

Supplementary Arboricultural Report

St Michael and All Angels Church,
Queens Fields East,
West Meads,
Aldwick,
West Sussex

Grid Ref: SZ 9162 9962

Prepared by:
The Mayhew Consultancy

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AR/21313

March 2014

Contents

Section	Title	Page
1.0	Details of survey	3
2.0	Instructions	3
3.0	Summary	4
4.0	Site details	5
5.0	Planning history	5
6.0	The proposal	5
7.0	Documents supplied	5
8.0	Existing trees	6
9.0	Arboricultural Impact Assessment	6
10.0	Tree Protection Measures	6
11.0	Post development pressure	9
12.0	Tree works	9
13.0	Sequence of works	9
14.0	Recommendations	10
15.0	Conclusion	10
Appendix A	Existing Tree Plan	
Appendix B	Tree Protection Plan	
Appendix C	Tree survey	
Appendix D	Tree survey key	
Appendix E	BS 5837 Table 1 – Cascade chart for tree quality assessment	
Appendix F	Tree Protection Fencing	
Appendix G	Sample Tree Protection Warning Sign	
Appendix H	1) Scope of this report 2) Survey method	

1.0 Details of survey

The Site:	St Michael and All Angels Church, Queens Fields East, West Sussex
Grid Ref:	SZ 9162 9962
TMC Ref:	AR/21313
Local authority:	Arun District Council
Survey date:	N/A
Report date:	18 th March 2014
Surveyed by:	Clive Mayhew BA (Hons), FArborA., MICFor, CEnv

2.0 Instructions

2.1 I am instructed by Mildren Homes to:

- 1) Assess the effect of six additional parking spaces on retained trees.
- 2) Produce an arboricultural report compliant with the recommendations contained within 'BS 5837:2012 Trees in relation to design, demolition and construction.'

2.2 My name is Clive Mayhew and I am the author this report. I have over 25 years experience in tree, landscape and ecology management in both the public and private sectors. I am a Chartered Arboriculturist within the Institute of Chartered Foresters, a Chartered Environmentalist, and a Fellow of the Arboricultural Association.

3.0 Summary

3.1 Site summary:

The subject site is located at St Michael and All Angels church in the south east corner of Queens Fields, Aldwick, West Sussex.

3.2 Proposal summary:

Consent has already been given to demolish the existing church and replace it with residential housing units. *This report deals with an amendment to that proposal and relates only to the installation of six additional parking spaces.*

3.3 Existing trees (Section 8 refers):

I surveyed eight individual trees and four groups of trees when visiting the site on 18th March 2013. Details of these trees are contained within [The Mayhew Consultancy](#) report for this site (AR21313 – dated March 2013) which should be read in conjunction with this current document.

3.4 Consequences of development on trees (Section 9 refers):

No trees will be lost if this amendment to the proposal were to be implemented.

3.5 Tree Protection (Section 10 refers):

If this proposal were to be implemented the following tree protection measures are recommended:

1. The erection of protective fencing in two locations.
2. The installation of ground protection in one area.

3.6 Conclusion:

If the tree protection measures recommended in this report are installed and adequately supervised, I consider that the proposal can be successfully implemented, while still adequately protecting the retained trees to a level which complies with current arboricultural standards.

4.0 Site details

- 4.1 The site is located in the south east corner of Queens Fields, which are public playing fields in Aldwick, West Sussex. Access to the public highway - Queens Fields East - is from the east of the site. The general landscape character of the area is medium density residential suburban housing, with a local shopping precinct adjacent to the site.
- 4.2 **Existing buildings:** My understanding is that the original church has now been demolished and that construction work has commenced on the approved development.
- 4.3 **Existing topography:** The site is level throughout, apart from a low grassed bund which runs along all of the boundaries excepting the north east.
- 4.4 **Existing vegetation:** The site vegetation was predominantly mown amenity grassland with trees situated along the south eastern and south western boundaries.
- 4.5 **Soils:** The British Geological Survey website indicates that the bedrock soil geology is from the London clay formation, with superficial overlying but undifferentiated river terrace deposits, containing sand, silt and clay. I have no information regarding the depth of the river terrace deposits, but their clay content - along with that of London clay - means that it is a soil which has the potential to be compacted, a characteristic that can be highly detrimental to tree roots. As a consequence, I have accounted for that possibility within the tree protection measures this report recommends.

