



Broad Oak Tree Consultants Limited

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ARBORICULTURAL IMPLICATIONS ASSESSMENT

**FOR PROPOSED
NEW EDUCATION BLOCK
AND PARKING**

AT

**PURBROOK PARK SCHOOL
PARK AVENUE
PURBROOK
WATERLOOVILLE
HAMPSHIRE
PO7 5DS**

By

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APPENDICES:

1. EXPLANATORY SHEETS, TREE INSPECTION SHEET
2. TREE CONSTRAINTS PLAN, DRAWING NO. J48.58/01 SHEETS 1 AND 2
3. TREE PROTECTION PLAN, DRAWING NO. J48.58/03
4. TABLE OF BS CALCULATED ROOT PROTECTION AREAS (RPAs)
5. EXAMPLES OF FENCING SPECIFICATION AND SIGNAGE

1. INTRODUCTION

- 1.1 Broad Oak Tree Consultants Ltd. have received instructions through MH Architects to undertake an inspection of trees located on and immediately adjacent to the site referred to as Purbrook Park School, Park Avenue, Purbrook, Waterlooville, PO7 5DS. The purpose of the inspection was to produce a base inventory of the tree stock, and produce an Arboricultural Implications Assessment of redevelopment proposals.
- 1.2 The proposals covered in this report relate to the proposed demolition of the existing Estates Office building and associated bin store and parking area and the construction of a new education block linking in to the existing buildings with remodelling of existing layouts. To the south east of the site new car parking is proposed adjacent to an existing car park and to the south side of the access road. Details of the proposals will have been submitted by MH Architects.
- 1.3 The trees were inspected on the 8th and 14th April 2014 by Tim Laddiman, BSc.(Hons) M.I.C.For. M.Arbor.A., Chartered Arboriculturist and Principal Consultant of Broad Oak Tree Consultants Ltd.
- 1.4 At the time of reporting checks had been made with Havant Borough Council and email confirmation received that the site is not located within a Conservation Area and that there are no Tree Preservation Orders on any of the trees.

2. GENERAL SITE DESCRIPTION

- 2.1 Purbrook Park School is located on the east side of Park Avenue with its eastern boundary bordering The Dale, with a second access point. The main access comprises a surfaced in and out drive with areas of parking. In all directions the site is bounded by residential properties and gardens.
- 2.2 The site is very approximately 'L' shaped with ground levels generally falling from the north end of the site.
- 2.3 The school buildings are to the north of the site and formed around an old Manor House comprising a mix of styles, ages and levels. Occupying the centre and south of the site are tree lined playing fields with a multi use surfaced area to the east.

3. SCOPE OF TREE SURVEY

- 3.1 The trees and areas included on topographic site survey plans produced by Terrain Land & Architectural Surveyors & Encompass Surveys were included in the inspections. Trees outside of these supplied plans have not been inspected. Where trees were missing from the supplied surveys their approximate locations have been added. For groups/linear features of trees very approximate general locations have been added.

4. DATA COLLECTION

- 4.1 All trees were inspected from the ground and no climbing or specialist investigations were undertaken. Only those trees within the site boundary could be basally inspected, with the structural integrity of the trees located outside the site unconfirmed. Each tree was inspected to the requirements of Section 4.4 of BS 5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations".

4.2 The tree survey followed the numbered sequence from 1 to 114 inclusive. Tree numbers, together with BS recommended colour coding of condition, have been added to the Tree Constraints Plan, our drawing no. J48.58/01 Sheets 1 and 2 in Appendix 2. This drawing also includes crown spreads based on four compass points and BS calculated root protection areas.

4.3 The following categories of information were obtained for each tree. Separate detailed tree survey sheets are attached in Appendix 1, together with comprehensive explanatory sheets which cover the details of the categories listed below.

- (1) Tree reference number
- (2) Species
- (3) Height in metres
- (4) Stem count
- (5) Stem diameter or equivalent in millimetres
- (6) Branch spread in metres
- (7) Age class
- (8) Height of crown clearance in metres
- (9) Physiological condition
- (10) Estimated remaining contribution in years
- (11) Category grading
- (12) Structural condition
- (13) Preliminary management recommendations

4.4 Within the assessment of physiological condition and remaining contribution, a visual inspection of each tree was undertaken to assess the crown and stem for any weak structures, deadwood, hollows, forks or other defects that might affect its stability and safety. The base of each tree was also visually inspected, together with tapping and probing, to search for signs of root lifting, bark death or decay. Where stems were heavily ivy clad, no full assessment of structural integrity could be undertaken. Clearance of the ivy would be necessary for confirmation of tree condition.

