

Trees and Construction

BS5837 Tree Survey Assessment

Site: Bersham Hall, Wrexham, LL14 4HS

Client: QEWC Ltd

Ref: 20102_22/A1



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1. INTRODUCTION

- 1.1 **Instruction:** This advice has been prepared for the QEWCLtd (hereafter; client) and is in respect of the tree related planning considerations at Bersham Hall, Wrexham, LL14 4HS (hereafter; site).

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

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

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

- 1.4 Following instruction the consultant surveyed the site on the 31st May 2022 where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.

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

- 1.6 The survey data and site observations use the supplied topographical survey to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter; TCP).

The TCP has an overlay of the proposed scheme to enable review. The TCP informs this assessment and is used as a base layer for the appended 'Tree Protection Plan' (hereafter; TPP); the TCP, tree survey data table and TPP are at Appendix III.

2. SITE INFORMATION & TREE ASSESSMENT

- 2.1 The wider site consists of Bersham Hall with associated structures, access and amenity areas. The surveyed site section consists of a section of the rear garden associated to Bersham Hall.
- 2.2 **Proposal:** It is understood that the proposed scheme involves the construction of a rear carparking area accessed from the side of the property.
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the existing property and potential construction area.
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A'- Good, 'B'- Moderate, C - low' and 'U' -Uncategorized being attributed to trees/tree groups; it is also worth noting that the BS5837 circular RPAs are considered to halt at the extents of existing property such as walls etc.
- 2.4.2 The BS5837 tree survey is a means of objective assessment and reflects the trees' condition, quality contribution, remaining life expectancy and spatial considerations (stem, crown and roots). On this basis and in order to consider the trees' accurate constraints, the survey data has the crown extents for north, south, east west, the stem diameter measurement, and the calculated root protection areas (hereafter; RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.

3. FINDINGS & RECOMMENDATIONS

- 3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (20102/TCP/01).

NOTE: This information as s.3 for the 'tree survey assessment' was provided as an informative of the arboricultural considerations and constraints to site as the tree report. It is included herein for reference and context and is supplemented with a review of the scheme as the AIA (section 4).

3.2 General Considerations for Tree Retention / Removal

- 3.2.1 Based on the individual prominence, amenity contribution and future potential of the high quality 'A' category trees, it is recommended that they be retained, protected and be clear of the proposal. Again, this is best achieved by avoidance where their crowns and RPAs are accommodated in the design and layout of the scheme.

- 3.2.2 The 'B' Class trees are considered of value both individually and in the landscape and should be retained by design. Proposed encroachment or removal would need to be justifiable and mitigated in any approved scheme.

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

- 3.2.3 There a number of low quality 'C' category trees and groups which have been noted as such due to either their small scale, defects and limited current contribution and/or limited future potential. Hence, they should not significantly constrain nor guide the scheme. However, retention may be preferable to retain landscape maturity. Where tree removals are required, mitigation tree planting is recommended and to be integrated as part of a landscape scheme.

- 3.2.4 Due to the poor condition and defects noted to the trees categorised as 'U' and in the context of a development with regular future site use it is recommended that T12 be removed.

- 3.2.5 Although many of the trees have defects, these largely relate to the general age and collective growth of trees. Aside from those categorised as 'U', general pruning and ongoing management of the trees on site will allow for their safe retention.

3.3 Tree Protection

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

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

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

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

3.4 General Overview

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

Tree Works

The tree removals to facilitate the scheme are to be justifiable in the context of the site layout and are to be mitigated by way of a landscape scheme; new tree planting will be required to replace and enhance the site's canopy cover with a general scheme of landscaping in acknowledgement for the removal of poor quality trees.

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

Tree Crowns

Taking account of the previous encroachment on structures, providing the previous conditions remain or the clearance is increased this should demonstrate no change of circumstance or an improvement to the existing conditions and should be acceptable.

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

Root Protection Areas (RPA)

As a minimum it would be suitable to consider the outer extents of retained trees' RPAs [up to the previous foundations] as construction exclusion zones and be protected.

