D F Clark Bionomique Ltd

Arboricultural Report

Land south of A127
Codham Hall
Brentwood Enterprise Park
Former M25 work site
Brentwood
Essex

Client - S J Padfield and Partners

20th September 2013
Our reference DFCP 2736

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Contents

Summary

The report is a supporting document for the promotion of the land inclusion in Brentwood Borough Council's Preferred Options consultation as a proposed employment allocation.

All significant trees and hedgerows on and adjacent to the site were surveyed. This report seeks to provide information in accordance with British Standard *BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations*.

With the exception of one oak on the edge of the woodland area none of the onsite individual or groups trees should be considered a constraint due to their poor condition or because of their small size. Trees within G4 and W1 are located off site but their root protection areas extend within the site boundary and consequently are a constraint to development. Buildings should be kept at least 6m from these tree lines although should hard surfaces be required within these areas this can be achieved using no dig construction methods.

There is opportunity to increase the quality of tree population on the site with new planting within and around the boundaries of any new development.

1.0 Introduction

1.1 **Brief:** We are instructed by Strutt & Parker on behalf of S J Padfield and Partners to carry out a survey of significant trees south of the A127 known as Brentwood Enterprise Park, Codham Hall, on the site of the old M25 works site, Brentwood and produce an arboricultural assessment to support a proposed development allocation as part of Brentwood Council's Preferred Options consultation as a proposed employment allocation.

The trees have been surveyed in accordance with the principles of British Standard *BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations* (The BS) at the feasibility stage (RIBA work stage A).

1.2 To provide a series of plans to assist the design team with the planning process.

1.3 To consider the arboricultural constraints and opportunities the site provides.

1.4 To work with other disciplines to ensure a holistic approach to the scheme.

2.0 Appraisal

2.1 **Site visit:** A site visit was undertaken on the 16 September 2013. The weather was clear and dry with good visibility.

2.2 **Site description:** The site is located south of the A127 at junction 29 of the M25. The site is bordered by fields to the south and east while a small wooded area runs along the boundary on the south west corner of the site.

The topography of the site generally slopes down from north to south in a gentle gradient, the exceptions being where artificial banks have been mounded to separate the site into sections.

The site is accessed either from the Junction 29 roundabout or from an access road bridging over the A127 from Codham Hall.

The map below shows the location of the site outlined in red.

3.0 Trees on site

3.1 **The trees:** There are nine trees and seven groups which are the subject of this report. All have been assessed and categorised in accordance with BS 5837:2012. In addition areas where young small trees have been planted have also been recorded on the plan but have not been included in the survey sheets as they are too small for inclusion under BS 5837:2012

Full details are found on the survey sheets at Appendix 2 and their locations are shown on the tree plans. The tree plan (DFCP 2736 TSP) shows locations and root protection areas.

Table 1

Tree	Comments
T1 Willow	A tree on the edge of the woodland with a limited safe useful life expectancy and therefore should not be a constraint to development and should not be retained within any new development.
T2 Oak	A tree on the edge of the woodland but within the site boundary. The tree has fair form and is in fair condition and should be retained within any development.
T3 Ash	A tree growing along a broken hedge line with extensive decay in its stem and a limited safe useful life expectancy and therefore should not be a constraint to development and should not be retained within any new development.
T4 Oak	A tree growing on the bank of the stream as part of a fragmented hedge line. Tree is of low quality and value with a restricted rooting zone and should not be a constraint to development but could be retained if desired.
T5 Oak	A tree growing on the bank of the stream as part of a fragmented hedge line. Tree is of low quality and value with a scrubby form and a restricted rooting zone. Tree should not be a constraint to development but could be retained if desired.
T6 Oak	A tree growing on the bank of the stream as part of a fragmented hedge line. Tree is of low quality and value with a scrubby form and a restricted rooting zone. Tree should not be a constraint to development but could be retained if desired.
T7 Oak	A tree growing on the bank of the stream as part of a fragmented hedge line. Tree triple stemmed from 1.5m and is of low quality and value with a scrubby form and a restricted rooting zone. Tree should not be a constraint to development but could be retained if desired.

