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BS 5837:2012 Arboricultural Survey, Impact Assessment and Method Statement

Gipsy Lane, Rochdale
for:

Arlington Energy Ltd.

CRM.348.003.AR.R.001.E

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1.0 Objectives

1.1 Introduction

1.1.1 Enzygo Limited [Enzygo] have been commissioned by Arlington Energy Ltd. to prepare an Arboricultural Survey report for the site off Gipsy Lane in Rochdale in support of a planning application for the development of battery storage facilities with associated infrastructure.

1.1.2 The report includes an assessment of the impact the development proposals may have on existing trees (Arboricultural Impact Assessment) including the expected loss of trees and potential impact on trees to be retained. Based on that it specifies methodologies which will minimise the potential effects on trees and makes recommendations on how any residual effects can be mitigated (Arboricultural Method Statement).

1.1.3 The following section describes the existing site and the development proposals and is followed by a summary for the structure of this report.

1.2 Site Overview

1.2.1 The site is located approximately 2km south-west of Rochdale town centre on the western edge of the industrial park in Castleton. Gipsy Lane lies to the north, the premises of The Royal Toby Hotel on Manchester Road in the west and commercial sites to the south and east.

1.2.2 The application boundary for the site is approximately 4250m² [0.42ha]. It comprises mature woodland in the north, grassland in the centre and an area of young trees and shrubs in the south. Views into the site from public viewpoints are very limited.

1.3 Project Description

1.3.1 It is understood the planning application is for the development of battery storage facilities including battery containers, inverters/transformers, an access route from the adjacent hotel car park, security fencing and an underground high voltage cable route towards an electric substation off Gipsy Lane in the north-east. An extension of the hotel car park, to be located to the South of the battery storage facility, is also proposed, as well as an informal amenity space in the South.

1.3.2 Further details regarding the proposed development can be found in the information submitted with the planning application.

1.4 Structure of the Report

1.4.1 Chapter 2.0 describes the methodology adopted for the Arboricultural Survey as well as for the assessment of the Arboricultural Impact.

1.4.2 **Chapter 3.0** summarises the findings of the Arboricultural Survey, describing the overall species mix, age, condition and value of the trees recorded on site. A full tree survey schedule is included in Appendix 1 - Arboricultural Survey Schedule.

1.4.3 **Chapter 4.0** describes the results of the Arboricultural Impact Assessment and outlines the significance of the impacts both within the site and the local landscape.

1.4.4 **Chapter 5.0** specifies any methodologies to be adopted to minimise the effects of the development on trees to be retained and makes recommendations on mitigating any residual effects on the trees on site.

2.0 Methodology

2.1 Introduction

2.1.1 This report and all methodologies adopted to carry out the Arboricultural Survey, the Arboricultural Impact Assessment and Arboricultural Method Statement are based on recommendations outlined in *British Standard (BS) 5837:2012 Trees in relation to design, demolition and construction- Recommendations*. This was published by BSI Standards Limited and came into effect on 30th April 2012. It supersedes BS 5837:2005 which is withdrawn.

2.2 Arboricultural Survey

2.2.1 A tree survey or arboricultural survey is a ground-based visual assessment of existing trees and tree groups on a site. It records the location of trees, the species, the estimated height and canopy spread, the stem diameter, and the tree's life stage, remaining useful life expectancy (RULE) and overall condition. Any distinctive features and abnormalities such as structural defects and physiological condition which may or may not have an adverse effect on the health or stability of the tree are also recorded, together with any signs of nesting birds and bat roost potential. Where ground conditions may influence the tree's growth, health and stability, such as water logging, ground compaction and severe level changes, this would also be recorded.

2.2.2 The site walkover includes an assessment of the overall value and quality of the trees on site by assigning a retention category to each tree and tree group. This assists stakeholders in deciding which trees should be removed or retained in the event of development occurring. There are four categories: A (high quality), B (moderate quality), C (low quality) and U (unsuitable for retention). For trees in categories A to C, these should qualify under one or more subcategories: 1 (mainly arboricultural qualities), 2 (mainly landscape qualities) and 3 (mainly cultural values).

2.2.3 The findings of the tree survey are recorded in Appendix 1 - Arboricultural Survey Schedule.

2.2.4 The survey includes all trees which have a stem diameter of at least 75mm at 1.5m height or measured in accordance with BS 5837:2012 Annex C.

2.2.5 The tree survey records individual trees (labelled "T" on the Tree Survey Plan and in the Tree Survey Schedule), but may also group trees of similar age, species and condition into Groups (labelled "G"). Trees may also be grouped where they form a homogeneous unit (e.g. tree belts and woodland groups) which is unlikely to be directly affected by the development

(labelled "G" for small groups or "W" for Woodland Groups, as appropriate). Hedgerows are also recorded where present (labelled "H").

2.2.6 To determine the location of trees, groups and hedgerows on site, a topographic survey was provided which formed the basis of this survey. This may or may not include the position of all trees to be surveyed; where necessary some tree positions are estimated with an accuracy of +/-1m.

2.2.7 The survey includes any trees outside the site boundary which may be affected by any development proposals by overhanging canopies or by Root Protection Areas which are likely to extend into the site. These trees are normally found within 12m from the site boundary.

2.2.8 In addition to a site walk-over survey, a desk-study is carried out which includes the calculation of Root Protection Areas (RPA) in accordance with BS 5837:2012 clause 4.6 as the minimum area of land around the stem of a tree which should be protected during construction.

2.2.9 In a second step, the relevant local authority is contacted (or their online mapping tool is checked where this is available) to establish whether any of the trees on site are protected by Tree Preservation Order (TPO) or whether Conservation Areas affect the legal status of any trees. More information on the legal implications of Tree Preservation Orders and Conservation Areas can be found in Appendix 3 – Rochdale Council Tree Preservation Order.