5.0 Planning history

- 5.1 Planning permission has been granted for the demolition of the existing building and construction of new residential properties.

6.0 The proposal

- 6.1 This report deals solely with an amendment to the original proposal, namely the installation of three pairs of additional parking spaces.

7.0 Documents supplied

- 7.1 Drawing by Mildren Homes: 'Proposed Site Plan.'
Dwg No: 0085/010 – Rev 2. July 2013.

8.0 Existing trees

8.1 I surveyed 8 individual trees and 5 groups of trees on site in March 2014. The survey information is appended to this report (Appendix C).

8.2 Description of trees

A full description of the trees is contained within [The Mayhew Consultancy](#) report for this site (AR21313 – dated March 2013) which should be read in conjunction with this current document.

9.0 Arboricultural Impact Assessment

9.1 The recommendations made here relating to tree retention, removal and planting are informed by current arboricultural, planning and urban design best practice, primarily British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations', which advocates a pragmatic approach to tree removal and retention, based on sustainability.

9.2 Trees requiring removal *irrespective* of the proposal:

No trees were identified as being in such a compromised structural condition as to require removal irrespective of whether the proposal is implemented or not.

9.3 Trees requiring removal as a *consequence* of the proposal:

No trees were identified as requiring removal as a consequence of the proposal.

10.0 Tree Protection Measures

10.1 Root Protection Areas (RPAs)

The identification of Root Protection Areas is the primary means by which retained trees are protected on construction sites. No unspecified activity should occur within any prescribed Root Protection Area, access should only be permitted with prior approval of the Local Planning Authority, and encroachment should normally only take place if the ground beneath is suitably protected.

10.1.2 BS 5837 provides arboriculturists with a method to determine the extent to which excavations associated with construction works might have a damaging effect on the roots of adjacent trees. The Standard enables a Root Protection Area to be calculated for each retained tree, and this is usually described as a circle with a radius at the prescribed distance from the tree. The size of each Root Protection Area is calculated from the tree's diameter.

10.1.3 I have calculated the Root Protection Areas of the existing trees as prescribed within BS 5837: 2012. These areas are shown as a dashed red line at Appendix A, and each figure is included within the survey schedule at Appendix C.

10.1.4 **RPA's and the subject site:** The proposal is to install three pairs of vehicle parking spaces in three locations:

P1 and P2 are located adjacent to the south west flank of the new residential block.

P11 and P12 are located close the site's south eastern boundary and P11 encroaches slightly into the root protection area of retained tree T6.

P13 and P14 are located to the south east of units 7 and 8.

10.2 **P1 and P2** are located adjacent to the south west flank of the new residential block and are outside of the root protection area of T11 – as illustrated at Appendix B.

10.2.1 Because the parking area is outside of the root protection area, no specific tree protection measures are required by BS5837. However, because a portion of the root protection area is within the working area adjacent to the parking spaces, I consider that it would be expedient to install ground protection in this location and this is illustrated in blue at Appendix B.

10.2.2 BS 5837 states that any ground protection should be appropriately specified and capable of supporting any activity without being distorted or causing compaction of the underlying soil. I consider that the activity in the identified area should be restricted to pedestrian movement and pedestrian operated plant with a maximum gross weight of 2 t only. As a consequence, the ground in this area should be protected with proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane.

10.2.3 If a greater – or lesser – degree of activity is envisaged than that described in 10.3.2 above, the specification of ground protection required can be adjusted accordingly; guidance for such amendments should be sought from an appropriately qualified arboriculturist and referenced to BS 5837.

- 10.3** **P11 and P12** are located close the site's south eastern boundary and P11 appears to encroach slightly into the root protection area of retained tree T6.

