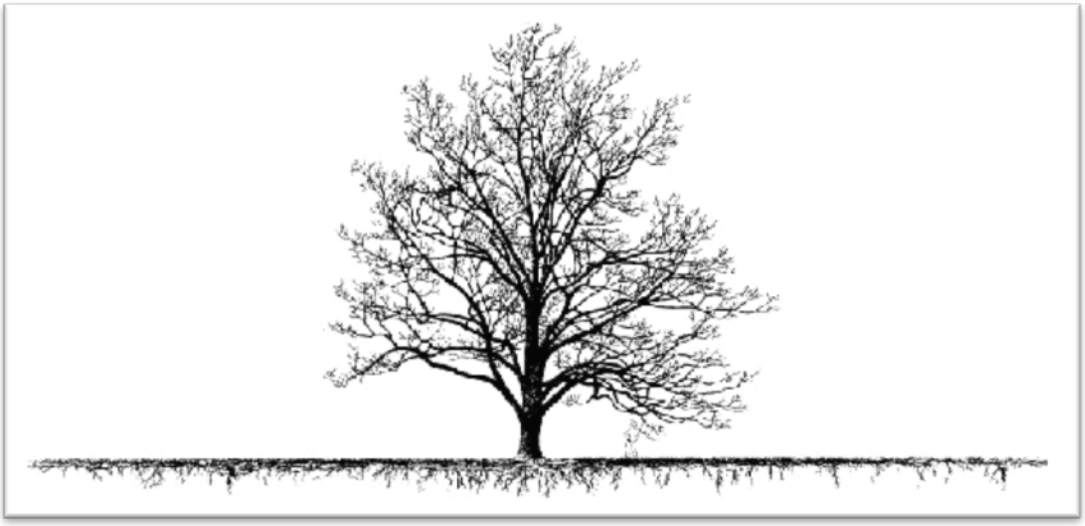

Arboricultural Implications Assessment for the proposed landscape scheme at John Crank, Brunel University.

AIA2023-BUJC

PREPARED BY:	DATE:	REVIEWED:
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Contents

Appended Plans:

Table A

REFERENCE DRAWINGS:	
AIA2023-BUJC-001-A-SURVEY	Tree survey plan
AIA2023-BUJC-002-A-PROPOSAL	Proposal plan

Appended documents:

Initial Tree survey schedule

Executive Summary:

Proposal:

The current proposal is '*The erection of a marquee for six months of each calendar year and the redevelopment of the site to provide a new raised lawn, removal and planting of trees, wheelchair access ramp, hardstanding, landscaping, street furniture, lighting and associated works'.*

Considerations:

The proposal requires implementation of no further design considerations, other than those identified within the assessment, to provide arboricultural defensibility.

Additional recommendations:

None.

1. Introduction.

1.1 My name is Mark Clews and I am an aboriculturist, trained to degree level (Dip. Arb (RFS)). I have thirty years of professional experience in providing arboricultural advice for development projects of all sizes.

1.2 I have been instructed to provide an arboricultural implications assessment on the proposed development at the Jon Crank building, Brunel University.

1.3 I have provided the above within the scope and limitations for the assessment set out in Appendixes B & C of this report. The report & accompanying drawings also satisfy the standard recommendations laid out in BS5837:2012 (Trees in relation to design, demolition and construction – Recommendations).

1.4 This report will refer to a series of drawings that will be accompanying it. These drawings should be readily available to easily comprehend the various parts of this report.

2. The Site

2.1 The proposal

The current proposal is '*The erection of a marquee for six months of each calendar year and the redevelopment of the site to provide a new raised lawn, removal and planting of trees, wheelchair access ramp, hardstanding, landscaping, street furniture, lighting and associated works'*.

2.2 General arboricultural site information

2.2.1 The development site is an internal area of Brunel University.

2.2.2 Three trees exist within the proposed area of development.

2.2.3 The site falls within Hillingdon Council's administrative area. Hillingdon Council's website confirms that no trees within the proposed development area are subject to TPO, neither is it included within a Conservation Area.

2.2.4 The proposed development area is mainly level, open compacted ground, with additional impervious hard surfacing.

2.2.5 The arboricultural character of the proposed development area is of even-aged, planted units comprising moderate internal amenity only.

2.2.6 Below is an aerial image of the proposed development area considered within this report:

2.3 Basic soil study

2.3.1 The BGS website has identified the development area as being located on London Clay bedrock, with Langley Silt superficial deposits, although the development area is likely to have a large component of made ground within it. The depth of soil types is not known.

The high content of clay components within the soil would indicate the soil has a high potential to be vulnerable to construction related soil compaction.

