

Arboricultural Impact Assessment

Land at

Hafod Y Wern School
Caia Park
Wrexham

Ref:

AIA/HYW/09/13

Date:

7th October 2013

Commissioned by:

Mr J. Roberts

Prepared by

S. Shields

Arboricultural Impact Assessment

Land at
Hafod Y Wern School
Caia Park
Wrexham

This Arboricultural Impact Assessment has been prepared in accordance with the protocols, standards and procedures set out in BS 5837: 2012 'Trees in relation to design, demolition and construction'.

Summary

It is proposed to develop the site to provide a new school building, and associated planning fields and sports pitches, situated to the south and west of the existing building.

An assessment of the trees on site has recorded 14 individual trees and 4 groups of trees. The most significant are the individual specimens of Lombardy poplar on the north boundary and in the south east corner of the playing field, a large lime tree in the area to the south west of the school buildings and the three groups of trees forming a distinctive landscape feature along the south boundary of the site. There are also a number of trees on and adjacent to the west boundary, including an area of scrub woodland on adjacent land.

It is not necessary to remove any of the significant trees to implement the proposed development. There are a number of recently planted trees present on the site. These are distributed across the site and it is recommended that they be retained where possible.

Providing the recommendations of this report are adopted and a satisfactory landscaping scheme prepared and implemented as part of the development there should be no negative implications on the arboreal environment in the long term.

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Contents

1.0	Instruction
2.0	Scope & Limitations
3.0	Statutory Controls & Obligations
4.0	Site Description
5.0	Development Proposal
6.0	Tree Assessment & Survey Methodology
7.0	Arboricultural Impact Assessment
8.0	Arboricultural Operations
9.0	Tree Protection Method Statement
10.0	Conclusions

Instruction

- 1.1 Shields Arboricultural Consultancy received instructions from Mr J Roberts on behalf of Wrexham County Borough Council to provide an arboricultural implication assessment in respect of the above development site.

Scope & Limitations

- 2.1 The purpose of the report is to assess the environmental and amenity values of all trees on or adjacent to the area affected by the proposed development. The report will assess the long-term contribution that the trees can make to the area and the arboricultural implications of retaining them and seek to find a satisfactory juxtaposition between the trees and the new development. The report will assess the potential impact that may arise as a result of the proposed construction works and make recommendations for protecting trees, hedges and shrubs where appropriate
- 2.2 The report is prepared in accordance with the recommendations of the British Standard Document BS 5837: 2012 'Trees in relation to design, demolition and construction'
- 2.3 This report is not an ecological assessment and does not identify habitats or constitute a protected species survey.

Statutory Controls & Obligations

- 3.1 Forestry Act; the felling of trees is controlled by the Forestry Act, which requires that a felling licence is obtained prior to cutting down any trees. The Forestry Act does not apply to the felling of trees growing within an orchard, private garden, churchyard or public open space. The Forestry Commission has the responsibility for enforcing the Forestry Act.
- 3.2 Tree Preservation Orders & Conservation Areas; Local Authorities have specific powers under the Town & Country Planning Act 1990 as amended, to protect trees through the use of Tree Preservation Orders. Where trees are protected under such orders it is a criminal offence (subject to any exemptions for which provision may be made by the act or order) to undertake, cause or permit the cutting down, topping, lopping, uprooting, wilful damage or wilful destruction of trees except with the consent of the local planning authority. Similar controls apply to all trees growing within a designated Conservation Area.
- 3.3 Bats, wild birds and other protected species; The Wildlife & Countryside Act & the Conservation (Natural Habitats & C.) Regulations make it an offence to disturb or destroy bats and bat roosts and wild birds and their nests. Other species of plant and animal are also protected. These creatures often inhabit trees and sufficient care must be taken to ensure they are not affected during forestry and arboricultural works.

