

Trees and Construction

BS5837:2012 Tree Survey, Arboricultural Implications Assessment & Method Statement

Site: Whitworth Community High School,
Whitworth, Rochdale

Ref: 21377/A1_AIA

Client: Wates Construction Ltd.



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

0333 123 7080 | info@indigosurveys.co.uk

www.IndigoSurveys.co.uk

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

- April 2021 -



TABLE OF CONTENTS

Chapter	Title	Page
1	Introduction	3
2	Site & Application Information	4
3	Findings & Recommendations	5 - 6
4	Scheme / Impact Assessment	7
5	Method Statement 'Considerations'	8 - 10

Appendices

Caveat	I
Terms and Definitions	II
Tree data table & Tree Protection Plan	III

Revision	Description	Date
/	/	/



1. INTRODUCTION

1.1 **Instruction:** This advice has been prepared for Wates Construction Ltd. (hereafter; client) and is in respect of the tree related planning considerations at Whitworth Community High School, Whitworth, Rochdale (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 of 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 19th April 2021 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 this 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 site currently comprises an in-use school site with associated access, parking, walkways, play areas, sports area and amenity space.
- 2.2 **Proposal:** It is understood that a proposed scheme involves the partial demolition of the existing school and the construction of a new school building at site. This will include a general scheme of landscape improvement, parking provision and access around the site (see: TCP).
- 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 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'B - moderate' and 'C - low' being attributed to trees/tree groups, as well as one tree categorised as 'U'.
- 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, east, south and west, the stem diameter measurement, and the calculated root protection areas (hereafter; RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.



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 (21377/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. It is included herein for reference and context and is supplemented with a review of the scheme as the AIA (section 4) and the AMS 'considerations' (section 5).

3.2 General Considerations for Tree Retention / Removal

3.2.1 Based on the boundary line location/neighbour's site location of T2 and G3, their retention and protection is to be assumed as part of the scheme.

3.2.2 There are smaller scale trees and those with defects or limitations on the current amenity contribution or useful remaining life expectancy, these are categorised as 'C - low'.

These 'C' category trees should not constrain nor significantly guide a scheme. For any proposed tree removals, mitigation tree planting is recommended as part of a landscape scheme and can suitably replace and enhance the initial loss of canopy cover.

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

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

3.3 Tree Protection

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

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



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

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

3.4 Further to the above information, the proposed scheme is reviewed hereafter at s.4 as an Arboricultural Implications Assessment (hereafter; AIA).



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.

4.2 The proposed scheme is in conflict with the ‘C’ category trees G4 and T9. However, as per s.3.2.2, these trees should not significantly constrain nor guide the scheme. Therefore, said trees should be removed to facilitate the scheme and mitigated by new tree planting as part of a landscape scheme; a 1:1 removal to replacement ratio as mitigation is recommended for ‘C’ category trees.

4.3 The proposed scheme conflicts with the ‘B’ category trees T3. Although the retention and protection of B category trees is preferable, as per s.3.2.3, the removal of some may be mitigated by a well delivered landscape scheme.

NOTE: The proposed site plan shows a volume of new tree planting which would provide adequate mitigation for the above tree removals.

4.4 Following the above considerations for trees and noted tree works, the trees are clear of the active construction area. However, the installation of temporary tree protection will be required to ensure no impact on trees from access, vehicles, material storage etc.

4.4 Further to the above, the following tree works are required prior to site works.

TREE WORK SUMMARY

NUMBER	TREE REMOVALS / PRUNING WORKS	
T3, T9 and G4	Remove	Remove in order to facilitate the scheme: - to be replaced with new tree planting and site landscaping.
Retained trees		Protection by placement of fixed Heras panels around the crown/RPA extents, to have no access during construction.

4.5 Further to the above review and in consideration for the tree removals and need to protect retained trees, the following section contains said details as an Arboricultural Method Statement (Application Stage).



