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BS 5837:2012 Arboricultural Survey

Kirkgate Lane Solar- Cable Route
for:

Ethical Power Development (EPD)

3073.001.ENZ.XX.00.RP.AR.45.101

'Experience and expertise working in union'

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BS 5837:2012 Arboricultural Survey

Project:	Kirkgate Lane Solar- Cable Route
For:	Ethical Power Development (EPD)
Status:	PL01
Date:	November 2023
Author:	Verena Meyer Dipl.Ing. CMLI MArborA – Principal Arboriculturist
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Contents

1.0 Non-Technical Summary

1.1 Arboricultural Survey

1.1.1 The site is a linear 2m wide and approximately 1.9km proposed cable route corridor along the public road network, starting at Kirkgate Lane and St. Peter's Church in the East, continues along Church Lane toward West Mead in the West and then turns south on to Lund Hill Lane where it connects to a substation approximately 700m southwest.

1.1.2 A tree survey in accordance with BS 5837:2012 was carried out by Enzygo Ltd. in November 2023, recording 17 trees, 17 tree groups, four woodland groups and two hedgerows along the proposed cable route and within 15m. They are predominantly mature groups and individual trees typical for rural roads and include species such as ash, oak and sycamore. Due to their maturity and location along the roads, the majority are assessed as being of moderate to high value.

1.1.3 On Kirkgate Lane, to the East of St Peter's Church, tree groups are protected by Tree Preservation Order.

1.2 Design recommendations

1.2.1 The site layout design should take into account the constraints posed by the trees on site and should seek to retain as many trees on site as possible to minimise the effect of the development on the amenity of the site and the local landscape as well as on the ecological value of the site. The retention of trees described in this report as being of high or moderate value as well as legally protected trees and trees of considerable age (ancient trees) should be prioritised.

1.2.2 *BS 5837:2012 Trees in relation to design, demolition and construction* chapters 5.2 and 5.3 describe the constraints posed by existing trees and outline the potential conflict between proposed structures and retained trees and how these can be avoided or minimised.

1.2.3 The cable route as well as any construction related storage and compounds should be designed to be located outside the Root Protection Areas (RPA) of retained trees as far as reasonably practicable. Lowering of ground levels within the RPA of retained trees is not acceptable. Specialist solutions to manage the conflict between the proposals and retained trees are available but may have an impact on costs of the construction phase considerably. These include access facilitation pruning, trenchless solutions for services and an arboricultural watching brief for open trench sections.

2.0 Overview

2.1 Introduction

2.1.1 Enzygo Limited [Enzygo] have been commissioned by Ethical Power Development (EPD) to prepare an Arboricultural Survey Report in accordance with BS 5837:2012 for the installation of a cable route from a proposed solar field in Felkirk in the East to the substation North of Royston in the West

2.1.2 This report should assist the design of the cable route alignment and development of cable route installation methodologies, allowing the designer to consider the arboricultural constraints on site, including the retention of desirable trees (high and moderate value and/or trees which are found to be legally protected) and the protection of above and below ground parts of retained trees.

2.2 Structure of the Report

2.2.1 **Chapter 2.0** provides a brief description of the site and its location.

2.2.2 **Chapter 3.0** summarises the planning background, including national and local planning policies and any relevant planning history of the site.

2.2.3 **Chapter 4.0** summarises the findings of the Arboricultural Survey, describing the overall species mix, age, condition and value of the trees recorded on site.

2.2.4 **Chapter 5.0** provides both general and site-specific design recommendations to assist with the development of any future site layouts which are sympathetic to the existing trees.

2.3 Site Description

2.3.1 The site is located approximately 2km west of South Hiendley and 2.5km northeast of Royston within the administrative boundaries of Wakefield City Council. It is a linear 2m wide and approximately 1.9km proposed cable route corridor along the public road network which starts at Kirkgate Lane and St. Peter's Church in Felkirk in the East, continues along Church Lane toward West Mead in the West and then turns south on to Lund Hill Lane where it connects to the substation approximately 700m southwest.

2.3.2 The route is well used by cars as well as Heavy Goods Vehicles, especially from the junction of Church Lane and Raven Lane west of St Peter's Church. The western end of the Church Lane section is part of the Barnsley Boundary Walk.

3.0 Planning background

3.1 National Planning Policy Framework

3.1.1 The National Planning Policy Framework (NPPF) published by the government and updated in September 2023 sets out the framework objectives for development in England. These are used by Local Planning Authorities (LPA) both during the preparation of their local planning policies as well as to guide them in making individual decisions for Planning Applications.

3.1.2 The NPPF sets out several objectives concerning the natural environment, including trees, woodland and hedgerows. In addition to broad objectives addressing biodiversity and the challenges posed by climate change (e.g. flood resilience, species selection) it encourages the enhancement of the natural and local environment by "*recognising […] the wider benefits from natural capital and ecosystem services including […] of trees and woodland*".

3.1.3 Paragraph 131 states that "Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure (…) that existing trees are retained wherever possible."

3.1.4 In paragraph 175 the NPPF requests that "Planning policies and decisions should contribute to and enhance the natural and local environment by (…) recognising (…) benefits (…) of trees and woodland".

3.2 Local Planning Policy

3.2.1 Policy D7 of the Wakefield Council Local Development Framework is referred to below:

Policy D 7

Protection of Trees and Woodland

The district's woodland, hedgerows and trees are important ecological assets identified in the Wakefield District Local Biodiversity Report. Where the Council considers that trees or woodland may be affected by a development proposal, it will require an appropriate tree survey to be submitted with the planning application.

1. Development that would detrimentally affect or result in the loss of Ancient Woodland will only be permitted if it can clearly be demonstrated that:
   a. development cannot reasonably be located on an alternative site; and
   b. exceptional reasons of public interest for development clearly override the ecological and historical importance of Ancient Woodland; and
   c. the need for development clearly outweighs any harm which may be caused to the ecological and landscape value of the woodland; and
   d. harm can be reduced to acceptable limits through the implementation of positive environmental mitigation measures within the site.

2. Development that would damage or result in the loss of trees, particularly veteran trees, areas of woodland or hedgerows, will only be permitted if it can clearly be demonstrated that:
   a. development cannot reasonably be redesigned or located on an alternative site; and
   b. the need for development clearly outweighs any harm to the ecological value and landscape quality of the area; and
   c. harm can be reduced to acceptable limits through the implementation of positive environmental mitigation measures either on site or in a suitable alternative location.

3.3 The Hedgerows Regulations 1997

3.3.1 As some of the hedgerows recorded in this survey are more than 20m long and located next to land used for agriculture, it needs to be investigated whether they fulfil one or more of the criteria set for "important hedgerows" in order to establish whether they are protected under the above regulations. Importance is defined by several both archaeological and ecological factors listed in Schedule 1, Part II of the regulations and should be confirmed by the relevant consultants.

3.4 Planning History

3.4.1 The proposals are linked to Wakefield Planning Application ref. 23/01900/FUL for the *Installation of a ground mounted solar photovoltaic array, together with associated infrastructure; access; fencing; CCTV; on-site biodiversity net gain and associated works* which is, at the time of writing this report, awaiting a decision. The development site lies at the eastern end of the cable route, with the cable connecting the solar site with the substation in the West.

4.0 Arboricultural Survey

4.1 Overview

4.1.1 The arboricultural survey in accordance with BS 5837:2012 was carried out by Verena Meyer, MArborA, in November 2023. At the time of the survey the trees were partially in leaf.

4.1.2 17 groups and 17 individual trees as well as four woodland groups and two hedgerows were recorded during the walk-over survey. They line the roads the proposed cable route would follow, with larger mature groups along long sections of the route, dense woodland groups in the West and scattered trees predominantly in the East.

4.1.3 A full schedule of all trees and tree groups recorded can be found in Appendix 1 – Arboricultural Survey Schedule. A selection of photographs showing both the site and notable individual trees and tree groups is included in Appendix 3 – Site photographs.

4.2 Tree species

4.2.1 Owed to their rural location, most trees are of native and naturalised species, including pedunculate oak (Quercus robur), ash (Fraxinus excelsior) and sycamore (*Acer pseudoplatanus*). A wider species range was observed around St. Peter's Church and the associated cemetery in Felkirk, where cherry (Prunus sp.), horse chestnut (*Aesculus hippocastanum*) and small-leaved lime (*Tilia cordata*) line the road. A historic yew (*Taxus baccata*) within the churchyard may also influence the proposals.

4.3 Tree age and overall condition

4.3.1 Most trees lining the cable route corridor are mature and are likely historic boundary features.

4.3.2 They are generally in good condition and largely unmanaged, with minor tree management such as crown lifts or management of tree risk evident in some trees. Very few signs of ash dieback (*Hymenoscyphus fraxineus*) were noted, although the best time to quantify the extent of the disease's effect on trees is when the trees are fully in leaf (May to September).

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

4.4.1 Most of the arboricultural features recorded on site are of moderate to high landscape value (BS retention categories B and A). They are mature trees and woodland groups which characterise the local landscape and help screen the road, provide a wind and noise buffer and are part of a historic landscape pattern typical for the region. It is also proven that dense roadside tree and woodland cover can significantly slow down traffic speeds.

4.4.2 Mature trees, especially oaks, have particular significance where they begin to develop veteran features and therefore have additional historic and ecological value.

4.5 Root Protection Areas (RPA)

4.5.1 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 2 – Tree Survey and Constraints PlanAppendix 5 – .

4.6 Tree Preservation Orders (TPO) and Conservation Areas

4.6.1 The online "Where I live" tool provided on the Wakefield Council website has confirmed that all trees included in this survey are protected by Tree Preservation Order ref. TPO/19/00134/W "Woodland at Felkirk and South Hiendley, Kirkgate Lane/Slack Lane, South Hiendley, Barnsley" This means that all trees covered by this TPO are legally protected as outlined in Appendix 4 – Wakefield Council Tree Preservation Orders.

4.6.2 The site, or any parts of it, does not lie within a Conservation Area.

4.6.3 The Tree Preservation Order covers T001 and T002 as well as groups G001, G003 and G004.

4.7 Non-statutory Designations

4.7.1 There are no non-statutory designations affecting the site.

5.0 Design recommendations

5.1 General recommendations

5.1.1 Design decisions should be based on the recommendations in chapters 5.2 and 5.3 of *BS 5837:2012 Trees in relation to design, demolition and construction* which describe the constraints posed by existing trees and outline the potential conflict between proposed structures and retained trees and how these can be avoided or minimised.

5.2 Maximise tree retention

5.2.1 It is recommended that the site layout design considers the safe retention of any trees which have been assigned the retention categories A, B and C as far as practicable to retain the ecological value and the mature character of the site and to minimise the potential visual impact the development may have on the surrounding landscape. The retention of legally protected trees should be a priority.

5.3 Minimise residual effect of trees on development

5.3.1 In addition to the desired retention of existing trees as described in 5.2 above, it is advised to consider the impacts any retained trees would have on the development, including the increased requirement for routine tree management near the pipeline.

5.4 Minimise residual effect of development on retained trees

Earthworks

5.4.1 Underground services should be placed within the footprint of the existing highway or outside of Root Protection Areas where possible.

5.4.2 Excavations for underground services may have an impact where they are proposed within the RPA of retained trees. No-dig alternatives should therefore be applied. Open trenching within RPAs should be avoided to minimise the risk of encountering and managing major roots especially in adverse weather conditions.

5.4.3 The reduction of ground levels within the Root Protection Areas of retained trees are not acceptable. Where this can't be avoided, the removal of the tree may have to be considered.

Construction operations

5.4.4 Construction operations near retained trees are likely to cause accidental damage of tree trunks and low hanging branches. Where possible, the design should allow for reasonable

distances between new structures and above ground parts of retained trees, including sufficient clear working areas around those structures.

5.4.5 Vehicle and plant movement during construction may further cause ground compaction which could lead to irreversible damage of tree roots and the rooting environment within the RPA of retained trees. Any construction phase plans should ensure that site access routes, site compounds and internal routes are proposed outside the Root Protection Areas (RPA) of retained trees.

6.0 Appendix 1 – Arboricultural Survey Schedule

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								
G01	Mixed species	12	200					1.5	Semi Mature	40+	Good	Linear group along Kirkgate Lane. Comprising oak, ash and sycamore. Retention category based on group value for screening, individual trees predominantly of low value.	B2		
G02	Sycamore (*Acer pseudoplatanus)*	20	300					2	Mature	40+	Good	Linear tree group along road, comprising predominantly early mature to mature sycamore, on top of retaining wall between 0.5m and 0.8m above road level. RPA unlikely extending south.	B2		
G03	Mixed species	12	250					1.5	Mature	40+	Good	Small woodland group around road bridge with trees at bottom of slope not influenced by proposed cable route. Trees on top of embankment sit on approximately 0.5m high mound. Group includes oak, sycamore, ash and hawthorn.	B2		
G04	Mixed species	14	250					1	Early	40+	Good	Tree belt between field and road, comprising ash, oak, sycamore. Dense ivy cover on some stems.	B2		
G05	Mixed species	5	150					0	Mature	20+	Good	Overgrown hedgerow fragment, hawthorn and blackthorn.	C2		
G06	Mixed species	20	300					1.5	Mature	40+	Good	Boundary group associated with cemetery. Comprising sycamore, ash, cherry, horse chestnut and small-leaved lime. Dense ivy on most stems. Overgrown hawthorn sections with ivy dominated crowns. One large pine set back from road.	A3		
G07	Mixed species	10	200					0	Mature	40+	Good	Group of oak trees set back from road, with hawthorn forming roadside 'buffer' and understorey. Attractive feature, associated with cemetery.	B2,3		

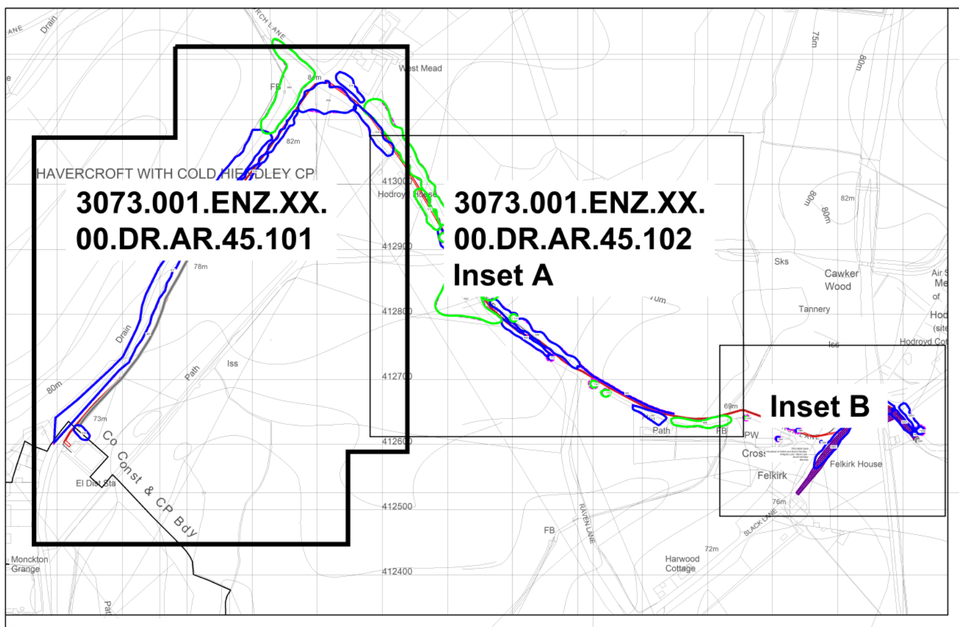
Ref	Species	Ht (m)	Stem dia (cm)	Canopy spread (m)				Clear crown	Life stage	RULE	Cond.	Notes (*Including preliminary management recommendations*)	BS Cat.	RPA (m)	RPA (m^2)
				N	E	S	W								
G08	Mixed species	20	400					1.5	Early Mature	40+	Good	Mixed deciduous tree belt marking boundary between road and field to north, important screen and windbreak. Appears largely unmanaged. Ivy on stems. Ditch to South of stems may limit extent of roots but so may agricultural operations in field to north.	B2,3		
G09	Mixed species	10	350					4	Early Mature	40+	Good	Boundary group with occasional gaps.	B2,3		
G10	Mixed species	20	500					1	Mature	40+	Good	Overgrown hawthorn hedgerow with ash standards. Dense screen.	B2		
G11	Mixed species	20	300					0	Mature	40+	Good	Hazel scrub with occasional ash.	B2		
G12	Pedunculate Oak (*Quercus robur*)	15	600					5	Mature	40+	Good	Linear group of historic oaks with mixed deciduous understorey. Forming attractive 'tunnel' with G12. One oak dying and requires regular review.	A2,3		
G13	Pedunculate Oak (*Quercus robur*)	15	600					4	Mature	40+	Good	Linear group of historic oak trees with mixed deciduous understorey. Forming attractive 'tunnel' with G11.	A2,3		
G14	Mixed species	15	350					4	Mature	40+	Good	Mixed tree belt between road and residential property boundary. Unmanaged with overgrown understorey.	B2		
G15	Mixed species	15	300					3	Early Mature	40+	Fair	Currently unmanaged mixed deciduous hedgerow with standard ash and oak. Forms boundary and provides screen between field and road.	B2		
G16	Mixed species	20	400					2	Mature	40+	Good	Mixed deciduous roadside group. Unmanaged but providing significant screening along northern verge.	B2		

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								
G17	Mixed species	10	200					0	Semi Mature	40+	Good	Overgrown roadside hedgerow	B2		
G18	Sycamore (*Acer pseudoplatanus*)	15	350					2	Early Mature	20+	Good	Three trees within substation compound. Providing some screening to north. Attractive group feature located close to palisade fence so future conflict expected.	B2		
H01	Common Hawthorn (*Crataegus monogyna*)	1	100					0	Early Mature	40+	Good	Fragmented hedgerow marking boundary between field and road. Traditionally managed bar unmanaged western end.	**B2,3**		
H02	Mixed species	1	100					0	Mature	10+	Fair	Alignment of historic hedgerow now mainly blackberry with fragments of hawthorn in southern section	**C2**		
T01	Common Ash (*Fraxinus excelsior*)	12	280	2.5	2.5	2.5	2.5	2	Semi Mature	20+	Good	Adjacent to field entrance. Historic stem wound 2m north well occluded.	C1,2	3.4	36
T02	Pedunculate Oak (*Quercus robur*)	15	250	5.0	2.0	4.0	3.0	2	Semi Mature	40+	Good	Attractive oak within 3rd party land, potential to grow to large specimen with open canopy.	B2	3	28
T03	Common Ash (*Fraxinus excelsior*)	25	700	6.0	6.0	6.0	6.0	4	Mature	20+	Good	Significant tree, first in a hedgerow towards West, triple stem with tight unions including a fourth severely decayed stem,	B2	8.3	216
T04	Fir (*Abies sp.*)	7	200	1.5	1.5	1.5	1.5	0	**Semi Mature**	**40+**	Good	**Christmas tree on road junction, with fairy lights in canopy, likely associated with church.**	B3	2.4	18
T05	Sycamore (*Acer pseudoplatanus*)	12	480	3.0	3.0	3.0	3.0	4	**Mature**	**20+**	Good	**Multistemmed tree, possibly fragment of old hedgerow. Dense ivy.**	B2	5.7	102
T06	Common Ash (*Fraxinus excelsior*)	12	470	3.0	4.0	3.0	4.0	2	**Early Mature**	**20+**	Good	**Multistemmed, possibly fragment of historic hedgerow, dense ivy.**	B2	5.7	102
T07	Sycamore (*Acer pseudoplatanus*)	12	380	3.0	3.0	3.0	3.0	1.5	**Early Mature**	**20+**	Good	**Multi-stemmed, possibly fragment of historic hedgerow. Some ivy. On step slope from field above.**	B2	4.5	64

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								
T08	Pedunculate Oak (*Quercus robur*)	25	500	7.0	7.0	7.0	7.0	3	**Mature**	**40+**	Good	**Significant boundary tree with wide open canopy. On steep slope with stem base 1.5m above road level. Twin-stemmed with dense ivy up to 8m into canopy.**	A2,3	6	113
T10	English yew (*taxus baccata*)	8	400	2.0	2.0	2.0	2.0	0	**Mature**	**50+**	Good	**ignificant tree associated with churchyard and visible from road. Behind stone wall and possibly higher than road level.**	A2,3	4.8	72
T11	Pedunculate Oak (*Quercus robur*)	12	500	4.0	7.0	7.0	8.0	4	**Mature**	**40+**	Good	**Historic boundary tree with open canopy, northern crown reduced either by pruning or accidentally by larger vehicles. Ivy on stem. At bottom of steep slope down towards field.**	A2,3	6	113
T12	Pedunculate Oak (*Quercus robur*)	14	650	5.0	7.0	6.0	5.0	5	**Mature**	**40+**	Good	**ignificant historic boundary tree with open canopy only managed over road.**	A2,3	7.8	191
T13	Pedunculate Oak (*Quercus robur*)	12	550	4.0	4.0	4.0	4.0	3	**Mature**	**40+**	Good	**Historic boundary tree with open canopy. Ivy on stem.**	B2,3	6.6	137
T14	Pedunculate Oak (*Quercus robur*)	20	500	6.0	6.0	6.0	6.0		**Mature**	**40+**	Good	**Large tree within group, standing out with large stem diameter. Historic boundary tree. Open canopy managed over road.**	A2,3	6	113
T15	Pedunculate Oak (*Quercus robur*)	12	400	6.0	8.0	5.0	8.0	3.5	**Mature**	**40+**	Good	**Old tree next to public footpath. Severe stem damage including blackened bark to Southwest. Canopy managed on all sides potentially affecting highway.**	A2,3	4.8	72
T16	Pedunculate Oak (*Quercus robur*)	14	700	7.0	7.0	7.0	7.0	3	**Mature**	**40+**	Good	**Large tree to South of road. Open canopy spreading over hazel and dogrose understorey. Large union at 1m with two co-dominant leaders.**	A2,3	8.4	222

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								
T17	Pedunculate Oak (*Quercus robur*)	12	500	7.5	6.0	6.0	4.0	4	**Mature**	**40+**	Good	**Significant oak tree within overgrown hedgerow group. Historic boundary tree with open canopy.**	A2,3	6	113
W01	Mixed species	20	400					0	**Early Mature**	**40+**	Good	**Oak woodland with scattered hazel understorey. Hazel coppiced along road.**	A2,3		
W02	Pedunculate Oak (*Quercus robur*)	15	400					4	**Mature**	**40+**	Good	**Oak woodland with bramble understorey.**	A2,3		
W03	Mixed species	20	500					4	**Mature**	**20+**	Fair	**Mixed deciduous woodland, mainly ash with Ash Dieback having impact on canopy cover. Dense scrubby understorey. Row of oak along northwestern edge.**	B2		
W04	Mixed species	25	400					3	**Mature**	**40+**	Good	**Attractive oak woodland with dense understorey incl. blackthorn**	A2		

7.0 Appendix 2 – Tree Survey and Constraints Plan



Location map- not to scale

HAVERCROFT WITH COLD HIENDLEY CP

SEE SHEET 2 of 2

84m
82m
78m
80m
73m
FB
W04
W03
G15
G14
G16
T17
G17
H02
G18
Drain
Path
Iss
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413(
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41290
41280
41270
41260

0 20 40 60 80 100m

Scale 1:1,000

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)

NOTES

- Do not scale for from this drawing for construction purposes
- This drawing is to be read in conjunction with all relevant drawings and documents associated with this project.
- All surveyed information including levels and layout is provided by others
- All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.

Rev	Date	Description	DRA	CHK	APP
PL01	30/11/23	For Planning	VM	GB	GB

Project
Kirkgate Lane Solar- Cable Route

Client
Ethical Power Development (PDP)

Drawing Title
Tree Constraints Plan (Sheet 1 of 2)

Status	Date	Scale
For Planning	30/11/23	1:1,000 @ A1

Drawn	Designed	Checked	Approved
VM	--	GB	GB

DWG No. 3073.001.ENZ.XX.00.DR.AR.45.101

Revision PL01

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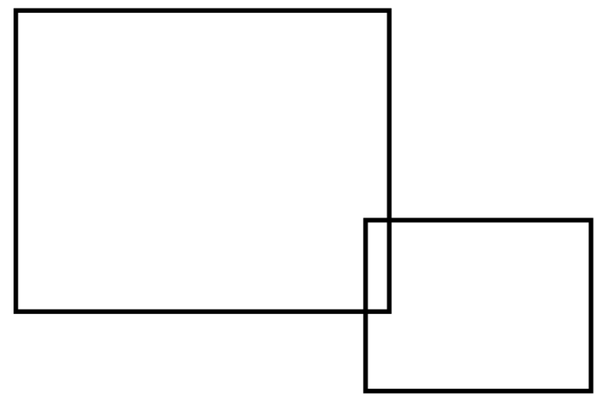


8.0 Appendix 3 – Site photographs

Plate 1: Group G01

Plate 2: Group G03

Plate 3: Trees T08, T06 and T05

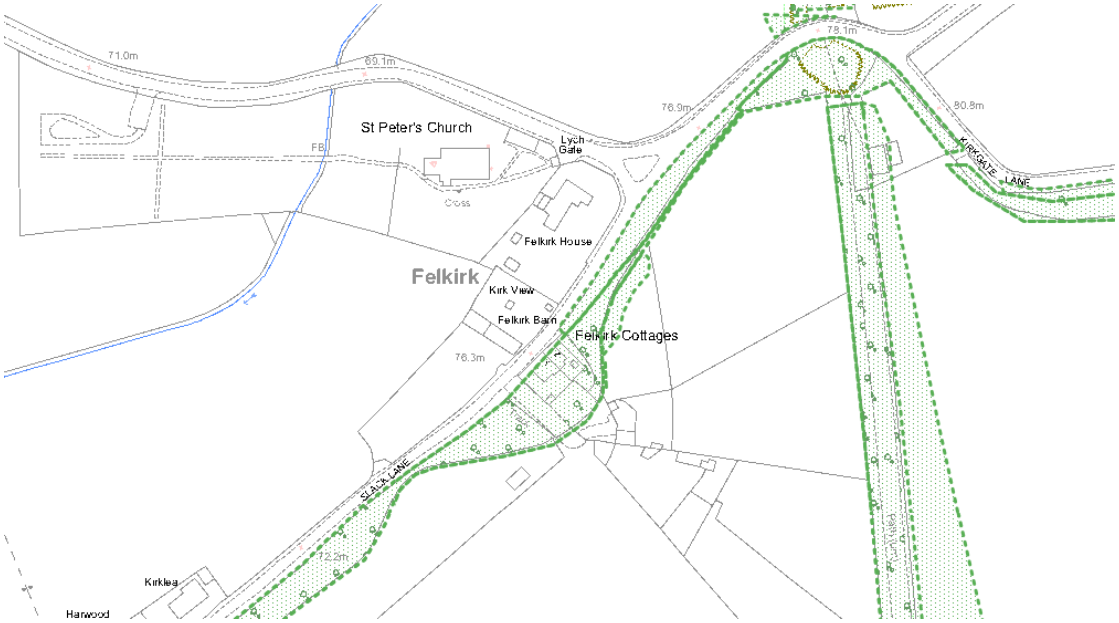
Plate 4: Woodland W01

Plate 5: Groups G12 and G13 on Church Lane

Plate 6: Group G16 on Lund Hill Lane

9.0 Appendix 4 – Wakefield Council Tree Preservation Orders

9.1.2 Wakefield Council Tree Preservation Order ref. TPO/19/00134/W "Woodland at Felkirk and South Hiendley, Kirkgate Lane/Slack Lane South Hiendley Barnsley"



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

9.1.2 Where TPOs 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 5 – Methodology

10.1 Introduction

10.1.1 This report and the methodology adopted to carry out the Arboricultural Survey is 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.

10.2 Arboricultural Survey

10.2.1 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.

10.2.2 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).

10.2.3 The findings of the tree survey are recorded in an Arboricultural Survey Schedule supported by a Tree Survey and Tree Constraints Plan, both appended to the report.

10.2.4 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.

10.2.5 The tree survey usually records individual trees (labelled "T" on the Tree Survey and Tree Constraints 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").

10.2.6 To determine the location of trees, groups and hedgerows on site, Enzygo Ltd. use the OTISS app installed onto a Samsung Androd tablet with GPS tracking accurate up to 1-2m. It enables the surveyor to plot trees onto a base plan, usually a digital copy of a topographic survey or an OS map tile, and to simultaneously record all tree survey information required for a full tree survey schedule to BS 5837:2012.

10.2.7 Following the completion of the site survey this is then uploaded into a Computer Aided Design (CAD) programme in order to produce the Tree Survey and Tree Constraints Plan, with the tree survey information converted into a corresponding Tree Survey Schedule.

10.2.8 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 15m from the site boundary.

10.2.9 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.

10.2.10 In line with standing advice by the Forestry Commission and Natural England for any veteran trees on site, the Root Protection Area will be a "*buffer zone around an ancient or veteran tree*" which "*should be at least 15 times larger than the diameter of the tree* [and] *5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter*".

10.2.11 The desk study includes liaison with the relevant local authority 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. Some local authorities provide online mapping tools on their website which identify any legal tree protection.

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