Weetwood Services Ltd
info@weetwood.net

Land South of Low Moor Lane, Hessay, York

2nd Flood Risk and Drainage Assessment Addendum

Technical Note

Project ref:	5767 Hessay Solar Farm
Prepared by:	Kevin Tilford BSc (Hons) MSc (Eng) PhD MBA C.WEM FCIWEM CEnv *Managing Director* Tim Brook BSc (Hons) *Technical Director*
Approved by:	Kevin Tilford BSc (Hons) MSc (Eng) PhD MBA C.WEM FCIWEM CEnv *Managing Director*
Date:	4 December 2023
Version:	Final v2.0

Background

1. A planning application for the *"Installation of a solar farm and associated infrastructure, including control station, DNO substation, access tracks, inverters and other auxiliary infrastructure"* was submitted to City of York Council (local planning authority) on 27 March 2023. The application was validated with the planning reference 23/00626/FULM.

2. The planning application was accompanied by a Flood Risk Assessment report ("the submitted FRA report") prepared by Weetwood and issued in March 2023 (Document ref: 5767/FRA/Final/v1.1/2023-03-21).

3. The Environment Agency stated in its consultation letter dated 21 April 2023 that it did not object to the proposals provided that the development was built in accordance with the submitted FRA report.

4. Ainsty (2008) Internal Drainage Board (a member of the York Consortium of Drainage Boards) responded to the proposals by way of a consultation response letter dated 13 April 2023. In its letter the Board made a number observations which culminated in the submission of additional information in a Flood Risk and Drainage Assessment Addendum (version 1.0; Issued on 24 October 2023; Doc. ref: 5767/TN/Final/v1.0/2023-10-24), and the submission of revised Landscaping Plan, and revised Site Plan, agreed by "the Board" by way of emails dated 30 and 23 November 2023 respectively.

5. A consultation response submitted by the City of York Council (the Lead Local Flood Authority) by way of an email dated 14 September 2023 provided guidance regarding surface water drainage. Additional information responding to the matters raised in the consultation response was presented in the 1st Flood Risk and Drainage Assessment Addendum issued on 24 October 2023.

6. The Lead Local Flood Authority responded to the 1st Flood Risk and Drainage Assessment Addendum by way of an email dated 30 October 2023. In the email, the Lead Local Flood Authority stated the specification and cross-sectional details for access roads, inverters and compounds needed to be submitted, and that the (drainage) plans needed to be amended to show existing and proposed ground levels, access road levels, and cover/invert levels of drainage features.

7. Drawings of the Inverter Station (elevations) and of the internal access roads (cross-sections showing build-up and confirming that that access roads would be "flush" with adjacent ground were submitted in October 2023. Ainsty (2008) Internal Drainage Board confirmed by way of an email dated 30 October 2023 that these drawings were acceptable from a Board perspective. It is presumed that the information has also been accepted by the Lead Local Flood Authority.

8. This document (Flood Risk and Drainage Assessment – 2nd Addendum) presents the additional outstanding information requested by the Lead Local Flood Authority, namely a revised surface water drainage scheme with associated levels (to m AOD).

Revised Surface Water Drainage Scheme

9. The surface water drainage scheme presented with the Flood Risk And Drainage Addendum (v1.0) has been revised as summarised below:

- Central compound for Customer Station, DNO Substation and Spares Container: Constructed of permeable Type 3 aggregate to a depth of 300 mm, laid level with adjacent ground. The sub-base for the compound area would be 529 sq m, and the sub-base and would provide up to 47.6 cu m of attenuation storage. The pass forward outflow would be restricted to a maximum rate of 1.0 l/s by an flow control device (e.g. Hydro-Brake® Optimum flow outlet device, model MD-SHE-0050-1000-0750-1000 or equivalent). The headwall for the outfall to the watercourse would be designed in accordance with Ainsty (2008) Internal Drainage Board requirements at detailed design stage and full details will be provided for prior written consent.

10. The internal access tracks will be flush' with adjacent ground, i.e. not raised. As such, there will be no change to ground levels, and no additional information is therefore provided on level.

11. The design calculations and revised drainage scheme layout are provided in **Annex 1** and **Annex 2** to this document respectively.

