Trees and Construction

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

Site: Dalton Ellis Hall & Ewings Building (University of Manchester)

Ref: 13986.22/A2_AIA

Client: University of Manchester

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- October 2022 -

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Revision	Description	Date
/	/	/

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1. INTRODUCTION

1.1 **Instruction:** This advice has been prepared for the University of Manchester (hereafter; client) and is in respect of the tree related considerations at Dalton Ellis Hall & Ewings Buidling, Manchester University (hereafter; site).

As the site is subject to ongoing improvements, 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 considerations. The objective is to systematically assess 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 21st July 2022 & September 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 was supplied with baseline arboricultural advice and 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.

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2. SITE INFORMATION & TREE ASSESSMENT

2.1 The site currently comprises in use university buildings with associated walkways and amenity areas. The site is part of the wider university site, as such, it is bound by university associated property to the north-west and south-east with Anson Road along the north-east boundary and Conyngham Road along the south-west boundary.

2.2 **Proposal:** It is understood that a proposed scheme involves the refurbishment of Dalton Ellis Hall and Ewings Building (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 <u>The trees</u> -

2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A - high', 'B - moderate' and 'C - low' being attributed to trees/tree groups.

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.

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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 TCP-01 and TCP-02.

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) and the AMS 'considerations' (section 5).

3.2 General Considerations for Tree Retention / Removal

3.2.1 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, although protection may be preferable to retain landscape maturity. 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.

3.2.2 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.

3.2.3 Based on the prominence and lack of significant defects of the high quality 'A' category trees, these trees should be retained and protected by designed clearance from the scheme. This is best achieved by clearance from tree stems and crowns, and avoidance of the RPAs, or at least for them to be accommodated within the design and layout.

3.3 Tree Protection

3.3.1 The design and layout of the site will need 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. crown clearance and allowance for future growth, RPA avoidance and designed protection as well as for new trees.

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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).

3.3.3 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 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

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

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 as construction exclusion zones and be protected.

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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.

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.

3.4.2 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.

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

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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 and section 2.2 herein, the TCP shows the '*proposed site plan*' as an overlay for review.

4.2 Based on the poor condition and defects noted to the 'U' category trees ExT3, it is recommend that these be removed as part of health and safety tree risk management in conjunction with the proposed scheme.

4.3 The proposed scheme is in conflict with the 'C' category trees ExT2, T219, T220 and T249. However, as per s.3.2.1, these trees are low quality and 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.

4.4 The proposed scheme is in conflict with the 'B' category trees T218, T250 - T255 and T333 - T337. Although the retention is preferable, as per s.3.2.2, the removal of said trees can be mitigated by a well delivered landscape scheme. Therefore, said trees should be removed to facilitate the scheme and replaced by considered new tree planting; a 2:1 removal to replacement ratio as mitigation is recommended for 'B' category trees and is considered suitable for the site.

4.5 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.

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

TREE WORK SUMMARY

NUMBER	TREE REMOVALS / PRUNING WORKS	
ExT2, ExT3, T218 - T220, T249 - T255 and T333 - T337	Remove	Remove in order to facilitate, and in conjunction with the scheme: - to be replaced with new tree planting as part of site landscaping.
Retained trees		Protection by placement of fixed Heras panels around the crown/RPA extents, to have no access during construction.

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4.7 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).

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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; are to be completed prior to any and all site works: tree works not specified within the associated arboricultural method statement (or leaning against or attaching of objects to a tree) are not 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 and detail within a Construction Management Plan.

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 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 to sign off the site for correct tree protection and planting.

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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 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 around the approved works.

5.4 Underground utilities

5.4.1 Underground utilities are to be installed as per a dedicated plan and be clear of RPA 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; 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.

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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 works and tree protection, for which the planning approval will be subject to a final and detailed Arboricultural Method Statement based on the approved information and other detail perhaps not available at the pre-planning approval stage, i.e. utility layout, final landscape plan, construction management plan (CMP) etc.

5.7.3 This AMS and the TPP may be approved by the council in support of the application, subject to a conditioned final AMS and TPP as a means of authorised tree protection measures; 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.

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Caveat

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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 m^2. 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.