5. METHOD STATEMENT (Application Stage)

5.1 Arboricultural Construction Restrictions

5.1.1 The following restrictions are considered relevant for tree protection purposes which are illustrated on the appended Tree Protection Plan:

- a) Tree works; outside the tree works identified in s.4 above, no tree works are permitted unless agreed in writing by the council.
- b) Protective Barrier Fencing (hereafter; PBF); is to be installed around the retained trees immediately after the tree works and prior to the site works commencing.
- c) Construction Exclusion Zone (hereafter; CEZ); following the installation of PBF the fenced off section is to act as a CEZ and be supplemented with ground protection for RPA sections outside of fenced off areas as the CEZ.
- d) Material Handling; no chemicals / materials are to be transported / stored / used / mixed within exposed grounds on site; all chemical / cement storage, transport or use will be pre-prepared with impermeable liner.
- e) Site Management; no fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of a tree's canopy, within a RPA / CEZ, and the RPA / CEZ may not be breached, i.e. no mechanical digging or scraping is permitted within a RPA / CEZ.
- f) Sensitive Landscape; only following construction completion within a particular phase can the PBF be removed and any remaining soft landscape works be undertaken (ground levels to be retained within RPAs and works undertaken manually with non-mechanical hand tools).

5.2 Arboricultural Site Monitoring / Supervision

5.2.1 The site should be checked by a qualified arboriculturist throughout the construction processes to ensure the tree protection measures are adhered to, thus -

- (a) pre-commencement to confirm tree removals;
- (b) after PBF installation;
- (c) during construction to ensure adherence to this AMS; and
- (d) prior to removal of site hoarding after construction completion (or after each phase of construction completion) to sign off the site for correct tree protection and planting.



5.3 Protective Barrier Fencing (PBF) Specification

5.3.1 Barrier fencing is to be installed (and signed off by way of arboricultural supervision) following the completion of the tree works. It is illustrated on the Tree Protection Plan and is to remain in situ for the entire duration of preparation/construction processes (or for each phase as relevant / necessary) unless otherwise agreed in writing by the council.

5.3.2 The barrier fencing is to consist of a series of Heras panels secured in place by driven scaffold posts or a scaffold frame to ensure that the fencing lines are well braced to resist impact, and site hoarding around the application boundary to prevent access to the RPA/CEZ areas.

5.4 Underground utilities

5.4.1 Underground utilities are to be installed as per a dedicated plan and be clear of RPAs by design. Otherwise, and if RPAs cannot be avoided, the following restrictions are recommended for underground utilities within RPAs:

- Any necessary excavations to be undertaken sensitively using either a no-dig method (e.g. Air-Spade) and/or under arboricultural supervision;
- Any exposed roots shall be packed with a clean damp sand (not builders sand) and wrapped in hessian sacking to protect them;
- Small roots which are identified (those less than 25mm diameter) may be carefully pruned back with a clean sharp tree saw; and
- Larger roots which are identified (those greater than 25mm in diameter) are to be retained and protected as they may be necessary for a tree's health and stability.

5.5 Ground Works within RPAs

5.5.1 No direct RPA incursion is anticipated, with exception of soft and hard landscaping - retained levels detail to be demonstrated by the client in the form of a 'site levels plan'.

5.5.2 Any excavations within a RPA or designated CEZ (the area enclosed by PBF) must:

- Only be undertaken when the construction works are completed (or those within a relevant phase are completed); and
- Use sensitive excavation techniques to protect the tree roots and their existing growing conditions.

5.6 Landscape Detail

5.6.1 The finer details of the site landscaping proposals are to be illustrated on a landscape plan. This is to include the exact proposals for hard and soft landscaping together with the details for any new trees' planting locations, species and stock selection, installation



and maintenance; this is to be undertaken by the appointed landscape architect who will have the full support of the arboricultural consultant where required.

5.7 Report Handling

5.7.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and/or trees.

5.7.2 The proposed scheme is reviewed in respect of the arboricultural constraints and is considered to be achievable in line with the BS5837 guidance. The recommendations herein may be approved by the council as a means of authorised tree protection; all site personnel will have access to a copy and the tree work and protection details are to be inspected as per s.5.2 for '*Arboricultural Monitoring / Supervision*'.

This concludes our advice.