12. For reference, the following drawings, all approved by the Ainsty (2008) Internal Drainage Board are presented as appendices to this document:

    - Revised Site Layout - **Appendix 1**
    - Revised Landscaping Plan - **Appendix 2**
    - Inverter Station Elevations - **Appendix 3**
    - Internal Access Track Cross-Section and Build-up - **Appendix 4**

Summary and Conclusion

13. This document responds to the matters raised by the Lead Local Flood Authority (City of York Council) to the 1st Flood Risk and Drainage Assessment Addendum by way of an email dated 30 October 2023.

14. By way of a response, this document (2nd Flood Risk and Drainage Assessment Addendum) presents the following information:

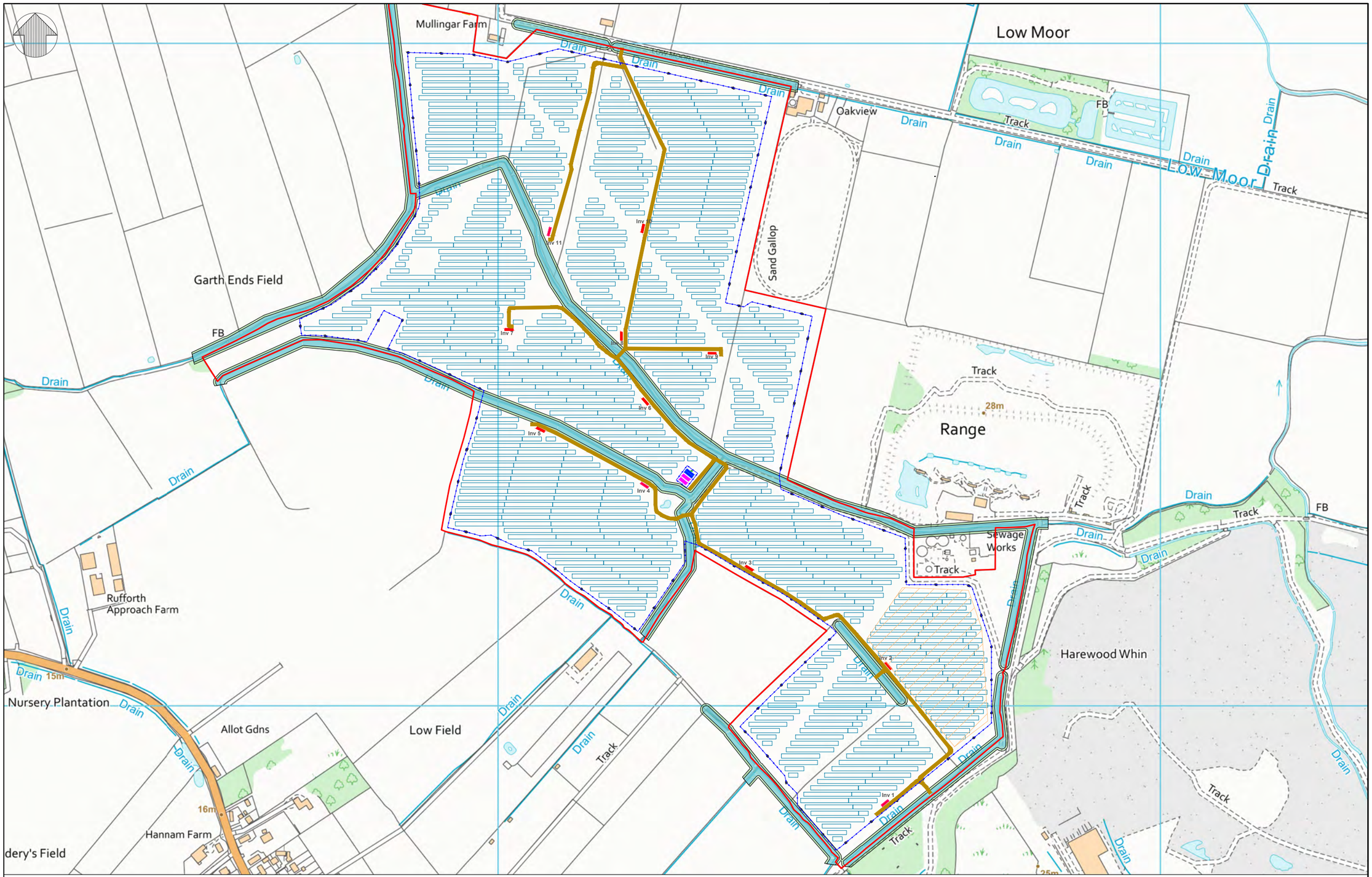
    - Surface water drainage scheme: The proposed drainage layout at the scheme compound has been revised to provide ground levels, and cover/invert levels of the surface water drainage pipes and drain outfall.