2.3 Arboricultural Impact Assessment (AIA)

2.3.1 Once a Tree Survey and Tree Constraints Plan has been prepared and a site layout is available, these are superimposed to establish the potential impact of the development, including the construction phase, on the existing tree stock.

2.3.2 The requirement for tree removal is ascertained where tree stems are located within or very close to proposed building footprints and hard landscape and/or within areas with significant proposed level changes and other works requiring soil movement (incl. excavations).

2.3.3 As part of the second stage an assessment is carried out of the impact both the construction operations and the development proposals may have of retained trees, including hard landscape in RPA, vertical structures and tree canopies.

2.3.4 Using information provided by the client on construction operations, including site access, construction vehicle and plant movement and location of the site compound and material storage areas, the potential impact on both below and above ground parts of retained trees is assessed.

2.3.5 In addition to assessing the impact of the development on existing trees, Enzygo also include an assessment of the impact of existing trees on the future use of the site, including shading, spatial constraints and the use of gardens, open spaces, paths and roads. Potential conflicts between trees and the safety of the site have also been analysed.

2.4 Arboricultural Method Statement (AMS)

2.4.1 The Arboricultural Method Statement (AMS) gives an overview on all methodologies to be adopted to minimise the effects the development, including construction operations, are expected to have on retained trees.

2.4.2 The AMS further includes a full specification for all methodologies which are necessary to protect retained trees.

2.4.3 Methodologies include protective barriers installed to create a Construction Exclusion Zone (CEZ) around retained trees, temporary ground protection where Root Protection Areas (RPA) cannot be fully fenced off, access facilitation pruning where there are conflicts between parts of the canopy and the development, specialist construction methods for buildings within the RPA and any methodologies to be adopted for utilities within the RPA.

3.0 Arboricultural Survey

3.1 Overview

3.1.1 The arboricultural survey was carried out by Verena Meyer, MArborA CMLI, in March 2018. At the time of the survey the trees were not in leaf. The survey was updated in September 2019.

3.1.2 The site comprises grassland and scrub in the centre which is enclosed by mature woodland in the north, scattered trees along the eastern boundary and an early mature woodland in the south.

3.1.3 Two areas of woodland, six tree groups and six individual trees were recorded during the walk-over survey. A full schedule of all trees and tree groups recorded can be found in Appendix 1 - Arboricultural Survey Schedule.

3.2 Tree species

3.2.1 The species on site are both of native and non-native origin. Non-native species form part of the woodland in the north and include non-native poplars (*Populus sp.*) and Norway maple (*Acer platanoides*). The remainder of trees include native willow (*Salix sp.*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*) and hornbeam (*Carpinus betulus*).

3.3 Tree age and overall condition

3.3.2 The trees are generally early mature to mature. There is no evidence of recent tree or woodland management on site, however, trees are generally in fair to good condition. A large number of trees in particular along eastern boundary are multi-stemmed or have low stem divisions, suggesting that they are self-set, whilst the woodland in the north is likely to have been planted as regular planting distances suggest.

3.4 Tree quality, value and significance on site and local landscape

3.4.1 The most important arboricultural feature recorded on site is mature woodland W19 which forms a significant landscape buffer between the residential properties in the north and the commercial sites in the south. It is suggested that it has been planted using a mix of short-lived, fast growing poplars for quick impact and longer-lived species such as sycamore, beech and hornbeam to provide long-term screening. The woodland is considered to be of high landscape value, however, the value of the poplars along the southern edge of the woodland (T5, G6 and G7) has been reduced to BS category B to reflect the limited remaining contribution expected from mature poplars.

3.4.2 Another arboricultural feature of importance to the site and the local landscape is the early mature woodland to the South of the site (BS category B).

3.4.3 All other trees on site have been assessed to be of low arboricultural and landscape value, with the exception of a small number of trees and tree groups which are "unsuitable for retention" (Category U).

3.5 Root Protection Areas (RPA)

3.5.1 The Root Protection Areas for each Category A to C tree and tree group has been calculated based on measured stem diameters. Both the radius and the area of each RPA are listed in Appendix 1 - Arboricultural Survey Schedule and shown on the plan included in Appendix 4 – Tree Survey and Tree Constraints Plan.

3.6 Tree Preservation Orders (TPO) and Conservation Areas

3.6.1 Rochdale Council have confirmed that the woodland to the north of the site is protected by Tree Preservation Order No. 247 dated 11th October 2005. This means that all trees covered by this TPO are legally protected as outlined in Appendix 3 – Rochdale Council Tree Preservation Order.

Table 1 –Trees protected by Rochdale Council Tree Preservation Order No. 247 (2005)

No.	Species	Notes
T2	Norway maple	Included in TPO but assessed as being unsuitable for long-term retention
G3	Norway maple (4No.)	Assumed part of TPO, but partially outside of TPO boundary, status to be confirmed
W4	Mixed woodland	Fully protected
T5	White poplar	Fully protected
G6	White poplar (6No.)	Fully protected
G7	Lombardy poplar (2No.)	Fully protected
G8	Goat willow	One tree technically within TPO boundary, but protection unlikely, status to be confirmed

4.0 Arboricultural Impact Assessment (AIA)

4.1 Development proposals

4.1.1 This AIA is based on the development proposals as shown on Smith Brothers Planning Arrangement drawing ref. SBC-21225 Rev. P6 dated 20th September 2019. It shows a proposed access route into the site from the adjacent car park of The Royal Toby Hotel in the west. It will serve the hotel car park extension in the centre of the site and the battery storage facility in the North. The compound will comprise 5 No. battery storage systems, a switchroom, a control room, a welfare room, a transformer and a substation, all enclosed by a concrete acoustic fence in the North, East and West and mesh and timber fencing in the South. An underground high voltage (HV) cable will run from the substation off site towards Castleton Transforming Station on Gipsy Lane and the electric substation located on the opposite side of the road.

