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PRELIMINARY TREE CONSTRAINTS SURVEY AND REPORT.

ARBORICULTURAL IMPLICATIONS ASSESSMENT

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1 Instruction

We have received an instruction from the client for the production of a tree survey and arboricultural implication study at the Gwenfro School, Wrexahm. This correspondence provided for the following work specification:

1.1 Brief

The survey should consider trees within the site and those immediately in the vicinity of ecological or amenity importance or are considered a material consideration for a planning application.

Methodology is to be in accordance with *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*.

A detailed schedule will be produced covering the following summary below:

- Tree/group reference number to be recorded on tree survey plans
- Species, common and scientific names recorded on survey plan
- Height in meters recorded on survey plan
- Stem diameter in mm at 1.5 above adjacent ground level
- Branch spread at four cardinal points
- Crown height in meters recorded on survey plan
- Age class
- Preliminary management recommendations
- Estimated remaining contribution in years
- Retention value to be recorded on plan
- Comments

A Tree Constraints Plan is to be produced detailing above and below ground constraints to inform the design team of these arboricultural constraints

2. Survey and report objectives

To provide an accurate survey of significant trees by collecting base line data in accordance with BS5837:2012.

To identify the above and below ground arboricultural constraints affecting land use on the site and to inform the design team of these constraints allowing feasibility and design options to be considered.

To assess the arboricultural implications arising from the installation of the proposed masterplan provided by Wrexham Council and incorporated into the Tree Protection Plan (TPP) to the rear of this report.

3. Survey – Methodology, limitations and further considerations

3.1 Survey methodology

This report has been commissioned by the client to determine a preliminary tree survey in contemplation of the development for the land identified

The site was surveyed on the 31st January 2012 and the trees were assessed visually and compiled in the following detailed schedule (arboricultural survey sheets contained in appendix four) as either numbered individuals.

Measurements and dimension are estimated visually.

The trees have been classified according to the “desirability to retain”. This assessment rates the amenity conferred by each tree and is based on the assumption that development will occur on the site. The categories expressed in BS5837: 2012 Table one – cascade chart for tree quality assessment are reproduced in appendix one.

A Tree Constraints Plan (TCP) has been produced detailing Root Protection Areas (RPA) and is based on BS5837:2012.

An arboricultural analysis of the impact of development has been undertaken and a Tree Protection Plan (TPP) produced based on the proposed design and as a result of Arboricultural Implications Assessment (AIA).

3.2 Survey limitations

This report provides information on the selection of trees to be retained on the site through the retention value assessment.

The trees on the site are subject to a general re-inspection schedule of twelve months, regardless of development plans from which a requirement for further monitoring, assessments or remedial works will be judged.

When development has commenced, retained trees will require monitoring during construction

No assessment has been made of soil conditions/implications of soil conditions and root extent is indeterminate from this survey. We would urge that soil type is ascertained and tree related implications are assessed such as foundation type/depth in accordance with N.H.B.C. guidelines.

This report has not searched for the existence of statutory legislation applying to the site, such as TPO or Conservation area.

No information is available to assess any detrimental implications of any proposed service lines or upgrading of existing services in the vicinity of retained trees, we would urge this information is assessed for arboricultural significance.

The survey boundaries have been taken from written instruction to examine those trees on the affected boundary alone.

3.3 Further considerations

A full Arboricultural Method Statement (AMS) is required for the scheme which can be made the subject of a planning condition.

4. Site description

The site is located within the existing Gwenfro community school grounds to the South of the campus areas.

The site is typified by mature and over mature Poplar growing in a linear line interspersed with occasional Sycamore of limited quality to the South of the main site.

5. Survey findings and development impact

5.1 Tree stock by retention value

Two trees (five and ten) are retention value U and require removal for safety.

Remaining trees are either category B and C trees, all of which are due to be removed for a variety and mix of reasons. T2, T3 and T4 are all mature and over mature Poplar and therefore are unsuitable for educational sites due to the high target occupancy across such sites. Further the species has a natural propensity for limb loss and stem decay. It has low decay resistance due to its sapwood either being converted into non-durable heartwood or that it gradually aging without a distinct change. In our experience of mature to over mature Poplars, it is highly likely that natural decay columns are forming or have already formed in the stems of these trees affecting structural integrity. The development impact would require in excess of 20% of the existing RPA to be covered with new permanent hard surfacing, contrary to BS5837:2012. Care should be exercised over misplaced tree preservation. Attempts to retain too many or unsuitable trees are liable to result in excessive pressure on the tree during development and subsequent demands for their removal. The end result is

usually fewer and less suitable trees than would be the case if proper planning, selection and conservation had been applied from the outset.

Remaining trees numbered six to eleven and excluding ten are category B and C trees requiring removal for the same reasons as above but also in addition as a direct consequence of the development proposals.

