

Benugo

Fields Bar & Kitchen

Arboricultural Impact Assessment

Stage 1 Arboricultural Report

Lincoln's Inn Fields, London

856047

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment.

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1 INTRODUCTION

1.1 General

This report details survey of trees on land at Lincoln's Inn Fields. The work was commissioned by Benugo in May 2015 and carried out by Luke Hawke of RSK on Friday 12th June.

Trees were inspected from ground-level without the use of specialist equipment, and inspection was restricted in a number of instances where trees were on third party land.

1.2 Purpose of the Report

The survey was carried out in connection with a proposal to extend part of Fields Bar and Kitchen. The aim of the survey was to undertake a walk over to identify trees within and adjacent to the site that are likely to pose a constraint to development, using criteria outlined in *BS5837:2012 - Trees in Relation to design, demolition and construction-Recommendations*. Trees not judged to pose a constraint did not have data collected at this stage. The report provides all information gathered during the survey, including a discussion of the constraints and potential mitigation/management options.

1.3 Site Context

1.3.1 General

The site is approximately one mile north east of London city centre, located within Lincoln's Inn Fields, a typical London park with open grassed areas, benches, an abundance of trees and formal shrub beds; the park is approximately 3 ha. The survey area is a small portion of this park located to the western extent of Fields Bar & Kitchen. Surrounding the park are roads and buildings typical of London. Further afield are Holborn and Covent Garden.

1.3.2 Soil

British Geological Society data indicate that the survey area is on London Clay bedrock, with Hackney Gravel superficial deposits¹. This is only a best estimate as no soil samples were taken or lab analysis carried out.

1.3.3 Protected Species

Mature trees can be used by birds and bats. All species of bat and nesting birds are protected in the UK by *The Wildlife and Countryside Act 1981* (as amended), extended by the *Countryside and Rights of Way Act 2000*. If the presence of a legally protected

¹ <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

species is suspected whilst undertaking any tree work, the task should be halted immediately and appropriate advice sought from a suitably qualified ecologist.

Although features suitable for roosting bats or nesting birds may have been noted this report is not intended to assess the suitability of trees for protected species.

1.4 Statutory Designations

Trees can be afforded statutory protection in a number of ways, including;

- Tree Preservation Orders;
- planning conditions,
- Felling Licences; and
- being in a designated Conservation Area.

Protected trees can only be removed or pruned if permission is granted either as part of a planning permission, or if a separate application is made to the Local Authority (or the Forestry Commission).

The nature of any protection afforded to these trees has not been investigated as part of this report.

1.5 Root Protection Area (RPA)

To ensure that a tree is not harmed by development activities, a root protection area is calculated. BS5837 defines the root protection area as *'the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability'*. The root protection area is usually enclosed by a construction exclusion zone for the duration of works.

1.6 Supplied Documents

The following drawings were supplied by Benugo:

- Current site plan (1567.01.1_extension_location.pdf)
- Proposed extension (081.01 .1 GA.PDF)

2 METHOD

2.1 General

All trees and tree groups inspected were categorised using the British Standard BS5837:2012 and the attached Tree Constraints Plan (Figure 1) shows the indicative tree positions, numbers and retention categories. A schedule of the trees is included in Table 1 and Table 2, which include species, physiological and structural condition, age, recommendations and retention values.

The survey followed the method described in Appendix 1 and follows guidance in BS5837:2012, with the life expectancy and condition of each tree and group informing its suitability for retention.

2.2 Tree Categorisation

Trees were categorised in terms of the tree's useful life expectancy and condition as summarised below. Full details of categorisation criteria are given in Appendix 2. Each category has three sub-categories relating to arboricultural (1), landscape (2) and cultural/conservation (3) qualities. Trees that have been categorised as A, B or C should be considered in the planning process whereas trees categorised as U are not a consideration in the planning process; these are likely to be lost in the short term due to physiological or structural defects.

Table A. Summary of Tree Categories

BS5837:2012 Categories	Definitions	Retention implications to a site
Category A (marked light green on the TCP*)	Trees of high quality and value able to make a substantial contribution to the site.	Every effort should be made to retain trees and amendments to a proposed scheme should be identified in preference to tree removal.
Category B (marked mid-blue on the TCP)	Trees of moderate quality and value able to make a significant contribution to the site.	Where possible amendments to a proposed scheme should be considered in preference to tree removal.
Category C (marked in grey on the TCP)	Trees of low quality and value in an adequate condition until new planting can be established, trees with impairments downgrading them from A or B category OR young trees with a stem diameter of less than 150mm.	The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.
Category U (marked in dark red on	Trees that have limited condition that will fail or die within 10 years and/or should be removed for reasons of arboricultural best practice	Not a material consideration in the planning process but may have other benefits

the TCP)		
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* TCP = Tree Constraints Plan – Figure 1

2.3 Distinction between Individual Trees and Tree Groups

Trees have been recorded as individuals or as groups. BS5837:2012 sets out the description of a group as follows: *“The term “group” is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture), in respect to each of the tree subcategories.”*

Where a tree in a group has characteristics that distinguish it from the rest of the group it is generally recorded as individual. Such trees may include, but are not limited to, veteran trees, trees with important defects, and specimen trees.