4.1.2 The proposals include for an amenity space to be created outside the application boundary, with access from the Royal Toby Hotel in the West, a simple gravel path through the coppice woodland, a seating area and palisade fencing along the ownership boundary in the South and East, leaving a strip of land along the edges for the re-routing of the informal yet established third party pedestrian access across the site. Standard tree planting is included in the proposals for this area (refer to Enzygo drawing ref. CRM.348.003.L.D.001 Planting Strategy).

4.2 Tree removal

Construction of battery storage infrastructure

4.2.1 The construction of the battery storage compound requires the removal of two Norway maples within G3, white poplar T5, the six white poplars within G6 and both Lombardy poplars in G7. These trees form the edge of the large mature woodland W4.

4.2.2 T5, G6 and G7 are protected by Tree Preservation Order ref. 247. They are mature and in good condition but have a limited remaining useful life expectancy. It is considered that they have originally been planted for their fast-growing rate to provide short- medium-term screening whilst the remaining woodland trees of longer-lived species establish. As the rest of the woodland has now matured, providing a high value screen of predominantly native species, the removal of the poplars may enable better development of those trees.

4.2.3 Whilst the legal protection of T5, G6 and G7 is acknowledged and their removal is likely to have a moderate effect on the character of the site in the short-term, it is expected that in the medium- and long-term, the trees immediately to the north of them will develop further and

provide a high quality woodland edge, comprising species more in keeping with the local landscape.

4.2.4 Although their location is estimated to be just outside the TPO boundary, the legal status of the Norway maples within G3 should be checked prior to removal of two trees within it. The removal of these trees would have a moderate effect in the short term but is expected to soon be mitigated by the trees immediately to the west.

Installation of new underground HV cable

4.2.5 Due to the limited value of tree groups G8, G13 and G14 it is proposed to remove them to facilitate the installation of the HV cable rather than to propose extensive and expensive trenchless solutions. This will also enable the future maintenance of the cable.

Landscape proposals

4.2.6 In addition to the trees removed as part of the main application, a small number of trees require removal to facilitate the re-routeing of the pedestrian access across the site and along the eastern boundary, as well as the installation of the timber boundary fence. These are trees T9, T10 and T11, mature and young ash, sycamore and Norway maple of low landscape value.

Aesthetic, safety and other reasons for removal

4.2.7 It is proposed to remove T2. It is technically protected by Tree Preservation Order but due to it growing through the boundary palisade fence it has considerable stem deformation and has therefore been assessed as being unsuitable for retention.

4.3 Summary of tree removal

Table 2 –Summary of proposed tree removal

No.	TPO	Reason for removal
T5, G6 and G7 (9 trees)	✓	Construction of battery storage compound
G3 (2 trees)	Tbc	Construction of battery storage compound
T2	✓	Unsuitable for retention
T9- T11	-	Construction of timber fence and enabling use of east boundary by third party pedestrians
G8, G13 and G14	-	To facilitate installation of underground HV cable

4.5 Residual impact of development on retained trees

4.5.1 Unless adequate protection is provided, construction operations near retained trees are likely to cause accidental damage of tree trunks and low hanging branches, in particular of trees along the western and northern edge of the proposed development.

4.5.2 It is expected that prior to the installation of the permanent security fence, ground compaction within the RPA of woodland group W4 may be caused by construction vehicles and plant operating along the northern site boundary.

4.5.3 Unless sensitive a sensitive methodology is applied, the construction of the compound security fence is likely to have an impact on the Root Protection Area of woodland W4.

4.5.4 Unless designed and implemented sensitively, the amenity space may have an impact on the trees within the woodland W1.

4.5.5 Fencing surrounding the battery storage compound is

4.6 Recommendations

4.6.1 All methodologies specified in the Arboricultural Method Statement (AMS) in Chapter 5.0 should be implemented to ensure any retained trees are adequately protected during construction.

4.6.2 All site managers and site operatives should be aware of the potential impact of the works on retained trees and follow the protection methodologies specified in the AMS in Chapter 5.0.

4.6.3 A schedule of arboricultural supervision should be agreed with the client. This should ensure any operations potentially affecting retained trees are carried out in accordance with the AMS in Chapter 5.0 and any noncompliance reported and rectified as soon as possible.

4.6.4 Replacement tree and shrub planting should be specified by the Project Landscape Architect with a focus on screening the site and using both native species and species already established on site.

5.0 Arboricultural Method Statement (AMS)

This AMS should be read in conjunction with Appendix 5 – Tree Protection Plan.

5.1 Site meetings and Arboricultural Supervision

5.1.1 To ensure all site managers and operatives are aware of the impacts the development may have on existing trees and of the methodologies to be adopted to minimise the impact, a pre-start meeting should be arranged with the Project Arboriculturist.

5.1.2 A schedule of site visits by the Project Arboriculturist should be agreed, which may include visits as follows:

Table 3 –Example schedule of site visits

Reason for visit	Timing
To mark trees proposed for removal	Prior to tree removal
To agree access facilitation pruning	Prior to commencement of pruning works
To inspect protective measures	Prior to demolition/construction commencing on site
To inspect specialist construction methods	During construction, as agreed
To inspect trees for any damage	Following completion of construction

5.1.3 If agreed with the client, the Project Arboriculturist may further visit the site in irregular intervals and without prior notification of the Site Manager.

5.2 Tree Removal and Access Facilitation Pruning

5.2.1 Prior to the site being set-up, a qualified arborist will remove only the trees listed in Table 2 above and carry out any tree works included in the Preliminary Management Recommendations in Appendix 1 - Arboricultural Survey Schedule and in Table 4 below. Any tree works should be carried out in accordance with *BS 3998:2010- Tree works recommendations*.