5. RISK ASSESSMENT - INFORMATIVES

5.1 Although the potential risk to someone passing beneath a tree when the tree or part of it fails is relatively remote, the risk is present. This increases significantly in areas of consistent and regular usage on a year round basis, such as footpaths, gardens and roadways. Where static structures exist, the risks become constant and an assessment is made as to whether complete or partial failure of a tree could potentially cause physical damage to such structures.

5.2 Within the scope of any tree survey it is a fact that not all risks of stem or crown failure can be covered, particularly in relation to freak occurrences of weather when even healthy trees can suffer stem snap or windblow. There is also a well known propensity for mature trees to occasionally shed limbs for no discernible reason, even on calm days. Although relatively rare, limbs may occasionally be shed and this should be acknowledged as a risk that cannot entirely be mitigated.

6. RESULTS OF TREE INSPECTIONS

- 6.1 A total of 114 individual trees and groups were inspected representing a diverse range of ages and species. A number of the larger on and near off site trees, such as numbers T3, Holm Oak and the Cedars T73 and T74 represent landscaping to the original Manor House element of the school from at least the early 1800s. Ongoing landscaping since then, and particularly when the majority of the school buildings were constructed, has added significantly to tree numbers.
- 6.2 The majority of the trees around the boundaries of the playing fields have been planted since the school began, originally as screening for the children from the adjoining residential gardens. Much of this has developed on to form intensely crowded and dense groups with most of the low level screening lost due to inter tree shading out of branches.
- 6.3 Within the tree inspections a number of the trees were identified as being in a potentially dangerous condition and requiring surgery/felling to reduce hazards to static targets, pupils and adjoining properties/road users. Since the inspections two lime trees within the school buildings complex have already been felled to abate immediate high level risks. The following section covers additional tree works recommended whether or not redevelopment works proceed.
- 6.4 Of the trees inspected, the following is a breakdown of the various numbers of trees and groups in each BS category.

BS Category	Tree No.	Sub Total
A	3, 73, 74, 88, 96, 99	6
B	1, 4, 6, 11, 15, 22, 24, 31, 32, 47, 50, 61, 62, 63, 69, 75, 76, 77, 78, 79, 80, 81, 82, 84, 85, 93	26
B/C	G91, G97	2
C	5, 7, 8, 9, 10, 12, 16, 17, 18, 19, 21, 23, 25, 26, G27, 29, 30, G33, 34, 35, 37, 38, 40, 41, 42, 44, 46, 48, 49, G52, 54, 55, 56, 57, 58, 59, 60, 64, 65, 70, 71, 72, 83, 86, G87, 90, G98, 100, 102, G103, G104, G105, 106, 109, 111, 112, 114	57
C/U	G45	1
U	2, 13, 14, 20, 28, 36, 39, 43, 51, 53, 66, 89, G92, G94, 95, 101, 107, 108, 110, 113	20
Felled	67, 68	2
	TOTAL	114

6.5 Interpretation of table

- Category A** Retention most desirable. Of high quality and value and in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).
- Category B** Retention desirable. Of moderate quality and value and in such a condition as to make a significant contribution (a minimum of 20 years is suggested).

Category B/C	Groups of trees that include individuals of varying qualities that fall into the category B and C classifications.
Category C	Could be retained – of low quality and value. Poor crown form, heavily asymmetric, large numbers of similar species/size. Currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested) or young trees with a stem diameter below 150mm.
Category C/U	Trees that would be included in category C but have structural faults, areas of decay, etc. that require more detailed investigations or climbing inspections to ascertain whether or not they can be safely retained. Groups that include dead/dying/dangerous individuals.
Category U	Trees for removal. Dead/dying/dangerous trees due to structural defects, fungal decay or root plate uplift. Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

7. BS CALCULATED ROOT PROTECTION AREAS (RPAs)

- 7.1 To provide an indication of the critical areas of root plate necessary for tree survival and longevity, BS5837:2012 requires the calculation of RPAs for trees in the BS Categories A, B and C. Calculations are not made for Category U trees which will require removal on safety grounds within 10 years.
- 7.2 The table attached in Appendix 4 has been calculated using the measured stem diameters and the formula as described in Section 4.6 in BS 5837:2012. These are represented as basic circles on the Tree Constraints Plan. Where buildings, walls, services and hard surfacing exist within the indicated RPAs it is likely that the architecture of root systems will have been affected. Foundations to walls and buildings can completely obstruct root development, depending on their depth and the nature of the underlying soils. In the absence of detailed site investigations the indicated RPA circles should be used for guidance only within any redevelopment proposals.