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

Demolition/Excavation Works

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

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

Hard Landscape Works

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

The surrounds of the site are predominantly hard surfaced as well as the retained section of driveway/track to the east site section. These can be suitably considered for replacement surfacing on a like for like basis or of a preferential surface treatment.

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

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

Planting Species and Volume

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

Depending on the volume and quality of trees to be removed, new tree planting should directly proportionate; a 1:1 removal to replacement ratio is considered suitable.

Planting Specification

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

Planting Location

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

Based on the residential use of the site, good tree planting space is anticipated. It is necessary however to consider and avoid future canopy/shade conflicts. Smaller scale fastigate species could be selected for the front gardens and trees with individual characteristics and biodiversity contribution could be selected for the rear gardens.

3.5 Additional Details

3.5.1 The surveyed trees have been subject to a detailed inspection and the arboricultural considerations detailed within this advice. The advice herein is intended to guide a suitable design in consideration for the site's valuable amenity assets.

3.5.2 Where retained trees are avoided and removed trees are mitigated, the considerations herein may form part of tree related planning conditions. These are detailed within an arboricultural method statement (AMS) based on the approved scheme.

However, anticipated impacts on trees, encroachment of crowns, RPA incursion or proposed construction near trees will likely require a detailed AMS to support the planning application and should be requested where present within the design.

3.5.3 Further to the above, the finer details of layout, design detail to accommodate trees and any proposed new tree planting are to be illustrated within a landscape plan. This is to include the exact details of hard and soft landscape works, RPA sections (where surface works are proposed) and details of new tree planting location, species,

stock selection, installation and maintenance; to be undertaken by the appointed landscape architect with the full support of the arboricultural consultant (where required).

- 3.5.4 Hence, further to the supply of the proposed site plan for the planning application, this will be reviewed as an arboricultural implications assessment (AIA) to inform AMS 'considerations'. Where this advice is accounted for, this will enable the arboricultural constraints to be managed effectively, i.e. phased works, tree protection fences etc.

4. SCHEME / IMPLICATIONS ASSESSMENT

4.1 For the purpose of this assessment, the proposed site plan is used as a basis for consideration. This takes account of anticipated tree removals, tree protection options and potential alterations to account for arboricultural features; as per section 1.6 a section 2.2 herein, the TCP shows the 'proposed site plan' as an overlay for review.

4.2 Currently it would appear that a number of trees will be affected by the development. These are currently T12, T13, T14, T16, T17, T18, T19, T20, T22, T23, T24, G2 and G3.

Of these;

'A' Class: T14

'B' Class: T13, T22 and T24

'C' Class: T16, T17, T18, T19, T20, T21, T22, T23 G2 and G3.

4.3 Further to the above T7, T9 and T10 are offsite trees and their Root Protection Areas (RPA) will be affected. T16 and T21 are on site trees which will be affected by the proposal in terms of RPA impingement. To preserve these trees it will be required to use a 'no-dig' porous surface within their RPAs which preserves the current site levels.

4.4 It is currently envisaged that the removal of T13, T14, T22, T24 will be resisted by the Local Authority. The removal of T16, T17, T18, T19, T20, T21, T22, T23 G2 while classed as 'C' and should not in themselves constrain the development, it is envisaged that the Local Authority will take their values as a group that supplements T13, T14, T22, T24.

It is advised that the proposed car park is so that the above trees are placed outside of the proposed car parking area and that the entire car park surface is constructed using a 'No Dig' surfacing situated entirely above the existing soil surface and where needed using a proprietary cellular confinement system (GeoWeb or similar) laid over a bi-axel geo-grid (tensar TriAx or similar).

CURRENT REQUIRED TREE WORK SUMMARY

NUMBER	TREE REMOVALS / PRUNING WORKS	
T12, T13, T14, T16, T17, T18, T19, T20, T22, T23, T24, G2 and G3	Remove	Remove in conjunction with the scheme: Replacements to be provided within the landscape scheme.
Retained trees		Protection by placement of fixed BS5837 specification Heras panels around the crown / RPA extents to have no access during construction and manually operative sensitive surface works and retained soil levels within RPAs.

