

Tree Survey and Impact Assessment

*for land at
Templar House
81-87 High Holborn
London
WC1V 6NU*

DP9 Ltd
100 Pall Mall
London
SW1 5NQ

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9904-KC-XX-YTREE-TreeSurvey-and-ImpactAssessmentRevA

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Document history

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1.0 Introduction

- 1.1 This tree survey sets out the information about trees to inform the planning process about the quality of trees on site. Following the tree survey the information is extended to consider the impact to them from the proposed development and how construction may proceed whilst ensuring trees are successfully retained.
- 1.2 In this report we consider the outline proposals for residential and commercial development. We consider those proposals in relation to the survey of trees we conducted as part of the site analysis.
- 1.3 High Holborn is an arterial road that connects the city of London with the west end.
- 1.4 Templar House, 81-87, is on the northern side of the road and has seven storeys. The ground floor comprises a number of retail units with the remainder above being office accommodation.
- 1.5 There is vehicle access from Eagle Street on the northern side of Templar House.
- 1.6 The red line plan provided indicates a proportion of the High Holborn pavement, and that of Eagle Street, is within the demise of Templar House.
- 1.7 There is a tree in the southern side of Templar House, sitting centrally within the overall pavement, that appears to within the red line. However this needs to be confirmed as it may be under local highway authority management.
- 1.8 We have checked online for records of Tree Preservation Orders and Conservation Areas applicable to the site. The online portal of Camden Borough Council does not hold records of Tree Preservation Orders or Conservation Areas. These records are not always comprehensive or reliable therefore, prior to undertaking any tree works, a formal enquiry with the Council should be made.
- 1.9 Nationally adopted guidance has been followed in the preparation of this report. *BS5837:2012: Trees in relation to design, demolition and construction – Recommendations* sets out a structure approach to considering trees during the development process. Guidance is given on the surveying of trees, the protected space that should be allocated to trees, what elements may give rise to harm to trees and what techniques can be deployed to minimise harm.

- 1.10 Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection. We recognise the need to integrate with other disciplines to achieve a balanced approach to development proposals.
- 1.11 We set out how our key elements interact with others at Appendix 1 of this report. The appendix provides comprehensive information about the stages of providing tree information within the planning process.
- 1.12 Further explanatory notes about tree survey information are given in Appendix 2.

2.0 Tree survey

- 2.1 The objective of this tree survey is to assess the significant trees and woody vegetation on the site to obtain dimensions, assess their quality and evaluate their condition to provide sufficient information to enable decisions to be made on planning aspects of the site and its potential development.
- 2.2 The tree survey:
 - 2.2.1 was conducted on the 20 November 2017 by Andrew Poynter BSc (Hons), FARborA, MICFor, MCIHort from ground level, in accordance with the guidance in British Standard BS5837:2012 *Trees in relation to design, demolition and construction – Recommendations*;
 - 2.2.2 is intended for planning purposes only;
 - 2.2.3 is not intended for the detailed design of foundations (further information upon vegetation can be provided upon request);
 - 2.2.4 is not a detailed health and safety condition survey of trees;
 - 2.2.5 recommends only preliminary works. Tree works required to achieve the scheme of development will be specified as part of a later stage;
 - 2.2.6 places reliance on the topographical survey.

- 2.3 Details of each tree are recorded in the Schedule of Trees at Appendix 3.
- 2.4 Site soil investigations have not been conducted. The (online) 'Geology of Britain Viewer' that contains British Geological Survey materials © NERC [2017] reveals the following soil information:
- 2.4.1 Bedrock geology: London clay formation (clay, silt and sand).
- 2.4.2 Superficial deposits: Lynch Hill gravel member (Sand and gravel).
- 2.5 Survey information is used to prepare the constraints posed by trees on development. These constraints are shown on the Tree Constraints Plan. The Plan shows root protection areas prescribed by the guidance within BS5837 paragraph 4.6.2 and adjusted where appropriate as recommended in subsequent paragraph 4.6.3. The root protection area (RPA) is the minimum extent of rooting required to sustain the tree.