10.3.1 Diagrammatically, the footprint of parking space P11 appears to encroach into the root protection area of T6 – when that root protection area is drawn as a circle of equal circumference around the trunk of T6. However, the original access road into the site cut through this notional root protection area – as illustrated with a blue dashed line at Appendix B. Given this historical incursion and the fact that intrusion of P11 is minimal - much less than the original road – I do not consider it necessary to stipulate specific tree protection measures with regards to the specification of P11. I do, however, recommend the installation of protective fencing and mulching in this area - as detailed at 10.2 and 10.4 below.

- 10.4** **P13 and P14** are located to the south east of units 7 and 8 and have no ramifications with regards to retained trees.

10.5 **Protective fencing**

The RPAs of the subject trees should be protected by the erection of Tree Protection Barriers, the preferred form of which consists of steel mesh 'Heras' type panels 1.8 metres high, mounted on a scaffolding frame as detailed in Figure 2 of BS 5837. (See Appendix F). The barriers should carry laminated signs stating: "Construction exclusion zone – Keep out." (See Appendix G).

- 10.5.1 All Tree Protection Barriers should be erected prior to any construction works commencing on site and remain in situ until they are completed. If there is a proposal to remove the barriers for any reason then a competent arboriculturist should assess and approve the works prior to its implementation.
- 10.5.2 **The subject site:** The locations of the two Tree Protection Barriers required by this proposal, and a third barrier enclosing T1, T2 and T3 are plotted at Appendix B. The purpose of all these barriers is to separate the construction activity from the rooting areas of the retained trees.

10.6 **Construction Exclusion Zones**

In some instances discrete portions of a site can be identified from which all construction activity can be excluded.

- 10.6.1 **The subject site:** Three Construction Exclusion Zones have been identified within the site and they are illustrated in yellow at Appendix B.

10.7 Other general activities

Many of the activities which occur on construction sites are potentially damaging to trees. These include the location of site huts, parking arrangements, the storage of materials, the storage of rubbish, and the movement and operation of plant. It is important to understand the range of potentially damaging activities that might occur on a particular site, and ensure at an early stage that these possible conflicts are recognised and avoided. Therefore areas designated for site huts, parking and storage of materials should be identified prior to the commencement of works and agreed with the LPA.

- 10.7.1 **The subject site:** There appears to be sufficient room outside the confines of the Construction Exclusion Zones to accommodate any site huts and storage areas that might be required to implement the proposal.

11.0 Post development pressure

- 11.1 When new structures are located near to trees there may be pressure to prune or remove them because of concerns that the trees might fail in some way, or because of perceived shading. Inevitably the tolerance of individuals towards trees varies considerably; one may take exception to the proximity of adjacent trees while another will happily coexist with the same juxtaposition.

- 11.2 **The subject site:** Due to the nature of this proposal and the location of the parking spaces, I consider that the issue of post development pressure has been satisfactorily addressed to a level which is entirely acceptable, given the specific constraints of the site and its development context.

12.0 Tree works

- 12.1 I do not anticipate that any tree surgery will be required in order to implement this proposal.

13.0 Sequence of works

- 13.1 The sequence of works should be as follows:

1. Erection of protective fencing.
2. Installation of ground protection.
3. Construction phase.
4. Removal of protective fencing.