Tree	Comments
T8 Oak	A tree growing on the bank of the stream as part of a fragmented hedge line. Tree is of low quality and value with a scrubby form, uneven crown shape and a restricted rooting zone. It should not be a constraint to development but could be retained if desired.
T9 Oak	An off site tree which is dead and leaning towards the site. This should not pose a constraint and the owner should be advised of their duty of care.
G1 Damson, Common Oak, Hawthorn, Sycamore, Field Maple	Off site trees growing on bank to the side of the A127. Trees do not pose a constraint to development as root protection areas do not extend into site.
G2 Ash, Hawthorn	Fragmented hedge line growing along watercourse between the depot and field. Low quality group should not pose a constraint to development.
G3 Ash, Hawthorn, Damson	Fragmented hedge line growing along watercourse between the depot and field. Low quality group should not pose a constraint to development.
G4 Common Oak, Grey Poplar, Lawson Cypress	Group of off site trees growing along boundary line behind bank. Trees should be retained as they are outside of site ownership. Trees present a constraint to development as root protection areas extend into site.
G5 Hornbeam, Hazel, Ash, Common Oak, Wild Cherry, Holm Oak	Group of small young trees growing on a bank between internal access road and recycling depot. Trees are of low quality and value and are easily replaced and as such do not pose a constraint to development.
G6 Hornbeam, Hazel, Ash, Common Oak, Wild Cherry, Holm Oak, Lawson Cypress, Crack Willow, Damson	Group of small young trees growing on a steep bank between the access road from Codham Hall and the recycling depot. Trees are of low quality and value and are easily replaced and as such do not pose a constraint to development.
G7 Damson, Common Oak, Hawthorn, Sycamore, Field Maple	Off site trees growing on bank to the side of the A127. Trees do not pose a constraint to development as root protection areas do not extend into site.
W1 Common Oak, Crack Willow, Damson, Ash, Grey Poplar	Off site woodland group of moderate quality and value. Trees should be retained within any development and pose a constraint to development as root protection area extends into the site.

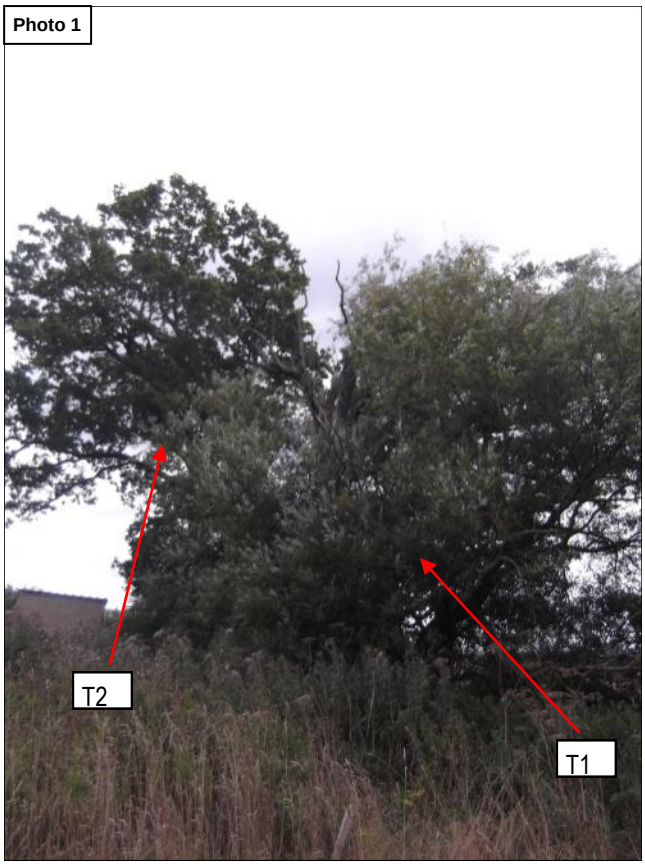
3.2 **Constraints and opportunities:** Of the onsite trees and groups only tree T2 should be a constraint to any future development. Trees T4-T8 are all oak trees of low quality and value growing along the watercourse. Under guidance in BS 5837:2012 these trees do not pose a constraint to development, however they are suitable to be retained within a scheme depending on the layout and construction methods.

