

ARBORICULTURAL IMPACT ASSESSMENT

(INC. TREE SURVEY TO BS 5837:2012)

CLIENT - Heraeus Nobelight
PROJECT - Project Luma
DOC. REF - P2882-AIA01 V2
PLANNING REF - n/a
CREATION DATE - 11/06/2023

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TABLE OF CONTENTS

1. SUMMARY	2
2 GENERAL INFORMATION	4
3 ARBORICULTURAL IMPACT ASSESSMENT	7
4 APPENDICES.....	12

PURPOSE OF DOCUMENT

This document assesses the anticipated impact that the proposed scheme will have on the surrounding tree population, and outlines possible technical design considerations and mitigation measures that should be implemented in order to minimise the overall arboricultural impact.

ARBORICULTURAL DOCUMENT REGISTER

Planning Documents		Version Issued	
Document	Ref.	Current Version	Document Date
Arb. Impact Assessment	P2882-AIA01	V2	11/06/2023
Arb. Site Plan (Existing)	P2882-ASP01	V2	12/04/2023
Arb. Site Plan (Proposed)	P2882-ASP02	V3	11/06/2023

1. SUMMARY

1.1 PROPOSED DEVELOPMENT

1.1.1 Changes to site including addition of new carparking spaces, gas storage building and cycle storage.

1.2 TREE SURVEY

1.2.1 The following woody vegetation was considered to be of note in relation to any development of the site: 27 individual trees, 12 groups of trees, 4 hedges.

1.3 PROTECTION MEASURES

1.3.1 The implementation of tree protection measures will be required to ensure that the site’s retained trees remain undamaged. Information as to the requirements of such can be found in *Section 3.8*.

1.4 TECHNICAL DESIGN CONSIDERATIONS

1.4.1 The design team must consider and implement the design advice provided in *Section 3.9* of this document.

1.5 PROVISION OF NEW TREE PLANTINGS

1.5.1 It is recommended that at least 8x new tree plantings, and the planting of a new mixed native hedge along the site’s northern boundary are to be included within the landscaping of the site so as to mitigate against the proposed tree removals.

1.6 CONCLUSION

1.6.1 The table below summarises the trees which will be lost, pruned, or protected by special measures during the development project.

	Tree Category			
	A	B	C	U
Trees/groups to be removed (* groups to have sections removed)	-	T6, *G6	G2, G1, *G4	-
Trees/groups/hedges to be pruned	-	G5	T3	-
Trees to be subjected to RPA incursions (excl. no-dig techniques)	-	G5, G6	T2	-

Trees to be protected through arboricultural measures / supervision (other than barriers and ground protection)	-	-	-
Trees requiring specialist design considerations (for purposes of minimising arboricultural impact)	-	-	T3

1.6.2 Considering the anticipated arboricultural impact from the construction and demolition activities associated with the development of the site, and the implementation of the proposed mitigation measures outlined in this document, the proposed development’s arboricultural impact is considered to be **acceptable**.

2 GENERAL INFORMATION

2.1 BRIEF

2.1.1 Ligna Consultancy Ltd were instructed by the client, Heraeus Nobelight, to undertake a tree survey in accordance with BS 5837:2012 and to prepare an arboricultural impact assessment for the proposed scheme at Project Luma.

2.2 PROPOSED DEVELOPMENT

2.2.1 Changes to site including addition of new carparking spaces, gas storage building and cycle storage.

2.3 SITE

2.3.1 The site discussed within this report is located at:

Project Luma
Hypro E U Ltd,
43 Station Road,
Longstanton,
Cambridge,
Cambridgeshire,
CB24 3DS

2.4 PROJECT CONTACT

Role	Name	Telephone	Email
Consultant	Ben Hallinan	01284 598008	benjamin@lignaconsultancy.co.uk

2.5 SCOPE OF REPORT

2.5.1 This report consists of the following:

- Appraisal of arboricultural impact
- Outline of tree protection & mitigation measures

2.5.2 Appendices included with this report are:

- Tree Survey
- Site Photos
- Arboricultural Site Plan (Existing) (P2882-ASP01 V2)
- Arboricultural Site Plan (Proposed) (P2882-ASP02 V3)

2.6 DOCUMENTS PROVIDED

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

- Topographical Survey (1909T-01-A)
- Proposed Site Plan (H119A-GSS-ZZ-ZZ-DR-A-9001-P08)

2.7 AUTHOR

2.7.1 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.

