PJC Consultancy
Arboricultural and Ecological Consultants

Arboricultural Impact Assessment

254 Kilburn High Road
London Borough of Camden
NW6 2BS

Report compiled by:
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PJC CONSULTANCY LTD

PJC Ref No: PJC/3412/14

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Summary

This report was commissioned to satisfy the requirements of arboricultural issues defined by planning policy, at the request of Aitch Group.

The proposed project should not affect existing and/or retained trees on the site as long as protection measures set out in BS5837: 2012 *Trees in relation to design, demolition and construction* and outlined in this report are followed.

Objectives of this report

My involvement in this project can be defined by the following objectives:

To provide a schedule of the existing trees that are situated in areas that are likely to be potentially affected by the proposed construction project.

To classify the existing trees using the process defined by BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*'.

To provide arboricultural guidance on protection measures to be implemented during the construction process, and prevent future conflict between trees and structures.

To promote the retention of trees wherever feasible and appropriate.

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1 INTRODUCTION

1.1 **Brief:** I have been commissioned by Laurence Quail of Aitch Group to provide a tree survey and arboricultural impact assessment for a proposed development at 254 Kilburn High Road in the London Borough of Camden.

1.2 **Documents and information provided:** I was provided with the following documents relating to the site:

- Drawing ref. 12066 S.01 – Existing Site Plan
- Drawing ref. 12066 GA.00 – Ground Floor Plan (Proposed)
- Drawing ref. 12066 GA.01 – First Floor Plan (Proposed)
- Drawing ref. 12066 GA.02 – Second Floor Plan (Proposed)
- Drawing ref. 12066 GA.03 – Third Floor Plan (Proposed)
- Drawing ref. 12066 GA.04 – Fourth Floor Plan (Proposed)
- Drawing ref. 12066 GA.05 – Fifth Floor Plan (Proposed)
- Drawing ref. 12066 GA.06 – Roof Plan (Proposed)

1.3 **Scope of this report:** This report is only concerned with the trees located in Kilburn Grange Park, that have the potential to be affected by the proposed construction works.

1.4 **Background information:** A proposal has been outlined to convert existing commercial buildings into a new multi-storey residential development with ground floor commercial units, adjacent to Kilburn Grange Park in the London Borough of Camden. PJC Consultancy has been commissioned to undertake a tree survey and provide an arboricultural impact assessment following the guidelines set out in BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations'.*

1.5 **Qualifications:** I have a Foundation Degree in Arboriculture and am a professional member of the Arboricultural Association. I have eight years experience in the arboricultural industry, originally working as a groundsman and feller, and progressing into consultancy.

2 SITE VISIT AND OBSERVATIONS

2.1 **Site visit:** I carried out a site visit on 9th October 2013. The weather conditions at the time were clear and dry with no wind. The visibility was good.

2.2 **Brief site description:** The site is situated between Kilburn Grange Park and the existing commercial properties on Kilburn High Road. It is currently comprised of commercial buildings and hard standing parking areas. There is a site access leading onto Kilburn High Road opposite Buckley Road. The existing buildings back onto a landscape strip located on the edge of Kilburn Grange Park. Trees located on council maintained land are situated adjacent to the existing buildings.

2.3 **Identification and location of trees:** The trees are not number tagged but their approximate locations are marked on the Tree Constraints Plan in Appendix 1. Each tree has been given an individual reference number for ease of identification. Existing tree positions were not shown on the drawings provided. All tree positions on the plans in Appendix 1 are indicative and should be checked on site.

2.4 **Tree observations:** I visually inspected the trees from within the boundaries of the property. The height, crown spread and crown clearance for each tree was estimated to the nearest metre. The DBH (stem diameter at 1.5 meters) was measured in millimetres using a diameter tape. Where access was not available, stem diameters were estimated and noted on the Tree Survey Schedule.

2.5 **Limitations of the Survey:** The survey methodology was restricted to a visual tree assessment. No tree climbing or ground investigation was carried out for this report.

