



Welsh-Wood

Arboricultural Consultancy

Pre-Development Site Survey

Arboricultural Report

BS5837:2012 Trees in Relation to Design,
Demolition and Construction

Regarding:

Redwither Business Centre
Fourth Rd, Wrexham
LL13 9XR

Ref: NEB 20012 AIA & AMS Ver 2 (Demolition)

Executive Summary

- S1** Welsh-Wood Arboricultural Consultancy have been instructed by Mr. Peter Hughes, Senior Architectural Technician at Wrexham County Borough Council, to undertake a tree survey in relation to the demolition of Redwither Business Centre. The Centre is still in operation at this time. The structure is situated along the south west of the site and is serviced by an access driveway, parking and footpaths.
- S2** A site visit was undertaken on 21st October 2020. In total 6 individual trees and 3 tree groups were recorded. The trees are for the most unaffected by the proposed demolition although it will be necessary to prune the canopy of T2, Himalayan birch, and install ground protection mats over its root protection area to facilitate demolition and prevent damage to the tree. This has been indicated on the Tree Protection Plan and is discussed within this report. In addition the removal of G3 which comprises 2 coppiced trees has been proposed to facilitate machinery access for the purpose of demolition.
- S3** Several shrub beds were noted which require remedial action. The shrub beds have been shown on the accompanying Tree Constraints and Tree Protection Plans and discussed within this report, however, are not included in the tree schedules. It will be necessary to remove all coniferous and mixed species shrub beds, situated around the building footprint, prior to demolition. It is also necessary to remove a maximum 2m strip of the broadleaf shrub bed to facilitate fence installation denoting the demolition area and for the Tree Protection Fencing, and also to facilitate demolition. This has been indicated on the Tree Protection Plan and is discussed within this report. This work should be completed in advance of demolition and by the end of December 2020 at the latest.
- S4** It must be noted that trees provide essential habitat for birds and bats and as such any proposed works must be carried out in full consideration of the law. Birds, bats and their habitats are afforded protection within the Wildlife and Countryside Act 1981 and The Conservation of Habitats and Species Regulations 2010 (as amended).

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1.0 Introduction

- 1.0.1 This report details the findings of a tree survey at the listed address (the site) and has been prepared in compliance with BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'.

1.1 *Brief/Instruction*

- 1.1.1 Welsh-Wood Arboricultural Consultancy has been instructed by Mr. Peter Hughes, Senior Architectural Technician at Wrexham County Borough Council, to undertake a survey of all trees on the site in order to facilitate demolition of the existing structure.
- 1.1.2 The site is still in use as a business centre at present. The building is situated against the south west site boundary, in a larger industrial area.
- 1.1.3 This report is concerned solely with the demolition of the structure, ensuring appropriate consideration and protection of all trees and relevant vegetative features such as hedgerows through the demolition process.

1.2 *Qualifications and experience of surveyor*

- 1.2.1 The author holds the Higher National Certificate in Arboriculture, and LANTRA Professional Tree Inspector qualifications, and has worked in the arboricultural industry for 18 years as a Local Authority Tree Officer, Arboricultural Consultant and Lecturer in Arboriculture.

1.3 *Documents Provided in Advance*

- 1.3.1 The following documents were provided prior to the tree survey:
- Site plan indicating the structure scheduled for demolition

1.4 *Relevant background information & scope of this report*

- 1.4.1 This report has been commissioned to support the demolition of the structure.
- 1.4.2 The survey is intended to appraise the quality of the tree stock and identify which trees, if any, should be removed and how retained trees should be protected in order to make a positive landscape contribution to the site in future years.

1.5 Caveats and Limitations

- 1.5.1 This report relates specifically to the condition of the trees upon the day that the inspection was carried out.
- 1.5.2 Inspection was carried out from ground level, with use of binoculars where necessary. No climbing inspection was conducted. Where access to parts of the site or trees on adjacent land was not possible, estimates have been made regarding tree dimensions. This will be made clear in the tree and group schedules where relevant.
- 1.5.3 No detailed analysis of soil samples was undertaken. Root areas and possible underground conflict interaction were only investigated insofar as a surface visual inspection.
- 1.5.4 All legal documentation and information given to and used for the purposes of this report by Welsh-Wood Arboricultural Consultancy is presumed accurate.
- 1.5.5 The report is valid only for typical weather conditions. Healthy trees, or parts of healthy trees, may fail in unusually high or unpredictable winds or violent storms and as such the consequences of such weather phenomena are unforeseeable. It follows that Welsh-Wood Arboricultural Consultancy cannot be held liable for any such failures.
- 1.5.6 Where trees fall under the protection of the Local Council, permission may be required before works begin. There are no such designations relating to any trees on site. This was confirmed in writing by Wrexham County Borough Council Planning Department on 15th October 2020.
- 1.5.7 All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means; electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without the written permission of Welsh-Wood Arboricultural Consultancy. Its content and format are for the exclusive use of the addressee in dealing with this claim / site / situation. It may not be sold, lent, hired out or divulged to any third party not directly involved in this claim / site / situation without written consent from Welsh-Wood Arboricultural Consultancy.