2.8 LIMITATIONS

- 2.8.1 Detailed inspections and recommendations relating to tree condition and health are not included within this report.
- 2.8.2 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.
- 2.8.3 Information provided by third parties, considered in the creation of this report, is assumed to be correct.

2.9 PROTECTED TREES

- 2.9.1 Details of trees (if any) that are protected by Tree Preservation Orders (TPOs) or are situated within Conservation Area are available upon request.
- 2.9.2 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.
- 2.9.3 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).

2.10 NESTING BIRDS / BATS

- 2.10.1 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.
- 2.10.2 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*.
- 2.10.3 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.
- 2.10.4 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.

2.11 SUMMARY OF TERMS

Term	Definition
Species	The type of tree.
Stem	The main woody upright portion of a tree that is supported by the roots and supports the crown.
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.
BS 5837	The commonly used name for the official guidance document relating to trees and development (<i>BS 5837:2012 - Trees in relation to design, demolition and construction – Recommendations</i>)
Canopy / Crown	The branches, leaves, and reproductive structures extending from the trunk or main stems of a tree/trees.
DBH	Diameter of a tree's 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.
Facilitation Tree Works	Tree pruning/felling required in order to facilitate the implementation of the proposed development.
Tolerance	The relative tolerance the species can show to construction related activities such as root-loss, soil compaction and other development pressures.
Category (Cat.)	Categorisation of the tree's value based on the methodology shown in Appendix 1, A1.4. This rating takes into account the size, quality, condition, estimated remaining life expectancy and legal status of each tree.

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	G5	Mixed group	Crown lift to 3.5m to facilitate carpark usage and installation	B2
Significance	Negligible			

3.3 INSTALLATION OF SURFACING WITHIN RPAS

Affected Trees Cat. B: G5 (Mixed group), G6 (Mixed group)

Impact Appraisal & Mitigation	<p>The installation of the new carpark surfacing will result in negligible RPA incursions of any one group tree to <5% for G5 and ~1% for G6.</p> <p><i>Owing to the negligible size of the incursions, any lasting impact on the overall health and condition of the trees is believed to be well within tolerable limits.</i></p> <p>No direct mitigation is considered necessary during the excavation of the foundations.</p>
Significance (with mitigation)	Negligible

3.4 INSTALLATION OF CYCLE STORE WITHIN RPA

Affected Trees Cat. C: T3 (Acer campestre)

Impact Appraisal & Mitigation	<p>A new cycle store is proposed on virgin ground within the RPA of T3. To prevent the need for excavation within the rooting area, a no-dig foundation should be used.</p> <p><i>The foundation of the cycle store should consist of a no-dig concrete slab cast atop the existing ground level (this must be cast atop an impermeable membrane to prevent chemical damage to the surrounding tree roots).</i></p>
Significance (with mitigation)	Negligible

3.5 INSTALLATION OF FLAG POLES

Affected Trees Cat. C: T2 (Laburnum anagyroides)

Impact Appraisal & Mitigation	<p>A new flag pole is proposed within the RPA of T2. The installation of this will result in a <1% RPA incursion, and as such is not considered to result in any significant impact on the tree.</p>
Significance (with mitigation)	Negligible

3.6 IMPLEMENTATION OF PROPOSED SCHEME

<i>Affected Trees</i>	All retained trees
<i>Impact Appraisal & Mitigation</i>	<p>During the construction process, all retained trees are susceptible to damage from general construction related activities.</p> <p><i>In order to reduce the risk of construction damage to the site's retained trees, tree protection barriers and temporary ground protection must be installed before the commencement of any site works.</i></p>
<i>Significance (with mitigation)</i>	Negligible

TREE RELATED SHADING AND NUISANCES

3.7 LONG-TERM IMPACT OF RETAINED TREES ON PROPOSED SCHEME

3.7.1 Shading

n/a

3.7.2 Canopy Growth

3.7.2.1 The layout of the scheme has been designed with consideration of the location and growth potential of nearby trees. Owing to such, no noteworthy contention between tree canopies and property are anticipated.

3.7.3 Nuisances

3.7.3.1 Owing to the tree species present within and around the site, and the layout of the proposed scheme, additional unreasonable tree-related nuisances, such as leaf and fruit-fall, are not thought to exist beyond what might generally be considered as acceptable limits.