3.0 Application of survey information

- 3.1 Trees place constraints on sites but they also provide opportunities.
In order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of site layout design should be to avoid the RPA. Ideally, structures should be outside the root protection area to provide working space for construction however protection measures can be taken if such clearance, in isolated cases, is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

- a) Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

- b) Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods.
- c) Service runs that cannot be routed outside the root protection area(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable. Offsite provision may be considered in some circumstances but this will require negotiation with the local planning authority.

4.0 Assessment of impact upon trees

- 4.1 This assessment will consider the impact upon trees of implementing the proposals shown on the drawings listed below

Table 1 - List of drawings referred to in this assessment

Originator	Drg No	Title	Scale
ASTUDIO	TH-AS-A-CP-A-PL-00-SI-0700 Rev P2	Ground Level Plan	1:?? @ A1
Keen Consultants	9904-KC-XX-YTREE-TCP01Rev0	Tree Constraints Plan	1:100@A1
Keen Consultants	9904-KC-XX-YTREE-TPP02Rev0	Tree Protection Plan	1:100@A1

- 4.2 Site proposals considered in this application include:
 - 4.2.1 Retail and office space along with residential dwellings
 - 4.2.2 Footpaths, parking and other hard surfaces
 - 4.2.3 Utilities and services
- 4.3 In outline, the proposals retain the prominent street tree on High Holborn.

Impact of buildings

- 4.4 The proposed building retains the existing basement, and ground floor building outline, hence no special measures are required for this construction. The basement extension is below and set back from the current extension, consequently there is unlikely to be any rooting within this area given the overburden.
- 4.5 There is currently good separation between the tree and the building and whilst the new building, from the first floor upwards, will be slightly closer there will be no need for excessive pruning to sustain the current relationship.

Impact of hard surfaces

- 4.6 The proposed layout of hard surfacing will simply replace the existing paving as necessary so no specialist measures are required

Impact of drainage and services

- 4.7 The proposed drainage and services are located outside of root protection areas and require no specialist measures for their installation.
- 4.8 No other installations, including mechanical and electrical equipment, are proposed in an area that would be of detriment to trees.

New tree planting

- 4.9 Whilst there is no opportunity for tree planting, retaining existing trees ensures a resource of trees in places where residents and visitors alike will enjoy multiple benefits provided by the tree stock. In so doing the tree stock will be able to withstand climate change, protecting and enhancing the resources of soil, air, water, landscape, amenity value, culture and biodiversity, and increasing the contribution that trees make to the quality of life. In that respect the proposals are in line with the very latest guidance, in terms of integrating trees with built form, contained in *Trees in the townscape: A guide for decision makers* produced by the Trees and Design Action Group.

Summary of impact on trees

- 4.10 The proposed development does not require the loss, or impact, the prominent street tree in High Holborn.
- 4.11 Extending the basement is remote form the active rooting area as the soil will be very heavily loaded.
- 4.12 Services and utility connections currently present will be reused.

Appendix 1

Introduction to key elements of tree information

Sustainable development requires the coordination between disciplines throughout the project, accordingly the package of arboricultural information supports the design process and follows through to construction ensuring effective tree protection.

Keen Consultants break the process down to coordinate with the key elements within both the RIBA Plan of Work (2013) and 'British Standard 5837:2012 Trees in relation to design, demolition and construction - Recommendations', this is set out in the table and explained below.

Figure 1 - Keen Consultants co-ordinated approach with cross references to key guidance.

Keen Consultants Tree Information	RIBA Stage	BS5837
Tree Survey ↓	Concept ↓	Feasibility ↓
Impact Assessment ↓	Developed design ↓	Proposals ↓
Method Statement ↓	Technical design ↓	Technical Design ↓
Site Monitoring	Construction	Demolition and construction

This cross referenced approach ensures trees are a material consideration and those to be retained will be safeguarded.

Tree Survey and Tree Constraints Plan

To inform the design and layout of the proposed development a tree survey has been undertaken to identify the size and quality of trees both within the site and immediately offsite. We have then used this information to prepare the Tree Constraints Plan drawing that shows the location of each tree, its size and the area around each tree that needs to be considered during the design process. Once prepared this information has been provided to the design team so that they know what constraints the trees pose.

Impact Assessment and Tree Protection Plan

During the design process the design team has consulted with the arboriculturist to ascertain if constraints may be breached, consider options emerging from the design and what spaces for new trees are needed.

Once the design was finalised an impact assessment has been prepared to accompany the planning application. The impact assessment demonstrates the proposals meet national and local planning policy and guidance. It demonstrates the benefits of the retained trees and incorporates new tree planting.

Another essential element of any application is the Tree Protection Plan.

Site Monitoring

Following the receipt of planning consent, it is a requirement that the installation of the protective barriers and ground protection are supervised, together with operations such as excavations or surfacing close to trees.

This varies according to the intensity of development near trees, the process is set out to ensure what is planned for in the Tree Protection Plan and method statement is delivered.

Appendix 2

Tree Survey Explanatory Notes

The survey of trees has been carried out in accordance with the criteria set out in Chapter 4 of *British Standard 5837:2012 Trees in relation to design, demolition and construction-Recommendations* (BS5837). The survey has been undertaken by the qualified and experienced arboriculturist detailed at Table 1 of this report and they recorded information relating to all those trees within the site and those immediately adjacent to the site which may be of influence to any proposals.

The results are recorded in the Schedule of Trees at Appendix 3.

Schedule of trees

Appendix 3 presents details of the individual trees, groups and hedgerows including heights, diameters at breast height, crown spread (given as a radial measurement of cardinal points from the stem), age class, comments as to the overall condition at the time of inspection, BS5837 category of quality and suitability for retention, and the root protection area information.

General observations particularly of structural and physiological condition for example the presence of any decay and physical defect and preliminary management recommendations have also been recorded where appropriate.

Details of the individual trees, groups and hedgerows

All trees were assessed for their quality and benefits within the context of proposed development in a transparent, understandable and systematic way.

Individuals

The default position is to record each tree as an individual for its unique contribution to the landscape

Groups and woodlands

Trees have been assessed as groups where it has been determined appropriate by the surveyor. The term group has been applied where trees form cohesive arboricultural features either aerodynamically, visually or culturally.

Hedges and shrub masses

We consider a hedgerow to typically comprise a line of trees or shrubs that currently is subject to, or has undergone, a pruning regime to contain its dimensions.

For the tree survey hedgerows and substantial internal or boundary hedges (including evergreen screens) have either been recorded in the Tree Schedule, including lateral spread, height and stem diameter(s), or indicated on the Tree Constraints Plan.

A tree survey in accordance with BS5837 does not assess hedgerows against *The Hedgerow Regulations 1997* or specifically from an ecological perspective, as such would be outside the scope of the British Standard assessment.

Shrub masses are collectives of woody plants, rather than trees, and are recorded where they are a significant feature of the site. They have either been recorded in the Tree Schedule or indicated on the Tree Constraints Plan.

Individual trees within groups, woodlands and hedges

An assessment of individual trees within the groups has been made where there has been a clear need to differentiate between them for example, in order to highlight significant variation between attributes including physiological or structural condition or where a potential conflict may arise.

BS5837 Categorisation

Trees have been divided into one of four categories based on Table 1 of BS5837, 'Cascade chart for tree quality assessment'. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).

Category U trees are those which would be lost in the short term for reasons connected with their physiology or structural condition. They are, for this reason not considered in the planning process on arboricultural grounds. Categories A, B & C are applied to trees that should be of material considerations in the development process. Each category also having one of three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural or conservation values accordingly.

Category (U)

Trees that have a serious irremediable structural defect such that their early loss is expected due to collapse and includes trees that will become unviable after removal of other category U trees.

Trees that are dead or are showing signs of significant, immediate or irreversible overall decline.

Trees that are infected with pathogens of significance to the health and/ or safety of other nearby trees or are very low quality trees suppressing adjacent trees of better quality.

Certain category U trees can have existing or potential conservation value which may make it desirable to preserve.

Category (A)

Shown green on Tree Constraints Plan: Trees that are considered for retention and are of high quality with an estimated remaining life expectancy of at least 40 years and with potential to make a lasting contribution. Such trees may comprise:

Sub categories

- 1) trees that are particularly good examples of their species, especially if rare or unusual, or are essential components of groups such as formal or semi-formal arboricultural features for example the dominant and/or principal trees within an avenue.
- 2) trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.
- 3) trees, groups or woodlands of significant conservation, historical, commemorative or other value for example veteran or wood pasture.