3. The Survey

Reference documents: AIA2023-BUJC-001-A-survey; Initial survey-schedule (appended to report)

3.1 Site visit & survey method.

3.1.1 A site survey was undertaken by myself & has formed the basis of the survey data produced. I surveyed all the trees on and surrounding the proposed development areas that required surveying, with the main purpose of classifying them into the BS5837 retention categories (see Appendix A). A purely visual assessment (VTA), was carried out on their structural soundness (in line with current, arboricultural good practice).

3.1.2 The survey was undertaken at ground level, with the aid of binoculars where appropriate

3.1.3 No soil samples were taken. Neither was any kind of detailed root morphology investigation undertaken.

3.1.4 No tissue samples were taken, nor was any internal investigation of the subject trees undertaken.

3.1.5 No further investigations were carried out for habitat value on the trees surveyed, other than a basic ground based visual inspection at the time of surveying.

3.1.6 Other trees than those recorded, were observed adjacent to the site but were not included in the survey due to their stem diameters & distance from the proposed areas of development & proposed construction access routes.

3.1.7 The stem diameters were measured in centimetres at 1.5 metres above ground level for single stems, and in accordance with Annex C of BS5837 for multiple stem trees. Where access was difficult/impossible the diameters were estimated and marked as such on the tree survey schedule.

3.1.8 Canopy spreads were laser measured at their polar coordinates. Where access to the polar coordinates was not possible, an estimation was made.

3.2 BS5837 tree quality categories

3.2.1 Please see Appendix A on BS5837:2012 Tree Quality Categories & on the criteria used to assign BS Categories to surveyed trees.

3.3 Additional information

3.3.1 One tree surveyed fell within U category under the BS5837 cascade chart for tree quality assessment. The remaining two qualified as B category trees, primarily due to their collective amenity

3.4 Initial tree work recommendations (sound arboricultural management only)

3.4.1 Please refer to clause 3.3.1

3.5 The tree survey plan

3.5.1 The tree survey plan indicates the tree number, crown size and shape and has been colour coded to indicate the condition of individual and groups of trees. Where trees are scheduled under a Tree Preservation Order (TPO) the TPO number may be shown on the plan. Additionally, the plan indicates the root protection area (RPA) for the various trees as recommended in BS5837:2012 (TCP – tree constraints plan), so serves the dual function of survey & outline constraints plan.

4. Arboricultural Implications & Design Constraints

4.1 General Design constraints below Ground

According to the current standard recommendations for developments near trees, root protection areas are to be assigned to trees that justify retention. This may also include 'C' category trees in certain situations. On the accompanying proposal plans, the C category trees do have their RPAs plotted, although they don't constitute any significant constraints on this site. Root protection areas are areas that the development should avoid, or adopt certain construction methods (if justified), to preserve the trees root systems and their growing medium. Neither should the development processes encroach such root protection areas (i.e. site construction traffic, material storage etc.), unless adequate protection for them has been arranged. In the case of 'C' category trees, it is often more justifiable to remove/replace them rather than constrain the development by protecting their RPAs. The RPAs are shown on C category trees, in this case, to ascertain whether any construction activities would significantly affect them and so bring about a clear decision to remove them.

4.1.1 Root protection areas (RPA).

Under the current standard for assessing developments near trees (BS5837:2012), trees that would need to be retained, are assigned an area of ground surrounding them, that must not be altered in any way. This area of ground is known as the root protection area or zone (RPA) and would normally be part of a construction exclusion zone or area, delimited by fencing. The standard RPA is assigned using the following formula table:

BS5837:2012 Calculation of stem diameters & root protection areas (RPA):
Trees with single stems = Stem dia x 12 = RPA radius
Trees with 2 - 5 stems = $\sqrt{(stem\ dia\ 1)^2 + (stem\ dia\ 2)^2 \ldots (stem\ dia\ 5)^2}$ = (stem dia) x 12 = RPA radius.
Trees with 6+ stems = $\sqrt{(mean\ stem\ dia)^2 x\ number\ of\ stems}$ = (stem dia) x 12 = RPA radius

The standard also states:

“The RPA should be calculated using Table 2 (the above table), as an area equivalent to a circle with a radius 12 times the stem diameter for single stem trees.”

It also goes on to state:

“The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

a) The morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and underground apparatus);

b) Topography and drainage;

c) The soil type and structure;

d) The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management."

The standard also caps the RPA of any one tree to 707m² or a radius of 15 metres, despite its stem diameter.

4.1.2 Calculated Root Protection Areas for the Site

Generally, when applying notional root protection areas for surveyed trees, the standard root protection area calculated under BS5837 is used, unless evidence demonstrating a significantly altered root morphology is available, or where it would be considered reasonable to assume a different root morphology due to the site characteristics.

Standard notional root protection areas were calculated for all of the trees surveyed.