Site description

- 4.1 The proposed development site is situated within Caia Park, a large Housing estate to the south east of the town of Wrexham. Hafod Y Wern School is located centrally within Caia Park in an area of open space.
- 4.2 The site extends to approximately 3.8 hectare and is at an elevation of 50m ASL and is sheltered. The site is generally level.
- 4.3 There are a number of trees on and adjacent to the site. The most significant trees are the individual specimens of Lombardy poplar on the north boundary and in the south east corner of the playing field, a large lime tree in the area to the south west of the school buildings and the three groups of trees forming a distinctive landscape feature along the south boundary of the site. There are also a number of trees on and adjacent to the west boundary, including an area of scrub woodland on adjacent land.

Soils

- 4.4 Soils at the appeared to be free draining, cultivated brown earths. There are also areas of existing hard standing within the site. Geological maps indicate red and red-brown mudstone and red-brown sandstone containing beds of pebbly sandstone and conglomerate itself containing Carboniferous limestone. There is an overlay of sand and gravel. Soils appeared to be free draining and of reasonable depth and there is no indication of any significant impediments to rooting.

*NB. This soil assessment is undertaken in situ using visual and manual techniques and is **only** for the purpose of establishing the influence of site soils on tree growth. The assessment **must not** be relied upon to inform any engineering decisions.*

Development Proposal

- 5.1 It is proposed to develop the site to provide a new school building, and associated planning fields and sports pitches, situated to the south and west of the existing building.

Tree Survey Methodology

- 6.1 All trees within and adjacent to the site have been assessed where they are within 15 m of any area that may be disturbed as a result of the proposed development and have a stem diameter over 100mm at 1.5 metres. Measurements have been taken in accordance with the procedures and protocols set out in BS 5837: 2012 and the Forest Mensuration Handbook. Height measurements are approximate unless otherwise stated. Trees have been assessed as individuals, groups or woodlands as appropriate. Where access to trees has been restricted, either as a result of their situation on private land or where vegetation or ground conditions are unfavourable, an estimation of trunk diameter has been made. This entails using a set of callipers to approximate the measurement. Estimates are rounded up to provide a margin. This technique has only been used where there is a sufficient

buffer between the RPAs and any area disturbed by development. Where trees are in woodlands or groups only the outside edge trees are assessed unless there are larger trees with RPAs or crowns that would overlap the edge trees.

- 6.2 BS 5837: 2012 provides the framework through which tree can be categorised in terms of their health, amenity value and long-term viability for retention on a development site. There are four categories, A,B,C & U.

Category A: Trees of high quality and value in such a condition as to be able to make a substantial contribution (a minimum of 40 years)

- 1 Trees that are particularly good examples of their species, or essential components of groups or formal arboricultural features.
- 2 Trees, groups or woodlands that 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.
- 3 Trees, groups or woodlands of significant conservation, historical, commemorative or other value.

Category B: Trees of moderate quality and value in such a condition to make a significant contribution (a minimum of 20 years)

- 1 Trees that might be included in a higher category but are downgraded because of impaired condition.
- 2 Trees present in numbers, usually as groups of woodlands that form distinctive landscape features.
- 3 Trees with clearly identifiable conservation or other cultural benefits.

Category C: Trees of low quality and value currently in adequate condition to remain until new planting could be established. Trees in this category would not usually be retained if they would pose a significant constraint to development.

Category U: Trees in such a condition that their existing value would be lost within 10 years and which should, in the current context be removed for arboricultural reasons.

The most significant or valuable trees are placed in the categories, A & B. Site design should make provision to retain trees in these categories and most Local Planning Authorities will insist upon this (or in exceptional circumstances will require that significant compensation planting is incorporated into the design), whilst trees that should not be a constraint to development are recorded with a C category. Trees categorised as U are in a poor condition and should be removed prior to the commencement of work.

- 6.3 Where trees are to be retained, it is necessary to ensure that they are suitably protected to avoid damage during the construction phase of the development. It is also important to consider any long term

implications, such as issues with shading or leaf litter that may arise as a result of tree retention.

