Landmark Trees

ARBORICULTURAL IMPACT ASSESSMENT REPORT:

Proposed Lidl Store

Former Hayes Swimming Pool Site

Botwell Lane

Hayes

Middlesex

REPORT PREPARED FOR:

Lidl UK

London North Property Office

4-14 Blackbird Hill

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REPORT PREPARED BY

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MSc ARB MICFor FArbor A MRICS C Env

Ref: LUK/BLH/AIA/03a

Date: 6th November 2015

APPENDICES

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:	Lidl UK	**Case Ref:**	LUK/BLH/AIA/03a
Local Authority:	LB Hillingdon	**Date:**	6/11/15
Site Address: Revised scheme for proposed Lidl Store, Former Hayes Swimming Pool Site, Botwell Lane, Hayes, Middlesex			
Proposal: Revisions to consented scheme for a neighbourhood food store			

Report Checklist	**Y/N**		**Y/N**
Arboricultural constraints on site	Y	Trees removal proposed	Y
Tree Survey	Y	Topographical Survey	Y
BS5837 Report	Y	Conservation Area	N
Tree Preservation Orders	N		
Tree Protection Plan:	N/a	(Include in future method statement)	
Tree Constraints Plan:	Y		
Arboricultural Impact Assessment:	Y		

Site Layout					
Site Visit	Y	Date: 16/06/15		Access Full/Partial/None	F
Trees on Site			Y	Off-site Trees	Y
Trees affected by development			Y	O/s trees affected by development	Y
Tree replacement proposed:			Y	On or off-site trees indirectly affected by development	N

Trees with the potential to be affected

Impact on London Planes along Central Avenue significantly reduced – retention of T10 now possible and only every other tree affected by new/replacement hard standings and minor building encroachment. Likely that some minor tree works may be required to facilitate construction.

Tree removals for new store as extant permission. One additional removal of category U tree T26 for new hard standings (low impact).

New access will require removal of one category B tree T44 (medium impact – replacement planting required). Extended parking area requires removal of 2 category C trees (T41 & T43) in addition to category U tree T42 and T46 (both require removal on grounds of sound husbandry)

Comments

Recommended tree works noted for 21 trees, including the felling of all 6 category U trees and option to fell category C/u tree T59

Recommendations

1	Proposal will mean the loss of important trees (TPO/CA)	N
2	Proposal has sufficient amelioration for tree loss	Y
3	Proposals provide adequate tree protection measures	Y
4	Proposal will mean retained trees are too close to buildings	N
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	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 of the revised proposals for a Lidl Store on the former Hayes swimming pool site, Botwell Lane, Hayes, Middlesex. The site has consent for a new store (Ref: 1942/APP/2013/3565); this permission requires the felling of 7 trees, comprising 2 category B trees (T10 and T28), 5 category C trees (T21, T22, T23, T24 and T29) and 2 further category U trees (T26 and T27).

1.2 There are 61 trees on the extended site, of which 7 are category A (High Quality), 27 are B category *(Moderate Quality), 17 are C category *(Low Quality), 2 are C/u category *(Low Quality/Unsuitable for Retention) and 8 are U category *(Unsuitable for Retention). In theory, only moderate quality trees and above are significant material constraints on development. However, the low quality trees would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate. In this instance, no such collective impact is proposed.

1.3 The principal primary impacts of the revised proposals have significantly reduced the impact on London Planes along Central Avenue. The current proposals will allow the retention of the category B tree T10, with only every other tree affected by new/replacement hard standings and minor building encroachment. There is some minor canopy encroachment by the new buildings, therefore it is likely that some minor tree works may be required to facilitate construction.

1.4 All tree removals for the new store are the same as the extant permission, comprising one category B tree, T28 and 5 category C trees (T21, T22, T23, T24 and T29), which can be mitigated with suitable replacement planting. One category U tree will also be removed, although this is not rated as an impact, due to the prior requirement to fell on grounds of sound husbandry (T27).

1.5 The revised proposals for hard standings and car parking will require the additional removal of category U tree, T26 for new hard standings (to be felled for sound husbandry), 2 category C trees (T41 & T43) for new parking (category U trees, T42 and T46 require removal on grounds of sound husbandry) and one category B tree, T44 for the new access. These additional removals will also be mitigated within a comprehensive landscaping scheme.

1.6 The new and replacement hard surfaces for the parking areas will require no-dig construction techniques, either using cellular confinement systems or, in some areas such as the line of trees T48 – T61, the existing sub-base. All existing hard surfacing should be removed with care, using an air spade or manually.

1.7 Secondary impacts comprise minor organic deposition (including leaves/honey dew) on to cars and the new car parking spaces, with some shading. Given that car parking should be short term only, the impact should be minimal; some shading may be beneficial.

1.8 Thus, with suitable mitigation and supervision the revised 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 Lidl UK to assess the arboricultural impact of the proposed changes to the extant planning permission for a new store at former Hayes swimming pool, Botwell Lane, Hayes, Middlesex (Ref: 1942/APP/2013/3565). The existing survey data was updated on the 16/06/15.

2.1.2 The revised scheme comprises a 2,824 sqm GEA store with 146 car parking spaces. This report will assess the impact of the revised scheme on the 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.

2.1.4 I am a Registered Consultant and Fellow of the Arboricultural Association and a Chartered Forester, with a Masters Degree in Arboriculture and 25 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: 03 Topographical Survey

Proposals: 3176 402P 403K 404F Plans

2.3 Scope of the original survey

2.3.1	As Landmark Trees' (LT) arboricultural consultant, I surveyed the trees on site on 16th June 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].
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.
2.4.2	A site plan identifying the surveyed trees, based on the client's drawings / topographical survey is provided in Appendix 5.
2.4.3	This plan also serves as the Tree Constraints Plan with the theoretical Recommended Protection Areas (RPA's), tree canopies and shade constraints, (from BS5837: 2012) overlain onto it. These constraints are then overlain in turn onto the client's proposals to create an Arboricultural Impact Assessment Plan in Appendix 6. General observations and discussion follow, below.