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Appendix III

Data Table:	As appended (BS5837 Tree Survey Key & Table)
Tree Constraints Plans:	As appended (13986.22/TCP/01 & 13986.22.EW/TCP/01)
Tree Protection Plans:	As appended (13986.22/TPP/01 & 13986.22.EW/TPP/01)

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

CLIENT: University of Manchester ***PROJECT REF:*** 13986.EW ***SITE:*** Ewings Building Manchester University

CONTACT: / ***SURVEY DATE:*** September 2022 ***ARB CONSULTANT:*** Rod Benzies *NDip Arb* & Andy Turnbull *FDSc 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
T164	Cherry; Prunus, Rosaceae	Y / EM	3	2	2	2	2	160	1.9	1	1	Normal	20-40	Crown asymmetry / growth influence.	C	2	
T165	Italian Alder; Alnus cordata	M	15	6	5	3	5	480	5.8	3.5	3	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	C	2	
T166	Pear; Pyrus, Rosaceae	EM	7	1	1	1	1	160	1.9	3.5	3	Normal	10-20	Upright growth habit.	C	2	
T167	Tree removed since previous survey																
T168	Ash; Fraxinus, Oleaceae	M	15	4	3	5	5	420	5.0	3.5	3	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T169	Sycamore; Acer, Aceraceae	M	16	6	3	5	5	520	6.2	4	4	Normal	20-40	Multiple stems.	B	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T170	Lime; Tilia, Tiliaceae	M	16	2	6	5	5	520	6.2	4	4	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T171	Lime; Tilia, Tiliaceae	M	16	3	4	5	5	520	6.2	4	4	Normal	20-40	Crown asymmetry / growth influence.	B / C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T172	Cherry; Prunus, Rosaceae	EM	7	3	5	2	2	250	3.0	4	4	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T173	Beech; Fagus, Fagaceae	Y	5	1	3	1	1	150	1.8	2	2	Normal	20-40	Upright growth habit.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T174	Italian Alder; Alnus cordata	Y	16	1	3	1	1	170	2.0	2	2	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T175	Italian Alder; Alnus cordata	Y	16	1	3	1	1	170	2.0	2	2	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T176	Beech; Fagus, Fagaceae	Y	3	1	1	1	1	100	1.2	2	2	Normal	20-40	Multiple stems.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T177	Beech; Fagus, Fagaceae	Y	3	1	1	1	1	100	1.2	2	2	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T178	Lime; Tilia, Tiliaceae	M	12	3	4	2	4	300	3.6	2	2	Fair	20-40	Crown asymmetry / growth influence.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T179	Beech; Fagus, Fagaceae	LM	19	0	8	8	7	760	9.1	2	2	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T180	Lime; Tilia, Tiliaceae	M	12	2	8	3	3	420	5.0	4	4	Fair	10-20	Upright growth habit.	C	2	Remove grass / debris piles to area clear of trees, & monitor tree's condition.
T181	Sycamore; Acer, Aceraceae	LM	17	6	5	6	10	690	8.3	4	4	Fair	10-20	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor tree's condition.
T182	Sycamore; Acer, Aceraceae	EM	15	6	5	4	3	260	3.1	4	4	Fair	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	Monitor tree's condition.
T183	Cherry; Prunus, Rosaceae	EM	9	4	5	2	3	310	3.7	4	4	Fair	10-20	Multiple stems.	C	2	Monitor tree's condition.
T184	Sycamore; Acer, Aceraceae	EM	13	4	3	2	3	310	3.7	4	4	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	B	2	
T185	Lime; Tilia, Tiliaceae	Y	10	2	2	2	2	160	1.9	4	4	Normal	20-40	Crown asymmetry / growth influence.	C	2	

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CLIENT: University of Manchester ***PROJECT REF:*** 13986.EW ***SITE:*** Ewings Building Manchester University

