Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT

& METHOD STATEMENT:

Heath Park & Heath House

Hampstead

London

NW3 7ET

REPORT PREPARED FOR:

Adair Associates

Cadogan House

4/6 High Street

Epsom, Surrey

KT19 8AD

REPORT PREPARED BY

Adam Hollis

MSc ARB MICFor FArbor A MRICS C Env

Ref: ADR/HP/AIM/01

Date: 29th October 2015

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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.

Tree Constraints & Protection Overview

Client:	Adair Associates	**Case Ref:**	ADR/HP/AIM/01
Local Authority:	Camden Council	**Date:**	29th October 2015
Site Address: Heath Park & Heath House, Hampstead, London, NW3 7ET			
Proposal: Landscaping of area surrounding development, as prepared by Bowles & Wyer			

Report Checklist	**Y/N**		**Y/N**
Arboricultural constraints on site	Y	Trees removal proposed	N
Tree Survey	Y	Topographical Survey	Y
BS5837 Report	Y	Conservation Area	Y
Tree Preservation Orders	Y		
Tree Protection Plan:	Y		
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout				
Site Visit	Y	Date: 21/10/15	Access Full/Partial/None	F
Trees on Site	Y		Off-site Trees	Y
Trees affected by development	Y		O/s trees affected by development	N
Tree replacement proposed:	N		On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Retained trees T948, T946 and T943 potentially affected by proposals; landscaping scheme clearly provided adequate protection for T948 and T946 - additional protection required for RPA of T943 only.

Comments

Recommended works for 6 trees (including the felling of T959) regardless of landscaping works, but also pertinent to maintaining a safe work site.

Recommendations		
1	Proposal will mean the loss of important trees (TPO/CA)	N
2	Proposal has sufficient amelioration for tree loss	N/a
3	Proposals provide adequate tree protection measures	Y
4	Proposal will mean retained trees are too close to buildings	N/a
5	Specialist demolition / construction techniques required	Y
6	The Proposal will result in significant root damage to retained trees	N
7	Further investigation of tree condition recommended (T948)	Y

RPA= Root Protection Area
TPP= Tree Protection Plan
AMS= Arboricultural Method Statement
AIA = Arboricultural Implication Assessment
BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'

1. SUMMARY

1.1 This report comprises an arboricultural impact assessment and method statement for the proposed landscaping at Heath Park & Heath House, Hampstead, London, NW3 7ET, reviewing any conflicts between the proposals and material tree constraints identified in our survey. It has been prepared to assist with the discharge the landscaping Condition 5 attached to planning permission 2008/0663/P (as varied by 2013/1342/P). The construction works for the proposed 6 bedroom residential dwelling are 60% complete, including the external brickwork and stone features.

1.2 The original survey and arboricultural impact assessment for the proposals under 2008/0663/P was undertaken by Arbtech Consulting Ltd in August 2007 (Report Ref: 070233 and TCP Ref: 070119 TCP-01). This survey was updated by Landmark Trees on the 21st October 2015; of the 22 trees surveyed on or around the site 19 are B category *(Moderate Quality), 2 are C category *(Low Quality), and T959 is U category *(Unsuitable for Retention and recommended for felling). In theory, only moderate quality trees and above are significant material constraints to be considered within the proposed landscaping scheme. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting.

1.3 The updated tree constraints have been plotted on the site plans, with the protection plans brought up to date, to allow the effective assessment of the potential impacts of the landscape proposals. The Arbtech report highlights the modified RPAs along the boundaries are based upon trial pit evidence. No roots were found as a consequence of the level changes either side of the boundary wall, and the unusual depth of the wall's foundations. It was accepted therefore, that the wall has acted as a permanent root barrier and no RPA should encroach on to the site from any tree outside of it.

1.4 During the survey, it was realised that the northernmost tree protected during the development proposals, and discussed at various site meetings, is in fact T948 that is to be retained in the absence of T947. It is clear that the works discussed since LT have been involved have yet to be undertaken; Appendix 2 of this AIM therefore recommends that the tree is pollarded to 7m as previously agreed with Camden Tree Officer, Alex Hutson, on site. The tree has declined further since the 2007 survey and subsequent LT visits in 2011; it is also acknowledged that significant landscape revisions have resulted to allow its retention, even though T947 was originally intended for retention (with T948 to be felled). The previously agreed pollarding will also reduce this tree's landscape contribution. Accordingly it is recommended that further investigations/discussions are undertaken to ensure that the tree is indeed worthy of retention in the longer term; these discussions will need to address the longer term landscape consequence of removal and replacement.

1.5 The Arbtech report clearly set out the arboricultural constraints on this site, which have been considered during the evolution of the landscape proposals. The AIA plan with the levels highlighted illustrates how the theoretical RPAs of the retained trees will be protected from any excavation works. Furthermore, it is clear that the RPA of T948 in addition to T946 (previously noted for felling) will be enhanced with the clearance of any debris/ removal of stones over 75mm in the soil.

1.6	The existing path within the RPA of T948 is to be removed manually, with the existing sub-base retained for the new permeable resin-bonded gravel surface. The existing paving within the RPA of T496 will also be removed manually, with the new porous resin-bonded path constructed on a no-dig basis.
1.7	As noted above, T959 is category U and recommended for felling on grounds of sound husbandry. It was also noted for removal within the previous Arbtech report.
1.8	The remaining landscaping works are within the theoretical RPAs of the off-site trees, but where modified RPAs were established by trial pits (see S1.3 above). As a precautionary measure, the landscaping proposals have ensured that there are areas of minimal excavations within the theoretical RPAs of T6, T7, T8, T10-T15, in addition to a porous resin-bonded surface for the replacement access road. The existing paving path, that is currently being used as the construction access road, should be lifted with caution by a skilled machine operator working away from the trees (sufficient canopy clearance is available).
1.9	Where practical, the existing Tree Protection Barriers will be retained; where this is not possible, access should be limited to pedestrian only with ply and 100-150mm of mulch provided as ground protection (as agreed on site monitoring visit in 2011 to enable wall to be pointed
1.10	Therefore, the retained trees will not be significantly affected by the proposed landscaping works, with additional enhancement proposed with porous paving and removal of debris/stones from within the RPA. Thus, with suitable mitigation and supervision the landscaping scheme is recommended to planning.