MITIGATION PROPOSAL

The following proposals, if approved, should be detailed within an arboricultural method statement and tree protection plan prior to the commencement of any development associated works:

3.8 PROTECTIVE MEASURES

3.8.1 Tree Protection Barriers

3.8.1.1 Barriers shall be erected, and a construction exclusion zone established, to protect all retained trees during the construction of the proposed scheme.

3.8.2 Temporary Ground Protection

3.8.2.1 Ground protection boards shall be installed within parts of the RPAs of trees where construction access is required to protect them from soil compaction damage during the construction of the proposed scheme.

3.9 TECHNICAL DESIGN CONSIDERATIONS

3.9.1 Cycle Store Foundations

3.9.1.1 The foundation of the cycle store should consist of a no-dig concrete slab cast atop the existing ground level (this must be cast atop an impermeable membrane to prevent chemical damage to the surrounding tree roots).

3.9.2 Routing and Installation of Utility Apparatus

3.9.2.1 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.

3.9.2.2 Where it is necessary for underground services to intersect an RPA, specialist excavation methods should be used.

3.9.2.3 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.

3.10 PROVISION OF NEW TREE PLANTINGS

3.10.1 It is recommended that at least 8x new tree plantings, and the planting of a new mixed native hedge along the site’s northern boundary are to be included within the landscaping of the site so as to mitigate against the proposed tree removals.

CONCLUSION

3.11 SUMMARY OF THE DEVELOPMENT’S OVERALL IMPACT

3.11.1 The table below summarises the trees which will be lost, pruned, or protected by special measures during the development project.

	Tree Category			
	A	B	C	U
Trees/groups to be removed (* groups to have sections removed)	-	T6, *G6	G2, G1, *G4	-

Trees/groups/hedges to be pruned	-	G5	T3	-
Trees to be subjected to RPA incursions (excl. no-dig techniques)	-	G5, G6	T2, G1	-
Trees to be protected through arboricultural measures / supervision (other than barriers and ground protection)	-	-	-	
Trees requiring specialist design considerations (for purposes of minimising arboricultural impact)	-	-	T3	

3.11.2 Considering the anticipated arboricultural impact from the construction and demolition activities associated with the development of the site, and the implementation of the proposed mitigation measures outlined in this document, the proposed development’s arboricultural impact is considered to be **acceptable**.

4 APPENDICES

4.1 APPENDICES

4.1.1 The following appendices are included within this document:

Appendix	Document
1	Tree Survey
2	Site Photos
3	Arboricultural Site Plan (Existing) (P2882-ASP01)
4	Arboricultural Site Plan (Proposed) (P2882-ASP02)

APPENDIX 1 TREE SURVEY

APPENDIX 1 – TREE SURVEY

A1.1 SITE VISIT

- i) A site visit was undertaken by Alistair Godfrey of Ligna Consultancy, on the 24/11/2022.

A1.2 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.
- 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) The method used for categorizing the trees can be seen in section A1.3. This is an improved variation of the method suggested in BS 5837:2012.
- v) 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.
- vi) 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.
- vii) Trees within groups or woodlands etc. are recorded individually where it is necessary to distinguish them from others.

A1.3 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: <ul style="list-style-type: none"> • Young • Semi-mature • Early-Mature • Mature • Late-mature • Veteran • Dead
Structural	Summary statement relating to the structural condition of a tree: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 takes into account the size, quality, condition, estimated remaining life expectancy and legal status of each tree.

A1.4 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:				
<p>Category A</p> <p>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.</p>	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)	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Cat. A</div>
<p>Category B</p> <p>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).</p>	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	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Cat. B</div>
Trees worthy of material consideration:				
<p>Category C</p> <p>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.</p>	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	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Cat. C</div>
Trees unsuitable for retention owing to condition:				
<p>Category U</p> <p>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.</p>	<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 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 			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Cat. U</div>

A1.5 SUMMARY OF DATA

- i) The following woody vegetation was considered to be of note in relation to any development of the site: 27 individual trees, 12 groups of trees, 4 hedges.
- 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	20	-
Groups	-	3	9	-
Woodland Groups	-	-	-	-
Hedges	-	-	4	-
Shrubs	-	-	-	-

Table 1 - Table showing category distribution within site.