14.0 Recommendations

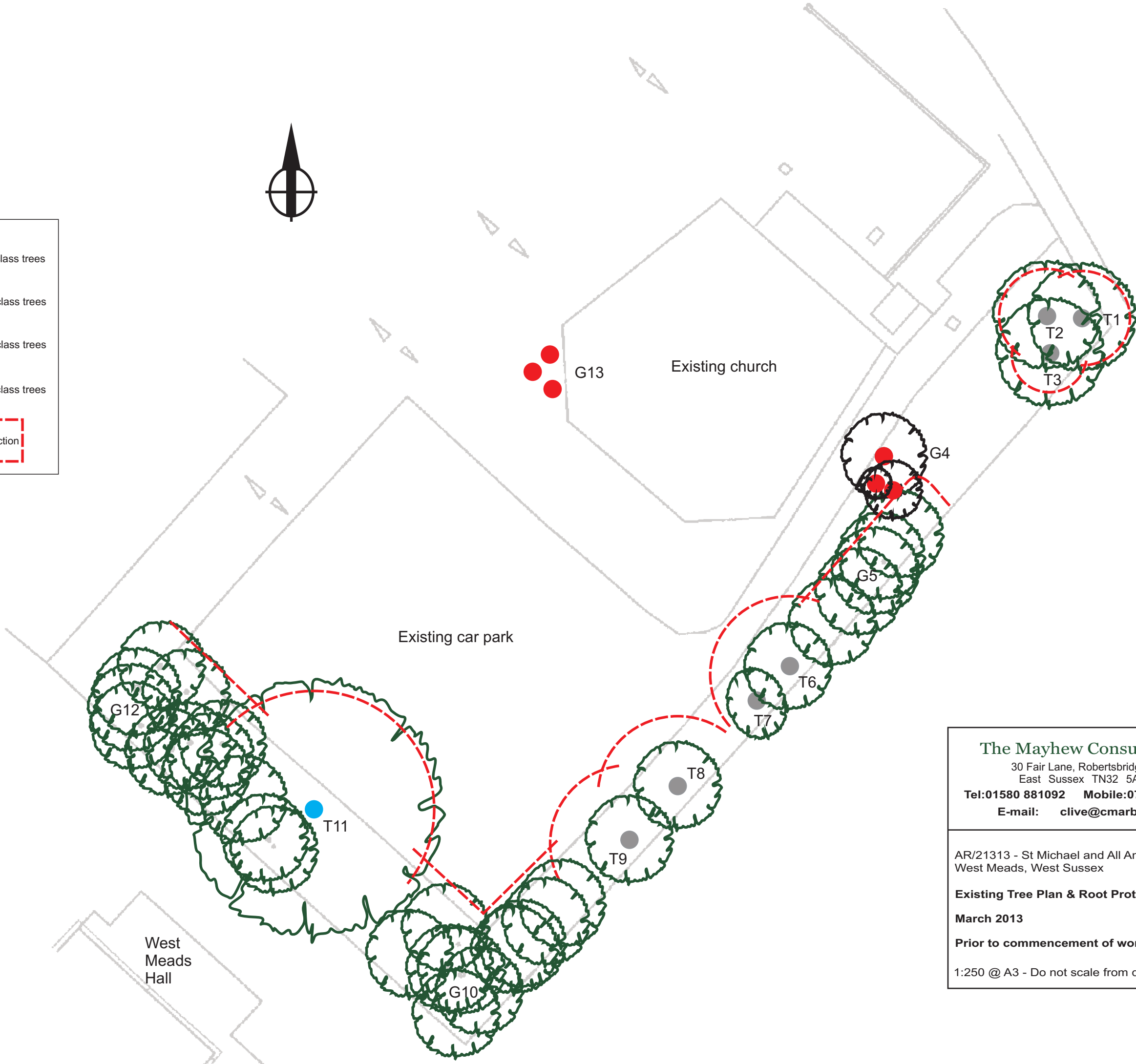
- 14.1 It is recommended that the tree protection measures advocated in this report should be followed at all times. Any deviation should only occur following consultation with the local authority's arboricultural officer, and only then with their specific approval.
- 14.2 It is recommended that a suitably qualified arboriculturist supervises the installation of the tree protection measures and confirms that they comply with BS5837, and if necessary briefs the individual who will be responsible for the maintenance of tree protection measures for the duration of the works.
- 14.3 An individual should be identified as a point of contact for arboricultural matters for the duration of the works. This individual will need to be familiar with the arboricultural constraints presented by the site, the tree protection measures that have been installed, and the requirement to keep those measures adequately monitored and maintained.

15.0 Conclusion

- 15.1 I consider that this scheme is acceptable in arboricultural terms and that the subject trees can be protected according to current standards, providing the recommended mitigation measures are adopted.

