TREE SURVEY
(BS 5837:2012)

CLIENT -	The London Borough of Camden
PROJECT -	Heybridge Castle
DOC. REF -	P1699-B–TS01 V1
PLANNING REF -	n/a
DATE OF ISSUE -	23/04/2021

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PURPOSE OF DOCUMENT

This document contains information on the site's tree population. The tree survey and its data are compliant with *BS 5837:2012 – Trees in relation to design, demolition and construction – Recommendations.*

This document and its associated plans should be used to assess constraints posed by the site's trees.

ARBORICULTURAL DOCUMENT REGISTER

Planning Documents		Version Issued							
Document	Ref.	V0	V1	V2	V3	V4	V5	V6	V7
Tree Survey Schedule	P1699-B-TS01		X						
Arb. Site Plan (Existing)	P1699-B-ASP01		X						
Arb. Site Plan (Proposed)	P1699-B-ASP02	X							

1 GENERAL INFORMATION

1.1 BRIEF

Ligna Consultancy Ltd were instructed by the client, The London Borough of Camden, to undertake a tree survey in accordance with BS 5837:2012 at Heybridge Castle.

1.2 SITE

1.2.1 The site discussed within this report is located at:

Heybridge Castle
Camden Town
London
NW1 8TD

1.3 PROJECT CONTACTS

Role	Name	Telephone	Email
Arboricultural Consultant	Ligna Consultancy Ltd	01284 598008	benjamin@lignaconsultancy.co.uk
Client	The London Borough of Camden	-	-

1.4 SCOPE OF REPORT

1.4.1 This report consists of the following:

- Tree survey methodology
- Survey key
- Tree categorisation methodology
- Summary of data

1.4.2 Appendices included with this report are:

- Tree Survey Schedule
- Site Photos
- Arboricultural Site Plan (Existing) (P1699-B-ASP01)

1.5 DOCUMENTS PROVIDED

1.5.1 The following documents were submitted to Ligna Consultancy Ltd for consideration:

- Topographical Survey

1.6 AUTHOR

1.6.1 Benjamin Hallinan is a professional member of the Arboricultural Association. He has worked in arboriculture for over ten years, including management and supervisory roles undertaking both domestic and commercial arboricultural work. He possesses a FdSc in arboriculture, LANTRA Professional Tree Inspection training, and has also received advanced training in tree related subsidence and BS 5837. A full CV and list of experience and CPD is available on request.

1.7 LIMITATIONS

1.7.1 Detailed inspections and recommendations relating to tree condition and health are not included within this report.

1.7.2 Any engineering solutions presented within this document are recommendations for their suitability from an arboricultural viewpoint. The architect and structural engineers should make the final decision on the suitability of the methods advised.

1.7.3 Information provided by third parties, considered in the creation of this report, is assumed to be correct.

1.8 COPYRIGHT

1.8.1 This report was prepared for use by the Clients and their contractors for planning purposes. The report and its appendices may not be copied, modified, or distributed beyond the necessary parties without the written consent of Ligna Consultancy Ltd.

1.9 PROTECTED TREES

1.9.1 Details of trees (if any) that are protected by Tree Preservation Orders (TPOs) or are situated within Conservation Area are available upon request.

1.9.2 It is the standard approach of Ligna Consultancy not to obtain this information from the LPA prior to an application, as the LPA will provide details of nearby protected trees as part of the consultation.

1.9.3 It should also be noted that granted planning permission that includes tree work specifications overrides Tree Preservation Orders and Conservation Area protections (approved works only).

1.10 NESTING BIRDS / BATS

1.10.1 Officially, the 'Bird Nesting Season' is between February and August (Natural England). During this time, it is recommended that vegetation works (tree or hedge cutting) or site clearance is avoided if there is a reasonable potential for the disruption of nesting birds.

1.10.2 All parties involved in the management and/or development of a site must actively avoid causing disturbance and disruption to nesting birds. Failure to do this may result in an infringement of the *Wildlife and Countryside Act 1981* and the *European Habitats Directive 1992 / Nesting Birds Directive*.

1.10.3 When tree or vegetation clearance work has to be undertaken during the nesting season, a pre works survey needs to be carried out by a suitably competent person.

1.10.4 Generally, it should be assumed that birds will be nesting in trees, and it is down to the site/project manager that any activities that have the potential to disturb nesting birds are assessed for their suitability and potential impact, and records are kept that show that any works carried out in the management of trees and other vegetation have not disturbed nesting birds.