Only one tree is due to be retained (T1) which is due to have a car park installed at the base. This will require the use of a no dig policy within the Special Measures Area (SMA) as shown on the Tree Protection Plan. A geo textile such as Tensar SS40 and an appropriate non fines infill is required. A porous finished wearing detail with as resin bonded gravel is required in the SMA. Much of this procedure has been captured in the image below:



5.2 Visual Amenity

The tree stock across the site largely confers visual amenity to the immediate locality of the site. There is very limited visual amenity conferred by the existing trees in the wider landscape due to the presence of woodland to the North of the residential areas (Solva Close) located off the Southern site boundary.

Whilst the trees can be viewed from Queensway on the Northern boundary, this view of the subject trees is transitory and trees are present on this Northern site frontage already that are of considerable size. The views of the trees from the East are obscured by a linear row of large existing trees and very little amenity is obtained by the trees from the Westerly position due to the positioning of the Queensway Industrial Estate buildings.

5.3 Above and below ground arboricultural constraints.

The Root Protection Area (RPA).

The RPA defines a circle from the stem and is calculated for single stem trees by multiplying the stem diameter by twelve. For trees with up to five or over five stems a combined stem diameter is used as detailed in BS5837:2012, 4.6. The RPA represents the minimum area of disturbance free ground to be retained for the continued health and safety of the tree.

In all cases (except T1) the RPA of existing trees is occupied by proposed development infrastructure so as to render retention unfeasible.

The potential for indirect and direct root damage to structures.

The likelihood of potential direct damage to the existing built infrastructure such as walls and property will depend mainly on the shrink ability of any clay component within the soil and rooting depth of the tree, the condition/age of the structure and also the proximity of the tree to the structure.

The assessment of soil shrink ability is outside the area of our expertise and the scope of this report.

The crown dimension.

The crown dimension has been shown at four cardinal points for each tree reference on the Tree Constraints Plan.

The physical contact and subsequent nuisance arising from tree crowns interfering typically with built property can manifest in post construction tree resentment and adequate planning is required to manage these issues.

The largest trees would require such as heavy canopy reduction so as to threaten the continued survival.

Dominance and shading related considerations.

It is clear this would be an issue if trees were to be retained.

5.4 Tree Works (Preliminary management recommendations)

Preliminary Management recommendations have been provided in Appendix three within the arboricultural survey sheets. These recommendations are provided in contemplation of development and also represent our recommendations for the current management of trees in order that the landowners discharge his/her duty of care (preliminary management recommendations).

The preliminary management recommendations have been updated within the site survey sheets as a result of the arboricultural implications analysis.

5.5 Tree Protection

The retained trees on site shall be protected by the installation of heras fencing with the use of bespoke metal pegs securing the supplied rubber feet into the ground. The location of the TPZ is as shown on the TPP.

A single Special Measure Areas have been identified and a no dig policy, load bearing geotextile and a finished porous wearing surface are all required.

5.6 Arboricultural Analysis and Summary

The site is typified by tree species that are unsuitable for the site and would require replacement regardless of development plans.

When tree retention has been considered then the impact of development would require their removal, as measured by BS5837:2012.

Tree retention will require the installation of protective fencing as specified in 5.5 and shown on the Tree Protection Plan.

5.7 Conclusions

The scheme details and general proposed general arrangement accords with BS5837:2012.

Tree loss for development can be mitigated by the provision of a landscape plan detailing appropriate replacements across the site.

6. Appendix

Appendix 1. Report Keys – age class, remaining contribution and retention value table

<u>Age Class</u>	<u>Remaining contribution (in years)</u>
Y Young	<10
EM Early Mature	10+
SM Semi mature	20
M Mature	40+
OM Over Mature	
V Veteran	

Table 1 - Cascade chart for tree quality assessment

TREES FOR REMOVAL			
Category and definition		Criteria	
Category U Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management		- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch Elm Disease) or very low quality trees suppressing adjacent trees of better quality NOTE: Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).	
TREES TO BE CONSIDERED FOR RETENTION			
Category and definition	Criteria - Subcategories		
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values including conservation
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens) or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested) or young trees with a stem diameter below 150mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits
NOTE: Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation			

Appendix 2. Tree Constraints Plan

Appendix 3. Tree Protection Plan

Appendix 4. Arboricultural survey sheets (detailed schedule)