3.2.1 The areas of small mixed species planting are located on artificial banks and bunds dividing the site into sections. These trees are recently planted and should not pose a constraint to development as they are too small to be included in a BS 5837:2012 survey.

3.2.2 Of the offsite trees only those in G4 and W1 pose any constraint to potential development. Building lines should be kept well away from the trees, at least 6m from the tree lines. Should hard surfacing be required within this area this can be achieved using no dig construction methods.

3.3.3 The currently low quality tree cover on the site could be increased as part of a new development. In addition to new tree planting on landscaped areas within the site, there may be the opportunity to provide new hedgerows and tree planting to the southern boundary of the site where it abuts the open farmland. Locally native species, appropriate to the environment should be used for boundary planting.

[1]*Root protection area (RPA) - A layout design tool indicating the minimum area surrounding the tree that contains sufficient rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. Assessed according to the recommendations set out in clause 4.6 of BS 5837. It is calculated by multiplying the radius squared by 3.142. Clause 4.6.2 of BS 5837 states that the RPA may be changed in shape, taking into account local site factors, species tolerance, condition and root morphology.*



T1 and T2 growing on site on edge of wooded area

T4 growing along watercourse with slightly scrubby

Tree T8– low quality scrubby tree.

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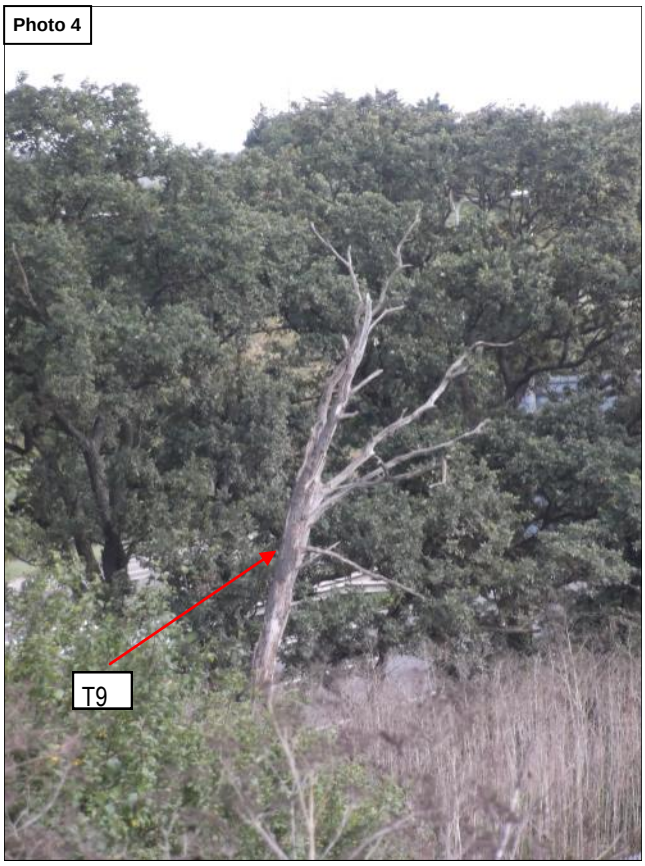
Photo 4



T9 off site dead tree leaning towards boundary

Photo 5

G1—off site trees growing along the edge of the A127

Photo 6

Off site trees in G4—deadwood in the crowns of the oaks

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Photo 7

Trees within W1

Photo 8

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View of the depot section of the site

4.0 Legislation

4.1 **Tree preservations orders:** According to information received from Brentwood Borough Council, there are no tree preservation orders (TPO) covering trees on or adjacent to the site and the site is not located within a conservation area. The tree protection status is correct at the time of report production but can be subject to change. It is therefore the responsibility of any persons undertaking tree works operations to the trees which are the subject of this report and in accordance with our recommendations, to undertake their own statutory tree protection checks with the local planning authority, to include TPO, conservation area and planning conditions prior to works commencing.

4.2 **Ecological constraints:** The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees. These could impose significant constraints on the use and timing of access to the site. It is the responsibility of the main contractor and tree surgery contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works. Unless competent to do so, the advice of an ecologist must be sought.