* 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 LANDMARK TREES were asked by Adair Associates to provide a survey and an arboricultural impact assessment of proposals for the site: Heath Park & Heath House, Hampstead, London, NW3 7ET. The report is to accompany a planning application to discharge the landscaping Condition 5 attached to planning permission 2008/0663/P (as varied by 2013/1342/P). Condition 5 states:

'No development shall take place until full details of hard and soft landscaping and the means of enclosure of all un-built, open areas have been submitted to and approved by the Council. Such details shall show boundary treatments within the site adjoining Heath House and shall not be carried out otherwise than in accordance with the details thus approved.'

2.1.2 The proposals are for the detailed landscaping of the grounds around the new 6 bedroom residential dwelling, which was 60% complete at the time of the revised arboricultural survey, including the external brickwork and stone features.

2.1.3 I am a Registered Consultant and Fellow of the Arboricultural Association and a Chartered Forester, with a Masters Degree in Arboriculture and 20 years experience of the landscape industry - including the Forestry Commission and Agricultural Development and Advisory Service. I am a UK Registered Expert Witness, trained in single joint expert witness duties. I am also Chairman of the UK & I Regional Plant Appraisal Committee, inaugurated to promote international standards of valuation in arboriculture.

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: 1699-11-01 Heath Park GA. REVM Bound

Proposals: 1699-11-21 Heath Park Formation Levels REV.D bound

1699-11-14 Heath Park Levels REV.F bound

2.3 Scope of survey

2.3.1 As Landmark Trees' (LT) arboricultural consultant, Kim Dear surveyed the trees on site on 21st October 2015, 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]. The survey updates the existing data prepared by Arbtech in 2007 to support the main proposals.

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 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 to this report. General husbandry recommendations are distinguished at Appendix 2 from the minimum requirements to facilitate development / form part of the planning application at Appendix 3. The former may still be relevant to providing a safe site of work, of course. Similarly, if for whatever reason the development does not go ahead, our recommendations in Appendix 2 would still apply.

2.4.2 An updated site plan identifying the surveyed trees, based on the client's drawings / topographical survey is provided in Appendix 4 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.

2.4.3	These constraints have been informed by previous site surveys and trial pits, undertaken to support the main application. The constraints have been overlain in turn onto the landscape proposals to create two Arboricultural Impact Assessment Plans in Appendix 5. The AIA plans illustrate the proposed protection measures in terms of protecting the existing levels within the RPAs, in addition to the proposed landscape mitigation such as porous surfaces for the proposed paths. The existing tree protection measures will be retained, with additional protection where works are required within the CEZ.

3.0 OBSERVATIONS

3.1 Site description

3.1.1 The site comprises part of the original triangular site at junction of North End Way and Spaniards Road, which is currently being developed under planning permissions ref 2008/0663/P (as varied by 2013/1342/P) for the demolition of existing dwelling house and ancillary structures and erection of a new basement and 2 storey dwelling house with basement double garage, access ramp, and associated landscaping and vehicular access off North End Way. The dwelling is 60% complete with substructure and frame completed. The flat roof is constructed and external windows & doors are installed. The external brickwork and stone features have been completed. The internal blockwork walls have been erected with all structural openings formed ready to receive the door sets in due course. There is now a fit out programme ahead of the team with the high level 1st fix services having started a month ago, so the ductwork, pipework and electrical containment is underway. The Internal drylining to walls and ceilings will start after the 1st fix services which is estimated in early November.

3.1.3 The construction access using the existing driveway which has been widened and runs to the west, reaching a turning area for the construction traffic. This existing construction access will be removed and relocated marginally to the east to provide the new access for the dwelling.

3.2 Subject trees

3.2.1 The original survey and arboricultural impact assessment for the proposals under 2008/0663/P was undertaken by Arbtech Consulting Ltd in August 2007 (Report Ref: 070233 and TCP Ref: 070119 TCP-01). This survey was updated by Landmark Trees on the 21st October 2015; of the 22 trees surveyed on or around the site 19 are B category *(Moderate Quality), 2 are C category *(Low Quality), and T959 is U category *(Unsuitable for Retention).

3.2.2 The tree species found on site comprise London plane, common lime, horse chestnut, turkey oak, silver birch, sweet chestnut, common beech, common ash and sycamore.

3.2.3 In terms of age demographics there is a preponderance of mature trees on the site with a few semi-mature and over-mature trees in the population.

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 6 out of the 22 trees on site, including the felling of tree T959 (see Appendix 2). The works noted include the need to pollard T948 to 7m; this previously agreed pollarding should be accompanied with further investigation of the apical dieback/deadwood to ensure that the tree is worthy of retention in the longer term.

3.3 Planning Status

3.3.1	Tree T948 is covered by a TPO and the site stands within the Hampstead Conservation Area, which will affect all the subject trees: it is a criminal offence to prune, damage or fell such trees without permission from the local authority.

4.0 DEVELOPMENT CONSTRAINTS

4.1 Primary constraints

4.1.1 BS5837: 2012 gives Recommended Protection Areas (RPA's) for any given tree size. 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.

4.1.2 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. **The modifications made to the RPAs of the off-site trees were established by trial pits as highlighted within the Arbtech Report (see below). The modifications have retained in this report.**

