Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT FOR:

Harrods Wharf
6 Somerville Avenue
London
SW13 8AD

INSTRUCTING PARTY:

Lifschutz Davidson Sandilands
Island Studios
22 St Peter's Square
London
W6 9NW

REPORT PREPARED BY

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PART 1: MAIN TEXT

PART 2 - APPENDICES

PART 3 - PLANS

DOCUMENT HISTORY

Revision	Status	Comments	Date
Rev 0	DRAFT	For Internal Review (Client / Design Team)	17/12/2020
Rev a	Approved	For External Issue	20/1/21

1. SUMMARY

1.1 The existing site comprises a disused wharf standing adjacent to a number of trees potentially constraining development. The proposal includes the installation of two pavilions onto the wharf.

1.2 There are 32 trees on 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, but with 12 trees identified as poor-quality specimens. T6 and T9 in particular require prompt attention regardless of development.

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: no trees need to be removed and only a small portion of trees will be pruned to facilitate construction. 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 nature of the proposed development means that these encroachments are theoretical only.

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 This Arboricultural Impact Assessment report has been prepared by Landmark Trees (LT) on behalf of Lifschutz Davidson Sandilands ('the Applicant'), to support a full planning application submitted to the London Borough of Richmond upon Thames ('LBRuT').

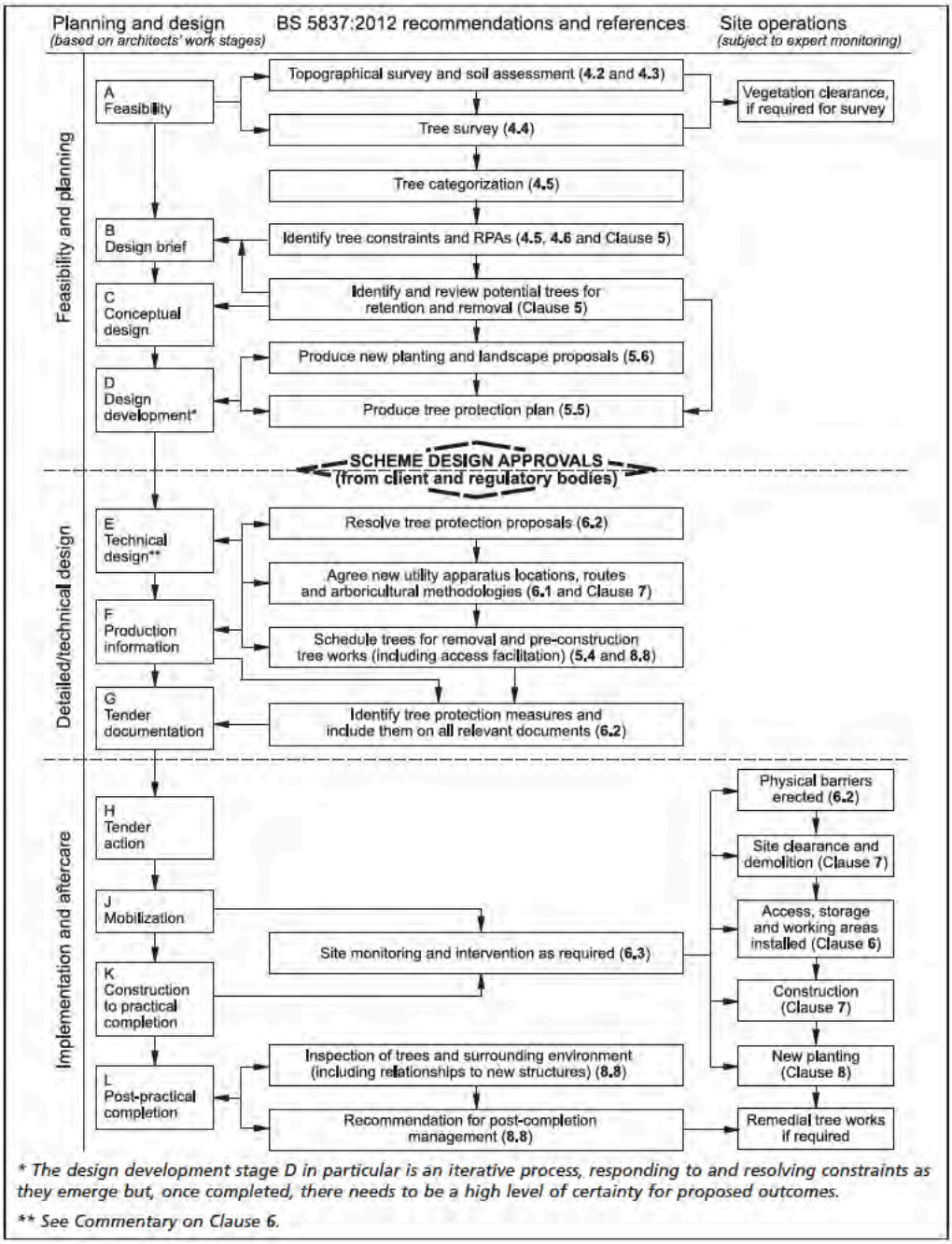
2.1.2 The application relates to the redevelopment of the wharf site adjacent to the Thames and the Grade II listed Harrods Furniture Depository building to provide ferry service across the river following the closure of Hammersmith Bridge. The proposals include the installation of two container based pavilions and decking onto the existing wharf.