Caveat

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



Appendix II

Terms and Definitions

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

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

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

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

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

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

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

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

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



Appendix III

Data Table:	As appended (BS5837 Tree Survey Key & Table)
Tree Constraints Plan:	As appended (21377/TCP/01)
Tree Protection Plan:	As appended (21377/TPP/01)

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

CLIENT: Whitworth High School

PROJECT REF: 21377

SITE: Whitworth High School, Whitworth, Rochdale

CONTACT: /

SURVEY DATE: 19th April 2021

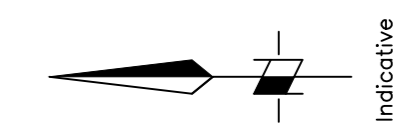
ARB CONSULTANT: Tony Banner TechCert (ArborA) TechArborA

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	Spruce; Picea, Pinaceae	M	14	4.5	4.5	4.5	4.5	340	4.1	2.5	3	Normal	20 - 40	Growing in shrub border, hard/surfaces/existing access in RPA.	B 1	
T2	Goat Willow; Salix, Salicaceae	M	10	3	3	3	3	260	3.1	1	/	Normal	< 10	Offsite in neighbours property, metal fencing included in stem.	U	Recommendations for owner - fell due to risk of stem failure.
G1	Cypress & Apple	M	5	/	/	/	/	200	2.4	0	/	Normal	10 - 20	Growing towards boundary.	C 2	
G2	Hawthorn, Holly & Goat Willow	M	< 10	/	/	/	/	250	3.0	/	/	Normal	10 - 20	Offsite on opposite side of stream.	C 2	
T3	Alder; Carpinus, Betulaceae	M	14	5	3	4	4	450	5.4	2.5	/	Normal	20 - 40	Growing next to parking area, part included wounds on stem.	B 1	
T4	Alder; Carpinus, Betulaceae	SM	7	3	2	3	2	234	2.8	2	/	Normal	10 - 20	Growing towards boundary, outside boundary fence.	C 1	
T5	Goat Willow; Salix, Salicaceae	M	12	5	5	4	4	418	5.0	4	5	Normal	10 - 20	Offsite, recently crown reduced and lifted.	C 2	
T6	Birch; Betula, Betulaceae	EM	5	2	2	2	2	110	1.3	1	/	Normal	10 - 20	Young form.	C 2	
T7	Birch; Betula, Betulaceae	EM	5	2	2.5	2	2	130	1.6	1	/	Normal	10 - 20	Young form.	C 2	
T8	Birch; Betula, Betulaceae	EM	5	2	2	2	2	185	2.2	0	/	Normal	10 - 20	Young form, multi-stem base.	C 2	
G3	Prunus sp.	M	< 10	/	/	/	/	250	3.0	/	/	Normal	20 - 40	Offsite, minor crown overhang of site fence.	B 2	
T9	Goat Willow; Salix, Salicaceae	SM	8	4	4	4	4	235	2.8	/	/	Normal	10 - 20		C 2	
G4	Fruit trees	M	4	/	/	/	/	150	1.8	/	/	Normal	10 - 20	Relatively young and small scale.	C 2	

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

FIELD KEY:

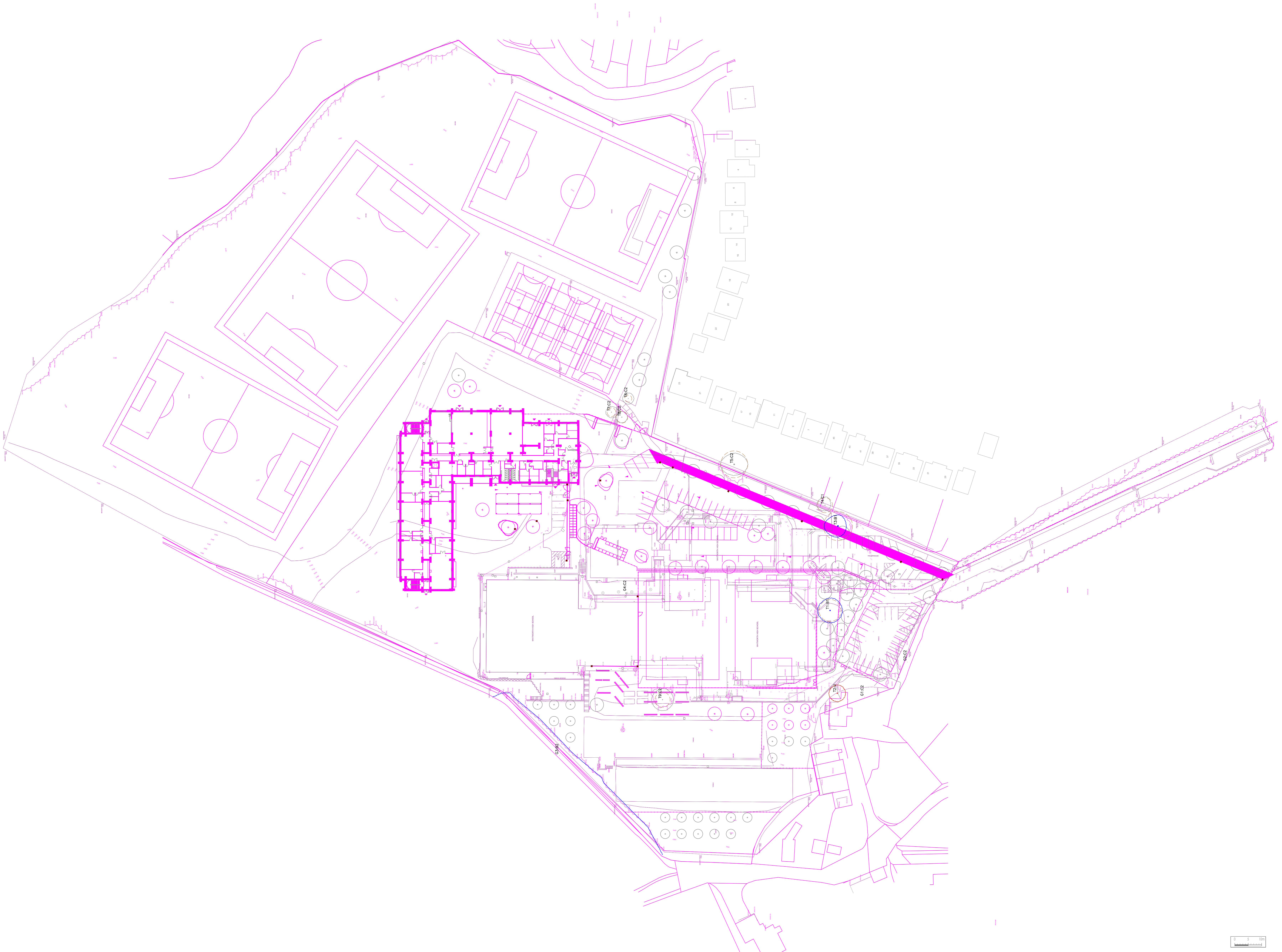
TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
SPECIES	-	Genus, species and/or common name;
AGE	-	Age classification (NP - new planting, Y - young, SM - semi mature, EM - Early-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;
IST 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 the tree will continue to make a contribution 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 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 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
- T1 Tree No.
- 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'



DO NOT SCALE FROM DRAWING
The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