4.3 **Occupiers Liability 1957 and 1984:** The Occupiers Liability Act places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore this report includes recommendations within the tree tables for work required for safety reasons. 'Common sense risk management of trees (National Tree Safety Group 2012)' states that *'the owner of the land on which a tree stands, together with any party who has control over the tree's management, owes a duty of care at common law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property.'*

4.4 **Common Law:** This enables pruning back of the crown and roots of trees on adjacent land where they overhang neighbouring property, providing the work is reasonable and does not cause harm. This right does not override TPO and CA legislation.

4.5 **Felling licences:** A felling licence is required from the Forestry Commission to fell more than 5 cubic metres in a calendar quarter (providing not more than 2 cubic metres are sold). This equates to approximately 3 medium/2 large trees. Dangerous trees, pruning, small trees (less than 8cm girth at 1.3m), trees in gardens, churchyards and public open space are all exempt from the requirement. Work identified to facilitate planning permission is also exempt. An application typically takes three months to process.

4.6 **Hedgerow Regulations 1997:** These regulations protect 'important hedges' from removal. Important hedges are defined in the regulations. The regulations apply to land used for agriculture (as well as other uses), if it: (a) has a continuous length of, or exceeding 20m; or (b) it has a continuous length of less than 20m and, at each end, meets another hedgerow. The regulations do not apply to hedgerows within the curtilage of, or marking the boundary of a dwelling house. The hedgerows on site are species poor and in my opinion do not qualify as important in the context of the Regulations.

5.0 Conclusions

5.1 The site has a very low quality tree population and the majority of the trees are very small and therefore none should be considered a constraint to any new development. Only trees T2, G4 and W1 pose a constraint.

5.2 Boundary hedgerows and adjacent, offsite trees provide some useful screening to the site. The hedgerows are fragmented in places and although the species are well suited to the local landscape they would benefit from management and reinforcement planting.

5.3 The current low tree quality could be usefully increased by new tree and hedgerow planting as part of a new development. Locally native species, appropriate to the local environment, should be used for hedgerow and boundary tree planting with non-native, ornamental species restricted to internal landscaping if required.

5.4 Development would provide impetus to bring the hedgerows into active management and remove trees in poor condition and enhance the landscape value.

Appendix one – key to tree survey sheets

Key to terms

T = Tree **G** = Group **H** = Hedge **S** = Shrub mass

Age Class:

NP = Newly planted.

Y = Young - an establishing tree that could be easily transplanted.

SM = Semi-mature - an established tree still to reach its ultimate height and spread and with considerable growth potential.

EM = Early mature - a tree reaching its ultimate height and whose growth is slowing however it will still increase considerably in stem diameter and crown spread.

M = Mature - a tree with limited potential for further significant increase in size although likely to have a considerable safe useful life expectancy.

OM = Over mature - a senescent or moribund tree with a limited useful life expectancy.

V = Veteran - a tree older than typical for the species and of great ecological, cultural or aesthetic value.

Dia: Diameter of stem in millimetres at 1.5m above ground level for single-stemmed trees or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

Stems: Numbers of stems or M/S = multi-stemmed.

Ht: Height in metres.

Ult ht: Ultimate height likely to be achieved for this tree in this location.

Cr ht 1: Height of first significant branch above ground level and direction of growth.

Cr ht 2: Height of canopy above ground level.

NSEW: Crown spread at the four cardinal points. Ø = average crown radius.

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BS cat: Category in accordance with Table 1 and section 4.5 of BS 5837.
U - Unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which it might be desirable to preserve.
A - High quality and value (non-fiscal) with at least 40 years remaining life expectancy.
B - Moderate quality and value with at least 20 years remaining life expectancy.
C - Low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150 mm.

A, B and C category trees are additionally graded into: 1) Mainly arboricultural values; 2) Mainly landscape values; 3) Mainly cultural values including conservation.

Cond: Physiological condition. G = good; F = fair; P = poor; D = dead.

Life exp: Estimated remaining contribution in years.

RPR: Root protection radius in metres based on stem diameter.

RPA: Root protection area. A layout design tool indicating the minimum area surrounding the tree that contains sufficient rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. Assessed according to the recommendations set out in clause 4.6 of BS 5837. It is calculated by multiplying the radius squared by 3.142. Clause 4.6.2 of BS 5837 states that the RPA may be changed in shape, taking into account local site factors, species tolerance, condition and root morphology.

CEZ: Construction exclusion zone. An area based on the RPA in m^2 identified by an arboriculturist, to be protected during development, including site clearance, demolition and construction work, by the use of barriers and/or ground protection fit for purpose to ensure the successful long-term retention of a tree.

Appendix two – tree survey sheets

Tree	Common Name	*Botanical Name*	Age	Dia (mm)	Stems	Ht	Ult Ht	Cr Ht	N	S	E	W	BS Cat	Life Exp	RPR	RPA	Comments	Recommendations
T 1	Crack Willow	*Salix fragilis*	M	350	1	8	9	1	3	3	3	3	U	<10	4.2	55	Low quality tree has lost the majority of its crown and major decay in stem.	Remove tree and retain root.
T 2	Common Oak	*Quercus robur*	M	450	1	12	14	1	3	4	3	5	B2	20+	5.4	92	Fair form but major deadwood in crown. High amenity value as growing on edge of woodland group.	Remove major deadwood.
T 3	Ash	*Fraxinus excelsior*	OM	500	1	6	7	0	2	2	2	5	U	<10	6	113	Low quality tree has lost majority of upper crown and has extensive decay in tear out wounds.	Remove tree and root.
T 4	Common Oak	*Quercus robur*	EM	400	1	8	10	0	4	6	6	6	C1	20+	4.8	72	Tree growing within hedge line along water course to south. Some deadwood in crown.	Remove major deadwood.
T 5	Common Oak	*Quercus robur*	EM	350	1	7	8	0	5	5	5	5	C2	20+	4.2	55	Tree growing within hedge line along water course to south. Some deadwood in crown. Slightly scrubby low form.	Remove major deadwood.
T 6	Common Oak	*Quercus robur*	EM	300	1	7	9	0	5	5	6	5	C1	20+	3.6	41	Tree growing within hedge line along water course to south. Low amenity value from outside site. Slightly low scrubby form.	No work s required
T 7	Common Oak	*Quercus robur*	EM	350	1	8	11	0.5	5	6	6	5	C1	20+	4.2	55	Tree growing within hedge line along water course to south. Low amenity value from outside site. Triple stemmed from 1.5m. Deadwood in crown.	Remove major deadwood.

Tree	Common Name	*Botanical Name*	Age	Dia (mm)	Stems	Ht	Ult Ht	Cr Ht	N	S	E	W	BS Cat	Life Exp	RPR	RPA	Comments	Recommendations
T 8	Common Oak	*Quercus robur*	EM	325	1	6	8	0	3	2	8	8	C1	20+	3.9	48	Tree growing within hedge line along water course to south. Low amenity value from outside site. Low scrubby form. Complex branch structure.	No works required.
T 9	Common Oak	*Quercus robur*	M	300	1	8	8	3	0	2	1	1	U	<10	3.6	41	Off site trees growing along side of a127. Tree is dead and leaning towards sites.	Contact owner.
G 1	Damson Common Oak Hawthorn Sycamore Field Maple	*Prunus domestica, Quercus robur, Crataegus monogyna, Acer pseudoplatanus, Acer campestre*	SM	90	1	4	10	0	1	1	1	1	C2	20+	1.1	4	Fragmented group of offsite trees growing along A127 slip road. Fair form and condition and providing screening to the site from the road.	No works required.
G 2	Ash Hawthorn	*Fraxinus excelsior, Crataegus monogyna*	EM	100	1	4	7	0	1	1	1	1	C2	20+	1.2	5	Trees growing between compound and field along watercourse forming hedge line. Fair form and condition. Low amenity from outside site.	No works required.
G 3	Ash Hawthorn Damson	*Fraxinus excelsior, Crataegus monogyna, Prunus domestica*	EM	100	1	4	7	0	1	1	1	1	C2	20+	1.2	5	Trees growing between compound and field along watercourse forming hedge line. Fair form and condition. Low amenity from outside site.	No works required.