ARBORICULTURAL IMPLICATIONS ASSESSMENT

8. REDEVELOPMENT PROPOSALS

- 8.1 The proposals covered in this report relate to the proposed demolition of the existing Estates Office building and associated bin store and parking area and the construction of a new education block linking in to the existing buildings with remodelling of existing layouts. To the south east of the site new car parking is proposed adjacent to an existing car park and to the south side of the access road. Details of the proposals will have been submitted by MH Architects.
- 8.2 The supplied MH Architects proposed Site Layout has been used as the base for the Broad Oak Tree Consultants Ltd. Tree Protection Plan, drawing no. J48.58/03 in Appendix 3. This indicates trees for removal and measures to protect retained trees to the requirements of BS5837:2012.

9. TREES TO BE REMOVED/SURGERY – SAFETY/SHORT LIFESPAN

- 9.1 The following trees have been identified as having structural defects or as being in declining health/dangerous condition where tree works/removal are recommended whether or not the redevelopment of the site occurs.
- 9.2 The following list is only the trees of relevance to the main school complex and do not represent a comprehensive list of recommended safety works for the whole site.

Tree No.	Species	Works required	Comments
T2	Laburnum	Fell.	Request owners to remove.
T10	Scots Pine	Deadwood crown	Risk of failures.
T20	Sycamore	Fell.	Limb/stem failures likely due to squirrel damage.
T22	Sweet Chestnut	Remove lowest limbs to S.	Risk of failure.
T24	Sweet Chestnut	Remove lowest limbs to S.	Risk of failure.
T28	Hazel	Fell.	Dying.
T36	Hawthorn	Fell.	Appears to be dead.
T39	Sycamore	Fell.	Decay of pollard points.
T43	Sycamore	Fell.	Decay of pollard points.
G45	Sycamore	Fell all.	Decayed bases – confirm ownership.
T51	Elm	Fell.	Dead. Risk of failure into adjoining garden.
T53	Hawthorn	Fell.	Dying.
T66	Lime	Fell.	Weak limb unions – failures likely.
T71	Sycamore	Reduce crown all over by one third height/branch length.	Reduce loading on weak stem unions
T81	Robinia	Remove torn out limbs.	Risk of failures.
T82	Norway Maple	Install brace in upper crown.	Prevent stem failure.

Tree No.	Species	Works required	Comments
T85	Ornamental Cherry	Raise crown to 2m over footpath.	Reduce risks to pedestrians.
T89	Common Oak	Fell.	Confirm ownership.

- 9.3 The trees listed for removal and presumed to be within the site boundary of the school are indicated with red dashed crown outlines on the Tree Protection Plan. Other trees would be subject to confirmation/negotiation with adjoining owners.

10. TREES FOR REMOVAL – REDEVELOPMENT

- 10.1 The following tree would require removal to facilitate the proposals.

Tree No.	Species	BS Category	Comments
T56	Sycamore	C	Declining condition.

- 10.2 This tree has a limited future life span and as a BS category C tree should not represent a significant constraint to the proposals, according to BS5837:2012. The layout of the scheme has been specifically designed to minimise the need to remove established trees.
- 10.3 This tree is indicated for removal for redevelopment with a blue dashed crown outline on the Tree Protection Plan.

11. POTENTIAL IMPACT OF PROPOSALS ON RETAINED TREES

11.1 *Proposed Education Block*

- 11.1.1 The only tree that could potentially be influenced by the new education block is the offsite Holm Oak, T3.
- 11.1.2 Whilst the new build does occupy part of the theoretical RPA of the tree, the potential for any impact is minimal. The new build is located south of an existing retaining wall that will have altered root architecture since its installation and minimised the potential presence of roots to its south by the nature of its foundations. Much of the rest of the new build within the theoretical RPA is occupied by the existing Estates Office. Foundations to this building will also have limited rooting presence.
- 11.1.3 The intervening tarmac road also represents a restricted moisture and gaseous exchange environment for the soils beneath, which do not represent ideal rooting conditions. It is therefore unlikely that the tree will have committed substantial resources to renewing rooting beneath this area with more open, suitable conditions available elsewhere.
- 11.1.4 Overall it is therefore considered that the potential impact of the new education block on the Holm Oak will be minimal and due to the site circumstances no specific precautions regarding excavation of existing or proposed foundations will be necessary.