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') 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 overleaf.**

Figure 1 The design and construction process and tree care



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause 6.*

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: 1178_X0100

Proposals: 1178_P0100

2.3 Scope & Limitations of Survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, Kim Dear surveyed the trees on site on 11th December 2020, 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

2.3.3 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.

2.3.4 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. General husbandry recommendations are distinguished at Appendix 2 from minimum requirements to facilitate development which form part of the planning application at Appendix 3. The former may still be relevant to providing a safe site of work, of course. Planning considerations notwithstanding, we trust these necessary recommendations are passed on to relevant parties with due diligence and the trees to be managed appropriately.

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 (RPA's), 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. General observations, discussion, conclusions and recommendations follow, below.

3.0 SITE CHARACTERISTICS

3.1 Property Description & Planning Context

Photograph 1: Aerial view of application site looking west

3.1.1	The wharf occupies a prominent riverside location to the south of Hammersmith bridge. The site is bound by the river Thames and the Thames footpath which runs in front of the existing Grade II listed Harrods furniture depository building which was converted into residential accommodation as part of the Harrods Village development in 2000. The existing wharf is approximately 92m in length and between 7-8m deep giving an existing wharf area of 690 sqm.
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 Castelnau 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 Policy 7.21 of the London Plan 2016, Policy 8.1.1 of LBRuT's Core Strategy and Policies DM OS5, DM HO2, DM HO3 and DM DC4 of their Development Management Plan, adopted November 2011.