4.2 Site-specific arboricultural design constraints/issues to the existing design proposal below ground.

Reference documents: AIA2023-BUJC-002-A-proposed;

4.2.1 Proposed footprint of new structures

Quad infill of sunken lawn area

The development proposes to infill the sunken lawn area where the three existing trees are located. The level of infill required is approximately 600mm.

The soil level raising is not tolerable for the existing trees and will lead to their very premature decline and loss. Tree 5830 has been assessed as a U category tree and very clearly does not present sufficient value to constrain the proposal. Trees 5829 and 5828 present somewhat greater collective value and their removal is justified provided adequate replacement trees are provided. The proposed scheme intends to replace these three trees with six replacements within the immediate lawn area and a further twenty five trees to the East. The proposal which requires the removal of the three existing trees would therefore be arboriculturally defensible.

4.2.2 Proposed new hard surfaces

Not applicable.

Underground services within the RPAs of retained trees

Not applicable.

4.2.3 Proposed soft landscaping

Not applicable.

4.2.4 Future root development

Retained trees

Not applicable.

4.3 Design constraints above Ground

Reference documents: N/a

4.3.1 Ingress and egress of vehicles.

Not applicable.

4.3.2 Future growing space for retained trees

Not applicable.

4.4 Relationship of built structures to retained trees.

4.4.1 Changes to soil water

Not applicable.

4.4.2 Shade.

Reference documents: N/a

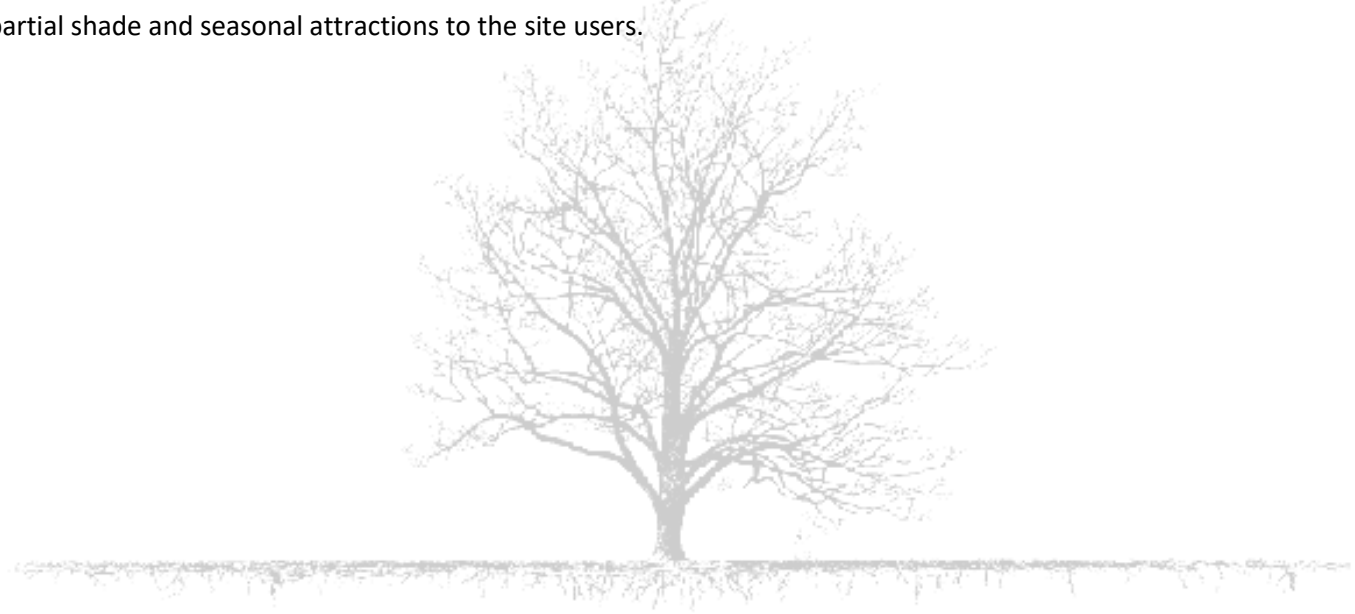
Not applicable.

4.4.3 Reflected solar glare.

Not applicable.

4.4.4 Relationship of future occupants & the nearby trees

The proposal intends to integrate additional tree planting into the landscaped area, where they will confer desired partial shade and seasonal attractions to the site users.



4.4.5 Additional Implications of the Development to the nearby trees

5.1 Loss of amenity by reduced tree stock.

Three trees are required for removal and will be replaced with thirty one. There will be no loss of arboricultural amenity.

5.2 Loss of wildlife habitat.

Not within the scope of this assessment.

5.3 Loss of species diversity.

Not within the scope of this assessment.