11.2 *Proposed Car Parking*

- 11.2.1 The proposed car park will overlap with the RPAs of trees T46, T47, T58, T61, T62 and T63. However, this has been recognised within the design process and it is proposed that a "no dig" specification porous surfacing is installed to minimise any potential impact. This would accord with the recommendations in Section 7 "Permanent hard surfacing within the RPA" of BS5837:2012 and APN 12 "Through the Trees to Development".

- 11.2.2 The existing turf within the parking area would be removed by hand tools only and then the levels built up rather than excavated. A geotextile would be laid over the soil and one of a range of inter locking, load spreading three dimensional structures laid on top, such as Geoweb, Nida gravel or Golpla products (subject to manufacturer's specifications) infilled with no fine stone and topped either with a gravel or dry joined pavements. Edge support can be provided by timber batten and board or sleepers to avoid the need for excavation.
- 11.2.3 Using this approach to the parking construction will minimise any potential compaction whilst maintaining permeability for moisture and gaseous exchange. Detailing of the surfacing could be required as part of a precommencement condition.

12. TREE PROTECTION – FENCING

12.1 *Location of fencing*

- 12.1.1 The Tree Protection Plan indicates the proposed location of protective fencing based on the calculated tree protection areas and space available.

12.2 *Design of fencing*

- 12.2.1 The protective fencing is to be constructed of a scaffold framework with uprights driven into the ground to a minimum depth of 0.6m and at no greater than 3m spacing. On to the uprights weldmesh panels such as "Heras" or a similar product will be securely mounted with all weather notices attached to every 5th panel reading "Keep Out – Protected Area". The fencing will form enclosed areas to which no access will be allowed.

- 12.2.2 Examples of the fencing specification and signage required are included in Appendix 5.

12.3 *Timing of fencing*

- 12.3.1 Protective fencing is to be erected prior to commencement of demolition works and remain in place until completion of construction. The location and suitability of the fencing can be confirmed to the local authority by an arboricultural consultant prior to commencement of construction. Any tree felling will need to be undertaken prior to fence installation to minimise risks to operatives. All tree surgeons' vehicles will be kept outside the indicated protection zones utilising existing areas of hard standing.

12.4 *Additional precautions*

- 12.4.1 Potentially injurious materials such as fuels, oils, chemicals and cement will be stored at least 20m from any stem, or in a bunded storage vessel. No fires will be lit within 5m of the drip line of any retained tree. No level changes will occur, either raising or lowering within the protected areas. A list of these additional precautions are included on the Tree Protection Plan.

13. SITE OPERATIONS AND MATERIALS STORAGE

- 13.1 Details of site zoning cannot be specified by an Arboriculturalist as these are commonly determined by contractors on the basis of Health & Safety Assessments. However, the robust protective fencing will define the remaining site space available for storage and operations.

- 13.2 The various areas of existing hard surfacing and parking provide ample storage space for machinery, materials and temporary welfare/office units.

14. SERVICES/DRAINAGE

- 14.1 Where possible, existing services should be utilised. If this is not practical, then new service runs will need to enter the site outside indicated RPAs for traditional trenching installation.
- 14.2 Any services, drainage and soakaways are to be kept outside indicated root protection areas wherever possible. Where excavation is necessary, these should be undertaken by hand and to the requirements of NJUG Volume 4 "Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees".

15. ARBORICULTURAL METHOD STATEMENT

- 15.1 Production of an Arboricultural Method Statement at this stage is considered inappropriate until the principles of the proposals and the measures to protect the trees have been accepted by the Council's Tree Officer. A detailed method statement could then be produced in response to a specific pre-commencement condition.
- 15.2 Alternatively reference could be made to the Tree Protection Plan in a specifically worded condition as the principle components for an Arboricultural Method Statement covering tree protection and construction methodologies are included on the Tree Protection Plan.

16. SUMMARY

- 16.1 The proposed new education block and parking would only require the removal of one BS category C tree which should not represent a constraint to the proposals. Recommendations made for tree works on safety grounds are not a planning issue.
- 16.2 Site circumstances mean that the potential impact of the new education block on an offsite Holm Oak will be significantly less than the theoretical RPA incursion would suggest. As such the potential impact on this tree is considered minimal. Extensive surrounding surfacing for machinery access and materials storage means that compaction will not be an issue and risks of contact damage to the Holm Oak or other trees is extremely low.
- 16.3 The positioning of part of the new car parking within outer tree RPAs necessitates a no dig design for construction with continued porosity. Various products exist on the market specifically designed to achieve such interactions with minimal disturbance to retained trees. Provided the works are appropriately undertaken and the trees are protected by robust protective fencing they should not suffer a decline in condition as a result of the works proposed.

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