Key:

- A class trees
- B class trees
- C class trees
- R class trees
- Root Protection Area



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AR/21313 - St Michael and All Angels church,
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Existing Tree Plan & Root Protection Areas
March 2013
Prior to commencement of works
1:250 @ A3 - Do not scale from drawing

Key:

B class trees

C class trees

Root Protection Area

Tree Protection Barrier

The site plan illustrates a proposed new residential block, shown as a large brown rectangle, situated on a plot bounded by Queens Fields East to the east. The plan includes several existing trees, labeled G10, G12, G5, T1, T2, T3, T6, and T11. Trees G10, G12, and G5 are marked with green dots, indicating they are B class trees. Trees T1, T2, T3, T6, and T11 are marked with grey dots, indicating they are C class trees. A red dashed line outlines the Root Protection Area (RPA) for the trees, and a blue dashed line indicates the Tree Protection Barrier. A yellow shaded area represents the 'Area of ground protection'. A blue dashed line shows the 'Line of original access road'. A north arrow is located in the upper left corner of the plan.

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AR/21313 - St Michael and All Angels church,
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Tree Protection Plan

March 2014

1:250 @ A3 - Do not scale from drawing

Tree Survey

Original survey November 2010

Re-surveyed 18th March 2013

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				Crown break	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
T1	Norway maple	6	28	3.6	41	4	4	4	4	2	Y	G	G	M	C2	Individually C, but B group.
T2	Norway maple	7	28	3.6	41	4	4	4	4	2	Y	G	G	M	C2	Individually C, but B group.
T3	Norway maple	6	22	2.7	23	4	4	4	4	2	Y	G	G	M	C2	Individually C, but B group.
G4	Thorn, silver birch & alder	4	27	3.3	34	3	3	3	3	2	SM	F	F	S	C2	The birch is the best tree in this poor group.
		12				2	2	2	2							
		4				1	1	1	1							
G5	5x thorn 1x field maple	7	20	2.4	18	2	2	2	2	1	SM	F	F	S	C2	Fairly contained group – valuable screen.
T6	Field maple	7	46	5.7	102	3	3	3	3	1	SM	F	F	S	C2	
T7	Prunus spp	4	22	2.7	23	2	3	2	2	1	SM	F	F	S	C2	Small tree.
T8	Field maple	7	46	5.7	102	3	3	3	3	1	SM	F	F	S	C2	
T9	Field maple	7	46	5.7	102	3	3	3	3	1	SM	F	F	S	C2	
G10	7x thorn 4x field maple 3x malus	8	23	2.3	28	2	2	2	2	1	SM	F	F	S	C2	Scrappy group, but useful as a visual screen.
T11	London plane	17	68	8.4	222	9	9	9	9	4	M	G	G	M	B1	Fine tree.

AR/21313 – St Michael and All Angels Church, Queens Fields East, West Sussex.

Tree No	Species	Ht.	Stem dia.	RPA Rad	RPA Area	Crown spread N – S – E - W				Crown break	Age class	Phy con	Str con	ECR	Class	Observations & recommendations
G12	10x alder 4x Field maple 2x hornbeam 1x lime	11	24	3.0	28	3	3	3	3	2	SM	G	G	S	C2	Scrappy group, but useful as a visual screen.
G13	3x silver birch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	These trees originally surveyed in 2010 had been felled at the time of re-survey in 2013.