CONTACT: / ***SURVEY DATE:*** September 2022 ***ARB CONSULTANT:*** Rod Benzies *NDip Arb* & Andy Turnbull *FDSc 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
T186	Lime; Tilia, Tiliaceae	M	15	4	4	5	5	470	5.6	4	4	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	
T187	Cherry; Prunus, Rosaceae	EM	8	2	3	2	2	170	2.0	4	4	Normal	20-40	Upright growth habit.	C	2	
T188	Horse Chestnut; Aesculus, Aesculaceae	LM	18	4	8	7	7	750	9.0	4	4	Normal	10-20	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	Maintenance required and monitor tree's condition.
T189	Tree removed since previous survey																
T190	Lime; Tilia, Tiliaceae	Y	7	2	2	2	2	160	1.9	2.5	2.5	Normal	20-40	Multiple stems.	C	2	
T191	Sycamore; Acer, Aceraceae	EM	10	3	3	4	3	290	3.5	2.5	2.5	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	
T192	Holly; Ilex, Aquifoliaceae	Y	4	2	2	2	2	160	1.9	2.5	2.5	Normal	20-40	Crown asymmetry / growth influence.	C	2	
T193	Lime; Tilia, Tiliaceae	M	16	5	4	4	4	550	6.6	4	4	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	Monitor and maintain epicormic growth rates.
T194	Lime; Tilia, Tiliaceae	M	16	2	3	3	3	300	3.6	4	4	Normal	20-40	Upright growth habit.	B	2	Monitor and maintain epicormic growth rates.
T195	Lime; Tilia, Tiliaceae	M	16	4	3	3	5	500	6.0	4	4	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor and maintain epicormic growth rates.
T196	Sycamore; Acer, Aceraceae	M	16	4	4	5	6	510	6.1	5	5	Fair	10-20	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	Maintenance required and monitor tree's condition.
T197	Beech; Fagus, Fagaceae	M	14	3	3	3	3	560	6.7	5	5	Normal	10-20	Multiple stems.	C	2	Monitor tree's condition.
T198	Ash; Fraxinus, Oleaceae	M	12	1	1	1	1	560	6.7	5	5	Fair	<10	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	U		Fell to ground level - consider safe retention as habitat pole).
T308	Cherry; Prunus, Rosaceae	M	3	4	4	4	4	370	4.4	2	2	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	
T309	Mulberry; Morus, Moraceae	EM	4	4	4	4	4	290	3.5	2	2	Fair	10-20	Multiple stems.	C	2	Monitor tree's condition.
T310	Oak; Quercus, Fagaceae	Y	4	3	3	3	3	180	2.2	2	2	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	
T316	Whitebeam; Sorbus, Rosaceae	M	10	3	3	3	3	500	6.0	3	3	Normal	20-40	Multiple stems.	B	2	
T322	Lime; Tilia, Tiliaceae	M	17	5	6	6	6	560	6.7	4	4	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor tree's condition.
T323	Lime; Tilia, Tiliaceae	M	17	5	6	6	6	560	6.7	4	4	Normal	20-40	Multiple stems.	B	2	Monitor tree's condition.
T324	Turkey Oak; Quercus, Fagaceae	LM	20	8	8	7	7	870	10.4	5	5	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	B	2	Monitor tree's condition.
T325	Elm; Ulmus spp	LM	18	5	3	4	8	530	6.4	5	5	Normal	20-40	Crown asymmetry / growth influence.	B	2	Monitor tree's condition.
T326	Sycamore; Acer, Aceraceae	LM	18	7	5	7	8	810	9.7	5	5	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	Monitor tree's condition.
T327	Lime; Tilia, Tiliaceae	LM	17	6	5	7	8	560	6.7	5	5	Normal	20-40	Upright growth habit.	B	2	Monitor tree's condition.
T328	Cherry; Prunus, Rosaceae	M	14	4	4	4	4	300	3.6	5	5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	
T329	Sycamore; Acer, Aceraceae	M	17	5	5	5	5	530	6.4	5	5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	
T330	Beech; Fagus, Fagaceae	LM	20	10	8	8	7	690	8.3	5	5	Normal	20-40	Multiple stems.	B	2	
T331	Hawthorn; Crataegus, Rosaceae	LM	12	4	5	3	2	570	6.8	1	1	Fair	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	
T332	Holly; Ilex, Aquifoliaceae	M	8	0	4	3	2	380	4.6	1	1	Normal	20-40	Crown asymmetry / growth influence.	C	2	

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

CLIENT: University of Manchester ***PROJECT REF:*** 13986.EW ***SITE:*** Ewings Building Manchester University

CONTACT: / ***SURVEY DATE:*** September 2022 ***ARB CONSULTANT:*** Rod Benzies *NDip Arb* & Andy Turnbull *FDSc 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
T333	Norway Maple; Acer, Aceraceae	M	17	5	3	6	5	310	3.7	3	3	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	
T334	Norway Maple; Acer, Aceraceae	LM	20	6	9	6	5	570	6.8	3	3	Normal	20-40	Upright growth habit.	B	2	
T335	Lime; Tilia, Tiliaceae	LM	17	6	7	6	5	600	7.2	4	5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor tree's condition.
T336	Silver Maple; Acer, Aceraceae	EM	16	5	2	3	3	250	3.0	4	5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor tree's growth rate and response to T337.
T337	Silver Maple; Acer, Aceraceae	M	18	6	4	4	4	500	6.0	4	5	Normal	20-40	Multiple stems.	B	2	
T338	Holly; Ilex, Aquifoliaceae	M	6	0	6	3	3	280	3.4	3	3	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	
T339	Lime; Tilia, Tiliaceae	M	18	6	6	6	6	600	7.2	4	4	Normal	20-40	Crown asymmetry / growth influence.	B	2	
T340	Lime; Tilia, Tiliaceae	M	18	6	6	6	6	460	5.5	4	4	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	
T341	Lime; Tilia, Tiliaceae	M	18	6	6	6	6	600	7.2	4	4	Normal	20-40	Upright growth habit.	B	2	
T342	Golden Chain; Laburnum, Fabaceae	M	6	3	0	3	2	250	3.0	0	0	Normal	10-20	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	
T343	Golden Chain; Laburnum, Fabaceae	M	6	3	0	3	2	200	2.4	0	0	Normal	10-20	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	
T344	Pear; Pyrus, Rosaceae	M	6	3	3	3	3	320	3.8	2	2	Normal	10-20	Multiple stems.	C	2	
G4	European Lime; Tilia, Tiliaceae	EM	8	/	/	/	/	200 (ave)	/	0	1 (ave)	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	C	2	
Ex.17. T2	Elder; Sambucus	SM	5	1.5	1.5	1.5	1.5	150	1.8	2.5	2.5	Fair	10 - 20	Close to fence, old Ivy severance.	C	3	
Ex.17. T3	Cotoneaster	SM	5	2.5	0	2	2	110	1.3	2	2	Fair / Poor	< 10	Self set next to building.	U		