	Life Stage						
	Young	Semi-Mature	Early-Mature	Mature	Late-Mature	Veteran	Dead
Individual Trees	-	10	4	13	-	-	-
Groups	-	6	2	4	-	-	-
Woodland Groups	-	-	-	-	-	-	-
Hedges	-	4	-	-	-	-	-
Shrubs	-	-	-	-	-	-	-

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

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 Works	Tolerance	RPA Radius (m)	RPA Area (m ²)	Cat.
T1		Acer pseudoplatanus (Sycamore)	9	5.5 / 5.5 / 5.5 / 5.5	1.5	480	Mature	Good	Good	Stem separates in to 3 main stems at 2 metres. Tree has been previously pollarded to 3 metres. Phone line running through tree crown - no work needed. Minor deadwood in crown - not of concern.				Moderate	5.8	104.2	C1
T2		Laburnum anagyroides (Common laburnum)	6	3 / 3 / 3 / 3	2	600	Mature	Good	Good	Recently been reduced to 3 metres with good regrowth. Stem separates in to multiple leaders at 1.5 metres.				Moderate	7.2	162.9	C1
T3		Acer campestre (Field maple)	9	5 / 5 / 5 / 3.5	2.5	350	Early-Mature	Good	Good				Crown lift to 3m on southern side to facilitate installation of cycle store	Good	4.2	55.4	C1
T4		Betula pendula (Silver birch)	14.5	5 / 5.5 / 5 / 3		320	Mature	Good	Good	Metal pole being occluded in to the tree - not of concern at this point in time. Minor deadwood in crown - not of concern.				Poor - Moderate	3.8	46.3	B2
T5		Betula pendula (Silver birch)	14.5	5.5 / 3.5 / 5.5 / 5.5		520	Mature	Good	Good	Metal pole being occluded in to the tree - not of concern at this point in time. Minor deadwood in crown - not of concern. Epicormic growth at base and stem of tree. Moderate sized pruning wound with decay - not of concern at this point in time. A over-extended limb to the west of the tree - not of concern at this point in time.				Poor - Moderate	6.2	122.3	B2
T6		Fraxinus excelsior (Ash)	17.5	8 / 8.2 / 8.5 / 9	2	560	Mature	Good	Good	Stem bifurcates at 2 metres, then bifurcates again at 3 metres. Minor deadwood in crown - not of concern.			Remove	Moderate	6.7	141.9	B2
T7		Alnus glutinosa (Common alder)	10	4 / 4 / 4 / 4	3	215	Semi-Mature	Good	Good	Minor deadwood in crown - not of concern.				Good	2.6	20.9	C1
T8		Alnus glutinosa (Common alder)	10	5 / 4 / 4 / 4	3	290	Semi-Mature	Good	Good	Minor deadwood in crown - not of concern. Stem bifurcates at 2 metres. Epicormic growth at base of tree. The tree no longer needs support stakes.	Remove stakes and ties.	Optional		Good	3.5	38.0	C1
T9		Crataegus monogyna (Hawthorn)	5	4 / 4 / 4 / 4	1.5	187	Early-Mature	Good	Good	Multi-stemmed tree. The tree no longer needs support stakes. Minor deadwood in crown - not of concern.	Remove stakes and ties.	Optional		Moderate - Good	2.2	15.8	C1
T10		Acer campestre (Field maple)	9	5.5 / 5.5 / 5.5 / 5.5	1.8	350	Mature	Good	Good	Stem separates in to multiple leaders at 2 metres. Epicormic growth at base of tree.				Good	4.2	55.4	C1
T11		Salix babylonica (Weeping willow)	14	7 / 7 / 7 / 7		500	Mature	Good	Good	On neighbouring property. Estimated dimensions used due to access restrictions.				Moderate - Good	6.0	113.1	B2
T12		Betula pendula (Silver birch)	10	4 / 4 / 4 / 4	3	200	Semi-Mature	Good	Good	Minor deadwood in crown - not of concern.				Poor - Moderate	2.4	18.1	C1
T13		Alnus glutinosa (Common alder)	10	4 / 4 / 4 / 4	3	250	Semi-Mature	Good	Good	Minor deadwood in crown - not of concern. Dense ivy on tree structure, obscuring full visual assessment.				Good	3.0	28.3	C1
T14		Castanea sativa (Sweet chestnut)	7	4 / 4 / 4 / 4	3	200	Semi-Mature	Good	Good	Minor deadwood in crown - not of concern. Dense ivy on tree structure, obscuring full visual assessment.				Moderate - Good	2.4	18.1	C1

