Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT FOR:

20 Crediton Hill

London

NW6 1HP

INSTRUCTING PARTY:

Private Client

c/o Scenario Architecture

10 Branch Place

London

N1 5PH

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)	14/04/23
Rev 01a	APPROVED	For External Issue (Planning)	19/05/2023

1. SUMMARY

1.1 This AIA has been prepared in support of a full planning application for: "*Demolition of the existing building and the erection of a 2 storey (plus basement) family dwellinghouse"*.

1.2 The existing site stands to the rear of the original building at 20 Crediton Hill, located approximately 10m from the main building, separated by a communal garden and communal driveway. The single-storey building is at the end of a narrow driveway, beside a cluster of six garages. Planning permission was granted for a basement extension in October 2018 (ref. 2018/1012/P). The current basement, rear ground floor amendments and landscaped patio garden proposal are largely the same as the consented scheme and partially implemented.

1.3 There are 5 trees (including a group) 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 all judged low-quality trees (group G6 are technically not actually trees).

1.4 The report has assessed the impacts of the development proposals and concludes there would be no material difference in arboricultural terms between the consented and current schemes. However, for completeness, details of the minor potential impacts are provided. No tree removals are necessary to facilitate the proposed design (it may be necessary to fell the closest members of G6 for construction access, but these are not technically trees, likewise with shrubs in the vicinity. The applicant will endeavour to preserve as much existing vegetation as possible and otherwise robustly replace with new plants). Very minor tip pruning of the off-site false acacia T2 may be required to provide overhead clearance to piling equipment so there will be at most a very low amount of canopy cover lost. It should be noted that these impacts would be the same as for the consented scheme.

1.5 The default position is that structures be located outside the Root Protection Area* (RPA) of trees to be retained - in this case, the basement is to be formed entirely beneath the existing building which our previous report reference PWA/20CRE/AIA/01b noted has 2.2m deep foundations along the entirety of its rear wall. Thus, whilst on plan there is some encroachment of the theoretical RPA of T2 and G6, there is likely to be no impact in practice. The report has demonstrated that the tree(s) can remain viable and also proposes a series of mitigation measures to improve the soil environment that is used by the trees for growth. Net impacts are assessed therefore as being negligible.

1.6 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 – including a Full Arboricultural Method Statement with Tree Protection Plan to reconcile construction activities with the tree protection measures. This can be secured by planning condition.

1.7 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 Scenario Architecture instructed Landmark Trees (LT) to prepare this Arboricultural Impact Assessment on behalf of their client, to support a full planning application submitted to London Borough of Camden ('LBC').

2.1.2 The application relates to the development of land at the rear of 20 Crediton Hill, London NW6 1HP. Specifically, full planning permission is sought for:

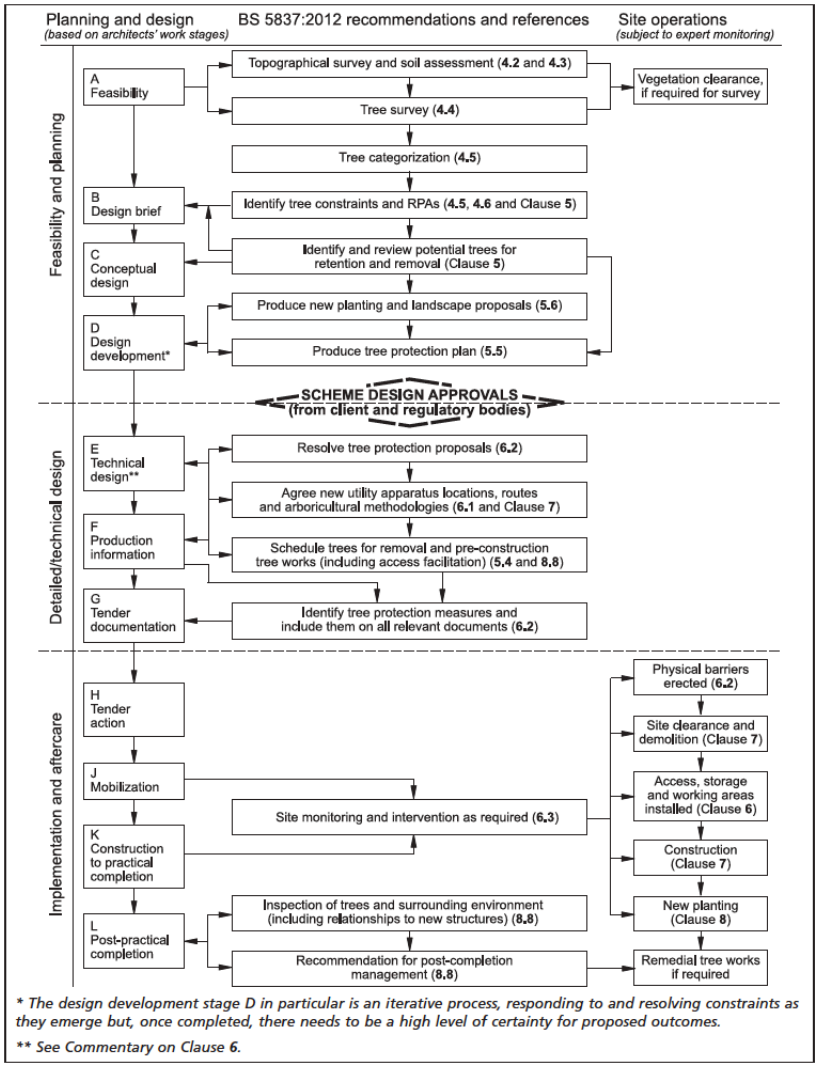
"Demolition of the existing building and the erection of a 2 storey (plus basement) family dwellinghouse."

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. This report updates Landmark Trees' earlier Arboricultural Impact Assessment report, PWA/20CRE/AIA/01b dated 17th November 2017, which was an approved document as part of the consented application scheme, to reflect changes in the proposal and also the passage of time.