2 TREE SURVEY

2.1 SITE VISIT

i) A site visit was undertaken by Benjamin Hallinan of Ligna Consultancy, on the 12/03/2021.

2.2 METHOD OF DATA COLLECTION

i) Data was collected using the recommendations laid out in British Standard 5837:2012 as a guide. All observations were from ground level without detailed or invasive investigations. Measurements were taken using a diameter tape.

ii) Measurements have been calculated using a laser measurer and diameter tape/calipers. Where this was not possible or reasonably practical, measurements have estimated by eye.

iii) The trees were surveyed and assessed impartially and irrespective of the proposed development. Management recommendations should be implemented regardless of any proposed development for reasons of sound arboricultural management or safety.

iv) In instances where no topographic tree location data has been provided, tree locations are plotted using GNSS and GIS systems (Juniper Geode receiver – sub-metre accuracy) and/or laser triangulation.

v) The method used for categorising the trees can be seen in section 2.4. This is an improved variation of the method suggested in BS 5837:2012.

vi) BS 5837:2012 recommends that better quality (category A and B trees) are retained where possible. Planning permission overrides a Tree Preservation Order and Conservation Area. Furthermore, trees are a material consideration in the UK planning system irrespective of their legal status. Trees in land adjacent to the site are considered where they may be impacted by development; for example, when roots or branches encroach onto the site.

vii)Trees may be recorded as group or woodland where:

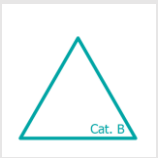
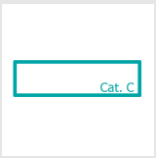
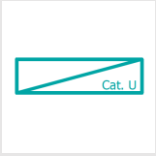
- The canopies touch.
- The trees have more group value than individual merit.
- They are part of a formal landscape feature like an avenue.
- It is impractical to record them individually.

viii) Trees within groups or woodlands etc. are recorded individually where it is necessary to distinguish them from others.

2.3 SURVEY KEY & GLOSSARY OF TERMS

Term	Definition
Ref.	Tree reference number
Tag	Physical tag attached to some trees with unique identification number (not the same as Ref.)
Species	The trees' scientific and common name
Height	The measured/estimated height of the tree (measured in metres)
Branch Spread	The length of a tree's branches from stem to tip measured from the north, east, south and western sides of the crown.
Crown Clearance	Crown clearance is the measurement of height between the trees branches in the outer third of its crown and the floor. Crown clearance has only been recorded where it is considered to be of relevance to the proposed scheme. The height of the first significant branch is also generally recorded and is discussed where relevant.
DBH	Diameter of a trees' stem, measured as per BS 5837:2012
RPA	The root protection area (RPA) is a 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.
Life Stage	A quantification of a trees' state of physical maturity: • Newly planted • Young • Semi-mature • Mature • Over-mature • Veteran • Dead
Structural	Summary statement relating to the structural condition of a tree: • Good (no apparent problems / normal optimal condition for a tree of its species.) • Fair (minor problems, no instabilities) • Poor (major problems, potential instabilities) • Unstable (extreme problems, likely to result in failure)
Vitality	Summary statement relating to the overall observed vitality of a tree: • Good (no apparent problems / normal optimal vitality for a tree of its species) • Fair (minor / temporary reduction in tree vitality) • Poor (major reduction in tree vitality, often with some branch dieback) • Dead / Dying (extreme / total reduction in tree vitality)
General Management Recommendations	Remedial tree works recommended regardless of whether the site is developed or not.
Facilitation Tree Works	Tree pruning/felling required in order to facilitate the implementation of the proposed development.
Development Related Tree Works	Tree works that are required as part of the proposed scheme.
Tolerance	The relative tolerance the species can show to construction related activities such as root-loss, soil compaction and other development pressures.
Cat.	Categorisation of the tree's value based on the methodology shown in A1.4. This rating take into account the size, quality, condition, estimated remaining life expectancy and legal status of each tree.

