

Trees and Construction

BS5837 Tree Survey Assessment

Site: Hallfield Primary School, Westminster, W2 6JJ

Ref: 17455/A1

Client: 3BM



(Mail) 2nd Floor | 1 Hunters Walk | Canal Street | Chester | CH1 4EB

0333 123 7080 | info@indigosurveys.co.uk

www.IndigoSurveys.co.uk

Arboricultural Consultant (Author):	Arboricultural Consultant (Checked by):
Tony Banner <i>TechCert (ArborA), TechArborA</i>	Andrew Turnbull <i>FDS Sc MA ArborA</i>

- August 2019 -

TABLE OF CONTENTS

Chapter	Title	Page
1	Introduction	3
2	Site & Application Information	4
3	Findings & Recommendations	5 - 8
Appendices		
	Caveat	I
	Terms and Definitions	II
	Tree data table & Tree Constraints Plan	III
Revision	Description	Date
/	/	/

1. INTRODUCTION

1.1 **Instruction:** This advice has been prepared for 3BM (hereafter client) and is in respect of the tree related planning considerations at the Hallfield Primary School, Westminster, W2 6JJ (hereafter site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter BS5837).

1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenities by trees which are appropriate for retention.

1.3 **Scope of this advice:** This advice has been produced in accordance with BS5837 and is intended to demonstrate the site's realistic arboricultural constraints and assist with the design process. The objective is to systematically assess the site and provide suitable recommendations regarding the proposal's potential impact on trees and vice versa.

1.4 Following instruction the consultant surveyed the site on the 14th Feb 2024 where a site walkover and BS5837 tree survey were carried out. All trees on site and around the application boundary were surveyed from ground level and plotted as either an individual.

1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.

1.6 The survey data and site observations use the supplied topographical survey to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter TCP). The TCP and the tree survey data table are at Appendix III.

2. SITE INFORMATION & TREE ASSESSMENT

2.1 The site currently comprises an in-use school with associated access, parking, walkways and hard and soft play areas. The site is bound by Hallfield Estate road to the north, Porchester Gardens road to the south, Leinster Gardens to the east, Leinster Place to the south-east and Inverness Terrace road to the west. The site access is directly off Hallfield Estate road.

2.2 **Proposal:** The proposal relates to the installation of play equipment to the north west of the site as per plan P523 College Park Proposed Site plan.

2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site. These trees are deemed to be within potential impact distance of the site and construction area.

2.4 The trees -

2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A' Good, and 'B - moderate' being attributed to trees.

2.4.2 The BS5837 tree survey is a means of objective assessment and reflects the trees' condition, quality contribution, remaining life expectancy and spatial considerations (stem, crown and roots). On this basis and in order to consider the trees' accurate constraints, the survey data is used to illustrate the trees as the TCP. This has the crown extents for north, east, south and west, the stem diameter measurement, and the calculated root protection areas (hereafter RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.

2.4.3 An online check on Westminster Council's website confirmed the site is contained within a Conservation Area.

3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (17455_24/TCP/01).

3.2 General Considerations for Tree Retention / Removal

3.2.1 Based on the boundary line location/neighbour's site location of T3, T4 and T5, their retention and protection is to be assumed as part of the scheme. This is best achieved by avoidance whereby their crowns are avoided and their RPAs are accommodated by design.

3.2.3 The moderate quality 'B' category trees are noted as such due to their fair future potential and/or fair current amenity contribution. These should be retained and protected where possible as part of the site's development.

Whilst the retention and protection of 'B' category trees is recommended, the removal of some may also be mitigated. Subject to supplementary details for tree selection as part of a well delivered landscape scheme, proposals of this nature may then be accepted by the council. However, this will require higher grade larger nursery planting stock than that to mitigate the removal of 'C' category trees to provide a long term site enhancement.

3.2.4 The more notable trees, based on the individual prominence, lack of significant defects, current contribution and/or future potential, are categorised as 'A - high'. It is recommended that these trees be retained, protected and be clear of the proposal. This is best achieved by avoidance where their crowns and RPAs are accommodated in the design and layout.