3.0 OBSERVATIONS

3.1 Site description

Photograph 1: Former Hayes Swimming Pool Site, Botwell Lane, Hayes, Middlesex

3.1.1	The site is located within the defined town centre boundary of Hayes. It is bordered to the south by Botwell Lane and Central Avenue to the east. The site area is 0.971 ha.
3.1.2	The site is relatively level.
3.1.3	In terms of the British Geological Survey, the site overlies the London Clay Formation, with superficial deposits of Langley Silt Member (see indicated location on Fig.1 plan extract below). The associated soils are generally, highly shrinkable clay; e.g. slowly permeable seasonally waterlogged fine silt 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.
3.1.4	Clay soils are prone to compaction during development with damage to soil structure potentially having a serious impact on tree health. The design of foundations near problematic tree species will also need to take into consideration subsidence risk. Further advice from the relevant experts on the specific soil properties can be sought as necessary.

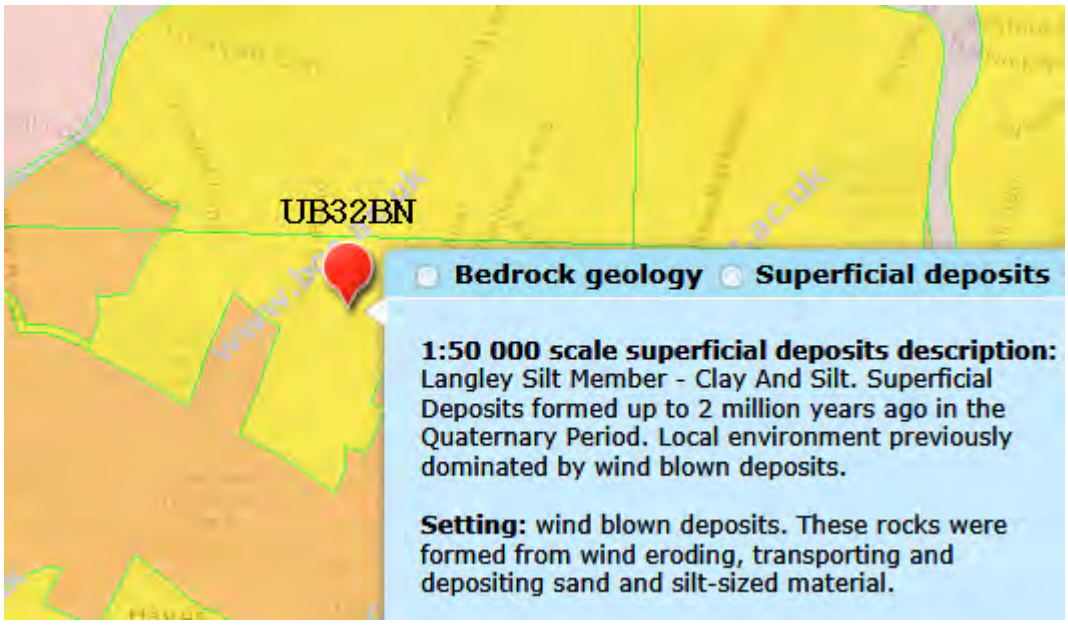

Figure 1: Extract from the BGS Geology of Britain Viewer

3.2 Subject trees

3.2.1	Of the 61 trees surveyed on and around the site, 7 are category A (High Quality), 27 are B category *(Moderate Quality), 17 are C category *(Low Quality), 2 are C/u category *(Low Quality/Unsuitable for Retention) and 8 are U category *(Unsuitable for Retention).
3.2.2	The tree species found on site comprise mainly London plane, with some oak, horse chestnut, field maple, Norway maple, silver maple, silver birch, Himalayan birch, common ash, common lime, small leaf lime, hornbeam, Leylandii, Leyland cypress, holly, purple plum. wild cherry, sycamore and whitebeam.
3.2.3	In terms of age demographics there is a preponderance of mature trees on the site with few semi mature and early mature trees in the population.

Photographs 2 and 3: London Plane trees along Central Avenue by Botwell Lane Junction

Photograph 4: Trees T38 – 49 looking northwards

Photograph 5: Row of Trees T48 – T63

Photograph 6: Row of London Plane along north eastern Central Avenue

3.2.4	Full details of the surveyed trees can be found in Appendix 1 of this report.
3.2.5	There are some arboricultural works required within the existing tree population. These are listed in Appendix 2 and include the felling of the 6 category U trees.

3.3 Planning Status

3.3.1	There are no Tree Preservation Orders and site stands outside any conservation areas: it is a criminal offence to prune, damage or fell TPO trees or trees in a conservation area 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. **No modifications have been made in this instance (please see overleaf).**

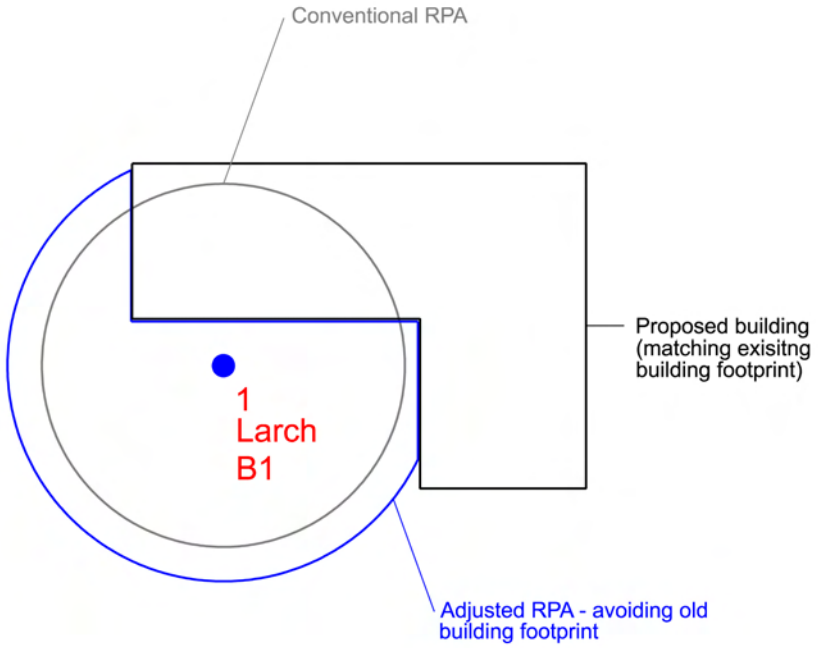

Figure 2 – Generic BS 5837 RPA Adjustments

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. Not infrequently, LT are requested by LPA Tree Officers to modify the RPA's to reflect their assumptions that e.g. a road will have drastically limited root growth.