3 APPRAISAL

3.1 The trees were assessed and categorised using the cascade chart in BS5837: 2012 *Trees in relation to design, demolition and construction – Recommendations.* Their dimensions were recorded, and their approximate positions plotted on the Tree Constraints Plan in Appendix 1. The Tree Survey Schedule in Appendix 2 contains more detailed information for each tree.

3.2 The categorisation of trees is based on a number of factors. The initial category is U for trees that are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years. Category U trees do not necessarily need to be removed if they do not conflict with the proposed development or are not dangerous. The remaining trees are then assessed for their arboricultural, landscape and historical, (or cultural) contribution. This assessment takes into account defects and previous pruning to put the trees into A, B and C categories. The highest categorisation is category A, with the lowest being category C. Category C trees are not normally retained if they pose a constraint to development. The cascade chart further explaining the above is included in Appendix 3.

3.3 A total of fifteen trees were surveyed and included in the Tree Survey Schedule. Three trees were categorised as A with seven categorised as B and five categorised as C. No trees were categorised as U.

3.4 All trees included in the survey are situated outside the north eastern site boundary adjacent to a public footpath in Kilburn Grange Park. There are a variety of species adjacent to the site including oak (*Quercus robur*), holly (*Ilex spp.*), Italian poplar (*Populus nigra 'italica'*), silver birch (*Betula pendula*) and yew (*Taxus baccata*). The trees vary in age class and contribute amenity value to the park.

3.5 The most prominent trees located adjacent to the site are the Italian poplars. These mature trees form prominent features adjacent to the park entrance. All trees adjacent to the site belong to and are managed by Camden Council. Permission will be required from the local authority before any tree works are carried out, including to the low level shrub beds.

3.6 It can be assumed that ground beneath the existing buildings will be non-conducive to root growth. The root protection areas of a number of trees have been amended on the Tree Constraints Plan in Appendix 1 to create a more realistic representation of the actual root spread.

4 ARBORICULTUAL IMPACT ASSESSMENT

Tree removal

4.1 The low level shrub beds located adjacent to the existing building to be demolished will require removal to allow installation of scaffolding and temporary ground protection. These should be replanted upon competition of the development. It is proposed that all trees within Kilburn Grange Park be retained and protected during the development.

Access facilitation pruning

4.2 The canopies of trees T3-T11 will require access facilitation pruning to avoid conflict during both demolition and construction works. 1.2m clearance will be required between the canopies and the outside face of the new building to allow the installation of scaffolding.

Tree shade

4.3 The trees will be located in close proximity to the main north east facing walls of the new building. The greatest level of shade cast by trees will be onto the ground floor, which is to be used for commercial units where natural light is of less importance.

4.4 The tops of a number of trees will also cast shade onto the first floor, which is to be used for residential properties. The widows are to be set back from the existing building footprint. The residents will be shaded during the early morning but should receive reasonable light in mid to late morning. In the afternoons, the tree shade will have no effect on the properties. The third, forth and fifth floor properties will be located above the height of the trees so will not be affected by tree shade.

Future tree works

4.6 It is likely that the trees located adjacent to the new building will require cyclical pruning to avoid nuisance caused by rubbing branches. The new building is located within the footprint of the existing building. The proposed development should not therefore result in a significant increase in the requirement for tree pruning in the future.

Services

4.7 No information has been provided regarding the routing of services for the proposed development. New utilities must be located outside of the trees root protection areas where they are underground and outside of the anticipated area of mature crown spread where above ground. If this is not possible, recommendations outlined in NJUG10 '*Guidelines for the planning, installation and maintenance of utilities in proximity to trees*' should be followed. Advice should also be sought from the project arboriculturalist.

5 ARBORICULTURAL METHOD STATEMENT

Tree protection barriers

5.1 Each tree's DBH was recorded, and applied to the formula found in Appendix 4. The resulting dimensions equal each trees Root Protection Areas that are plotted on to the Tree Protection Plan in Appendix 1, and added to the Tree Survey Schedule in Appendix 2. These are represented as a circle on the plan (unless significant existing rooting constraints are present), and are colour coded depending on the category they were classed in using the cascade chart in Appendix 3.