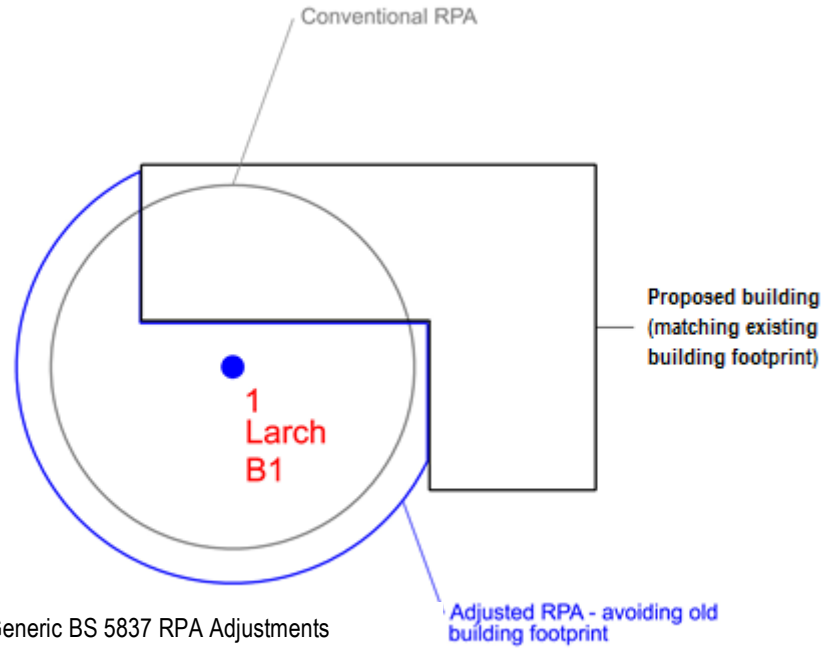

Figure 2 – Generic BS 5837 RPA Adjustments

4.1.3 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.

4.1.4 The Arbtech report highlights the modified RPAs along the boundaries are based upon trial pit evidence. No roots were found as a consequence of the level changes either side of the boundary wall, and the unusual depth of the wall's foundations. It was accepted therefore, that the wall has acted as a permanent root barrier and no RPA should encroach on to the site from any tree outside of it.

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 service life. Again, Category-C trees would not normally constrain development individually, unless they provide some external screening function. As discrete, internal trees, their removal will not affect the wooded envelope that encloses much of the site.

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."

4.1.10 In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees will comprise a constraint in aggregate, in terms of at least, replacement planting.

4.1.11 In this instance, few on-site trees remain. The potential constraints comprise the category C tree T948 in addition to the category B tree T946. The off-site category B tree T943 could also be potentially affected by the landscaping works.

4.1.12 B category trees around the site are not rooting on site, therefore will not significantly constrain 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.

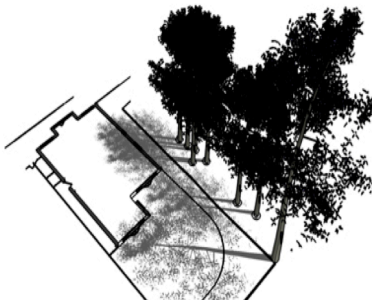

Figure 3 –
Generic Shading Constraints

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.

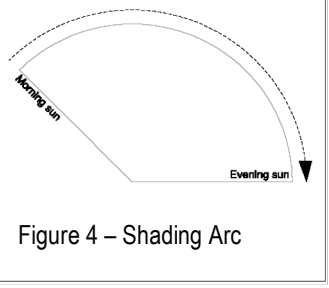

Figure 4 – Shading Arc

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 There will be minimal secondary impacts from the retained trees, with the existing shading and organic deposition constraints remaining as today. There is sufficient ground clearance for the majority of the trees; there is no ground clearance for T948, although this tree is to be pollarded in the short term. The significance of these constraints will vary depending on the location and proximity to the proposed landscaping.

Note: Sections 5 & 6 will now assess the impacts upon constraints identified in Section 4. 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 From Matheny & Clark (1998))

Ref: ADR/HP/AIM/01

Tree ID	English Name	Height (m)	Ground Clearance	Maturity	BS Cat.	Sub Cat	Useful Life	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Tel: 020 7851 4544
946	Beech	12	2	Mature	B	2	40+	Moderate/ poor	Negligible	N/a	No-dig in RPA indicated on landscape plan (AIA Plan 1); path to be porous (AIA Plan 2)
948	Sycamore	11	0	Over Mature	C		<10	Moderate	Negligible	N/a	No-dig in RPA indicated on landscape plan (AIA Plan 1); path to be porous (AIA Plan 2)
959	Ash	12	3	Semi mature	U		<10	N/a	N/a	N/a	To be felled on the grounds of sound husbandry

Landmark Trees Ltd
Tel: 020 7851 4544
E-mail: info@landmarktrees.co.uk

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The updated tree constraints have been plotted on the site plans, with the protection plans brought up to date, to allow the effective assessment of the potential impacts of the landscape proposals. The Arbtech report highlights the modified RPAs along the boundaries are based upon trial pit evidence. No roots were found as a consequence of the level changes either side of the boundary wall, and the unusual depth of the wall's foundations. It was accepted therefore, that the wall has acted as a permanent root barrier and no RPA should encroach on to the site from any tree outside of it.

6.1.2 During the survey, it was realised that the northernmost tree protected during the development proposals, and discussed at various site meetings, is in fact T948 that is to be retained in the absence of T947. It is clear that the works discussed since LT have been involved have yet to be undertaken; Appendix 2 of this AIM therefore recommends that the tree is pollarded to 7m as previously agreed with Camden Tree Officer, Alex Hutson, on site. The tree has declined further since the 2007 survey and subsequent LT visits in 2011; it is also acknowledged that significant landscape revisions have resulted to allow its retention, even though T947 was originally intended for retention (with T948 to be felled). The previously agreed pollarding will also reduce this tree's landscape contribution. Accordingly it is recommended that further investigations/discussions are undertaken to ensure that the tree is indeed worthy of retention in the longer term; these discussions will need to address the longer term landscape consequence of removal and replacement.

6.1.3 The Arbtech report clearly set out the arboricultural constraints on this site, which have been considered during the evolution of the landscape proposals. The AIA plan with the levels highlighted illustrates how the theoretical RPAs of the retained trees will be protected from any excavation works. Furthermore, it is clear that the RPA of T948 in addition to T946 (previously noted for felling) will be enhanced with the clearance of any debris/ removal of stones over 75mm in the soil (see AIA Plan 1). It is recommended that the whole of the RPA of the off-site category B tree T943 is protected in the same way.

6.1.4 The existing path within the RPA of T948 is to be removed manually, with the existing sub-base retained for the new permeable resin-bonded gravel surface. The existing paving within the RPA of T496 will also be removed manually, with the new porous resin-bonded path constructed on a no-dig basis.

6.1.5 As noted above, T959 is category U and recommended for felling on the grounds of sound husbandry. It was also noted for removal within the previous Arbtech report.