4.1.4 Such assumptions cannot be proved without prior site investigations / trial pits. Where it is not always possible to conduct site investigations (e.g. below busy roads), we can always look to the published science. There seems little support for the popular myth that roads and services will curb root growth: research for the International Society of Arboriculture by Kopinga J (ISA 1994), found that "a constant high moisture content of the soil directly underneath the pavement surface can be considered as a major soil factor in attracting the trees' roots to develop there." By contrast, grass in lawns may actively antagonise tree roots with natural pathogens. Similarly, Professor F Miller (ISA 1994) found that service trenches at > 3m distances from trees had minimal impact on growth or crown shape.

4.1.5 A key misunderstanding, even among professionals, is that we conflate the RPA with the actual root system: RPA's are *prima facie* a notion / convention / treaty and almost entirely theoretical, but readily calculable. Conversely roots are a "known unknown," spatial entity that we predict at our folly. Yet, many are quick to do so.

4.1.6 LT favour the neutrality of a circular RPA, because in a difference of opinion, the tree officer will always have the prerogative to dictate the final modification of shape. With the best will in the world, the free allowance of modifications will tend to lead to inequitable outcomes, prejudicing the applicant and the practice is in our view, best avoided. The neutral circle dispenses with this inequity.

4.1.7 Ultimately, the point of the circular RPA is to illustrate areas of concern. The purpose of this report is to consider areas of concern (not to modify them to suit our argument or findings). Therefore, no modifications are made here to the RPA's, regardless of roads etc.

4.1.8 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.

4.1.9 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 would comprise a constraint in aggregate, in terms of any collective loss / removal, where replacement planting would be appropriate. In this instance, no such collective impact is proposed.

4.1.11 In this instance, there are 9 category A trees and 25 category B trees that could potentially provide significant constraints to any changes to the development proposals. However, the majority of these trees are located around the boundaries of the site; therefore the potential primary constraints upon development could be minimised, provided it will not be necessary to build right up to the boundaries.

4.2 Secondary Constraints

4.2.1 The second type of constraint produced by trees that are to be retained is that the proximity of the proposed development to the trees should not threaten their future with ever increasing demands for tree surgery or felling to remove nuisance shading (Figure 3), honeydew deposition or perceived risk of harm.

Figure 3 –
Generic Shading Constraints

4.2.2 The shading constraints are crudely determined from BS5837 by drawing an arc from northwest to east of the stem base at a distance equal to the height of the tree, as shown in the diagram opposite. Shade is less of a constraint on non-residential developments, particularly where rooms are only ever temporarily occupied.

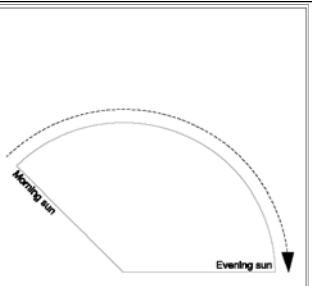

Figure 4 – Shading Arc

4.2.3 This arc (see Figure 4) represents the effects that a tree will have on layout through shade, based on shadow patterns of 1x tree height for a period May to Sept inclusive 10.00-18.00 hrs daily.

4.2.4 Assuming that they will be retained, the orientation of the on and off-site trees in the southern corner of the site will provide some potential shading constraints. All of the trees surveyed have the potential to provide varying degrees of organic deposition. The significance of these constraints will vary depending on the location and proximity to the proposed re-development.

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 Matheny & Clark (1998))

Hide irrelevant | Show All Trees

Ref: LUK/BLH/AIA/03

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	3	Plane, London	Replacement/new hard surfacing (27m2/10.6%) Building Construction within RPA and canopy (10.5m2/4%)	37.5 m^2 16.91 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction Manual excavation & remedial tree surgery
B	5	Plane, London	Replacement/new hard surfacing (21.7m2/11.4%) Building Construction within RPA and canopy (4m2/2.9%)	25.7 m^2 16.89 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction Manual excavation & minor remedial tree works
B	7	Plane, London	Replacement/new hard surfacing (19.6m2/14.3%) Building Construction within RPA and canopy (4m2/2.9%)	19.6 m^2 13.33 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction Manual excavation & minor remedial tree works
B	9	Plane, London	Replacement/new hard surfacing (23.7m2/10.7%) Building Construction within RPA and canopy (9.2m2/4.2%)	32.9 m^2 17.75 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction Manual excavation & minor remedial tree works
B	11	Plane, London	Replacement/new hard surfacing (27.4m2/12.4%) Building Construction within RPA (12.2m2/5.5%)	39.6 m^2 18.38 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction Manual excavation
B	13	Plane, London	Replacement/new hard surfacing (16.1m2/14.2%)	16.1 m^2 12.67 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction

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Ref: LUK/BLH/AIA/03

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	15	Plane, London	Replacement/new hard surfacing (14m2/12.4%)	14 m^2 11.9 %	Mature	Normal	Good	Low	N/A	Manual removal of existing HS in RPA. No-dig construction
B	17	Plane, London	Replacement/new hard surfacing (39.5m2/17.8%)	39.5 m^2 26.87 %	Mature	Normal	Good	Low	N/A	No-dig construction
C	18	Plane, London	Replacement/new hard surfacing (16.3m2/14.4%)	16.3 m^2 15.64 %	Mature	Normal	Good	Low	N/A	No-dig construction
B	19	Plane, London	Replacement/new hard surfacing (11.2m2/9.9%)	11.2 m^2 7.62 %	Mature	Normal	Good	Low	N/A	No-dig construction
A	20	Plane, London	New hard standings & bicycle rack	31.2 m^2 16.32 %	Mature	Normal	Good	Low	N/A	No-dig construction
C	21	Cherry, Wild (Gean)	Felled to Facilitate Development As in extant permission	m^2 N/A %	Mature	Normal	N/A	N/A	Medium	New planting / landscaping