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

CLIENT: University of Manchester ***PROJECT REF:*** 13986.A3 ***SITE:*** Fallowfield & Victoria Campus, Manchester University

CONTACT: / ***SURVEY DATE:*** July 2017 & 21st July 2022 ***ARB CONSULTANT:*** Rod Benzies *NDip Arb* & 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
T210	Lime; Tilia, Tiliaceae	EM	14	3	4	4	4	280	3.4	3	4	Normal	40+	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	
T211	Lime; Tilia, Tiliaceae	EM	14	3	4	4	4	280	3.4	3	4	Normal	40+	Multiple stems.	B	2	
T212	Lime; Tilia, Tiliaceae	M	6	3	4	4	4	280	3.4	3	4	Normal	40+	Multiple stems. Leaning South. Co-dominant branch structure.	C	2	
T213	Hornbeam; Carpinus, Betulaceae	EM	6	3	4	4	4	200	2.4	3	4	Normal	40+	Crown asymmetry / growth influence.	C	2	
T214	Sycamore; Acer, Aceraceae	LM	18	3	9	6	6	590	7.1	3	4	Fair	10-20	Crown asymmetry / growth influence. In proximity to structure.	C	2	
T215	Lime; Tilia, Tiliaceae	LM	20	7	6	6	6	640	7.7	3	4	Normal	40+	Upright growth habit.	B	2	
T216	Lime; Tilia, Tiliaceae	EM	11	3	3	3	3	170	2.0	3	4	Fair	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	C	2	
T217	Lime; Tilia, Tiliaceae	EM	12	5	5	3	3	290	3.5	3	4	Normal	40+	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	
T218	Lime; Tilia, Tiliaceae	EM	12	5	5	3	3	290	3.5	3	4	Normal	40+	Multiple stems.	B	2	
T219	Sycamore; Acer, Aceraceae	LM	15	1	1	1	1	580	7.0	3	4	Fair	10-20	Multiple stems. Managed by pollard - recently pruned.	C	2	Monitor tree's condition.
T220	Holly; Ilex, Aquifoliaceae	EM	8	2	2	2	2	170	2.0	2	2	Fair	20-40	Crown asymmetry / growth influence.	C	3	
T221	Lime; Tilia, Tiliaceae	EM	18	3	6	7	2	320	3.8	4	4	Normal	20-40	Crown asymmetry / growth influence by T223	B	2	
T223	Beech; Fagus, Fagaceae	LM	20	9	5	7	8	700	8.4	4	4	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Monitor tree's condition.
T224	Oak; Quercus, Fagaceae	LM	17	6	5	6	8	660	7.9	4	6	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	Instruct wall inspection - monitor tree's condition.
T225	Ash; Fraxinus, Oleaceae	EM	17	5	5	6	5	300	3.6	6	6	Poor	10 - 20	Sparse crown throughout.	C	2	Monitor tree's condition.
T226	Lime; Tilia, Tiliaceae	LM	18	6	6	6	6	730	8.8	6	6	Normal	20-40	Co-dominant branch structure. In proximity to structure.	B	2	
T227	Lime; Tilia, Tiliaceae	LM	12	3	3	6	3	450	5.4	6	6	Normal	20-40	Crown asymmetry / growth influence, epicormic growth hat base.	B	2	Remove epicormic growth.
T228	Sycamore; Acer, Aceraceae	LM	18	9	6	7	5	720	8.6	6	6	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure, multi-stem crown at 4m.	B	2	Monitor tree's condition.
T229	Lime; Tilia, Tiliaceae	EM	6	3	3	7	5	230	2.8	3	3	Normal	40+	Upright growth habit., part of collective canopy group.	B	2	
T250	Silver Birch; Betula, Betulaceae	M	18	4	4	4	4	530	6.4	4	4	Normal	20-40	Upright growth habit, co-dominant at 3m.	B	2	
T251	Ash; Fraxinus, Oleaceae	M	18	1	1	1	1	570	6.8	4	4	Normal	20-40	Pollard, recent pruned.	B	2	
T252	Lime; Tilia, Tiliaceae	M	18	2	5	4	4	560	6.7	5	5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Crown close to building.	B	2	Prune to clear building.
T253	Lime; Tilia, Tiliaceae	M	18	2	5	4	4	560	6.7	5	5	Normal	20-40	Part of collective canopy group, co-dominant at 4m, crown overhang of building.	B	2	Prune to clear building.
T254	Lime; Tilia, Tiliaceae	M	21	2	5	6	6	690	8.3	5	5	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure with included bark union.	B	2	Monitor included bark union.
T255	Lime; Tilia, Tiliaceae	M	21	2	5	6	6	690	8.3	5	5	Normal	20-40	Crown asymmetry / growth influence.	B	2	
T256	Ginkgo; Ginkgo biloba	EM	8	1	1	1	1	150	1.8	2	2	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	C	1/2	
T257	Lime; Tilia, Tiliaceae	EM	20	3	4	5	6	580	7.0	5	5	Normal	40+	Upright growth habit, recently pruned.	B	2	
T258	Lime; Tilia, Tiliaceae	EM	20	3	4	5	6	780	9.4	5	5	Normal	40+	Co-dominant branch structure from below 4m. Unreadable tag. Recent crown reduction.	B	2	Monitor crown regrowth.

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

CLIENT: University of Manchester ***PROJECT REF:*** 13986.A3 ***SITE:*** Fallowfield & Victoria Campus, Manchester University

CONTACT: / ***SURVEY DATE:*** July 2017 & 21st July 2022 ***ARB CONSULTANT:*** Rod Benzies *NDip Arb* & 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
T259	Honey Locust; Gleditsia, Fabaceae	M	18	3	6	5	6	530	6.4	5	5	Normal	40+	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	B	2	
T260	Cherry; Prunus, Rosaceae	EM	3	2	3	1	3	160	1.9	3	1	Normal	20-40	Multiple stems.	C	2	
T261	Mulberry; Morus, Moraceae	M	14	8	7	8	8	550	6.6	3	1	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. Recently pruned.	C	1	Monitor tree's condition.
T262	Magnolia; Magnolia	M	4	3	3	3	3	160	1.9	1	1	Normal	20-40	Crown asymmetry / growth influence.	C	1	
T263	Magnolia; Magnolia	EM	3	2	3	1	2	160	1.9	3	1	Normal	10-20	Crown asymmetry / growth influence. In proximity to structure.	C	3	
T264	Atlas Cedar; Cedrus atlantica	Y	6	2	2	2	2	180	2.2	1	1	Normal	20-40	Upright growth habit.	C	1	
T265	Purple Beech; Fagus, Fagaceae	LM	20	8	6	12	10	720	8.6	3	3.5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Old pruning wounds on the stem.	A	2	
T266	Lime; Tilia, Tiliaceae	LM	20	6	6	6	6	650	7.8	3	3.5	Normal	20-40	Co-dominant branch structure from below 4m. Unreadable tag. Recently pruned as per previous management recommendation (remove epicormic and crossing branches in crown).	B	2	
T267	Purple Beech; Fagus, Fagaceae	LM	20	8	6	7	10	740	8.9	3	3.5	Normal	20-40	Part of collective canopy group.	B	2	
T268	Turkey Oak; Quercus, Fagaceae	M	18	5	4	5	8	650	7.8	3	3.5	Normal	20-40	Multiple stems. Leaning South. Co-dominant branch structure. In proximity to structure.	A	2	
T269	Lime; Tilia, Tiliaceae	M	18	5	4	5	8	630	7.6	3	3.5	Fair	20-40	Crown asymmetry / growth influence, recently pruned, bark damage in upper crown.	B	2	Monitor tree's condition.
T270	Ash; Fraxinus, Oleaceae	LM	22	9	5	9	6	670	8.0	4	7	Normal	20-40	Crown asymmetry / growth influence. In proximity to structure.	B	2	
T271	Ash; Fraxinus, Oleaceae	LM	22	10	6	6	7	900	10.8	4	7	Normal	20-40	Multi stems, recent snap-out in crown.	B	2	Monitor tree’s condition.

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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

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KEY

Tree Crown Spread

Root Protection Area (RPA – as per BS5837)

Tree Stem

T1 Tree No.

Tree Condition Category (A, B, C or U – see data table)

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'

Indicative

REV.	DESCRIPTION	DWN	CHK'D	DATE
/	Proposed scheme for review	TB	AT	13/10/22

CLIENT
University of Manchester

PROJECT
13986.22/A2
Dalton Ellis Hall
(Manchester University)

TITLE
Tree Constraints Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	16/10/2017	AT	27/10/2017			1:200

Indigo Surveys Ltd
(Hub) Second Floor, 1 Hunter's Walk, Canal Street, Chester, CH1 4EB
Telephone: 0333 123 7080 www.indigosurveys.co.uk

Drawing Number
13986.22/TCP/01

REV. A0

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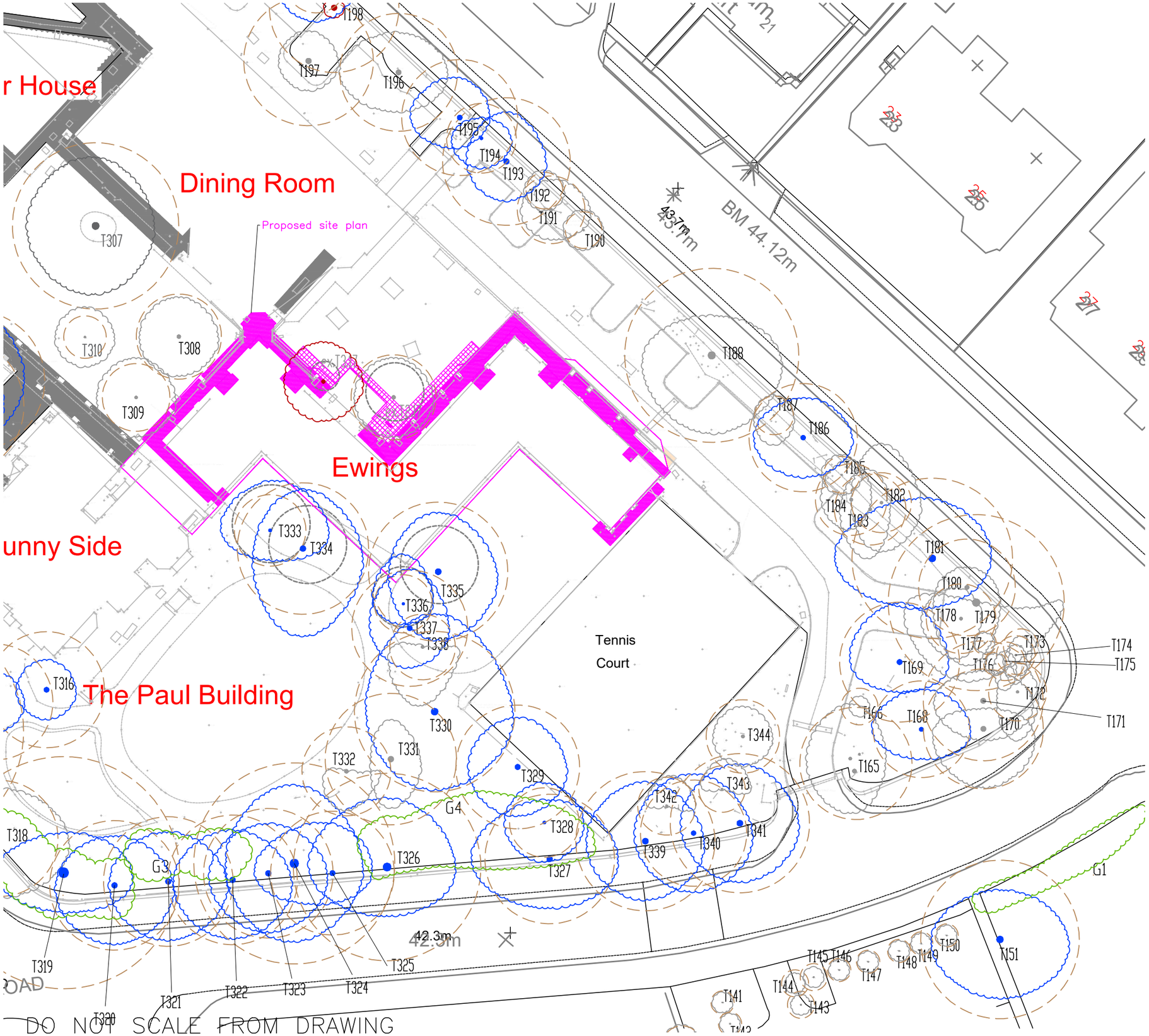

KEY

Tree Crown Spread

Root Protection Area (RPA – as per BS5837)

Tree Stem

T1 Tree No.