3.3 Tree Protection

3.3.1 The design and layout of the site is to incorporate the essential components of retained trees (crown and rooting area) and provide a suitable level of clearance to allow for their long term safe retention, i.e. RPA protection and crown clearance as well as for any new tree(s) being planted.

3.3.2 Depending on the level of tree retention/removal, the protection methods for the retained trees is likely to vary. However, it is likely that a combination of construction restrictions be used with protective barrier fencing (to protect RPAs).

The process of site operations will be an important aspect to confirm by way of a construction layout plan, i.e. showing storage areas, parking, delivery area, access routes etc., all outside of RPAs or with a provision for ground protection. As a basis for tree protection the following points will need to be considered:

- Removal of all agreed trees and any agreed pruning works prior to works commencing by a suitably qualified arboricultural contractor;
- Induction of construction personnel regarding the exclusion of works (including access and storage) from the retained trees' RPAs;
- Secure temporary barrier fencing around the site to exclude the retained tree's crowns and RPAs from the working site;
- The storage of materials clear of all retained trees and conditions to ensure no contamination/run-off into soils in proximity to trees or on higher ground; and
- For the removal of existing structures and/or hard surfaces from RPAs the works to be undertaken separate to construction, manually and sensitively.

3.4 General Overview

3.4.1 The considerations for trees which are to be retained as part of the proposal need to be addressed in order to ensure their protection. This is to account for the potential impact on retained trees and their growing environment from the proposed development and vice versa (these are as follows).

Tree Works

Any trees which are to be removed should be well indicated to ensure that the retained trees are suitably protected. Hence, all trees which are to be removed are to be marked by a suitably qualified person (spraying the stems with a cross) prior to tree works.

Tree Crowns

Consideration is required for both existing and newly planted trees whereby the proposed construction should take account of trees reaching their full growth potential. It is always prudent to provide adequate clearance from a tree's current crown for future growth, i.e. to allow a tree adequate space to reach maturity without conflicts with new structures.

Root Protection Areas (RPA)

It is *sometimes* possible to undertake construction activities within the rooting areas of retained trees which requires greater attention to tree protection, foundation designs, phasing of works etc. If it is proposed to undertake works within these areas, more specific advice should be sought from a qualified arboriculturalist with a view to assessing the feasibility of said proposal and forming a suitable method statement.

Demolition/Excavation Works

Any removal of existing built structures (including stairways, small outbuildings, retaining walls etc.) or hard surfacing will need to be undertaken with great care where this occurs within or near to the anticipated rooting areas of retained trees.

Said works should adhere to the RPA restrictions, be undertaken manually with hand held non mechanical tools and ensure that existing ground levels are retained.

Hard Landscape Works

As with previously mentioned arboricultural restrictions to demolition/construction, the proposed works should avoid retained trees' RPAs. However, where ground works are proposed within RPAs, construction methods (for hard surfacing, walls etc.) should retain the existing ground levels, be undertaken sensitively and using a no dig design.

Conversion of soft surfaced areas within RPAs to hard surfaced walkways, parking areas etc., will need to utilise a no-dig product to ensure no negative impact on the tree roots and/or growing conditions.

- 3.4.2 For any proportion of tree removal, new tree planting should be integrated into a landscape scheme. The new trees should be of a suitable volume, species, scale, in suitably prepared planting locations with adequate space for future growth and development and enhance the site's long term amenity contribution.

Planting Species and Volume

New tree planting should incorporate a range of species, select mixed characteristics and take account of the availability of space, i.e. concentrate on selecting suitable scale species based on the ultimate growth extents.

The new tree planting should directly proportional to the volume and quality of trees to be removed.

Planting Specification

A detailed specification should be included within a landscape scheme (could form part of planning conditions). This should outline the proposed tree species, stock selection, location, planting process and ongoing maintenance (watering, mulch and pruning).

Planting Location

The new planting sites should take account of the future growth potential of the chosen species and should allow for the amenity space to be utilised, minimise the potential conflict with structures and facilitate the contribution to amenity from the site.