Table 4 –Access Facilitation Pruning

Tree No.	Proposed tree works	Reason
W1	Coppice	To install gravel path and seating and to facilitate tree planting in gaps
W4	Raise canopy to 4m over protective barrier	To create clearance over construction site
T12	Remove low lying limbs to West and North and raise western and northern canopy to 2.5m	To enable access of eastern boundary by third party pedestrians

5.2.2 Any tree works, including tree removal, should be preceded by a nesting bird and roosting bat check carried out by a suitably qualified ecologist.

5.2.3 Where trees are protected by Tree Preservation Order or Conservation Area designation of the site, the works must not be carried out without prior written approval by the Local Planning Authority. Refer to Appendix 3 – Rochdale Council Tree Preservation Order for further information.

5.2.4 To find a suitably qualified tree surgeon, please refer to the Arboricultural Association's list of Registered Contractors.

5.3 Protective Barrier

5.3.1 Where construction operations are likely to cause damage to above ground parts of retained trees or compaction of the Root Protection Areas (RPA), a protective barrier should be erected prior to commencement of any works on site to create a sacrosanct Construction Exclusion Zone (CEZ). The alignment of the fence should follow the canopy line of the trees or the edges of the RPA, whichever is greater.

5.3.2 Where possible, the CEZ should be extended to include any areas proposed for soft landscaping to minimise compaction in these areas and ensure new planting can establish successfully.

5.3.3 The alignment of the barrier, including indicative setting-out information, is shown on the drawing included in Appendix 5 – Tree Protection Plan.

5.3.4 The protective barrier should be installed in accordance with BS 5837:2012 Figure 2 Default specification for protective barrier which consists of a horizontal and vertical scaffold framework that should be braced to resist impact from construction plant and vehicles. Please refer to Appendix 6 – Protective barrier to BS5837:2012 for further information and a detailed specification.

5.3.5 All weather notices should be firmly attached to the barrier to inform any site operatives of the purpose of the fencing, e.g. "Construction Exclusion Zone- No access".

5.3.6 Where the development is proposed in more than one phase or where temporary access of the CEZ is required for the installation of hard landscape or any other permitted work which is required prior to the main construction works being completed, the barrier may be realigned as shown in Appendix 5 – Tree Protection Plan.

5.3.7 The protective barrier must not be removed or realigned unless in accordance with this report or until all construction work has been completed and all construction vehicles and plant have departed from site.

5.4 Temporary Ground Protection

5.4.1 During all works carried out prior to the installation of the permanent security fence, temporary ground protection should be laid out to protect the southern extent of the Root Protection Area of woodland group W4, as shown in Appendix 5 – Tree Protection Plan and in accordance with of paragraph 6.2.3 of BS 5837:2012.

5.4.2 The Temporary Ground Protection should be capable of supporting any traffic entering the area and may comprise the following:

- For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame or on top of a compression resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
- For pedestrian-operated plant (up to 2t gross weight) proprietary, inter-linked ground protection boards placed on top a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;
- For wheeled or tracked construction traffic (>2t gross weight) an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

5.5 Installation of Boundary Treatments

5.5.1 Where the installation of fence posts is proposed within the RPA of woodland groups W1 and W4, excavations should be kept to a minimum and be carried out carefully by hand. Where roots larger than 25mm diameter are encountered during excavations, these should not be severed but fence posts be repositioned to avoid larger roots. Fence post foundations should be installed using a semi-dry postcrete mix.

5.5.2 Fences should be aligned to ensure a minimum distance of 1m between the fence and the stems of existing trees to allow for the future growth of the trees.

5.6 New amenity space: Sensitive Siting and No-dig construction methodologies

5.6.1 The path and seating area should be sited as to avoid the removal of any mature trees and coppices within woodland W1.

5.6.2 The gravel path and seating area proposed within the RPA of W1 should be installed without any excavations but should be built up on top of existing ground levels.

5.6.3 A geotextile membrane will be laid out on top of the existing ground, which may be cleared of all vegetation and loose organic matter. Then a three-dimensional 100mm deep Cellular Confinement System (CCS) will be installed and filled with inert granular material which allows free drainage and gas exchange (min. 4mm, no fines or sand).

5.6.4 With the CCS acting as a sub-base, all remaining layers required by the Project Engineer can be installed on top, finishing with a permeable wearing course which will ensure gas and water exchange between the air and the root zone.

5.6.5 Kerbing which requires excavations within the RPA of existing trees should be avoided. Peg and board edging should be used for light structures.

6.0 Non-technical summary

6.1 Arboricultural Survey

6.1.1 The site comprises grassland in the centre and semi-mature to mature trees and shrubs along the southern, eastern and northern boundaries. Two areas of woodland, six tree groups and six individual trees have been surveyed within the site and within 12m of the site boundary. Trees along the northern boundary are protected by Tree Preservation Order.

6.2 Arboricultural Impact Assessment

6.2.1 The development of battery storage facilities including the construction of a car park extension, an access road and the installation of a high voltage cable requires the removal of three individual trees and two tree groups. Three low value trees and one Category U group are proposed for removal to enable third party pedestrian access along the eastern boundary. One additional tree is also proposed for removal due to their poor condition.

6.2.2 The removal of nine mature poplars which are protected by Tree Preservation Order is considered to have a moderate adverse effect on the character of the site in the short-term, however these non-native trees are reaching the end of their remaining useful and safe life expectancy and the removal would enable the development of the mature predominantly native woodland to the north.

6.2.3 Unless adequate protection measures are provided, operations linked to the development are further expected to have an adverse effect on any retained trees on site.

6.3 Arboricultural Method Statement

6.3.1 Protective measures include Access Facilitation Pruning, the erection of a Protective Barrier, No-Dig Construction for paths, Temporary Ground Protection for unmade ground within the Root Protection Area of the mature woodland in the North and the sensitive installation of boundary treatments in proximity to trees.

