Category C Low Quality

Area Øz Category U
 Trees Unsuitable for Retention

لريب Development

May 2023 - Crown Spread Tree Number — Species Category Tree Position Approximate (not shown on original survey) Tree Felled To Facilitate

1:200@ A1

TREE PROTECTION PLAN



NOTE:

This survey is of a preliminary nature. The trees were inspected from the ground only on the basis of the Visual Tree Assessment method. No samples were taken for analysis. No decay detection equipment was employed. The survey does not cover the arrangements that may be required in connection with the laying or removal of underground services.

Branch spread in metres is taken at the four cardinal points to derive an accurate representation of the crown.

Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).

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