5.0

Table 1: Arboricultural Impact Assessment

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

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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	22	Whitebeam	Felled to Facilitate Development As in extant permission	m^2 N/A %	Early Mature	Normal	N/A	N/A	Low	New planting / landscaping
C	23	Maple, Field	Felled to Facilitate Development As in extant permission	m^2 N/A %	Early Mature	Normal	N/A	N/A	Low	New planting / landscaping
C	24	Birch, Silver	Felled to Facilitate Development As in extant permission	m^2 N/A %	Semi-mature	Normal	N/A	N/A	Low	New planting / landscaping
U	26	Ash, Common	Felled to Facilitate Development To be felled on the grounds of sound husbandry	m^2 N/A %	Early Mature	Moderate	N/A	N/A	Low	New planting / landscaping
U	27	Cherry, Wild (Gean)	Felled to Facilitate Development As in extant permission/good husbandry	m^2 N/A %	Mature	Poor	N/A	N/A	Low	New planting / landscaping
B	28	Birch, Himalayan	Felled to Facilitate Development As in extant permission	m^2 N/A %	Mature	Normal	N/A	N/A	Medium	New planting / landscaping

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

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Ref: LUK/BLH/AIA/03

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	29	Sycamore	Felled to Facilitate Development As in extant permission	m^2 N/A %	Early Mature	Normal	N/A	N/A	Low	New planting / landscaping
C/u	30	Chestnut, Horse	New hard standing	26.4 m^2 13 %	Mature	Moderate	Moderate	Low	N/A	No-dig construction
B	32	Lime, Caucasian	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	New parking/hard standings
B	33	Lime, Common	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	New parking/hard standings
A	34	Lime, Small-leaved	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	New parking/hard standings
A	35	Lime, Small-leaved	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	New parking/hard standings

5.0

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

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Ref: LUK/BLH/AIA/03

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
A	36	Lime, Small-leaved	New parking within RPA & in/under canopy	m^2 N/A %	Mature	Normal	Moderate	Low	N/A	No-dig construction Remedial tree surgery (see Rec. Works)
A	37	Lime, Common	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Medium	N/A	No-dig construction Remedial tree surgery (see Rec. Works)
B	37a	Ash, Common	New parking within RPA & in/under canopy	m^2 N/A %	Mature	Moderate	Moderate	Medium	N/A	No-dig construction
C	38	Sycamore	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Moderate	Moderate	Low	N/A	No-dig construction
C	39	Sycamore	New parking within RPA & in/under canopy	m^2 N/A %	Mature	Moderate	Moderate	Low	N/A	No-dig construction
B	40	Sycamore	New parking/hard standings	m^2 N/A %	Mature	Normal	Moderate	Low	N/A	No-dig construction

5.0

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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	41	Maple, Silver	Felled to Facilitate Development	m^2 N/A %	Mature	Normal	N/A	N/A	Low	New planting / landscaping
U	42	Plum, Purple	Felled to Facilitate Development Requires felling on grounds of sound husbandry	m^2 N/A %	Early Mature	Normal	N/A	N/A	N/A	New planting / landscaping
C	43	Holly	Felled to Facilitate Development	m^2 N/A %	Semi-mature	Normal	N/A	N/A	Low	New planting / landscaping
B	44	Sycamore	Felled to Facilitate Development	m^2 N/A %	Mature	Normal	N/A	N/A	Medium	New planting / landscaping
A	45	Lime, Small-leaved	New parking within RPA & in/under canopy	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	No-dig construction
U	46	Maple, Norway	Felled to Facilitate Development Requires felling on the grounds of sound husbandry	m^2 N/A %	Early Mature	Normal	N/A	N/A	N/A	New planting / landscaping

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: LUK/BLH/AIA/03

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	48	Leylandii	Replacement hard surfacing	m^2 N/A %	Mature	Moderate	Good	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
B	49	Hornbeam	Replacement hard surfacing	m^2 N/A %	Early Mature	Normal	Moderate	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
U	50	Hornbeam	Replacement hard surfacing To be removed on the grounds of sound husbandry	m^2 N/A %	Mature	Moderate	N/A	N/A	N/A	To be removed on grounds of sound husbandry
U	51	Leylandii	Replacement hard surfacing To be removed on the grounds of sound husbandry	m^2 N/A %	Mature	Poor	N/A	N/A	N/A	To be removed on grounds of sound husbandry
C	52	Leylandii	Replacement hard surfacing	m^2 N/A %	Mature	Moderate	Good	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
C	53	Leylandii	Replacement hard surfacing	m^2 N/A %	Early Mature	Moderate	Good	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)

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: LUK/BLH/AIA/03

B.S. Cat.	Tree No.	Species	Impact	Tree / RPA Affected	Age	Growth Vitality	Species Tolerance	Impact on Tree Rating	Impact on Site Rating	Mitigation
B	54	Hornbeam	Replacement hard surfacing	m^2 N/A %	Semi-mature	Normal	Moderate	Low	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
C	55	Leylandii	Replacement hard surfacing	m^2 N/A %	Early Mature	Normal	Good	Low	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
U	56	Leylandii	Replacement hard surfacing To be removed on grounds of sound husbandry	m^2 N/A %	Early Mature	Poor	N/A	N/A	N/A	To be removed on grounds of sound husbandry
B	57	Hornbeam	Replacement hard surfacing	m^2 N/A %	Early Mature	Normal	Moderate	Low	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
U	58	Cypress, Leyland	Replacement hard surfacing To be removed on grounds of sound husbandry	m^2 N/A %	Early Mature	Poor	N/A	N/A	N/A	To be removed on grounds of sound husbandry
C/u	59	Leylandii	Replacement hard surfacing	m^2 N/A %	Early Mature	Normal	Good	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)