6.3.2 Where the effects of tree removal are significant, replacement tree and shrub planting should be specified by the Project Landscape Architect with a focus on native species or species already present on site.

7.0 Appendix 1 - Arboricultural Survey Schedule

7.1 Information recorded and symbols used

Ref - Sequential tree reference as per Tree Survey Plan

Species - Common name (*Scientific name*)

Ht (m) - Estimated tree height in metres

Stem dia (cm) - Stem diameter measured in accordance with BS5837:2012 Annex C

Canopy Spread - Estimated branch spread (in metres) at four cardinal points

Clear crown - Height of the lowest branch(es) including cardinal point(s) where applicable

Life stage -
- YNG - Young
- SM - Semi-mature
- EM - Early mature
- M - Mature
- OM - Over-mature (including veteran trees)

RULE - Remaining useful life expectancy estimated in years

Cond. - Overall condition -
- G - Good
- F - Fair
- P - Poor

Notes - Including observations and notes on:

Defects and other structural and physiological abnormalities, nesting birds, bat roost potential, notes on surrounding land incl. soil compaction, Tree Preservation Orders and Conservation Area, notes on limited access/inspection, off site location and preliminary management recommendations (in *italics*)

BS Cat. - retention category and sub-category in accordance with BS5837:2012

A - High Quality	1 - Mainly arboricultural value
B - Moderate Quality	2 - Mainly landscape value
C - Low Quality	3 - Mainly cultural value
U - Unsuitable for retention	

RPA (m)	- Radius of Root Protection Area calculated in metres (Radius of RPA= 12x stem diameter) - This will usually be capped at 15m for trees with a stem diameter larger than 1.25m.
RPA (m^2)	- Area of Root Protection Area (relevant if RPA is not circular due to pre-existing site conditions, incl. water courses, retaining structures and building foundations). - This will usually be capped at 707m^2 for trees with a stem diameter larger than 1.25m.
~	- estimated, used to indicate measurements which cannot be taken due to access restrictions (in particular stem diameters)

Ref	Species	Ht (m)	Stem dia (cm)	Canopy spread (m)				Clear crown	Life stage	RULE	Cond.	Notes (*Including preliminary management recommendations*)	BS Cat.	RPA (m)	RPA (m²)
				N	E	S	W								
W1	Mixed native woodland	<15	15 (average)	See plan				0	EM	40+	Good	Native woodland including mature shrubby willow and scattered standard early mature ash, good screen along southern site boundary, some deadwood	B2	1.80	10.18
T2	Norway maple (*Acer platanoides*)	12	3x10+ 8+ 7+ 14+ 12	3	2	2.5	2.5	2	EM	<10	Poor	Multi-stemmed tree close to boundary ffence with multiple girdling points around barb wire fence, growing through palisade fence, part of **Tree Preservation Order 247**	U	3.24	32.98
G3	Norway maple (*Acer platanoides*)	12	24 (average)	See plan				0.5	EM	20+	Good	Four trees planted in a row along site boundary, may form part of **Tree Preservation Order 247**	C1	2.88	26.06
W4	Mixed screen woodland	30	55 (max)	See plan				0	M	40+	Good	Mixed woodland including hybrid poplars, maple, hornbeam, sycamore, beech and ash, part of **Tree Preservation Order 247**	A2	6.60	136.85
T5	White poplar (*Populus alba*)	30	60	7	5	8	5	1.5	M	20+	Good	-	B2	7.20	162.86
G6	White poplar (Populus alba)	30+	50 (average)	See plan				1	M	20+	Good	Row of six trees on edge of woodland, part of **Tree Preservation Order 247**	B2	6.00	113.10
G7	Lombardy poplar (*Populus nigra 'Italica'*)	35+	47 (average)	1.5	1.5	1.5	1.5	5+	M	20+	Fair	Part of screen planting, part of **Tree Preservation Order 247**	B2	5.64	99.93
G8	Goat willow (*Salix caprea*)	10	28 (average)	See plan				2	M	<10	Poor	Three trees leaning severely towards north, most northerly tree may form part of **Tree Preservation Order 247**	U	3.36	35.47

Ref	Species	Ht (m)	Stem dia (cm)	Canopy spread (m)				Clear crown	Life stage	RULE	Cond.	Notes (*Including preliminary management recommendations*)	BS Cat.	RPA (m)	RPA (m^2)
				N	E	S	W								
T9	Ash (*Fraxinus excelsior*)	12	24+ 22	4	2	3	3	3	M	40+	Fair	Stem division at 1.2m	C1	3.96	49.27
T10	Norway maple (*Acer platanoides*)	6	7x 7	3	1	1	2.5	0	YNG	20+	Fair	Coppice stool with abundant regrowth	C1	2.28	16.33
T11	Sycamore (*Acer pseudoplatanus*)	15	24	2.5	3.5	4	3	1	M	40+	Good	-	C1	2.88	26.06
T12	Goat willow (*Salix caprea*)	15	60 (average)	8	3	5	8	1	OM	10+	Fair	Multi-stemmed tree/large shrub with low lying stems	C1	7.08	157.48
G13	Mixed group	10	20	See plan				0.5	SM	20+	Fair	Mixed self-set group forming one canopy, includes ash, horse chestnut and sycamore	C1	2.40	18.10
G14	Mixed group	10	25	See plan				1.5	EM	20+	Fair	Mixed self-set group forming one canopy, includes sycamore and goat willow	C1	3.00	28.27