2.4 Constraints

The trees were viewed from ground-level and from within the site boundary only. The trees were inspected using the Visual Tree Assessment method (Mattheck and Breloer 1994²). Detailed inspections including decay detection, soil assessment or aerial inspections have not been carried out.

This report is principally concerned with trees in relation to the proposed development. Although obvious structural defects and the condition of trees have been noted, this survey was not undertaken with health and safety in mind, and a full hazard assessment was not carried out.

Trees are living organisms and their health and condition is not static and so findings and recommendations in this report are only valid for one year. The health and condition of the trees may also change with other factors such as extreme weather conditions or development work.

² Mattheck, C. Breloer, H. (2003) *The Body Language of Trees, A handbook for failure analysis*. The Stationary Office

3 RESULTS

3.1 Summary

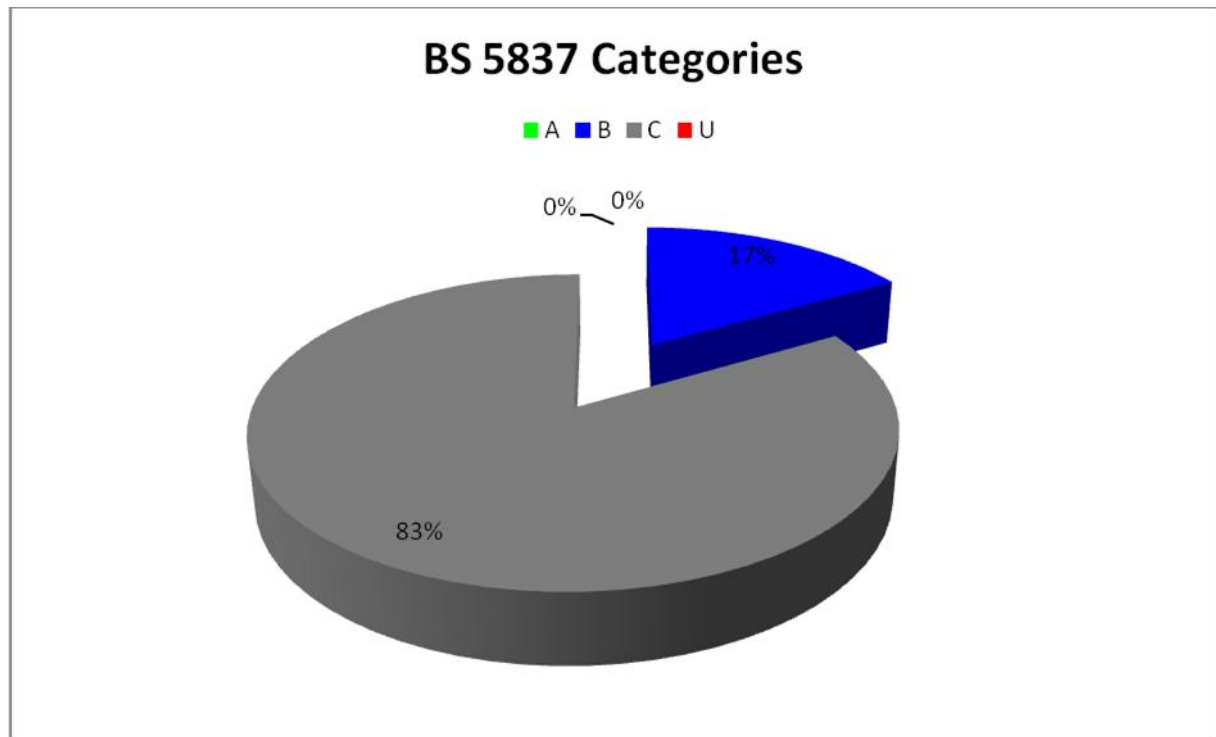
Six trees were surveyed as they were deemed most likely to be affected by the proposed extension. As so few trees required survey there was a limited range in species diversity and age; five Holly (*Ilex aquifolium*) and one Red Horse Chestnut (*Aesculus x carnea*) were surveyed. All Holly were early mature, and the Red Horse Chestnut was fully mature.

Chart A. Summary of Tree Species



The chart below shows the distribution of BS 5837 categories recorded on site. There is one category B tree and five category C trees. There were no category A or U trees recorded. Further details on the individual trees and the tree groups can be found in *Section 6. Table 1. Tree Survey Data*.

Chart B. Summary of Tree Categories



3.2 Condition

The Red Horse Chestnut was in good condition with the five Holly being only in fair condition.

The reason for the Holly trees to be in fair condition is because they have historically been topped (the removal of most of the canopy through indiscriminate cutting through the main stem). If the re-growth is left without continued management it can break away from the stem leaving large wounds and so reducing life expectancy. The majority of them also have stem wounds although the decay extent is limited.

The Red Horse Chestnut was in good condition physiologically with a good healthy canopy. However soil erosion has resulted in exposed roots and some minor root damage.

All trees are growing in compacted ground conditions which can reduce the amount of water and gaseous exchange, resulting in a decline in health. Details of all trees can be found in Table 1.

3.3 Amenity Value

The trees are located in an inner city park next to the Fields Bar and Kitchen, a busy restaurant used all day by members of the public. Therefore the trees here provide visual amenity value to all those using this area. They help to break up the appearance of the restaurant and allow it to blend in the park. The trees are also visible from the street and so this adds to the visual benefits they are providing.

In addition to visual amenity value, the trees also provide shelter and shade to park users helping to create a tranquil environment that in combination with the other trees of the park is a cooler place to be on hot days. This particularly applies to the large Red Horse Chestnut as it has a large spreading canopy that helps cast a cooling shadow.

4 CONCLUSIONS

4.1 General

The Tree Constraints Plan (*Figure 1*) gives an indication to the restrictions posed on the site by the canopy of the trees and their Root Protection Areas (RPA). This should inform the design process for the proposed development: The Category A and B trees should influence the design of the development in favour of their retention. Works should not take place within the RPA of retained trees, but where this is unavoidable; no-dig methods should be used.

It would be possible to accommodate a development of the site whilst retaining a number of trees without impacting on their RPAs. There is also plenty of scope for replacement planting if tree removals become necessary to facilitate any development.

4.2 Design and Planning

4.2.1 Arboricultural Impact Assessment (Stage 2)

Once the design is in place, an arboricultural implication assessment can be prepared to comment on the proposed design, with the aim of highlighting and, where possible, mitigating any tree issues that could otherwise delay the planning application.

4.2.2 Arboricultural Method Statement (Stage 3)

Once the design is finalised and before construction takes place, an arboricultural method statement (AMS) should be compiled detailing the location and nature of protective fencing, signage and other protection measures. All site operatives must be made aware of the nature of the protection detailed in the AMS and it should remain in place throughout construction.

5 TABLES, FIGURES AND APPENDICES

TABLE 1

TREE SURVEY DATA

Tree Survey Data





Type	Species	Age	Diameter (mm)	Height (m)	North (m)	East (m)	South (m)	West (m)	Condition	General Comments	Life Exp	BS. Category	Root Protection Radius (m)	RPA (m2)
T1	Ilex aquifolium (Holly)	EM	397	12(2)	3	4	4	2	Fair	Tree located 4m N from building corner. Double stem from ground, minor ivy coverage, both main stems have been previously topped.	20+	C1	4.76	71.19
T2	Ilex aquifolium (Holly)	EM	230	8(4)	2	1	2	2	Fair	Tree located 4m W from T1. Single stem with minor damage at base and some epicormic growth. Bifurcate at 4.5m. Previously topped	20+	C1	2.76	23.93
T3	Ilex aquifolium (Holly)	EM	310	9(4)	3	3	3	3	Fair	Tree is 4m to the W, single stem with minor epicormic. Tree also previously topped. Tree has lean to south east	20+	C1	3.72	43.48
T4	Ilex aquifolium (Holly)	EM	230	8(2)	1	1	1	3	Fair	Single stem, some epicormic and basal damage. Previously topped. Leaning to the west. Tree is 3m sw of t3	20+	C1	2.76	23.93
T5	Ilex aquifolium (Holly)	EM	290	9(3)	3	1	1	3	Fair	Single stem with minor epicormic growth. Previously topped	20+	C1	3.48	38.05
T6	Aesculus carnea (Red Horse Chestnut)	M	800	16(4)	6	4	5	7	Good	Soil erosion around base leading to exposed roots with some damage. Tree is co dominant from 3m, some included unions. Some pruning wounds	40+	B1	9.6	289.57