    - Revised drawings/plans for the Site Layout, Landscaping Plan, Inverter Stations, and Access Trach Cross-Sections (all approved by the Ainsty 2008 Internal Drainage Board).

This document has been prepared solely as a Technical Note for Atmos Consulting. This report is confidential to Atmos Consulting and Weetwood Services Ltd accepts no responsibility or liability for any use that is made of this document other than by Axis PED for the purposes for which it was originally intended.

Appendix 1

Proposed Site Layout (Revised)



Key:

Solar Panel	Spare Container	Meteo Mast	Fence	Watercourse Easement - 6m either side of bank top
Road	Inverter/TX	Gate	Temporary Constrcution Compound	Watercourse Easement - 9m either side of bank top
Customer Station	DNO Substation	Site Boundary	CCTV	

REV			2023-11-10
DRAWING TITLE: Proposed Site Layout	DRAWING NUMBER:	DWG DRAWING NAME:	
solar2	PROJECT NAME AND ADDRESS: Hessay Solar Farm United Kingdom	APPROVAL STAMP:	SCALE: 1:5700
	CUSTOMER:	STATUS: Planning	FORMAT: A3
			SHEET: 1/1

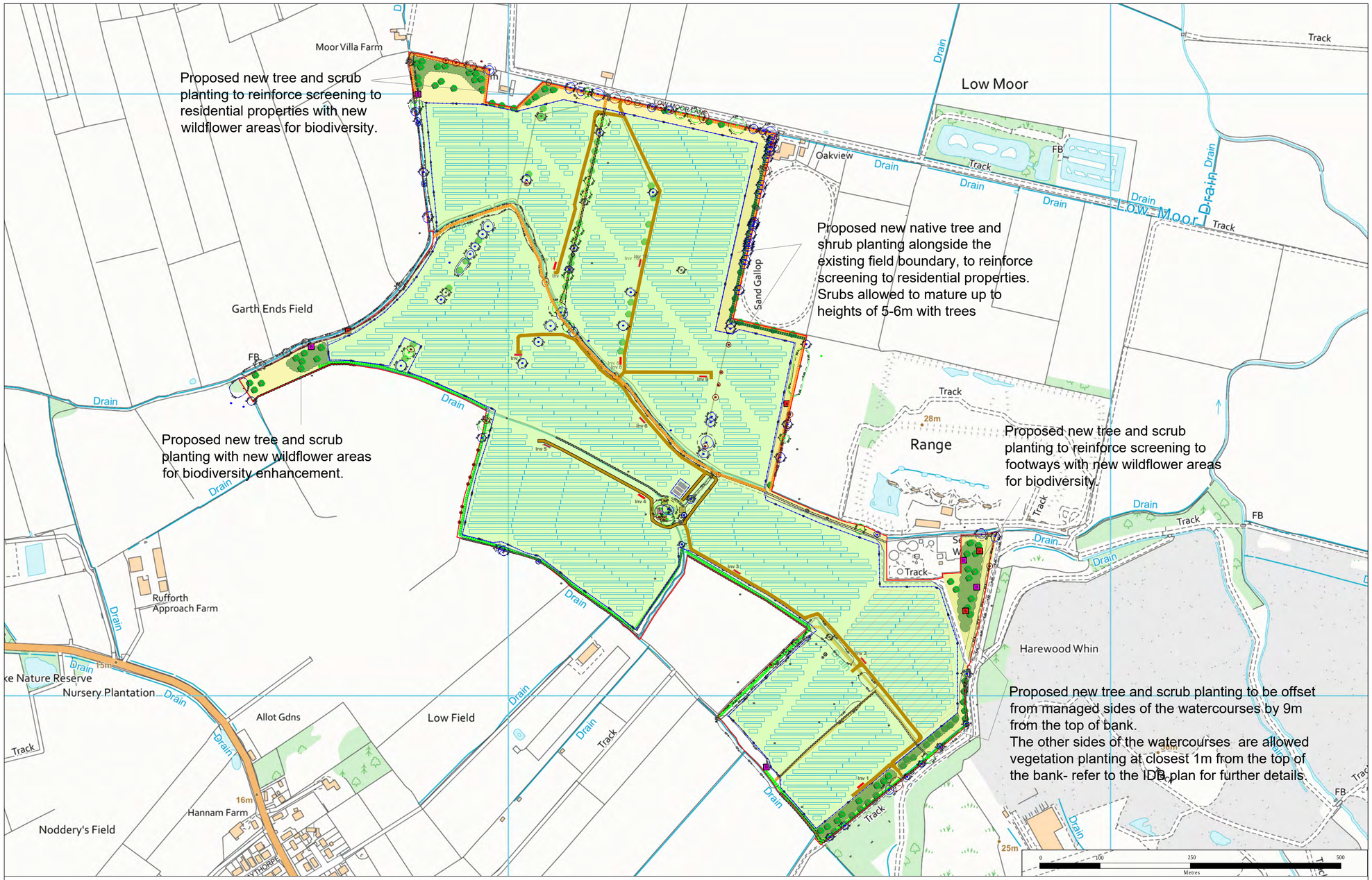
Appendix 2

Landscape Plan (Revised)

Hessay Solar Farm

Hessay Solar Limited

Figure 10
Landscape and Ecological Management Plan



Key

Landscaping Measures

- Existing Trees and Tree groups with RPA*
- Proposed Trees / Hedgerow Trees
- Hedgerows gapped up / infilled - up to 6m
- Hedgerows gapped up / infilled - up to 3m
- Proposed Native Species Hedgerow
- Proposed Native Scrub Planting
- Proposed Species Rich Grassland Mix
- Proposed Wildflower Mix
- Existing Pond

* Refer to the Arboricultural Assesment for further details

Ecological Measures

- h Herptile Hibernacula (2 no.)
- B Bird Boxes (6 no.)
- b Bat Boxes (6 no.)

Note: the specification and location of the bat and bird boxes would be agreed with an ecologist and their installation supervised on site

atmos CONSULTING

Rev	Description	Date
A	LA requests for setback/screening & trees	Oct 23

N

Scale @ A2: 1: 5000

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09/10/2023 | 58761/LEMP