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: LUK/BLH/AIA/03

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	60	Leylandii	Replacement hard surfacing	m^2 N/A %	Early Mature	Normal	Good	Medium	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
B	61	Hornbeam	Replacement hard surfacing	m^2 N/A %	Mature	Normal	Moderate	Low	N/A	Airspade / manual excavation No-dig construction (existing sub bases)
C	62	Leylandii	Removal of existing hard surfacing	m^2 N/A %	Early Mature	Normal	Good	Positive	N/A	Airspade / manual excavation
B	63	Hornbeam	Removal of existing hard surfacing	m^2 N/A %	Early Mature	Normal	Good	Positive	N/A	Airspade / manual excavation

6.0 DISCUSSION

6.1 Rating of Primary Impacts

6.1.1 The principal primary impacts of the revised proposals have significantly reduced the impact on London Planes along Central Avenue. The current proposals will allow the retention of the category B tree T10, with only every other tree affected by new/replacement hard standings and minor building encroachment. There is some minor canopy encroachment by the new buildings, therefore it is likely that some minor tree works may be required to facilitate construction.

6.1.2 All tree removals for the new store are the same as the extant permission, comprising one category B tree, T28 and 5 category C trees (T21, T22, T23, T24 and T29), which can be mitigated with suitable replacement planting. One category U tree will also be removed, although this is not rated as an impact, due to the prior requirement to fell on grounds of sound husbandry (T27).

6.1.3 The revised proposals for hard standings and car parking will require the additional removal of category U tree T26 for new hard standings (to be felled for sound husbandry), 2 category C trees (T41 & T43) for new parking (category U trees, T42 and T46 require removal on grounds of sound husbandry) and one category B tree, T44 for the new access. These additional removals will also be mitigated within a comprehensive landscaping scheme.

6.1.4 The new and replacement hard surfaces for the parking areas will require no-dig construction techniques, either using cellular confinement systems or, in some areas such as the line of trees T48 – T61, the existing sub-base. All existing hard surfacing should be removed with care, using an air spade or manually. All new surfaces should be porous to promote healthy soil water relations for future root growth. BS5837: 2012 now discourages impacts of >20%, even with porous paving/no-dig construction, but does allow for consultant discretion. In my view, the trees in question are healthy specimens of species with a good resistance to development impacts (London plane and sycamore), which are quite capable of tolerating these impacts once mitigated.

6.1.5 The principal of RPA encroachment is established within BS5837:2012 and supported by the source document, National Joint Utilities Guidelines 10 / Vol. 4 1995 / 2010. NJUG introduced the x12 diameter *Precautionary Zone* for supervised working and *Prohibited Zone* at a universal 1m from the base of the tree. RPA's are frequently confused with the NJUG Prohibited Zone, when they clearly correlate with the NJUG Precautionary Zone.

6.1.6 An RPA encroachment of <20% of RPA may be considered as low impact, given the permissive references to 20% RPA relocation and impermeable paving within BS5837:2012 and other published references to healthy trees tolerating up to 30-50% root severance (Coder, Helliwell and Watson in CEH 2006). The trees in question are healthy specimens of species with a good resistance to development impacts, and quite capable of tolerating these low impacts.

6.1.7 "**In practice 50% of roots can sometimes be removed with little problem**, provided there are vigorous roots elsewhere. Inevitably, this degree of root loss will temporarily slow canopy growth and even lead to some dieback" (Thomas 2000). LT do not recommend annexing such high proportions of the root system; rather that within the context of the published science, planning should not be unduly concerned by impacts that are well below the subcritical threshold – *tree health is not at stake.*

6.2 Rating of Secondary impacts

6.2.1 Secondary impacts comprise minor organic deposition (including leaves/honey dew) on to cars and car parking spaces, with some shading. Given that car parking should be short term only, the impact should be minimal; some shading may be beneficial.

6.3 Mitigation of Impacts

6.3.1 The limits of excavation for the new store within RPAs will be undertaken manually; any roots encountered will be cleanly pruned back to an appropriate junction with a sharp pruning saw or secateurs. Roots larger than 25mm diameter may only be cut in consultation with an arboriculturalist. .

6.3.2 Existing hard surfacing should be removed with an airspade/manually, with the existing sub-base retained where possible. Where the sub-base is to be removed, care must be taken not to disturb the roots that are likely to below the surface.

6.3.2 Nuisance deposition can be further mitigated with routine maintenance, light pruning / deadwooding. The minor canopy encroachment to the new building/car parking can be avoided with a crown lift of lower limbs or simply cutting back the overhanging branches to facilitate construction.

6.3.4 The landscape impact of tree losses can be offset by the landscape proposals, ideally involving new planting of ornamental varieties of native species, and where appropriate with columnar or compact form. A selection of columnar tree species cultivars for constricted sites is provided in Appendix 4.

7.0 CONCLUSION

7.1	The potential impacts of the changes to the development permitted under 1942/APP/2013/3565 are all very low in terms of the number and quality of trees removed, and the scale/intensity of the impacts of the hard surfacing to the retained trees.
7.2	The full potential of the impacts can 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 lifting and the retained trees are generally in good health and capable of sustaining these reduced impacts.
7.4	Therefore, the proposals will not have any significant impact on either the retained trees or wider landscape. Thus, with suitable mitigation and supervision the scheme is recommended to planning.

8.0 RECOMMENDATIONS

8.1 Specific Recommendations

8.1.1 Current tree works to facilitate development are found in Appendix 2 and a selection of columnar tree species cultivars for constricted sites provided in Appendix 3.

8.1.2 Excavation and construction impacts within the RPA's of trees identified in Table 1 above, will need to be controlled by method statements specifying mitigation methods suggested in para 6.3 above and by consultant supervision as necessary. These method statements can be provided as part of the discharge of conditions.

8.1.3 Replace felled trees with native ornamental nursery stock under current best practice; i.e. conforming to and planted in accordance with the following:

- 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.

8.2 General Recommendations

8.2.1 Any trees which are in close proximity to buildings proposed for demolition should be protected with a Tree Protection Barrier (TPB). This TPB should comprise 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 lay out 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 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.

8.2.3 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. Trial pits will be used to determine the location of the foundation pits for any proposed lampposts.

8.2.4 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

8.2.5 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 for charging points if proposed).
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 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 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.

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

8.2.7 The sequence of works should be as follows:

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

9.0 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.

Landmark Trees

Site: Lidl. Botwell Lane

Date: 16/06/2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: LUK/BLH/AIA/03

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	Oak, English	14	5		1100	Mature	13.2	Normal	Fair	A		>40	Small amount of bark loss in crown Pollarded in 2015 Minor decay pockets through crown
2	Plane, London	16	6666	6.0	600	Mature	7.2	Normal	Fair	B		>40	Restricted rooting / FP heave T's 1-20 all high CL'd to 6m+ with slight etiolation of limbs Outside development boundary
3	Plane, London	16	8378.	6.0	700	Mature	8.4	Normal	Fair	B	2	>40	Tight in corner of hard surfaces. Cavity visible in pruning wound in crown break to N Some damage to path. Slight lean to road. All planes CL'd 6m +
4	Plane, London	15	4374	6.0	520	Mature	6.2	Normal	Fair	B	2	>40	Deadwood (minor) thoughout crown Hung-up (detached) branches In macadam close to road. Heave to fp. Competes with tree behind Outside development boundary
5	Plane, London	16	4447	6.0	580	Mature	7.0	Normal	Fair	B	2	>40	In grass. Slight lean towards path. 50mm x 6m dead branch W 7m abg
6	Plane, London	15	4576	6.0	500	Mature	6.0	Normal	Fair	B	2	>40	Leaf growth a bit thin in places. Heave to path Outside development boundary
7	Plane, London	16	4477	6.0	570	Mature	6.8	Normal	Fair	B	2	>40	A sparser than normal canopy Entry wounds on trunk Cavity visible in pruning wound in crown break to N

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8	Plane, London	14	5282	6.0	450	Mature	5.4	Normal	Fair	C	2	>40	A sparser than normal canopy Significant break out wounds in crown with decay inside Outside development boundary
9	Plane, London	16	6566	6.0	640	Mature	7.7	Normal	Fair	B	2	>40	A sparser than normal canopy Entry wounds on trunk
10	Plane, London	16	5556	4.0	540	Mature	6.5	Normal	Fair	B	2	>40	Bit sparse on roadside. Slight lean to road. Entry wounds on trunk Heave to footpath Outside development boundary
11	Plane, London	16	6	2.0	690	Mature	8.3	Normal	Fair	B	2	>40	
12	Plane, London	16	2424	7.0	440	Mature	5.3	Normal	Fair	C	2	>40	Suppressed by nearby tree Entry wounds on trunk Cavity visible in pruning wound in crown break to E Outside development boundary
13	Plane, London	16	5336		530	Mature	6.4	Normal	Fair	B	2	>40	Deadwood throughout crown Entry wounds on trunk
14	Plane, London	12	4444	7.0	410	Mature	4.9	Normal	Fair	B	2	>40	Slight lean to the road. Deadwood throughout crown Suppressed Outside development boundary

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15	Plane, London	16	5556	2.0	510	Mature	6.1	Normal	Fair	B	2	>40	
16	Plane, London	12	5353	5.0	430	Mature	5.2	Normal	Fair	B	2	>40	Deadwood through crown long dead branch above fp Outside development boundary
17	Plane, London	15	5555	5.0	570	Mature	6.8	Normal	Fair	B	2	>40	Slight lean Significant break out wound W in crown with decay inside
18	Plane, London	16	3383	5.0	480	Mature	5.8	Normal	Fair	C	2	>40	Bit sparse, slight lean to the road Entry wounds on trunk Outside development boundary
19	Plane, London	16	6565	4.0	570	Mature	6.8	Normal	Fair	B	2	>40	Main growth side towards road Deadwood (minor) Pavement heave Outside development boundary
20	Plane, London	16	5666	3.0	650	Mature	7.8	Normal	Fair	A		>40	Entry wounds on trunk Included bark in branch unions Canker in bases of limbs just above main fork & over FP Outside development boundary
21	Cherry, Wild (Gean)	10	4		290	Mature	3.5	Normal	Fair	C	2	10-20	Cankered base with resin bleed

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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
22	Whitebeam	11	6555	2.0	330	Early Mature	4.0	Normal	Fair	C		>40	Included bark in branch unions Co-dominant limbs
23	Maple, Field	9	4	1.5	350	Early Mature	4.2	Normal	Fair	C	2	>40	Dense growth
24	Birch, Silver	9	4456	1.0	260	Semi-mature	3.1	Normal	Fair	C	2		Thinner on the side of the Maple
26	Ash, Common	9	6	1.5	410	Early Mature	4.9	Moderate	Fair	U		10-20	Decay at trunk base Mechanical damage to base Minor dieback in top
27	Cherry, Wild (Gean)	6	4242		550	Mature	6.6	Poor	Hazardous	U		<10	90% dead Decay at trunk base (Phellinus)
28	Birch, Himalayan	10	4444	1.5	330	Mature	4.0	Normal	Fair	B	2	>40	A tree with insignificant defects
29	Sycamore	14	4444	3.0	490	Early Mature	5.9	Normal	Fair	C	2	>40	

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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
30	Chestnut, Horse	10	5555	3.0	670	Mature	8.0	Moderate	Poor	C/u	2	10-20	Decay in trunk Die-back in crown Fork at 3m, next to road Outside development boundary
32	Lime, Caucasian	10	5	1.0	430	Early Mature	5.2	Normal	Good	B		>40	Hung-up (detached) branches Dense habit Included bark in branch unions Outside development boundary
33	Lime, Common	12	5	1.5	470	Early Mature	5.6	Normal	Good	B	2	>40	Included bark in branch unions Outside development boundary
34	Lime, Small-leaved	11	5		480	Early Mature	5.8	Normal	Good	A	2	>40	
35	Lime, Small-leaved	11	5	2.0	360	Early Mature	4.3	Normal	Good	A	2	>40	
36	Lime, Small-leaved	12	4444	1.0	380	Mature	4.6	Normal	Good	A	2	>40	
37	Lime, Common	11	4442	1.0	360	Early Mature	4.3	Normal	Good	A	2	>40	