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 below) 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 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: Existing Gr. Floor Plan 20Chill/01

Proposals: Proposed Basement Floor Plan 168-PR-A1.01; Proposed Ground Floor Plan 168-PR-A1.02; Proposed Site 168-PR-A0.01

2.3 Scope & Limitations of Survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, Adam Hollis surveyed the trees on site on 09/09/2016 and 19/01/2023, 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. 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 (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 photograph showing site in context – note trees between site and cricket field have been removed since image was captured (Source: Bing Maps)

3.1.1 This site is located to the rear of the original 20 Crediton Hill building. It is accessed from the eastern side of Crediton Hill via a narrow driveway.

3.1.2 The site itself is relatively level throughout, but the land drops away steeply (by some 2.2m) on the boundary of the cricket ground.

3.1.3 We are not aware of the existence of any Tree Preservation Orders*, but the site stands within West End Green Conservation Area. Camden's online mapping indicates that the cricket club is outside the conservation area (the boundary of which aligns with ends of the rear gardens). It is a criminal offence to prune, damage or fell trees within the conservation area 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 A2, 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.

3.2 Soil Description

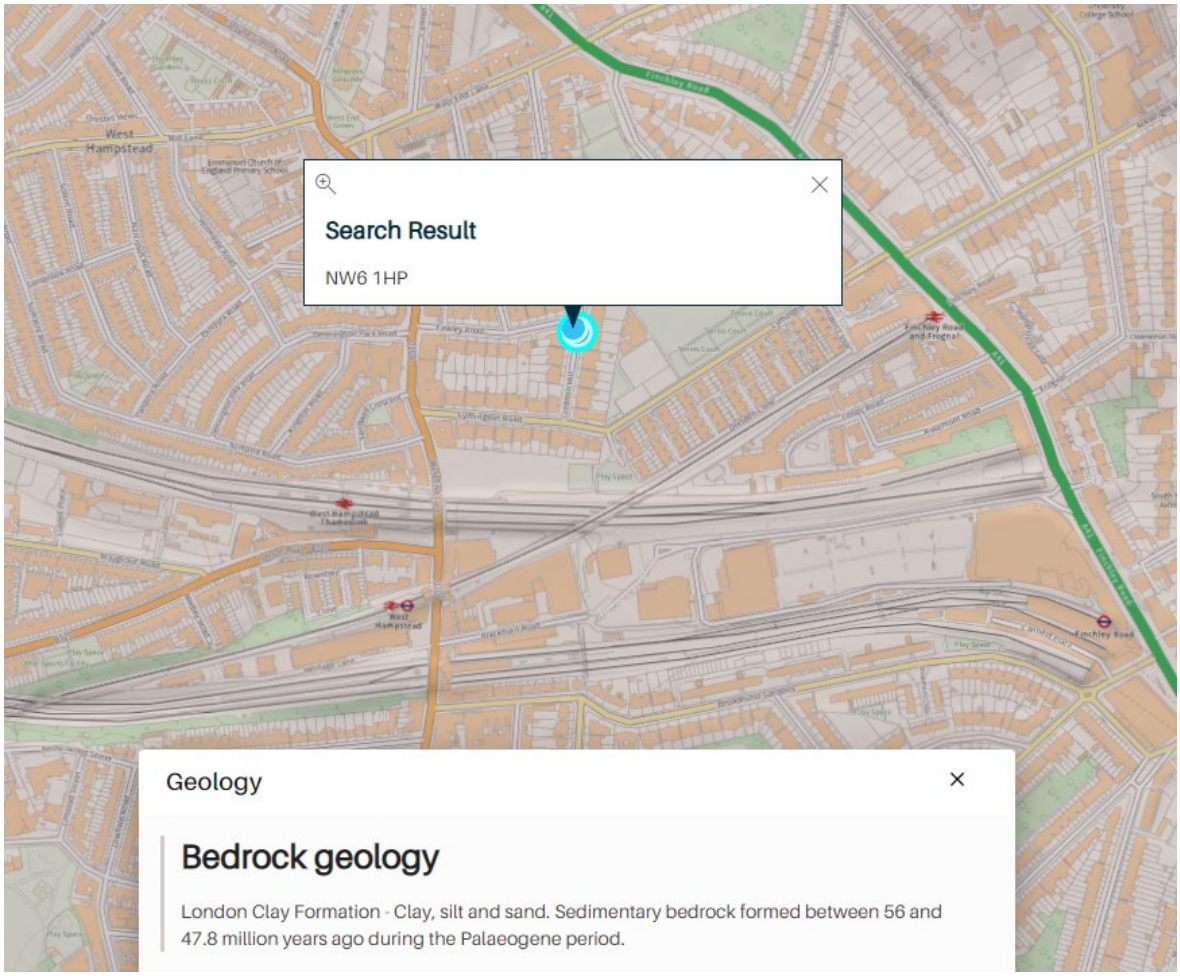


Figure 2: Extract from the BGS Geology of Britain Viewer

3.2.1 In terms of the British Geological Survey, the site overlies the London Clay Formation (see indicated location on Fig.2 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 – although it is to be noted that, to date, due to the continuous 2.2 metres deep foundations the existing building has not subsided or moved in any way since the time it was constructed in 1986. 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 5 remaining surveyed trees / group of trees, all are category* C (Low Quality); none are category A (High Quality), B (Moderate Quality) or U (Poor Quality). For the sake of consistency, the same numbering system adopted in the previous tree survey undertaken has been maintained. It will be observed that a young tree has been added since the time of the original survey. It is understood that 5 trees (T2a, G3, T4, T5a, T5) previously located on the adjacent land were felled by the owners of the adjoining sports grounds in September / October 2021.

3.3.2 The tree species found on / adjoining the site comprise pear, false acacia, Chusan palm, Austrian pine and crab apple. It should, however, be noted that botanically Chusan palm is not a 'tree' but a 'palm' – not having bark and only having primary growth, it is classified as a large woody herb (as grasses, bamboos, sedges and bananas).