Drawn by: AJ | Checked by: RN | Approved by: RN

Outline Landscape Specifications:

Existing Vegetation:

Any necessary works being undertaken within close proximity and to the retained tree lined hedgerows should be carried out in accordance with *BS 3998:2010 Tree work Recommendations, BS 5837:2012 Trees in Relation to Design Demolition and Construction* and *NJUG 4 Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* and in consultation with an arborist. This includes selective thinning of shading vegetation to the pond area for Ecology enhancements.

Proposed Planting:

Planting to be supplied in accordance with *BS 3936-1:1992 Nursery Stock. specification for trees and shrubs, BS 3936-4:2007 Nursery Stock.Specification for forest trees, poplars and willows, BS 8545:2014 Trees:from nursery to independence in the landscape.* All landscaping works to be in accordance with *BS4428:1989 "General Landscaping Works."* All planting should be source from local provenance certified seed stock where possible with other sources needing to be approved.

Tree and Scrub Planting:

Trees and shrubs will be planted into tree pits 2-3 times the width of root spread and to the depth of root spread. The tree pit's sides are to be loosened, base aerated and later backfilled with the existing excavated subsoil and topsoil. All trees to be supported with a suitable tree guard and staked with adjustable tree ties. All shrubs to be staked and protected with rabbit guards.

Hedgerow Infill Planting:

The hedgerow infill areas will be planted as double staggered rows at 6 per metre, with a spacing of 300-600mm between rows. Hedging planted into a trench measuring a min of 600mm wide and 300mm deep, allowing enough width and depth for the roots. Short lengths of individual whip infilling may be undertaken by slit planting. The existing soil should be improved by digging in well rotten Farm Yard Manure or other soil improver. All hedging will be supported with rabbit guards and canes and 1m wide mulch matting.

Temporary stock proof fencing of 1.2m high should be used to prevent grazing of new hedgerows by livestock if necessary. Any planting being carried out within the ecological constraints buffer area around the pond to be hand dug and supervised by an Ecologist.

Grassland & Wildflower Planting:

The disturbed areas of grassland will be sown with a low growing species rich mix of grasses, which will be lightly grazed by sheep or maintained by cutting. The exact grassland seed mixes will be agreed with an Ecologist. The areas of wildflower mix will be separated from this grassland by a stock-proof fencing to prevent any possible grazing by animals.

Timing & Aftercare:

Planting of the hedgerow mix to take place during the months of November to March, preferably before January and at a time when the soil is not frozen or waterlogged. The new plants will be watered in at the time of planting and regularly during their first year. All tree and hedgerow species will have a minimum 1m wide radius free of any weeds until 3 years after planting, when they are well established. Weeding will be done using a mulch mat and either by hand or mechanical control as required in order to prevent competition for nutrients from perennial weeds and grasses.

The planting supports and guards will be inspected regularly to ensure they are not impeding the plant's growth and will be adjusted or replaced as required. These will be removed when the planting is established within the initial 3 years.

Pruning will be required in the second year to encourage bushy growth by removing half of the previous year's growth. The plants will be shaped in the third year by trimming both lateral and lead branches. The hedging will be cut on a rotational basis using mechanical methods approximately every 2-3 years and shaped to an 'A' shape. All hedge cutting will be undertaken outside of the nesting bird period (beginning of March to end of August).

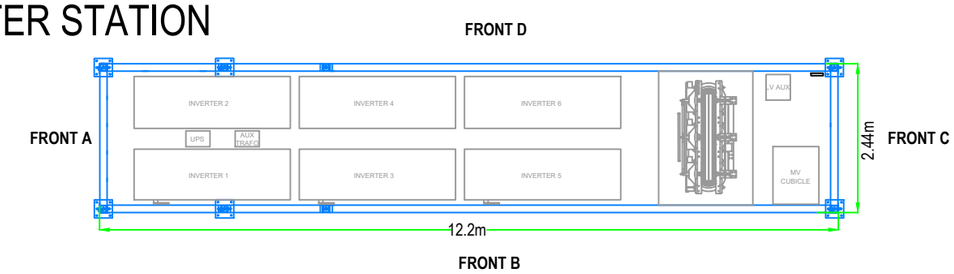
The grassland will be managed by light grazing or cutting several times in the first year to reduce competition from annual weeds and allow the grass to become established. Weeds may also need treating through spot treatment with an appropriate approved herbicide. In the second year and onwards the grassland can be maintained by a light grazing regime through the year or by cutting. Areas of wildflower mix will similarly need controlling of any initial flushes of perennial weeds and persistent weeds. The wildflower mix will be maintained by an annual cut after they have flowered, with the cut growth allowed to sit to release any seeds prior to the cuttings being removed off site. (cuttings will be left in situ for no more than 1 week for the seeds to fall before being collected)

Any loss of planting which occurs within 5 years of the initial planting as a result of plant failure will be replaced with the same plant species.

Appendix 3

Inverter Station Elevations

INVERTER STATION



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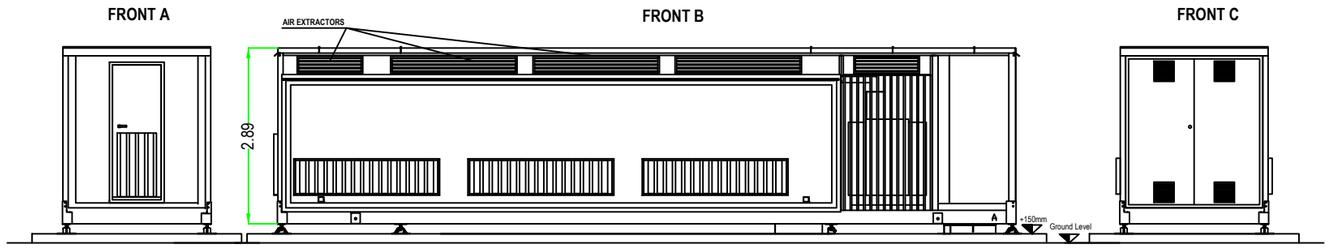
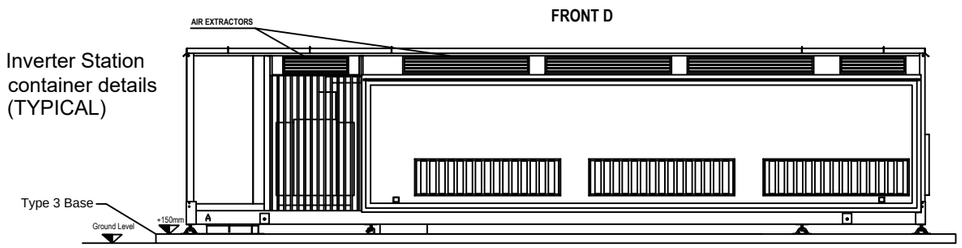




Inverter Station container details (TYPICAL)

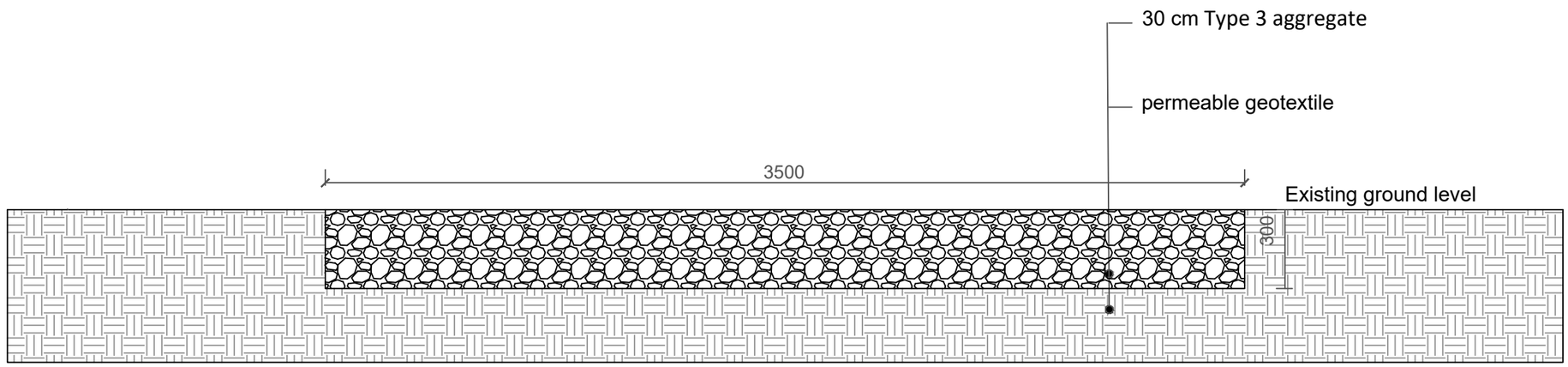
Light Gray/ Dark Green metal

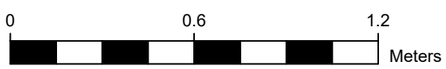
Drawn / MM			2023-02-09
DRAWING TITLE: Inverter Station Elevations	DRAWING NUMBER: 105-004A-230213	DWG DRAWING NAME:	
solar2	PROJECT NAME AND ADDRESS: Hessay solar farm United Kingdom	APPROVAL STAMP:	SCALE: 1:100 / FORMAT: A3
	CUSTOMER:	STATUS: Preliminary	SHEET: 1/1

Appendix 4

Internal Access Road Cross-Section

Stratigraphy of internal roads
Flat ground





DRAWN / SIGN			2023-10-26
DRAWING TITLE: Road Cross Section	DRAWING NUMBER: 170-002A-230913	DWG DRAWING NAME:	
solar2	PROJECT NAME AND ADDRESS: Hessay Solar farm United Kingdom	APPROVAL STAMP:	SCALE: 1:20
	CUSTOMER:	STATUS: Planning	PAPER: A3 / SHEET: 1/1

Annex 1

Revised Drainage Scheme Attenuation Storage Calculations (Micro Drainage)