2.4 TREE CATEGORISATION METHODOLOGY

Category and definition	Criteria / Subcategories			Label on plan
	1 – Mainly arboricultural qualities	2 – Mainly landscape qualities	3 – Mainly cultural values/conservation	
Trees worthy of being a material constraint:				
Category A Trees of high quality, capable of providing a significant contribution to local amenity (usually large in size) and that generally possess an estimated remaining life expectancy of 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)	
Category B Trees of moderate quality and with an estimated remaining life expectancy of 20+ years, that are capable of providing a notable contribution to local amenity but are lacking the condition of category A trees (usually medium to large in size).	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); 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	
Trees worthy of material consideration:				
Category C Trees of a low quality, small size, or incapability to be protected within the legal framework. These trees generally possess an estimated remaining life expectancy of 10+ years.	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	
Trees unsuitable for retention owing to condition:				
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.	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality			

2.5 SUMMARY OF DATA

i) 7 individual trees were recorded as being significant within the context of the development proposals.

ii) The following tables show the category distribution and life stage of the trees distributed within the site:

	Tree Category			
	A	B	C	U
Individual Trees	-	-	7	-
Groups	-	-	-	-
Woodland Groups	-	-	-	-
Hedges / Shrubs	-	-	-	-

Table 1 - Table showing category distribution within site.

	Life Stage						
	Newly Planted	Young	Semi-Mature	Mature	Over-Mature	Veteran	Dead
Individual Trees	-	7	-	-	-	-	-
Groups	-	-	-	-	-	-	-
Woodland Groups	-	-	-	-	-	-	-
Hedges / Shrubs	-	-	-	-	-	-	-

Table 2 - Table showing life stage distribution within the site.

3 APPENDICES

3.1 APPENDICES

3.1.1 The following appendices are included within this document:

Appendix	Document
1	Tree Survey Schedule
2	Site Photos
3	Arboricultural Site Plan (Existing) (P1699-B-ASP01)
4	Arboricultural Site Plan (Proposed) (P1699-B-ASP02)

APPENDIX 1
TREE SURVEY SCHEDULE

Ref.	Tag	Species	Height (m)	Crown (N/E/S/W)	Crown Clearance (m)	DBH (mm)	Life Stage	Structural	Vitality	Additional Notes	General Management Recommendations	Priority	Draft Development Related Tree Work	Tolerance	RPA Radius (m)	RPA Area (m^2)	Cat.
T1		Acer campestre 'Elsrijk' (Field maple)	6	2.5 / 2.5 / 2.5 / 2.5	2.5	140	Young	Good	Good	Young street tree.		-		Good	1.7	8.9	C1
T2		Acer campestre 'Elsrijk' (Field maple)	6	2.5 / 2.5 / 2.5 / 2.5	2.5	140	Young	Good	Good	Young street tree.		-		Good	1.7	8.9	C1
T3		Acer campestre 'Elsrijk' (Field maple)	6	2.5 / 2.5 / 2.5 / 2.5	2.5	110	Young	Good	Good	Young street tree.		-		Good	1.3	5.5	C1
T4		Fraxinus excelsior (Ash)	7	3 / 3 / 3 / 3	3	150	Young	Good	Good	Young street tree.		-		Moderate	1.8	10.2	C1
T5		Fraxinus excelsior (Ash)	7	3 / 3 / 3 / 3	3	160	Young	Good	Good	Young street tree.		-		Moderate	1.9	11.6	C1
T6		Acer platanoides 'Princeton Gold' (Yellow Norway Maple)	6.5	2.5 / 2.5 / 2.5 / 2.5	3	130	Young	Good	Good	Young street tree.		-		Moderate - Good	1.6	7.6	C1
T7		Acer platanoides 'Princeton Gold' (Yellow Norway Maple)	5	1.5 / 1.5 / 1.5 / 1.5	2	80	Young	Good	Good	Young street tree. Minor cambial damage at base - not of concern.		-		Moderate - Good	1.0	2.9	C1

APPENDIX 2
SITE PHOTOS

Figure 1 - Site, looking northeast.

APPENDIX 3
ARB. SITE PLAN (EXISTING)

Use of This Document

This document should be viewed in conjunction with the relevant arboricultural impact assessment and/or tree survey schedule.

Tree Categorisation & Numbering

The method used for categorising the trees can be seen in Appendix 1 of the Tree Survey/Arboricultural Impact Assessment. The categorisation method used is an improved variation of the method suggested in BS 5837:2012.

BS 5837:2012 recommends that better quality trees (Cat. A & B) are retained where possible. Trees in land adjacent to the site are considered where they may be impacted by development.

The trees considered significant within the context of the development are numbered and assigned a prefix of 'T' or 'G' to describe whether they are an individual or a group, and 'S' or 'H' for a shrub or hedge. Using this identification number, further information for each tree/group can be found within the survey schedule.

Cat. A	**Category A** : High or exceptional aboricultural, landscape or ecological value. (Worthy of being a material constraint.)
Cat. B	**Category B** : Moderate arboricultural, landscape or ecological value. (Worthy of being a material constraint.)
Cat. C	**Category C** : Low quality or small in size. (Not worthy of being a material constraint.)
Cat. U	**Category U** : Such poor quality or condition that renders it unsuitable for retention. (Not worthy of being a material constraint.)

Root Protection Areas

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Areas (RPA's) should be plotted around each of the category A, B and C trees. This is a notional depiction of the minimum rooting area in m2 which should be left undisturbed around each tree. The RPA is calculated using the *British Standard BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'*, unless otherwise stated within the survey schedule.

Where there appears to be restrictions to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

RPA	**Root Protection Area (RPA)**: The notional area around each tree which should be left undisturbed during the development of the site
	RPA Incursion: Anticipated incursion into the root protection area of a proposed tree which may result in root disturbance.

Further Object Key

	Tree Stem: Diameter of stem at ~1.5m
	Tree Removal: Trees designated for removal will comprise of a dashed canopy outline & red category label)
	Site Boundary: Extent of site boundary (illustrative only)
	Buildings/Surfacing to be Removed: Buildings or surfacing to be removed will generally be depicted with a dashed red line

Ligna Consultancy

Project:	Heybridge Castle
Client:	Camden Town Council
Drawing:	Arboricultural Site Plan (Existing)
Drawing Ref:	P1699-B-ASP01
Rev:	V1
Date:	23/04/2021
Scale:	1:200 - A2
Drawn By:	B. Hallinan
Based on:	Topographical Survey

All dimensions should be checked on site. No dimensions to be scaled from this drawing. Please notify us of any discrepancies found. Ligna Consultancy Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based. This drawing is designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees.

An architect or structural engineer should be contacted over any matters of construction, detailing or specification and for any standards or regulatory requirements relating to proposed structures, hard surfacing or underground services.

This drawing was produced in colour - a monochrome copy should not be relied upon.

APPENDIX 4
ARB. SITE PLAN (PROPOSED)

1) Positioning of Structures

a) To ensure that any arboricultural impact is kept to a minimum, the positioning of structures must consider the location of any near-by root protection areas (RPAs) and tree canopies.

b) When designing the site layout, compliance with the following points should be aimed for:

- If tree removals are required, lower-quality trees (Cat. 'C' & 'U') should be prioritised for removal over higher-quality trees (Cat. 'A' & 'B'). Where higher quality trees are to be removed, there will have to be justification and suitable mitigation for this.
- Where possible, all structures should be situated externally to RPAs of retained trees.
- Is there sufficient clearance between the proposed structure and any nearby tree canopies (tree canopies continue to grow).
- In the case of habitable buildings, has sufficient distance been provided between any near-by trees and the dwelling so as to not significantly shade or overbear the property in such a way that any future occupants will be concerned.

2) Foundation Specification (within RPA)

a) In the event that the siting of a proposed building's footprint intersects the RPA of a retained trees in excess 5-15% (species dependent), specification of the following foundation types should be considered:

- Sleeved micro pile foundations with raised floor.
- Screw pile foundations with raised floor
- Cantilevered floor

b) Provision for compression layers will need to be made above the existing ground level.

c) Additionally, excavation of soil from within a root protection area should be avoided (with the exception of the levelling of any manmade mounds, or the removal of the vegetation layer during the initial site clearance).

d) In the event of an RPA incursion of >15%, the design may need to include measures to allow for rainwater roof run-off to be diverted and distributed over any built-over rooting areas. Additionally, the design of the structure may require a ventilated airspace between the underside of the structure's floor and the soil (seek further arboricultural advice).