Appendix I

Caveat

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

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Appendix II

Terms and Definitions

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

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

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

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

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

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

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

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

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

Appendix III

Data Table: As appended (BS5837 Tree Survey Key & Table)

Tree Constraints Plan: As appended (20102_22/TCP 01 and 20102_22/TCP 02)

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

CLIENT: QEWC Ltd

PROJECT REF: 20102_22

SITE: Bersham Hall LL14 9HS.

CONTACT: /

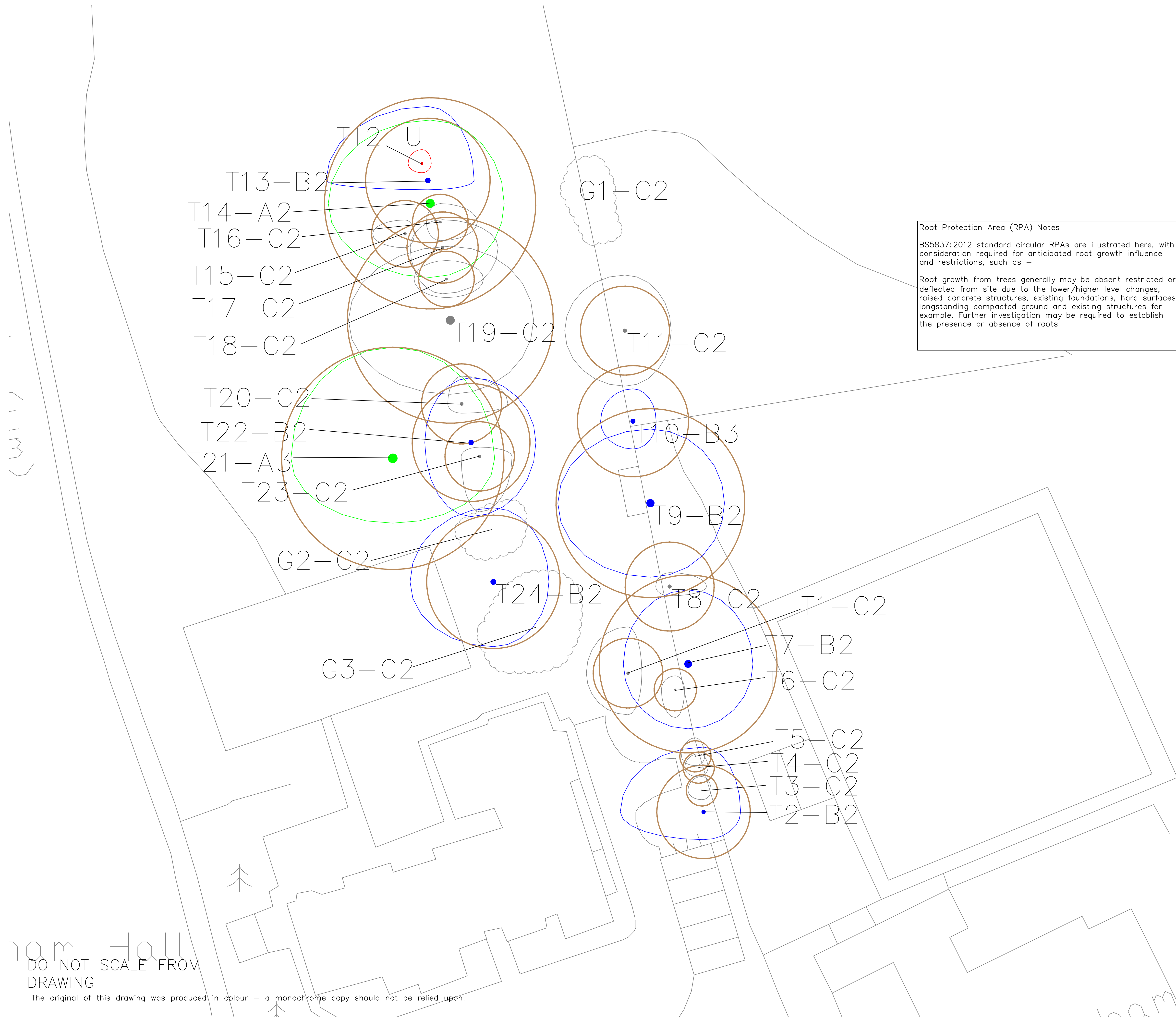
SURVEY DATE: 31 May 2022

ARB CONSULTANT: Rod Benzies (MARborA)