3.5 Additional Details

- 3.5.1 The surveyed trees have been subject to a detailed inspection and the arboricultural considerations detailed within this advice. The advice herein is intended to guide a suitable design in consideration for the site's valuable amenity assets.
- 3.5.2 Further to the above, the finer details of layout, design detail to accommodate trees and any proposed new tree planting should be illustrated within a landscape plan. This is to include the exact details of hard and soft landscape works, RPA sections (where surface works are proposed) and details of new tree planting location, species, stock selection, installation and maintenance; to be undertaken by the appointed landscape architect with the full support of the arboricultural consultant (where required).
- 3.5.3 Hence, further to the supply of the proposed site plan for the planning application, this will be reviewed as an arboricultural impact assessment (AIA) to inform arboricultural method statement (AMS) 'consideration'. Where this advice is accounted for, this will enable the arboricultural constraints to be managed effectively, i.e., phased works, tree protection fences etc.

This concludes our advice.

Caveat

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.

Appendix II

Terms and Definitions

“Arboriculturist” - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

“Competent Person” - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

“Topographical survey” - an accurately measured land survey undertaken to show all relevant existing site features. A method of carrying out topographical surveys is given in RICS specification Surveys of land buildings and utility services at scales of 1:500 and larger.

“BS5837 Tree survey” - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

“Tree categorisation method” - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

“Root protection area (RPA)” - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m². The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

“Arboricultural implications assessment” - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

“Arboricultural method statement” - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

“Tree protection plan” - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Appendix III

Data Table:	As appended (BS5837 Tree Survey Key & Table)
Tree Constraints Plan:	As appended (17455_24/TCP/01)
Scheme Overlay	As appended (17455_24/TCP/02)

TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

CLIENT: 3BM

PROJECT REF: 17455_24

SITE: Hallfield Primary School, Hallfield Estate, London, W2 6JJ

CONTACT: /

SURVEY DATE: 14 February 2024

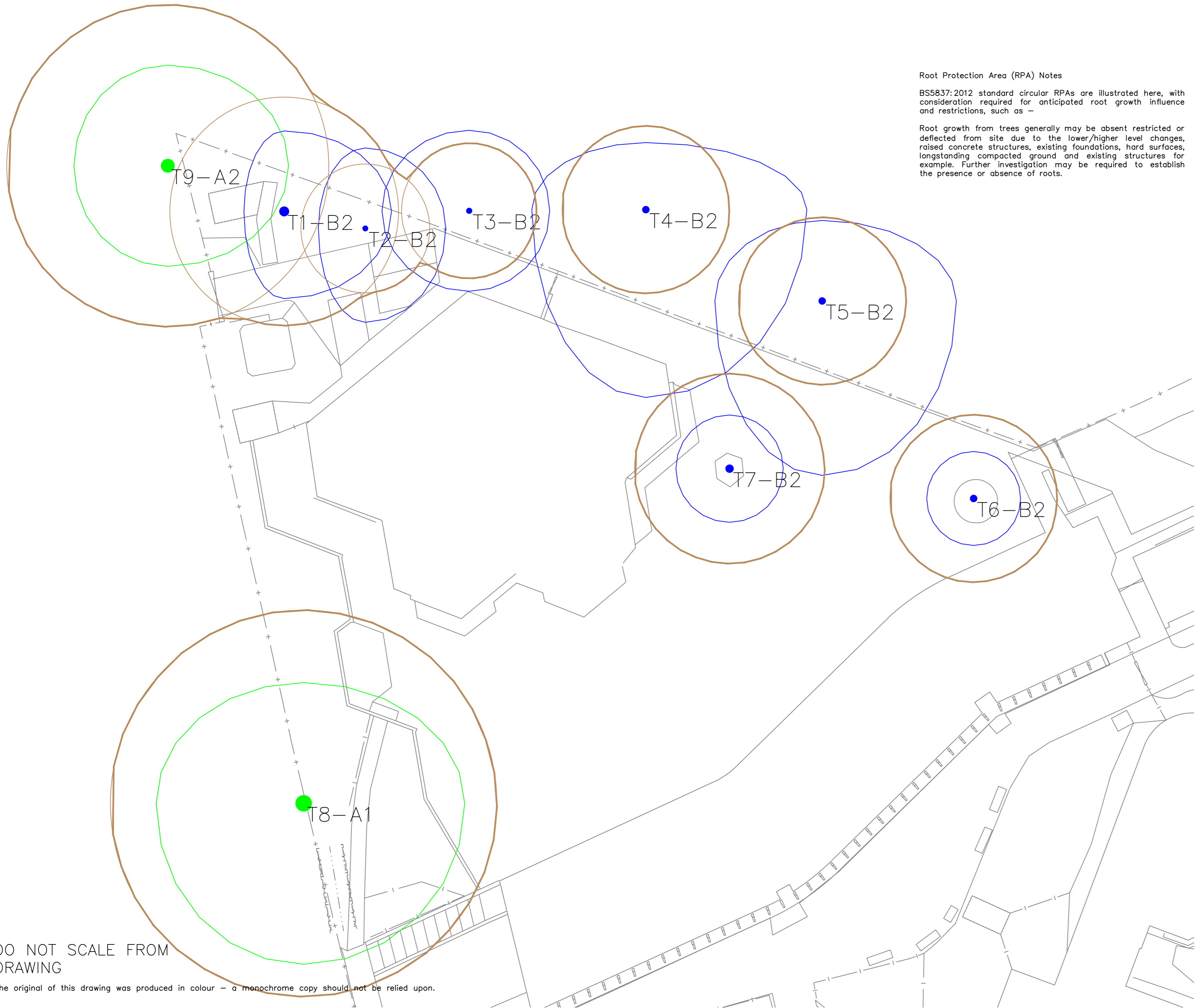
ARB CONSULTANT: Rod Benzies BSc MArborA

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T1	Sycamore; Acer pseudoplatanus; Aceraceae	M/OM	20+	6	6.5	8	3	710	8.5	5	4	Low/ Norm	20-40	Managed by crown reduction. Managed by crown lifting. Old pruning scars on stem, average occlusion rate. Growth affected by adjacent trees due to light competition. Set in landscape bed with tarmac within RPA. epicormic growth. Disruption to nearby landscape surfaces (minor)	B 2	Monitor tree condition
T2	Lime; Tilia (species); Tilaceae	M	20+	6	7	6	3.5	400	4.8	5	4	Low/ Norm	20-40	Managed by crown reduction. Managed by crown lifting. Old pruning scars on stem, average occlusion rate. Growth affected by adjacent trees due to light competition. Set in landscape bed with tarmac within RPA. Flush cut stem scars	B 2	Monitor tree condition
T3	Lime; Tilia (species); Tilaceae	M	20+	6	6	6	6.5	420	5.0	5	4	Low/ Norm	20-40	Managed by crown reduction. Managed by crown lifting. Old pruning scars on stem, average occlusion rate. Set in landscape bed with tarmac within RPA	B 2	Monitor tree condition
T4	Ash, Fraxinus spp	M	20+	5	14	12	8.5	520*	6.2	5	4	Low/ Norm	20-40	Managed by crown reduction. Managed by crown lifting. Old pruning scars on stem, average occlusion rate. Asymmetric unbalanced crown	B 2	Monitor tree condition
T5	Ash, Fraxinus spp	M	20+	6	13	10	8	520*	6.2	5	4	Low/ Norm	20-40	Managed by crown reduction. Managed by crown lifting. Old pruning scars on stem, average occlusion rate. Asymmetric unbalanced crown	B 2	Monitor tree condition
T6	Rowan; Sorbus aucuparia; Rosaceae	M	10	3.5	3.5	3.5	3.5	520*	6.2	3	2	Norm	20-40	Managed by crown lifting. Managed by crown reduction. Multistemmed from 1.7m. Inclusions in stem splay. Grafted specimen. Set in round open soil bed 1.2m radius. Tarmac within RPA	B 2	Monitor tree condition
T7	Lime; Tilia (species); Tilaceae	M	20+	4	4	4	4	590	7.1	4	4	Norm	20-40	Managed by crown lifting. Managed by crown reduction. Tarmac within RPA. Set in hexagonal bed 0.5m radius. Lime epicormic controlled by pruning	B 2	Monitor tree condition
T8	London Plane; Platanus hispanica; Platanaceae	M/OM	20+	9	12	12	11	1200*	14.4	4	4	Norm	40+	Set in round open soil bed 1.2m radius. Set in landscape bed opening to street. Co-dominant branch system. Managed by crown lifting. Managed by crown reduction	A 1	Monitor tree condition