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 Works	Tolerance	RPA Radius (m)	RPA Area (m ²)	Cat.
T15		Alnus glutinosa (Common alder)	10	3 / 3 / 3 / 3	2	170	Semi-Mature	Good	Good	Minor exudates on stem - not of concern at this point in time. Epicormic growth on stem of tree.				Good	2.0	13.1	C1
T16		Alnus glutinosa (Common alder)	10	2.5 / 2.5 / 2.5 / 2.5	2	130	Semi-Mature	Good	Good					Good	1.6	7.6	C1
T17		Acer campestre (Field maple)	12	5.5 / 5.5 / 5.5 / 5.5	1.8	380	Mature	Good	Good	Stem separates in to multiple leaders at 2 metres. Epicormic growth at base of tree.				Good	4.6	65.3	C1
T18		Tilia x Europaea (Common Lime)	12	5.5 / 5.5 / 5.5 / 5.5	1.8	330	Semi-Mature	Good	Good	Stem separates in to multiple leaders at 2 metres. Epicormic growth at base of tree.				-	4.0	49.3	C1
T19		Tilia x Europaea (Common Lime)	12	5.5 / 5.5 / 5.5 / 5.5	1.8	290	Early-Mature	Good	Good	Stem separates in to multiple leaders at 2 metres.				-	3.5	38.0	C1
T20		Tilia x Europaea (Common Lime)	12	5.5 / 5.5 / 5.5 / 5.5	1.8	310	Early-Mature	Good	Good	Stem separates in to multiple leaders at 2 metres.				-	3.7	43.5	C1
T21		Alnus glutinosa (Common alder)	8	4 / 4 / 4 / 4	2	175	Semi-Mature	Good	Good	Epicormic growth at base of tree.				Good	2.1	13.8	C1
T22		Crataegus monogyna (Hawthorn)	7	3 / 3 / 3 / 3	0.5	220	Semi-Mature	Good	Good	Stem separates in to multiple stems at 2 metres.				Moderate - Good	2.6	21.9	C1
T23		Acer campestre (Field maple)	12	5.5 / 5.5 / 5.5 / 5.5	1.8	430	Mature	Good	Good	Stem separates in to multiple leaders at 2 metres. Epicormic growth at base of tree. Minor deadwood in crown - not of concern.				Good	5.2	83.6	C1
T24		Betula pendula (Silver birch)	15	4.5 / 4.5 / 4.5 / 4.5	1.5	320	Mature	Good	Good	Fungal fruiting body present at base of tree - not of concern at this point in time.				Poor - Moderate	3.8	46.3	B2
T25		Betula pendula (Silver birch)	15	4.5 / 4.5 / 4.5 / 4.5	1.5	220	Mature	Good	Good	Fungal fruiting body present at base of tree - not of concern at this point in time. Epicormic growth at base of tree. Stem bifurcates at 2 metres.				Poor - Moderate	2.6	21.9	B2
T26		Betula pendula (Silver birch)	15	4.5 / 4.5 / 4.5 / 4.5	1.5	316	Mature	Good	Good	Estimated dimensions used due to access restrictions.				Poor - Moderate	3.8	45.2	B2
T27		Acer campestre (Field maple)	12	5.5 / 5.5 / 5.5 / 5.5	0.3	346	Mature	Good	Good	Epicormic growth at base of tree. Minor deadwood in crown - not of concern.				Good	4.2	54.3	C1
G1		Mixed group	7	3 / 3 / 3 / 3		180	Early-Mature	Good	Good	A group of early mature trees to the south, small saplings and shrubs to the north. Species include; Betula pendula, Acer Spp, Cornus sanguinea, Prunus Spp.			Remove	-	2.2	14.7	C1
G2		Prunus laurocerasus (Laurel)	7	3 / 3 / 3 / 3		200	Semi-Mature	Good	Good				Remove	Good	2.4	18.1	C1
G3		Mixed group	7	3 / 3 / 3 / 3		180	Semi-Mature	Good	Good	A native hedgerow with some semi-mature trees within. Fence running along group. Species include Acer campestre, Prunus Spp, Rosa Spp, Snowberry bush, Crataegus monogyna. Phone line running through tree crown - no work needed.				-	2.2	14.7	C1