5.4 Site exposure through tree loss.

The proposal intends to replace three existing trees with thirty one replacements. The proposal will result in a significant arboricultural improvement through increased tree numbers, species suitability and longevity.

5.5 Arboricultural character of the site.

There will be an overall improvement to the arboricultural character of the developed areas from the proposals.

5.6 Arboricultural amelioration.

No additional amelioration is considered necessary, provided the proposals are undertaken.

6 Proposed Access, site welfare, storage & parking

6.1 Not applicable.

7. Soil contamination

Not within the scope of this assessment.

8. Conclusion

Under BS5837:2012 & general development procedures, development projects should accommodate the needs of valuable trees on & around the proposed development site, both through their design & construction, so that what is proposed will not significantly affect the valuable trees on or surrounding the site, or create bad future relationships between the trees of value & the developments constructed.

The proposal via its design, would result in a significant improvement to arboricultural amenity within the development area.

This concludes the implications assessment.

Mark Clews.

Appendix A – BS5837:2012 Tree Quality Assessment Flow Chart

BS5837 tree quality categories

BS5837 requires that all trees surveyed are assessed for structural & physiological quality; for their significance in contributing arboriculturally, aesthetically, ecologically, landscape context & culturally to their locality & for the remaining significant contribution they are estimated to have in their current context. The cascade chart in the standard has been reproduced below:

Category A **Shown as Green on plan**

Category A – Trees of High Quality & Value		
Minimum remaining Contribution: 40 years		
Sub-categories:		
1	2	3
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)
Trees in this category are the dominant trees in a group, or fine examples of their species, or occupy key positions within the local landscape, on the surveyed site and particular emphasis should be given on their retention		

Category B **Shown as Blue on plan**

Category B – Trees of Moderate Quality & Value		
Minimum remaining Contribution: 20 - 40 years		
Sub-categories:		
1	2	3
Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Trees in this category can be retained as individuals or as groups.		

Category C **Shown as Grey on plan**

Category C – Trees of Low Quality & Value

Minimum remaining Contribution: 10 - 20 years

Sub-categories:

1	2	3
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

Currently in adequate condition to remain until new planting could be established (minimum of 10 years), or young trees with a stem diameter below 150mm.
Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm can be considered for relocation.

Category U **Shown as Red on plan**

Category U – Trees unsuitable for retention

Minimum remaining Contribution: <10 years

Sub-categories: None

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

NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve

Appendix B - Scope of tree survey and assessment

I. To identify all trees on the site that are 75mm diameter + at 1.5m up the trunk (DBH).

II. To identify trees surrounding the site, that would potentially be affected by any proposed development of the site.

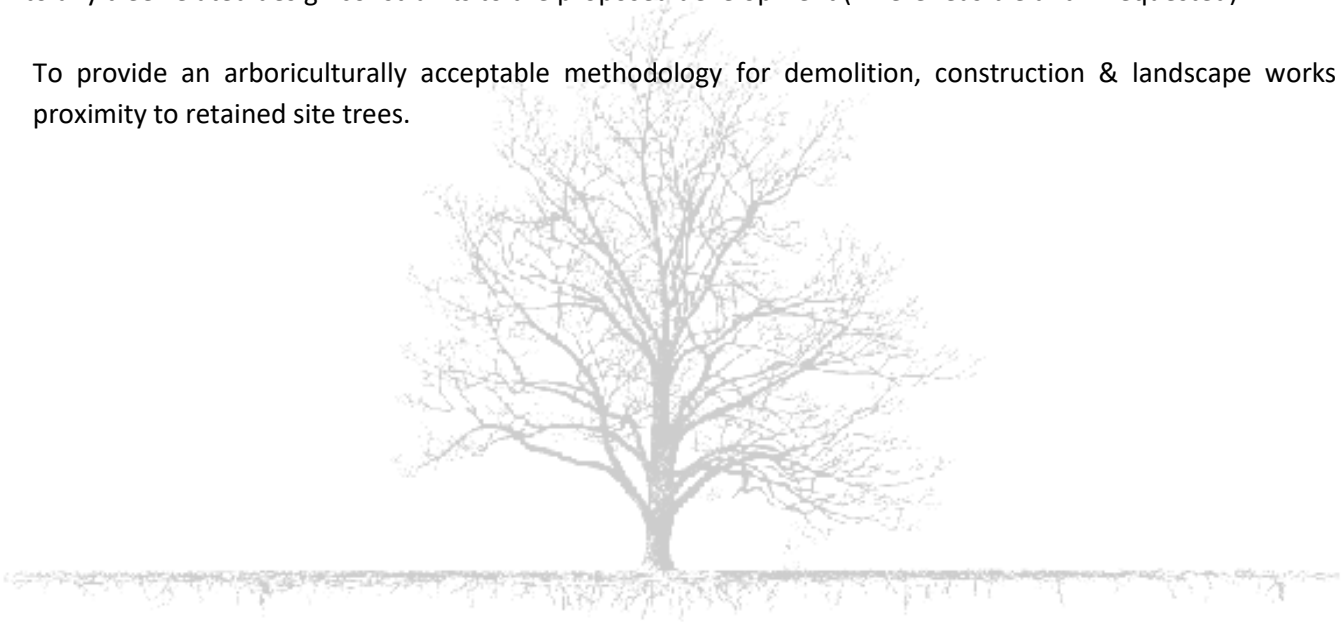
III. To carry out a detailed visual inspection of all the trees on/surrounding the site and a condition assessment made based on the inspection.