3) Routing & Installation of Utilities

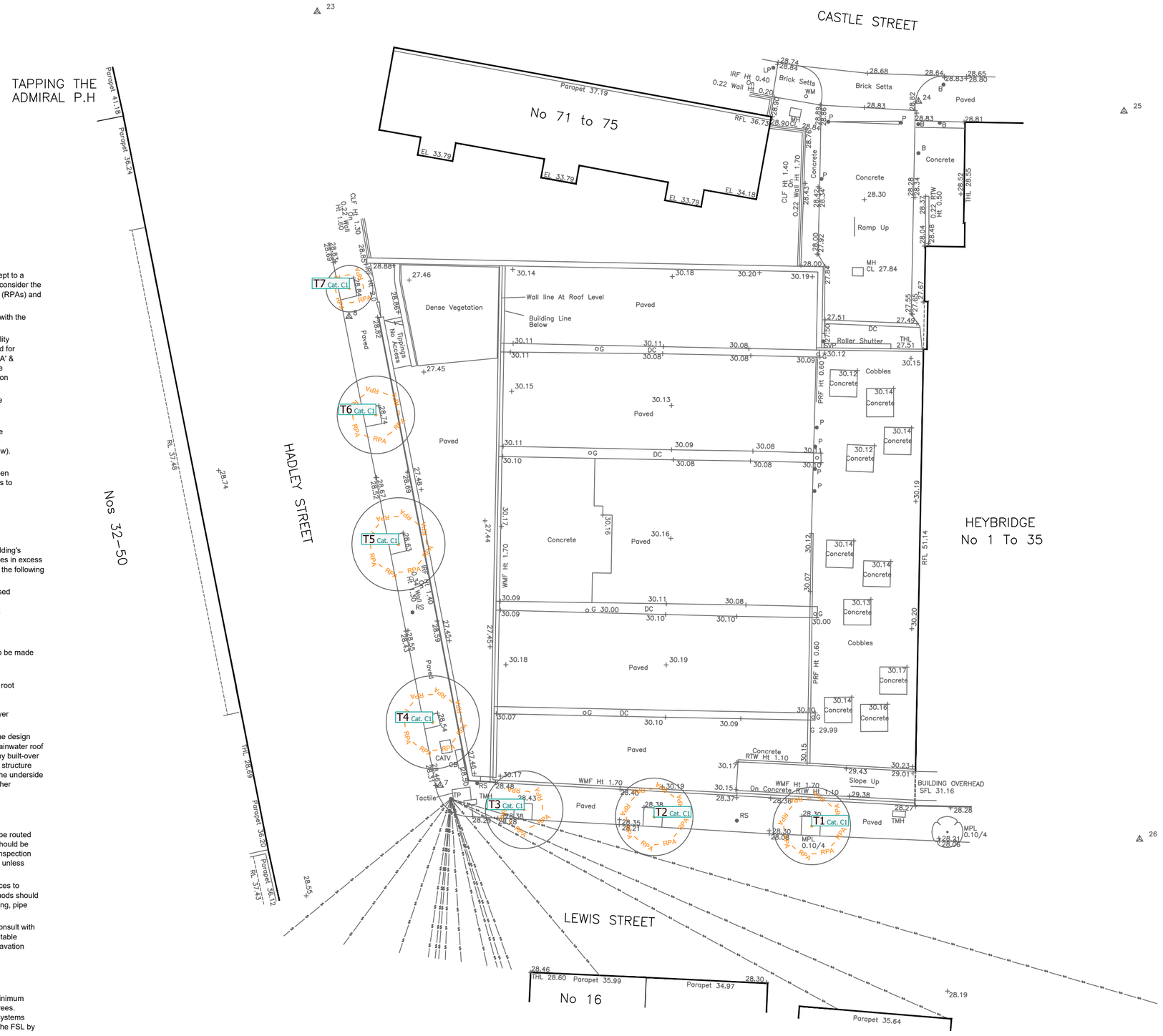
a) Wherever possible, utility apparatus should be routed outside of any RPAs. Failing this, services should be routed together in common ducts, with any inspection chambers being located outside of the RPA, unless unavoidable.

b) Where it is necessary for underground services to intersect an RPA, specialist excavation methods should be used, such as air-spading, micro- tunnelling, pipe ramming, or impact moleing.

c) In such situations, the design team should consult with Ligna Consultancy in order to establish a suitable services route and specify the specialist excavation method most suitable.

4) Hard-Surfacing & Landscaping

a) Hard surfacing should ideally be kept to a minimum within the root protection areas of retained trees. However, where required, no-dig surfacing systems should be used (note that these often raise the FSL by >100mm, depending on system thickness).



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