3.2 Soil Description

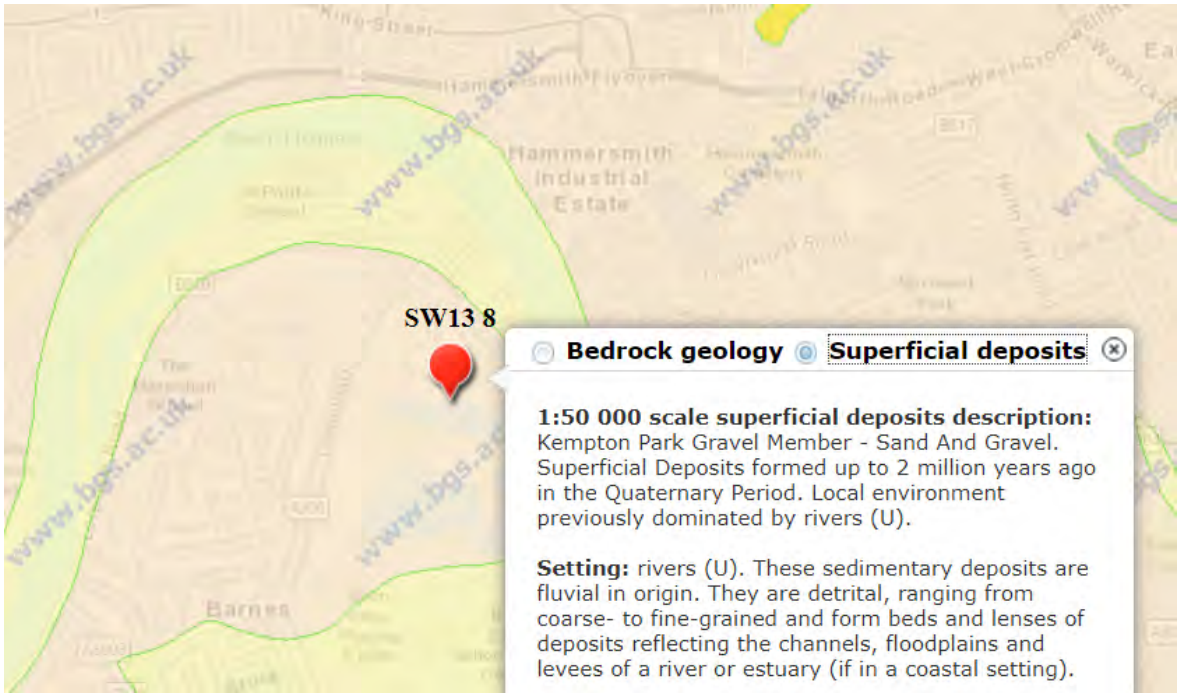


Figure 2: Extract from the BGS Geology of Britain Viewer

3.2.1	In terms of the British Geological Survey, the site overlies the London Clay Formation with Kempton Park Gravel Member superficial deposits (see indicated location on Fig.1 plan extract above). The associated soils are generally, sand and gravel, but with subsoils of highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine loam over clay. Such highly plastic subsoils are prone to movement: subsidence and heave, but their influence will depend somewhat on the actual depth of that clay (sand and gravel deposits are not shrinkable). 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	Sand and gravel soils are less prone to compaction during development than clay soils, potentially reducing the threat to tree health from construction traffic. The design of foundations near problematic tree species will also need to take into consideration subsidence risk in relation to the clay subsoil and its depth. 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 32 surveyed trees, 4 are category* B (Moderate Quality), 25 are category C (Low Quality) and 12 are category U (Poor Quality); none are category A (High Quality).
3.3.2	The tree species found on the site comprise bird cherry, common ash, sycamore, hybrid poplar, elder, London plane, false acacia and stag's horn sumach.
3.3.3	In terms of age demographics there are predominantly semi-mature specimens present with a few early mature and mature trees present.

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

3.2.4	Full details of the surveyed trees can be found in Appendix 1 of this report.
3.2.5	There are recommended works for 5 trees. These are listed in Appendix 2.

Photograph 2: Thames footpath leading to wharf behind iron railings

Photograph 3: Existing wharf

Photograph 4: Pholiota squarrosa fruiting bodies at base of T6

4.0 DEVELOPMENT CONSTRAINTS

4.1 Primary Constraints

4.1.1 A tree's primary constraint on development is the physical space it occupies or requires above and below ground on a given site. The current canopy spreads and heights are noted in our survey; allowance for further growth and broader aspects of juxtaposition are considered under secondary impacts below. With regard to root spread, BS5837 defines the Root Protection Area (RPA) as 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.

4.1.2 The individual RPA's 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.

4.1.3 Circular RPA's 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 2). Alternatively, one need principally remember that RPA's are area-based and not linear – notional rather than fixed entities.

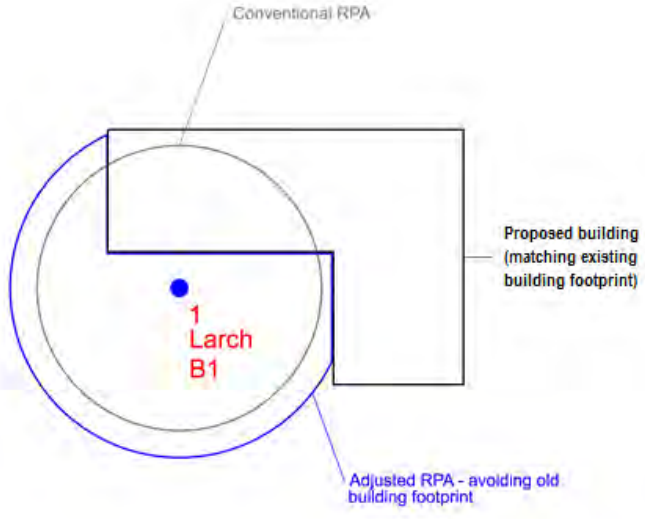


Figure 3– Generic BS 5837 RPA Adjustments (for fictitious site)

4.1.4 In BS5837, paragraph 4.6.2 states that RPA's 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.

4.1.5 No *a priroi* modifications have been made in this instance, though further investigations are recommended, where proposals encroach / come near RPA and their modification could have a bearing on the impact assessment.

4.1.6 In addition to these quantitative assessments, the quality of trees will also be a consideration: Category U trees are discounted from the planning process in view of their limited service life. Again, Category C trees would not normally prevent development individually, unless they provide some particular (screening) function. Nonetheless, they remain material constraints.

4.1.7 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 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 upon development.

4.2 Secondary Constraints

4.2.1 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 3), honeydew deposition or perceived risk of harm.

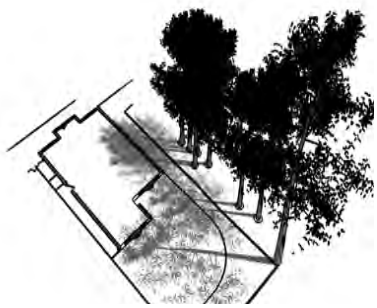


Figure 3 –
Generic Shading Constraints

4.2.2 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 non-residential developments, particularly where rooms are only ever temporarily occupied.