5.2 The disturbance of a tree's root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally and act as transport for water and nutrients. Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above growing medium, i.e. from porous to non-porous can alter the resources available to the tree, which in turn can lead to its decline.

5.3 Due to the close proximity of the demolition and construction works to the trees, the trees will need to be located within the construction compound. Ridged timber hoarding, affixed to the ground using wooden posts shall be installed around all trees within the works compound. The tree protection hoarding shall surround the stems and canopy spreads to a height of 2m (minimum).

5.4 The root protection areas of the trees within the works compound will extend outside the hoarding. Temporary ground protection will need to be installed in the locations shown on the Tree Protection Plan. To be fit for purpose, the ground protection needs to prevent compaction or rutting of the ground beneath. To account for the extensive scaffolding requirements, specification for ground protection shall be a single thickness of railway sleepers (or similar) above a compressible layer of woodchip or sharp sand (not builders sand), spread across a permeable membrane. A proprietary ground protection system (provided by Eve Trakway or similar product) may also be used.

5.5 Any variation in the form or extents of the tree protection barriers should only follow consultation with the project arboriculturalist.

5.6 The tree protection barriers shall be installed following the initial tree works, prior to commencement of demolition works. It shall remain in place until all external works to the north east facing wall of the new building have been completed.

Site access

5.7 There will be insufficient space to operate plant machinery adjacent to trees outside the north east facing wall of the new building. A suitable access point to deliver materials using plant machinery is indicated on the Tree Protection Plan. Where machinery is required to cross the root protection area of a retained tree, (notably the three Italian poplars), ground protection will be required.

Demolition works adjacent to trees

5.8 Care must be taken when demolishing the above ground parts of the existing building in proximity to tree canopies. The building shall be demolished inwards from within the footprint of the building. Where plant with booms is operated close to trees, a banksman shall be used.

5.9 Where possible, the existing footings adjacent to the trees shall be retained below ground level. This will eliminate any chance of damage to adjacent root growth. Where the footings do require removal from the edge of the existing building, they shall be broken up using controlled hand tools (pneumatic drill or similar) and removed by hand.

Storage and handling of harmful chemicals

5.10 Provision needs to be made for the storage and handling of harmful chemicals in proximity to trees. Harmful chemicals include fuels, oils, builder's sand (which has a high salt content) and cement. Cement mixing should only occur where there is no potential for cement washings to leech into a root protection area.

Arboricultural supervision

5.11 A pre-commencement meeting shall be held with the contractors and the project arboriculturalist to explain the tree protection methodology. All contractors should be briefed about tree related site factors as part of the site safety briefing.

5.12 A system and programme of onsite monitoring by the appointed arboricultural consultant should be agreed with the Local Authority Arboricultural Officer, if it is deemed necessary. Record sheets of site visits should be available for inspection by all parties, and forwarded to a designated employee of the Local Authority.

5.13 If significant root growth is disturbed during construction activities that are not within the scope of this report all work should cease and the project arboriculturalist consulted. Roots greater than 25mm in diameter or dense fibrous roots shall be considered significant root growth. It should be remembered that whilst root protection areas are part of industry best practice, tree root growth is influenced by a number of factors and may not conform to expected ideals.

6 CONCLUSIONS

6.1 Although a number of small shrubs beds have been recommended for removal to facilitate installation of ground protection and scaffolding, this should not have a significant effect on the amenity value of Kilburn Grange Park. The shrub beds may be replanted during the soft landscaping phase of development. All trees located along the edge of the proposed building are to be retained and protected during the proposed development.

6.2 Based on the above assessment, trees recommended for retention in this report can be protected during the proposed construction and supported following completion of the development.

7 OTHER CONSIDERATIONS

7.1 The trees at this site are owned and maintained by the London Borough of Camden. Permission will be required from the local authority before tree works are undertaken.

7.2 Financial penalties and/or criminal proceedings can result if tree works are carried out on a protected tree without consent. The entirety of the tree is protected, both above and below ground.

7.3 Trees should be checked for protected species before works are undertaken. It is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations. Nesting birds are protected by the Wildlife and Countryside Act. If protected species are discovered, Natural England should be contacted for advice.