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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
37a	Ash, Common	13	5	4.0	700	Mature	8.4	Moderate	Fair	B	2	20-40	Ivy clad to 50%. Base not accessible
38	Sycamore	13	4444		400	Early Mature	4.8	Moderate	Fair	C	2	10-20	Ivy clad to 50%. Deadwood (minor) thoughout crown Base inaccessible; crown sparse
39	Sycamore	12	4	4.0	500	Mature	6.0	Moderate	Fair	C	2	10-20	Ivy growth from base. Minor dead wood. Small pocket of basal decay Sparse of crown
40	Sycamore	14	5		500	Mature	6.0	Normal	Fair	B	2	20-40	Recently reduced Restricted access to base Ivy growth from base. Triple fork at 2m
41	Maple, Silver	14	7974	2.0	610	Mature	7.3	Normal	Good	C	2		Large wound on trunk at base. Minor dead wood. Requires
42	Plum, Purple	8	4343	1.0	300	Early Mature	3.6	Normal	Poor	U		10-20	Decay in trunk / main fork Canker
43	Holly	5	3		244	Semi-mature	2.9	Normal	Fair	C	2	10-20	Multi-stemmed.

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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
44	Sycamore	14	6664	2.0	600	Mature	7.2	Normal	Fair	B	2	20-40	Crossing / grafted stem Fork at 2m. Ivy from base has been previously cut off.
45	Lime, Small-leaved	10	5663	0.0	450	Early Mature	5.4	Normal	Fair	A	2	>40	Included bark in main stem unions Decay in trunk
46	Maple, Norway	8	4554	1.0	340	Early Mature	4.1	Normal	Fair	U		10-20	Decay in trunk Not worth keeping Significant lesion N 0-5m
48	Leylandii	12	4	2.0	660	Mature	7.9	Moderate	Fair	C	2	10-20	Decay in trunk lesions Coryneum canker (hereafter Canker)
49	Hornbeam	10	3	2.0	470	Early Mature	5.6	Normal	Fair	B	2	20-40	Early decay in trunk
50	Hornbeam	10	3	2.0	534	Mature	6.4	Moderate	Poor	U		<10	Decay in trunk(s) / one dead stem of two Advanced decay at trunk base Dm: 42 + 33
51	Leylandii	12	3	2.0	620	Mature	7.4	Poor	Fair	U		<10	Deadwood (minor) throughout crown Canker Decay in trunk lesions

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Ref: LUK/BLH/AIA/03

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
52	Leylandii	12	3	2.0	550	Mature	6.6	Moderate	Fair	C	2	10-20	(minor) Canker Decay in trunk lesions
53	Leylandii	12	3	2.0	430	Early Mature	5.2	Moderate	Fair	C	2	10-20	Canker (minor) Decay in trunk lesions
54	Hornbeam	12	2222		300	Semi-mature	3.6	Normal	Fair	B	2	20-40	Basal wound Included bark in branch unions Minor decay in main fork
55	Leylandii	12	3	2.0	460	Early Mature	5.5	Normal	Fair	C	2	10-20	As per T53
56	Leylandii	9	2	2.0	450	Early Mature	5.4	Poor	Poor	U		<10	As per 51
57	Hornbeam	10	3.5	2.0	390	Early Mature	4.7	Normal	Fair	B	2	>40	Included bark in branch unions Suppressed by nearby tree I.e. T58
58	Cypress, Leyland	12	1.5	2.0	430	Early Mature	5.2	Poor	Poor	U		<10	Wind-snapped crown Low live crown ratio Suppressing 57; Cankered

Landmark Trees

Site: Lidl. Botwell Lane

Date: 16/06/2015

Appendix 1

BS5837 Tree Constraints Survey Schedule

Landmark Trees Ltd

020 7851 4544

Surveyor(s): Adam Hollis

Ref: LUK/BLH/AIA/03

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
59	Leylandii	12	2		550	Early Mature	6.6	Normal	Fair	C/u	2	10-20	As per T59
60	Leylandii	11	3	2.0	500	Early Mature	6.0	Normal	Fair	C	2	10-20	As per 53
61	Hornbeam	11	3	2.0	560	Mature	6.7	Normal	Fair	B	2	>40	Included bark in branch unions
62	Leylandii	12	2222	2.0	510	Early Mature	6.1	Normal	Fair	C	2	10-20	As per 53
63	Hornbeam	11	2231	1.0	370	Early Mature	4.4	Normal	Fair	B	2	>40	

APPENDIX 2

RECOMMENDED TREE WORKS

Notes for Guidance:

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

CB - Cut Back to boundary/clear from structure.
CL# - Crown Lift to given height in meters.
CT#% - Crown Thinning by identified %.
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: Lidl. Botwell Lane
Date: 16/06/2015

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

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	Oak, English	A	14		5	Mon	Small amount of bark loss in crown Pollarded in 2015 Minor decay pockets through crown Recommended husbandry 3
26	Ash, Common	U	9	1.5	6	Fell	Decay at trunk base Mechanical damage to base Minor dieback in top Recommended husbandry 2
27	Plum	U	6		4242	Fell Remove ASAP	Decay at trunk base (Phellinus) Recommended husbandry 1
32	Lime, Caucasian	B	10	1.0	5	DWD	Hung-up (detached) branches Dense habit Included bark in branch unions Outside development boundary Recommended husbandry 3
37a	Ash, Common	B	13	4.0	5	CR 2m Svr Ivy Remove ivy	Ivy clad to 50%. Base not accessible Recommended husbandry 3
38	Sycamore	C	13		4444	Svr ivy Re-inspect in Winter	Ivy clad to 50%. Deadwood (minor) thoughout crown Base inaccessible; crown sparse Recommended husbandry 2