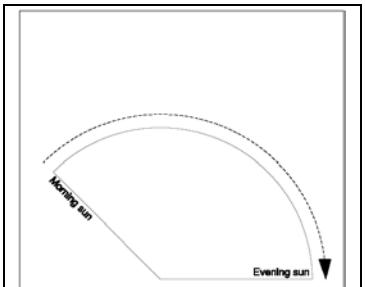


Figure 4 – Shading Arc

4.2.3 This arc (see Figure 4) 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.

4.2.4 Assuming that they will be retained, the orientation of the on- and off-site trees 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.

5.0

Table 1: Arboricultural Impact Assessment

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

Hide irrelevant | Show All Trees

Ref: LDS_6SMV_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
C	12	Plane, London	Container / Decking Installation within RPA	m^2 N/A %	Mature	Moderate	Good	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing
B	13	Poplar, Hybrid	Container / Decking Installation within RPA	m^2 N/A %	Post-Mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing
C	13a	Poplar	Container / Decking Installation within RPA Container Installation within Canopy	m^2 N/A %	Mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing Remedial tree surgery (see Rec. Works)
B	14	Poplar	Container / Decking Installation within RPA Container Installation within Canopy	m^2 N/A %	Mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing Remedial tree surgery (see Rec. Works)
U	G15	Poplar	Container / Decking Installation within RPA	m^2 N/A %	Semi-mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing
C	16	False Acacia	Container / Decking Installation within RPA Container Installation within Canopy	m^2 N/A %	Semi-mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing Remedial tree surgery (see Rec. Works)
U	17	Poplar	Container / Decking Installation within RPA	m^2 N/A %	Young	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing

5.0

Hide irrelevant | Show All Trees

Table 1: Arboricultural Impact Assessment

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

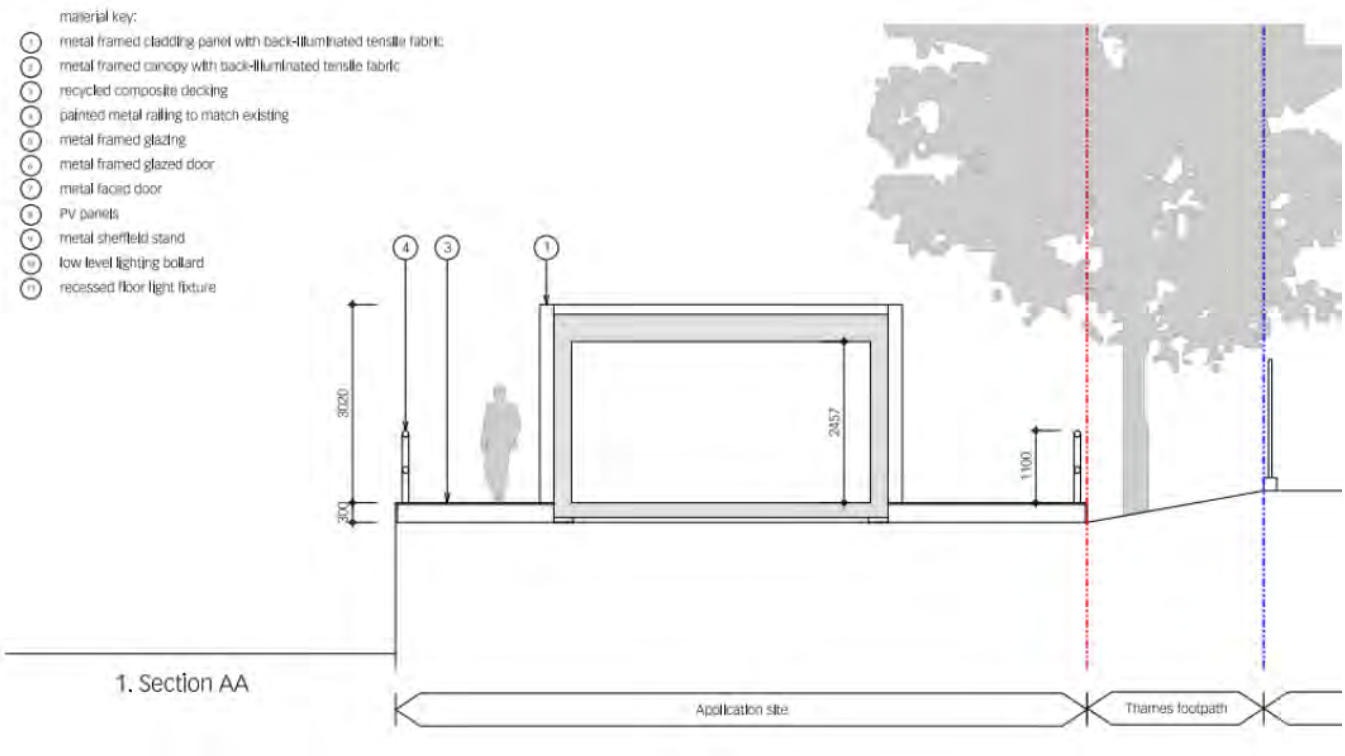
Ref: LDS_6SMV_AIA

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
C	18	Elder	Container / Decking Installation within RPA	m^2 N/A %	Semi-mature	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing
C	19	False Acacia	Container / Decking Installation within RPA	m^2 N/A %	Young	Moderate	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing
B	20	poplar	Container / Decking Installation within RPA	m^2 N/A %	Mature	Normal	Moderate	Very Low	Very Low	Container / Decking to be installed onto existing hard surfacing

6.0 ARBORICULTURAL IMPLICATIONS

6.1 Rating of Primary Impacts

6.1.1	The principal impacts in the current proposals are the requirement to crown lift T13a, T14 and T16 to provide occupational clearance to the wharf / pavilions. Though pruning is only required here to serve development, undertaken to best practice, the scale envisaged should not be altogether untoward in a more managed and occupied site. The immediate reduction in canopy cover through pruning is therefore is rated as a very low impact unlikely to harm either the resource or the wider conservation area.
6.1.2	Further impacts to retained trees comprise the installation of the container-based pavilions and composite decking within the RPA of T12 – T20. As the section detailed in Plan Extract 1 demonstrates, the containers and decking will be installed onto the wharf's existing surface with no excavation necessary and therefore the encroachment of the RPAs of these trees is on plan only.



Plan Extract 1: Section detailing proposed container and decking installation

6.2 Rating of Secondary Impacts

6.2.1 The photovoltaic panels on the roof of Pavilion 2 will be shaded by T20 but this shade will be limited to the southernmost quarter of the roof and will only be for the first part of the day. Accordingly, it is not considered likely to result in post-development conflict, but we would recommend advice be sought from a suitable expert on the implication of this limited level of shade. In the event of any engineering concern, we note the tree is a poplar and the species respond well to pruning. Some modest pruning may be considered appropriate.

6.2.2 Both pavilions will have green roofs which will significantly limit any nuisance from organic deposition and following the pruning recommended herein, it is highly unlikely any further pruning works will be required and thus, the secondary impacts of development are minimal.

6.2.3 It is acknowledged that the increased occupancy of the site increases the risk the adjacent trees pose but given the existing level of use of the site, this does not materially alter the level of maintenance required were development not to proceed.

6.3 Mitigation of Impacts

6.3.1 The immediate canopy encroachment can be avoided with a crown lift of lower limbs, affecting a 6-7m ground clearance.

7.0 CONCLUSION

7.1 The potential impacts of development are very low with no tree removal necessary and only theoretical encroachments of RPAs.

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 Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape thereby complying with Policy 7.21 of the London Plan 2016, Policy 8.1.1 of LBRuT's Core Strategy and Policies DM OS5, DM HO2, DM HO3 and DM DC4 of their Development Management Plan, adopted November 2011. Thus, with suitable mitigation and supervision the scheme is recommended to planning.

8.0 RECOMMENDATIONS

8.1 Specific Recommendations

8.1.1	Tree works recommendations in Appendix 2 are not part of the current application, but requirements of general maintenance that will need to be applied for (subject to para. 3.3 of this report and any other relevant constraints in planning or leasehold) by the client separately. Consent for the current planning application does not impart any consent for the Appendix 2 maintenance works. Please note, though, the owner and / or manager of a property have a duty to maintain a safe site of work and to protect occupiers of the surrounding land / members of the public from tree hazards. Works recommended in this report should be enacted in a timely fashion by the relevant party regardless of the progress of the development.
8.1.2	Recommendations for works required to facilitate development are found in Appendix 2. Any works recommended within this report should only be carried out with local authority consent.
8.1.3	Excavation and construction impacts within the RPA's 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.

8.2 General Recommendations for Sites Being Developed with Trees

8.2.1 Any trees which are in close proximity to the proposed development should be protected with a Tree Protection Barrier (TPB). Protective barrier fencing should be installed immediately following the completion of the tree works, remaining in situ for the entire duration of the development unless otherwise agreed in writing by the Council. It should be appropriate for the intensity and proximity of the development (and usage of the Thames Path), usually comprising steel, mesh panels 2.4m in height ('Heras') and should be mounted on a scaffolding frame (shown in Fig 2 of BS5837:2012). The position of the TPB can be shown on plan as part of the discharge of conditions, once the layout is agreed with the planning authority. The TPB should be erected prior to commencement of works, remain in its original form on-site for the duration of works and be removed only upon full completion of works.