Category (B)

Shown blue on Tree Constraints Plan: Trees that are considered for retention and are of moderate quality with an estimated remaining life expectancy of at least 20 years and with potential to make a significant contribution. Such trees may comprise:

Sub categories

- 1) trees that might be included in category A but are downgraded because of impaired condition for example the presence of significant though remediable defects, including unsympathetic past management and storm damage.
- 2) 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.
- 3) trees with material conservation or other cultural value.

Category (C)

Shown grey on Tree Constraints Plan: Trees that are considered for retention and are of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm. Such trees may comprise:

Sub categories

- 1) unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
- 2) trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value or trees offering low or only temporary/transient screening benefits.
- 3) trees with no material conservation or other cultural value.

Devising BS5837 root protection areas

Default situation

The root protection area is a function of the stem diameter, it is multiplied by 12 to give a radius. For multi-stemmed trees the stems are combined to provide an effective diameter figure which is then multiplied.

Initially the root protection area should be plotted as a circle, and in many situation it remains a circle.

Influenced situation

Adjustments to the root protection area are made where pre-existing site conditions that would influence root distribution are present. Typically this will be buildings and retaining walls, lighter structures such a hard surfacing, sheds and garages generally do not have the same influence.

Ponds, rivers and watercourses will also influence root distribution as waterlogged soils are not conducive to root growth. Rainwater attenuation and ditches are likely to have a lesser impact if they are dry for significant periods.

Appendix 3

Schedule of Trees

*for land at
Templar House
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London
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Key to Tree Schedule

Column Heading	Explanation
Tree No.	Unique number corresponding with number on plan
Species	English names
Ht (m)	Height in metres
Branch Spread	Crown radius in metres to cardinal points of the compass
Stem diameters (cm)	All measurements conform to Annex C of BS 5837:2012 Single stem - Stem diameter in centimetres measured at 1.5m above ground level. Multi-stemmed tree with 2 to 5 stems – Diameter of each stem Multi-stemmed tree with more than 5 stems – Average stem diameter and number of stems
Height of crown clearance	Height in metres between the ground and underside of canopy
Height of first major branch and direction of growth	Height from ground level to base of first major branch and the approximate direction of growth
Abbreviations as suffix to a dimension	<i>Suffix 'e' denotes an estimated dimension.</i> <i>Suffix 'av' denotes an average dimension</i>
Age class	Age Class definitions: Y = Young S = Semi-mature E = Early mature M = Mature O = Over mature
Category grading (see Appendix A2 for detailed explanation) and Estimated remaining contribution (yrs)	Summary of BS 5837: 2012 categorisation: 1. Trees that do not warrant consideration for retention: U = 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. 2. Trees to be considered for retention: A1, 2 or 3 = trees of high quality and value (substantial contribution >40 yrs) B1, 2 or 3 = trees of moderate quality and value (significant Contribution >20 yrs) C1, 2 or 3 = trees of low quality and value (but adequate, ie >10 yrs or young trees – until new planting can be established)
Estimated remaining contribution	Useful estimated remaining contribution of the tree or tree group
Condition	Brief description including physiological and structural defects
Preliminary management recommendations	Describes current arboricultural requirement for the tree in its current context and should be undertaken as soon as reasonably practicable.
Root protection radius	Radius of minimum root protection area in metres calculated from section 4.6 and Annex D of BS5837:2012
Root protection area	Total area of minimum root protection area extrapolated from root protection radius

TREES AT TEMPLAR HOUSE, 81-87 HIGH HOLBORN, LONDON

Tree No.	Species	Ht (m)	Branch Spread (m)				Stem diameters (cm)						Height of crown clearance (m)	Height of first branch (m) and direction (compass point)	Age class	Category grading	Estimated remaining contribution (yrs)	Condition Physiological / Structural	Preliminary management recommendations	Root protection radius (m)	Root protection area sq.m	
			N	E	S	W	Single Stem	2-5 stems														More than 5 stems
								Stem 1	Stem 2	Stem 3	Stem 4	Stem 5										
1	London Plane	23	1	12	11	10	76							7	6E	M	B1	>20	3.4m from the building. Good overall condition with asymmetric crown form as a consequence of growing against the building. Good separation between the building and the crown. The southern side of the crown overhangs the road.		9.12	261