Survey sheet key

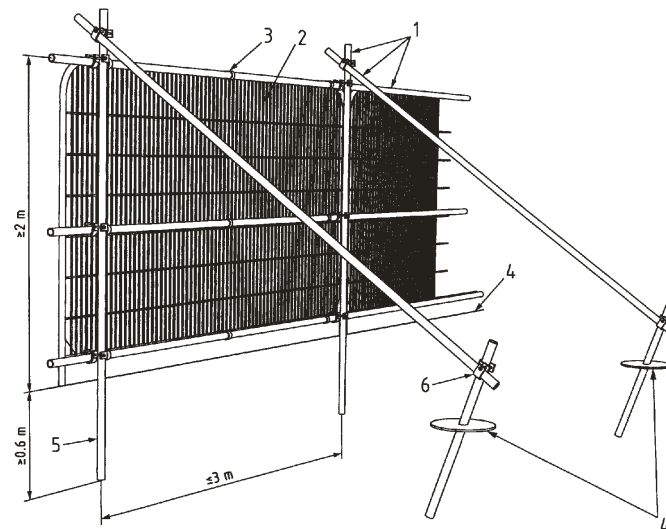
Tree No	Tree reference number as used in the report and survey plan T = Tree G= Group H = Hedge W = Woodland
Ht	Tree height in metres
Stem dia.	Stem diameter in millimetres Measured at 1.5 metres above ground level, or immediately above the root flare of multi-stemmed trees M = Multi-stemmed tree
Crown sp	Crown spread measured in metres from the stem to the four compass points
Crown break	Height of crown clearance above adjacent ground level, given in metres
Age class	Age class Y = Young: Staked or newly established tree SM = Semi-mature: An established tree at a stage of rapid growth EM = A tree nearing its ultimate canopy size for its situation M = Mature: A tree at its ultimate canopy size for its situation OM = Over mature: A mature tree smaller than its ultimate canopy size, often such trees are of great historical or ecological importance.
P. Con	Physiological condition of the tree expressed through an assessment of its general well-being G = Good, F = Fair, P = Poor, D = Dead
S. Con	Structural condition of the tree G = Good, F = Fair, P = Poor, D = Dangerous
R.C.	Estimated remaining contribution expressed in years D = <10, S = 10-20, M = 20-40, L = >40
BS Cat	Tree category graded as per the guidance given within Table 1 of BS 5837:2012 – See Appendix E A - Green = Trees of high quality with an estimated remaining life expectancy of at least 40+ years B - Blue = Trees of moderate quality with an estimated remaining life expectancy of at least 20 years C - Grey = Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm U – Red = Trees in such a condition that they cannot be realistically retained for longer than 10 years.
RPA ~ R	Root Protection Area radius, as measured in metres from the centre of the tree
RPA ~ A	Root Protection Area expressed in square metres

BS 5837:2012 Table 1 – Cascade chart for tree quality assessment

Category and Definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees in such a condition that they cannot realistically be retained as living trees in the context of the 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 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.			DARK RED
	1. Mainly arboricultural values	2. Mainly landscape values	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 of 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)	LIGHT 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 remediable 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	MID 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 150mm	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 landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	GREY

BS 5837:2012 - Tree protection fencing

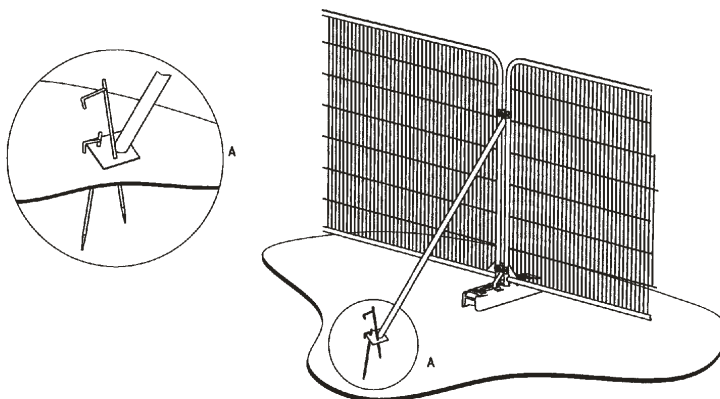
Figure 2 Default specification for protective barrier



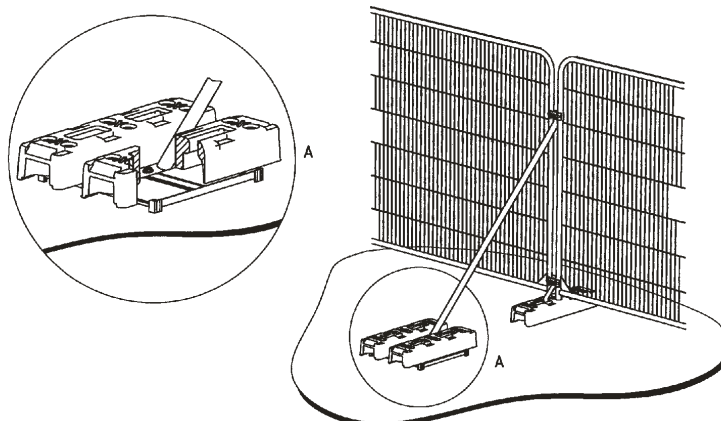
Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Tree protection area warning sign



1.0 Scope of this report

- 1.1 I have been commissioned to produce base line survey data for trees, with a view to identifying constraints and opportunities for sustainable tree cover in the context of the development proposal for the site. The survey has been undertaken in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction - Recommendations' and was made in the context of the site's current usage.
- 1.2 This report comprises the prerequisite information for the planning process recommended in BS 5837:2012
- The production of a Tree Survey
 - The production of an Arboricultural Impact Assessment
 - The production of a Tree Protection Plan if required.
 - The production of an Arboricultural Method Statement, if required.
- 1.3 The tree locations and canopy spreads are plotted on the indicative plans at Appendix A.
- 1.4 A detailed condition survey or hazard assessment of each tree has not been undertaken within the scope of this report. If a tree was noted as being in such a condition as to require more detailed assessment then that observation is included in the tree survey notes at Appendix B.
- 1.5 The findings within this report have been made on the basis of evidence seen on the day of inspection. It should be understood that some indications of tree hazard, such as leaf appearance and density, fungal fruiting bodies, and specific pests and diseases, are only visible at specific times of the year. Should significant additional information become apparent following the submission of this report I would reserve the right to modify the conclusion made accordingly.
- 1.6 This report is valid until:
- The re-inspection dates given for any tree in the survey schedule
 - An episode of adverse weather conditions - for example winds over land measured at Beaufort scale force 8 or above.
 - For two years from the date of inspection.
- Whenever any of the above occurs first, the trees must be re-inspected and any recommendations carried out. The presence of a hazard, the probability of harm and the value of the target area all help to determine the frequency of re-inspection.
- 1.7 Some trees are protected in law. Prior to any works to trees being undertaken a check should be made with the relevant Local Authority to ensure that prior permission is not required with regard to Tree Preservation Orders (TPOs), Conservation Areas (CAs) or planning conditions that may affect the site or its trees.
- 1.8 Works to trees can also be regulated because of the risk of harming wildlife which may live on, or around them. Wild birds and bats are protected under the Wildlife and Countryside Act (1981) for example, and it is an offence to knowingly disturb their nests or roosts, while works to trees in proximity to badger setts may require a license.
- 1.9 Any tree works should be undertaken in accordance with British Standard 3998:2010 'Tree work - Recommendations'.

- 1.10 If hard surfacing needs to be installed close to trees the principles prescribed in BS 5837:2012 and modified specifications contained within Arboricultural Practice Note 12, 'Through the Trees to Development,' should be adopted.
- 1.11 My expertise is within the field of arboriculture and this report is limited to the arboricultural aspects of the site only. Any comments made with regard to other matters are from a lay person's point of view.

2.0 Survey method

- 2.1 Each tree was inspected from ground level, noting only external features and defects. The Visual Tree Assessment (VTA) method was used to carry out the tree survey; this is an industry standard, best practice method for assessing the health, stability and, to some degree, the amenity of urban trees. A tree may be physiologically healthy, with vigorous growth, but also exhibit mechanical defects and therefore be structurally weak, consequently presenting a risk. VTA involves an assessment of each tree's physiological and structural condition. It is carried out from ground level, with the aid of binoculars as necessary.
- 2.2 No climbing inspection was made of the crown, no excavation was made of the root system, and no specific decay detection equipment was used.
- 2.3 The following instruments were available to carry out the inspection:
- Diameter tape – To measure stem diameters
 - Nylon headed mallet – To sound trees for audible indications of decay
 - Steel probe – To indicate the presence and extent of cavities
 - Binoculars – To visually inspect above ground parts of the tree
- 2.4 No soil samples were taken and no tissue samples were collected.
- 2.5 The following publications have been used to inform this survey, and the recommendations which follow from it:
1. British Standard 5837:2012
'Trees in relation to design, demolition and construction – Recommendations.'
 2. British Standard 3998:2010 'Tree work - Recommendations.'
 3. 'Diagnosis of ill-health in trees' by R.G. Strouts and T.G. Winter.
DoE booklet Research for Amenity Trees No. 2, 1994.
 4. 'The body language of trees - A handbook for failure analysis'
by C. Mattheck and H. Breloer.
DoE booklet Research for Amenity Trees No. 4, 1994.