6.4 To ensure that trees are not adversely affected by the construction works it is necessary to:

- a. The avoidance of physical damage to the aerial parts of the trees (i.e. Impact and other damage to trunk and branches)
- b. The avoidance of damage to retained trees as a result of the severance or other physical damage to their roots
- c. Preserve of the character of the soil, through the avoidance of any activity that would cause it to become compacted or otherwise disturbed or disrupted, and to avoid contamination by potentially harmful substances
- d. To ensure free gaseous exchange is permitted between the upper layers of soil and the atmosphere
- e. To ensure adequate (but not excessive) water supply to the soil and hence to tree roots

This would normally be achieved by establishing an area, known as a construction exclusion zone (CEZ) around each tree. The CEZ is derived from the root protection area (RPA) and the crown spread of the tree. The RPA represents the area occupied by the tree's root system and is calculated for each tree based on its stem diameter and the ground conditions present taking account of and any impediment to rooting. The RPA should represent the most probable position of the tree's root system.

The CEZ must be considered sacrosanct and be maintained completely undisturbed. No construction should take place within this area and it should not be used for storage of materials or fuels. Access for vehicles machinery or personnel is prohibited and to ensure that it is not damaged by construction activity it must be suitably protected during the construction phase, using robust fencing or alternative ground protection methods, to prevent disturbance and damage occurring.

6.5 In addition to the implications that a new development may have for existing trees it is also important to assess any long term issues or concerns that may arise as a result of retaining trees close to a new dwelling or structure. This can include problems associated with leaf litter and other debris that may fall from trees, the potential that a tree has to cause damage to a structure in the future, any on going maintenance requirements that may arise and the level of shade that the tree may cast. Trees can also cause feelings of apprehension to the occupiers of nearby buildings and can have an over bearing impact on a property if adequate space is not provided.

6.6 The report assesses all trees with regard to their size, position and natural characteristics, and taking into account of their future growth

makes provides recommendations as to their long term suitability for retention.

Arboricultural Assessment

- 7.1 Full details of the tree surveyed are provided in appendix A. and their relative positions, crown spreads, root protection areas are indicated on the attached plans.
- 7.2 No checks have been undertaken to establish the status of the trees with regards to Tree Preservation Orders or Conservation Areas. No trees or hedges should be felled, lopped, topped or in otherwise removed or damaged without prior permission from the relevant authority.
- 7.3 The survey recorded 14 individual trees and 4 groups of trees which were categorised as follows:

Category	Quantity
Category A: Trees of high quality and value in such a condition as to be able to make a substantial contribution (a minimum of 40 years)	3
Category B: Trees of moderate quality and value in such a condition to make a significant contribution (a minimum of 20 years)	9
Category C: Trees of low quality and value currently in adequate condition to remain until new planting could be established. Trees in this category would not usually be retained if they would pose a significant constraint to development.	6
Category U: Trees in such a condition that their existing value would be lost within 10 years and which should, in the current context be removed for arboricultural reasons.	0

Design Considerations

- 7.4 The site design should seek to incorporate as many category A & B trees into the layout as possible. Category C trees should be retained where possible. There are a number of recently planted trees present on the site. These are distributed across the site and it is recommended that they be retained where possible. Given that these trees will need space to grow, it is recommended that a 5 metre exclusion zone is established around each specimen to be retained.
- 7.5 In addition to the ensuring that the trees are not physically damaged by the construction process, consideration should also be given to the trees in the terms of their influence on the new buildings.
- 7.6 It is not necessary to remove any of the significant trees to implement the proposed development; however consideration should be given to the long term implications of situating the new school close to groups G1, G2 & G3 a row of large poplar and willow trees. These trees will cast a degree of shade over the southern elevations of the new building, however as these are deciduous trees with reasonably open

canopies; the shading will not be oppressive and could be considered beneficial during the summer months. The impact of shading should be taken into account when addressing design issues such as locations of windows or solar panels.

- 7.7 It is also recommended that a construction exclusion zone, approximately 8 metres deep is established along the west boundary to afford the adjacent scrub woodland protection from development damage. This zone is sufficient to accommodate the requirements and protect of the largest trees in this area.
- 7.8 All services both under and over ground must be located outside the CEZ around retained trees. All services must be installed in compliance with NJUG chapter 4 recommendations.