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T1	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	EM/M	9.5	5.0	4.5	1.5	4.5	280, 140	3.76	2.25	2All round	Low/Norm	10_20	Set in soft landscape bed. Concrete paths and pavements within RPA. Multistemmed tree 2 stems. Signs of adhoc pruning	C 2	
T2	Turkey Oak; Quercus cerris; Fagaceae	EM/M	18+	7.0	3	4.0	9.0	420	5.04	2.5	4.75W	Norm	20-40	Set in soft landscape bed. Concrete paths and pavements within RPA. Signs of adhoc pruning . Building within RPA. Asymmetric crown arrangement	B 2	
T3	Hawthorn; Crataegus monogyna; Rosaceae	EM/M	5	1.5	1	1.0	1.5	140	1.68	1.75	2All round	Norm	20-40	Set in soft landscape bed. Dense Ivy on stem and into crown	C 2	
T4	Apple; Malus (Spps); Rosaceae	EM/M	5	1.5	1	1.0	1.5	140	1.68	2.5	2All round	Norm	20-40	Set in soft landscape bed	C 2	
T5	Apple; Malus (Spps); Rosaceae	EM/M	4	2.0	1	1.0	1.5	140	1.68	1.75	2All round	Norm	20-40	Set in soft landscape bed. Dense Ivy on stem and into crown	C 2	
T6	Hawthorn; Crataegus monogyna; Rosaceae	EM/M	5	1.5	3	1.0	1.5	190	2.28	1.75	2All round	Norm	20-40	Set in soft landscape bed. Leaning south west	C 2	
T7	Sycamore; Acer psuedoplatanus; Aceraceae	M	18+	8.0	7	7.0	7.0	800*	9.6	2	4All round	Norm	40+	Set in soft landscape bed. Leaning south west. Set in neighbouring property. Dense Ivy on stem and into crown. Unsighted assessment. Possibly Multistemmed	B 2	
T8	Hawthorn; Crataegus monogyna; Rosaceae	EM/M	5	1.5	1	4.0	1.5	400*	4.8	2	2All round	Norm	10_20	Set in neighbouring property. Dense Ivy on stem and into crown. Unsighted assessment	C 2	
T9	Sycamore; Acer psuedoplatanus; Aceraceae	M	20+	8.0	8	8.0	10.0	600, 600	10.19	2	2All round	Norm	40+	Set in neighbouring property. Dense Ivy on stem and into crown. Unsighted assessment	B 2	
T10	Hawthorn; Crataegus monogyna; Rosaceae	M	7	3.5	3	2.5	3.5	Multistemmed 500*	6	2	2All round	Norm	40+	Set in neighbouring property. Dense Ivy on stem and into crown. Unsighted assessment	B 3	
T11	Goat Willow; Salix capreae; Salicaceae	M	9	6.0	6	5.0	6.5	400	4.8	1	1All round	Norm	20-40	Set in neighbouring property. Unsighted assessment. Self seeded tree	C 2	
T12	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	M	5	1.5	1	1.0	1.5	250	3	0	1All round	Dead	Dead	Dense Ivy on stem and into crown. Dead tree	U	
T13	Sycamore; Acer psuedoplatanus; Aceraceae	M	16.5	8.0	1	5.0	11.0	560	6.72	2	3.75W	Norm	40+	Dense Ivy on stem and into crown. Subdominant to adjacent tree. Asymmetric crown arrangement. Growth pattern affected by light competition	B 2	
T14	Sycamore; Acer psuedoplatanus; Aceraceae	M	20+	9.0	8	8.0	11.0	620, 720	11.4	2.5	3W	Norm	40+	Dense Ivy on stem and into crown. 2 individual trees grown in close proximity, mutually exclusive . Suckering at base. Signs of adhoc pruning . Rope equipment attached to base	A 2	
T15	Hawthorn; Crataegus monogyna; Rosaceae	M	9	1.5	1.5	1.0	3.5	300	3.6	2	2All round	Norm	10_20	Rope equipment attached to base. Exposed surface roots	C 2	
T16	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	M	7	2.0	2	4.0	1.5	250	3	2	2All round	Norm	10_20	Rope equipment attached to base. Exposed surface roots. Signs of limb failure. Linear splits and cavities in main stem	C 2	