8.0 Appendix 2 – Site photographs



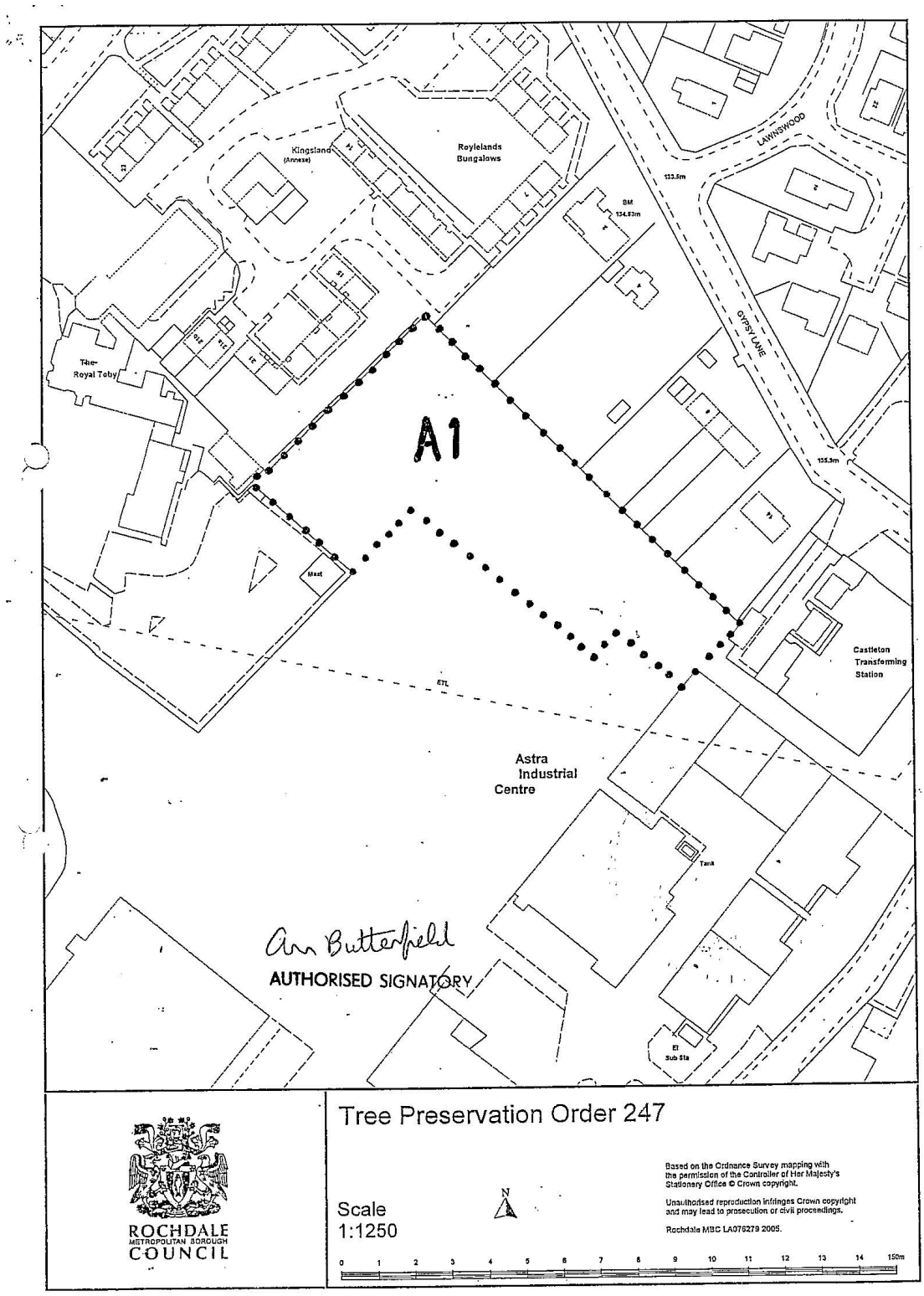
Plate 1: Row of mature poplar trees (T5 and G6), Rochdale Tree Preservation Order 247.



Plate 2: Low value tree group G14 along proposed high voltage cable route

9.0 Appendix 3 – Rochdale Council Tree Preservation Order No. 247 dated 11th October 2005

9.1 **Rochdale Council Tree Preservation Order No. 247 dated 11th October 2005**



Article 4

SCHEDULE 1
SPECIFICATION OF TREES
Trees specified individually
(encircled in black on map)

Reference on Map	Description	Situation
None		

Trees specified by reference to an area
(within a dotted black line on the map)

Reference on Map	Description	Situation
A1	Sycamore Ash Maple Beech Poplar Hornbeam	Land to the rear of 2-14 Gipsy Lane, Rochdale and to the rear of 16-20 Roylelands Bungalows, Rochdale

Groups of trees
(within a broken line on the map)

Reference on Map	Description (including number of trees in the group)	Situation
None		

Woodlands
(within a continuous black line on the map)

Reference on Map	Description	Situation
None		

9.1.1 Trees covered by Tree Preservation Order (TPO) are legally protected from lopping, topping, damaging, wilfully destructing and uprooting unless written consent has been obtained by the Local Planning Authority.

