

Flood Risk Assessment and Drainage Strategy

Proposed Solar Farm
Land north of Lullington
Swadlincote
Derbyshire

RLC Ref. 201053

June 2021

[Rev 02]

Prepared for
Lullington Solar Park Limited

Revision Schedule

RLC Ref. 201053

June 2021

Rev	Date	Details	Prepared by	Reviewed by
00	18 May 2021	Initial issue	Paul Cosford CEng, MICE, MCIHT Technical Director	Mike Lloyd BEng(Hons), CEng, MStructE Director
01	03 June 2021	Site plan updated	Paul Cosford CEng, MICE, MCIHT Technical Director	Mike Lloyd BEng(Hons), CEng, MStructE Director
02	21 June 2021	Paragraphs 6.3 & 6.5 amended	Paul Cosford CEng, MICE, MCIHT Technical Director	Mike Lloyd BEng(Hons), CEng, MStructE Director

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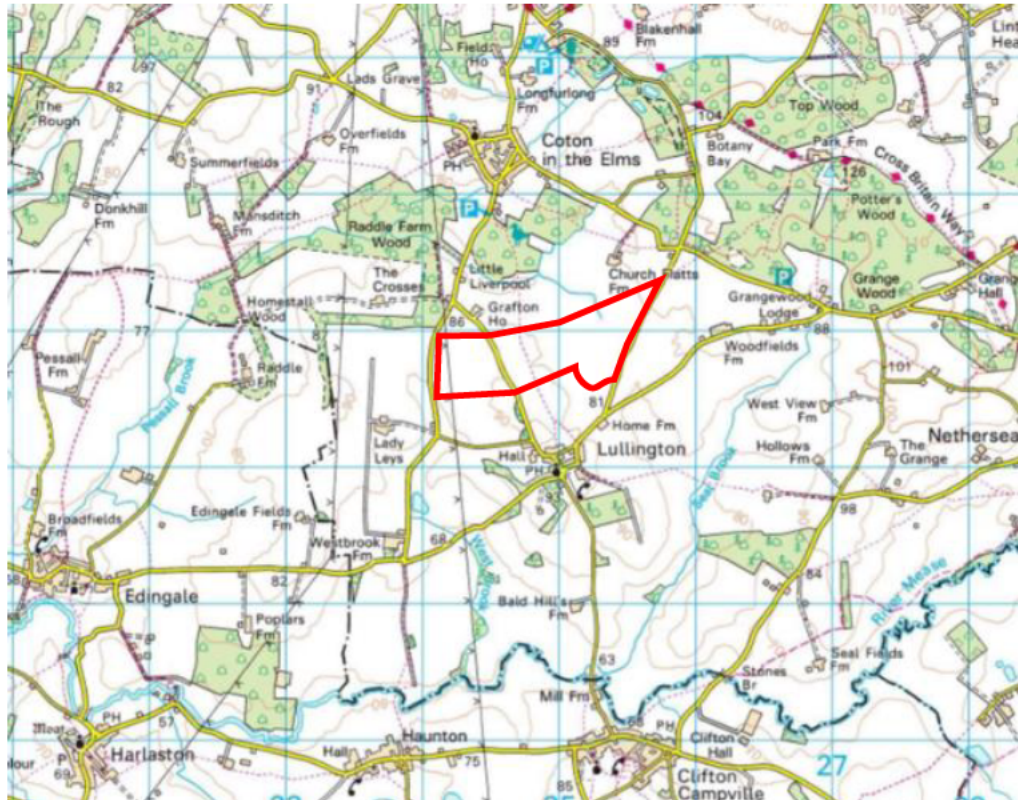
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1 Introduction and Proposals

- 1.1 Rossi Long Consulting Ltd has been instructed by Island Green Power UK Ltd, on behalf of Lullington Solar Park Limited, to undertake a Flood Risk Assessment in support of proposals for a solar farm on land to the north of Lullington, Swadlincote, Derbyshire.
- 1.2 The National Planning Policy Framework requires a Flood Risk Assessment to be undertaken for all development proposals greater than one hectare. This should identify and assess the risk of all forms of flooding to and from development and demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.
- 1.3 The development proposals comprise a series of ground-mounted solar array with associated infrastructure comprising substations and associated equipment, buried grid connection, fencing and CCTV, and landscaping including new woodland and site access.
- The panels are proposed to be fixed (rather than tracker), arranged in east/west rows, facing south, with a maximum height of 3.0m. The array will link into overhead power lines running through the site. There will be a buffer zone between the end of each array and the site boundary to allow for facility maintenance. A detailed layout of the proposals is shown on the drawing in Appendix A.
- 1.4 This report is compiled with the benefit of desk study research, walk-over survey, and by reference to British Geological Survey data.

2 Site Description and Topography

- 2.1 The proposed development site covers an area of 70.18 hectares (ha), located on land to the north of Lullington, South Derbyshire. A site location plan is included in Appendix B, with an extract shown below:



Location Plan

- 2.2 The site is currently used for agricultural purposes, and is made up of adjoining fields currently separated by hedge/tree lines. All sides of the development are bordered by other fields, farm tracks or public highway.
- 2.3 The site is located in a rural location just to the north of Lullington, Derbyshire and is divided into two parts by Lullington Road which crosses the site north/south. The Ordnance Survey grid reference for the larger eastern portion of the site is SK 25009 13974.

- 2.4 The two parts of the site generally fall away from Lullington Road, with a high point of 90.00m just to the east of the highway. The area to the west of Lullington Road falls to the south-west, down to a level of 77.00m adjacent to an un-named road. West Brook is located to the west of the south-west corner, and follows a route to the south before turning east just north of Westbrook Farm:



The larger area to the east of Lullington Road falls to a low point of 81.00m on its northern boundary, some 800m east of the road, and rises from there to the eastern boundary to a high point of 91.00m at the far north-eastern corner. The topography forms a gentle valley at the low point, which falls from the southern boundary to the northern boundary and towards Pessall Brook which lies just beyond. A full topographical survey of the site is included in Appendix C:



Extracts from Google Mapping

3 Planning Policy and Flood Risk

3.1 The National Planning Policy Framework (NPPF) was published by the Department for Communities and Local Government in March 2012 and updated in February 2019. NPPF requires that flood risk is taken into account in the planning process, to avoid inappropriate development in areas at risk of flooding and to direct development away from areas at highest risk. The overall aim should be to steer new development towards Flood Zone 1.

3.2 Flood Zone 1 is a low probability flood zone defined as land having a less than 1 in 1000 annual probability of river or sea flooding (shown as 'clear' on the flood map – all land outside Flood Zones 2 & 3).

Flood Zone 2 is a medium probability flood zone defined as land having between a 1 in 100 and 1 in 1000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1000 annual probability of sea flooding (land shown 'light blue' on the flood map).

Flood Zone 3a is a high probability flood zone defined as land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding (land shown 'dark blue' on the flood map).

Flood Zone 3b, the functional floodplain, comprises land where water has to flow or be stored in times of flood.

3.3 From Environment Agency flood zone mapping it is confirmed that the site is situated in Flood Zone 1.

3.4 There are no restrictions to the type of development permitted within Flood Zone 1.

3.5 Whilst there are no restrictions to the type of development permitted within Zone 1, the NPPF permits certain types of developments within the other two higher probability zones, Zone 2 (medium) and Zone 3 (high), subject to the type of development and mitigation measures being put in place.

The NPPF "Flood Risk Vulnerability Classification" sets out these development types and categorises them as follows:

- a) Essential Infrastructure
- b) High Vulnerability
- c) More Vulnerable
- d) Less Vulnerable
- e) Water Compatible Development

The proposals are classified as 'less vulnerable' development. 'Less vulnerable' development is appropriate in Flood Zone 1 and the Exception Test is not required (see Table 3 overleaf).

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	Exception Test required	✓	✓	✓
	Zone 3a	Exception Test required	x	Exception Test required	✓	✓
	Zone 3b functional floodplain	Exception Test required	x	x	✓	✓

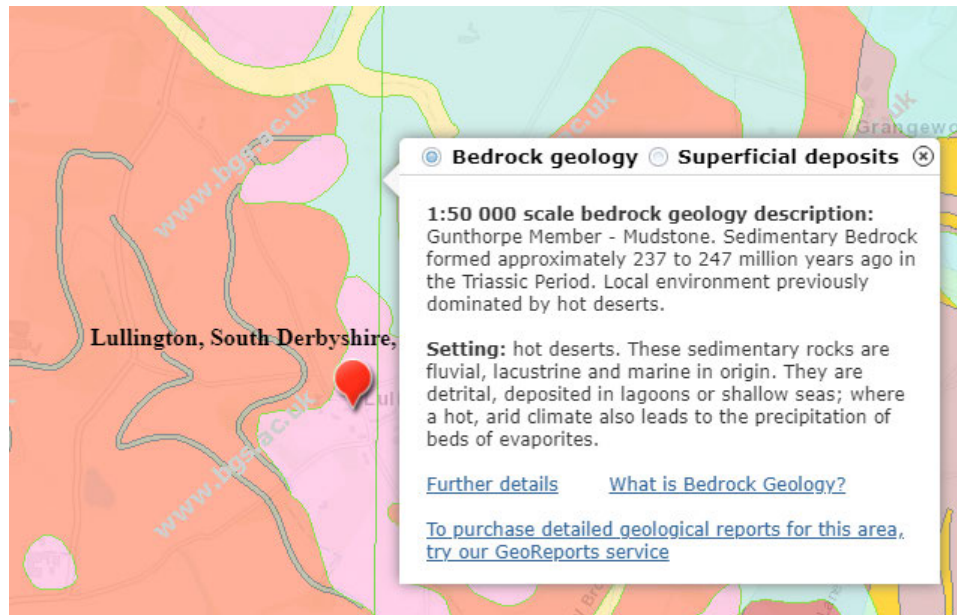
Key: ✓ Development is appropriate x Development should not be permitted

Properly prepared assessments of flood risk will inform the decision-making process at all stages of development planning. A Strategic Flood Risk Assessment is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change, and to assess the impact that changes or development in the area will have on flood risk. It may also identify, particularly at more local levels, how to manage those changes to ensure that flood risk is not increased. A site-specific Flood Risk Assessment is carried out by, or on behalf of, a developer to assess the risk to a development site and demonstrate how flood risk from all sources of flooding to the development itself and flood risk to others will be managed now, and taking climate change into account.

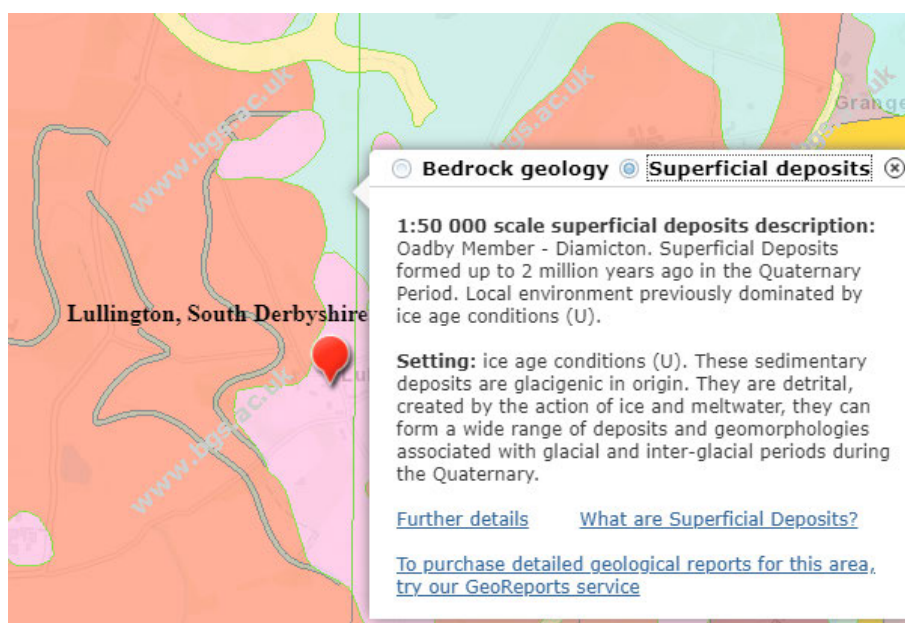
- 3.6 For site-specific Flood Risk Assessments the main study requirement is to identify the flood zone and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions. A site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime, taking account of the vulnerability of its users without increasing flood risk elsewhere and, where possible, will reduce flood risk overall.
- 3.7 For sites in Flood Zone 1, the Flood Risk Assessment is principally required to consider the management of surface water run-off together with flood risk from sources other than rivers and the sea. Surface water arising from a developed site should, as far as practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account.

4 Ground Conditions and Hydrology

- 4.1 British Geological Survey (BGS) mapping shows that the site is situated on variable superficial deposits with outcrops of bedrock. The bedrock is described as Mudstone, an extract of the mapping is shown below:



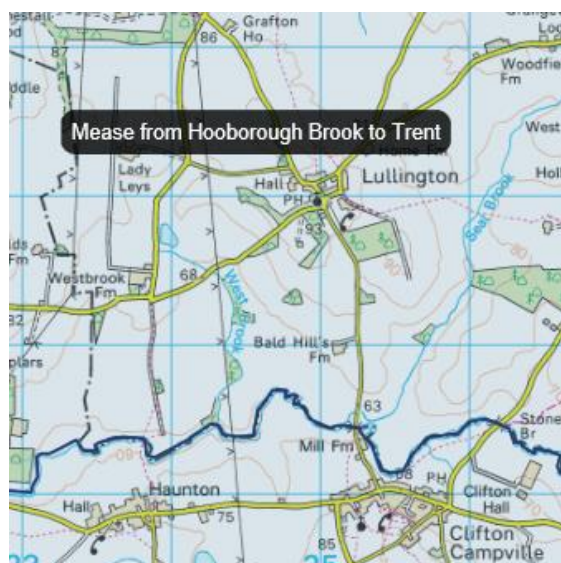
The significant Superficial deposits are described as Diamiction, with smaller areas of Sand and Gravel. These deposits are Glacigenic in origin and represent outwash sands and gravels, silts and clays – an extract of the BGS Superficial deposits mapping is shown below:



- 4.2 The DEFRA website shows that the site is not within a Groundwater Source Protection Zone – see extract from Groundwater Source Protection Zones below:

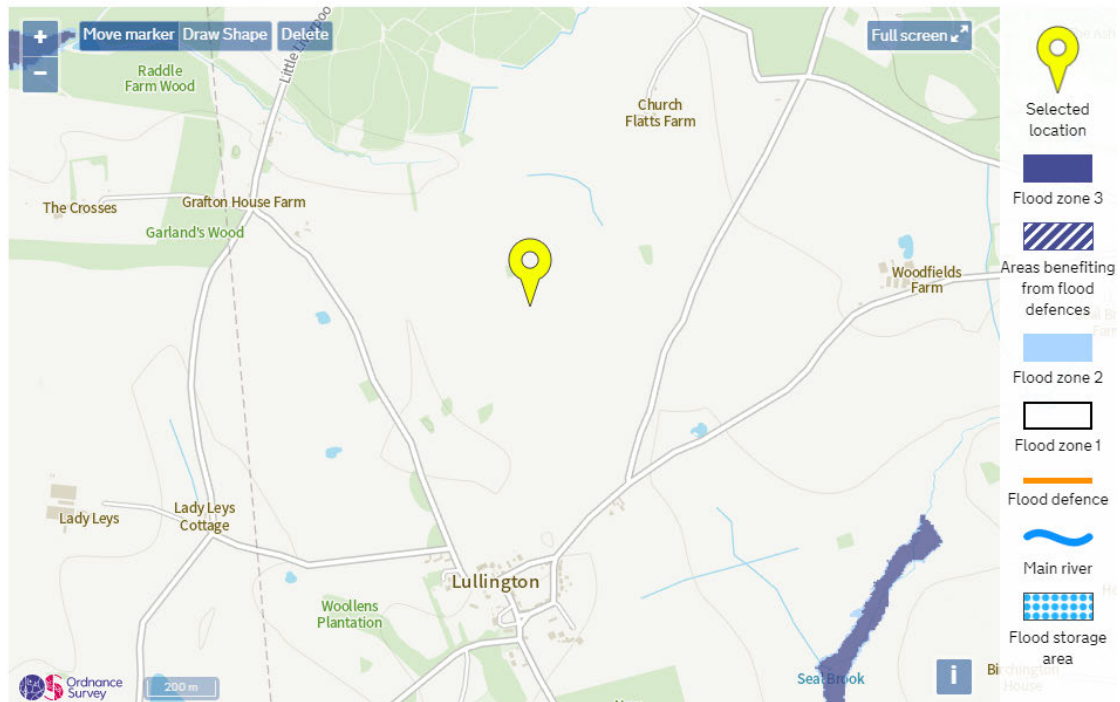


- 4.3 We are not aware of any formal land drainage on the site; therefore, ground conditions will dictate the rate of run-off from the site. Ground conditions vary across the site, and the areas of Mudstone will possess very little infiltration capacity whereas the areas of Sand and Gravel will have infiltration potential. Whichever area is considered, rainfall that exceeds the infiltration capacity of the subsoil will flow overland at 'greenfield' run-off rates following the natural fall of the land towards the south for the western part of the site, towards West Brook, and for the larger eastern part of the site towards the low point at the northern boundary close to Pessall Brook.
- 4.4 The site is in the Mease Rivers Operational Catchment with a natural flow to the west to the River Trent. West Brook and Pessall Brook are both tributaries of the River Mease. West Brook flows south to its confluence with the River Mease. Pessall Brook flows north then west, meeting the Mease further downstream:



5 Flood Risk Sources

- 5.1 **Fluvial Flooding:** The site is situated in Flood Zone 1, as shown on the Environment Agency flood zone mapping below. Flood Zone 1 is a low probability flood zone and comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (< 0.1%):

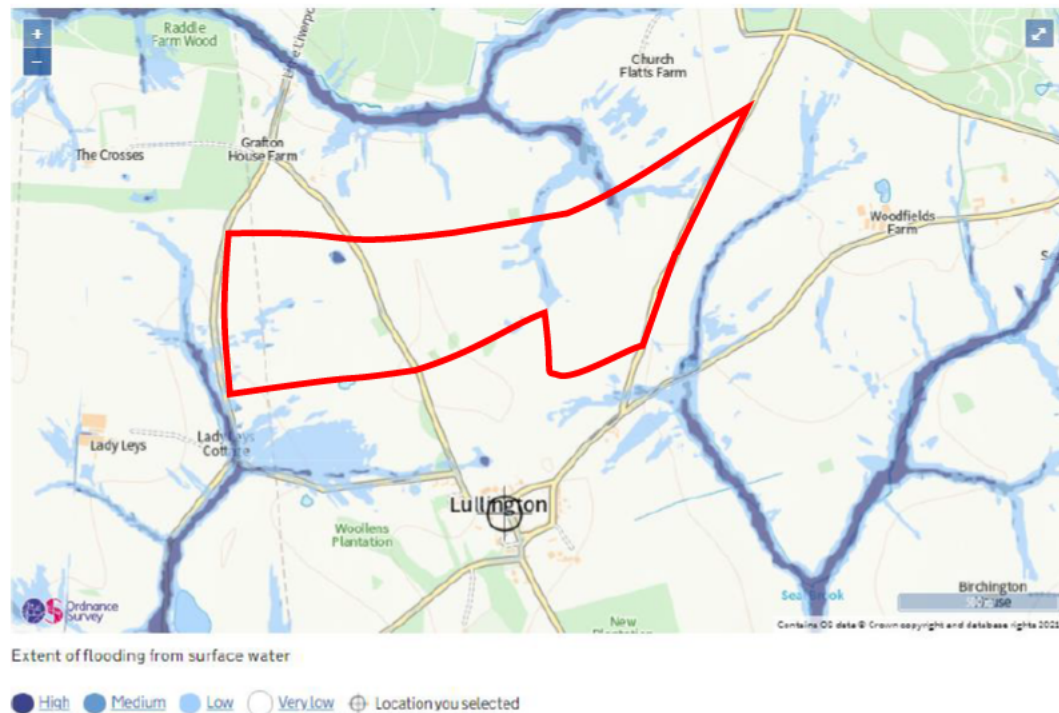


Flood Zone Mapping

The development area is therefore at 'low' risk of flooding from the rivers or the sea.

- 5.2 **Groundwater flooding** occurs when water levels in the ground rise above surface elevations. BGS borehole records confirm a depth to groundwater at 31.5m below ground level (bgl). The ground conditions and topography are such that the risk of flooding from groundwater is considered to be 'low'.

- 5.3 **Surface water flooding** occurs when intense rainfall is unable to soak into the ground or enter drainage systems. The Environment Agency publishes mapping showing the risk of flooding from surface water, which is shown below:



Extract from Surface Water Flood Map

Apart from in isolated locations, the site is generally at 'very low' risk of flooding of flooding from surface water:

'Very low' means that each year the area has a chance of flooding of < 1 in 1000 (0.1%).

There are small areas on the site where 'low' risk of flooding is shown. These areas coincide with the natural gentle valley which runs from south to north across the site:

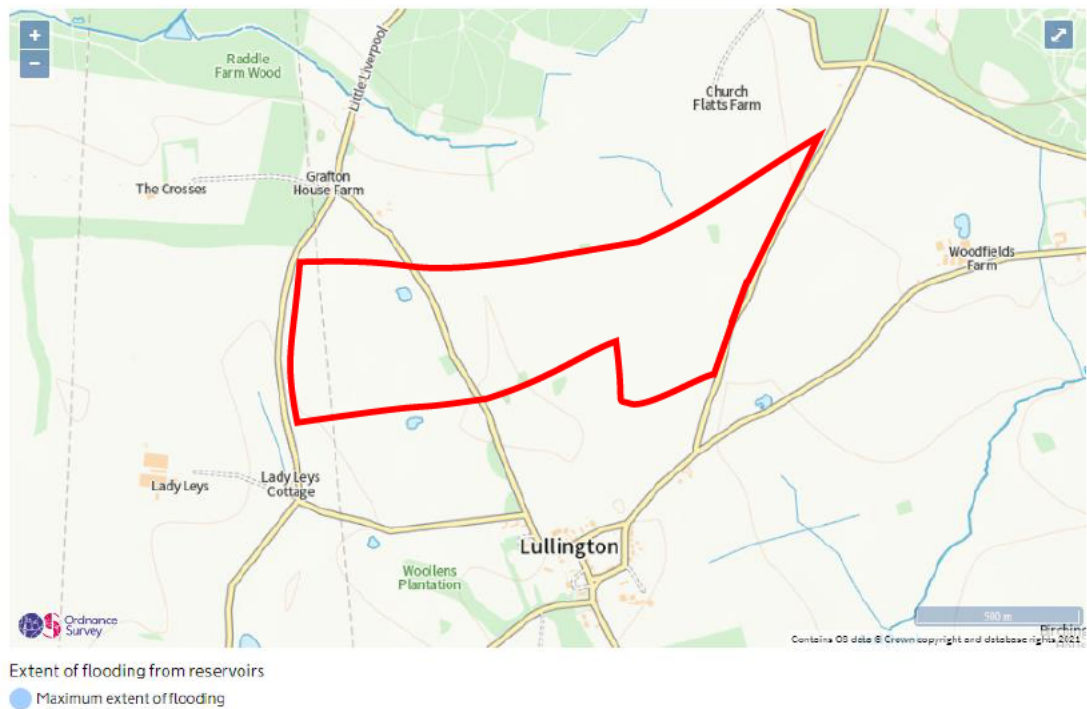
There is a very small area of 'medium' and 'high' risk of flooding indicated, which coincides with the head of Pessall Brook that flows towards the north:

'Low' risk means that each year the area has a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1.0%);

'Medium' risk means that each year the area has a chance of flooding of between 1 in 100 (1.0%) and 1 in 30 (3.3%); and

'High' risk means that each year this area has a chance of flooding of greater than 1 in 30 (>3.3%).

- 5.4 For the vast majority of the site the risk of flooding is 'very low' and, where a greater risk of flooding has been identified, this is in isolated locations and not on a flood flow route. The locations appear to represent local low spots in the terrain. Given that the solar panel arrays are raised above ground level on posts, any potential depth of localised flooding would not affect the operation of the development. Neither will the proposals increase the risk of flooding on or off the site.
- 5.5 There are no surface water sewers in the vicinity of the site. The risk of flooding from this source is 'low'.
- 5.6 From our review of Ordnance Survey mapping of the site and the surrounding area, our assessment is that there are no significant flood risks to the site from reservoirs, canals or other artificial sources. This is confirmed for reservoirs by reference to the Environment Agency mapping shown below:



Extract from Reservoir Flood Map

6 Surface Water Drainage

- 6.1 The site is 'greenfield' land and we are not aware of any formal provision for drainage of the land. Planning Policy requires that surface water arising from a developed site should, as far as practicable, be managed in a sustainable manner to mimic surface water flows arising from the site prior to the proposed development.
- 6.2 As this is a 'greenfield' site, existing run-off characteristics will be governed by topography, soil type and the nature of the overlying surfaces. Subsoil conditions are generally of a cohesive nature, with granular material in some areas. Initial rainfall will be absorbed by the topsoil and the granular soils beneath. Where rainfall exceeds the near surface infiltration capacity of the soils, the natural fall of the land is to the east and to the north as discussed in Section 2 and illustrated on the Topographic Survey included in Appendix C.
- 6.3 The proposal will comprise the installation of photovoltaic (PV) panels laid out in rows running from north to south across the site, with a maximum height of 3.0m above ground level. The mounting structure for the panels is a metal frame securely fixed into the ground. The supporting posts will be driven into the ground to avoid the use of mass concrete foundations. The panels are fixed and tilted at 15° to the horizontal with rows spaced 8.25m apart.
- 6.4 The surface area of the panels is not considered to be an impermeable area that prevents direct infiltration into the ground. Rainwater falling on to each of the solar panels will drain freely into the ground both between and beneath the panels. The general directions of the natural overland flows generated when the infiltration potential of the ground is exceeded are indicated on the drawing attached in Appendix D.
- 6.5 The site is to remain 'soft' landscaped underneath the panels, which is open meadow grassland. Whilst there may be a concentration of rainwater at the front of each panel, this will naturally migrate to beneath the next panel array following the fall of the land. The development proposals will result in the installation of a small substation and associated curtilage and inverters. These will be positioned on small areas of impermeable surfaces that would not have any measurable impact on surface water run-off from the site.
- 6.6 The potential mobilisation of sediment into watercourses local to the proposed solar farm has been raised by South Derbyshire District Council as a potential issue. The River Mease is designated as a Special Area of Conservation (SAC) and, as such, any activity which may affect its operation is subject to scrutiny. The potential migration of sediment into Pessall Brook and West Brook, and its subsequent transportation downstream to the River Mease, has been identified as a risk especially during the construction and decommissioning phases.
- 6.7 Discussions with the Council's Sustainability Officer concluded that, in order to mitigate against the potential migration of sediment off-site and into the local watercourses, an interception swale should be introduced at the locations where run-off naturally discharges off-site. Two locations have been identified, one along the northern boundary of the eastern section of the site close to Pessall Brook and a second along the western boundary where the site is currently assumed to discharge into West Brook.

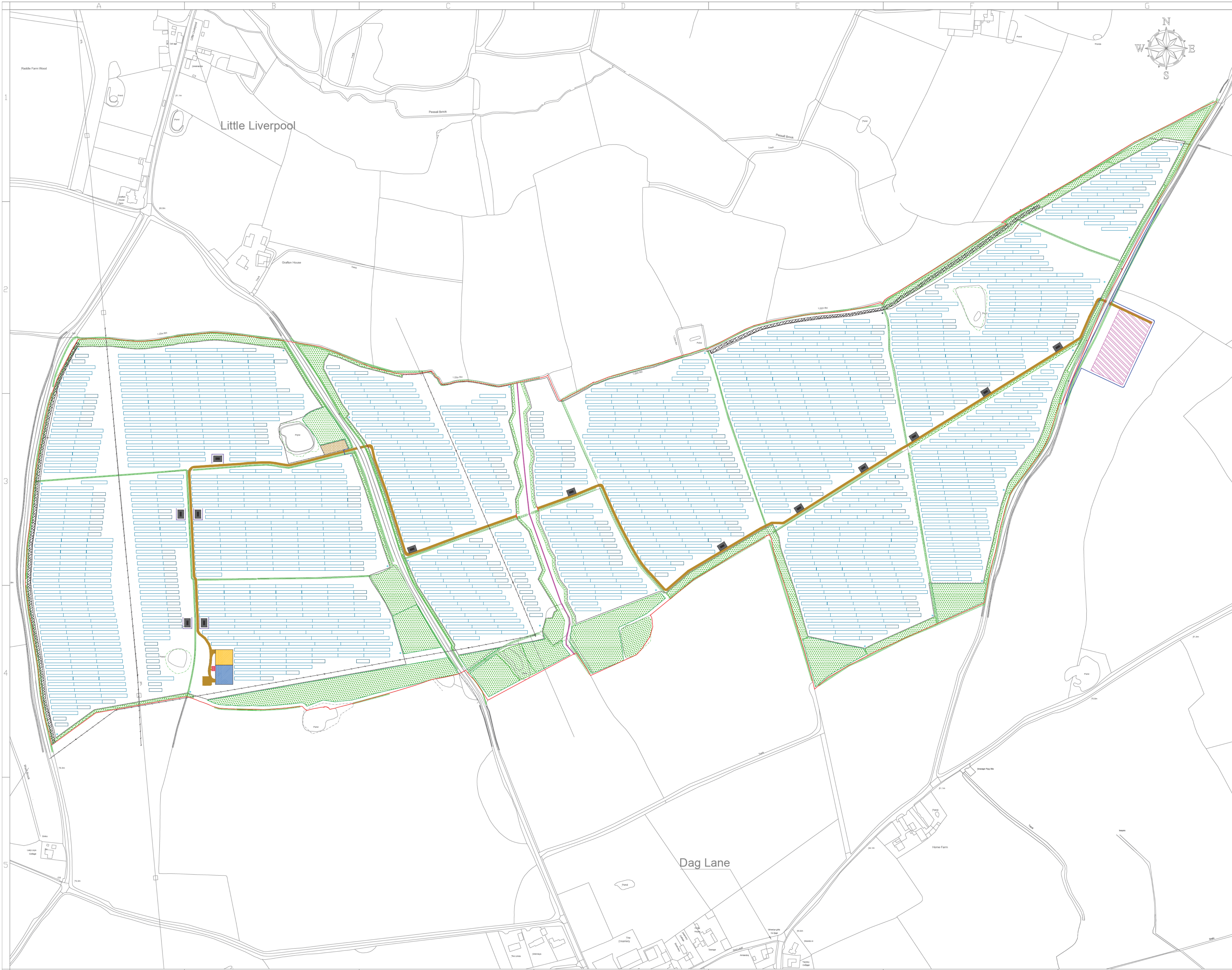
-
- 6.8 The swale is to extend for a total distance of 500m at the northern boundary, 250m either side of the location of Pessall Brook. For the western section of the site, the interception swale will be introduced for the full length of the boundary of approximately 600m to intercept run-off from the site. Details of the swale are shown on the drawing included in Appendix D.
- 6.9 During construction, unnecessary soil disturbance and trafficking of the land should be avoided to prevent compaction. The ground 'roughness' should be maintained below and between panels to aid infiltration and maintain the natural 'greenfield' run-off regime.

7 Conclusions and Recommendations

- 7.1 The proposal for the site is for the provision of a series of ground-mounted solar panel arrays on arable land to the north of Lullington, Derbyshire. The site is situated in Flood Zone 1. This is a low probability flood zone where all forms of development listed in the NPPF are appropriate.
- 7.2 All forms of flooding have been considered in Section 5 and the site is generally at 'low' risk of flooding from all sources. There are small isolated areas where there is the risk of 'medium' to 'high' risk surface water flooding. Flood mapping defines 'high' risk as flooding with a greater than 1 in 30 (3.3%) chance of flooding in any year. The solar panels are supported on posts that elevate the panels above ground level and, consequently, the development is not affected by this isolated 'medium' and 'high' flood risk. Neither will the development increase the risk of flooding, both on or off the site.
- 7.3 The existing fields comprise ground conditions that are largely cohesive in nature, with smaller areas of granular soil. Rainwater will naturally run off the cohesive areas and into the local watercourses, whilst during extreme events where rainfall exceeds the immediate infiltration capacity of the granular subsoil surface run-off will continue to drain into the local watercourses in exactly the same manner as it does now prior to development.
- 7.4 The proposal is to maintain natural vegetation across the site so as to mimic the existing surface water drainage regime. There will be no increase in impermeable area, thus the proposals will not increase flood risk on or off the site. The natural run-off regime will remain post-installation of the solar arrays, with the flow paths indicated on the drawing in Appendix D maintained.
- 7.5 The risk of sediment migration off-site will be mitigated by the introduction of the interception swales along the western and northern boundaries. The proposed locations of the swales coincide with the existing run-off flow paths prior to discharge to the local watercourses.

8 Appendices

Appendix A – Proposal Plan



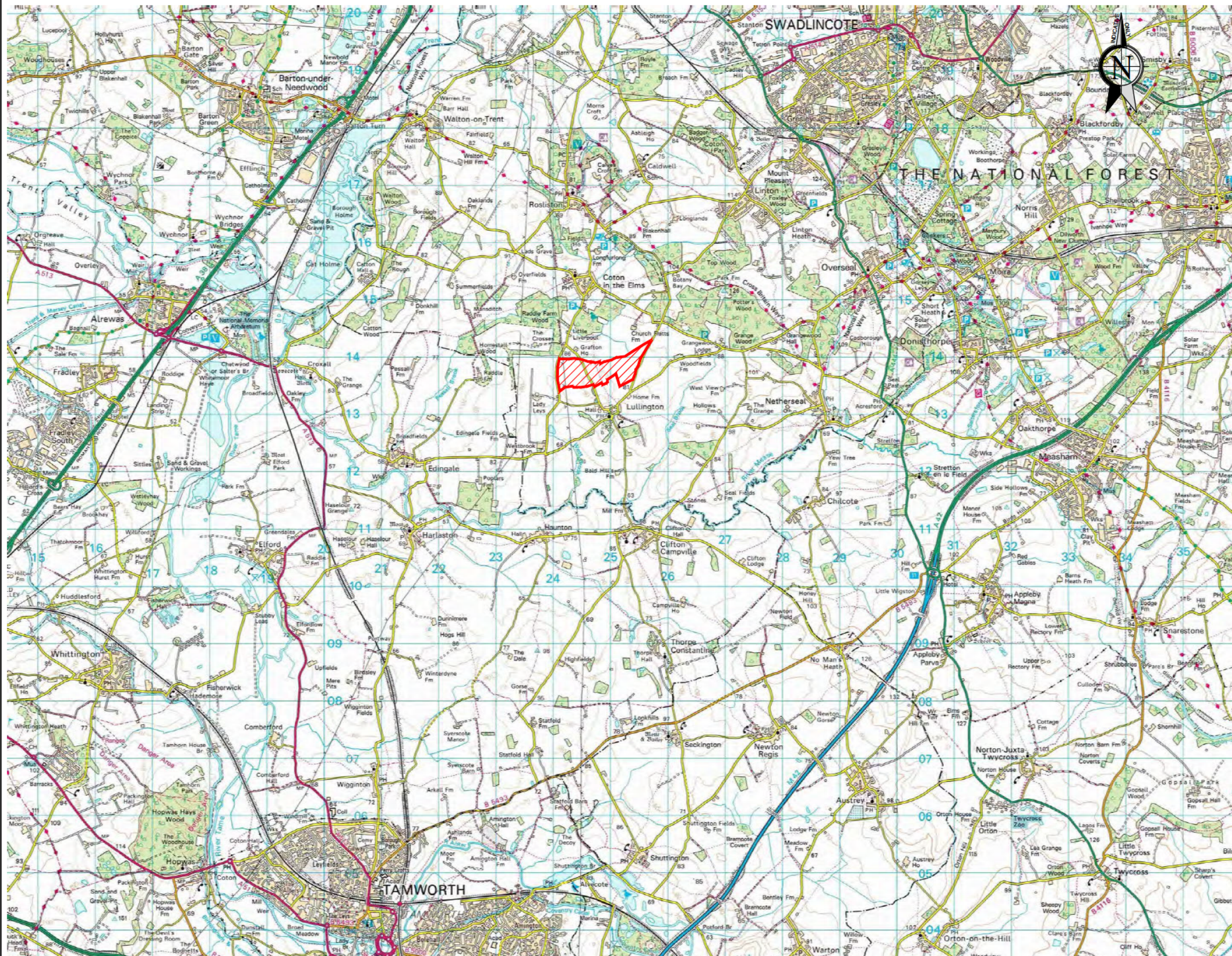
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Scale:	1:2500
Sheet Format:	A1 "594 x 841"
Company:	Island Green Power UK Limited
Project Designer:	Alessio Aru, Unit 20.2, Coda Studios 189 Munster Road, London SW6 6AW
Ref No.:	1

Descriptive Legend

	Application boundary
	Other Land in control of the Applicant
	Fence
	Mounting structures
	Substation - Customer compound
	Substation - DNO compound
	Substation - Control Room
	Conversion unit
	Soundproof barriers
	Internal track
	Existing Access
	New Access
	Vegetation barrier
	Public footpath
	Building compound
	Bee area
	Swale
	CCTV pole



Appendix B – Site Location Plan



KEY

 **SITE LOCATION**

PRELIMINARY DRAWING:
THIS DRAWING IS FOR PRELIMINARY PURPOSES ONLY
AND MUST NOT BE READ AS A CONSTRUCTION ISSUE.
IT INDICATES DESIGN INTENT ONLY AND IS SUBJECT TO
AMENDMENT DURING FINAL DESIGN DEVELOPMENT.

P01	INITIAL ISSUE	26/04/21	OT	
REV	DESCRIPTION	DATE	BY	AUTH

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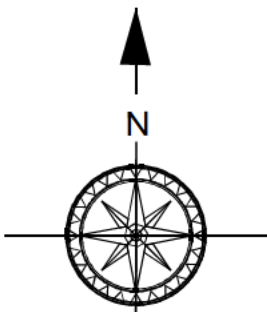
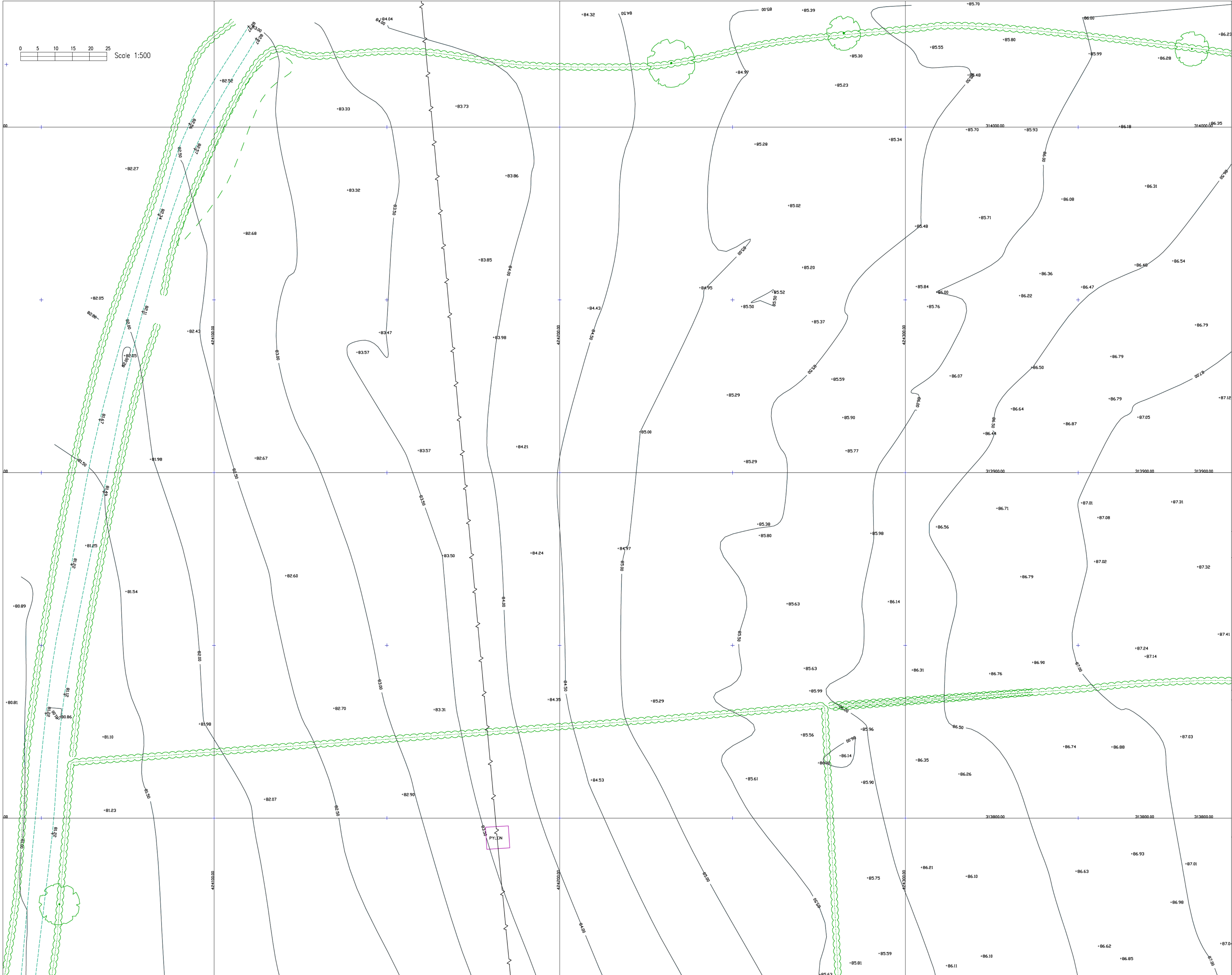
CLIENT
ISLAND GREEN POWER UK LTD

PROJECT
LULLINGTON SOLAR FARM LTD

TITLE
SITE LOCATION PLAN

DRAWN OT	AUTHORISED	DATE 26/04/21	SCALE AT A3 NOT TO SCALE
SUITABILITY INFORMATION			
PROJECT NO. 201053	DRAWING FIELDS.	DRAWING NO. SK-01	REV P1

Appendix C – Topographical Survey



Grid North

SURVEY TO ORDINANCE SURVEY
GPS DATUM AND GRID,
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS

FENCE TYPES		LEGEND	
BW	Barbed Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Rolling
CI	Corrugated Iron	FW	Field Wall
CL	Chainlink	PR	Post & Rail
AV	Air Valve	MH	Manhole
BO	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	OHI	Overhead
CH	Chimney	OSBM	Obstruction Bench
CL	Cover Level	P	Post Or Pillar
CONC	Concrete	PM	Parking Meter
CTV	Cable Television	RE	Rodding Eye
DK	Drop Kerb	RS	Road Sign
DP	Down Pipe	SAP	Sapling
DR	Drain	SC	Ship Cock
ELC	Electricity Pole	SL	Slump Level
EP	Electricity Pole	ST	Stop Tap
ER	Earth Rod	SV	Shut Valve
FB	Power Box	TAR	Tarmac
FH	Fire Hydrant	TCB	Telephone Call
FP	Flag Pole	Box	Box
GP	Gate Post	TL	Traffic Lights
GV	Gas Valve	TP	Telegraph Pole
IC	Inspection Cover	TV	Television Box
L	Level	UTL	Unable to lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Letter Box	WM	Water Meter
LP	Lamp Post	WO	Wash Out

Drawn by: PR Surveved by: PRAP

Date: January 2021
Scale:- 1:500
Drawing Number: ALS1001/500/01
Topographical
Client: Lullington Solar Park Limited
Project: Lullington Solar Park

Surveyed By:-

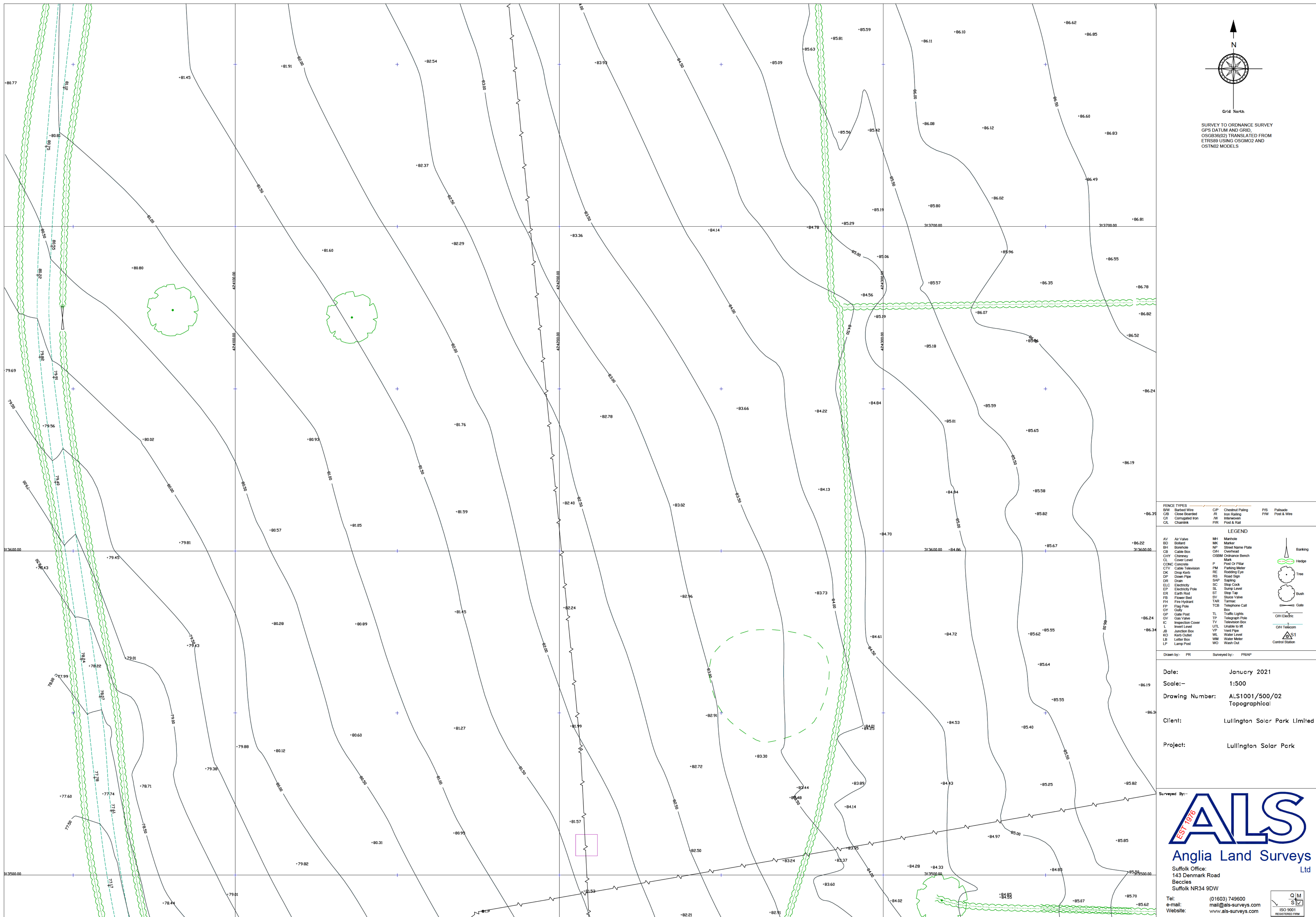
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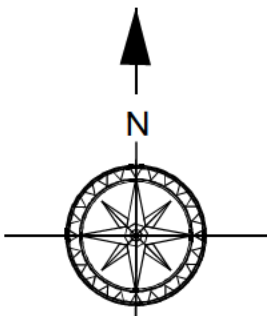
Anglia Land Surveys Ltd

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143 Denmark Road
Beccles
Suffolk NR34 9DW

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e-mail: mail@als-surveys.com
Website: www.als-surveys.com

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Grid North

SURVEY TO ORDINANCE SURVEY
GPS DATUM AND GRID.
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS

FENCE TYPES			
BW	Barricade Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Rolling
CI	Corrugated Iron	FW	Interviewer
CL	Chainlink	PR	Post & Rail

AV	Air Valve	MH	Manhole
BO	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	OHI	Overhead
CHY	Chimney	OSBM	Ordinance Bench
CL	Cover Level	Mark	Mark
CONC	Concrete	PM	Post Or Pillar
CTV	Cable Television	PM	Parking Meter
DK	Drop Kerb	RE	Rodding Eye
DP	Down Pipe	RS	Road Sign
DR	Drain	SAP	Sapling
ELC	Electricity Pole	SC	Ship Cock
EP	Electricity Pole	SL	Slump Level
ER	Earth Rod	ST	Stop Tap
FB	Power Band	SV	Shut Valve
FH	Fire Hydrant	TAR	Tarmac
FP	Flag Pole	TCB	Telephone Call
GY	Gully	Box	Box
GP	Gate Post	TL	Traffic Lights
GV	Gas Valve	TP	Telegraph Pole
IC	Inspection Cover	TV	Television Box
L	Level	UTL	Unable to lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Lamp Post	WM	Water Meter
LP	Lamp Post	WO	Wash Out

Drawn by:- PR Surveyed by:- PRIAP

Date: January 2021
Scale:- 1:500
Drawing Number: ALS1001/500/03
Topographical

Client: Lullington Solar Park Limited

Project: Lullington Solar Park

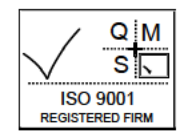
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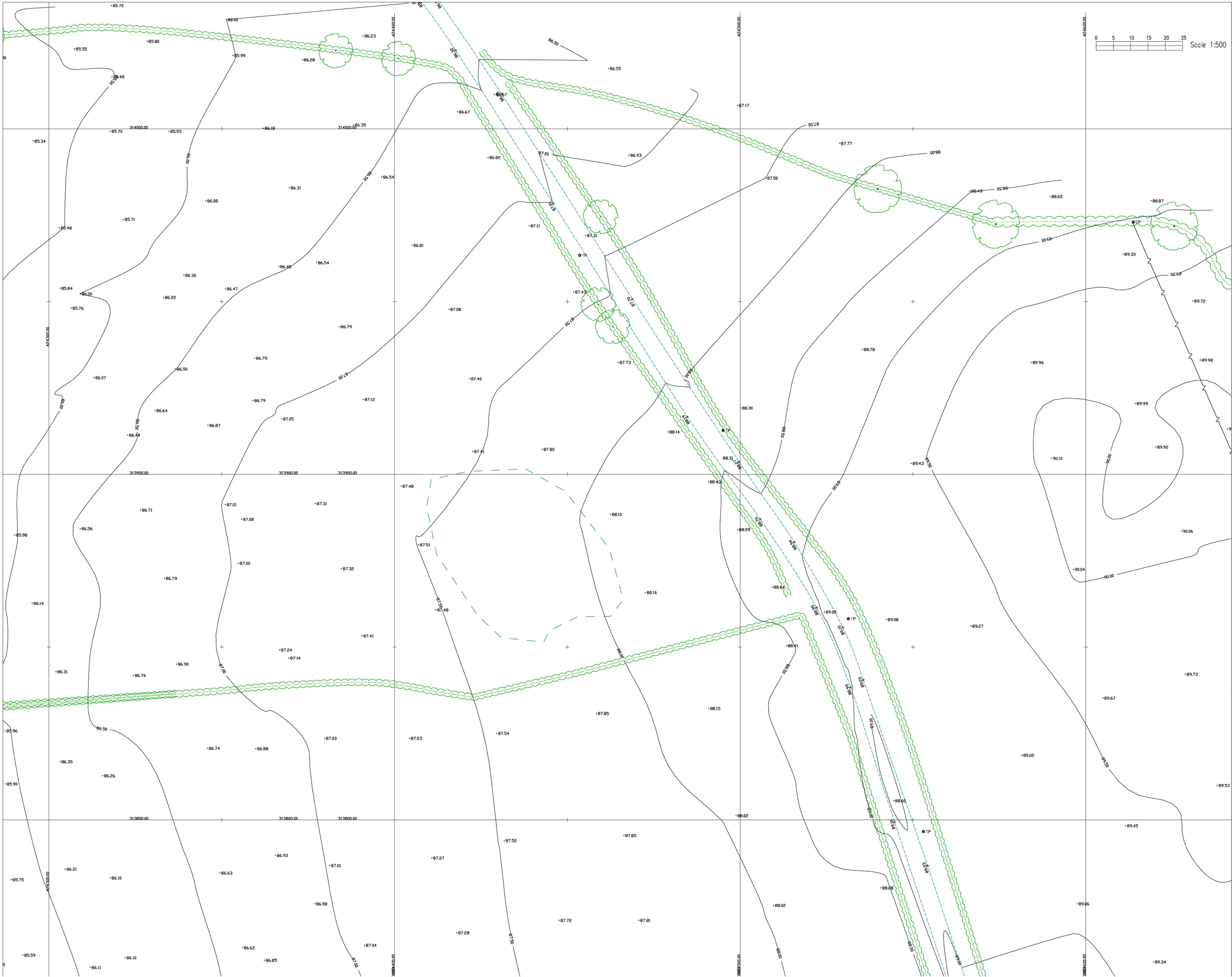


Anglia Land Surveys Ltd

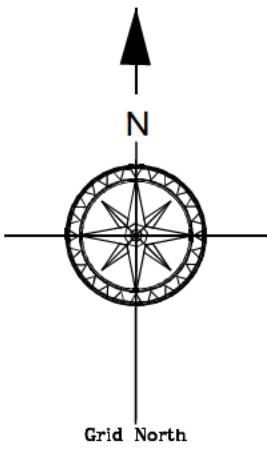
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Beccles
Suffolk NR34 9DW

Tel: (01603) 749600
e-mail: mail@als-surveys.com
Website: www.als-surveys.com





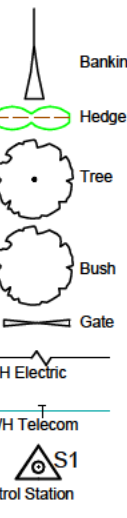
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SURVEY TO ORDINANCE SURVEY
GPS DATUM AND GRID.
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS

FENCE TYPES			
BW	Barricade Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Rolling
CI	Corrugated Iron	FW	Interlocking
CL	Chainlink	PR	Post & Rail

AV	Air Valve	MH	Manhole
BO	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	OHI	Overhead
CH	Chimney	OSBM	Ordinance Bench
CL	Cover Level	Mark	Mark
CONC	Concrete	P	Post Or Pillar
CTV	Cable Television	PM	Parking Meter
DK	Drop Kerb	RE	Rodding Eye
DIP	Down Pipe	RS	Road Sign
DR	Drain	SAP	Sapping
ELC	Electricity Pole	SC	Ship Cock
EP	Electricity Pole	SL	Stump Level
ER	Earth Rod	ST	Stop Tap
FB	Power Band	SV	Shut Valve
FH	Fire Hydrant	TAR	Tarmac
FP	Flag Pole	TCB	Telephone Call
GY	Gully	Box	Box
GP	Gate Post	TL	Traffic Lights
GV	Gas Valve	TP	Telegraph Pole
IC	Inspection Cover	TV	Television Box
L	Level	UTL	Unable to lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Letter Box	WM	Water Meter
LP	Lamp Post	WO	Wash Out



Drawn by: PR Surveyed by: PRAP

Date: January 2021
Scale: 1:500
Drawing Number: ALS1001/500/04
Topographical
Client: Lullington Solar Park Limited
Project: Lullington Solar Park

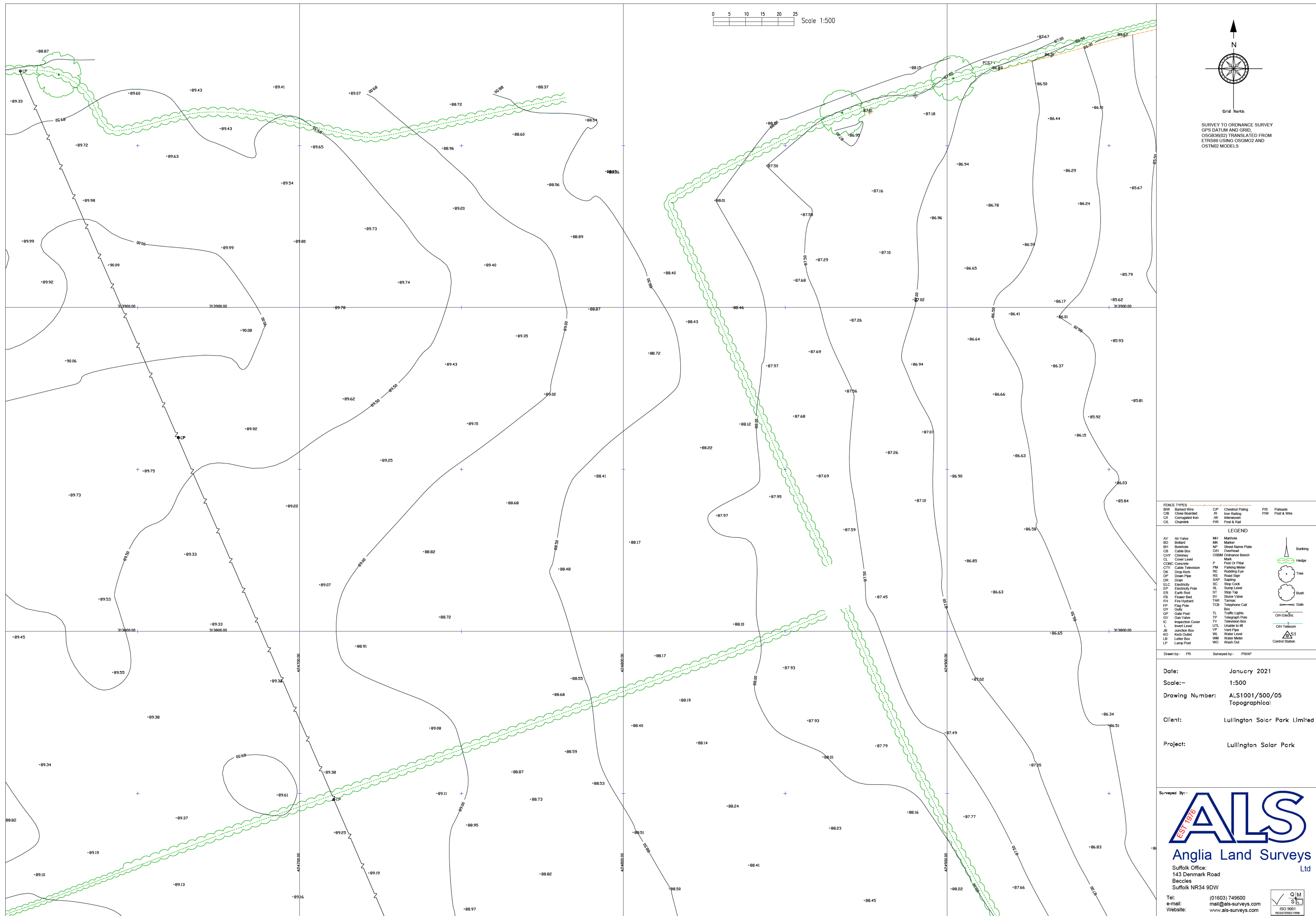
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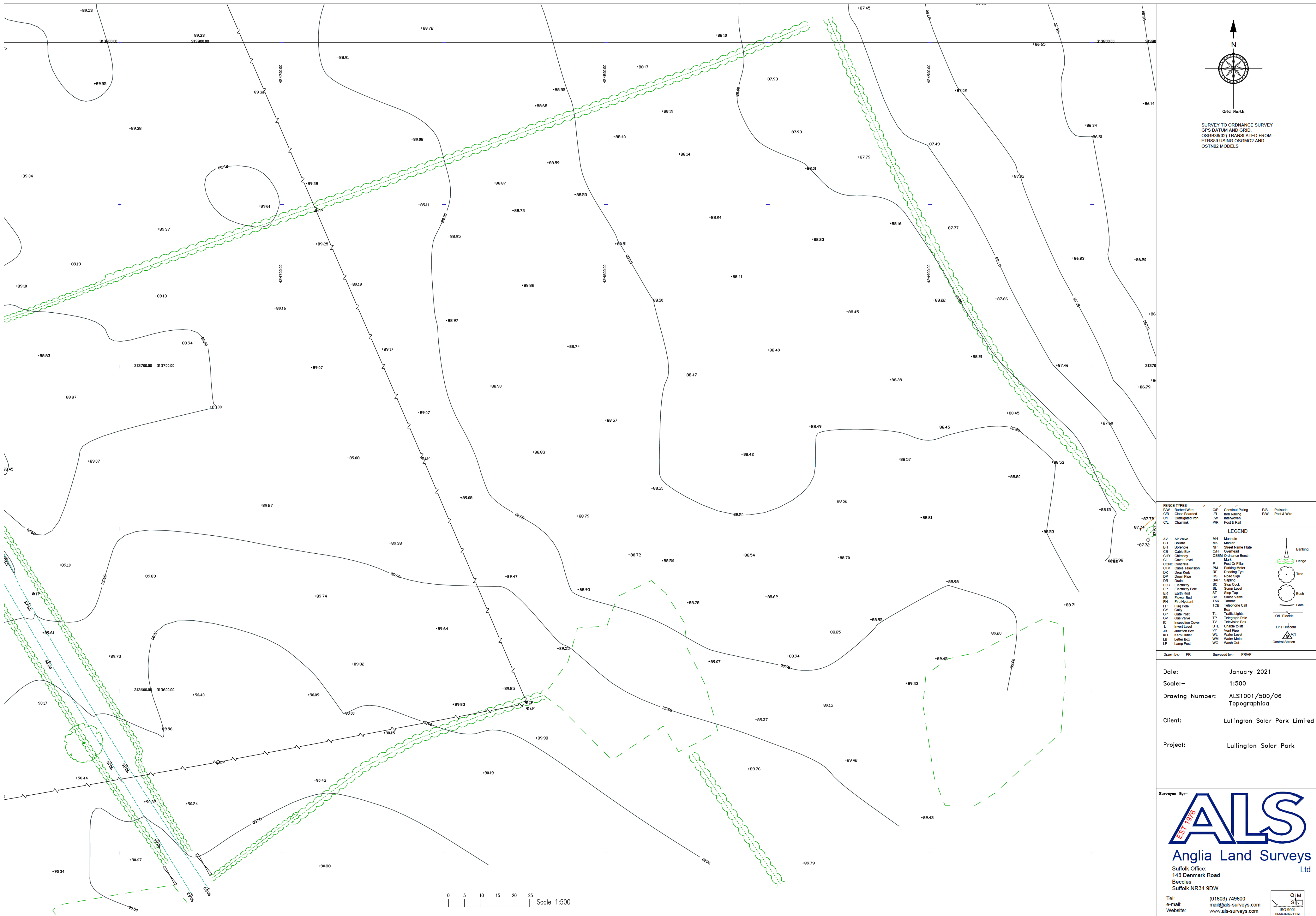
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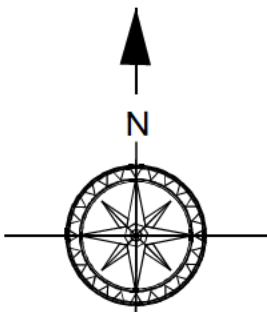
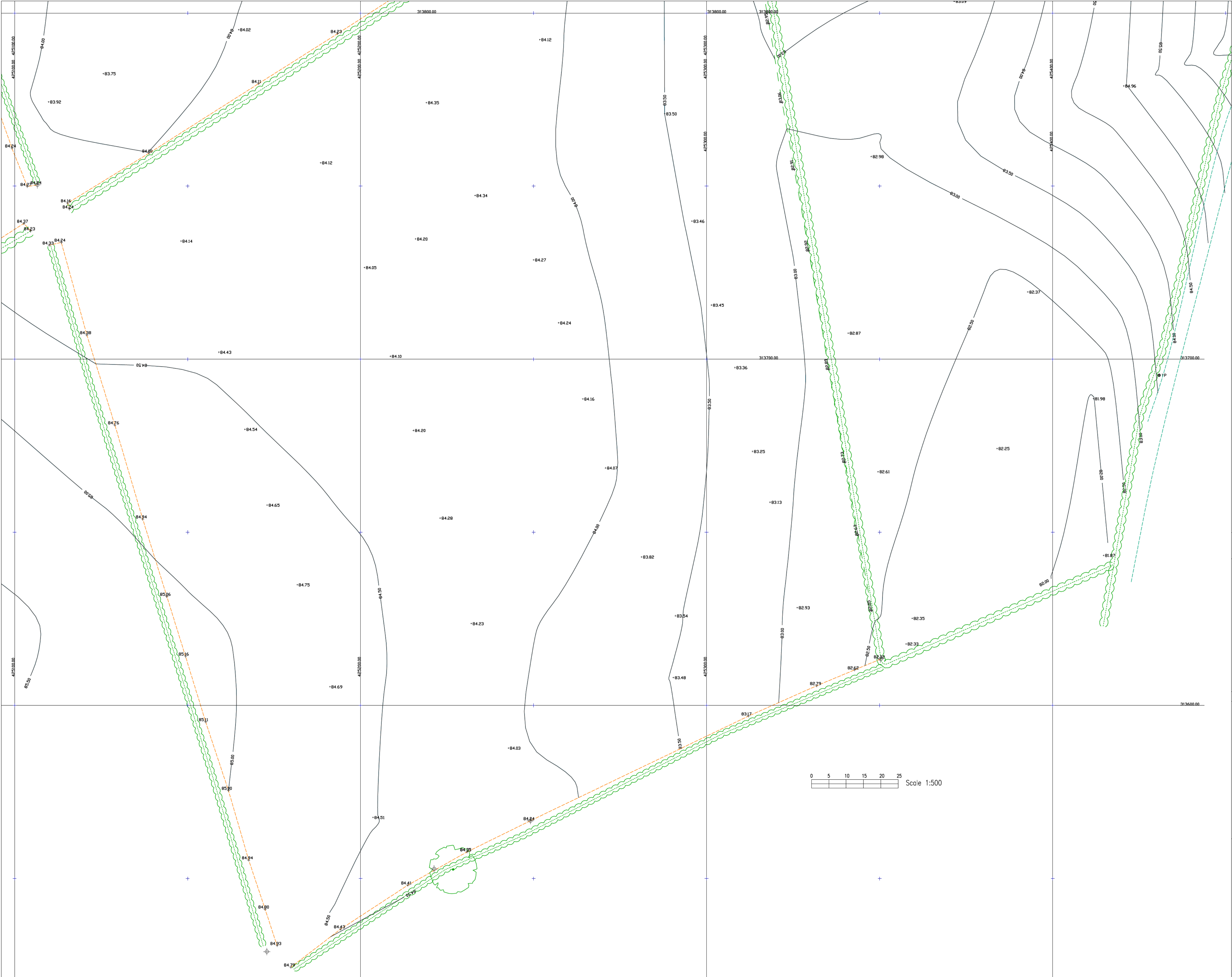
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e-mail: mail@als-surveys.com
Website: www.als-surveys.com

ISO 9001
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Grid North

SURVEY TO ORDNANCE SURVEY
GPS DATUM AND GRID.
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS

FENCE TYPES					
BW	Barricade Wire	C/P	Chestnut Paling	P/S	Palisade
CB	Close Boarded	I/R	Iron Rolling	P/W	Post & Wire
CI	Corrugated Iron	I/W	Interweave		
CL	Chainlink	P/R	Post & Rail		
LEGEND					
AV	Air Valve	MH	Manhole		
BO	Bollard	MK	Marker		
BH	Borehole	NP	Street Name Plate		
CB	Cable Box	OH	Overhead		Banking
CH	Chimney	OSBM	Ordinance Bench		
CL	Cover Level	P	Post Or Pillar		Hedge
CONC	Concrete	PM	Parking Meter		
CTV	Cable Television	RE	Rodding Eye		Tree
DK	Drop Kerb	RS	Road Sign		
DP	Down Pipe	SAP	Sapling		
DR	Drain	SC	Ship Cock		
ELC	Electricity Pole	SL	Stump Level		Bush
EP	Electricity Pole	ST	Stop Tap		
ER	Earth Rod	SV	Shut Valve		
FB	Power Box	TAR	Tarmac		
FH	Fire Hydrant	TCB	Telephone Call		Gate
FP	Flag Pole	Box	Box		
GY	Gully	TL	Traffic Lights		OH Electric
GP	Gate Post	TP	Telegraph Pole		
GV	Gas Valve	TV	Television Box		
IC	Inspection Cover	UTL	Unusable to Lift		
L	Level	VP	Vent Pipe		OH Telecom
JB	Junction Box	WL	Water Level		
KO	Kerb Outlet	WM	Water Meter		
LB	Letter Box	WO	Wash Out		
LP	Lamp Post				Letter Station

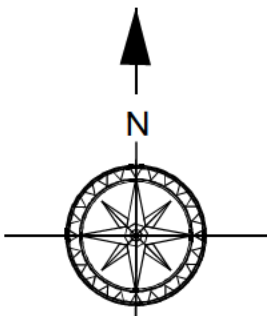
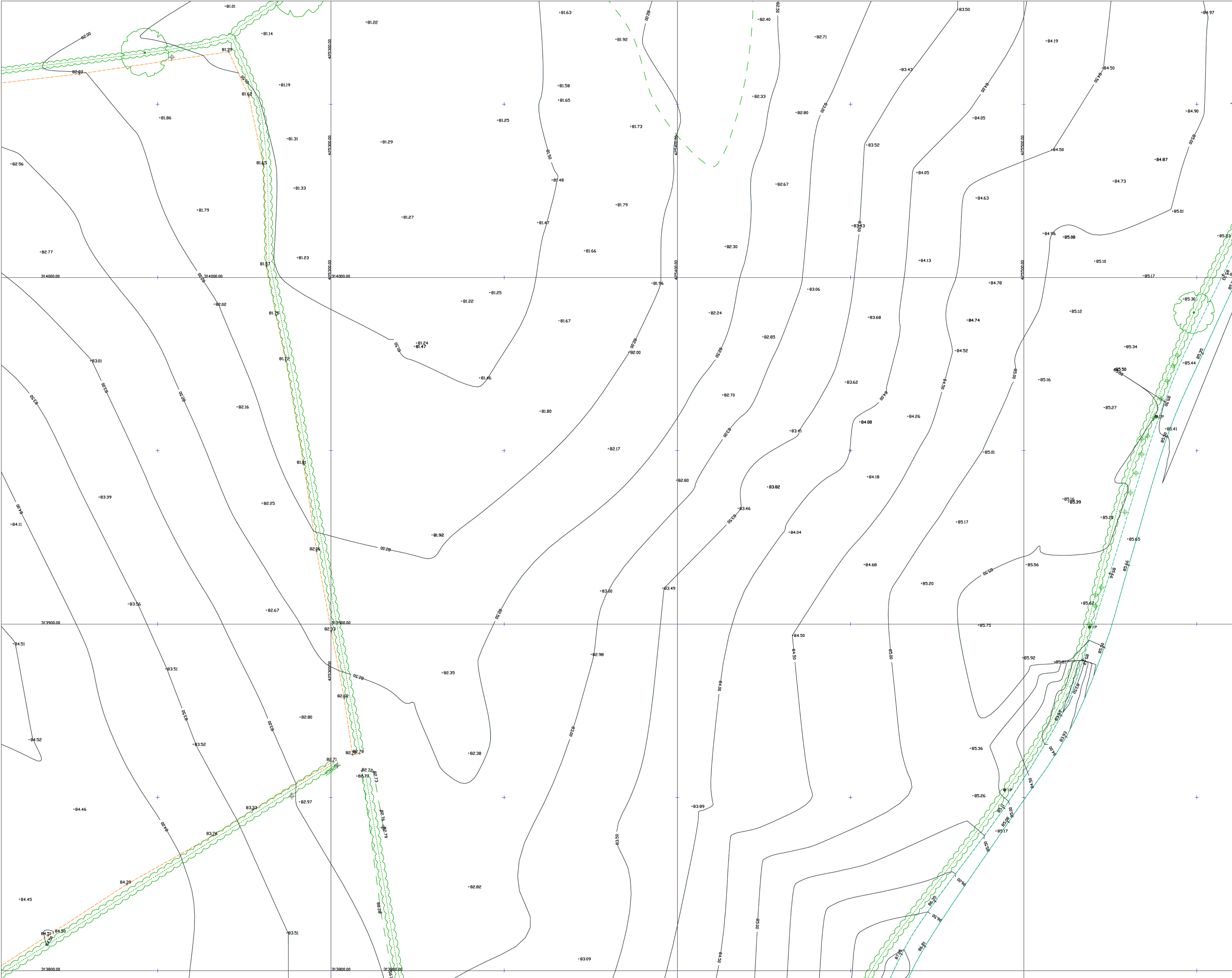
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Date: January 2021
Scale: 1:500
Drawing Number: ALS1001/500/08
Topographical

Client: Lullington Solar Park Limited

Project: Lullington Solar Park

Surveyed By: **ALS**
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SURVEY TO ORDANCE SURVEY
GPS DATUM AND GRID,
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS

FENCE TYPES			
BW	Barbed Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Rolling
CI	Corrugated Iron	FW	Interview
CL	Chainlink	PR	Post & Rail
		PIS	Palisade
		PWW	Post & Wire
LEGEND			
AV	Air Valve	MH	Manhole
BO	Bollard	MK	Marker
BH	Borehole	NP	Street Name Plate
CB	Cable Box	OHI	Overhead
CHRY	Chimney	OSBM	Obstruction Bench
CL	Cover Level	P	Post Or Pillar
CONC	Concrete	PM	Parking Meter
CTV	Cable Television	RE	Rodding Eye
DK	Drop Kerb	RS	Road Sign
DP	Down Pipe	SAP	Sapping
DR	Drain	SC	Ship Cock
ELC	Electricity Pole	SL	Slump Level
ER	Earth Rod	ST	Stop Tap
FB	Power Box	SV	Shut Valve
FH	Fire Hydrant	TAR	Tarmac
FP	Flag Pole	TCB	Telephone Call
GY	Gully	Box	Box
GP	Gate Post	TL	Traffic Lights
GV	Gas Valve	TP	Telegraph Pole
IC	Inspection Cover	TV	Television Box
L	Level	UTL	Unable to lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Letter Box	WM	Water Meter
LP	Lamp Post	WO	Wash Out

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Date: January 2021
Scale:- 1:500
Drawing Number: ALS1001/500/09
Topographical
Client: Lullington Solar Park Limited
Project: Lullington Solar Park

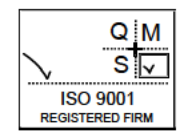
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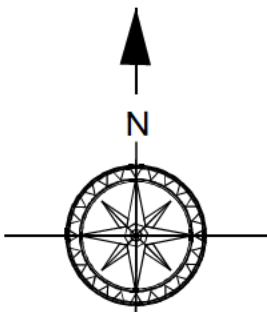
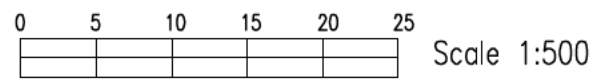


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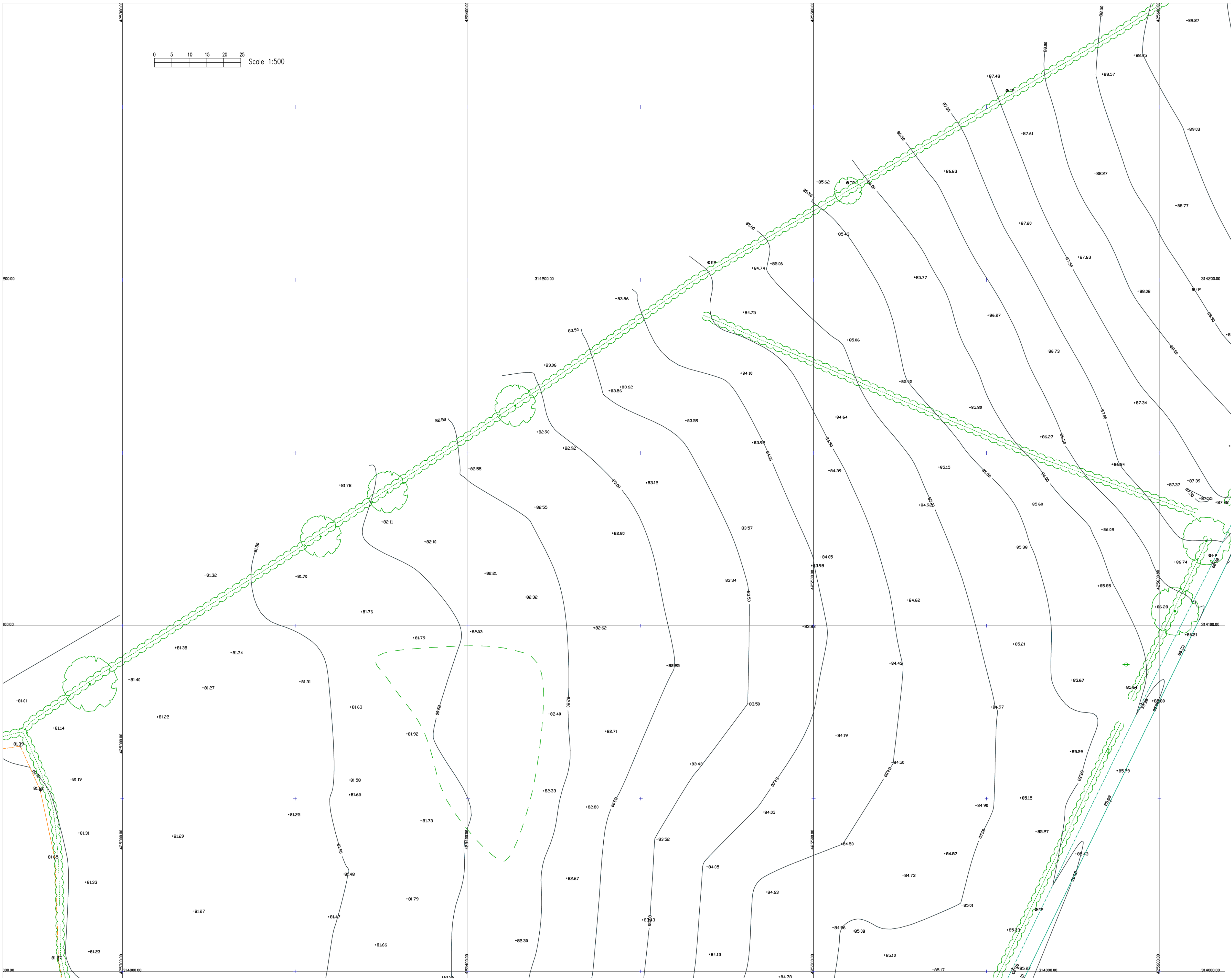
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Website: www.als-surveys.com





Grid North

SURVEY TO ORDNANCE SURVEY
GPS DATUM AND GRID.
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS



FENCE TYPES		Legend	
BW	Barricade Wire	CP	Chestnut Paling
CB	Close Boarded	IR	Iron Rolling
CI	Corrugated Iron	FW	Field Wall
CL	Chainlink	PR	Post & Rail
AV	Air Valve	MC	Manhole
BO	Bollard	MR	Marker
BN	Bonhole	NP	Street Name Plate
CB	Cable Box	OH	Overhead
CH	Chimney	OSBM	Ordinance Bench
CL	Cover Level	Mark	Mark
CONC	Concrete	P	Post Or Pillar
CTV	Cable Television	PM	Parking Meter
DK	Drop Kerb	RE	Rodding Eye
DR	Down Pipe	RS	Road Sign
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FB	Fire Hydrant	ST	Stop Tap
FP	Flag Pole	SV	Shut Valve
GP	Gate Post	TCB	Telephone Call
GV	Gas Valve	TL	Telegraph Pole
IC	Inspection Cover	TV	Television Box
L	Level	UTL	Unable to lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Letter Box	WM	Water Meter
LP	Lamp Post	WO	Wash Out

Drawn by:- PR Surveyed by:- PR/AR

Date: January 2021
Scale:- 1:500
Drawing Number: ALS1001/500/10
Topographical
Client: Lullington Solar Park Limited
Project: Lullington Solar Park

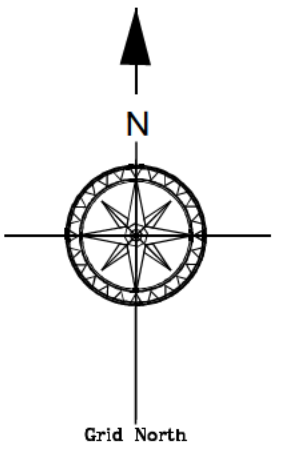
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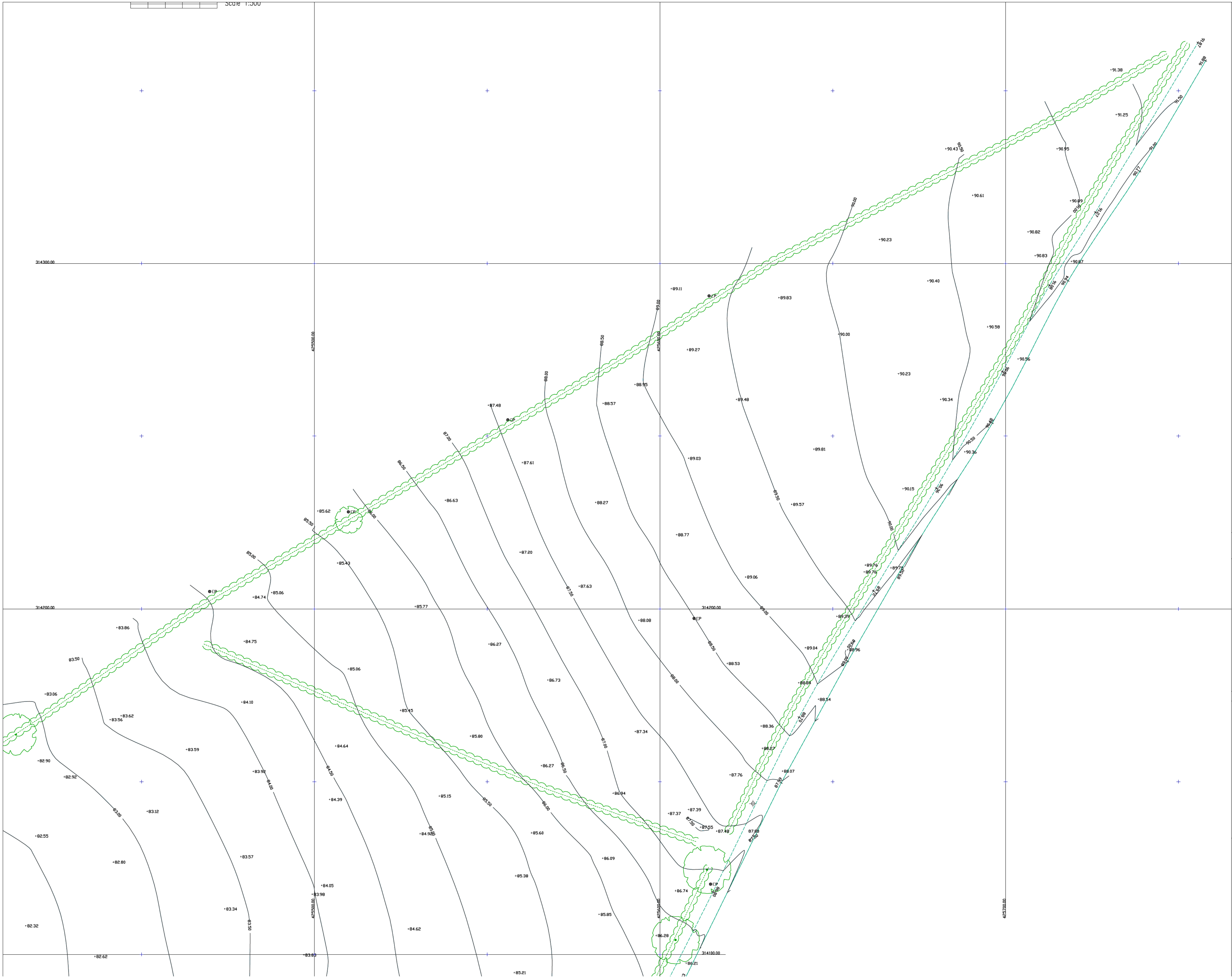
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SURVEY TO ORDNANCE SURVEY
GPS DATUM AND GRID.
OSGB36(02) TRANSLATED FROM
ETRS89 USING OSGM02 AND
OSTN02 MODELS



FENCE TYPES			LEGEND		
BW	Barricade Wire	CP	Chestnut Paling	PIS	Palisade
CB	Close Boarded	IR	Iron Rolling	PW	Post & Wire
CI	Corrugated Iron	FW	Field Wall		
CL	Chainlink	PR	Post & Rail		
AV	Air Valve	MH	Manhole		
BO	Bollard	MK	Marker		
BN	Borehole	NP	Street Name Plate		
CB	Cable Box	OH	Overhead		
CH	Chimney	OSB	Obstruction Bench		
CL	Cover Level	P	Post Or Pillar		
CONC	Concrete	PM	Parking Meter		
CTV	Cable Television	RE	Rodding Eye		
DK	Drop Kerb	RS	Road Sign		
DP	Down Pipe	SAP	Sapping		
DR	Drain	SC	Ship Cock		
ELC	Electricity Pole	SL	Slump Level		
ER	Earth Rod	ST	Stop Tap		
FB	Power Bed	SV	Shut Valve		
FH	Fire Hydrant	TAR	Tarmac		
FP	Flag Pole	TCB	Telephone Call		
GY	Gully	TL	Box		
GP	Gate Post	TV	Telegraph Pole		
GV	Gas Valve	UTL	Utility		
IC	Inspection Cover	VP	Vent Pipe		
L	Level	WL	Water Level		
JB	Junction Box	WM	Water Meter		
KO	Kerb Outlet	WO	Wash Out		
LB	Lamp Post				
LP	Lamp Post				

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Date: January 2021
Scale: 1:500
Drawing Number: ALS1001/500/11
Topographical

Client: Lullington Solar Park Limited

Project: Lullington Solar Park

Surveyed By:-

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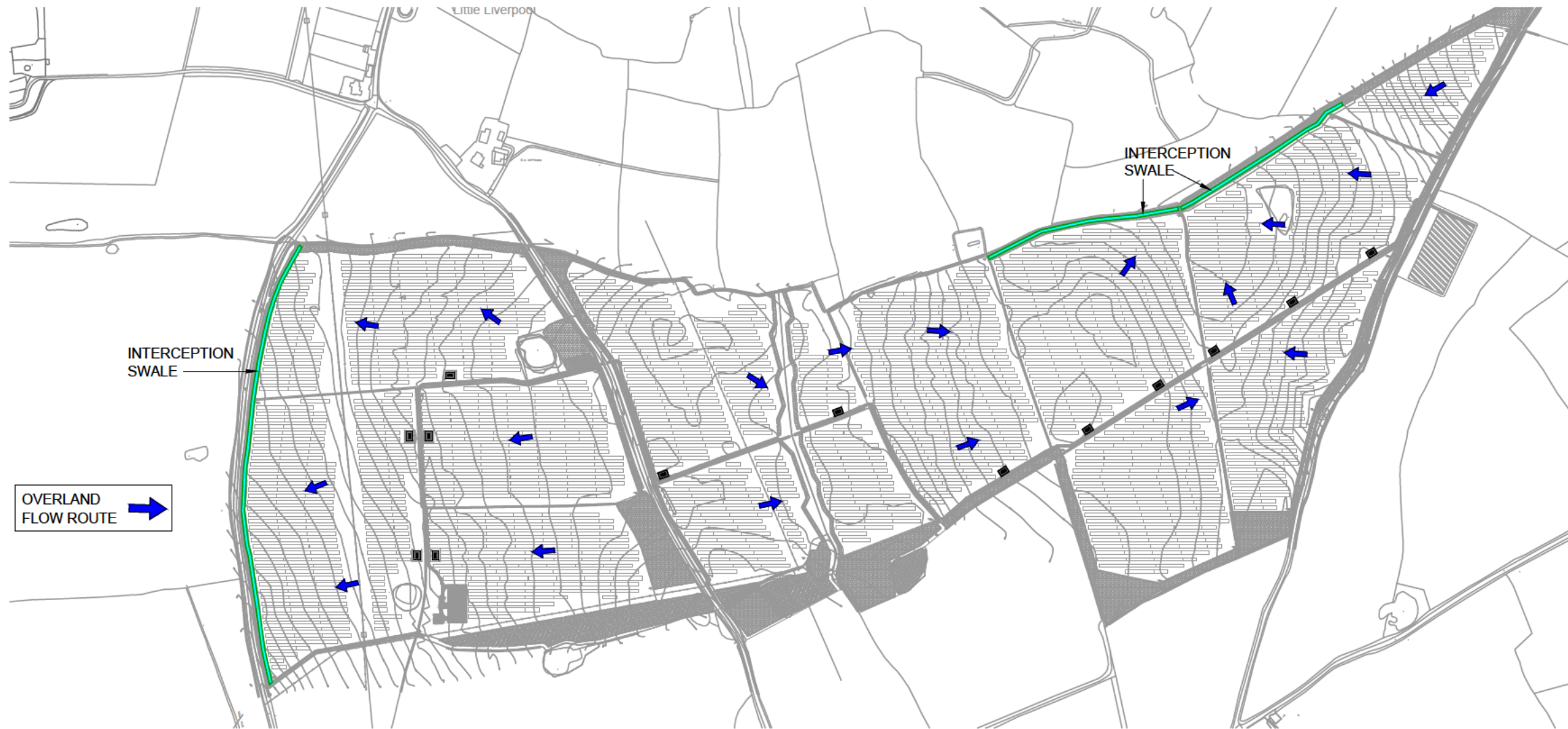
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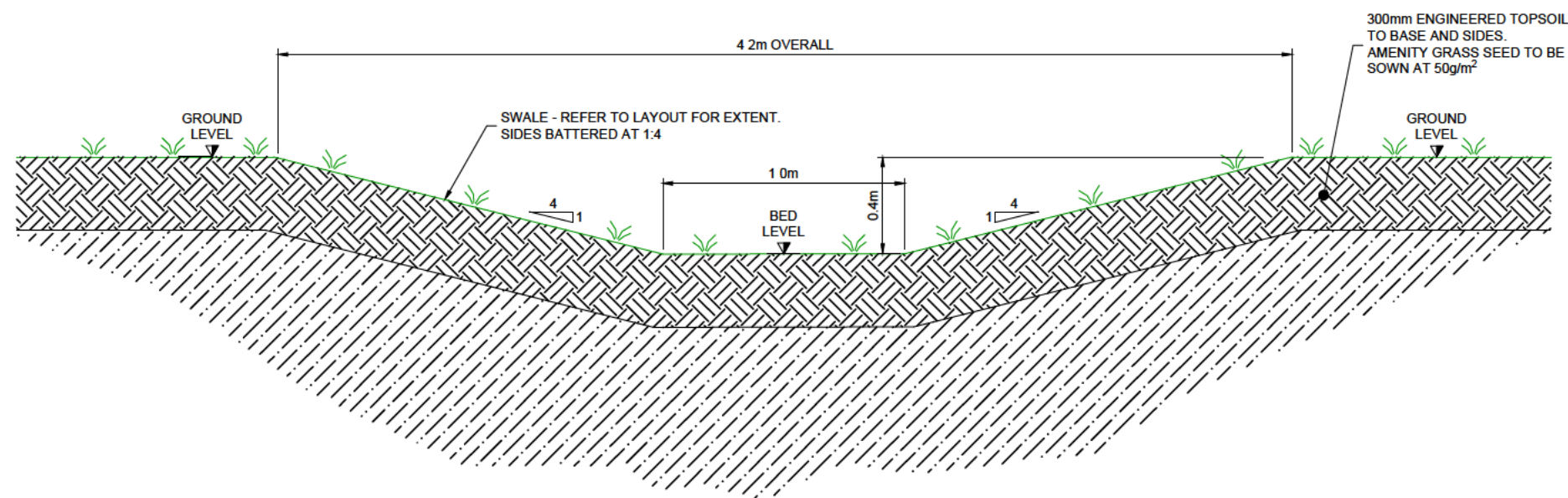
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Appendix D – Interception Swale Details



PLAN OF SWALE LOCATIONS
(NTS)



PROPOSED INTERCEPTION SWALE SECTION
(1:20)

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX
NOTES: THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RISK REGISTER PRODUCED FOR INCLUSION IN THE HEALTH AND SAFETY PLAN. THE HAZARDS NOTED ARE IN ADDITION TO THE NORMAL HAZARDS AND RISKS FACED BY A COMPETENT CONTRACTOR WHEN DEALING WITH THE TYPE OF WORKS DETAILED ON THIS DRAWING.

CONSTRUCTION RISKS:

- DEEP EXCAVATIONS: TRENCH EXCAVATION SIDES CANNOT BE GUARANTEED TO BE STABLE. BATTERS AND/OR SUITABLE SIDE SUPPORT MAY BE REQUIRED
- WORK CLOSE TO LIVE TRAFFIC, APPROPRIATE TRAFFIC MANAGEMENT TO BE IN PLACE
- EXISTING BURIED SERVICES

MAINTENANCE/CLEANING RISKS:

- NO SIGNIFICANT RISKS.

DEMOLITION RISKS:

- NO SIGNIFICANT RISKS.

NOTE:

1. DO NOT SCALE, IF IN DOUBT ASK.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL ENGINEER'S DRAWINGS AND DETAILS, THE SPECIFICATION FOR THE WORKS, THE RELEVANT ARCHITECT'S DRAWINGS AND ANY OTHER SPECIALIST'S DRAWINGS.
3. ANY DISCREPANCIES FOUND ON THIS OR ANY OTHER DRAWINGS ARE TO BE REPORTED TO AND RESOLVED BY ROSSI LONG CONSULTING BEFORE THE COMMENCEMENT OF ANY WORK RELEVANT TO THE DISCREPANCY.
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5. THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ROSSI LONG CONSULTING'S APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ROSSI LONG CONSULTING ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED. ONLY WRITTEN DIMENSIONS SHALL BE USED.

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P2	SITE LAYOUT UPDATED	03.06.21	JLH	PDC
P1	INITIAL ISSUE	17.05.21	JLH	PDC
REV	DESCRIPTION	DATE	BY	AUTH

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ISLAND GREEN POWER UK Ltd.
UNIT 21.2 CODA STUDIOS
189 MUNSTER ROAD, LONDON, SW6 6AW

PROJECT
PROPOSED LULLINGTON PV PLANT, DERBYSHIRE

TITLE
INTERCEPTION SWALE PLAN AND SECTION

DRAWN JLH	AUTHORISED PDC	DATE MAY '21	SCALE AT A3 AS SHOWN
SUITABILITY S2 - INFORMATION			
PROJECT NO. 201053	DRAWING FIELD.	DRAWING NO. C-005	REV P2