8.2.2 A TPB may no longer be required during soft landscaping work but a full arboricultural assessment of the landscape proposals must be performed prior to the undertaking of any excavations within the RPA of a tree. This will inform a decision about the requirement of protection measures. It is important that all TPBs have permanent, weatherproof notices denying access to the RPA.

8.2.3 The use of heavy plant machinery for building demolition, removal of imported materials and grading of surfaces should take place in one operation. The necessary machinery should be located above the existing grade level and work away from any retained trees. This will ensure that any spoil is removed from the RPAs. It is vital that the original soil level is not lowered as this is likely to cause damage to the shallow root systems.

8.2.4 Any pruning works must be in accordance with British Standard 3998:2010 Tree work [BS3998].

8.2.5 Where sections of hard surfacing are proposed in close proximity to trees, it is recommended that "No-Dig" surfacing be employed in accordance with BS5837:2012 and 'The Principles of Arboricultural Practice: Note 1, Driveways Close to Trees, AAIS 1996 [APN1]'.

8.2.6 If the RPA of a tree is encroached by underground service routes then BS5837:2012 and NJUG VOLUME 4 provisions should be employed. If it is deemed necessary, further arboricultural advice must be sought.

8.2.7 Numerous site activities are potentially damaging to trees e.g. parking, material storage, the use of plant machinery and all other sources of soil compaction. In operating plant, particular care is required to ensure that the operational arcs of excavation and lifting machinery, including their loads, do not physically damage trees when in use.

8.2.8 To enable the successful integration of the proposal with the retained trees, the following points will need to be taken into account:

1) Plan of underground services.
2) Schedule of tree protection measures, including the management of harmful substances.
3) Method statements for constructional variations regarding tree proximity (e.g. foundations, surfacing and scaffolding).
4) Site logistics plan to include storage, plant parking/stationing and materials handling.
5) Tree works: felling, required pruning and new planting. All works must be carried out by a competent arborist in accordance with BS3998.
6) Site supervision: the Site Agent must be nominated to be responsible for all day-to-day arboricultural matters on site. This person must:
   - be present on site for the majority of the time;
   - be aware of the arboricultural responsibilities;
   - have the authority to stop work causing, or may cause harm to any tree;
   - ensure all site operatives are aware of their responsibilities to the trees on site and the consequences of a failure to observe these responsibilities;
   - arrange with the retained arboricultural consultant an initial pre-start briefing to inspect tree protection measures and agree a schedule of monitoring thereof on an initial monthly basis to be reviewed over the duration of works.
   - give advance notice (ideally 2 weeks) to retained arboricultural consultant to arrange for supervision of any excavation (especially for services and foundations) within RPA
   - make immediate contact with the local authority and/or a retained arboricultural consultant in the event of any tree related problems occurring.

8.2.9 These points can be resolved and approved through consultation with the planning authority via their Arboricultural Officer.

8.2.10 The sequence of works should be as follows:

i) initial tree works: felling, stump grinding and pruning for working clearances;
ii) installation of TPB for demolition & construction;
iii) installation of underground services;
iv) installation of ground protection;
v) main construction;
vi) removal of TPB;
vii) soft landscaping.

9.0 COMPLIANCE: Trees and the Planning System

9.1 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.

9.2 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.

9.3 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.

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

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
	Arboricultural impact assessment	
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	

10.0 REFERENCES

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Landmark Trees

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.

Landmark Trees

PART 2 – APPENDICES

APPENDIX 1

TREE SCHEDULE

Botanical Tree Names

Acacia, False (Robinia)	: Robinia Pseudoacacia	Plane, London	: Platanus acerifolia
Alder, Common/Black	: Alnus glutinosa	Poplar	: Populus spp
Ash, Common	: Fraxinus excelsior	Stag's Horn Sumach	: Rhus typhina
Cherry, Bird	: Prunus padus	Sycamore	: Acer pseudoplatanus
Elder	: Sambucus nigra		

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).
8. Structural Condition - Good (no or only minor defects), Fair (remediable defects), Poor - Major defects present.
9. 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.