Arboricultural Operations

- 8.1 If tree removal or pruning will be required, subject to a grant of planning permission, to implement this development the work should be undertaken by a suitably qualified person, holding public liability insurance for the sum of £5,000 000. All operators must hold relevant NPTC certificates. A site specific risk assessment must be prepared and operators must work to a health and safety method statement.
- 8.2 The contractor undertaking the work is responsible for any loss or damage arising as a result of the operations and agrees to indemnify the owner against such occurrences.
- 8.3 All tree protection measure specified in the following section and shown on the accompanying TPP are to be fully installed prior to the commencement of the arboricultural works. Where access is required to the trees, then suitable ground protection must be used in lieu of the tree protection fences.

Arboricultural Method Statement

- 9.1 This arboricultural method statement (AMS) sets out the details of tree protection measures afforded to the retained trees on and adjacent to the site.
- 9.2 This document should be read in conjunction with the Tree Protection Plan (TPP) which will be issued when detailed plans are prepared for the site. The TPP indicates the construction exclusion zone (CEZ) that must be maintained around each retained tree. These areas must remain undisturbed during the construction process and must be protected using suitable fencing or ground protection as specified.
- 9.3 Copies of the TPP & the AMS must be available on site and all tree protection requirements explained to all persons undertaking activities on the site during the site induction process.

- 9.4 All tree protection measures must be installed and inspected prior to bringing onto the site any plant, materials or equipment or undertaking any construction works or demolition or any arboricultural works. The LPA must be informed in writing once the tree protection measures are installed.
- 9.5 The site is to be inspected by the consulting arboriculturalist in accordance with the schedule of inspections.
- 9.6 All measurements are given in metric using standard abbreviations.

Fencing and Ground Protection

- 9.7 The TPP indicates the position all protective fences.
- 9.8 Protective fencing will comprise a 2.4 m high scaffold frame work with vertical and horizontal poles, driven into the ground to a depth of 0.6 m and well braced to resist impact. Onto this framework 'weldmesh' or 'herres' fencing panels must be securely fixed using scaffolding clamps or as agreed with the Local Planning Authority.
- 9.9 Where ground protection is specified it will consist of a proprietary system such as Ground Guard protective plates which must extend over the entire area indicated on the TPP and be securely fastened in place. The type of guard used must be suitable for loads up to 40 tonnes or more.
- 9.10 The protective fencing and ground protection must be inspected on installation and will remain in place until completion of the construction phase and then only removed with the consent of the LPA.
- 9.11 Other than works approved in writing by the LPA, no works including storage or dumping of materials shall take place within the exclusion zones defined by the protective fencing.

General Precautions

- 9.12 No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within 10m of the trunk of a tree that is to be retained or within any part of the CEZ.
- 9.13 No fires will be lit within 20m of the trunk of any tree that is to be retained.
- 9.14 Storage and mixing areas must be outside the CEZ and must be identified prior to the commencement of the construction work. Contractor parking should be in areas indicated on the TPP. It may be possible to situate site huts and toilets within the CEZ, providing that they are:
 - 1. Placed on load distributing pads.
 - 2. Can be positioned and serviced without coming into contact with the crown of the tree or allowing any vehicle to operate within the RPA.
 - 3. All services are connected above ground level.

-
4. The buildings can be accessed from outside the CEZ or all routes are ground protected.
- The site buildings would then form part of the tree protection barrier.
- 9.15 Access to the work area is via the main site entrance and must not traverse the CEZ.
- 9.16 All service and drainage routes, below or above ground must avoid the CEZ. All services are to be installed in accordance with NJUG volume 4 Guidelines.
- 9.17 To ensure that all tree protection measures are properly installed the site must be monitored by Shields Arboricultural Consultancy to the following schedule. Details of the findings and photographic evidence of the site inspection visits will be reported to the LPA by email within 24 hrs of the visit.