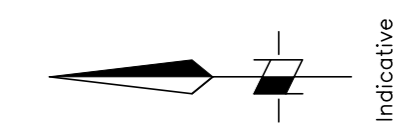
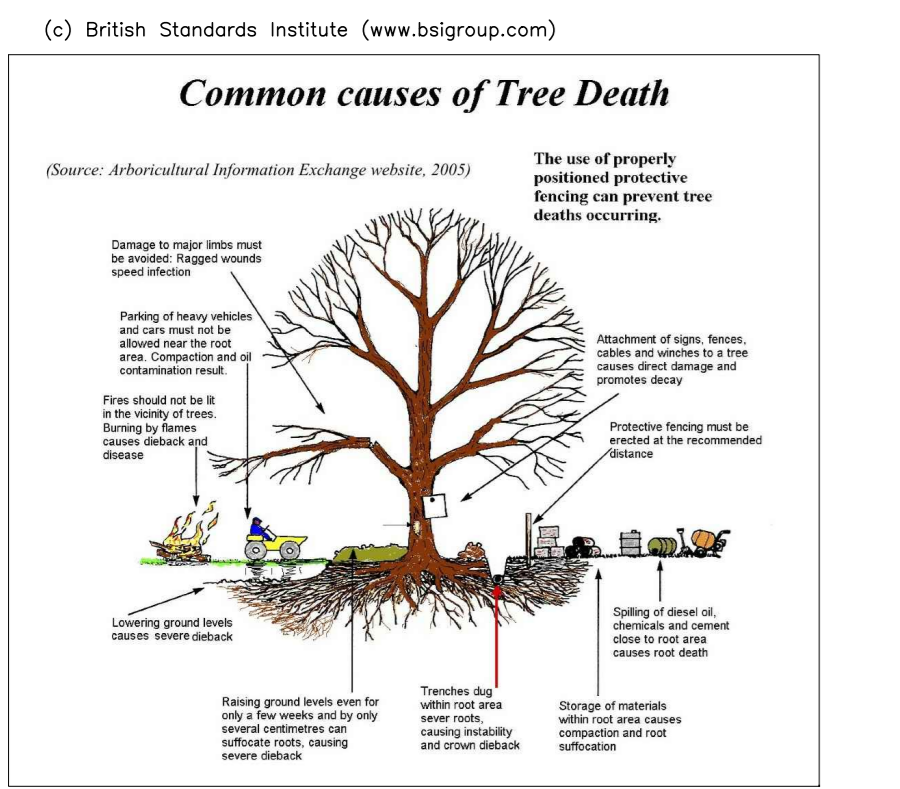
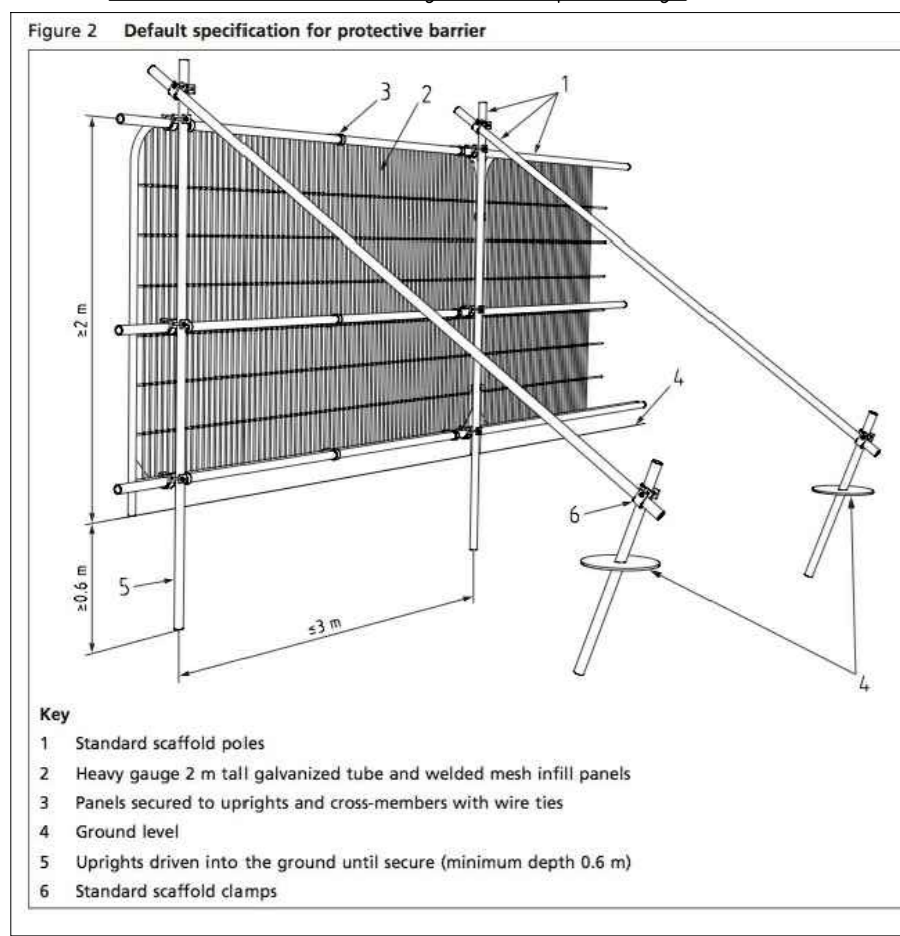
REV.	DESCRIPTION	DWN	CHK'D	DATE		
CLIENT Whitworth High School						
PROJECT 21377 Whitworth High School, Whitworth, Rochdale						
TITLE Tree Constraints Plan						
DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	20/06/20	TB	20/06/20			1:500


Indigo Ltd
11th Floor, 1 Hunter Walk, Canal Street, Chester, CH1 4B
Telephone: 0333 123 7050 www.indigosurveys.co.uk

Drawing Number: 21377/TCP/01 A0
REV.