7.4 The trees at this site were assessed for their condition and safety in relation to the average range of weather conditions that the region experiences. Any weather events that exceed the average norm cannot be predicted, and so their effects are not considered within this report.

7.5 The views and opinions contained within this report are entirely those of the author.

8 IMPLEMENTATION OF WORKS

8.1 The contractors should carry out all tree works to BS 3998 *Recommendations for Tree Works* (2010) as modified by research that is more recent. They should also carry relevant, adequate and up to date insurance.

8.2 It is also recommended that all tree works are carried out by an Arboricultural Association approved contractor. Approved contractors are expected to work to industry best standards, and the Arboricultural Association website contains contact details and information on engaging a suitable contractor.

Contact details

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Author: Peter Davies

Date: 29th May 2014

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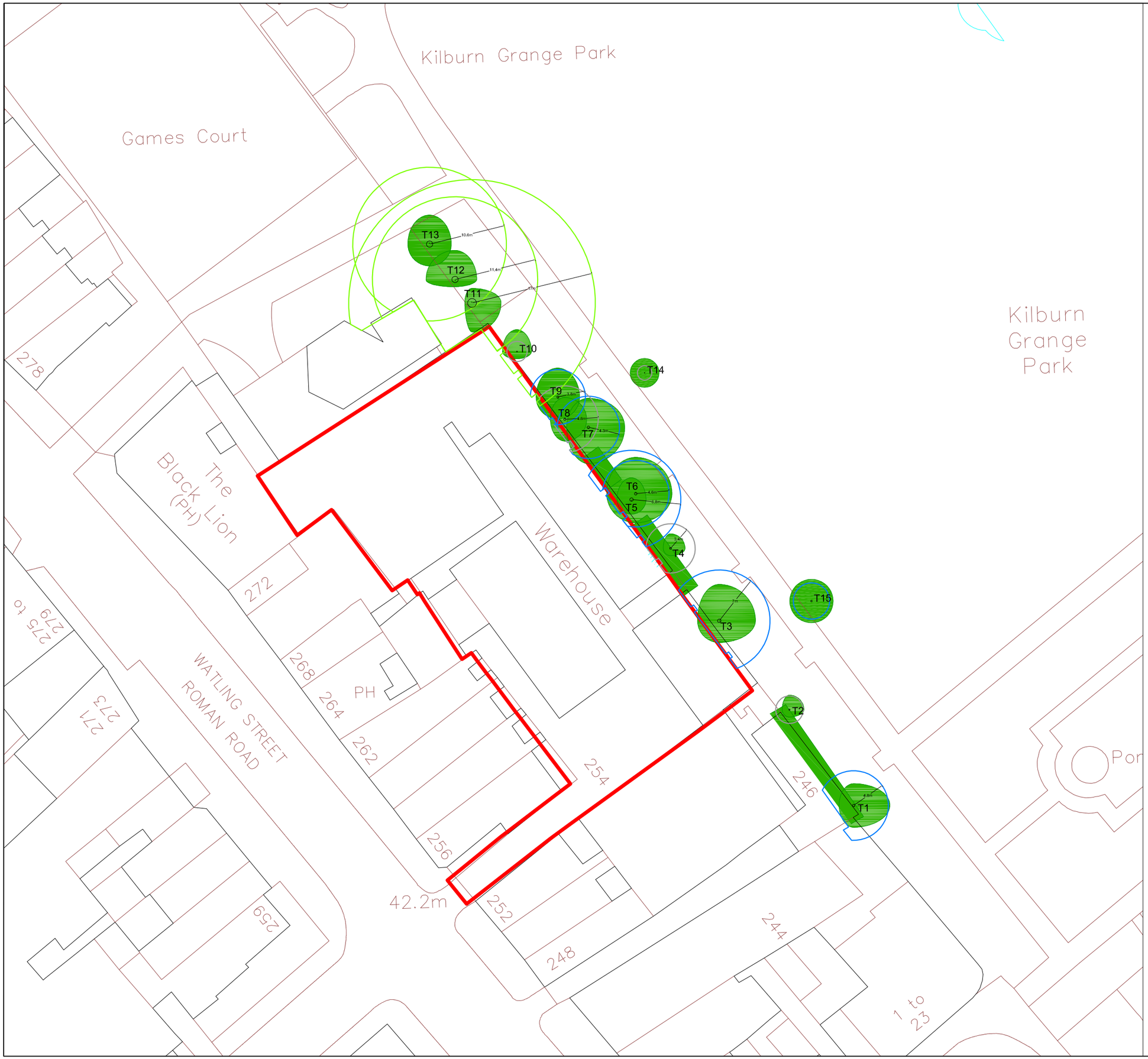
APPENDIX 1 Tree Constraints Plan and Tree Protection Plan