Landmark Trees

Site: Lidl. Botwell Lane
Date: 16/06/2015

Appendix 2

Recommended Tree Works

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

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Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
39	Sycamore	C	12	4.0	4	Mon Re-inspect in Winter	Ivy growth from base. Minor dead wood. Small pocket of basal decay Sparse of crown Recommended husbandry 2
40	Sycamore	B	14		5	Svr Ivy	Recently reduced Restricted access to base Ivy growth from base. Triple fork at 2m Recommended husbandry 3
41	Maple, Silver	C	14	2.0	7974	FInv	Large wound on trunk at base. Minor dead wood. Requires Recommended husbandry 3
42	Plum, Purple	U	8	1.0	4343	Fell	Decay in trunk / main fork Canker Recommended husbandry 2
43	Holly	C	5		3	Clr BS Remove sycamore self-setts growing amongst bush	Multi-stemmed. Recommended husbandry 3
44	Sycamore	B	14	2.0	6664	FInv Re-inspect in Winter	Crossing / grafted stem Fork at 2m. Ivy from base has been previously cut off. Recommended husbandry 2

Landmark Trees

Site: Lidl. Botwell Lane
Date: 16/06/2015

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

Appendix 2

Recommended Tree Works

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Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
45	Lime, Small-leaved	A	10	0.0	5663	Mon	Included bark in main stem unions Decay in trunk Recommended husbandry 3
46	Maple, Norway	U	8	1.0	4554	Fell	Decay in trunk Not worth keeping Significant lesion N 0-5m Recommended husbandry 2
48	Leylandii	C	12	2.0	4	Mon	Decay in trunk lesions Coryneum canker (hereafter Canker) Recommended husbandry 3
49	Hornbeam	B	10	2.0	3	Mon	Early decay in trunk Recommended husbandry 3
50	Hornbeam	U	10	2.0	3	Fell	Decay in trunk(s) / one dead stem of two Advanced decay at trunk base Dm: 42 + 33 Recommended husbandry 1
51	Leylandii	U	12	2.0	3	Fell	Deadwood (minor) throughout crown Canker Decay in trunk lesions Recommended husbandry 2

Landmark Trees

Site: Lidl. Botwell Lane
Date: 16/06/2015

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

Appendix 2

Recommended Tree Works

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Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
56	Leylandii	U	9	2.0	2	Fell	As per 51 Recommended husbandry 2
59	Leylandii	C/u	12		2	DWD Option to fell	As per T59 Recommended husbandry 2
60	Leylandii	C	11	2.0	3	CCL	As per 53 Recommended husbandry 3

APPENDIX 3

RECOMMENDED TREE WORKS TO FACILITATE DEVELOPMENT (See Table 1)

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

Landmark Trees

Site: Lidl. Botwell Lane
Date: 16/06/2015

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

Appendix 3

Recommended Tree Works To Facilitate Development

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Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
21	Cherry, Wild (Gean)	C	10		4	Fell	Cankered base with resin bleed To facilitate development
22	Whitebeam	C	11	2.0	6555	Fell	Included bark in branch unions Co-dominant limbs To facilitate development
23	Maple, Field	C	9	1.5	4	Fell	Dense growth To facilitate development
24	Birch, Silver	C	9	1.0	4456	Fell	Thinner on the side of the Maple To facilitate development
28	Birch, Himalayan	B	10	1.5	4444	Fell	A tree with insignificant defects To facilitate development
29	Sycamore	C	14	3.0	4444	Fell	To facilitate development

Landmark Trees

Site: Lidl. Botwell Lane
Date: 16/06/2015

Surveyor(s): Adam Hollis
Ref: LUK/BLH/AIA/03

Appendix 3

Recommended Tree Works To Facilitate Development

Hide irrelevant
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Tree No.	English Name	B.S. Cat	Height	Ground Clearance	Crown Spread	Recommended Works	Comments/ Reasons
36	Lime, Small-leaved	A	12	1.0	4444	CL	To facilitate development
37	Lime, Common	A	11	1.0	4442	CL	To facilitate development
41	Maple, Silver	C	14	2.0	7974	Fell	Large wound on trunk at base. Minor dead wood. Requires attention To facilitate development
43	Holly	C	5		3	Fell	Multi-stemmed. To facilitate development
44	Sycamore	B	14	2.0	6664	Fell	Crossing / grafted stem Fork at 2m. Ivy from base has been previously cut off. To facilitate development

APPENDIX 4: TREE SELECTION FOR CONSTRICTED LOCATIONS

Table A4.1: Rosaceous Tree Species for Constricted Planting Locations

Common Name	Species	Selected Form
Hawthorn	Crataegus monogyna	Stricta
Cockspur	Crataegus prunifolia	Splendens
Cherry	Prunus x hillieri	Spire
Bird cherry	Prunus padus	Albertii
Rowan / Mountain ash	Sorbus aucuparia	Cardinal Royal
Rowan / Mountain ash	Sorbus aucuparia	Rossica Major
Rowan / Mountain ash	Sorbus aucuparia	Sheerwater Seedling
Swedish whitebeam	Sorbus intermedia	Brouwers
B. whitebeam	Sorbus x thuringiaca	Fastigiata

Table A4.2: Specimen Tree Species for Constricted Planting Locations

Common Name	Species	Selected Form
Chinese red bark birch	Betula albosinensis	Fascination
Swedish birch	Betula pendula	Dalecarlica
Hornbeam	Carpinus betulus	Fastigiata Frans Fountaine
Turkish Hazel	Corylus colurna	
Maidenhair tree	Gingko biloba	
Pride of India	Koelreuteria paniculata	Fastigiata
European larch	Larix decidua	Sheerwater Seedling
Tulip tree	Liriodendron tulipfera	Fastigiata

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) or immediately above the root flare for multi-stemmed trees.

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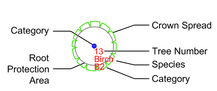
Site: Lidl Hayes	1-200@A0
Drawing Title: Tree Constraints Plan	June 2015

Key:

- Category A High Quality
- Category B Good Quality
- Category C Moderate Quality
- Category R Poor Quality



APPENDIX 5

ARBORICULTURAL IMPACT ASSESSMENT 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: Lidl Hayes	1-200@A0
Drawing Title: Arboricultural Impact Assessment	November 2015

Key:

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

Category — Crown Spread — Tree Number — Species — Category — Root Protection Area

5m 10m 20m