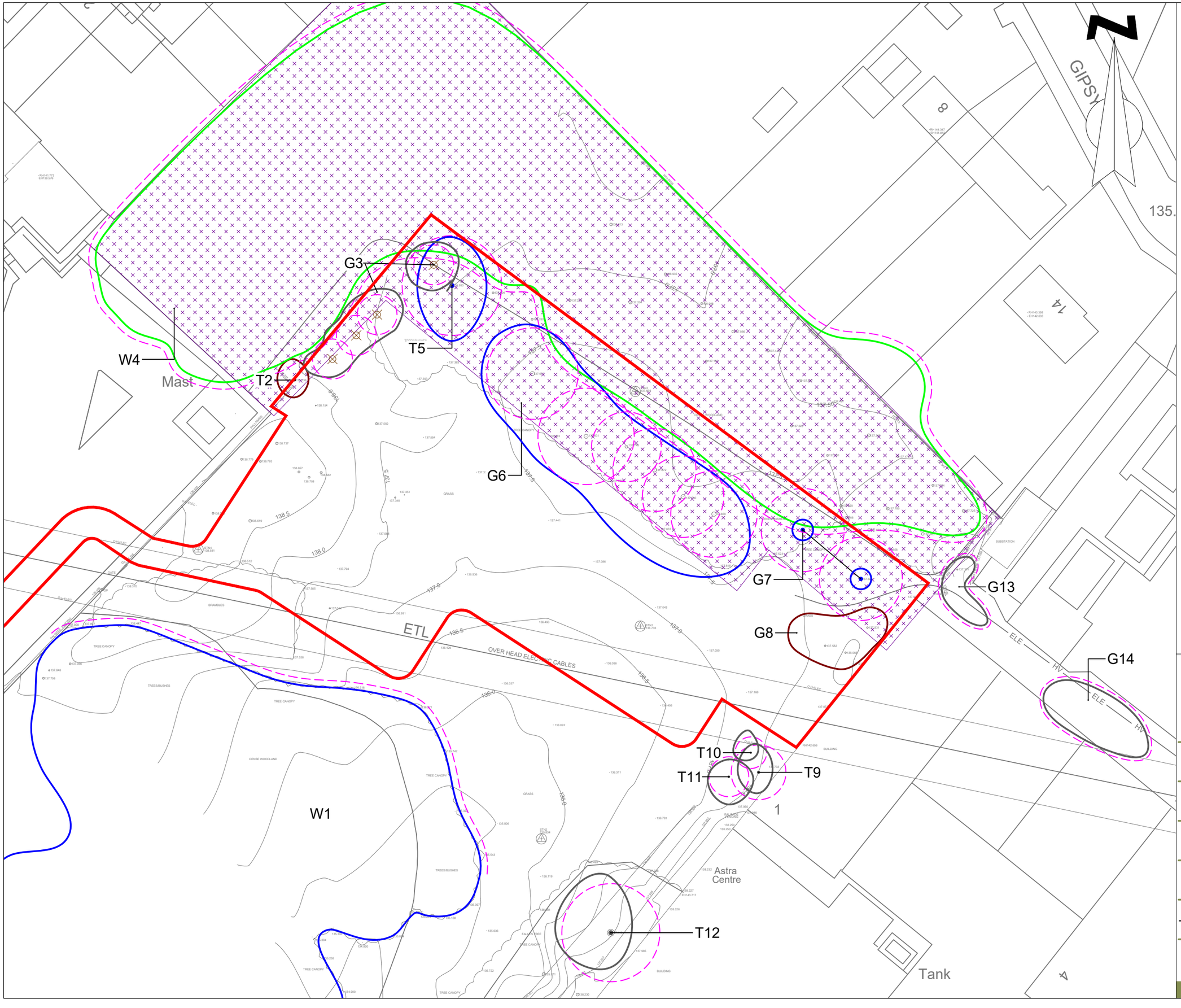
9.1.2 Where TPO protect individual trees and tree groups (Group TPO), these will specify exactly which trees are covered by including a TPO location map showing the exact location of protected trees. A schedule will further list the species of the protected trees which enables any stakeholders to identify the protected trees on site.

9.1.3 Where a Woodland TPO or an Area TPO has been served, these will cover all trees within a boundary shown on the map accompanying the notice. However, only trees which were present when an Area TPO is served are legally covered. Any trees established after the TPO was served will not be included in the TPO unless this has been updated.

9.1.4 Written permission needs to be sought from the Local Planning Authority before any works are carried out which may directly or indirectly affect protected trees, including any works included in the preliminary management recommendations in Appendix 1 - Arboricultural Survey Schedule. Consent for the proposed works can further be assumed if they are included in an Arboricultural Impact Assessment and/ or Tree Protection Plan and where these documents are listed as approved documents under the relevant planning permission.

9.1.5 Where the TPO information provided by the council is ambiguous, e.g. based on historic or inaccurate map information, confirmation should be sought from the relevant council officer on which trees are protected, which may require a meeting on site and subsequent written confirmation of accurate TPO information.

10.0 Appendix 4 – Tree Survey and Tree Constraints Plan



KEY - Tree Survey and Tree Constraints Plan

Tree Categories BS 5837 (2012)

- Tree Category A
- Tree Category B
- Tree Category C
- Tree Category U

- Root Protection Area (RPA)
- Tree location (Topographic survey)
- Tree location (Estimated by Enzygo Ltd.)
- Rochdale Borough Council Tree Preservation Order 247
- Site boundary

REV	DATE	BY	COMMENTS
-	20/08/2019	VM	First issue
A	27/09/19	VM	Rev boundary & tree numbers

enzygo environmental consultants

Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Arlington Energy Ltd.

SCALE: 1:500@A3

PROJECT REF: CRM.348.003

DRAWN: VM

CHECKED: GB

DATE: Aug 2019

PROJECT: Gipsy Lane, Rochdale

TITLE: Tree Survey and Tree Constraints Plan

FIGURE NO: CRM.348.003.Ar.D.001.A

11.0 Appendix 5 – Tree Protection Plan

Remove two trees within group G3

Protective barrier to BS 5837:2012 to follow edge of compound to be removed following installation of permanent boundary fence

Concrete acoustic fencing along north, east and west elevation Steel frame on pile foundations in RPAs

W4: Raise south-western canopy to 4m height to prevent accidental damage of branches overhanging the protective barrier during construction.