2.0 Data collection

2.0.1 Tree survey data included:

- Tree reference number
- Species listed by common name
- Height in metres to the nearest 0.5m
- Stem diameter in mm, measured in accordance with Annex C of BS5837:2012
- Branch spread in metres at 4 cardinal points
- Height above in metres ground level of:
 - First significant branch and direction of growth
 - Lowest part of the canopy
- Life stage (newly planted / young / semi-mature / mature / over-mature / veteran)
- General observations
- Preliminary management recommendations
- Estimated remaining contribution in years (<10 / 10+ / 20+ / 40+)
- Category grading (U, A, B or C)

2.0.2 The trees were surveyed using current visual tree assessment (VTA) methods and where necessary sounded with a rubber-ended mallet to ascertain the need to investigate further defects or issues regarding structural stability/longevity.

2.0.3 The Visual Tree Assessment methodology (VTA) as devised by Prof. Dr. Claus Mattheck is an internationally recognised industry standard for tree inspection.

2.0.4 These suggestions are the author's professional recommendations and in no way hold any legal or official capacity.

N	A new or recently planted tree established for no more than 5 years in its present location.
Y	A young tree planted/established for no more than 10 years in its present location.
SM	A semi-mature tree which is well established but with some growth to make before reaching its full potential size.
M	A mature tree at or near its potential maximum size which is still growing vigorously.
OM	An over mature tree in decline.
V	A veteran tree; in the advanced stage of its life and displaying numerous characteristics such as unusually large girth, cavities, water pockets, large quantities of dead wood etc.

Table 1. The classification system used to describe each trees age class. The age class legend can be used in conjunction with individual tree data found in the sectional appendix of this paper. Please note this is a general age class classification and users should be aware that this information is species specific.

Report on Redwither Business Centre, Fourth Rd, Wrexham LL13 9XR

Undertaken by N Brewin Welsh-Wood Consultancy, November 2020

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<https://www.welsh-wood.com/>

2.1 Site Visit

- 2.1.1 A site visit was undertaken by the author on 21st October 2020. The weather conditions during the site visit were cloudy with light rain however, posed no constraint to assessment.
- 2.1.2 Restrictions to assessment do exist in the form of vegetation namely surrounding shrub beds for G1. No further action to address this constraint to survey is thought necessary at this time.

2.2 Site description

- 2.2.1 The listed address consists of a two storey business centre currently still in use. Vehicular access is via Abbey Road which leads to on-site parking and a turning circle. The site is bordered by open space containing 4 trees to the north, Abbey Road to the east, large, formal parking areas to the south and Fourth Road to the west.
- 2.2.2 The topography of the site is flat and there is no evidence of a prevailing wind.
- 2.2.3 The trees included in this report exist as formal tree planting along the building footpath, a wooded group in a shrub bed bordering the on-site parking, formal planting within the adjacent car park, a small group of two trees at the south of the structure, and as formal planting on the adjacent open space.
- 2.2.4 There are several coniferous and mixed species shrub beds situated at the building footprint which will require removal prior to demolition. They consist of a variety of evergreen shrubs and ornamental conifers. In addition to their presence impeding demolition they have a high ecological value as nesting habitat and therefore they should be removed prior to the end of December 2020 to ensure no birds begin to establish nests. Despite this being outside of the nesting season birds often make the most of favourable conditions and extend their breeding season outside of the recognised timeframe.
- 2.2.5 It is also necessary to remove a maximum 2m strip from the south west extents of the broadleaf shrub bed shown on the Tree Protection Plan to facilitate demolition and fence installation. This should also be completed at the earliest opportunity and prior to the end of December 2020 for the same reasons as noted in 2.2.4.

- 2.2.6 All trees surveyed were classified in accordance with Table 2; the tree classification system set out in BS 5837: 2012 Trees in Relation to Design, Demolition and Construction (shown below).
- 2.2.7 As no topographical survey has been undertaken at this time the trees were plotted by hand and then compared with aerial imagery to provide as accurate a location as possible for the Tree Constraints Plan.
- 2.2.8 In addition to the trees and tree groups, the coniferous and mixed species and broadleaf shrub beds are also shown on the Tree Constraints Plan.

Category & definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention				
Category U Trees in such a condition that they cannot realistically be retained as living trees in the context of current land use for >10 yrs	- 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 category U trees - Trees that are dead or showing signs of significant, immediate and irreversible decline - Trees infected with significant pathogens affecting health or safety, or very low quality trees suppressing trees of better quality <i>NOTE: these trees can have existing or potential conservation value making retention desirable</i>			DARK RED
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values inc conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of >40 yrs	Particularly good examples of their species, esp if rare or unusual. Those that are essential components of groups or formal or semi-formal arboricultural features	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value	LIGHT GREEN
Category B Trees of moderate quality with an estimated remaining life expectancy of >20 yrs	Trees that might be included in category A but are downgraded because of impaired condition such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit category A designation.	Trees present in numbers, usually growing as groups or woodlands such that they attract a higher collective rating than they might as individuals. Trees occurring as collectives but situated so as to make little visual contribution to the area.	Trees with material conservation or other cultural value	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of >10 years, or young trees with a stem diameter <150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary landscape benefits.	Trees with no material conservation or other cultural value.	GREY

Table 2 - Tree classification, adapted from table 1 of BS 5837:2012

3.0 Arboricultural Impact Assessment

3.1 General Statement

- 3.1.1 In total 6 individual trees and 3 tree groups were surveyed. All trees are situated within or adjacent to the site boundary and have been identified on the accompanying Tree Constraints Plan.
- 3.1.2 The individual trees consist of formal planting, the groups are also formal however have been recorded as groups due to the nature of their establishment or to best represent them in this report in consideration of the proposed works.
- 3.1.3 A full schedule for individual trees and tree groups can be found in Appendix 1 however, relevant details and significant factors are discussed below.

3.2 Species and Age Distribution

- 3.2.1 There are several tree species represented on site, the most common being Cherry species (*Prunus spp.*) Maple species (*Acer spp.*) English oak (*Quercus robur*) and Rowan species (*Sorbus spp.*). Individuals of Himalayan birch (*Betula utilis*) Holly (*Ilex aquifolium*) and Atlas cedar (*Cedrus atlantica*) were also noted.
- 3.2.2 The majority of on-site trees have been classified as semi mature and as such are capable of making a significant contribution to the landscape for many years to come. One veteran tree was recorded (T5 English oak).
- 3.2.3 It should be noted that an age category relates to a period of years and as such even mature specimens can make a lasting contribution that may span decades, dependant on the individual species.

3.3 Tree Descriptions

- 3.3.1 T1 and T2 are both situated next to the footpath servicing the structure to the northeast. T1 Bird cherry has no significant defects and will not be impacted upon by the proposed demolition however the crown for T2 Himalayan birch overhangs the

demolition area, as indicated by the black hatched line on the Tree Protection Plan, and as such has been recommended for remedial works to lift and partially reduce the crown.

- 3.3.2 In addition the roots from T2 have begun to lift the adjacent footpath which is a patterned brick construction. This footpath falls within the demolition area. As such recommendations have been made to place ground protection mats over the RPA for this tree along the footpath to prevent root damage and address the current trip hazard posed by the lifted bricks.
- 3.3.3 T3 – T6 (Atlas Cedar and Oak) are all situated on the open space to the north of the site and the trees and their root protection areas fall outside of the demolition area. They have been noted given their size and proximity and will require Tree Protection Fencing. There are some factors relating to the condition of T3 – T5 that while irrelevant to the demolition are of note, as such a copy of the tree schedule and plan have been passed onto the Arboricultural Officer at WCBC for consideration.
- 3.3.4 G1 consists of mixed broadleaf trees established as a screening group and underplanted with shrubs. It does not impede demolition however will require Tree Protection Fencing for the duration of on-site works.
- 3.3.5 G2 consists of formal planting, predominantly Cherry species, along vegetative divisions within the adjacent car park area. The trees have been grouped given their location away from the demolition area however they still require Tree Protection Fencing.
- 3.3.6 G3 consists of two trees situated on a formal grassed verge. These two specimens, laurel and holly, have been grouped given their distance from the development. Despite their potential to make a lasting contribution their removal has been proposed to facilitate machinery access to the site for the purpose of demolition.

3.4 Structural Condition

- 3.4.1 Structural condition relates to the form of the trees, in particular specimens that have developed as multi stemmed from the base or may have developed poor branch structure that renders them susceptible to failure in the future.

- 3.4.2 No significant structural defects were noted however, both trees in G3 are coppice specimens and as such would require cyclical pruning to prevent their stems from exceeding their optimum size and as such becoming susceptible to failure.

3.5 *Physiological Condition*

- 3.5.1 Physiological condition relates to the health of the trees surveyed.
- 3.5.2 T3 – T5 all have factors that it is thought prudent to pass onto the landowner.
- T3 has some burrowing at the stem base which requires monitoring during routine inspections.
 - T4 has two brackets of the decay fungi *Ganoderma lucidum* at the base which should be noted and may require further investigation.
 - T5 is a veteran that has suffered significant stem and branch failure. While no remedial action is thought necessary at this time it is felt relevant to record its presence, condition and significance.

3.6 *Demolition Proposal Summary*

- 3.6.1 The proposal is to demolish the existing structure in its entirety. No proposal to remove the hard standing or access driveway surrounding the structure have been made at this time.

3.7 *Tree Categorisation & Constraints*

- 3.7.1 The tree constraints plan that accompanies this report shows the above ground constraints (branch spread) and the below ground constraints, i.e. the anticipated extent of tree roots based on a calculation using the stem diameter and consideration of any site conditions which may affect root growth.
- 3.7.2 Root protection areas (RPA) are usually shown as a circle centred on the base of the stem unless site conditions such as nearby structures indicate that the shape of the rooting area deviates from this format.

3.7.3 The RPA for several trees has been modified due to on-site features such as an adjacent highway and hard standing as shown on the Tree Constraints Plan (Modified RPA) included in Appendix 2 of this report. This relates to T1, T4, T5, G1 and G2.

3.7.4 The trees surveyed for this report have been categorised as follows:

BS Category	Tree Reference	Number of Features
A (1,2,3)	G1, G2	2
B (1,2,3)	T1, T3, T4, T5, T6, G3	6
C (1,2,3)	T2	1
U		

Table 3. Summary categorisation of trees surveyed.

3.8 Below ground constraints

3.8.1 Given the location of the trees the only below ground constraints to demolition is T2 where a portion of the root protection area is beneath the footpath. Recommendations to install ground protection mats has been made within the method statement in this report.

3.8.2 Should planning consent for demolition be granted it will be possible to erect Tree Protection Fencing for all trees within influence of the site while still permitting adequate space for the demolition works to proceed as indicated on the Tree Protection Plan.

3.9 Above ground constraints

3.9.1 The crown of T2 hangs low over a portion of the demolition area and as such recommendations have been made to lift and partially reduce the crown in advance of any other on-site works.

3.10 Trees to be retained/ removed

3.10.1 As mentioned the removal of G3 has been proposed to facilitate demolition. All other trees are to be retained.

3.11 Recommendation to be completed on approval and prior to demolition

- 3.11.1 Complete all tree works specified within the tree schedules.
- 3.11.2 Remove all coniferous and mixed species shrub beds and reduce broadleaf shrub bed by maximum 2m at south west edge.

4.0 Arboricultural Method Statement

- 4.0.1 Recommended control measures for development works in or near to the root protection area (RPA) are discussed in this chapter. These chapters can be regarded as a method statement of works and can be utilised as the exact principle during the construction period.
- 4.0.2 Tree protection on development sites is of paramount importance if trees are to be retained successfully. The inevitable stress caused by development near an existing tree can, if provision for adequate protection is not made, be a stress that can severely damage the trees or even result in their death. Although the trees appear healthy during and on completion of the works, the full effects may not become apparent for several years after works have finished.
- 4.0.3 The Tree Protection Plan accompanying this report indicates all areas for protective tree fencing which is the only recommendation at this time.
- 4.0.4 **It must be noted that this method statement may be subject to changes on receipt of a finalised and approved demolition methodology. This version of the method statement has been prepared following discussion with the client as to their preferred options for demolition.**

4.1 Protective Fencing

- 4.1.1 Before the commencement of any works on site protective fencing must be erected to the dimensions and specification shown in Appendix 5 of this report and as indicated on the Tree Protection Plan in Appendix 3.

- 4.1.2 These protection measures will be in place for the duration of the development and on site monitoring is recommended to ensure that the fencing remains in place and intact promoting the successful retention of the subject trees.
- 4.1.3 Signs must be affixed to the fencing to inform on-site contractors of the importance of the fencing barriers (Appendix 6).
- 4.1.4 The root protection areas (RPAs) must be treated as sacrosanct and the following guidelines must be followed:
- NO mechanised excavations
 - NO movement of construction traffic or parking of vehicles
 - NO storage of building materials
 - NO storage of chemicals or fuels
 - NO fires to be lit in close proximity to trees
- 4.1.5 The client has indicated that the demolition contractor will erect Heras fencing around the immediate demolition area and that no works will take place outside of this fencing. The location of this fencing has been included on the Tree Protection Plan. It must however be noted that this is NOT the Tree Protection Fencing and as such additional fencing must be installed solely for the purpose of tree protection and in keeping with the recommendations made in this report.

4.2 Specialist Construction Methods

- 4.2.1 As noted the roots of T2 have begun to lift the adjacent brick pattern footpath that falls within the demolition working area. The lifted footpath also presents a trip hazard. It is necessary to install ground protection mats over the root protection area for T2, as indicated on the Tree Constraints Plan.
- 4.2.2 Ground protection mats vary in dimension and load bearing capacity and can easily be hired to address this requirement. The mats must be capable of supporting the weight loading of any planned activity and machinery usage in this portion of the site.

4.3 Access, Egress & Facilities

- 4.3.1 The point for access and egress from site has been indicated on the Tree Protection Plan and is via Fourth Rd, then utilising the car park area to the south east of the structure. This is also the area where the site compound will be established providing all necessary site huts and storage, and welfare facilities.
- 4.3.2 Contractor parking is not thought feasible in this portion of the site however there are numerous adjacent parking bays that can be utilised.
- 4.3.3 No access to the site for the proposed demolition works is permitted at any other point.
- 4.3.4 It is understood that heavy plant will not be stored on site, and that all arisings from the demolition will be removed immediately. Under no circumstances can any facilities or storage be located within the RPA's for retained trees.

4.4 Responsibilities

- 4.4.1 It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regard to tree protection is adopted on site.
- 4.4.2 The main contractor will be responsible for contacting the Local Planning Authority at any time if issues are raised related to the trees on site.
- 4.4.3 If further pruning works are required permission must be sought from the Local Planning Authority and on approval carried out in accordance with BS3998 Tree Work - Recommendations 2010.
- 4.4.4 The main contractor will ensure the construction sequence is appropriate to make certain that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of **ALL** construction works on the site.
- 4.4.5 The protective fencing and signs must be maintained in position at all times and checked on a regular basis by an on-site person designated that responsibility.

4.5 Arboricultural supervision

- 4.5.1 It is recommended that prior to development operations, a full consultation between the client, the Local Planning Authority, the Consultant Arboriculturalist and other relevant contractors take place on site to answer any questions related to the undertaking of this project.
- 4.5.2 In addition to the recommendation above, and supervised works discussed within this section, it is recommended that a number of short inspections of the subject trees should be undertaken by an Arboricultural Consultant familiar with BS5837: 2012 operations during the extent of the project as set out below.
- 4.5.3 On completion of each inspection a brief report with photographic evidence of the findings will be submitted to the Local Planning Authority via email and within 24 hours of the visit. If any unauthorised works are noted the LPA will be advised immediately by telephone.

Event/ Stage	Action
Pre Development Consultation Meeting	On site meeting between the client, the Local Planning Authority, the Consultant Arboriculturalist and other relevant contractors to answer any questions related to the undertaking of this project.
Installation of tree protection fencing	Arboricultural Consultant to check that protective tree fencing is in place as indicated on the Tree Protection Plan prior to commencement of any construction work including site preparation.
Construction Phase	Arboricultural Consultant to make periodic visits to site to check that the protective fencing is in place. Supervisory visits are made every week for the duration of the development.
Completion of works	Arboricultural Consultant to confirm completion of all works in order to authorise removal of the tree protection fencing.

Table 4. Items and order for Arboricultural Supervision.

Appendix 1.1 - Tree Data

Date: 21st October 2020
Site: Redwither Business Centre Fourth Rd, Wrexham LL13 9XR
Consultant: N Brewin

Table 1 - Tree Survey Data

Key For Tree Survey Data

Tree ID	Numerical value assigned to the tree or tree group
Common & Botanical Name	Common and botanical name recorded
Height (m)	Height to the top of the central canopy
Stem Dia. (mm)	Depth of main stem measured at 1.5m
Crown Spread (m)	Measure of the spread of the canopy across the four cardinal compass points
Height & Orientation of First Significant Branch	Height and orientation on the main stem of the first significant branch
Avg. Canopy Height (m)	The average height of the canopy of the tree
Life Stage	One of five categories: Y - Young, under 10 years of age, SM - Semi mature, well established but yet to reach full potential, M - Mature, more or less full height and large girth, increasing only slowly. OM - Over mature, beyond two thirds of the life expectancy of their species. No significant extension growth. Crown starting to break up and decrease in size. V - Veteran, Tree that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.
General Observations	Significant structural and physiological defects noted
Preliminary Recommendations	Works recommendations to remedy or further investigate significant defects, or facilitate development
Estimated Remaining Contribution (Years)	Taken from guidelines provided within BS 5837 (2012) Trees in Relation to Design, Demolition and Construction
BS5837: 2012 Category	Taken from guidelines provided within BS 5837 (2012) Trees in Relation to Design, Demolition and Construction
RPA Radius (m)	Root protection area - radius of RPA
RPA m²	Root protection area

Tree ID	Common Name	Botanical Name	Height (m)	Calc. / Actual Stem Dia. (mm)	Spread (m)				Height (m) & Orientation of First Significant Branch	Avg. Canopy Height (m)	Life Stage	General Observations	Preliminary Recommendations	Estimated Remaining Contribution (Years)	BS5837: 2005 Category	RPA Radius (m)	RPA m²
					N	E	S	W									
1	Bird cherry	<i>Prunus padas</i>	5	300	5	4	5	4	S 1.5	1	SM	Historic crown lift. Multiple pruning wounds with good wound occlusion.	No works required.	20+	B1	3.6	41
2	Himalayan birch	<i>Betula utilis</i>	6	290	4	2	4	3	S 1.5	1	SM	Three stems. Roots lifting adjacent footpath. Crown low over footpath.	Crown lift to 3m over footpath by reduction of crown extents by maximum 1m. Observe natural target pruning and remove all arisings from site.	10+	C1	3.5	38
3	Atlas cedar	<i>Cedrus atlantica</i>	11	690	5	5	7	6	S 0.5	2	SM	Multi stemmed at base. Burrowing in soil around base. Historic crown lift.	No works required.	20+	B1	8.3	215
4	English oak	<i>Quercus robur</i>	12	700	6	6	6	7	S 3	2	SM	Ganoderma lucidum brackets at base.	No works required.	20+	B1	8.4	222
5	English oak	<i>Quercus robur</i>	11	1500	4	6	3	8	W 1	1	V	Asymmetrical form to main stem. Large cavity filled with concrete and bricks. Historic primary limb failure.	No works required.	20+	B3	15.0	707
6	English oak	<i>Quercus robur</i>	9	550	5	4	4	6	N 4	2	SM	Pruning wound with decay at 2m on main stem.	No works required.	20+	B1	6.6	137

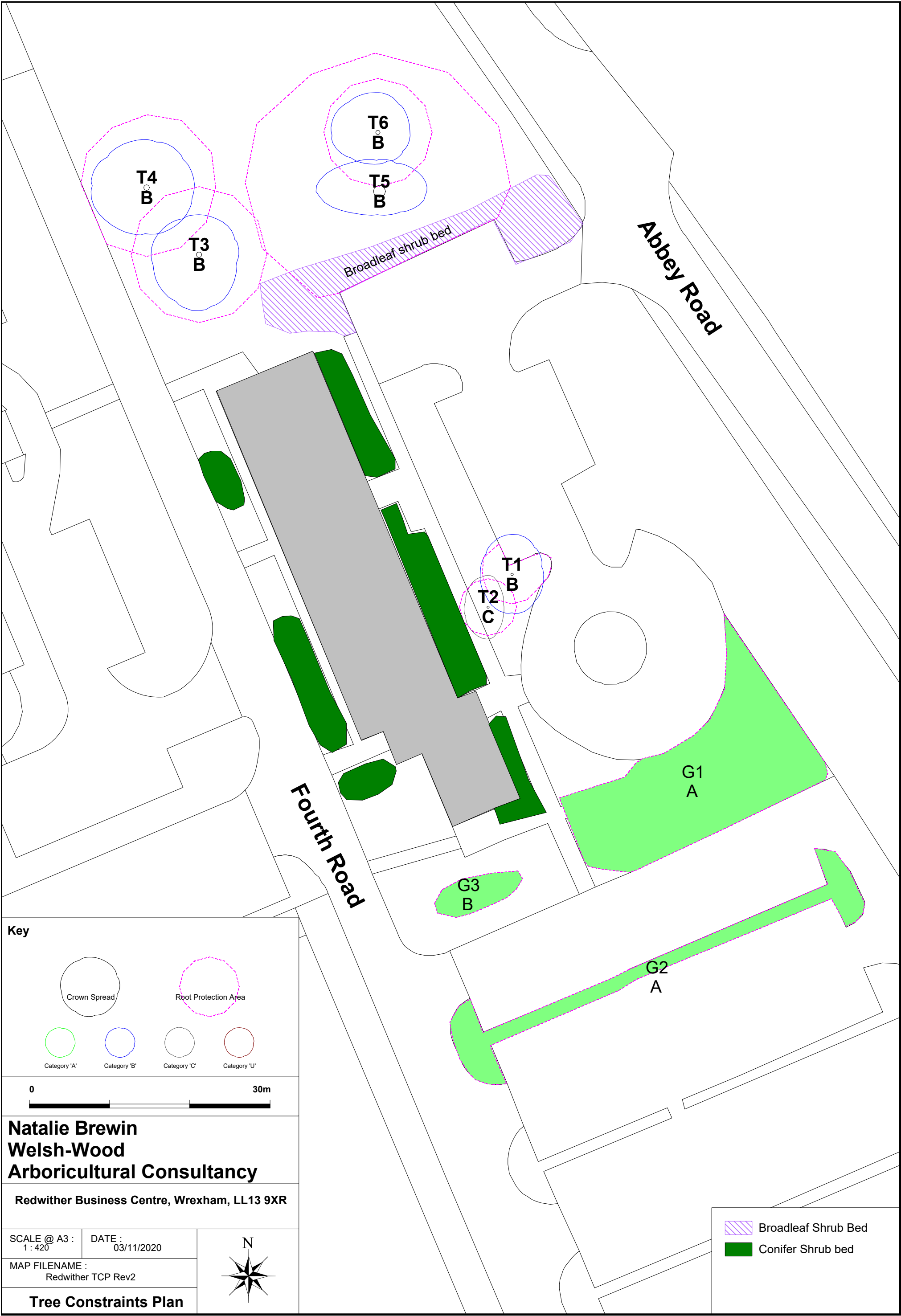
Appendix 1.2 - Group Data

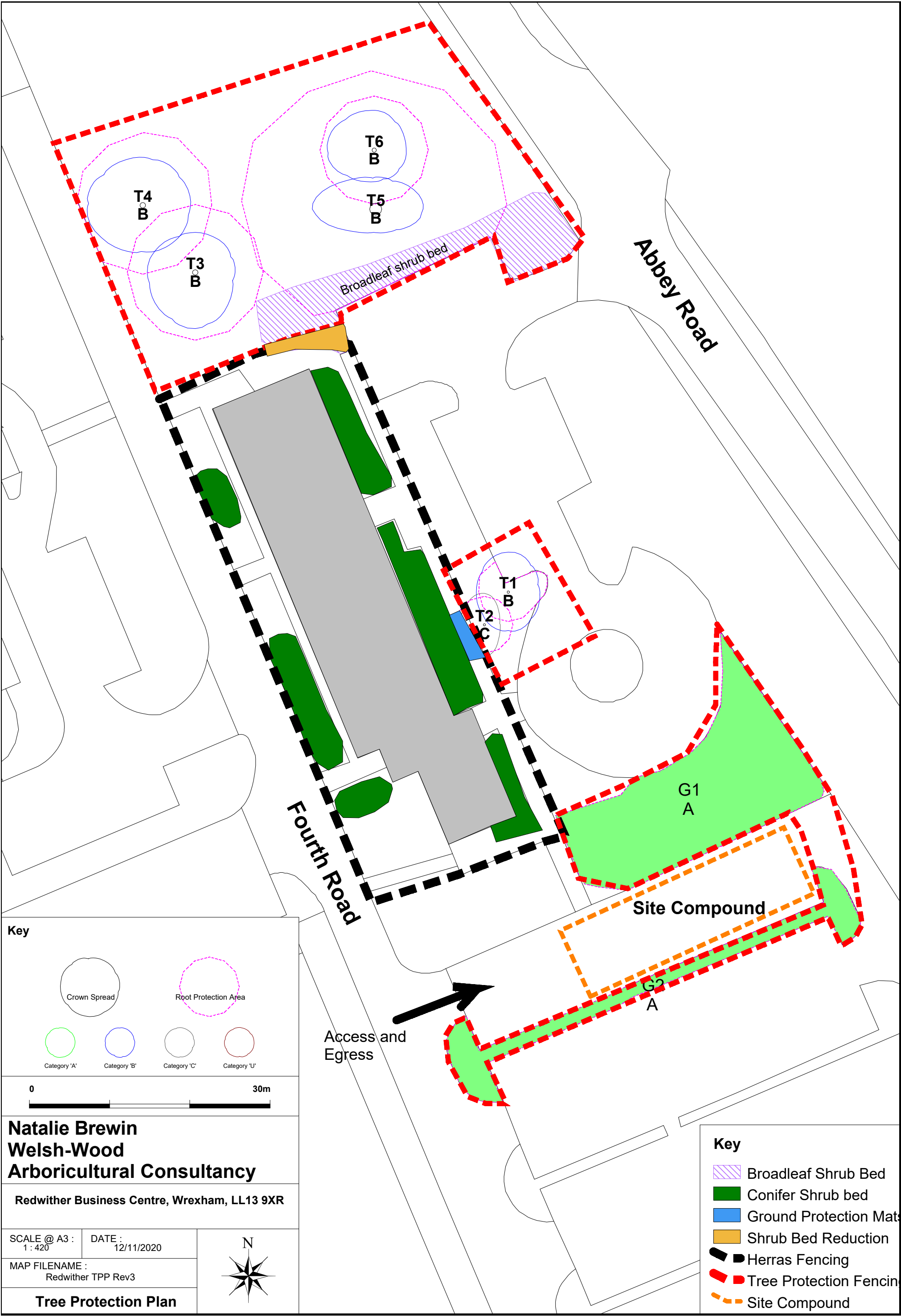
Date: 21st October 2020
Site: Redwither Business Centre Fourth Rd, Wrexham LL13 9XR
Consultant: N Brewin

Key For Group Survey Data

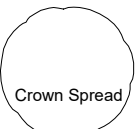
Tree ID	Numerical value assigned to the tree or tree group
Description	Description of group makeup and management
Height (m)	Height to the top of the central canopy
Stem Dia. (mm)	Depth of main stem measured at 1.5m
Life Stage	One of five categories: Y - Young, under 10 years of age, SM - Semi mature, well established but yet to reach full potential, M - Mature, more or less full height and large girth, increasing only slowly. OM - Over mature, beyond two thirds of the life expectancy of their species. No significant extension growth. Crown starting to break up and decrease in size. V - Veteran, Tree that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.
General Observations	Significant structural and physiological defects noted
Preliminary Recommendations	Works recommendations to remedy or further investigate significant defects, or facilitate development
Estimated Remaining Contribution (Years)	Taken from guidelines provided within BS 5837 (2012) Trees in Relation to Design, Demolition and Construction
BS5837: 2012 Category	Taken from guidelines provided within BS 5837 (2012) Trees in Relation to Design, Demolition and Construction
RPA Radius (m)	Root protection area - radius of RPA
RPA m ²	Root protection area

Group ID	Description	Dominant Species	Height (m)	Calc. / Actual Stem Dia.	Life Stage	General Observations	Preliminary Recommendations	Estimated Remaining Contribution (Years)	BS5837: 2005 Category	RPA Radius (m)	RPA m ²
1	Formal group of mixed broadleaf surrounded by a 1m mixed shrub layer.	Cherry, Rowan, Maple (Prunus spp. Sorbus spp. Acer spp.)	6	250	SM	Group provides attractive screen and has habitat value. Entire group contained within raised curb and surrounded by hard standing.	No works required.	40+	A2	3.0	28
2	Formal planting dividing parking area.	Rowan, Maple (Sorbus spp. and Acer spp.)	4	150	SM	Formal planting established in narrow beds edged with paved curbs dividing parking area.	No works required.	40+	A2	1.8	10
3	2 shrubs situated in grassed area.	Holly, Laurel (Ilex aquifolium, Prunus laurocerasus)	1.5	170	SM	Two shrubs in formal grassed area.	No works required.	20+	B2	2	13





Key


Crown Spread


Root Protection Area


Category 'A'


Category 'B'


Category 'C'


Category 'U'

030m

SCALE @ A3 :
1 : 420

DATE :
12/11/2020

MAP FILENAME :
Redwither TPP Rev3



Tree Protection Plan

Natalie Brewin
Welsh-Wood
Arboricultural Consultancy
Redwither Business Centre, Wrexham, LL13 9XR

Key


Broadleaf Shrub Bed


Conifer Shrub bed


Ground Protection Mat


Shrub Bed Reduction


Herras Fencing


Tree Protection Fencing


Site Compound

Appendix 4 – Photographs



P1 – T2 crown low over demolition area contained within footpath (pruning specified)



P2 – T2 Birch roots lifting pattern brick footpath (ground protection mats required)



P3 – T3 to T6 on open space to north of site

P4 – G1 requires Tree Protection Fencing



P5 – G2 requires Tree Protection Fencing. Also shows access point and area for site compound.



P6 – G3 requires Tree Protection Fencing (2 trees maintained as shrubs)



P7 – P11 Coniferous and mixed species shrub beds at structure footprint for removal



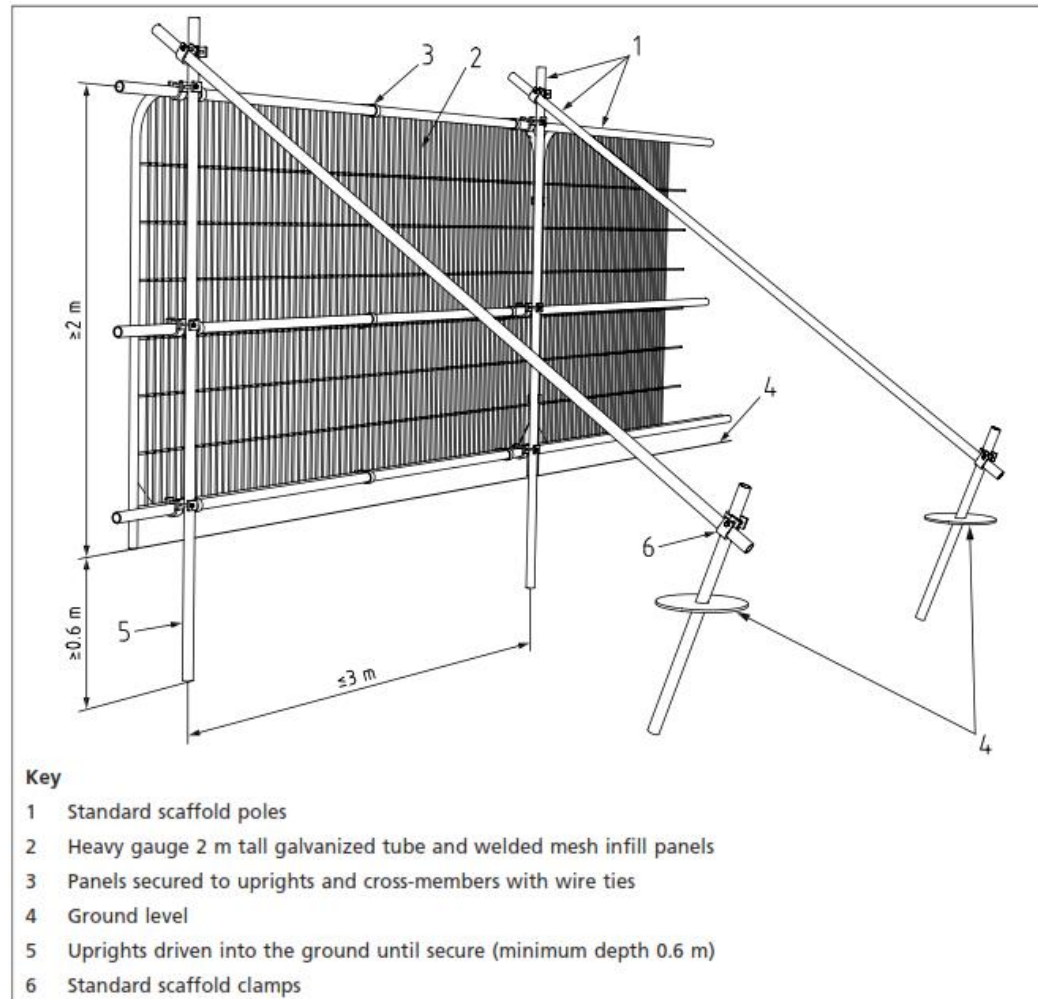


P12 – Broadleaf shrub bed



P13 – Corner of broadleaf shrub bed requires pruning to facilitate demolition and fence installation

Appendix 5 - Tree Protection Fencing Specification



Appendix 6 - Tree Protection Fencing Signage



Appendix 7 - Bibliography

1. Davison M W. (1981). Field Guide to the Trees & Shrubs of Britain. Readers Digest, London.
2. Hirons A D & Thomas P A. (2018). Applied Tree Biology. John Wiley & Sons Ltd. Chichester
3. Lonsdale D. (1999). Principles of Tree Hazard Assessment and Management. 2007 Reprint. Office of the Deputy Prime Minister, London
4. Mattheck C & Breloer H. (2003). The Body Language of Trees - A Handbook for Failure Analysis. Office of the Deputy Prime Minister. London
5. More D & White J. (2003). Cassell's Trees of Britain and Northern Europe. Cassell, London
6. National Tree Safety Group (2011). Common Sense Risk Management of Trees. Forestry Commission, Edinburgh.
7. Roberts J Jackson N & Smith M. (2006). Tree Roots in the Built Environment. Office of the Deputy Prime Minister. London
8. Shigo A. (2003) Modern Arboriculture. Shigo & Trees Associates, New Hampshire, USA.
9. Strouts G R & Winter G T. (2005). Diagnosis of Ill-health in Trees. Office of the Deputy Prime Minister. London.
10. Thomas P A. (2000). Trees: Their Natural History. Cambridge University Press.
11. Weber K & Mattheck C. (2003). Manual of Wood Decays in Trees. The Arboricultural Association, Hampshire.