6.1.6 The remaining landscaping works are within the theoretical RPAs of the off-site trees, where modified RPAs were established by trial pits (see S1.3 above). As a precautionary measure, the landscaping proposals have ensured that there are areas of minimal excavations within the theoretical RPAs of T6, T7, T8, T10-T15, in addition to a porous resin-bonded surface for the replacement access road. The existing paving path, that is currently being used as the construction access road, should be lifted with caution by a skilled machine operator working away from the trees (sufficient canopy clearance is available).

6.1.7 Where practical, the existing Tree Protection Barriers will be retained; where this is not possible, access should be limited to pedestrian only with ply and 100-150mm of mulch provided as ground protection (as agreed on site monitoring visit in 2011 to enable wall to be pointed.

6.2 Rating of Secondary impacts

6.2.1 The proposals are for landscape enhancement only, therefore secondary impacts are not strictly relevant. There is sufficient ground clearance for the majority of the trees; there is no ground clearance for T948, although this tree is to be pollarded in the short term.

6.3 Mitigation of Impacts

6.3.1 The landscape proposals have already ensured that the RPAs of T948 and T946 are protected, with further enhancement with the clearance of any debris/ removal of stones over 75mm in the soil.

6.3.2 The proposed footpaths within the RPAs of T948/946 are to be porous, resin-bonded gravel and should be constructed using no-dig construction techniques, either with a cellular confinement system with no fines aggregate for the sub-base or simply building upon the existing sub-base without disturbing the ground below. Choice of construction method will initially depend upon root penetration within the existing sub-grade. The key principle is not to excavate in the presence of roots with the proposed porous surface to promote healthy soil water relations for future root growth. This no-dig protection should be extended to the RPA of T943 that lies within the site.

6.3.6 The landscape impact of the previous tree removals will be offset by the landscape proposals.

7.0 CONCLUSION

7.1	The potential impacts of the proposed landscaping have been minimised, with the retained trees T948, T946 adequately protected with no-dig protection within the RPAs, in addition to debris removal, new planting and mulch specified in areas with no planting. These protection measures should be extended to the RPA of T943 that lies within the site. Overall, the potential impacts to all retained trees are negligible.
7.2	The full potential of the impacts have been mitigated through design and precautionary measures. These measures are re-iterated in the Outline Method Statement in Section 9.0 of this report, to assist the discharge of planning conditions.
7.3	Therefore, the landscape proposals will not have any significant impact on either the retained trees or wider landscape. Thus, with the proposed mitigation and supervision the scheme is recommended to planning.

8.0 RECOMMENDATIONS

8.1 Specific Recommendations

8.1.1 Current tree works recommendations are found in Appendix 2 to this report. Any tree removals recommended within this report should only be carried out with local authority consent.

8.1.2 All replacement trees should be planted under current best practice; i.e. conforming to and planted in accordance with the following:

- BS8545: 2014 Code of Practice for Trees from Nursery to Landscape
- BS 3936:1980 Nursery Stock;
- BS 4043:1966 Transplanting Semi-Mature Trees; and
- BS 5236:1975 Cultivation and Planting of Trees in the Advanced Nursery Stock Category.
- All replacement stock should be planted and maintained as detailed in BS 4428:1989 (Section 7): Recommendations for General Landscape Operations.

9.0 METHOD STATEMENT

9.1 Method Statement (to be read in conjunction with AIA Plans in Appendix 5)

9.1.1 This outline method statement has been prepared for assistance with the discharge of landscape planning conditions at Heath Park & Heath House. The statement will address the precautions that will be undertaken to protect the trees on and around this site during the proposed construction works.

9.1.2 This section of the report lays down the methodology for any proposed works that may have an effect upon the retained trees. It is essential within the scope of any contracts related to the development proposals that this method statement is observed and adhered to. It is recommended that this section form part of the work schedule and specification issued to the building contractors and can be used to form part of the contract.

9.1.3 Copies of this method statement will be available for inspection on site. The developer will inform the local planning authority within twenty-four hours if the arboricultural consultant is replaced.

9.2 Sequence of Works

9.2.1 The sequence of works should be as follows:

i) check existing TPBs;
ii) ground modelling works
iii) reorganize TPBs for construction of new paths;
iv) construct new paths;
v) removal of TPB;
vi) soft landscaping.

9.2.2 Site supervision: as for the construction of the dwelling, the existing Site Agent will be responsible for all arboricultural matters on site. This person will be:

- present on site for the majority of the time;
- aware of the arboricultural responsibilities;
- have the authority to stop work that is 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;
- make immediate contact with the local authority and/or a retained arboriculturalist in the event of any tree related problems occurring.
- Contact details for Landmark Trees are provided on the cover to this report.
- Contact details for Local Authority Tree Officer are as follows:

James Remmington
Tree and Landscape Officer
London Borough of Camden
5th Floor Town Hall Extension
Argyle Street
London WC1H 8ND

Email :James.Remmington@camden.gov.uk
Telephone: 020 7974 4444

9.3 Site Monitoring

9.3.1 Landmark Trees are to be retained as Arboricultural Consultants responsible for site monitoring for the duration of the landscaping proposals Key personnel are in the main Adam Hollis MSc (Arb) and occasionally James Bell Tech Cert, subject to any new staff intake. Site monitoring will be undertaken by a qualified and experienced arboriculturalist at pre-determined and agreed time intervals.

9.3.2 The arboriculturalist will arrive at the site, check in at the site office and be safely escorted around the site by the site agent, checking the maintenance of tree protection measures. Routine visits will generally be unannounced. However, the arboriculturalist will also visit subject to advance notification and agreement to supervise any agreed works within the RPA.

9.3.3 Monitoring will involve a schedule of routine visits (quarterly, including both site-setup and sign-off inspections) and reports to ensure contractor compliance with tree protection measures and to provide ongoing liaison with all personnel involved in the site development (including the LPA). Any defects requiring rectifying must be notified to the Site Agent and the Client and copied to the LPA by email. Emergencies will be notified to the LPA by phone. Appropriate records will be kept and be made available to the LA if required to show evidence of site monitoring (Appendix 3).

9.3.4 Supervision will not require the arboriculturalist to be present throughout all operations to ensure tasks are carried out as per the approved methodology, but certainly, during the key elements of proposed (and any other unplanned) incursions into the protection areas (subject to LPA agreement and for whatever reasons). Such supervision would require the arboriculturalist to attend site, if not the whole task, to ensure the arboricultural objectives were met. However, where tasks are ongoing, provided the arboriculturalist is satisfied, and after an appropriate briefing, the supervision may be reduced to telephone and email contact between the site foreman/ contractor and arboriculturalist.

9.3.5 In addition, a site log book will be kept by the Site Agent to record all stages of the development from the installation of the fence protection, to routine checks of the fencing through to the completion of the project. This should be made available to the LA if required to show evidence of site monitoring. Site monitoring should include:

- Re-organisation of TPBs for footpaths
- Demolition of hard surfaces / structures within RPA's
- Construction of new of hard surfaces / structures within RPA's
- Site completion meeting

9.3.6 The arboricultural consultant should be given responsibility for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant should be instructed to inspect and monitor any works within exclusion zones; i.e. demolition of hard standing. A record of site visits should be maintained for inspection on site and copies forwarded to the developer / agent and to the local planning authority.

9.4 Pre- Landscaping Site Preparation

9.4.1 The existing husbandry works (i.e felling of T959 and the pollarding of T948) are listed in Appendix 2.

9.4.2 The retained trees are protected with the Tree Protection Barriers (TPB). These should be retained during landscape formation levelling.

9.4.3 A Landmark Trees representative should be informed when the fencing is to be altered to allow the proposed paths to be constructed, to enable their initial presence to oversee the work being carried out

9.4.4 The only other exception is the completion of soft landscaping but if any excavations, however minor, are to be carried out as part of soft landscaping within RPAs, an arboricultural assessment must be carried out beforehand and any arboricultural protection measures incorporated.

9.4.5 The existing protective fencing is be located to form the boundary of the Construction Exclusion Zone (CEZ). The CEZ is an exclusion zone and suitable steps are being taken to prevent access by pedestrians and vehicles and the storage of any works materials and equipment will be located outside of the CEZ. Where pedestrian access has been required in the past to enable pointing works to the wall, ground protection comprising 100 – 150 mm ply and mulch has been used.

9.4.6 Upon completion of the tree works, the standard of work can be checked by the retained arboricultural consultant and the existing TPB's inspected, who can then liaise with the local authority. If there are any amendments to either the tree works or additional protection measures, they will be agreed at this meeting and confirmed in writing.

9.5 Development Phase

9.5.1 The following general precautions will apply:

- No fires shall be made on any part of the site, or within 20m of any tree to be retained.
- No storage of materials shall be made within the protective fences.
- No breaching or moving of the protective fences without the approval of an arboriculturist.
- Alterations in levels within the tree protection fence areas shall be avoided.

9.5.2 Site access and accommodation will be as existing until changes are required in the landscape phase. Any further pruning for working clearances must be discussed first with the arboriculturalist; once agreed in principle these works should be approved by the appropriate tree officer and approved in writing by the LPA. Materials can be unloaded onto protected ground within RPA's and stored throughout the interior of the site away from protected trees

9.5.3 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.

9.6 Routing & Installation of Services

9.6.1 It is understood that the routing and instillation of services for the landscaping will avoid the RPAs at the design stage; however if unavoidable then it may be possible with written permission from the LPA to implement the provisions of BS5837 and NJUG VOLUME 4 (e.g. radial trenching and /or mole trenching) under arboricultural supervision.

9.7 Changes in Grade

9.7.1 The landscaping proposals will maintain the existing levels within the RPAs of on-site retained trees. It is recommended that this protection is extended to the off-site T943. If soil is to be disturbed within the CEZ / RPA of T943, it will be done only with hand tools and the supervising arborist will be informed if roots are exposed.

9.8 Construction Measures

9.8.1	The replacement paving/hard landscaping will use no-dig construction techniques and porous surfaces. The key principle will be not to excavate in the presence of roots and to provide a porous surface to promote healthy soil water relations for future root growth.

9.9 Removal of Ground Protection & Post Construction Landscaping & Treatment

9.9.1	The tree protection may be removed upon completion of the construction phase and when all drainage and service runs have been installed and any site machinery has been removed from the RPA.
9.9.2	Any further landscaping works should avoid the changing of ground levels or deep digging. Heavy machinery should not be used in the vicinity of the retained tree.
9.9.3	If herbicides are to be used they should be appropriate to their purpose and not in such a way as to damage the retained tree or vegetation; they must be applied by a suitably qualified person i.e. a holder of a recognised 'certificate of competence'.
9.9.4	The retained trees will remain in ‘new planted areas’ which will reduce the chances of compaction and disturbance of root systems. As noted in the Arbtech report at Section 13.6.4, the planting should be combined with a mulch of decomposed woodchip/bark mulch is to be applied to a maximum depth of 40mm atop the RPAs (this will also be protected as noted on the AIA plans in Appendix 5.
9.9.5	The new planting scheme adopted has considered aspects of the site such as current design, layout and future use. Consideration has also been given to the soil type, climate and overall character of the landscape.

9.10 Completion

9.10.1	Following completion of the works listed above, a Landmark Trees consultant will meet with a local authority representative and agree upon any remedial works deemed necessary.
9.10.2	A separate LT post-development tree inspection (with specific reference to the retained tree) is recommended to facilitate a constructive meeting. Any works agreed in this meeting will be confirmed in writing and will be performed to BS 3998: 2010 Tree Works.
9.10.3	It is recommended that, in due course, acceptance of the recommendations in this report is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of tree protection recommendations have been priced in to the job.

9.10.4	If conflicts between any part of a tree and the building arise in the course of development these can often be resolved quickly and at little cost if a qualified arboriculturist is consulted promptly. Lack of such care is often apparent quickly and decline and death of such trees can spoil design aims and can of course affect saleability, and reflects lack of best practice. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of the finished development.

10.0 REFERENCES

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APPENDIX 1

TREE SCHEDULE

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.

Site: Heath House Park, Hampstead NW3 7ET
Date: 21/10/15
Surveyor: Kim Dear

BS5837 Tree Constraints Survey Schedule

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Tree ID	English Name	Height (m)	Stem diameter (mm)	RPA (m)	Spread N (m)	Spread E (m)	Spread S (m)	Spread W (m)	Ground Clearance	Maturity	BS Cat.	Sub Cat	Useful Life	Comment
2	Lime	18	690	8.3	4	4	3	4	6	Mature	B	2	40+	Roadside, epicormic growth
3	Lime	17	650	7.8	3	4	4	3	6	Mature	B	2	40+	Roadside, epicormic growth
4	Lime	15	400	4.8	3	5	5	4	4	Semi mature	B	2	40+	Ivy
4a	Lime	17	850	10.2	3	3	5	4	4	Mature	B	2	40+	In avenue of 5 pairs to North
5	Horse Chestnut	16	570	6.8	7	5	3	5	5	Mature	B	2	20-40	
6	Horse Chestnut	17	850	10.2	8	7	3	5	5	Mature	C		20-40	Leaf miner/deadwood
7	Lime	21	900	10.8	6	5	5	5	4	Mature	B	2	40+	
8	London Plane	17	780	9.4	6	5	5	6	6	Mature	B	2	40+	Old pollard, cavities in crown
10	London Plane	18	930	11.2	9	8	4	8	5	Mature	B	2	40+	Old pollard, cavities in crown
11	London Plane	17	930	11.2	6	7	4	5	8	Mature	B	2	40+	Old pollard, cavities in crown
12	London Plane	13	880	10.6	4	5	4	5	5	Mature	B	2	40+	Old pollard, cavities in crown
13	London Plane	17	890	10.7	7	8	8	8	5	Mature	B	2	40+	Old pollard, cavities in crown
15	London Plane	17	900	10.8	7	8	5	7	5	Mature	B	2	40+	Old pollard, cavities in crown
16	London Plane	18	960	11.5	5	7	7	7	5	Mature	B	2	40+	Old pollard, cavities in crown
939	Lime	19	590	7.1	4	7	7	5	3	Mature	B	2	40+	Epicormic
940	Lime	20	630	7.6	5	8	5	6	2	Mature	B	2	40+	Major deadwood, epicormic
941	Turkey Oak	18	690	8.3	7	6	5	5	3	Mature	B	2	40+	
942	Silver Birch	15	345	4.1	4	3	3	3	2	Mature	B	2	40+	
943	Sweet Chestnut	11	740	8.9	8	8	6	5	4	Mature	B	2	20-40	Minor deadwood over bus stop
946	Beech	12	620	7.4	7	6	4	7	2	Mature	B	2	40+	Trifurcated 2m, old pollard
948	Sycamore	11	650	7.8	4	3	3	4	0	Over Mature	C		<10	Apical dieback/deadwood
959	Ash	12	310	3.7	3	4	4	2	3	Semi mature	U		<10	Bifurcated/crown damage

Appendix 2

Recommended Tree Works

Notes for Guidance:

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

Site: Heath House Park, Hampstead NW3 7ET
Date: 21/10/15
Surveyor: Kim Dear

Recommended Tree Works

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Tree ID	English Name	BS Cat.	Height (m)	Stem diameter (mm)	Ground Clearance	Maturity	Useful Life	Comment	Recommended Works
4	Lime	B	15	400	4	Semi mature	40+	Ivy	SvrIvy
6	Horse Chestnut	C	17	850	5	Mature	20-40	Leaf miner/deadwood	DWD: Remove deadwood
940	Lime	B	20	630	2	Mature	40+	Major deadwood, epicormic	DWD: Remove deadwood
943	Sweet Chestnut	B	11	740	4	Mature	20-40	Minor deadwood over bus stop	DWD: Remove deadwood
948	Sycamore	C	11	650	0	Over Mature	<10	Apical dieback/deadwood	Pol: Pollard to 7m/remove?
959	Ash	U	12	310	3	Semi mature	<10	Bifurcated/crown damage	Fell

Appendix 3 General Guidelines & Sample Site Monitoring Sheet

3.1 All work must be to BS 3998:2010 - '*Recommendations for tree work*'.

3.2 Staff carrying out the work must be qualified, experienced and ideally be Arboricultural Association approved contractors, and will be covered by adequate public liability insurance.

3.3 Any defects seen by a contractor or the client that were not apparent to the consultant must be brought to the consultant's attention immediately.

3.4 No liability can be accepted by the consultant in respect of the trees unless the recommendations of this method statement are carried out under the supervision of a Landmark Trees consultant.

3.5 It is advisable to have trees inspected by a consultant regularly. On this site it is recommended that these inspections are made every year.

Landmark Trees

Site Monitoring Report Sheet

Client:		**Planning Ref:**	
Local Authority:		**Date:**	
Site Address:			
Proposal:			

Visit Checklist	**Y/N**		**Y/N**
Tree protection barrier (TPB) in place		TPB as per approved	
Ground protection (GP) in place		GP as per approved	
TPB / GP breached		Trees damaged	
Site Agent briefed by LT			
LT briefed by Site Agent			
LPA informed			
Remedial action required			