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T9	London Plane; Platanus hispanica; Platanaceae	M/OM	20+	7.5	7.5	9	7	1000*	12.0	10	11	Norm	40+	Co-dominant branch system. Managed by crown lifting. Managed by crown reduction. Old pruning scars on stem, average occlusion rate. Set on street with pavement road in RPA	A 2	Monitor tree condition

TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
SPECIES	-	Genus, species and/or common name;
AGE	-	Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature);
HEIGHT (in m)	-	Approximate height of tree in metres;
CANOPY (in m) N - S - E - W	-	Approximate branch spread in metres of the four principal compass points;
STEM (in mm)	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;
RPA (in m)	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);
CLEARANCE (in m)	-	Crown clearance in metres above the adjacent ground level;
1ST BRANCH (in m)	-	Clearance in metres to first significant branch and direction of growth (where relevant);
VITALITY	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);
ESTIMATED REMAINING CONTRIBUTION	-	Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;
NOTES	-	Structural and physiological condition observations;
BS CAT.	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy); Standard retention category U : in such a condition that any existing value would be lost within 10 years; Standard retention category A : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years; Standard retention category B : moderate quality and value, in such a condition as to make a significant contribution of 20+ years; Standard retention category C : low quality and value, currently in adequate condition to remain until new planting could be established 10+ years; Standard retention sub-category, mainly due to: 1- Arboricultural values, 2- Landscape values, 3- Cultural values, including conservation;
MANAGEMENT	-	Preliminary management recommendations (as appropriate);
**	-	Within the survey schedule denotes an estimate



Root Protection Area (RPA) Notes

BS5837:2012 standard circular RPAs are illustrated here, with consideration required for anticipated root growth influence and restrictions, such as –

Root growth from trees generally may be absent restricted or deflected from site due to the lower/higher level changes, raised concrete structures, existing foundations, hard surfaces, longstanding compacted ground and existing structures for example. Further investigation may be required to establish the presence or absence of roots.

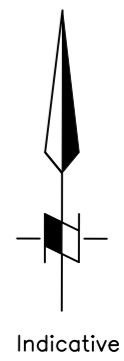
KEY

- ○ ○ ○ Tree Crown Spread
- Root Protection Area (RPA)
- ● ● ● Tree Stem
- T1 Tree No.
- Removed Tree

Tree Condition Category

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'



REV.	DESCRIPTION	DWN	CHK'D	DATE
------	-------------	-----	-------	------

CLIENT	3BM			
--------	-----	--	--	--

PROJECT	17455_24/A1 Hallfield Primary School, Hallfield Estate, London, W2 6JJ			
---------	--	--	--	--

TITLE	Tree Constraints Plan			
-------	-----------------------	--	--	--

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	20/02/2024	AT	20/02/2024			1-200



(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester, CH1 4EB
Telephone: 0333 123 7080 www.indigosurveys.co.uk

Drawing Number	17455_24/A1/TCP/01	A2
REV.		

THIS DRAWING IS CONFIDENTIAL AND MUST NOT BE REPRODUCED WITHOUT THE CONSENT OF INDIGO SURVEYS LTD.

DO NOT SCALE FROM DRAWING

The original of this drawing was produced in colour – a monochrome copy should not be relied upon.