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
1	Cherry, Bird	5	3131	0.5	90	Young	1.1	Poor	Poor	U		<10	A sparser than normal canopy Entry wounds on trunk
2	Cherry, Bird	6	4021	2.5	200	Semi-mature	2.4	Moderate	Fair	C	2	10+	Ivy clad Leaning (slightly)
2a	Ash, Common	12	4322	3.5	230	Semi-mature	2.8	Moderate	Fair	C	2	20+	Ivy clad
3	Sycamore	12	4564	4.0	610	Early Mature	7.3	Moderate	Fair	C	2	20+	Ivy clad Included bark in main stem unions tag number 707
4	Alder, Common	3	0003	1.0	150	Young	1.8	Poor	Poor	U		<10	part collapsed
G5	Poplar, Hybrid	9	2111	1.5	180	Semi-mature	2.2	Moderate	Fair	U	2	20+	self seeded, poor

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
6	Poplar, Hybrid	15	6556	4.0	900	Mature	10.8	Moderate	Poor	C/u		TBC	Pholiota fungus at base Deadwood throughout crown crown over path, needs reduction or felling. tag 706.
7	Poplar, Hybrid	14	1212	4.0	350	Semi-mature	4.2	Moderate	Fair	C	2	20+	Ivy clad
8	Elder	4	1110	0.5	150	Semi-mature	1.8	Moderate	Poor	U		<10	
9	Poplar, Hybrid	15	5767	4.0	780	Mature	9.4	Poor	Poor	C/u		TBC	Deadwood throughout crown Pholiota fungus at base needs reduction or felling
10	Elder	3	1111	0.5	90	Young	1.1	Poor	Poor	U		<10	
11	Ash, Common	4	4130	1.0	110	Young	1.3	Moderate	Poor	C	2	10+	on bank edge, tag 660

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
12	Plane, London	12	8296	3.0	850	Mature	10.2	Moderate	Fair	C	2	20+	growing through bank stonework tag 659 and 115
13	Poplar, Hybrid	19	9610,9	5.0	1300	Post-Mature	15.6	Moderate	Fair	B	2	20+	Deadwood throughout crown Ivy clad remove ivy
13a	Poplar	19	1462	3.0	850	Mature	10.2	Moderate	Fair	C	2	20+	Leaning (slightly) tag 703
14	Poplar	19.5	5896	4.0	1040	Mature	12.5	Moderate	Fair	B	2	20+	Deadwood throughout crown Leaning (slightly)
G15	Poplar	10	2211	3.0	250	Semi-mature	3.0	Moderate	Poor	U		<10	Ivy clad 4 self seeded
16	False Acacia	8	3233	3.0	149	Semi-mature	1.8	Moderate	Fair	C	2	20+	

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
17	Poplar	9	2111	2.0	200	Young	2.4	Moderate	Poor	U		<10	Leaning (slightly) Ivy clad
18	Elder	5	2332	1.0	150	Semi-mature	1.8	Moderate	Fair	C	2	10+	Ivy clad
19	False Acacia	5	3030	2.0	175	Young	2.1	Moderate	Fair	C	2	10+	Ivy clad
20	poplar	20	10,9,12,9	5.0	1100	Mature	13.2	Normal	Fair	B	2	20+	tag 701
21	poplar	12	1111	2.0	350	Young	4.2	Moderate	Fair	C	2	20+	Ivy clad
22	Stag's Horn Sumach	6	3322	3.0	300	Early Mature	3.6	Moderate	Fair	C	2	10+	Ivy clad

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
23	False Acacia	17	4555	7.0	700	Mature	8.4	Moderate	Fair	B	2	20+	Deadwood (minor) throughout crown Ivy clad
24	poplar	-4	4130	0.0	330	Semi-mature	4.0	Poor	Poor	U		<10	collapsed into thames
25	False Acacia	7	3121	2.0	80	Young	1.0	Moderate	Fair	C	2	20+	
26	False Acacia	8	3111	3.0	85	Young	1.0	Moderate	Fair	C	2	20+	
27	Elder	4	2221	1.5	375	Semi-mature	4.5	Moderate	Fair	C	2	10+	
28	False Acacia	12	4323	5.0	277	Semi-mature	3.3	Moderate	Fair	C	2	10+	tag 602, remove dead stem to immediate left.

Landmark Trees

Site: Harrods Wharf

Date: 11/12/2020

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Kim Dear

Ref: LDS_6SMV_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
29	False Acacia	11	5051	5.0	300	Semi-mature	3.6	Poor	Poor	U		<10	leaning over river
G30	False Acacia	9	2212	3.5	100	Semi-mature	1.2	Moderate	Poor	U		<10	mixed group robin is and elder self seeded

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

Husbandry 1 - Urgent (ASAP), 2 - Standard (within 6 months), 3 - Non-urgent (2-3 years)

CB - Cut Back to boundary/clear from structure.
CL# - Crown Lift to given height in meters.
CT#% - Crown Thinning by identified %.
CR#% - Crown Reduce by given maximum % (of outermost branch & twig length)
DWD - Remove deadwood.
Fell - Fell to ground level.
FInv - 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.