Tree	Common Name	*Botanical Name*	Age	Dia (mm)	Stems	Ht	Ult Ht	Cr Ht	N	S	E	W	BS Cat	Life Exp	RPR	RPA	Comments	Recommendations
G 4	Common Oak Grey Poplar Lawson Cypress	*Quercus robur, Populus canescens, Chamaecyparis lawsoniana*	EM	400	1	9	13	0	3	3	3	3	C2	20+	4.8	72	Trees growing along boundary line forming hedge. Major deadwood in crowns especially in the oaks. Unable to fully inspect due to access.	Remove major dead-wood.
G 5	Hornbeam Hazel Ash Common Oak Wild Cherry Holm Oak	*Carpinus betulus, Corylus avellana, Fraxinus excelsior, Quercus robur, Prunus avium, Quercus ilex*	Y	75	1	3	9	0	1	1	1	1	C2	20+	0.9	3	Young trees in dense group growing on bank between access road and recycling yard. Fair form and condition with no major defects.	No works required.
G 6	Hornbeam Hazel Ash Common Oak Wild Cherry Holm Oak Lawson Cypress Crack Willow Damson	*Carpinus betulus, Corylus avellana, Fraxinus excelsior, Quercus robur, Prunus avium, Quercus ilex, Chamaecyparis lawsoniana, Salix fragilis, Prunus domestica*	Y	75	1	3	9	0	1	1	1	1	C2	20+	0.9	3	Young trees in dense group growing on slope down from access road to self storage yard. Fair form and condition with no major defects.	No works required.
G 7	Damson Common Oak Hawthorn Sycamore Field Maple	*Prunus domestica, Quercus robur, Crataegus monogyna, Acer pseudoplatanus, Acer campestre*	SM	90	1	4	10	0	1	1	1	1	C2	20+	1.1	4	Fragmented group of offsite trees growing along A127 slip road. Fair form and condition and providing screening to the site from the road.	No works required.
W 1	Common Oak Crack Willow Damson Ash Grey Poplar	*Quercus robur, Salix fragilis, Prunus domestica, Fraxinus excelsior, Populus canescens*	M	400	1	12	13	0	3	3	3	3	B2	20+	4.8	72	Woodland block on edge of farm land. Deadwood in crowns but high amenity value.	Remove major dead-wood.

Appendix three – tree survey plan

DFCP 2736 TSP

See attached plan

Appendix four – tree constraints & opportunities plan

DFCP 1389 TS & OP

See attached plan

Appendix five – contacts and references

Contacts table			
Name	**Company**	**Position**	**Tel. No.**
James Firth	Strutt & Parker LLP	Senior Planner	[redacted]
Christopher Padfield	S J Padfield and Partners	Client	C/O Strutt and Parker LLP
Sharon Hosegood	D F Clark Bionomique Ltd	Managing Director	[redacted]

Reference documents:

- BS 5837:2012, Trees in relation to design, demolition and construction - Recommendations
- BS 3998:2010 Tree work – Recommendations
- 'Tree Roots in the Built Environment' *(DCLG - Jack Roberts, Nick Jackson & Mark Smith)*
- Principles of Tree Hazard Assessment and Management *(DTLR - David Lonsdale)*
- Tree Preservation Orders - A Guide to the Law and Good Practice - DETR
- National Joint utilities Group (NJUG). Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, Issue 2. London: NJUG, 2007
- Topographical plan 15133108

Survey methodology: The trees were surveyed from ground level without detailed investigations. All trees with a trunk diameter of 75mm or above[2] were surveyed. All dimensions were estimated unless otherwise indicated. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS 5837 and includes species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C) to reflect its suitability as a material constraint on development.

[1]BS 5837 recommends that in most circumstances all trees over 75mm stem diameter should be included in a pre-planning land and tree survey.

Appendix six – specific report caveats

Specific report caveats:

- The survey was based on a drawing provided by the client.
- No internal diagnostic equipment was used other than a sounding mallet and probe.
- The survey is concerned solely with arboricultural issues.
- Any work with trees will discharge the due diligence requirements of all relevant wildlife and countryside legislation.
- Trees are dynamic living organisms whose health and condition can change rapidly. Any changes to the tree or conditions close to the tree may change the stability and condition of the tree and a further examination would be required and may affect the validity of this report.
- This report is valid for 12 months.

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D F Clark Bionomique Ltd

S J Padfield and Partners

24th September 2013

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Checked by

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Managing Director