Temporary ground protection during enabling works- to be removed following installation of permanent acoustic fence

Protective barrier to BS 5837:2012 to follow red line site boundary to be removed following installation of acoustic fence

Proposed access track

Proposed palisade fence

Protective barrier to BS 5837:2012 to follow edge of construction area

Cut back existing willow scrub by 3.5m to establish construction area

Standard tree planting within gaps in willow coppice (refer to Enzygo drawing ref. CRM.348.003.L.001)

Protective barrier to BS 5837:2012 to follow red line site boundary

Proposed formal 1m wide path, route to be determined on site to avoid willow coppices, path to be established on top of existing ground levels

Proposed third party access route

Proposed palisade boundary fence

T12: Remove lower limbs to west and north and raise canopy to 2.5m to facilitate use of third party pedestrian access route

G3 G6 G7 G8 G13 G14 T2 T5 T9 T10 T11 T12 W1 W4 Mast

32 Car Parking Spaces

Astra Centre

GIPSY

KEY - Tree Protection Plan

Tree Categories BS 5837 (2012)

- **Tree Category A**
- **Tree Category B**
- **Tree Category C**
- **Tree Category U**
- **Tree to be removed**
- **Root Protection Area (RPA)**
- **Tree location (Topographic survey)**
- **Tree location (Estimated by Enzygo Ltd.)**
- **Rochdale Borough Council Tree Preservation Order 247**
- **Protective barrier** BS 5837 (2012) Figure 2
- **Temporary ground protection** BS 5837 (2012) clause 6.2.3
- **Gravel path and seating area** built on top of existing ground levels
- **Replacement tree planting**

REV	DATE	BY	COMMENTS
-	20/08/2019	VM	First issue
A	11/09/2019	VM	Comments Sep 2019
B	23/09/2019	GB	Path update
C	27/09/2019	VM	Revised site layout
D	02/10/2019	VM	Fence specification
E	14/10/2019	VM	Fence specification.

enzygo environmental consultants
Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Arlington Energy Ltd.

SCALE: 1:500@A3

PROJECT REF: CRM.348.003

DRAWN: VM

CHECKED: GB

DATE: Aug 2019

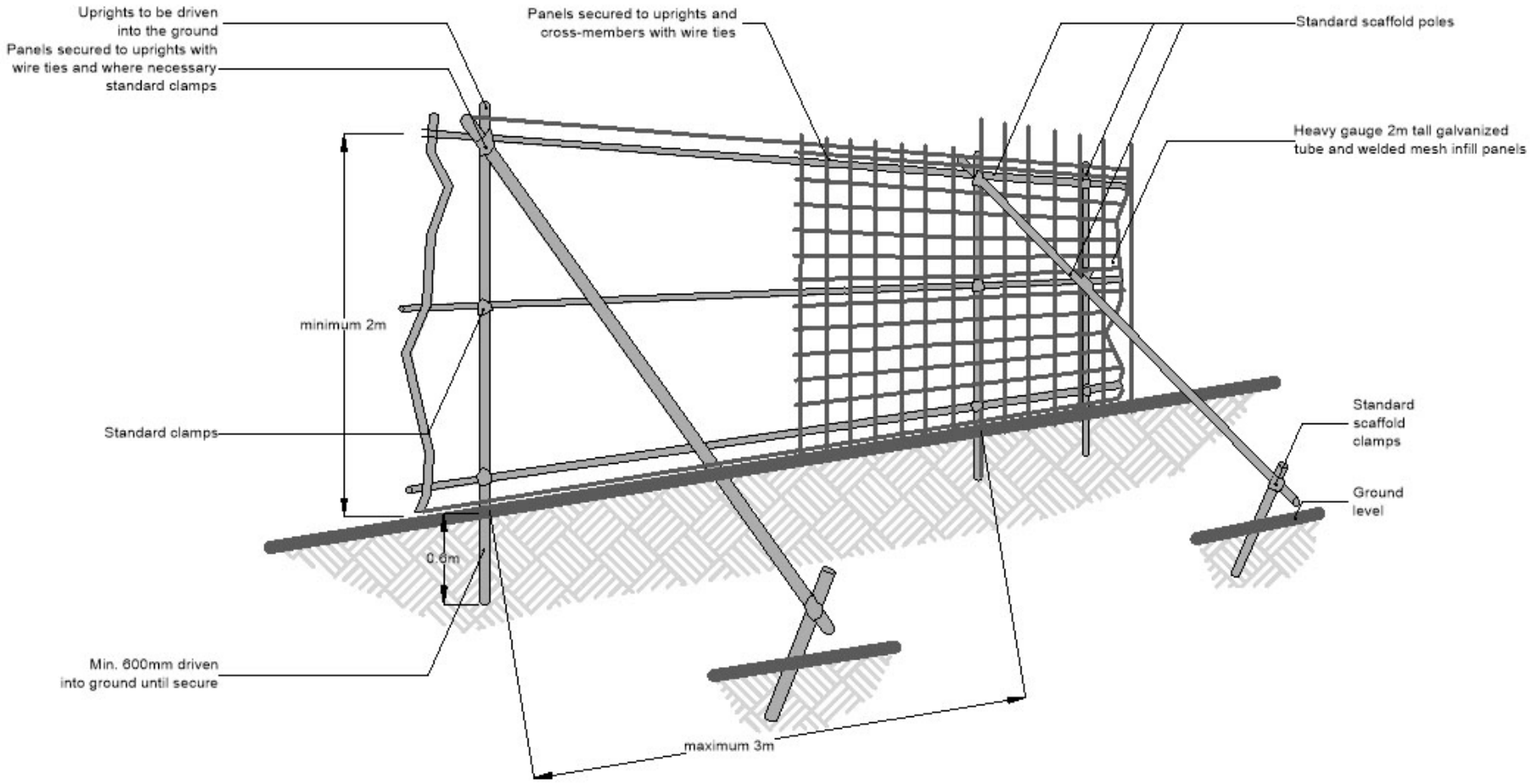
PROJECT: Gipsy Lane, Rochdale

TITLE: Tree Protection Plan

FIGURE NO: CRM.348.003.Ar.D.002.D

12.0 Appendix 6 – Protective barrier to BS5837:2012

12.1 **Default specification for protective barrier**



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