Landmark Trees

Site: Harrods Wharf
Date: 11/12/2020

Surveyor(s): Kim Dear
Ref: LDS_6SMV_AIA

Appendix 2

Recommended Tree Works

Hide irrelevant
Show All Trees

Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
4	Alder, Common	U	3	1.0	0003	Mon	part collapsed Recommended husbandry 3
6	Poplar, Hybrid	C/u	15	4.0	6556	FInv Decay Detection	Pholiota fungus at base Deadwood throughout crown crown over path, needs reduction or felling. tag 706. Recommended husbandry 1
9	Poplar, Hybrid	C/u	15	4.0	5767	FInv Decay Detection	Deadwood throughout crown Pholiota fungus at base needs reduction or felling Recommended husbandry 1
24	poplar	U	-4	0.0	4130	Mon	Collapsed into Thames Recommended husbandry 3
28	False Acacia	C	12	5.0	4323	Fell Remove dead stem to immediate left	tag 602

APPENDIX 3

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.
FInv - 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.

*Not generally specified following BS3998:2010

Landmark Trees

Site: Harrods Wharf
Date: 11/12/2020

Surveyor(s): Kim Dear
Ref: LDS_6SMV_AIA

Appendix 3

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/ Reasons
13a	Poplar	C	19	3.0	1462	CL	5m	Leaning (slightly) tag 703 To facilitate development
14	Poplar	B	19.5	4.0	5896	CL	5m	Deadwood throughout crown Leaning (slightly) To facilitate development
16	False Acacia	C	8	3.0	3233	CL	5m	To facilitate development

Landmark Trees

PART 3 – PLANS

PLAN 1

TREE CONSTRAINTS PLAN

key plan

notes

T2a
C2
T2
Cherry
C2

T1
C1
Cherry
U

T3
Sycamore
C2

T4
Alder
U

G5
Poplar
U

T6
Poplar
C1U

T17
Poplar
C2

T9
Alder
U

T10
Alder
U

T8
Poplar
C1U

T11
Ash
C2

T12
Plane
C2

T13
Poplar
B2

T16a
Poplar
C2

T14
Poplar
B2

G15
Poplar
U

T17
Poplar
U

T18
Elder
C2

T20
poplar
B2

T24
Poplar
U

T25
False Acacia
C2

T26
False Acacia
C2

T27
Elder
C2

T22
Stag's Horn Sumach
C2

T22
Stag's Horn Sumach
C2

T28
False Acacia
C2

T29
False Acacia
U

T23
False Acacia
B2

G30
False Acacia
U

T15
False Acacia
C2

T19
False Acacia
C2

0 M 5 M 10 M

N W E S

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).

Landmark Trees

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Site: Harrods Wharf	1:250@ A1
Drawing Title: Tree Constraints Plan	December 2020

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention

Category
13
Birch
B2
Root Protection Area

Crown Spread
Tree Number
Species
Category

Tree Position Approximate (not shown on original survey)

PLAN 2

ARBORICULTURAL IMPACT ASSESSMENT PLAN (S)

i. Ground Floor

T2a
C1/2
Cherry
C2

T1
Cherry
U

T3
Sycamore
C2

T4
Alder
U

G5
Poplar
C/U

T6
Poplar
C/U

T7
Poplar
C2

T8
Birch
U

T9
Poplar
C/U

T10
Alder
U

T11
Ash
C2

T12
Plane
C2

T13
Poplar
B2

T14
Poplar
B2

T15a
Poplar
C2

G15
Poplar
U

T16
False Acacia
C2

T17
Poplar
U

T18
Elder
C2

T19
False Acacia
C2

T20
poplar
B2

T21
Poplar
U

T22
Stag's Horn Sumach
C2

T23
False Acacia
B2

T24
Poplar
U

T25
False Acacia
C2

T26
False Acacia
C2

T27
Elder
C2

T28
False Acacia
C2

T29
False Acacia
U

G30
False Acacia
U

0 M 5 M 10 M

N
W E
S

Proposed Site 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).

Landmark Trees

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Site: Harrods Wharf	1:250@ A1
Drawing Title: Arboricultural Impacts Assessment	December 2020

Key:

- Category A High Quality
- Category B Moderate Quality
- Category C Low Quality
- Category U Trees Unsuitable for Retention

Category
Root Protection Area
T3 Birch B2
Crown Spread
Tree Number
Species
Category

Tree Position Approximate (not shown on original survey)