Comments

Recommendations

Outcome		
1		
2		
3		
4		

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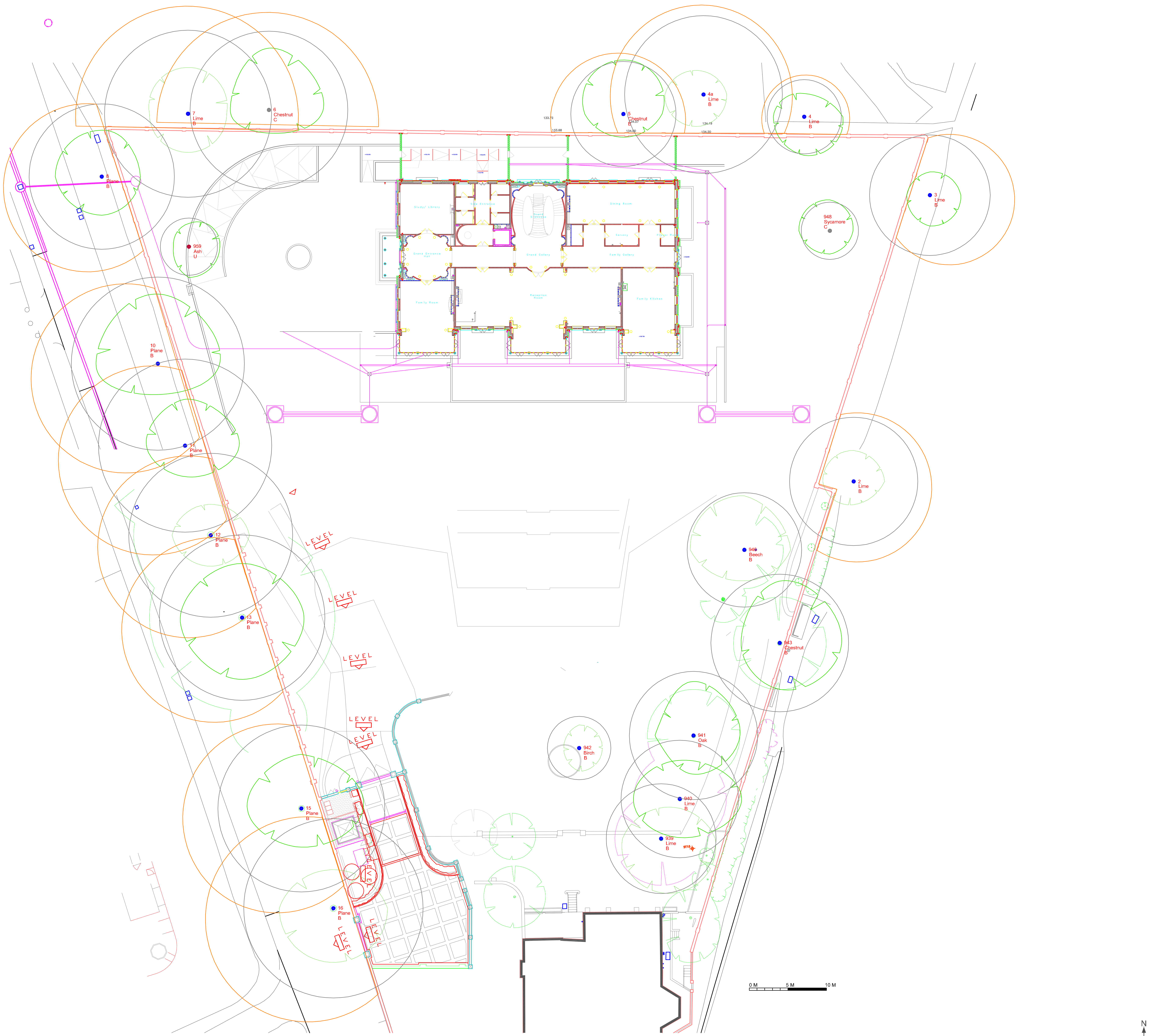
Landmark Trees is the trading name of Landmark trees Ltd. Registered in Wales. Reg No. 3882076

APPENDIX 4

TREE CONSTRAINTS PLAN



NOTE:

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

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

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

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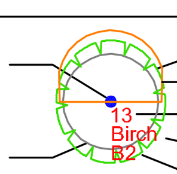
Site: Heath Park	1:250@ A1
Drawing Title: Tree Constraints Plan	October 2015

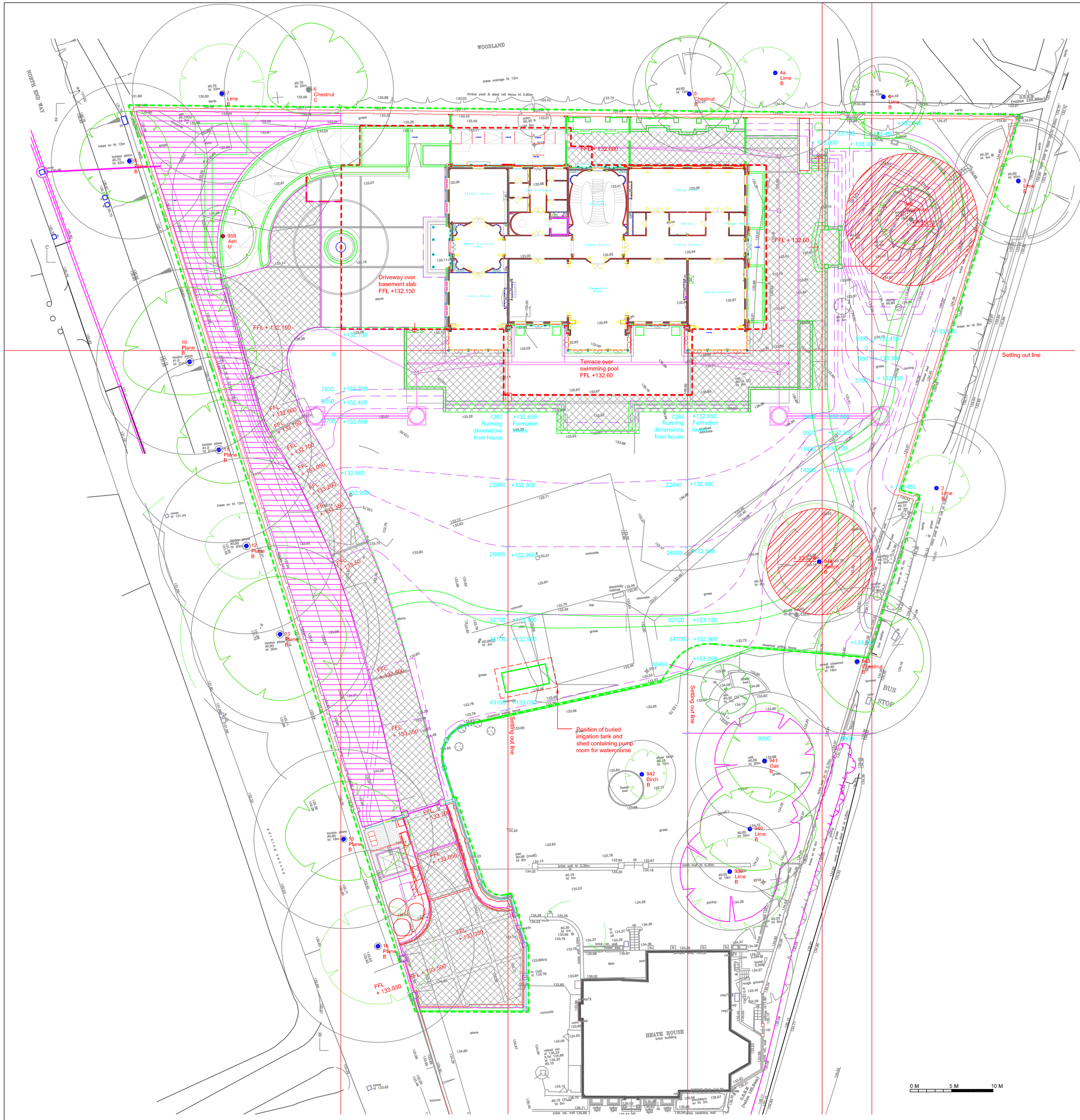
Key:

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



APPENDIX 5

ARBORICULTURAL IMPACT ASSESSMENT PLANS



Existing trees

Root Protection Zone - no digging within this area - surface to be cleared of all debris and stones larger than 75mm

Formation levels to structural engineers detail

No excavation in this area - to be left free of building and other debris and stones larger than 75cm

Extent of basement

Contour lines at 150mm increments

Site boundary

+133.600 Formation levels

FFL +132.150 Finished paving levels

+ 135.57 Existing levels/ base of protected trees

NOTES

1. All landscape areas to be left free of building and other debris and and the surface to be cleared of stones larger than 75cm
2. Following achievement of formation levels in landscape areas every effort should be made to protect the soil structure by avoiding all unnecessary vehicle compaction.

NOTE:

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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

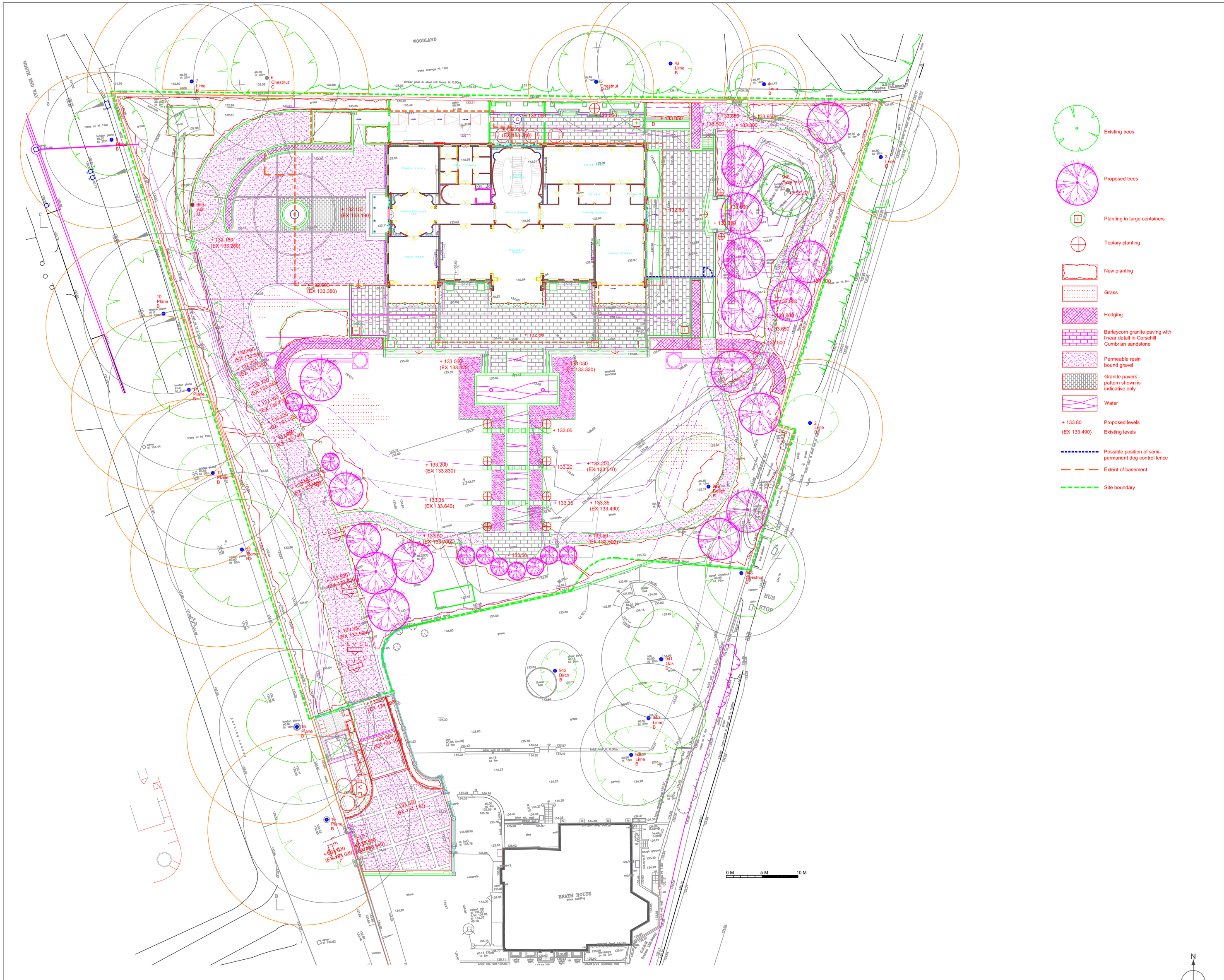
Site: Heath Park	1:250@ A1
Drawing Title: Arboricultural Impacts Assessment	October 2015

Key:

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

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

Tree Position Approximate (not shown on original survey)



Existing trees

Proposed trees

Planting in large containers

Topiary planting

New planting

Grass

Hedging

Barleycorn granite paving with linear detail in Corsehill Cumbrian sandstone

Permeable resin bound gravel

Granite pavers - pattern shown is indicative only

Water

+ 133.80 Proposed levels

(EX 133.490) Existing levels

Possible position of semi-permanent dog control fence

Extent of basement

Site boundary

NOTE:

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

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

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

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Site: Heath Park	1:250@ A1
Drawing Title: Arboricultural Impacts Assessment	October 2015

Key:

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

Category
Crown Spread
Alternate RPA
Root Protection Area
13 Birch B2
Tree Number
Species
Category

Tree Position Approximate (not shown on original survey)