FIGURE 1

TREE CONSTRAINTS PLAN



Legend

-  Tree BS5837 Category B
-  Tree BS5837 Category C
-  Root Protection Area
-  Tree or tree group number



Rev.	Date	Amendment	Drawn	Chkd.	Appd.
—	—	—	—	—	—



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Client
BENUGO

Project Title
Fields Bar and Kitchen

Drawing Title
TREE CONSTRAINTS PLAN

Drawn LH	Date 040915	Checked LH	Date 040915	Approved LH	Date 040915
Scale	Orig Size A3	Dimensions METRES			
Project No. 856047			Drawing File —		
Drawing No. —					Rev. —
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APPENDIX 1

METHOD

General

- On site data was recorded onto site copies of forms.
- The site data was transposed in the office into an MS Access database. Individual tree numbers and locations were plotted to a topographical survey showing tree positions. In instances where trees were not shown on the topographical survey tree positions were estimated.
- The data recorded includes:
- Height - data gathered using a Suunto optical clinometer PM - 5/1520. Where access to the tree was not possible the Heights were estimated.
- Diameter - measurements taken at 1.5 metres above ground level (complying with requirements for BS5837). Where multiple stems occurred below 1.5m the measurement was taken as the point immediately above the root flare. Girth data was gathered using a metric diameter tape, callipers or estimated when no access.
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan
- Tree condition - judged visually using the guidelines produced in the report. The condition is indicated with the appropriate colour on the plan found in the report. (see Figure 1)
- Age class - estimated from an examination of the tree in question.

Age Classification

The following classification is employed:

Y - Young: Trees estimated to be under ten years old.

SM - Semi Mature: Trees yet to attain mature stature and estimated to be up to 25% of attainable age.

EM - Early Mature: Almost full height, seed bearing but crown still developing. Estimated to be up to 50% of attainable age.

M - Mature: Tree has reached full height and crown spread for species, seed bearing and over 50% of attainable age.

OM - Over Mature: Full size but in decline, crown retrenchment, small leaf size and poor extension growth. Veteran features may be present.

Estimated Remaining Contribution in Years

The estimated remaining contribution in years is an estimate based on currently known factors of the possible remaining life of the tree as an asset. Clearly, it is impossible to predict changes in condition which may occur in the future and this reflects what is considered reasonable under existing circumstances, the following classification is employed:

Category U: Death or removal is likely within less than 10 years

Category C: Death or removal is likely within 10-20 years.

Category B: Death or removal is likely within 20-40 years.

Category A: Death or removal is likely beyond 40 years

The estimated remaining contribution in years will be dependent on the interaction of the typical longevity of the species, its current age and condition with prevailing environmental factors. The estimated remaining contribution in years also dependent on future tree management that can extend useful life in some instances.

Tree Condition

The tree survey assessed the individual condition of all trees identified on the site. The assessment of condition is based on a visual and professional view.

The categories considered for Physiological Condition are good, fair, poor and dead.

Structural Condition is also commented on and this will include such items of presence of decay and physical defects.

Trees are living organisms and their condition can change rapidly in response to environmental variables. Condition remarks refer to the date of survey and cannot be assumed to remain unchanged. While there is no such thing as a safe tree, regular inspection of trees is recommended to reduce the foreseeable risks associated with trees. There is currently no published guidance from the UK insurance industry on the frequency of tree inspections. In the German courts a bi-annual routine inspection is normally expected for older street trees, giving an indication of the rapidity of change in condition that can occur.

Preliminary Management Recommendations

Recommendations are given where it is felt by the arboriculturist that further investigations are required due to suspected defects and work recommendations.

Tree Categorisation Using BS 5837 Methodology

The trees surveyed were categorised using the method explained in BS5837 Trees in Relation to Construction 2012. This method categorizes individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan.

Groups are identified as those trees forming a single arboricultural feature with trees that provide companion shelter, are avenues or screens or cultural.

Initially the surveyor will determine if the tree should be regarded as a U category tree. U category trees are those that are low value trees that have little future due to physiological and structural condition.

Other trees are graded A, B or C. The initial category should reflex the trees value in making an important contribution to the amenity of the site over a period of time. The higher the category the longer the perceived time period.

A sub category is included 1, 2 or 3. This sub category reflects the type of value the surveyor feels the tree presents in regards its value to 1 – arboricultural, 2 – landscape, 3 – cultural or conservation.

The cascade chart used is included as Appendix 2 of this report.

APPENDIX 2 - BS5837:2012

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those 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	<ul style="list-style-type: none">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 declineTrees 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 <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>			See Table 2
	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)	See Table 2
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	See Table 2
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	See Table 2