Schedule of Inspection

1. On completion of erection of fencing and installation of ground protection prior to commencement of development works
 2. Monthly through out the project
 3. On completion of project
- 9.18 Prior to the commencement on site of any work, a competent person is to be appointed to monitor the day to day activities on site. In the case of a tree being damaged or where an unexpected event arises it will be for this person to contact Shields Arboricultural Consultancy to seek advice on contingency measures.

Conclusion

- 10.1 Providing the recommendations of this report are adopted and a satisfactory landscaping scheme prepared and implemented as part of the development there should be no negative implications on the arboreal environment in the long term.

S.J.A. Shields

**Dip. Arb. (RFS), M.Arbor.A, MICFor.
Chartered Forester**

7th October 2013

Arboricultural Assessment

Ref. No.	Species	Top Height	Stem Dia	Stems	N	E	S	W	CC	FSB	Age	Rem Cont.	Cat.	RPA M2	Notes
1	Lombardy poplar (<i>Populus nigra Italica</i>)	22	580	1	3	2.8	2.6	1.9	2		M	20+	B1	152	Condition: Good – Has been pollarded in the past. RPA: Circular AIA: A reasonable prominent tree, T1 is to the north of the site, away from the proposed development area and can be retained and protected to the required standard under the proposed layout.
2	Lombardy poplar (<i>Populus nigra Italica</i>)	22	480	1	3	2.7	2.5	2.2	2		M	20+	B1	104	Condition: Fair – Has been pollarded in the past. Tree is beginning to decline with deadwood present in the crown. RPA: Circular. AIA: As T1
3	Lombardy poplar (<i>Populus nigra Italica</i>)	22	610	1	3	2.1	2.7	2	2		M	10+	C1	168	Condition: Fair – Has been pollarded in the past. RPA: Circular. AIA: As T1
4	Lombardy poplar (<i>Populus nigra Italica</i>)	10	160	1	1.5#	1.5	1.5#	1.5#	1		SM	20+	C1	12	Condition: Good – Sucker growth from adjacent trees. RPA: Circular. AIA: As T1
5	Lombardy poplar (<i>Populus</i>)	10	170	1	1.5#	1.5	1.5#	1.5#	1		SM	20+	C1	13	Condition: Good – Sucker growth from adjacent trees. RPA: Circular.

	<i>nigra Italica</i>)														
6	Ash (<i>Fraxinus excelsior</i>)	14	440	1	7	5.8	6	6	4	E	M	20+	B1	88	AIA: As T1 Condition: Good RPA: Circular. AIA: As T1
7	Oak (<i>Quercus petraea</i>)	3	100	1	2	2.2	2.2	1.5	1		Y	20+	C1	5	Condition: Fair – Tree is suppressed by the adjacent ash. RPA: Circular. AIA: As T1
8	Ash (<i>Fraxinus excelsior</i>)	12	450	1	5.3	5.5	5.8	3	2		M	20+	B1	92	Condition: Good RPA: Circular. AIA: As T1
9 – 17 (G1)	Poplar (<i>Populus sp.</i>)	20	590	1	6	6#	6#	6#	4		M	20+	A2	158	Condition: Good – Group of 9 trees on the south boundary of the site. RPA: Circular. AIA: A prominent group of trees just outside the south boundary of the site. There is sufficient space under the proposed layout to allow for the trees to be retained and protected to the required standard. The trees will cast a degree of shade over the southern elevations of the new building, however as these are deciduous trees with reasonably open canopies, the shading will not be oppressive and could be beneficial during the summer months.
18 – 23	Willow	16	240, 220.	3	7	7#	7#	7#	3		M	10+	B2	48	Condition: Good – Group of 6 multi-stem trees on the south