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 Works	Tolerance	RPA Radius (m)	RPA Area (m ²)	Cat.
G4		Mixed group	8	4 / 4 / 4 / 4		250	Early-Mature	Good	Good	A group of predominantly Cupressus x leylandii. Smaller saplings to end of group with brambles growing within. Phone line running through tree crown with tension and rubbing of the line.	Reduce tension and rubbing on the phone line by pruning tertiary branches to give 0.2-0.5m of clearance.		3.5m wide section to be removed to facilitate installation of new access pathway.	-	3.0	28.3	C3
G5		Mixed group	7.5	5 / 5 / 5 / 5	2	300	Mature	Good	Good	A line of relatively closely planted trees. Species include Tilia x europaea, Prunus avium, Alnus glutinosa, Betula pendula. Epicormic growth at base of tree on some trees. Power lines lightly touching trees to west of group.			Crown lift to 3.5m to facilitate carpark usage and installation	-	3.6	40.7	B2
G6		Mixed group	14.5	6.5 / 6.5 / 6.5 / 6.5	2	400	Mature	Good	Good	A line of relatively closely planted trees. Species include Tilia x europaea, Fagus sylvatica. Epicormic growth at base of tree. on some trees. Moderate ivy on the stems.			4x trees to be removed from G6 to facilitate car park entrance.	-	4.8	72.4	B2
G7		Mixed group	14	5 / 5 / 5 / 5	1.5	350	Mature	Good	Good	A woodland group with a small pond within. Species include Tilia x europaea, Acer campestre, Salix caprea, Acer platanoides, Betula pendula. Moderate size deadwood in crown. Low risk of harm. Historic structural failure - not of concern at this point in time.				-	4.2	55.4	B2
G8		Cupressus x leylandii (Leylandii)	18	6 / 6 / 6 / 6		400	Mature	Good	Good	A group of predominantly Cupressus x leylandii. Estimated dimensions used due to access restrictions.				Good	4.8	72.4	C3
G9		Mixed group	8	3 / 3 / 3 / 3		180	Semi-Mature	Good	Good	A native hedgerow with some semi-mature trees within. Species include Acer campestre, Prunus Spp, Rosa Spp, Snowberry bush, Crataegus monogyna. Phone line running through tree crown - no work needed.				-	2.2	14.7	C1
G10		Mixed group	6	2 / 2 / 2 / 2		100	Semi-Mature	Good	Good	A native hedgerow with some semi-mature trees within. Species include Acer campestre, Prunus Spp, Rosa Spp, Snowberry bush, Crataegus monogyna.				-	1.2	4.5	C1
G11		Mixed group	9	2 / 2 / 2 / 2		180	Semi-Mature	Good	Good	Species include Acer campestre, Crataegus monogyna.				-	2.2	14.7	C1
G12		Mixed group	7	3 / 3 / 3 / 3		180	Semi-Mature	Good	Good	A native hedgerow with some semi-mature trees within. Fence running along group. Species include Acer campestre, Prunus Spp, Rosa Spp, Snowberry bush, Crataegus monogyna, Cornus sanguinea. Building within group. Estimated dimensions used due to access restrictions.				-	2.2	14.7	C1

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 Works	Tolerance	RPA Radius (m)	RPA Area (m ²)	Cat.
H1		Acer campestre (Field maple)	1	0.5 / 0.5 / 0.5 / 0.5		50	Semi-Mature	Good	Good					Good	0.6	1.1	C1
H2		Acer campestre (Field maple)	1	0.5 / 0.5 / 0.5 / 0.5		50	Semi-Mature	Good	Good					Good	0.6	1.1	C1
H3		Acer campestre (Field maple)	1	0.5 / 0.5 / 0.5 / 0.5		50	Semi-Mature	Good	Good					Good	0.6	1.1	C1
H4		Cupressus x leylandii (Leylandii)	4	0.5 / 0.5 / 0.5 / 0.5		50	Semi-Mature	Good	Good					Good	0.6	1.1	C3

APPENDIX 2

SITE PHOTOGRAPHS

APPENDIX 2 – SITE PHOTOGRAPHS

Note - Below is a selection of site photographs intended for general site context. Should you require supplementary site/tree photographs please contact info@lignaconsultancy.co.uk:



Figure 1 – Looking south down the site along station road.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 2 – Looking south down the site at the main building.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 3 – Looking west down the main driveway.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 4 – Looking north in to G7.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 5 – Looking west towards the small kitchen block.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 6 – Looking west on the south of the site.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 7 – Looking northwest from the south of the property towards the main building.