IV. To classify the trees on/surrounding the site using the tree quality assessment criteria used and recommended under BS5837:2012.

V. To identify any tree-related constraints to the proposed design and/or development of the site.

VI. To assess the impact of the proposed design against the affected trees & attempt to provide workable solutions to any tree-related design constraints to the proposed development (where feasible and if requested).

VII. To provide an arboriculturally acceptable methodology for demolition, construction & landscape works in proximity to retained site trees.



Appendix C - Limitations and Disclaimer

I. I cannot make any comment or assessment on the existence and/or condition of any underground services.

II. I cannot make any comment on the existing dynamics of the local soil hydrology.

III. I cannot make any assessment of the local water table.

IV. Any inspection of trees on or surrounding the site, have been assessed solely on the VTA method. Detailed inspections on the condition of any of the trees, is considered beyond the scope of this report. I have not carried out any further inspections, unless otherwise stated and accompanied with the resulting evidence.

V. Any assessment I have made on the condition of the trees inspected, does not hold true indefinitely. Unless otherwise stated, any assessment and recommendations can be held good for one year from the date of inspection, assuming normal climatic conditions.

VI. The assessment and report do not constitute a comprehensive tree hazard evaluation report. As such, it should not be used as an authoritative assessment on the structural integrity and/or risks the trees surveyed, present to their locality. Neither should it form the basis of any tree risk management systems. The author accepts no liability whatsoever, for consequences arising from the use of the assessments in this report for any such tree risk management program and/or for the evaluation of any hazards posed by the trees surveyed. The assessments of the trees surveyed and their possible risks in this report are simply not comprehensive enough to provide the necessary information to formulate an effective and site-appropriate tree risk management strategy. There are work recommendations in the tree schedule, but these are solely in relation to the development proposal, not in response to any general risk the trees may present to their locality.

VII. This report was written solely to provide arboricultural input to aid the design and development processes and should only be used as such.

VIII. The data contained within this document and the accompanying documents, has been provided in a non-modifiable form. Any third party modification of its data may render this document unfit for purpose and any third party responsible for such modifications, will be held solely liable for any implications this may cause.

IX. Even if all the constraints identified in the report are mitigated, this does not guarantee that the LPA will take the same view as the author of the report. Neither does it guarantee that consent will be given to the proposed development, if any proposals are discussed. The report merely identifies tree-related design and construction issues and attempts to provide solutions where possible (and if requested), to any such tree-related issues surrounding the development of the site.

X. This document and its accompanying documents have been prepared by me in my professional capacity as an arboricultural consultant. The contents of these documents do not, in any way, purport to include any manner of legal advice or opinion.

No detailed soil analysis has been undertaken by me. While BS5837 recommends an arboriculturist providing basic soil survey data, any detailed ground investigations will normally be undertaken by others & any such data would supersede the basic desktop survey data provided within this report.

Appendix D – Identified facilitation tree work & removal schedules:

SCHEDULE OF REQUIRED TREE WORKS TO SITE TREES TO FACILITATE PROPOSAL

IDENTIFIED TREES

REFERENCE	Species	Common Name	Category	Recommendations
REF. 5828	Salix sepulcralis Chrysocoma	Weeping Willow	B1/2	Fell to ground level and grind out stump
REF. 5829	Salix sepulcralis Chrysocoma	Weeping Willow	B1/2	Fell to ground level and grind out stump
REF. 5830	Salix sepulcralis Chrysocoma	Weeping Willow	U	Fell to ground level and grind out stump

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Notes:
1. Unless otherwise stated, all measurements are given in metres
2. RPA = an area of ground surrounding a tree that is required to be protected. Unless otherwise stated, the RPA radius is given, without modification for known site features that will have modified this radius
3. BS5837 category is the tree quality classification system used in the BS standard. The colours indicated are representative of those quality categories & are also reflected in the tree survey plans
4. Tree Work Recommendations on this schedule, is based solely on sound arboricultural management
5. Physiological & structural condition fields are basic fields with more detail sometimes provided in the notes field

BS5837:2012 Calculation of stem diameters & root protection areas (RPA):

Trees with single stems = Stem dia x 12 = RPA radius

Trees with 2 - 5 stems = $\sqrt{(stem\ dia\ 1)^2+(stem\ dia\ 2)^2 \ldots (stem\ dia\ 5)^2}$ = stem dia x 12 = RPA radius.

Trees with 6+ stems = $\sqrt{(mean\ stem\ dia)^2 x\ number\ of\ stems}$ = stem dia x 12 = RPA radius

Initial tree survey schedule of trees surveyed in Quad area, Brunel University

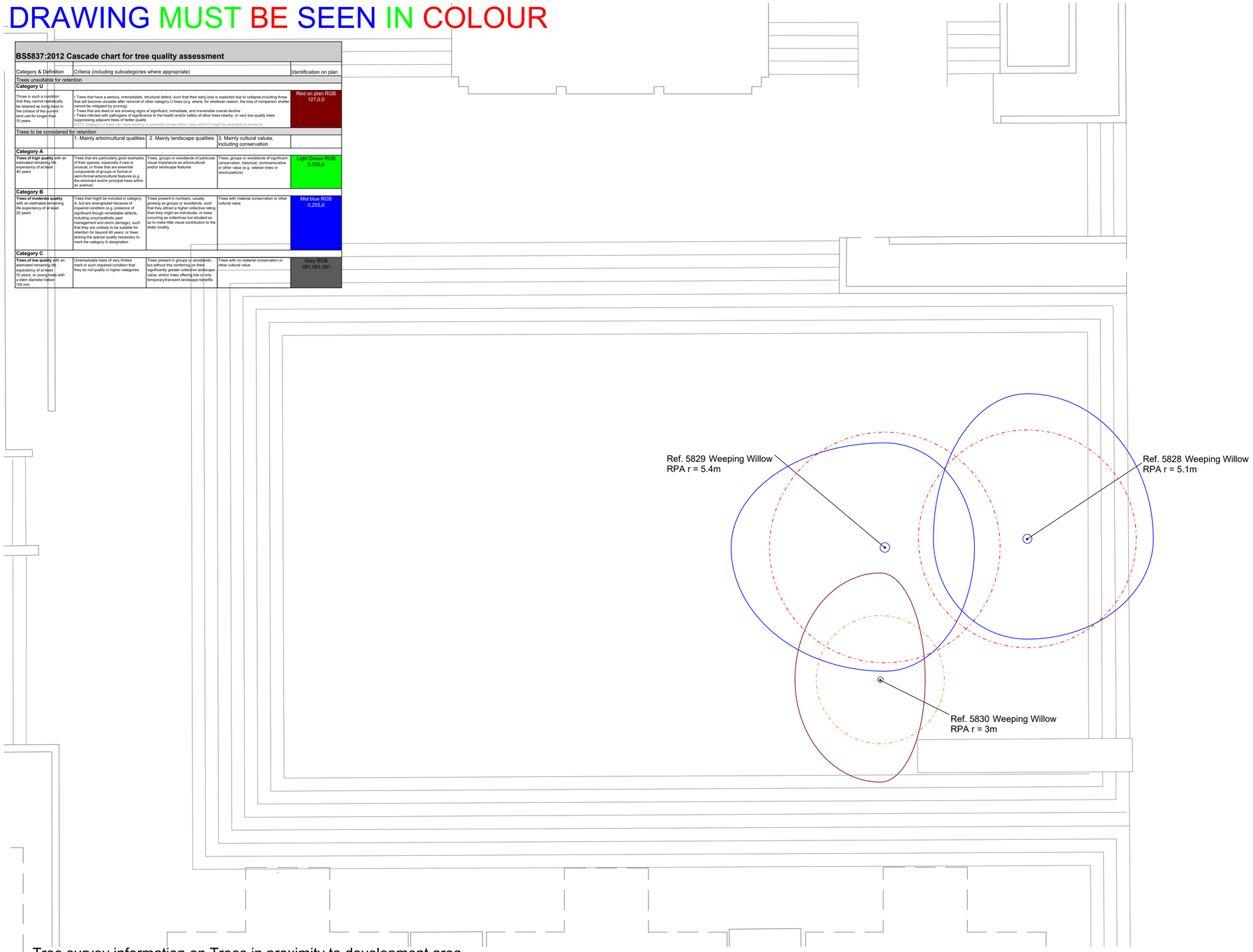
Tree quality & hence values have been based principally on amenity contribution. While other values exist, such as ecological values, these have not been used as the primary factor in determining the surveyed tree values

Date	Reference	Species	Common Name	Height	Stem Diameter	Number of stems	RPA Radius	RPA area (in m²)	Canopy NESW	Crown Clearance	First Sig Branch height (m)	First Sig Branch Direction	Age Class	Physiological Condition	Structural Condition	Est. Remaining Contribution	BS5837 Category	Recommendations	Notes
17/03/2023	Ref. 5828	Salix sepulcralis Chrysocoma	Weeping Willow	9m	0.42m	1 No. Stems	RPA r = 5.1m	81m²	6.8 N 5.9 E 4.7 S 4.4 W	3m	4m	East	4 - Mature	3 - Moderate	Fair	20 - 40 years Years	B1/2	Fell to ground level and grind out stump	Of moderate landscape contribution
17/03/2023	Ref. 5829	Salix sepulcralis Chrysocoma	Weeping Willow	10m	0.44m	1 No. Stems	RPA r = 5.4m	92m²	4.9 N 4.2 E 5.8 S 7.2 W	2m	3m	West	4 - Mature	3 - Moderate	Fair	20 - 40 years Years	B1/2	Fell to ground level and grind out stump	One primary branch to upper west has local exposed decay section at 6-7m. Moderate associated adaptive growth visible. Of moderate contribution
17/03/2023	Ref. 5830	Salix sepulcralis Chrysocoma	Weeping Willow	8m	0.26m	1 No. Stems	RPA r = 3m	28m²	5 N 2.1 E 4.8 S 4 W	2m	3m	West	4 - Mature	3 - Moderate	Poor	<10 years Years	U	Fell to ground level and grind out stump	Exposed section of stem to north-west at 1.2m. Exposed wood has advanced decay visible, although has good associated adaptive growth. Screwdriver pushed in 120mm of 260mm. Of very limited remaining contribution

DRAWING MUST BE SEEN IN COLOUR

BS5837:2012 Cascade chart for tree quality assessment

Category & Definition	Criteria (including subcategories where appropriate)			identification on plan
Trees unsuitable for retention				
Category U				
Those in such a condition that they cannot reasonably be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, immediable, 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 NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.			Red on plan RGB 127,0,0
Trees to be considered for retention				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
Category A				
Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light Green RGB 0,255,0
Category B				
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid blue RGB 0,255,0
Category C				
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey RGB 091,091,091



Key:

- BS5837 A CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 B CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 C CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 U CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 ROOT PROTECTION ZONE FOR TREES THAT SHOULD NORMALLY BE CONSIDERED FOR RETENTION, THEREBY *POTENTIALLY* PRESENTING CONSTRAINTS TO THE DESIGN & CONSTRUCTION OF THE PROPOSAL
- BS5837 ROOT PROTECTION ZONE FOR TREES THAT ARE OF LOW QUALITY / VALUE AND DO NOT NORMALLY PRESENT CONSTRAINTS TO THE DESIGN & CONSTRUCTION OF THE PROPOSAL

NORTH

BS5837:2012 Calculation of stem diameters & Root Protection Areas:

Trees with single stems = Stem dia x 12 = RPA radius

Trees with 2 - 5 stems = √ (stem dia 1)² + (stem dia 2)²... + (stem dia 5)² = Stem dia x 12 = RPA radius

Trees with 6+ stems = √ (mean stem dia)² x number of stems = Stem dia x 12 = RPA radius

Notes;

Tree survey plan showing existing tree survey data for client site.

Drawing accuracy;

a. *The non-arboricultural parts of this drawing have been produced using spatial data derived from a survey undertaken by others. No responsibility can be taken for incorrect site features. If any arboricultural mistakes are identified, inform the arboriculturist.*
b. *Unless otherwise stated, do not scale off drawing. Dimensions shown must be used. Any shown dimensions are in meters.*

Tree Survey data;

c. *Survey plan indicates tree positions, canopy dimensions & BS5837 tree quality categories through colour of canopies.*
d. *For detailed information on the trees shown; please read the accompanying tree survey schedule.*
e. *Supplementary information on the surveyed trees may be found in an accompanying arboricultural report.*
f. *Trees with stem diameters below 7cm will not have been recorded, unless specifically requested.*

Tree survey information on Trees in proximity to development area

Surveyed Trees

Date Surveyed	Reference	Species	Common Name	Height	Stem Diameter	Number of Stems	RPA Radius	RPA Area	Canopy NESW	Crown Clearance Height	First Significant Branch Height	First Significant Branch Direction	Age Class	Physiological Condition	Structural Condition	Est. Remaining Contribution	Category	Recommendations	Notes
17/3/2023	Ref. 5828	Salix sepulcralis Chrysocoma	Weeping Willow	9m	0.42m	1 No. Stems	RPA r = 5.1m	81m²	6.8 N 5.9 E 4.7 S 4.4 W	3m	4m	East	4 - Mature	3 - Moderate	Fair	20 - 40 years	B1/2	None	Of moderate landscape contribution
17/3/2023	Ref. 5829	Salix sepulcralis Chrysocoma	Weeping Willow	10m	0.44m	1 No. Stems	RPA r = 5.4m	92m²	4.9 N 4.2 E 5.8 S 7.2 W	2m	3m	West	4 - Mature	3 - Moderate	Fair	20 - 40 years	B1/2	None	One primary branch to upper west has local exposed decay section at 6-7m. Moderate associated adaptive growth visible. Of moderate contribution
17/3/2023	Ref. 5830	Salix sepulcralis Chrysocoma	Weeping Willow	8m	0.26m	1 No. Stems	RPA r = 3m	28m²	5 N 2.1 E 4.8 S 4 W	2m	3m	West	4 - Mature	3 - Moderate	Poor	<10 years	U	None	Exposed section of stem to north-west at 1.2m. Exposed wood has advanced decay visible, although has good associated adaptive growth. Screwdriver pushed in 120mm of 260mm. Of very limited remaining contribution

March 2023

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Site: John Crank Building Project

Plan Title: Tree Survey Plan

Client: Brunel University

Scale	Date	Issue Status
1:100@A1	6/03/2023	ISSUED

Drawing No.: AIA2023-BUJC-001-A-survey

Revision: A

DRAWING MUST BE READ IN COLOUR

Key:

- BS5837 A CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 B CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 C CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 U CLASS TREE. HATCHED CANOPY DENOTES REMOVAL/REPLACEMENT
- BS5837 ROOT PROTECTION ZONE FOR TREES THAT SHOULD NORMALLY BE CONSIDERED FOR RETENTION, THEREBY *POTENTIALLY* PRESENTING CONSTRAINTS TO THE DESIGN & CONSTRUCTION OF THE PROPOSAL
- BS5837 ROOT PROTECTION ZONE FOR TREES THAT ARE OF LOW QUALITY / VALUE AND DO NOT NORMALLY PRESENT CONSTRAINTS TO THE DESIGN & CONSTRUCTION OF THE PROPOSAL
- PROPOSED FOOTPRINTS

Existing sunken area to be brought up to same levels as wider area as part of the greater landscape works. Levels within the RPAs of the existing trees to be raised by approx 600mm

Ref. 5829 Weeping Willow
RPA r = 5.4m

Ref. 5828 Weeping Willow
RPA r = 5.1m

Ref. 5830 Weeping Willow
RPA r = 3m

Schedule of required tree works to site trees to facilitate proposal

Identified Trees

Reference	Species	Common Name	Category	Recommendations
Ref. 5828	Salix sepulcralis Chrysocoma	Weeping Willow	B1/2	Fell to ground level and grind out stump
Ref. 5829	Salix sepulcralis Chrysocoma	Weeping Willow	B1/2	Fell to ground level and grind out stump
Ref. 5830	Salix sepulcralis Chrysocoma	Weeping Willow	U	Fell to ground level and grind out stump

March 2023. All works to be undertaken in accordance with BS3998:2010.

Notes;

Proposal shown overlaid onto existing trees. Only areas conflicting with site trees shown.

Drawing accuracy;

a. *The non-arboricultural parts of this drawing have been produced using spatial data derived from a survey undertaken by others. No responsibility can be taken for incorrect site features. If any arboricultural mistakes are identified, inform the arboriculturist.*
b. *Unless otherwise stated, do not scale off drawing. Dimensions shown must be used. Any shown dimensions are in meters.*

Tree Survey data;

c. *Survey plan indicates tree positions, canopy dimensions & BS5837 tree quality categories through colour of canopies.*
d. *For detailed information on the trees shown, please read the accompanying tree survey schedule.*
e. *Supplementary information on the surveyed trees may be found in an accompanying arboricultural report.*
f. *Trees with stem diameters below 7cm will not have been recorded, unless specifically requested.*

*BS5837:2012 **Calculation** of stem diameters & Root Protection Areas:*

*Trees with single stems = **Stem dia x 12** = RPA radius*

*Trees with 2 - 5 stems = **√ (stem dia 1)² + (stem dia 2)²... + (stem dia 5)² = Stem dia x 12** = RPA radius*

*Trees with 6+ stems = **√ (mean stem dia)² x number of stems = Stem dia x 12** = RPA radius*

NORTH

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Site: John Crank Building Project

Plan Title: Proposal Plan - areas to affect existing trees

Client: Brunel University

Scale	Date	Issue Status
1:100@A1	16/3/2023	ISSUED

Drawing No.: AIA2023-BUJC-002-A-proposed

Revision: A