(G2)			250												boundary of the site. RPA: Unconstrained. AIA: As G1
24 – 46 (G3)	Poplar (<i>Populus sp.</i>)	22	590	1	6.5	7#	7#	7#	4		M	20+	B2	158	Condition: Good – Group of 23 trees on the south boundary of the site. RPA: Unconstrained. AIA: As G1
47	Lombardy poplar (<i>Populus nigra Italica</i>)	22	1105	1	5.5	5.7	5	3.5	3	N	M	20+	A1	552	Condition: Good RPA: Circular. AIA: Tree is away from the proposed development area and can be retained and protected to the required standard under the proposed layout.
48	Lombardy poplar (<i>Populus nigra Italica</i>)	22	910	1	4.5	5	4.3	3.5	2	N	M	20+	A1	375	Condition: Good RPA: Circular. AIA: Tree is away from the proposed development area and can be retained and protected to the required standard under the proposed layout.
49	Lime (<i>Tilia SP.</i>)	20	1030	1	7	8.3	8.9	12	1.5	SW	M	20+	B1	480	Condition: Fair – Large cavity on the south side of the tree with a primary decay fungus present. Not structurally significant at this time. RPA: Circular. AIA: Tree is away from the proposed development area and can be retained and protected to the required standard under the

															proposed layout.
50	Lombardy poplar (<i>Populus nigra Italica</i>)	22	520	1	3	3.6	3.3	1.5	2		M	20+	B1	122	Condition: Good RPA: Circular. AIA: As T1
51	Lombardy poplar (<i>Populus nigra Italica</i>)	22	640	1	3	3.8	2.6	2.5	2		M	20+	B2	185	Condition: Good RPA: Circular. AIA: As T1
52	Cherry (<i>Prunus sp.</i>)	9	145	1	2.9	2.7	2	2.1	1.5	NE	SM	20+	C1	10	Condition: Good RPA: Circular. AIA: As T1
G4	Various												C1		Condition: Tree recently planted. RPA: Unconstrained. AIA: This group includes a number of recent planting distributed across the site. Trees are under the size to normally be included in an AIA. However, the majority of these trees are away from any areas of development activity. It is recommended that a 6 metre radial exclusion zone is established around any new planting that is to be retained. This will be identified in the Tree Protection Plan.

BS 5837: 2012 provides the framework through which tree can be categorised in terms of their health, amenity value and long-term viability for retention on a development site. There are four categories, A,B,C & U.

Category A: Trees of high quality and value in such a condition as to be able to make a substantial contribution (a minimum of 40 years)

- 1 Trees that are particularly good examples of their species, or essential components of groups or formal arboricultural features.
- 2 Trees, groups or woodlands that 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.
- 3 Trees, groups or woodlands of significant conservation, historical, commemorative or other value.

Category B: Trees of moderate quality and value in such a condition to make a significant contribution (a minimum of 20 years)