3.3.3 In terms of age demographics the pear and Chusan palm group are mature, the false acacia is early mature, the Austrian pine semi-mature and the crab apple is young.

3.3.4 Full details of the surveyed trees can be found in Appendix 1 of this report.

3.3.5 There are recommended works for the pear T1 that are considered prudent regardless of development proceeding. These are listed in Appendix 2.

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

Photograph 2: G6 with T7 on right

Photograph 3:Off-site false acacia T2

Photograph 4: Pear T1

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.

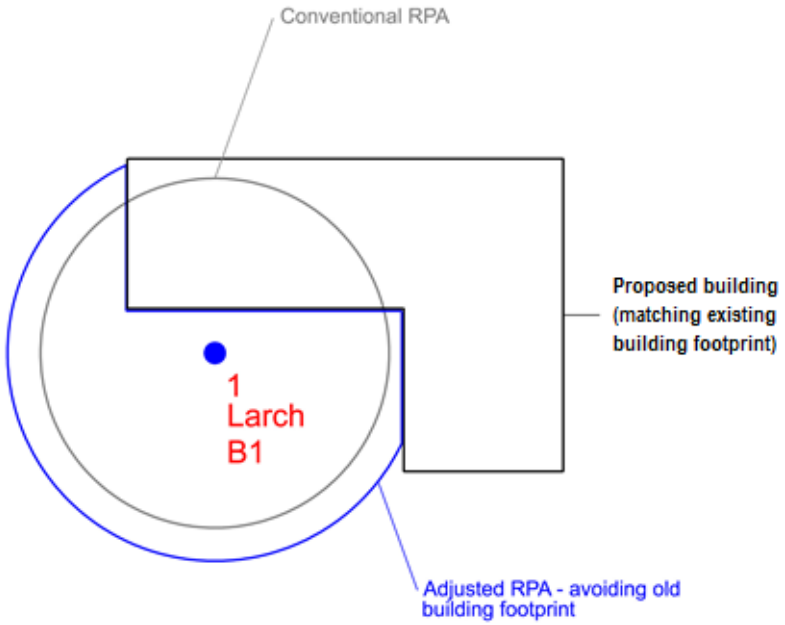


Figure 3 – Generic BS 5837 RPA Adjustments

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. In this case, given the low quality of the trees, the basement being formed entirely beneath the existing building which our previous report reference PWA/20CRE/AIA/01b noted has 2.2m deep foundations along the entirety of its rear wall and the extant consent **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, there is only one internal site tree which and only category C trees on the neighbouring land. There are few significant primary constraints upon development, provided these trees are suitably replaced and / or adequately protected with the appropriate methodologies are employed during development.

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.

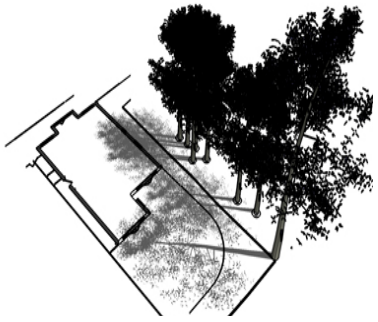


Figure 4 –
Generic Shading Constraints

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

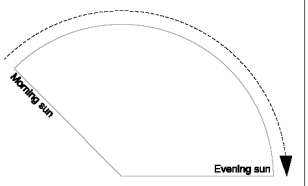


Figure 5 – Shading Arc

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 on the adjoining sites will ensure that shading constraints are minimal, especially given the subterranean nature of the development of basement on the application site, with leaf deposition and honey-dew likely to be as it is today. 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: SCA/20CRE/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	2	Acacia, False	Basement Construction within RPA Basement construction beyond 2.2m foundations so theoretical only	2.35 m^2 2.08 %	Early Mature	Poor	Moderate	N/A	N/A	Theoretical impacts only so not necessary
C	G6	Palm, Chusan	Basement Construction within RPA Basement construction beyond 2.2m foundations so theoretical only	9.9 m^2 35.01 %	Mature	Normal	Moderate	N/A	N/A	Theoretical impacts only so not necessary

6. ARBORICULTURAL IMPLICATIONS

6.1 Rating of Primary Impacts

6.1.1 The existing building has 15 metre long, 2.2m deep foundations constructed in 1986. They were constructed along the full length of the building in order to prevent any effect from the roots of the neighbouring trees. Therefore, it is highly unlikely tree roots are present under the building and whilst impacts listed within Table 1 these are purely theoretical only.

6.1.2 The new basement is proposed under existing upper ground floor; minimising the chances of impacting RPAs. It is important to note that all works to construct the new basement would be carried out from the internally, with most works being carried out through the soft-wood floor of the existing building, which would be lifted internally to allow for excavation of soil beneath. This excavation would be carried out using small mechanical tools and a small driverless digger with 18" wide bucket. It is to be noted that the Council has previously granted consent for such basement, and it has been partially implemented.

6.1.3 It may be necessary to fell the closest members of G6 for construction access but, as noted at 3.3.2, these are not technically trees. The applicant will endeavour to preserve as much existing vegetation as possible and otherwise robustly replace with new plants). Very minor tip pruning of the off-site false acacia T2 may be required to provide overhead clearance to piling equipment so there will be at most a very low amount of canopy cover lost. The immediate reduction in canopy cover through felling and / or pruning is therefore rated as a very low impact unlikely to harm either the resource or the wider conservation area. It should be noted that these impacts would be the same as for the consented scheme.

6.1.4 As the current proposal omits the lightwell, which was part of previously consented basement scheme, pear tree T1 would now be beyond the piling line and there should be no reason to remove it to facilitate construction of the present proposal.

6.1.5 The principal impacts in the current proposals to the retained trees comprise the encroachments into the 'nominal circle RPA' of false acacia T2 and some of Chusan palm G6 by. However, these theoretical incursions would be beyond the 2.2m deep foundations of the existing buildings, so there is likely to be no impact in practice. It will also be noted that these impacts would be the same as for the partially implemented consented scheme.

6.1.6 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 very low.

6.1.7 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. For the reasons set out above, the project arboriculturalist has determined that the retained trees can remain viable in the scheme before planning.

6.1.8 The trees in question are shown in Table 1 above to be reasonably healthy specimens of species with a moderate resistance to development impacts, and of an age quite capable of tolerating these limited impacts. Nor do the site characteristics suggest specific soil anomalies having a bearing on such considerations, provided appropriate measures (e.g. ground protection) are taken (see 6.3 below).

6.1.9 As per BS5837 recommendations (at 5.3.1a), the above assessment demonstrates that the tree(s) can remain viable. 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 status quo is unlikely to change with further development, which is the salient point for planning to consider especially given the subterranean nature of the proposals. Thus, the secondary impacts of development are minimal.

6.2.2 There would be no material difference in arboricultural terms between the consented and current schemes; indeed, the omission of the lightwell means the current scheme would not involve piling so close to pear T1.

6.3 Mitigation of Impacts

6.3.1 All plant and vehicles engaged in excavation / construction works should either operate outside the RPA, or should run on a temporary surface designed to protect the underlying soil structure.

6.3.2 The existing hard surfacing to the front of the site, which will be the focus of construction access arrangements, will be retained in situ and appropriately supplemented to withstand anticipated loading until the main building construction works are completed. At the landscaping stage, the 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(s).

6.3.3 Nuisance deposition can be further mitigated with routine maintenance, light pruning / deadwooding and the fitting of filtration traps on guttering (see Figure 7 overleaf).

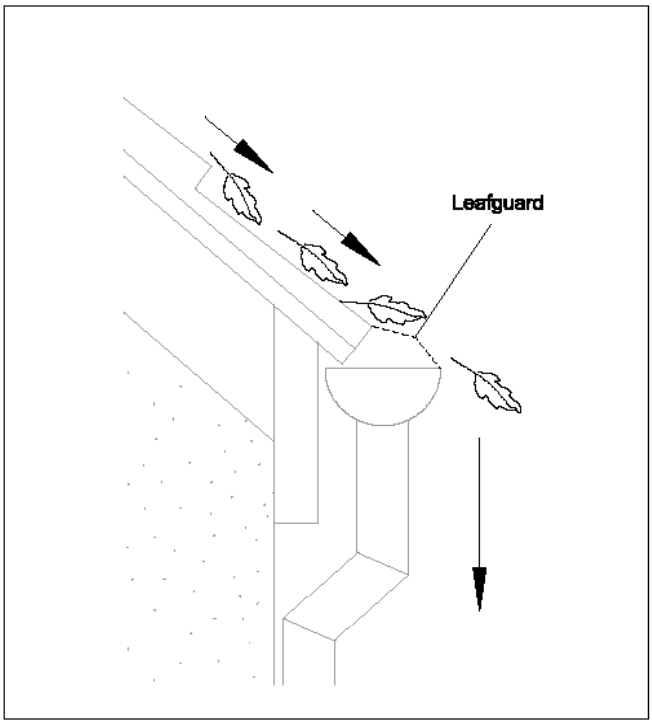


Figure 7: Filtration traps, as shown above, could be fitted on the gutters which can easily be maintained at 2-3m above ground.

7. CONCLUSION

7.1 The potential impacts of development are very low in terms of both quality of trees removed and also RPA encroachments of trees retained. Indeed, as the proposed basement is below the existing footprint which has 2.2m deep foundations along the entirety of its rear wall, such encroachment would be theoretical and there is likely to be no impact in practice. Further, in arboricultural terms, the proposals are largely the same as the scheme consented under reference 2018/1012/P and partially implemented.

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, the West End Green Conservation Area or wider landscape thereby complying with Policies G1 and G7 of the London Plan 2021 and Policies A2, 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 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 3. Any tree removals recommended within this report should only be carried out with local authority consent.

8.1.3 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.

8.2 General Recommendations for Sites Being Developed with Trees / Outline Arboricultural Method Statement

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, 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 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. 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 Plan in the Appendices

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.

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. 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

- 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

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	Pear, Common	: Pyrus communis
Apple, Crab	: Malus sylvestris	Pine, Austrian	: Pinus nigra
Chusan Palm	: Trachycarpus fortunei		

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: 20 Crediton HIll

Date: 09/09/2016 & 19/01/2023

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: SCA/20CRE/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	Pear, Domestic	12	2232	4.0	341	Mature	4.1	Normal	Good	C	2	20+	Lost stem /limb from base Large wound no decay Asymmetric crown, low taper Weak fork at 5m, crack in upper fork
2	Acacia, False	11	2554	4.0	500	Early Mature	6.0	Poor	Fair	C	2	10+	A sparser than normal canopy Very close to building & wall: probable cause of damaged wall
G6	Palm, Chusan	5	1	2.0	250	Mature	3.0	Normal	Good	C	2	>40	
7	Pine, Austrian	9	3	1.5	250	Semi-mature	3.0	Normal	Good	C	2	20+	
8	Apple, Crab	4	1.5	2.0	100	Young	1.2	Normal	Fair	C	2		

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

Priority 1 - Urgent (ASAP), 2 - Standard (within 3 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: 20 Crediton HIll

Date: 09/09/2016 & 19/01/2023

Surveyor(s): Adam Hollis

Ref: SCA/20CRE/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
1	Pear, Domestic	C	12	4.0	2232	CR Reduce in height by 2m	Lost stem /limb from base Large wound no decay Asymmetric crown, low taper Weak fork at 5m, crack in upper fork Management priority 2

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: 20 Crediton HIll

Date: 09/09/2016 & 19/01/2023

Surveyor(s): Adam Hollis

Ref: SCA/20CRE/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
2	Acacia, False	C	11	4.0	2554	CB Cut back to boundary line	A sparser than normal canopy Very close to building & wall: probable cause of damaged wall To facilitate development
G6	Palm, Chusan	C	5	2.0	1	SFell May be necessary to fell closest stems for construction clearance	To facilitate development

Landmark Trees

PART 3 – PLANS

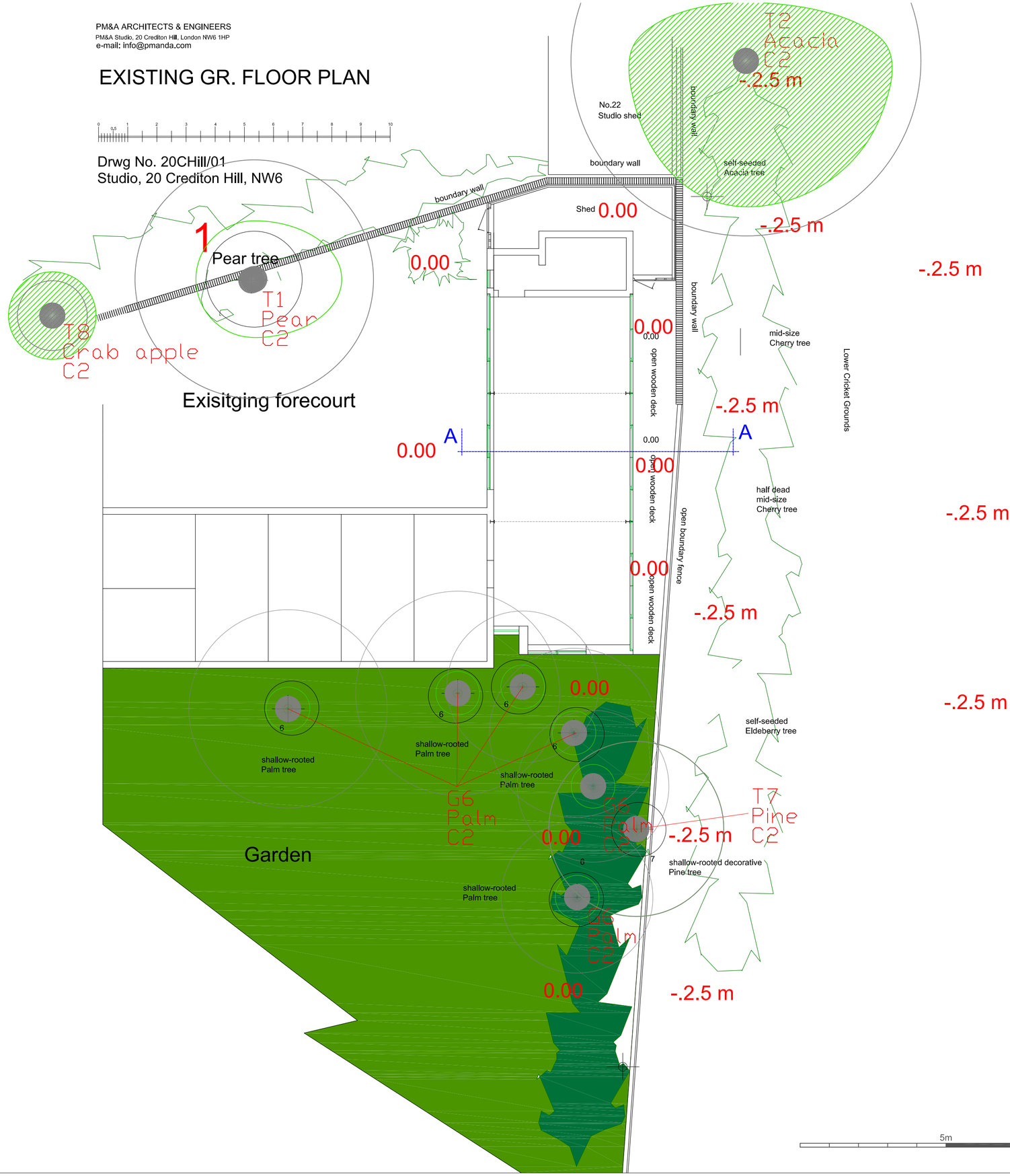
PLAN 1

TREE CONSTRAINTS PLAN

PM&A ARCHITECTS & ENGINEERS
PM&A Studio, 20 Crediton Hill, London NW6 1HP
e-mail: info@pmanda.com

EXISTING GR. FLOOR PLAN

Drwg No. 20CHill/01
Studio, 20 Crediton Hill, NW6



-.2.5 m

-.2.5 m

-.2.5 m

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.

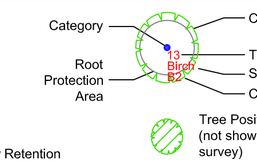
Root Protection Areas (RPA) are derived from stem diameter measured at 1.5 m above adjacent ground level (taken on sloping ground on the upslope side of the tree base).

Landmark Trees
20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 20 Crediton Hill	1:100@ A2
Drawing Title: Tree Constraints Plan	January 2023

Key:

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

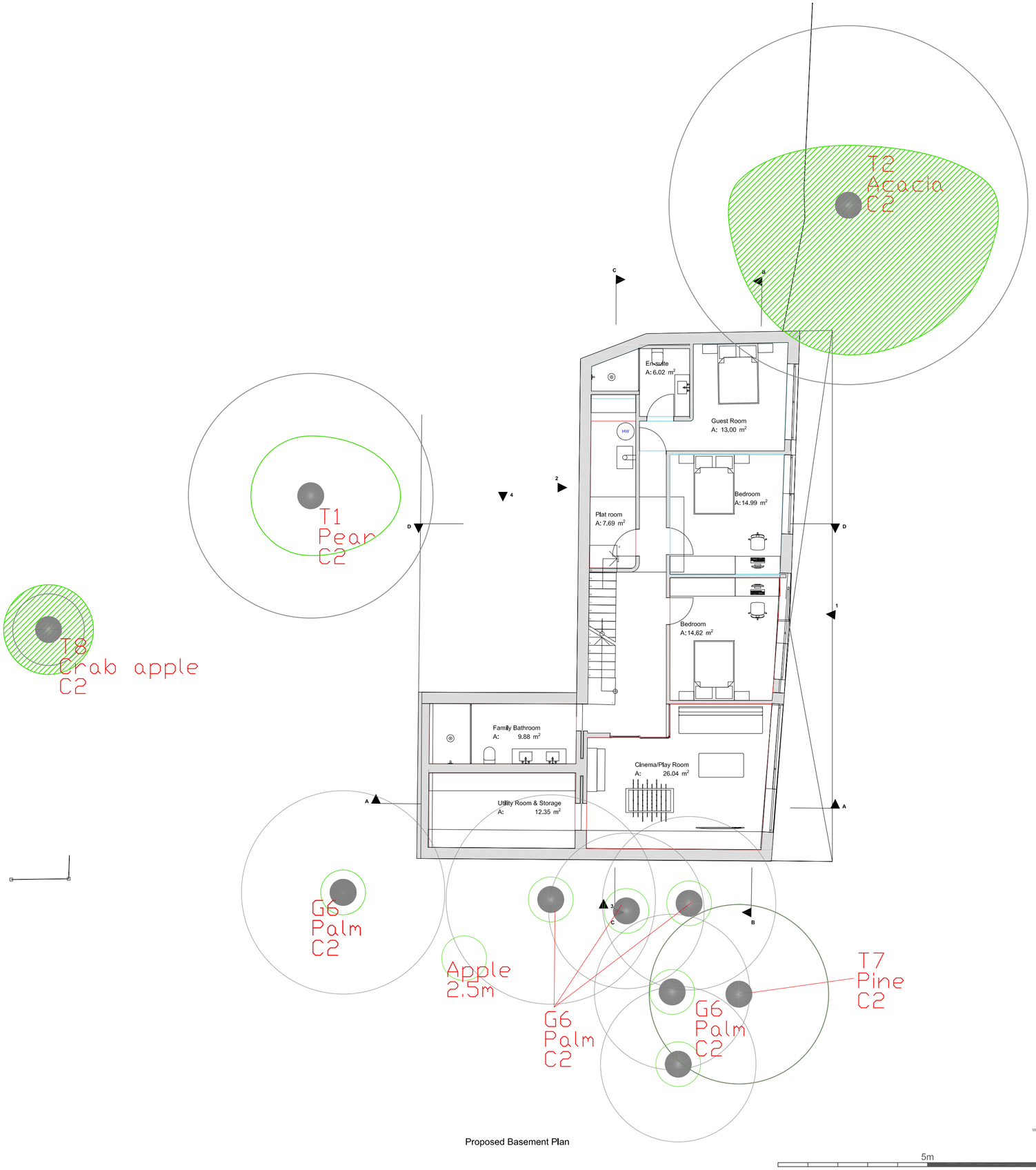


Tree Position Approximate (not shown on original survey)

PLAN 2

ARBORICULTURAL IMPACT ASSESSMENT PLAN (S)

i. Basement
ii. Ground Floor
iii. Site



Proposed Basement 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).

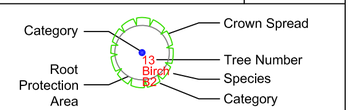
Landmark Trees

20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 20 Crediton Hill	1:100@ A2
Drawing Title: Arboricultural Impacts Assessment	April 2023

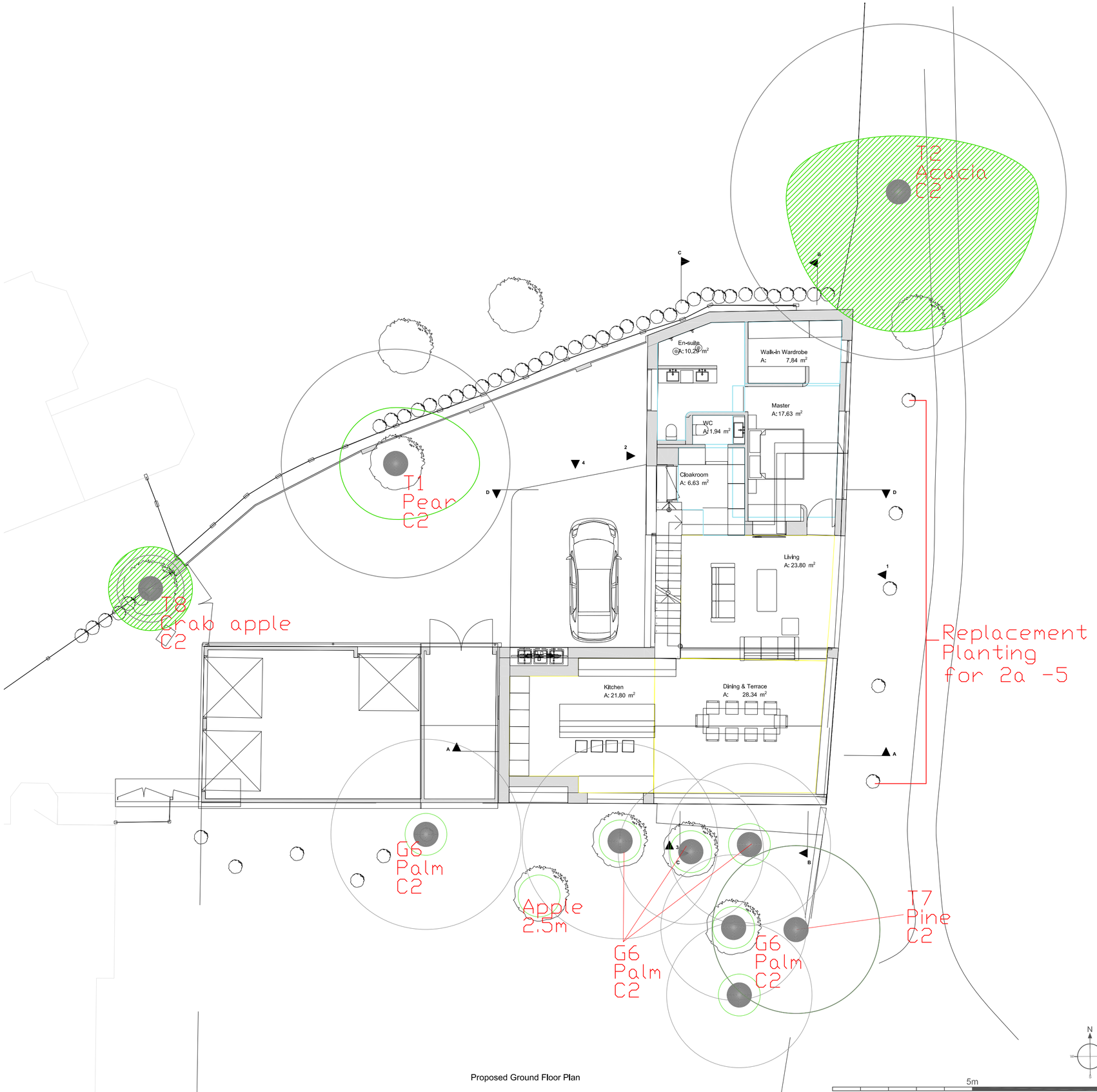
Key:

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



Tree Position Approximate (not shown on original survey)

Note: Minor discrepancies between bases in existing and proposed plans may cause some approximation in tree locations



Proposed Ground Floor 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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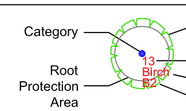
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 20 Crediton Hill	1:100@ A2
Drawing Title: Arboricultural Impacts Assessment	April 2023

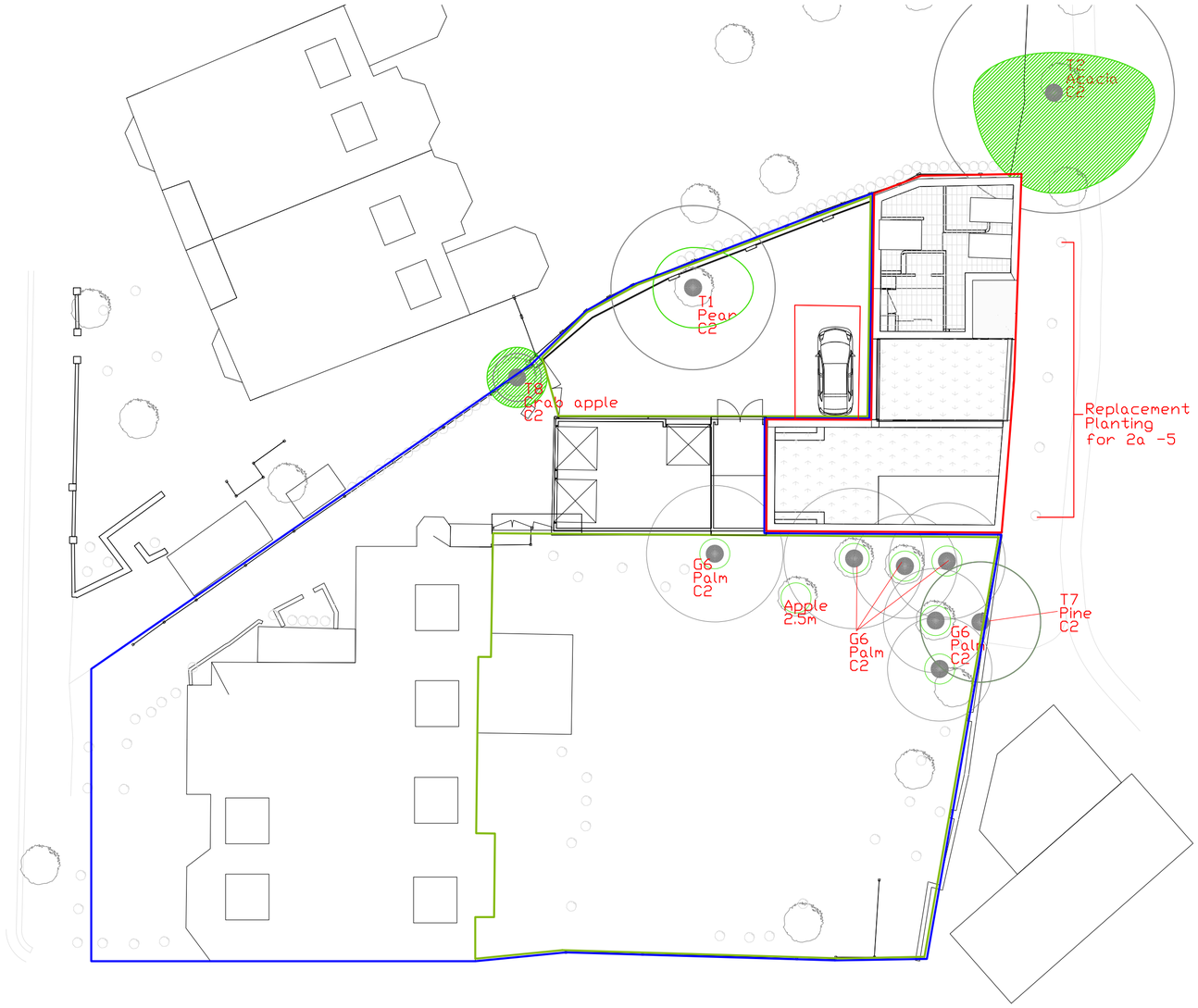
Key:

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



Tree Position Approximate (not shown on original survey)

Note: Minor discrepancies between bases in existing and proposed plans may cause some approximation in tree locations



LEGEND

Area of Freehold Site and Premises subject of Application

Ownership form below existing ground level

Adjacent land over which Application Site and Premises have the established full unconditional legal rights of pedestrian and vehicular access, parking/garaging, all other general uses, full use of Communal Gardens, own Services: Gas, Mains Water, Mains Electricity, Drainage, Cable Services, communal General Waste and Recycle Waste Bin facilities, own CCTV Security system

Full use of Communal Gardens

Proposed Site Plan

N

0 2 4

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).

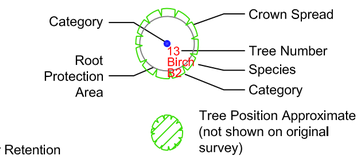
Landmark Trees

20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 20 Crediton Hill	1:200@ A2
Drawing Title: Arboricultural Impacts Assessment	April 2023

Key:

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

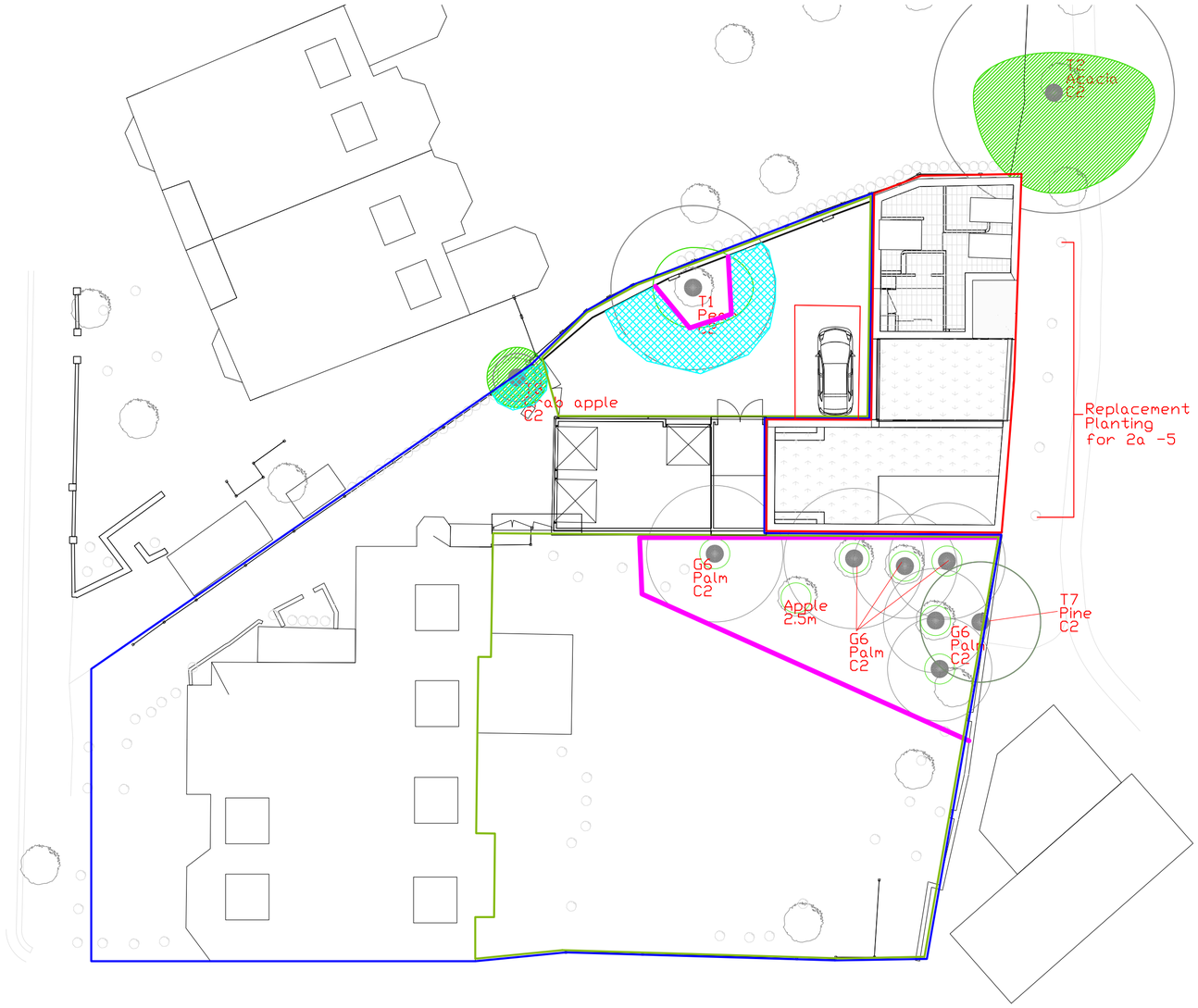


Tree Position Approximate (not shown on original survey)

Note: Minor discrepancies between bases in existing and proposed plans may cause some approximation in tree locations

PLAN 3

OUTLINE TREE PROTECTION PLAN



LEGEND

- Area of Freehold Site and Premises subject of Application
- Ownership form below existing ground level
- Adjacent land over which Application Site and Premises have the established full unconditional legal rights of pedestrian and vehicular access, parking/garaging, all other general uses, full use of Communal Gardens, own Services: Gas, Mains Water, Mains Electricity, Drainage, Cable Services, communal General Waste and Recycle Waste Bin facilities, own CCTV Security system
- Full use of Communal Gardens

Proposed Site Plan

N

0 2 4

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

20 Broadwick Street, London, W1F 8HT
Tel: 0207 851 4544 Mobile: 07812 989928
e-mail: info@landmarktrees.co.uk Web: www.landmarktrees.co.uk

Site: 20 Crediton Hill	1:200@ A2
Drawing Title: Tree Protection Plan	April 2023

Key:

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

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

- Tree Position Approximate (not shown on original survey)
- Tree Protection Fencing

Note: Minor discrepancies between bases in existing and proposed plans may cause some approximation in tree locations