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

Protective Barrier Fencing – Example Design

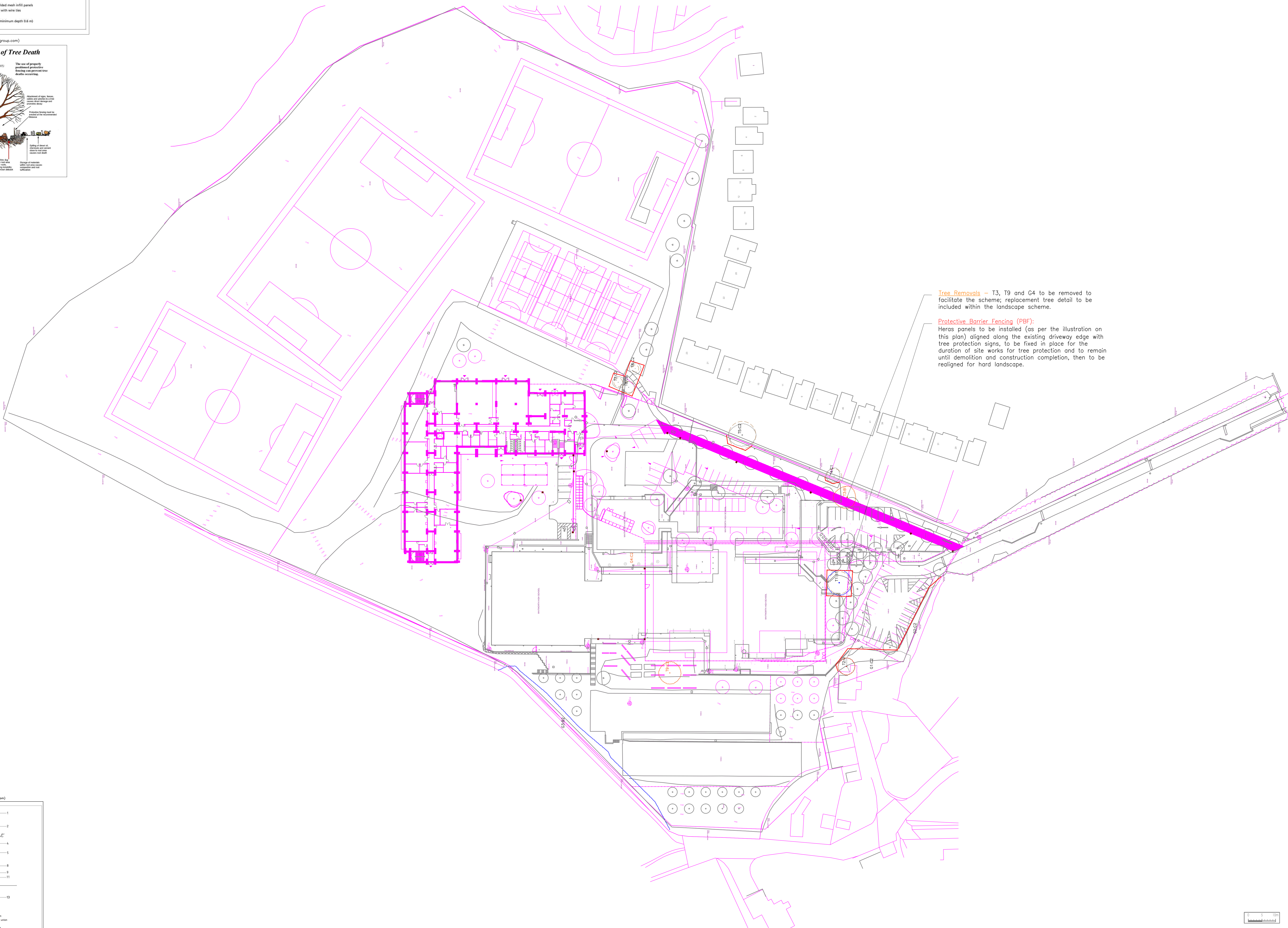


KEY

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

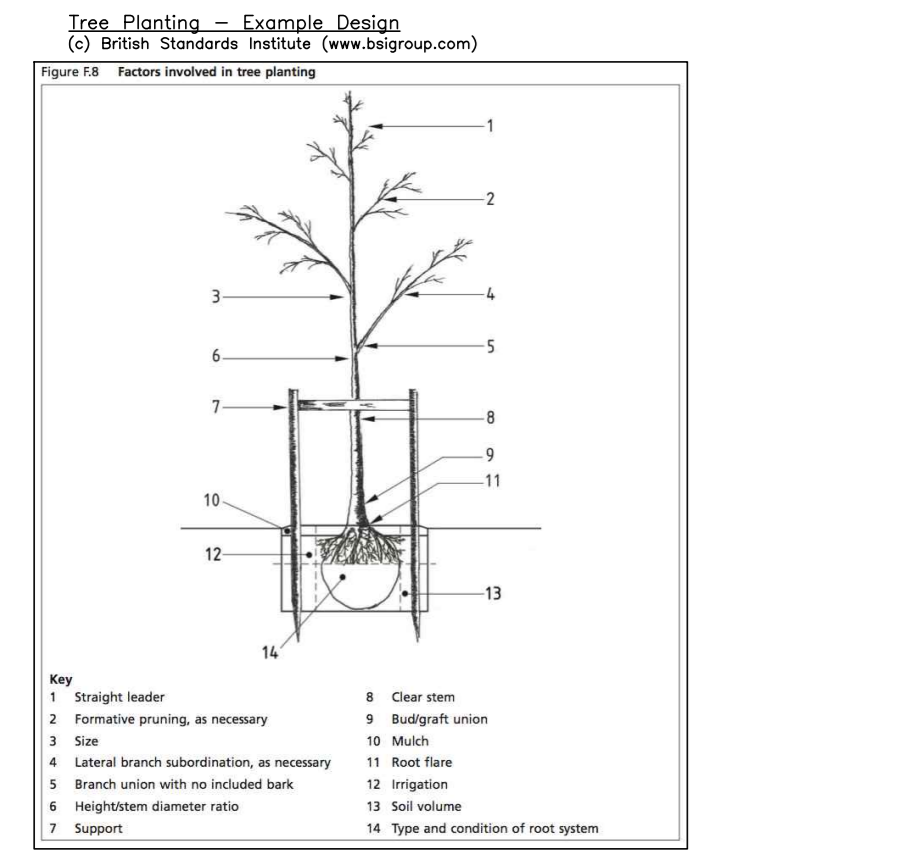
(Green Circle)	A
(Blue Circle)	B
(Grey Circle)	C
(Red Circle)	U

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'



Tree Removals – T3, T9 and G4 to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.

Protective Barrier Fencing (PBF):
Heras panels to be installed (as per the illustration on this plan) aligned along the existing driveway edge with tree protection signs, to be fixed in place for the duration of site works for tree protection and to remain until demolition and construction completion, then to be realigned for hard landscape.



DO NOT SCALE FROM DRAWING

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

REV.	DESCRIPTION	DWN	CHK'D	DATE
	CLIENT	Wates Construction Ltd.		
	PROJECT	21377 Whitworth High School, Whitworth, Rochdale		
	TITLE	Tree Protection Plan		
DWN	DATE	CHK'D	DATE	APPRO
RCK	20/03/20	TB	20/03/20	
	SCALE	1:500		
 Indigo Ltd (Incl Second floor) 1 Hunter's Walk, Chorley, Cheshire, CH1 4EB Telephone: 0333 123 7050 www.indigosurveys.co.uk				
Drawing Number				A0
21377/TPP/01				REV.
THIS DRAWING IS CONFIDENTIAL AND MUST NOT BE REPRODUCED WITHOUT THE CONSENT OF INDIGO SURVEYS LTD.				