Key:

- RPA for CAT A Tree*
- RPA for CAT B Tree*
- RPA for CAT C Tree*
- Tree canopy

Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.

Appendix 2, (Tree Survey Schedule) contained within the arboricultural report ref. no. PJC/3412/14 contains further information for each tree.

This drawing should be viewed in colour.

The root protection areas of trees located in close proximity to the existing building have been amended to provide a more realistic representation of the actual root spread.

All tree positions on this drawing area approximate and must be checked on site prior to construction.

Site: 254 Kilburn High Road, London, NW6 2BS

Client: Aitch Group

Surveyor: Peter Davies

Date Drawn: 29/05/14

Scale: 1:500 at A3

Drawing Number: PJC/3412/14/A

Drawing Title: Tree Constraints Plan

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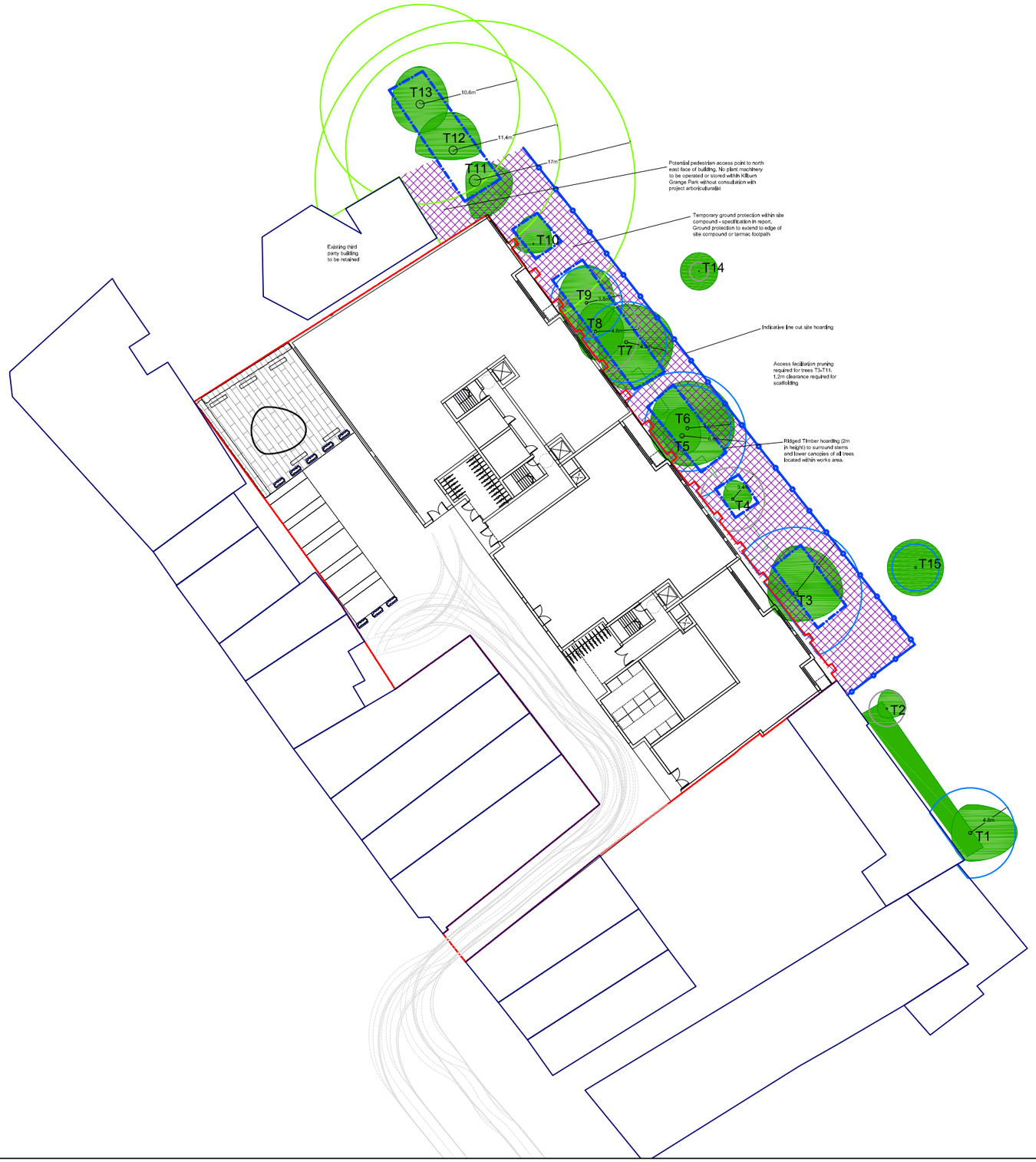