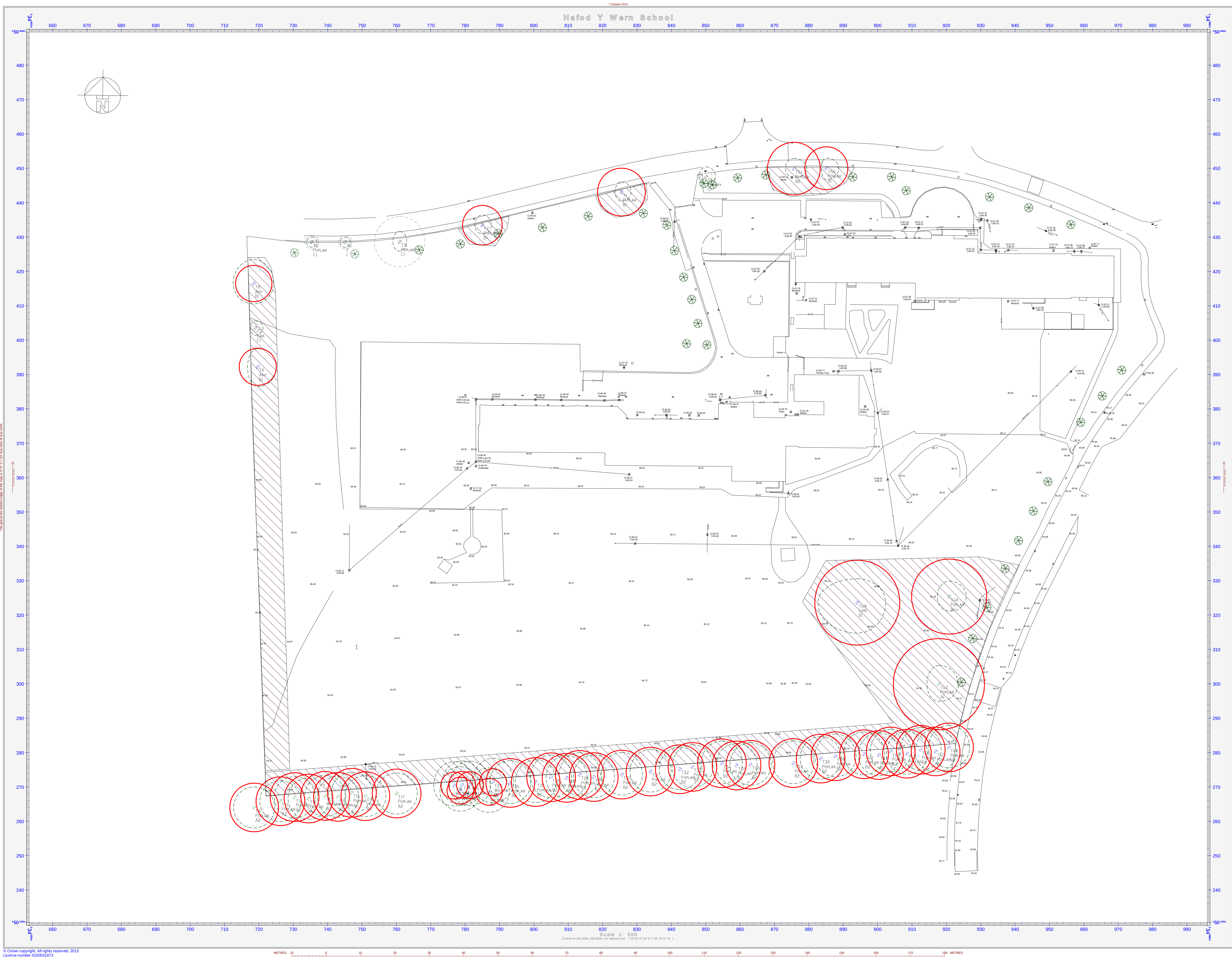
- 1 Trees that might be included in a higher category but are downgraded because of impaired condition.
- 2 Trees present in numbers, usually as groups of woodlands that form distinctive landscape features.
- 3 Trees with clearly identifiable conservation or other cultural benefits.

Category C: Trees of low quality and value currently in adequate condition to remain until new planting could be established. Trees in this category would not usually be retained if they would pose a significant constraint to development.

Category U: Trees in such a condition that their existing value would be lost within 10 years and which should, in the current context be removed for arboricultural reasons.

Key

Tag No	Identification number for tree	Species	Species of tree
Top Height	Estimated height of tree	Stem Dia.	Diameter of stem at 1.5 metres
Stems	Number of stems	N, E, S, W	Crown spread at compass points
CC	Crown Clearance	FSB	Direction of first significant branch
Rem. Cont	Remaining safe life expectancy in years	RPA	Root protection area in m ²
Cat.	BS Category (see above)	AIA	Arboricultural Implication Assessment
Age	Y - Young Trees SM Semi Mature EM Early Mature M Mature LM Late Mature exceeds normal life expectancy for species VET Veteran Tree		
Condition	Good Relatively free from defects and / or major pests and diseases Fair Some defects, which could be addressed through tree surgery or minor pests or early symptoms of diseases Poor Substantial defects or terminal decline Dead Dead		



Tree Constraints Plan

Land at
Hafod Y Wern School
Caia Park
Wrexham

- Legend
- Tree Cat A
 - Tree Cat B
 - Tree Cat C
 - Tree Cat U
 - Recent Planting
 - RPA
 - RPA Cat C
 - Canopy Spread
 - CEZ