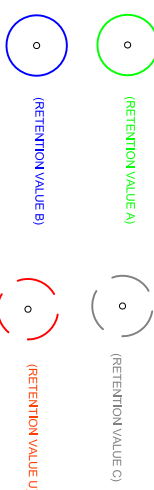
Tree Ref on plan	Common Name	Latin Name	Age Class	Stem diameter in mm	Multi/single stem	Ht. in M	Lower crown height	Canopy Spread N	Canopy Spread E	Canopy Spread S	Canopy Spread W	Retention value	Remaining contrib. in years	Arboricultural comments	Preliminary Management Recommendations	Root Protection Area - Radius in M
1	Common Oak	Quercus robur	M	400	1	10	0.5	3	4	4	4	C1	40+	Poor shape & form. Pollard. Growing in chain link fence.	Retain and protect. SMA applies. No dig construction for 3no. Car parking bays. Refer to AIA	4.8
2	Lombardy Poplar	Populus nigra 'Italica'	M	600	1	21	3.5	4	4	4.5	3.5	B1	40+	Growing in chain link fence.	Innappropriate condition and tree species to retain. Remove and replace with sustainable tree species planted in appropriate position to confer maximum public visual amenity value. Fell, grind stump.	7.2
3	Lombardy Poplar	Populus nigra 'Italica'	M	600	1	18	5	3.5	3.5	3.5	3.5	C1	40+	Cavity on stem. Growing in chain link fence.	Unsuitable for retention due to nature of development, tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	7.2
4	Lombardy Poplar	Populus nigra 'Italica'	M	440	1	19	5	2.5	2.5	2.5	2.5	C1	40+	Growing in chain link fence.	Unsuitable for retention due to nature of development, tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	5.3
5	Sycamore	Acer pseudoplatanus	M	700	MS	11	5	3.5	3.5	3.5	3.5	U	40+	Multiple stems at ground level. Included bark present in main fork. Growing in chain link fence. Poor condition	Remove due to existing condition promptly for safety reasons	8.4

Tree Ref on plan	Common Name	Latin Name	Age Class	Stem diameter in mm	Multi/single stem	Ht. in M	Lower crown height	Canopy Spread N	Canopy Spread E	Canopy Spread S	Canopy Spread W	Retention value	Remaining contrib. in years	Arboricultural comments	Preliminary Management Recommendations	Root Protection Area - Radius in M
6	Lombardy Poplar	Populus nigra 'Italica'	M	550	1	14.5	5	2.5	2.5	1	2.5	C1	40+	Crown distorted due to group pressure. Growing in chain link fence.	Unsuitable for retention due to nature of development and tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	6.6
7	Hybrid Black Poplar	Populus serotina	M	850	1	21	4	7	6	4.5	4	B1	40+	Crown distotred.	Unsuitable for retention due to nature of development and tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	10.2
8	Lombardy Poplar	Populus nigra 'Italica'	M	550	1	22	2.5	2.5	2.5	3	1.5	B1	40+	Crown distorted due to group pressure.	Unsuitable for retention due to nature of development and tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	6.6
9	Lombardy Poplar	Populus nigra 'Italica'	M	550	1	22.5	2.5	2.5	2.5	2.5	2.5	B1	40+	Crown distorted due to group pressure.	Unsuitable for retention due to nature of developmen, tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	6.6
10	Hybrid Black Poplar	Populus serotina	M	320	1	14	2.5	2.5	3.5	0.5	3.5	U	40+	Poor condition	Remove due to existing condition promptly for safety reasons	3.8

Tree Ref on plan	Common Name	Latin Name	Age Class	Stem diameter in mm	Multi/single stem	Ht. in M	Lower crown height	Canopy Spread N	Canopy Spread E	Canopy Spread S	Canopy Spread W	Retention value	Remaining contrib. in years	Arboricultural comments	Preliminary Management Recommendations	Root Protection Area - Radius in M
11	Hybrid Black Poplar	Populus serotina	M	910	1	21	2.5	7	6.5	7	5.5	B1	40+	Large edge tree.	Unsuitable for retention due to nature of development, tree species and propensity for failure. Will require replacement with sustainable tree species suitable for the environment planted to maximise visual amenity. Fell, grind stump.	10.9

TREE PROTECTION PLAN

Retention value key



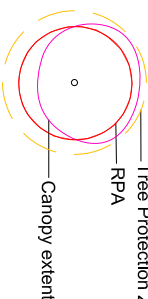
Trees to be removed - shown dashed

Root Protection Areas (RPA) & Provisional Tree Protection Zones (TPZ)

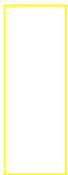
Root Protection Areas (RPA's) have been identified and are based on BS5837:2012.

Provisional Tree Protection Zones (TPZ's) have been identified following an assessment of the likely tolerance of damage, root morphology, site conditions, topography, ultimate height and issues of post construction tree resentment such as nuisance. The TPZ represents a realistic assessment of the area of ground required to remain undisturbed to facilitate meaningful and long term successful tree retention. Further allowance for a greater distance may be required following detailed analysis of shadowing, where applicable.

TPZ's and RPA's have been shown as detailed below.



Designated areas exist where Special Measures will be required during construction



SPECIAL MEASURE AREA (SMA). Refer to AIA and draft arboricultural method statement for details of recommended construction.

Monochrome
This drawing shall not be read in black and white.

AMENITY
TREE CARE
Ltd

Client:
WBC

Project:
Gwenfro School

Detail:

TREE PROTECTION PLAN - Overview

Drawn By: **SB** Date: Scale: 1:500@A3

Dwg No: TR-01 Revision: