BS5837 TREE SURVEY

Arboricultural Impact Assessment, Method Statement & Tree Protection Plan: Chirk EV Charging Car Park.



11/10/24
REV: V1

Arboricultural Services
Arbserv

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1. EXECUTIVE SUMMARY

Arbserv Ltd has been instructed by Gwyn Humphreys Planning Consultant For and on behalf of Roger Parry & Partners LLP to undertake a BS5837 Tree Survey for the proposed EV Charging Car Park at Chirk

This report includes an AIA which evaluates the existing tree cover, any tree related constraints and the impact of the proposed works upon the immediate surroundings.

This report also includes Arboricultural Method Statements (AMS) which outline the proposed methods to be employed as a result of the AIA in connection to the proposed construction work.

A Tree Protection Plan (TPP) is contained on the map to illustrate RPA's and methods to protect and work around retained trees along with any construction exclusion zones (CEZ).

Individual trees have been surveyed and categorised in accordance with BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'.

Overall, the assessment highlights the proposed removal of trees offering low or only temporary/transient landscape benefits. This Loss can be mitigated by the proposed landscape tree planting to accommodate the proposed development. Proper planning and adherence to the Arboricultural Method Statement are essential to ensure minimal impact on the existing trees while supporting the project's successful implementation.

Protective fencing will be required to protect tree RPA's and avoid compromising the trees during excavation and construction throughout the scheme, as shown on the tree protection plan.

2. INTRODUCTION

2.1 INSTRUCTION

Arbserv Ltd are instructed by Gwyn Humphreys Planning Consultant For and on behalf of Roger Parry & Partners LLP to conduct a BS5837 Tree Survey including Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan for the proposed EV Charging Car Park at Chirk.

This report identifies and categorises the significant trees in accordance with BS5837: 2012 (Trees in Relation to Design, Demolition and Construction – Recommendations), which may be impacted by the proposed scheme.

This report has been prepared to take account of the constraints that the existing trees place on the site. Arbserv have discussed the brief and specification of the proposed development with the client, the parameter of trees to be surveyed has been established using the map location plan provided and drawings of the proposed scheme.

2.2 SCHEME PROPOSAL

The proposed scheme is EV Charging Car Park at Chirk.

2.3 AUTHOR

Matthew Owen: RFS Cert Arboriculture and Lantra Award in Professional Tree Inspection combine with over a decade of experience in Arboriculture as a surveyor and consulting Arboriculturalist.

2.4 REPORT LIMITATIONS

This report was prepared for use by our client for planning purposes only. It is not a substitute for a tree condition, insurance, or mortgage service. Information provided by third parties used in the preparation of this report is assumed to be correct. The contents are copyright and may not be duplicated or used by third parties without written consent of Arbserv Ltd. The tree survey site parameters are highlighted on the location plan. This parameter has been established by reviewing the proposed building location/planning boundary and selecting all trees over a diameter of 75mm that could be affected by the proposed construction.

Trees are living organisms, the health and condition of which can change rapidly, especially after extreme weather conditions. All observations and advice provided in this report are based on the condition of the trees at the time of inspection and are only relevant in the context of the proposed design.

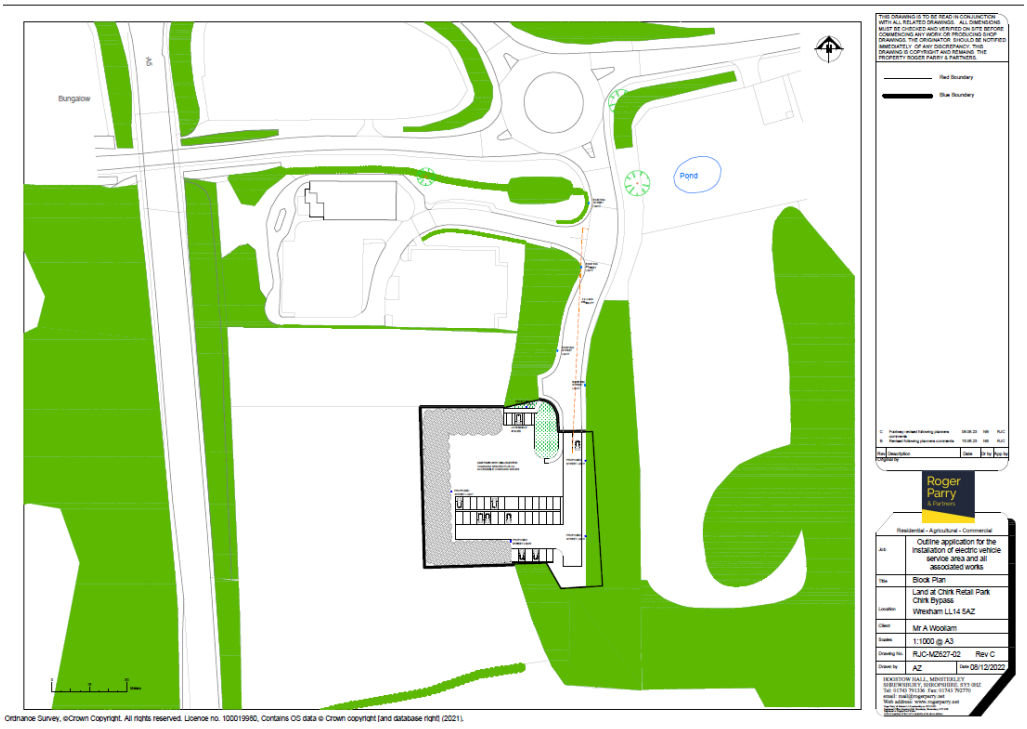
The conclusions and recommendations in this report are valid for a period of one year of the date of this report and are specific to the current design proposal.

Bats, nesting birds and a variety of mammal species are protected under Conservation of Habitats and Species Regulations 2010, Wildlife and Countryside Act 1981, Nature Reserves and Special Protection Areas and Countryside and Rights of Way Act 2000.

Prior to the commencement of any tree work or felling operations (Forestry Act 1967) a risk assessment must be conducted to determine if any protected species and their habitats will be disturbed or endangered. If any protected species are present in any of the trees or there are known bird nesting sites or bat roosts, then the Statutory Nature Conservation Organisation must be consulted before work commences. A check with the LPA must also be made to ensure trees are not protected under Tree Preservation Orders, Conservation Areas or AONB; if so written consent from the LPA must be secured first, unless part of a LPA approved planning application. In all cases the tree owner must also provide consent.

2.5 LOCATION OF SURVEY

- Nearest Post Code: CHIRK RETAIL PARK, Wrexham LL14 5AZ



2.6 SITE DESCRIPTION & PARAMETERS

Trees were surveyed within or with roots or branches within the red line boundary above. The area comprises of proposed development land to the south of an existing retail park.

3. METHOD

3.1 BS5837:2012 INTRODUCTION

A tree survey carried out in accordance with BS5837: 2012 facilitates a phased approach to tree protection during development. The survey data collected is used to assess and categorise the existing trees. It establishes their suitability for retention and whether they are compatible with the proposed design.

The aim of tree categorisation is to identify the quality and value (in a non-fiscal sense) of the trees associated with the proposed design. Tree categorisation facilitates informed decisions to be made concerning which trees should be removed or retained within the context of the proposed design.

Data collected informs the extent of the minimum root protection area required and determines where a need exists for additional protection for the physical structure of any significant trees impacted by the proposed design.

From this survey, the constraints trees pose upon the design can be identified, and a mechanism to deliver suitable mitigation can be provided through an Arboricultural Method Statement supported by a tree protection plan.

3.2 METHOD

All trees in this survey have been surveyed from ground level using Visual Tree Assessment (VTA) observations. This involves a systematic, non-invasive, ground based examination of each tree, looking for signs of ill-health, vulnerability or damage and their causes. Protocol described by (Lonsdale 1999), and (Mattheck & Breloer 1998) (Strouts & Winter 1998) No aerial inspections or invasive decay detection surveys or soil samples have been carried out.

Data was collected in accordance with the requirements of British Standard 5837:2012. Measurements were taken using diameter tape, digital clinometer, or laser measure. Where this was not possible or reasonably practical, measurements have been estimated by eye.

Data collected:

- Tree ID
- Species
- Maturity
- Height
- Height and direction of first significant branch
- Stem Diameter according to annex c of BS5837:2012
- Crown spread-in four cardinal directions
- Physical and structural condition
- Retention category according to table 1 BS5837:2012

All trees surveyed have been plotted on a tree protection plan of the site and their data recorded in the BS5837 Tree survey schedule. This includes all trees and shrubs with a diameter of 75mm or above measured at 1.5m above ground level. Measured according to annex c of BS5837:2012.

(Note in the case of woodlands or substantial tree groups, only individual trees with stem diameters greater than 150mm usually need plotting)

The tree constraints and Root Protection Areas (RPA) are then calculated for single stemmed trees; by calculating an area equivalent to a circle radius 12 times the stem diameter.

Root Protection Area (RPA) Layout design tool indicating the minimum areas around a tree deemed to contain sufficient roots and rooting volume to maintain the trees viability, and where the protection of the roots and soil structure is treated as a priority. (BS5837:2012)

The (RPA) will be calculated for all trees surveyed using the BS5837 formula. The radius of the RPA will be given and highlighted on a tree protection plan map attached to this document.

The current value of the trees is assessed in the Arboricultural Impact Assessment using the quality categories A, B, C, U ranging from high quality (A) to low quality or DBH <150mm (C) based on Arboricultural, landscape, and cultural values. Category U trees are considered to be unsafe for Arboricultural reasons and should be normally removed. With the exception of retaining standing dead habitat poles.

The Arboricultural impact assessment and method statement for each tree will be recorded within the BS5837 Tree survey schedule preliminary recommendations survey comment.

The remaining contribution of each tree is noted <10 10-20, 20-40 or >40years. This can only be an informed opinion based on the surveyor's experience and the current conditions of the tree, and obviously cannot take account of catastrophic weather events.

4. KEY TO SURVEY & PLANS

ERC: Means 'estimated remaining contribution', recorded in a range of years. It is the amount of *time the tree can realistically be retained for.*

Cat: Means 'category grading', a full explanation of the categories is given in an excerpt from BS 5837:2012 in the Tree Survey Schedule section

Ref: The reference number assigned to that item with a code to help identify the type or structure such as:

T	Tree
S	Shrub
G	Group of Trees
SG	Group of Shrubs
O	Orchard
W	Woodland
H	Hedgerow

Hgt (m): Height of the tree in metres rounded up to the nearest half metre.

DBH: 'Diameter at Breast Height' – the stem diameter measured in millimetres at 1.5m above ground level. Where the ground around the base of the tree is not level, this is taken 1.5m above the upper side of slope.

Crown Spread: The crown spread is given to four cardinal points, rounded up to the nearest half metre.

Clear (m): The height of the crown clearance of the lowest branch above ground level, with the general direction it is growing to a cardinal point.

Life stage: Recorded with codes as follows, and relative to the species of the tree:

RPA: root protection area.

CEZ: Construction exclusion zone.

Y	Young
EM	Early-mature
SM	Semi-mature
M	Mature
OM	Over-mature
V	Veteran

The trees were surveyed and assessed impartially and irrespective of the proposed development. Management recommendations should be implemented regardless of any proposed development for reasons of sound Arboricultural management or safety.

BS 5837:2012 requires retention of better quality (category A and B trees) where possible. Planning permission overrides a Tree Preservation Order and Conservation Area. Furthermore, trees are a material consideration in the UK planning system irrespective of their legal status. It is therefore not considered necessary to highlight or give additional merit to trees that have legal protection. Trees in land adjacent to the site are considered where they may be impacted by development, for example when roots or branches encroach onto the site.

Trees may be recorded as group or woodland where:

- The canopies touch.
- The trees have more group value than individual merit.
- They are part of a formal landscape feature like an avenue.
- It is impractical to record them individually.
- Trees within groups or woodlands etc. are recorded individually where it is necessary to distinguish them from others.

5. TREE DATA SUMMARY

5.1 INTRODUCTION

The survey was carried out on 02 of October 2024 by Matthew Owen. Appendix 1 BS5837 Tree Protection Plan 'Overview and proposed tree removal plan)' shows the layout of the site and the locations of all relevant trees.

The full results are tabulated in BS5837 tree survey schedule table Appendix 2 and should be read in conjunction with the Tree Protection Plan (appendix 1). For clarity on larger schemes map tiles have been used.

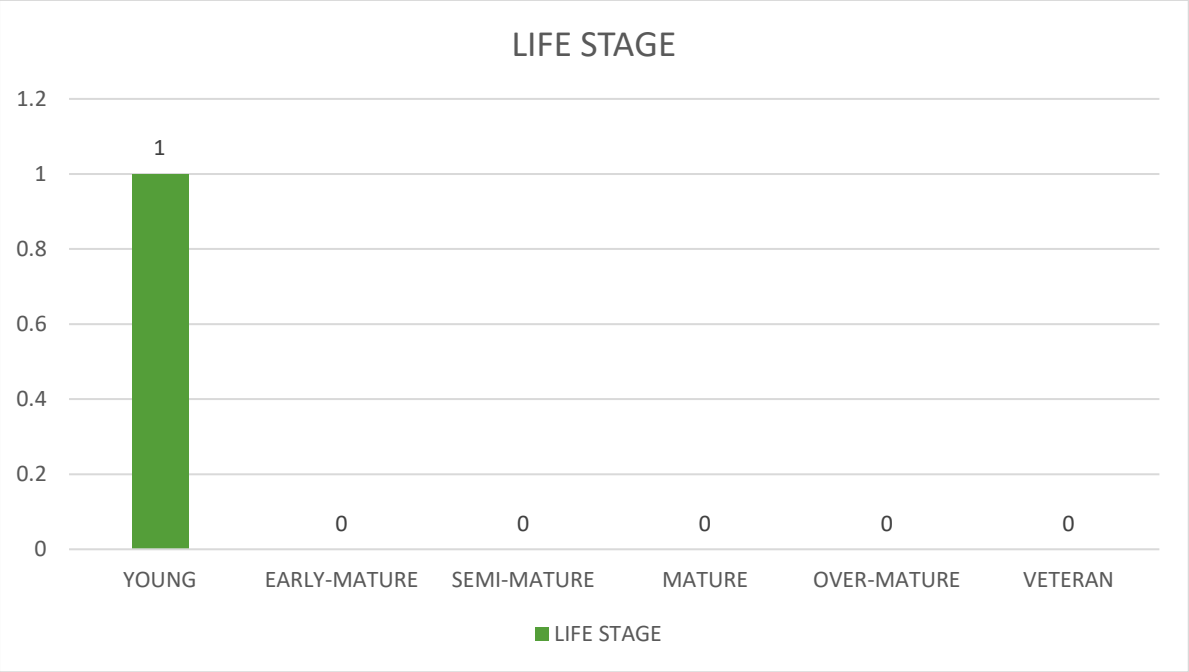
5.2 TREE DATA SUMMARY CHARTS

Individual trees and groups have been categorised in accordance with the BS5837: 2012 (see appendix 3) and these are summarised in the charts below:

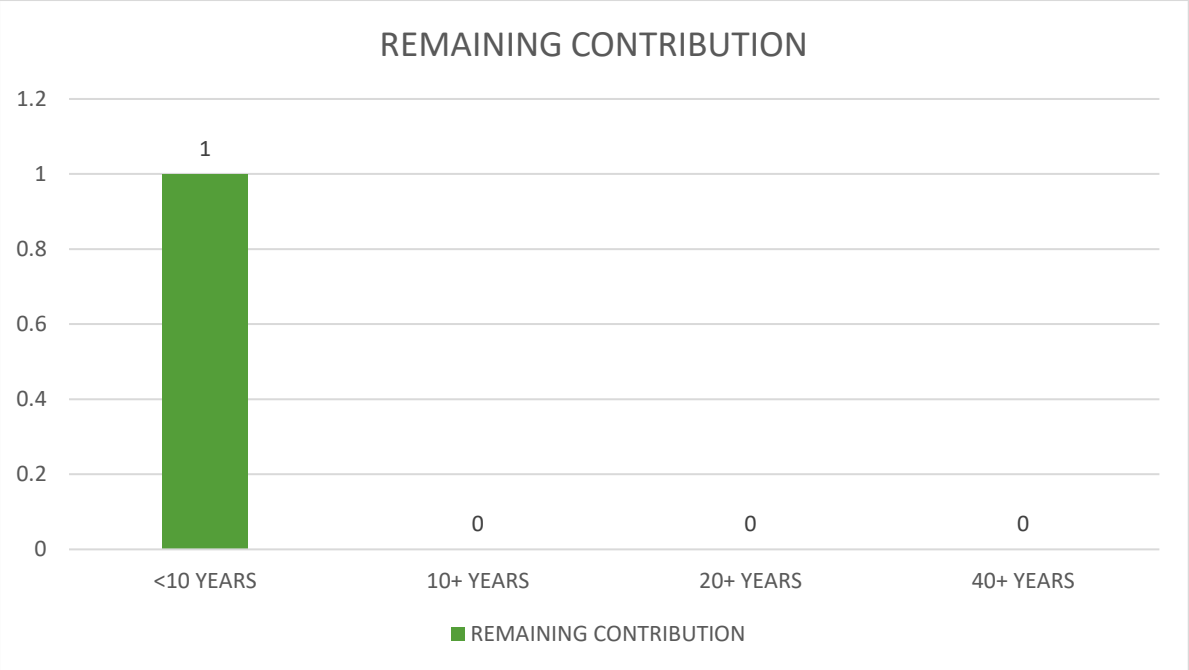
5.2.1 TREE CATEGORY



5.2.2 LIFE STAGE



5.2.3 REMAINING CONTRIBUTION



Trees surveyed mainly fall into category U small trees regrowing from old stumps unsuitable for retention. Category C trees of species characteristics not suitable for their current setting and Category B trees suitable for retention growing on a woodland edge.

6. CONSTRAINTS POSED BY EXISTING TREES

The constraints posed by the trees within the scheme boundary are derived from the physical structure of each tree and its accompanying root distribution network.

6.1 ABOVE GROUND CONSTRAINTS

The above ground constraints posed by the existing trees are shown in the current height and spread. The height and direction of the first significant branch and any notable physical and structural defects are also shown in the BS5837 survey schedule (Appendix 2).

The physical form of the tree; its trunk and branches, are a significant constraint to development. Impact on a trees' structure by machinery, equipment, materials or liquid discharge/leakage has the potential to detrimentally impact on the continued physiological and structural condition of the tree.

More so for residential schemes, the effects of trees on daylight and sunlight with regards to shading can be illustrated by plotting a segment, with radius from center of the stem equal to the height of the tree. This is drawn from due north-west to due east, indicating the shadow pattern through the main part of the day.

Further details of the above ground constraints are found in the Arboricultural Impact Assessment.

6.2 BELOW GROUND CONSTRAINTS

Root Protection Areas (RPA) as defined in Annex B of BS 5837:2012, indicate the minimum area around a tree deemed to contain enough roots and rooting volume to maintain the tree's vitality.

This is based on a standard calculation of the tree's stem diameter x12. Nevertheless, varying factors such as life stage, pr-existing features such as a wall or watercourse can affect the RPA. Therefore, not all will have a standard symmetrical root plate or one as big or small as the standard calculation. However, should this be the case then it is noted in the comment section for each tree in appendix 2.

The below ground constraints are marked as Root Protection Areas (RPA'S) on the tree protection plan derived from a standard calculation.

The concise Arboricultural Impact Assessments and Arboricultural Method Statements are displayed in the survey comment of the tree survey table for each tree.

This is to provide uncomplicated use by operatives along with the tree protection plan on site. The Arboricultural impact assessment and method statement in this report provide more detailed information.

7. ARBORICULTURAL IMPACT ASSESSMENT

7.1 AIA INTRODUCTION

The AIA evaluates the direct and indirect effects of the proposed scheme design on the trees and where necessary recommends mitigation methods. It also aims to identify any potentially damaging activities proposed in the vicinity of retained trees. The concise Arboricultural Impact Statement for each tree surveyed is included in the survey comment of the BS5837 tree survey schedule Appendix 2.

7.2 AIA DATA INTERPRETATION

The Arboricultural Impact Assessment for each tree/group typically falls into one of the main categories below:

- The proposed build falls out-side the RPA
- The proposed build falls inside the RPA Tree proposed for Removal
- The proposed build falls inside the RPA Tree being Retained alternative methods proposed to minimise impact (See AMS for proposed work method inside RPA).
- Tree unsuitable for retention CAT U and poses a hazard to people/property in conjunction with the proposed scheme.
- Section of Hedge proposed for Removal

7.3 AIA SUMMARY

Existing trees outside the red line planning boundary to the East and North have not been surveyed for this project however have been considered in this arboricultural impact assessment and protected by the perimeter tree protection fence CEZ.

G1, Group 1 category C young, planted tree groups offering low temporary/transient landscape benefits are proposed for removal. Low Arboricultural Impact compared with the volume of retained trees within a shelterbelt to the East. Mitigate loss with proposed replacement landscape tree planting to the west.

The proposed parking areas fall out-side the RPA'S of all other trees and hedges in the site parameter. (see appendix 1 Tree Protection Plan) The Arboricultural impact on these trees can be mitigated by following the Arboricultural Method statement out-side RPA.

Proper planning and adherence to the Arboricultural Method Statement are essential to ensure minimal impact on the existing trees while supporting the project's successful implementation.

The effects of shading represent a no impact to the proposed development.

8. ARBORICULTURAL METHOD STATEMENT

8.1 AMS INTRODUCTION

The purpose of the AMS is to safeguard that the proposed design and construction process does not impact detrimentally on the retained tree resource within and adjacent to the scheme.

The AMS details best practice measures to be adopted to protect retained trees during the development process. AMS details contained within the comment section of Appendix 2 Tree Schedule should be included within the specifications and schedules of work issued to all relevant construction and landscaping contractors.

The methodology should be approved by the Local Authority and Local Authority Tree Officer at planning stage and then discussed between the Project Manager, Architect and all relevant contractors before implementation.

8.1.1 Arboricultural Methods

Method out-side RPA for all trees retained. The RPA shall be measured and clearly marked on site with the use of ground pins or marker spray. All relevant personnel should be briefed to ensure they are fully aware of the location and extent of the RPA'S Construction Exclusion Zone (CEZ). Install the section of Heras fence or similar barrier positioned as indicated on the tree protection plan to form a construction exclusion zone (CEZ).

8.2 GENERAL REQUIREMENTS

8.2.1 SITE INDUCTIONS

A copy of the AMS shall remain on site for the duration of the construction and landscape works and be available to operatives at all times. The site induction shall include details regarding tree related issues. Any variation from the methodology described in this method statement should be discussed with the project Arboriculturist before implementation.

8.2.2 TREE WORK

Where applicable, all tree works should be carried out by suitably qualified and experienced arboricultural contractors in accordance with the tree works detailed in the Tree Survey Schedule, prior to the installation of the Temporary Protective Fencing and/or the Temporary Ground Protection.

All tree works should conform to British Standard BS3998:2010 Tree Work – Recommendations.

Performance of all arboricultural operations and use of equipment should be in accordance with current directives of the Health and Safety Executive (HSE) and current Industry Codes of Practice (ICOP).

All operatives should be equipped with and use Personal Protective Equipment (PPE) in accordance with current directives of the HSE and industry codes of practice.

All possible efforts should be made by the tree contractor, and any other site operatives, to prevent damage to retained trees.

8.2.3 SITE RULES & TREE PROTECTION

No construction related operations shall occur within RPAs, unless specifically detailed in the AMS.

Where specified, protective fencing shall be installed prior to the construction phase as detailed in Appendix 1.

No concrete or other construction materials shall be mixed within RPAs.

No excavation or any other operations shall occur within the RPAs, other than as detailed in the Arboricultural Method Statement.

All construction equipment and materials shall be stored outside RPAs. No fires shall be lit within 15m of any tree crown.

Deliveries by crane shall be supervised by the Site Agent, positioning the vehicle in such a manner that retained trees are not put at risk of damage.

No notice boards, phone cables or services should be attached to any part of any tree.

A record should always be maintained of any activity or incident with an impact or potential impact on retrained trees and made available for review by the Project Arboriculturalist.

Weatherproof notices shall be attached to the protective fencing displaying the words Construction Exclusion Zone. It shall be checked by an Arboriculturalist before excavation works commence.

Ground levels should not be raised or lowered within the RPA and CEZ.

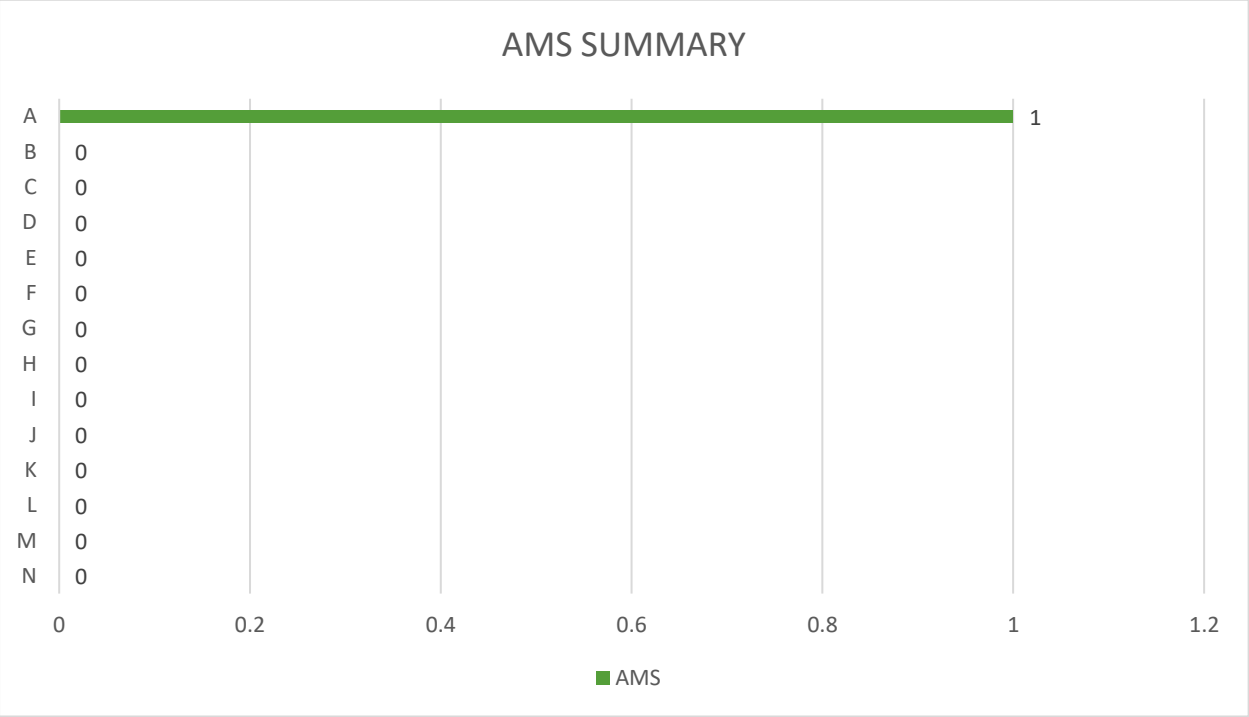
Drainage and utilities follow recommendations in the NJUG Volume 4 Code of practice relating to work in proximity to tree roots within the RPA. Any drainage or service-related works to be carried out within the RPA (apart from works permitted by Statutory Undertakers) must be subject to prior written approval of the LPA of a method statement detailing how such works are to be carried out and monitored, to avoid undue damage to trees.

8.3 AMS DATA INTERPRETATION

The Arboricultural Method Statement for each tree/group typically falls into one of the main categories below:

A. Install the section of Haras fence barrier positioned as indicated on the tree protection plan to create the CEZ
B. Work inside the RPA Trees proposed for Removal
C. Work inside the RPA Trees proposed for Removal, mitigate loss by replanting Standard
D. Work inside the RPA Section of Hedge Proposed for Removal
E. Work inside the RPA Section of Hedge proposed for Removal, fence and replanted whips post work
F. Work inside RPA inside Precautionary Zone for Utilities under NJUG's Vol 4 requires Arborist Supervision for Open Cut Trenches
G. Work inside RPA inside Precautionary Zone for Utilities under NJUG's Vol 4 using Trenchless Tunnelling below the RPA.
H. Work inside RPA, Hand Dig Pile Foundations
I. Work inside RPA to create driveway using Cellular Confinement Systems
J. Access via RPA required, install temporary ground protection mats to protect RPA
K. Tree pruning required to facilitate access - carry out to BS3998
L. Tree pruning required to accommodate scheme - carry out to BS3998
M. Cat U Tree proposed for removal - fell/section fell.
N. Other

8.4 AMS DATA SUMMARY



8.5 AMS SUMMARY

Overall, the main Arboricultural Method Statement of this scheme is to retain and protect groups of existing trees neighboring the site with fencing in-line with the CEZ on the tree protection plan. This will afford protection for the trees and their rooting environment to exclude plant, machinery and storage of materials in the RPA's.

9. ARBORICULTURAL SITE MONITORING

The arborist shall visit site at pre-scheduled intervals for the below to ensure the method statement is followed under field conditions and ensure compliance by contractors.

- The marking out and instalment of construction exclusion zones prior to construction/works.

Prepared and written by:



FDSc Arb, Cert Arb, Lanta Professional Tree Inspection
(Arboricultural Surveyor)

Matt Owen 11/10/23

10. APPENDICES

APPENDIX 1: BS5837 TREE PROTECTION PLAN

Bungalo

Pond

Proposed Tree Planting Mitigation

Category C Group, Low temporary/transient landscape benefits are proposed for removal.

G1
C

Tree Protection Fence, (CEZ)

Additional Key

Tree Protection Fence (CEZ)

KEY

Crown Spread

Root Protection Area

Shading Arc

Category 'A'

Category 'B'

Category 'C'

Category 'U'

0 80m

Arbserv Ltd

Chirk EV Charging

SCALE : 1 : 1000 @ A3

DATE : 11/10/2024

N

MAP FILENAME : BS5837 TREE PROTECTION PLAN

Map data shown may contain Ordnance Survey ® products supplied by Pear Technology Services Ltd; Email: info@peartechnology.co.uk
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APPENDIX 2: BS5837 2012 TREE SURVEY SCHEDULE

Roger Parry & Partners LLP
20 Salop Rd
Oswestry
SY11 2NU
Phone: 01691 655334

Arbserv Ltd
Crew Green
Shrewsbury
Shropshire
SY5 9BQ
Phone: 01743 884671
Mobile: 07912599933
matt@arbserv.co.uk

BS5837:2012 Assessment

Tree ID : G1 **Tag :** G1 **Assessor :** Matthew Owen **Bats :**
Species : A Group **TPO :** **Inspected :** 02 October 2024 **Cons Area :**
- - **Next Insp :** Not Required
1st Branch: 1s

Estimated Measurements

Stems			Health					RP		Site Status	Priority	Clearance (m)				Spread (m)			
H (m)	No	Ø (mm)	Maturity	Crown	Stem	Basal	Phy Con	Cat	ERC	A (m²)	R (m)			N	E	S	W	N	E	S	W
10	0		Young	Fair	Fair	Fair	Fair	C.2	10 to 20 yrs			Pre Construction						2	2	2	

Survey Comment : Mixed native broadleaf plantation young 15-20 years old. Oak, Ash, Birch, Maple. Ash dieback present.
Arboricultural Impact Assessment: category C young, planted tree groups offering low temporary/transient landscape benefits are proposed for removal.
Mitigate Loss with proposed replacement tree planting.

Tree Comment :

BS5837:2012 Assessment

Report selection criteria.

Projects.

Chirk EV Charging

Date Range.

Any Date

Work types.

-----> -No Selection made-

Latest Survey.

All surveys for the selected trees.
---> Last survey for each selected tree.

Work Completed.

---> Work Completed
---> Work Not Completed

Number of trees in selected Project(s)	**1**
Number of trees in Report selection	**1**

APPENDIX 3: PHOTO GALLERY

Group 1 G1 east



G1 Group 1, South



APPENDIX 4: BRITISH STANDARD CASCADE CHART

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• 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 (e.g. 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, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	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 (e.g. veteran trees or wood-pasture)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the 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; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

APPENDIX 5: BARRIERS

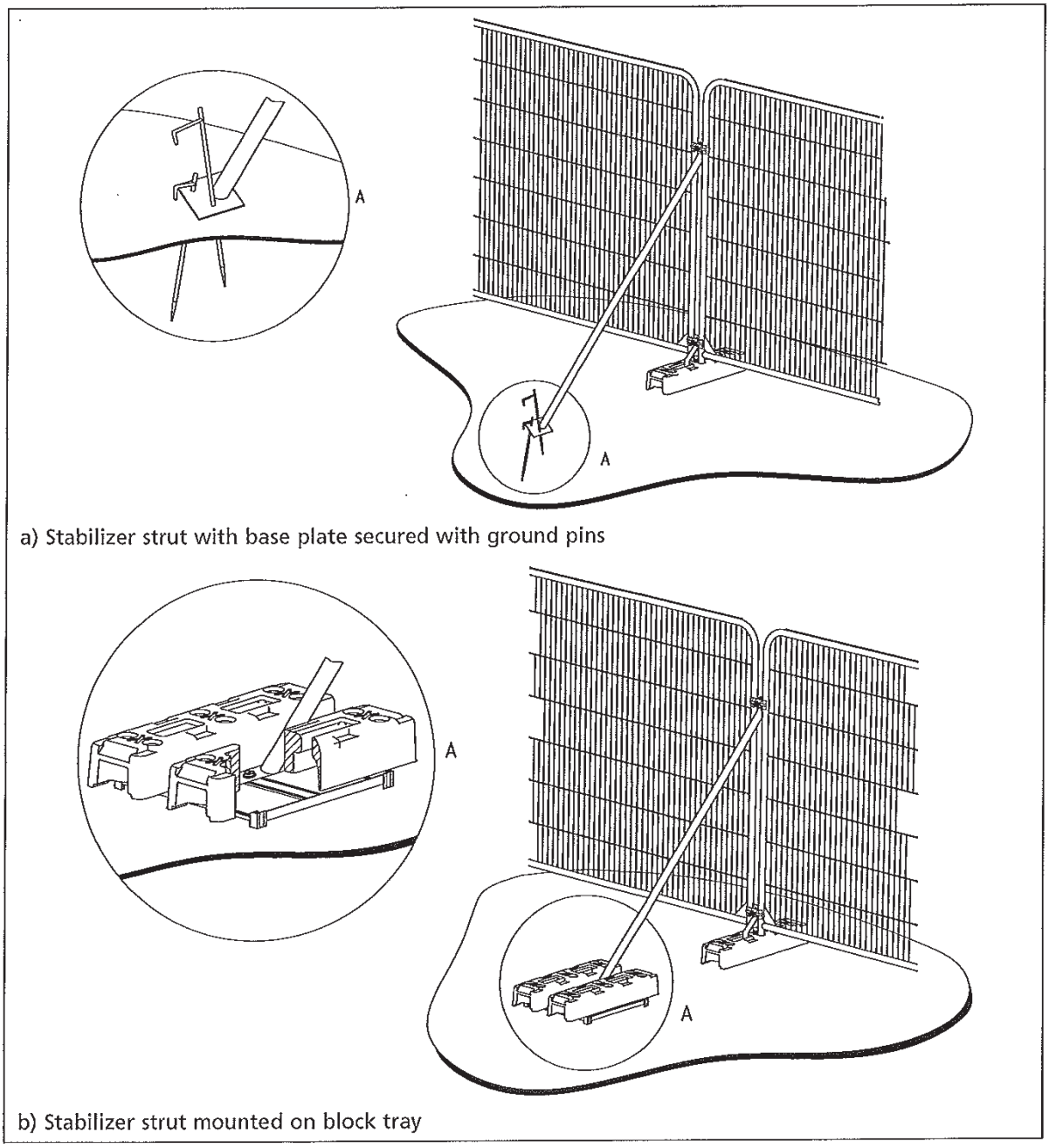
Barriers

6.2.2.1 Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). Barriers should be maintained to ensure that they remain rigid and complete.

6.2.2.2 The default specification should consist of a vertical and horizontal scaffold framework, well braced to resist impacts, as illustrated in Figure 2. The vertical tubes should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification should be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

6.2.2.3 Where the site circumstances and associated risk of damaging incursion into the RPA do not necessitate the default level of protection, an alternative specification should be prepared by the project arboriculturist and, where relevant, agreed with the local planning authority. For example, 2 m tall welded mesh panels on rubber or concrete feet might provide an adequate level of protection from cars, vans, pedestrians and manually operated plant. In such cases, the fence panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 3a). Where the fencing is to be erected

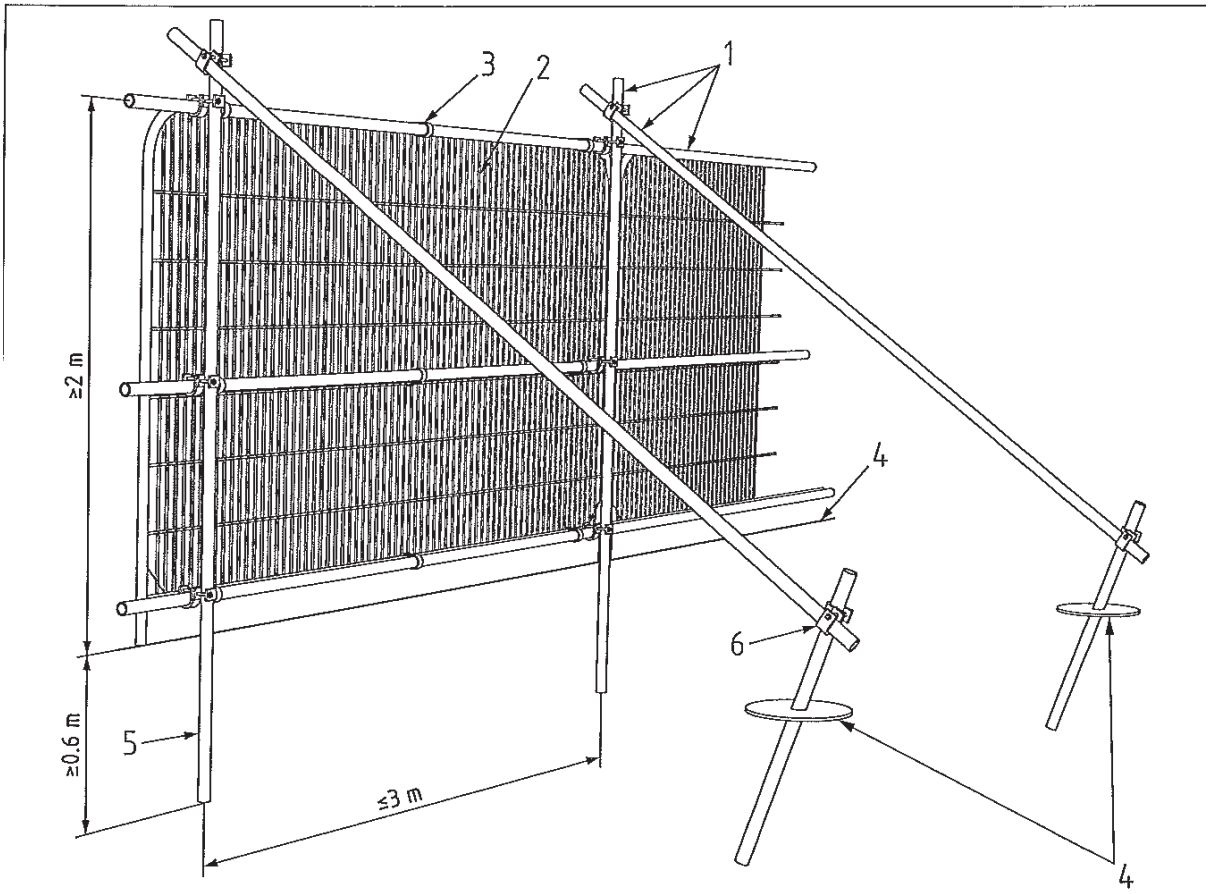
Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

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

APPENDIX 6: REFERENCES

Arboricultural Practice Note No 12 ‘Through the Trees to Development’ by Derek Patch and Ben Holding 2007.

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Trees in relation to design, demolition and construction – Recommendations

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