Key:

- RPA for CAT A Tree* to be retained
- RPA for CAT B Tree* to be retained
- RPA for CAT C Tree* to be retained
- Canopy of tree to be retained
- Tree protection hoarding
- Indicative line of site hoarding
- Temporary ground protection

**** Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.***

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Client: Aitch Group

Surveyor: Peter Davies

Date Drawn: 29/05/14

Scale: 1:500 at A3

Drawing Number: PJC/3412/14/B

Drawing Title: Tree Protection Plan

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APPENDIX 2 Tree Survey Schedule

Tree Survey Schedule

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Client: Aitch Group
Site: 254 Kilburn High Road
Survey date: 09/10/2013
Surveyor: Peter Davies

T: Individual tree or shrub
G: Group of 2 or more trees
H: Hedgerow
W: Woodland block

Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T1	Yew (Taxus baccata)	8	350 estimate	N: 3 E: 5 S: 3 W: 2	2 north	Mature	Good	Good	Regularly reduced away from building	No action required on date of survey	B2	55.4	4.2 (to be amended for rooting constraints)
T2	Holly (Ilex x altaclerensis 'Golden King')	6	160	N: 2 E: 2 S: 1 W: 1	2 north	Semi mature	Good	Good	Unbalanced crown due to suppression, no major visible defects	No action required on date of survey	C2	11.6	1.9
T3	Yew (Taxus baccata)	7	489.9 combined stem diameter	N: 5 E: 5 S: 3 W: 3	2 east	Mature	Good	Good	Multi-stemmed form, minor bark damage on stem, canopy rubs against building	Reduce canopy to provide 1.2m (mini) clearance from existing building	B2	108.6	5.9 (to be amended for rooting constraints)
T4	Holly (Ilex aquifolium)	7	254.6 combined diameter estimate	N: 2 E: 2 S: 1 W: 1	2 north	Early mature	Good	Good	Dual stemmed, low forking habit, canopy touches building	Reduce canopy to provide 1.2m (mini) clearance from existing building	C2	29.3	3.1 (to be amended for rooting constraints)
T5	Yew (Taxus baccata)	7	480	N: 3 E: 2 S: 2 W: 2	2.5 east	Early mature	Fair	Good	Dual stemmed, suppressed by oak, good overall condition	Reduce canopy to provide 1.2m (mini) clearance from existing building	B1	104.2	5.8 (to be amended for rooting constraints)
T6	English oak (Quercus robur)	9	366.2 combined stem diameter	N: 5 E: 5 S: 4 W: 4	2 west	Mature	Good	Fair	Unbalanced form due to suppression from yew, previously crown lifted over path	Reduce canopy to provide 1.2m (mini) clearance from existing building	B2	60.7	4.4 (to be amended for rooting constraints)

Tree Survey Schedule

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G: Group of 2 or more trees
H: Hedgerow
W: Woodland block

Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T7	Purple plum (Prunus cerasifera)	6	350	N: 4 E: 5 S: 5 W: 3	2 north	Mature	Good	Good	Canopy overhangs building, no major visible defects	Reduce canopy to provide 1.2m (mini) clearance from existing building	B2	55.4	4.2 (to be amended for rooting constraints)
T8	Silver birch (Betula pendula)	8	320	N: 3 E: 3 S: 3 W: 2	2 south	Mature	Fair	Good	Canopy overhangs building, no major visible defects	Reduce canopy to provide 1.2m (mini) clearance from existing building	C2	46.3	3.8 (to be amended for rooting constraints)
T9	Yew (Taxus baccata)	6	300	N: 4 E: 3 S: 3 W: 3	2 north	Early mature	Good	Good	Canopy overhangs building, no major visible defects	Reduce canopy to provide 1.2m (mini) clearance from existing building	B2	40.7	3.6 (to be amended for rooting constraints)
T10	Holly (Ilex aquifolium)	6	120.4 combined stem diameter	N: 3 E: 2 S: 1 W: 2	1 east	Semi mature	Fair	Fair	Dual stemmed, young tree	Reduce canopy to provide 1.2m (mini) clearance from existing building	C1	6.6	1.4
T11	Italian poplar (Populus nigra 'italica')	20+	1220	N: 2 E: 4 S: 4 W: 1	5 south	Mature	Good	Good	Canopy overhangs building, minor deadwood, no major visible defects	Reduce canopy to provide 1.2m (mini) clearance from existing building	A2	673.3	14.6 (amended for rooting constraints)
T12	Italian poplar (Populus nigra 'italica')	20+	880	N: 4 E: 3 S: 1 W: 4	4 north	Mature	Good	Good	Canopy overhangs building, minor deadwood, no major visible defects	No action required on date of survey	A2	350.3	10.6 (to be amended for rooting constraints)

Tree Survey Schedule

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Client: Aitch Group
Site: 254 Kilburn High Road
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Surveyor: Peter Davies

T: Individual tree or shrub
G: Group of 2 or more trees
H: Hedgerow
W: Woodland block

Tree ref. no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Management recommendation	Category grading	Root Protection Area (m2)	Root Protection Radius (m)
T13	Italian poplar (Populus nigra 'italica')	20+	870	N: 4 E: 3 S: 3 W: 3	3 south	Mature	Good	Good	Typical habit for species, no major visible defects	No action required on date of survey	A2	342.4	10.4 (to be amended for rooting constraints)
T14	Red oak (Quercus robur)	5	60	N: 2 E: 2 S: 2 W: 2	2 south	Semi mature	Good	Good	Young tree, good condition	No action required on date of survey	C2	3.1	1
T15	Hornbeam (Carpinus betulus)	5	210	N: 3 E: 3 S: 3 W: 3	2 north	Early mature	Good	Good	Minor strimmer damage, good amenity value	No action required on date of survey	B2	20	2.5

APPENDIX 3 Cascade Chart for Tree Quality Assessment

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Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after the removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *Note Category U trees can have existing or potential conservation value which it might be desirable to preserve*			Red
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi---formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood---pasture)	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

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APPENDIX 4 Root Protection Area Formulas

CALCULATING THE RPA

For single stemmed trees

$$\mathbf{RPA(m^2) = \frac{(stem\ diameter\ (mm)\ @\ 1.5\ m \times 12)^2 \times 3.142}{1000}}$$

For trees with two to five stems, a combined stem diameter is calculated as follows:

$$\mathbf{\sqrt{(stem\ diameter\ 1)^2 + (stem\ diameter\ 2)^2 \ldots + (stem\ diameter\ 5)^2}}$$

For trees with more than five stems, the combine stem diameter is calculated as follows:

$$\mathbf{\sqrt{(mean\ stem\ diameter)^2 \times number\ of\ stems}}$$

APPENDIX 5 Photographs

Photograph 1 – Trees T11, T12 and T13

Photograph 2 – Tree T3

Photograph 3 – Trees T5 and T6

Photograph 4 – North east site boundary