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
T17	Sycamore; Acer psuedoplatanus; Aceraceae	EM/M	16	3.0	5	6.0	3.5	320	3.84	2	2All round	Norm	10_20	Rope equipment attached to base. Exposed surface roots. Signs of limb failure. Linear splits and cavities in main stem. Curved main stem. Dense Ivy on stem and into crown	C 2	
T18	Hawthorn; Crataegus monogyna; Rosaceae	M	13	2.0	2	4.0	3.5	250	3	2	2All round	Norm	10_20	Rope equipment attached to base. Dense Ivy on stem and into crown. Signs of adhoc pruning	C 2	
T19	Sycamore; Acer psuedoplatanus; Aceraceae	M/OM	20+	8.0	8	9.0	11.0	430, 820	11.11	3.5	4.75All round	Norm	40+	Rope equipment attached to base. Exposed surface roots. Dense Ivy on stem and into crown. Smaller subdominant stem affected by light competition. Smaller stem could be removed without affecting larger stems viability	C 2	
T20	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	M	9	3.0	1	5.0	1.5	360	4.32	2.5	4.75All round	Norm	10_20	Rope equipment attached to base. Asymmetric crown arrangement	C 2	
T21	Horse Chestnut; Aesculus hippocastanum; Hippocastanaceae	M/OM	20+	12.0	7	11.0	11.0	1000+	12	2	3.75All round	Norm	40+	Exposed surface roots. Multistemmed from 5m. Large branch pruning wounds decaying into stem (compartmentalized). Similar large cavities in lower scaffolds. Wet cavity weeping at base. Long lateral branches . Large hanging branch in centre crown	A 3	Remove hanging branches
T22	Sycamore; Acer psuedoplatanus; Aceraceae	M	18+	7.0	8	7.0	5.0	530	6.36	2.5	4.75All round	Norm	40+	Rope equipment attached to base. Bow to main stem. Crown lifting has taken place in the past	B 2	
T23	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	EM/M	7	1.0	6	3.5	2.0	200, 240	3.74	2.5	4.75All round	Norm	10_20	Rope equipment attached to base. Multistemmed from base. Failed stem (still alive) now layering into ground	C 2	
T24	Sycamore; Acer psuedoplatanus; Aceraceae	M	20+	8.0	7	6.0	9.0	600	7.2	3.5	3All round	Norm	20-40	Rope equipment attached to base. Linear cavity at base level. Dense Ivy on stem and into crown. compacted surrounding soil. Tight Fastigate branch structure	B 2	
G1	Common Hazel; Corylus avellana; Betulaceae;Sycamore; Acer psuedoplatanus; Aceraceae	M	9	N/A	N/A	N/A	N/A	250	3	0	0	Norm	20-40	Coppice stool regrowth	C 2	
G2	Hybrid Holly; Ilex alterclarensis; Aquifoliaceae	M	7	N/A	N/A	N/A	N/A	200	2.3	0	0	Norm	20-40	Multistemmed from base	C 2	
G3	Myrobalan Plum; Plum; Prunus cerasifera Rosaceae; Rosaceae	M	10	N/A	N/A	N/A	N/A	500* largest stem	6	0	0	Norm	10_20	Multistemmed tree 5 stems. Signs of adhoc pruning . Linear splits and cavities in main stem	C 2	

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W	STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.	MANAGEMENT
TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'													
	TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;										
	TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);										
	SPECIES	-	Genus, species and/or common name;										
	AGE	-	Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature);										
	HEIGHT (in m)	-	Approximate height of tree in metres;										
	CANOPY (in m) N - S - E - W	-	Approximate branch spread in metres of the four principal compass points;										
	STEM (in mm)	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;										
	RPA (in m)	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);										
	CLEARANCE (in m)	-	Crown clearance in metres above the adjacent ground level;										
	1ST BRANCH (in m)	-	Clearance in metres to first significant branch and direction of growth (where relevant);										
	VITALITY	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);										
	ESTIMATED REMAINING CONTRIBUTION	-	Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;										
	NOTES	-	Structural and physiological condition observations;										
	BS CAT.	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy); Standard retention category U : in such a condition that any existing value would be lost within 10 years; Standard retention category A : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years; Standard retention category B : moderate quality and value, in such a condition as to make a significant contribution of 20+ years; Standard retention category C : low quality and value, currently in adequate condition to remain until new planting could be established 10+ years; Standard retention sub-category, mainly due to: 1- Arboricultural values, 2- Landscape values, 3- Cultural values, including conservation;										
	MANAGEMENT	-	Preliminary management recommendations (as appropriate);										
	' * '	-	Within the survey schedule denotes an estimate										



KEY

Tree Crown Spread

Root Protection Area (RPA)

Tree Stem

T1Tree No.

Removed Tree

Tree Condition Category

A

B

C

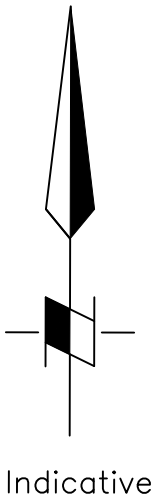
U

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

Root Protection Area (RPA) Notes

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

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

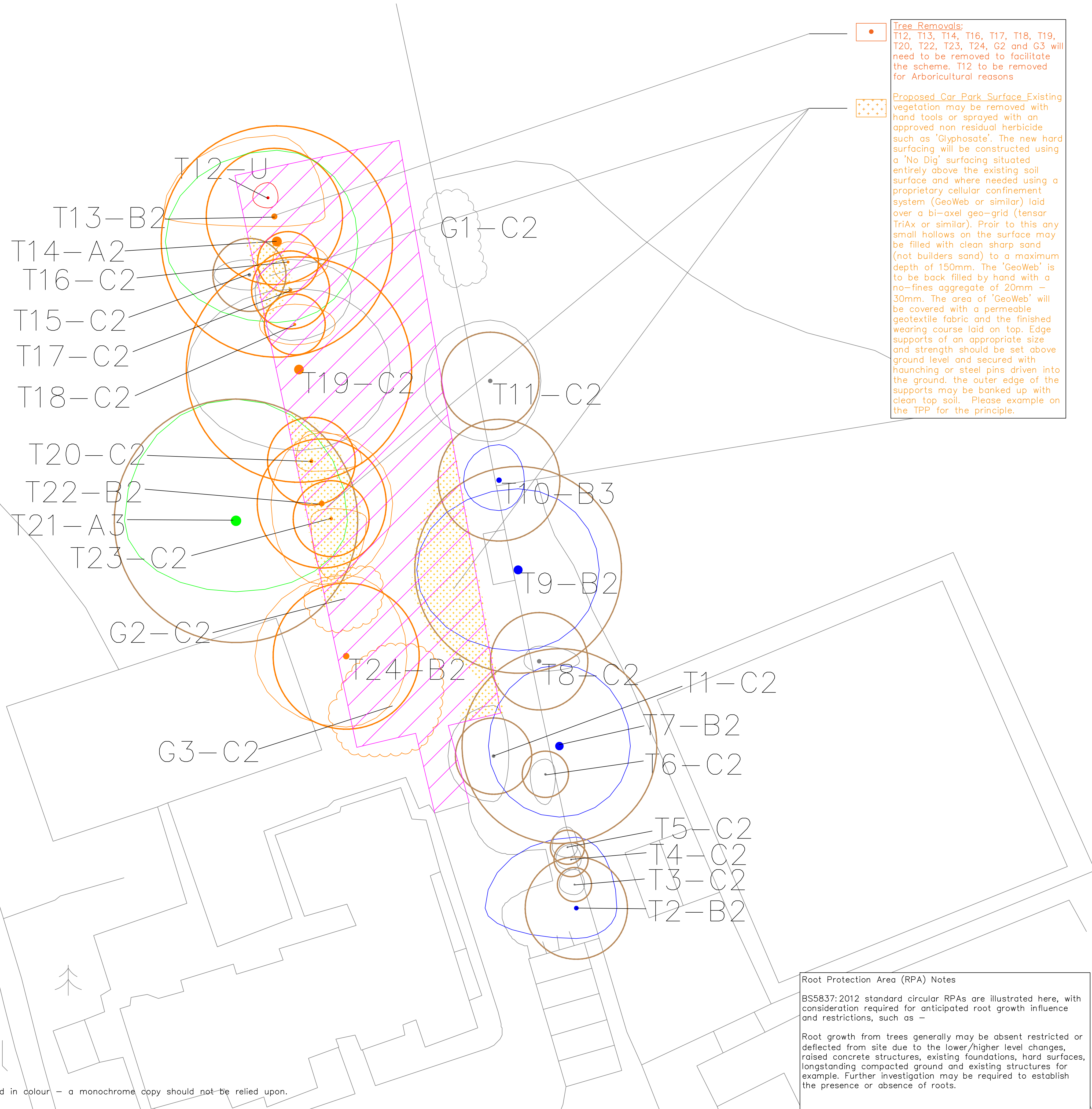


REV.	DESCRIPTION	DWN	CHK'D	DATE		
CLIENT						
QEwC Ltd						
PROJECT						
20102_22/A1 Bersham Hall, Bertram Road, Wrexham, LL14 4HS						
TITLE						
Tree Constraints Plan						
DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	09/06/2022	AT	09/06/2022			1-200
IndigoLtd Surveys (Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester. CH1 4EB Telephone: 0333 123 7080 www.indigosurveys.co.uk						
Drawing Number						A1
20102_22/A1/TCP/01						REV.
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Tree Removals:
T12, T13, T14, T16, T17, T18, T19, T20, T22, T23, T24, G2 and G3 will need to be removed to facilitate the scheme. T12 to be removed for Arboricultural reasons

Proposed Car Park Surface: Existing vegetation may be removed with hand tools or sprayed with an approved non residual herbicide such as 'Glyphosate'. The new hard surfacing will be constructed using a 'No Dig' surfacing situated entirely above the existing soil surface and where needed using a proprietary cellular confinement system (GeoWeb or similar) laid over a bi-axel geo-grid (tensar TriAx or similar). Prior to this any small hollows on the surface may be filled with clean sharp sand (not builders sand) to a maximum depth of 150mm. The 'GeoWeb' is to be back filled by hand with a no-fines aggregate of 20mm - 30mm. The area of 'GeoWeb' will be covered with a permeable geotextile fabric and the finished wearing course laid on top. Edge supports of an appropriate size and strength should be set above ground level and secured with haunching or steel pins driven into the ground. the outer edge of the supports may be banked up with clean top soil. Please example on the TPP for the principle.

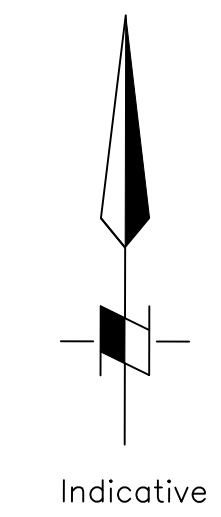
KEY

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

Tree Condition Category

- A
- B
- C
- U

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



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Root Protection Area (RPA) Notes

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REV.	Based on TCP 20102_22 & Current scheme outline	RB	TB	9/6/22
	DESCRIPTION	DWN	CHK'D	DATE

CLIENT
QEwC Ltd

PROJECT
20102_22/A1
Bersham Hall, Bertram Road,
Wrexham, LL14 4HS

TITLE
Tree Constraints Plan
Scheme Overlay

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	09/06/2022	AT	09/06/2022			1-200

(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester. CH1 4EB
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