Indicative

Tree Condition Category (A, B, C or U – see data tab

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

REV.	DESCRIPTION	DWN	CHK'D
/	Proposed site plan overlay for review	TB	AT

CLIENT

University of Manchester (Ewings Building)

PROJECT

13986.22.EW/A2
Victoria Campus
(Manchester University)

TITLE

Tree Constraints Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE
RCK	26/07/2017	AT	27/07/2017		

Indigo Surveys Ltd
(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester. CH1 4EB
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Drawing Number

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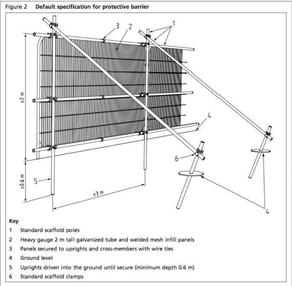
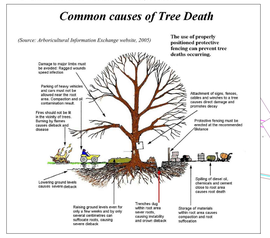
Protective Barrier Fencing – Example Design

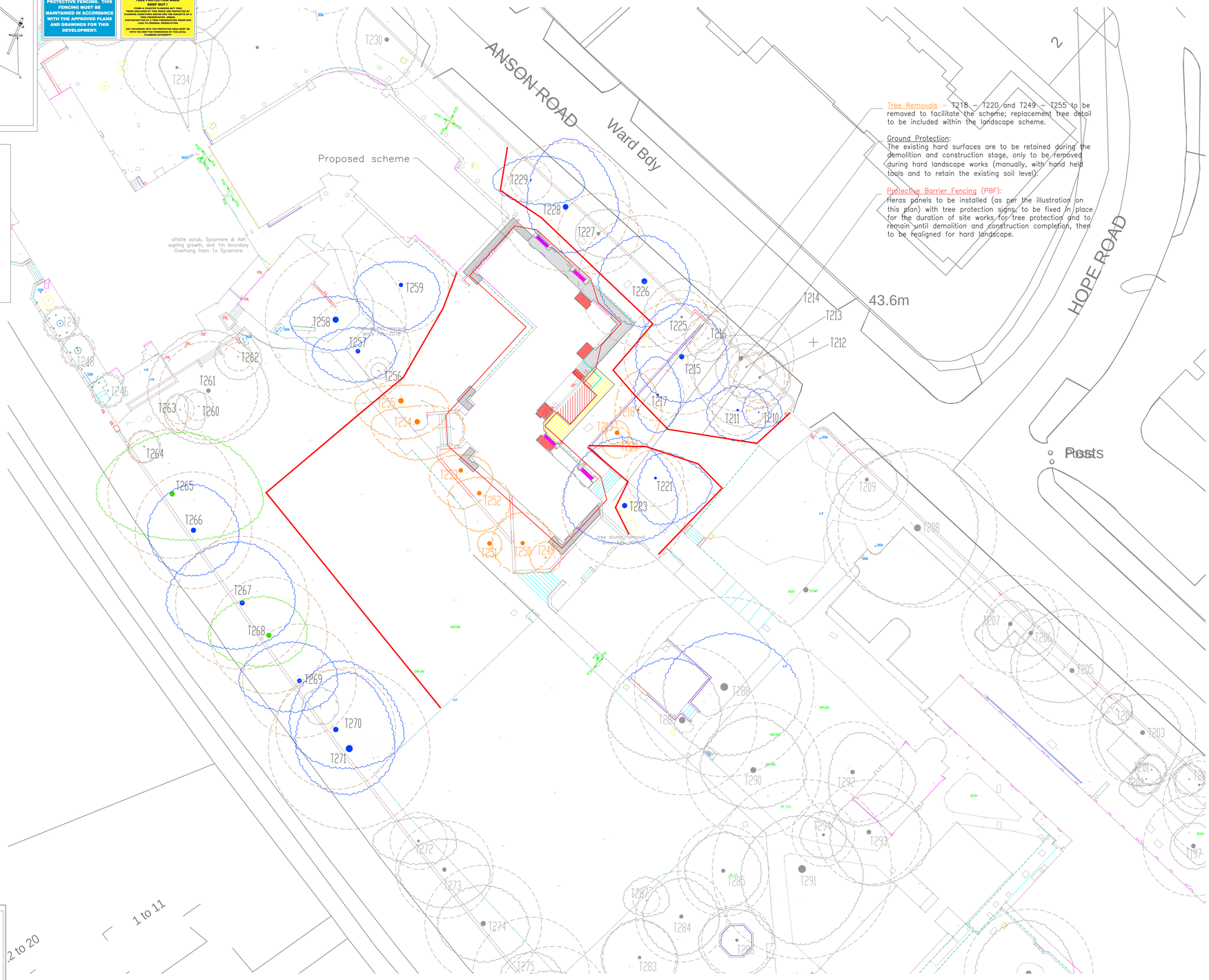
Figure 2 Default specification for protective barrier



Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

(c) British Standards Institute (www.bsigroup.com)





KEY

Tree Crown Spread

Root Protection Area (RPA – as per BS5837)

Tree Stem

T1 Tree No.

Tree Condition Category (A, B, C or U – see data table)

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'

Indicative

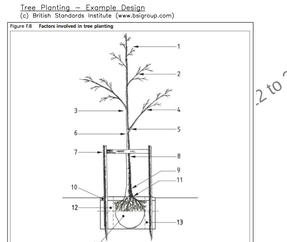
Tree Removals – T218 – T220 and T249 – T255 to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.

Ground Protection:
The existing hard surfaces are to be retained during the demolition and construction stage, only to be removed during hard landscape works (manually, with hand held tools and to retain the existing soil level).

Protective Barrier Fencing (PBF):
Heras panels to be installed (as per the illustration on this plan) 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.

Tree Planting – Example Design
(c) British Standards Institute (www.bsigroup.com)

Figure F.8 Factors involved in tree planting



Key
1 Straight leader
2 Formative pruning, as necessary
3 Size
4 Lateral branch subordination, as necessary
5 Branch union with no included bark
6 Height/stem diameter ratio
7 Support
8 Clear stem
9 Budgraft union
10 Mulch
11 Root flare
12 Irrigation
13 Soil volume
14 Type and condition of root system

DO NOT SCALE FROM DRAWING

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

/	Uses TCP as base	TB	AT	14/10/22
REV.	DESCRIPTION	DWN	CHK'D	DATE

CLIENT
University of Manchester

PROJECT
13986.22/A2
Dalton Ellis Hall
(Manchester University)

TITLE
Tree Protection Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	14/10/2017	AT	27/10/2017			1:200

Indigo Surveys Ltd
(Hub) Second Floor, 1 Hunter's Walk, Canal Street, Chester, CH1 4EB
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Drawing Number
13986.22/TPP/01
A0
REV.

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r House

Dining Room

Proposed site plan

Ewings

unny Side

The Paul Building

Tennis Court

T198 T197 T196 T195 T194 T193 T192 T191 T190 T188 T187 T186 T185 T184 T183 T182 T181 T180 T178 T179 T177 T173 T174 T175 T176 T169 T172 T171 T170 T166 T168 T165 T344 T343 T342 T341 T340 T339 T307 T310 T308 T309 ex T337 ex T336 T333 T334 T335 T336 T337 T338 T316 T330 T331 T332 T329 T328 T327 T326 T325 T324 T323 T322 T321 T320 T319 G4 G3 G1 T141 T142 T143 T144 T145 T146 T147 T148 T149 T150 T151

43.7m

42.3m

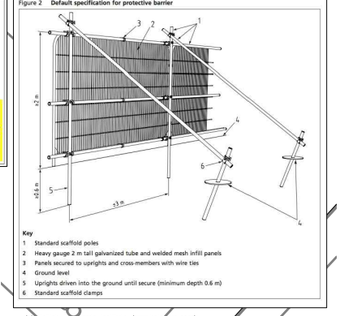
Tree Removals – ExT2, ExT3, T333 – T337 to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.

Ground Protection:
The existing hard surfaces are to be retained during the demolition and construction stage, only to be removed during hard landscape works (manually, with hand held tools and to retain the existing soil level).

Protective Barrier Fencing (PBF):
Heras panels to be installed (as per the illustration on this plan) and 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.

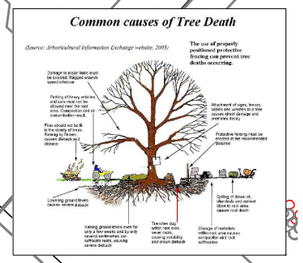
Protective Barrier Fencing – Example Design

Figure 2 Default specification for protective barrier



Key
1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

(c) British Standards Institute (www.bsigroup.com)



Indicative

KEY

Tree Crown Spread

Root Protection Area (RPA – as per BS5837)

Tree Stem

T1 Tree No.

Tree Condition Category
(A, B, C or U – see data tab

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

REV.	DESCRIPTION	DWN	CHK'D
/	Uses TCP as base layer	TB	AT

CLIENT
University of Manchester (Ewings Building)

PROJECT
13986.22.EW/A2
Victoria Campus
(Manchester University)

TITLE
Tree Protection Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE
RCK	26/07/2017	AT	27/07/2017		

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Drawing Number
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