APPENDIX 2 – SITE PHOTOGRAPHS



Figure 8 – Looking east at the main building from the south of the site.

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 'S' to describe whether they are an individual or a group, and '1' or 'H' for a shrub or hedge. Using this identification number, further information for each tree/group can be found within the survey schedule.

Category A: High or ancient/ancient, historical, or ecological value. (Priority of being a material constant)	Category B: Medium or ecological value. (Priority of being a material constant)
Category C: Low quality or shrub/hedge. (Priority of being a material constant)	Category U: Such poor quality or condition that renders it unsuitable for retention. (Not worthy of being a material constant)

Root Protection Areas

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Areas (RPA) 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 restriction to root growth the root protection area is reshaped to more accurately reflect the likely distribution of the roots.

Root Protection Area (RPA): The notional area around each tree which should be left undisturbed during the development of the site.	RPA Incursion: An incursion into the RPA is a breach of the root protection area of a retained tree which may result in root damage.
Arboriculturally Sensitive Development/Removal: A structure or surfacing to be removed or altered to avoid damage to trees.	Specialist Foundations: Foundations to be used to preserve underlying trees.

Further Object Key

Tree Stem / Stem Line: Diameter of stem at 1.3m	Tree Removal: Trees designated for removal with complete or a well-filled canopy
Site Boundary: Extent of site boundary (illustrative only)	Buildings/Surfacing to be Removed: Building or surfacing to be removed with a well-filled canopy

Project Luma

Client: **Heraeus Nobelight**

Drawing: **Arboricultural Site Plan (Existing)**

Drawing No: P2882-ASP01.1	Version: V2	Date: 12/04/2023
Scale: 1:300 - A1	Drawn by: Alistair Godfrey	

Topographical drawing (1909T-01-A)

Ligna Consultancy

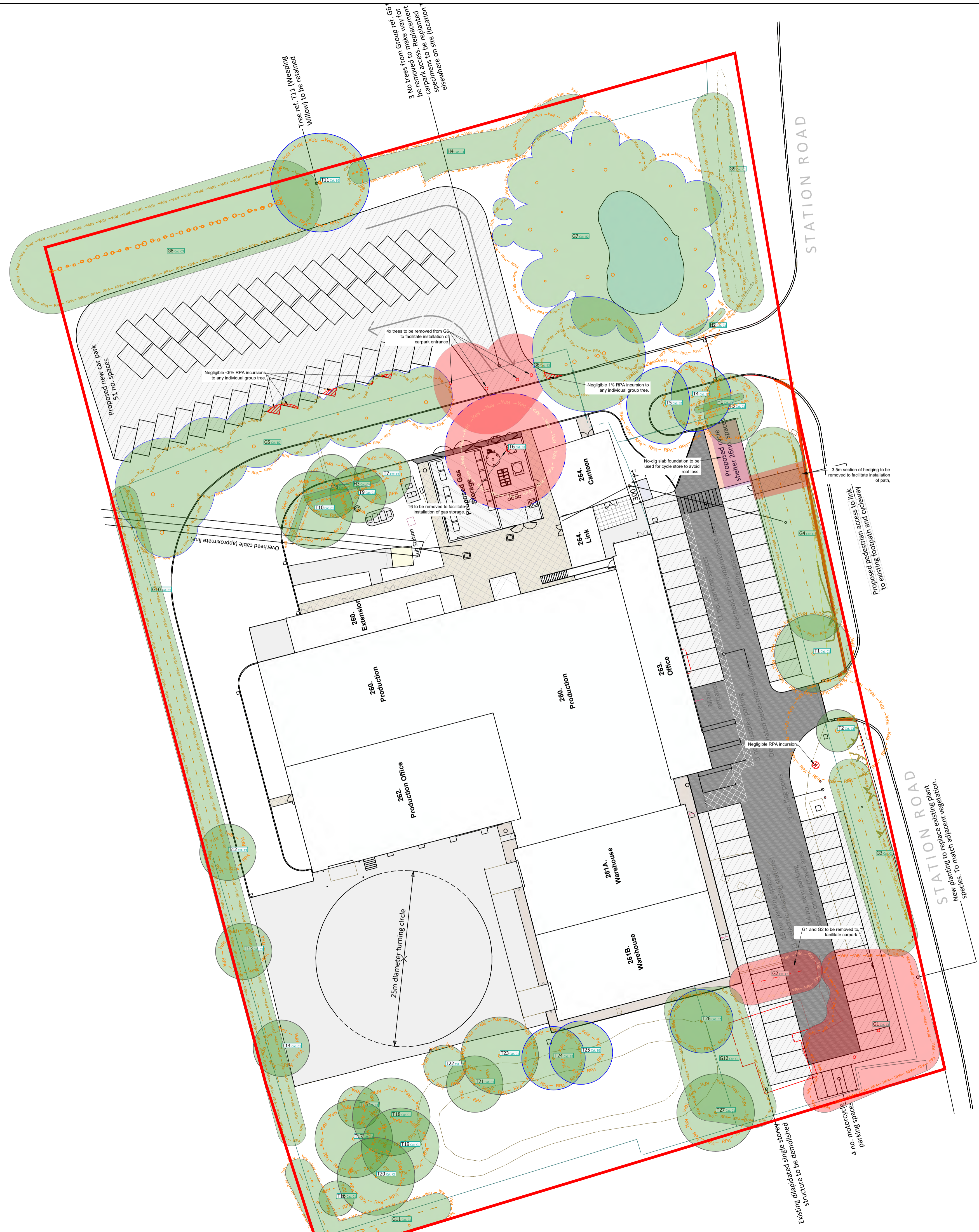
All dimensions should be checked on site. No dimensions to be used for this drawing. Please refer to the appropriate level. Ligna Consultancy Ltd cannot be held responsible for inaccuracies in the data or drawings which the user receives. The drawing is designed to reflect the principles of the layout or design plan, and not necessarily the physical construction thereof.

An arboricultural or landscape engineer should be consulted over any matters of construction, building or landscaping and for any structural or regulatory requirements relating to proposed structures. The arboricultural drawing was produced in collaboration with a landscape architect and should not be relied upon.

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APPENDIX 4

ARB. SITE PLAN (PROPOSED)



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 'S' to describe whether they are an individual or a group, and '1' or '14' for a shrub or hedge. Using this identification number, further information for each tree/group can be found within the survey schedule.

Category A: High or exceptional architectural, landscape or ecological value. (Quality of being a material constant.)	Category B: Moderate architectural, landscape or ecological value. (Quality of being a material constant.)
Category C: Low quality or value. (Quality of being a material constant.)	Category U: Such as a shrub or hedge that renders it unsuitable for retention. (Quality of being a material constant.)

Root Protection Areas

In order to avoid damage to the roots or rooting environment of retained trees, the Root Protection Areas (RPA) 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.

Root Protection Area (RPA): The reserved area around each tree which should be left undisturbed during the development of the site.	RPA Incursion: An incursion into the root protection area of a protected tree which may result in root damage.
Arboriculturally Sensitive Demolition (ASD): A structure or surface to be removed using special methods to prevent damage to trees.	Specialist Foundations: Low impact foundations to be used to preserve underlying tree roots.

Further Object Key

Tree Stem: Stem line. Diameter of stem at 1.4m.	Tree Removal: Trees designated for removal will comprise of a red filled canopy.
Site Boundary: Extent of site boundary (illustrative only).	Building/Surfacing to be Removed: Building or surfacing to be removed will generally be shown with a dashed red line.



Project Luma	
Client: Heraeus Nobelight	
Drawing: Arboreal Site Plan (Proposed)	
Drawing No: P2882-ASP02	Date: 11/06/2023
Scale: 1:300 - A1	Drawn by: B. Hallinan
Based on: H119A-GSS-ZZ-DR-A-9001-P08	

All dimensions should be checked on site. No dimensions to be taken from this drawing. Please refer to the appropriate level. Ligna Consultancy Ltd. cannot be held responsible for inaccuracies in the field drawings which may also be taken. This drawing is designed to reflect the principles of the layout or design and is not a final design. An architect or structural engineer should be consulted over any matters of construction, detailing or specifications and for any necessary or regulatory requirements apply to proposed structures. Best practice drawing was produced in colour - a monochrome copy should not be relied upon. © Ligna Consultancy Ltd. 2023



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