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 160 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	13.855	0.055	0.0	1.0	1.0	8.7	Flood Risk
30 min Summer	13.875	0.075	0.0	1.0	1.0	11.9	Flood Risk
60 min Summer	13.892	0.092	0.0	1.0	1.0	14.5	Flood Risk
120 min Summer	13.901	0.101	0.0	1.0	1.0	16.0	Flood Risk
180 min Summer	13.901	0.101	0.0	1.0	1.0	15.9	Flood Risk
240 min Summer	13.898	0.098	0.0	1.0	1.0	15.4	Flood Risk
360 min Summer	13.890	0.090	0.0	1.0	1.0	14.2	Flood Risk
480 min Summer	13.883	0.083	0.0	1.0	1.0	13.1	Flood Risk
600 min Summer	13.876	0.076	0.0	1.0	1.0	12.0	Flood Risk
720 min Summer	13.869	0.069	0.0	1.0	1.0	10.9	Flood Risk
960 min Summer	13.856	0.056	0.0	1.0	1.0	8.9	Flood Risk
1440 min Summer	13.835	0.035	0.0	1.0	1.0	5.4	Flood Risk
2160 min Summer	13.813	0.013	0.0	1.0	1.0	2.0	Flood Risk
2880 min Summer	13.802	0.002	0.0	1.0	1.0	0.3	Flood Risk
4320 min Summer	13.800	0.000	0.0	0.8	0.8	0.0	Flood Risk
5760 min Summer	13.800	0.000	0.0	0.6	0.6	0.0	Flood Risk
7200 min Summer	13.800	0.000	0.0	0.5	0.5	0.0	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	121.269	0.0	9.4	18
30 min Summer	79.695	0.0	13.1	33
60 min Summer	49.937	0.0	17.0	62
120 min Summer	30.267	0.0	21.2	120
180 min Summer	22.297	0.0	23.7	152
240 min Summer	17.851	0.0	25.4	182
360 min Summer	12.957	0.0	27.8	248
480 min Summer	10.330	0.0	29.6	316
600 min Summer	8.659	0.0	31.0	384
720 min Summer	7.492	0.0	32.2	450
960 min Summer	5.959	0.0	34.1	580
1440 min Summer	4.309	0.0	36.8	824
2160 min Summer	3.110	0.0	39.5	1168
2880 min Summer	2.466	0.0	41.3	1472
4320 min Summer	1.775	0.0	43.5	0
5760 min Summer	1.405	0.0	44.7	0
7200 min Summer	1.171	0.0	45.3	0

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Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
8640 min Summer	13.800	0.000	0.0	0.4	0.4	0.0	Flood Risk
10080 min Summer	13.800	0.000	0.0	0.4	0.4	0.0	Flood Risk
15 min Winter	13.864	0.064	0.0	1.0	1.0	10.1	Flood Risk
30 min Winter	13.887	0.087	0.0	1.0	1.0	13.7	Flood Risk
60 min Winter	13.906	0.106	0.0	1.0	1.0	16.8	Flood Risk
120 min Winter	13.919	0.119	0.0	1.0	1.0	18.8	Flood Risk
180 min Winter	13.919	0.119	0.0	1.0	1.0	18.8	Flood Risk
240 min Winter	13.915	0.115	0.0	1.0	1.0	18.1	Flood Risk
360 min Winter	13.905	0.105	0.0	1.0	1.0	16.5	Flood Risk
480 min Winter	13.894	0.094	0.0	1.0	1.0	14.9	Flood Risk
600 min Winter	13.884	0.084	0.0	1.0	1.0	13.2	Flood Risk
720 min Winter	13.873	0.073	0.0	1.0	1.0	11.5	Flood Risk
960 min Winter	13.854	0.054	0.0	1.0	1.0	8.5	Flood Risk
1440 min Winter	13.822	0.022	0.0	1.0	1.0	3.5	Flood Risk
2160 min Winter	13.800	0.000	0.0	1.0	1.0	0.0	Flood Risk
2880 min Winter	13.800	0.000	0.0	0.8	0.8	0.0	Flood Risk
4320 min Winter	13.800	0.000	0.0	0.5	0.5	0.0	Flood Risk
5760 min Winter	13.800	0.000	0.0	0.4	0.4	0.0	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Summer	1.008	0.0	45.6	0
10080 min Summer	0.889	0.0	45.7	0
15 min Winter	121.269	0.0	10.8	18
30 min Winter	79.695	0.0	15.0	32
60 min Winter	49.937	0.0	19.5	60
120 min Winter	30.267	0.0	24.1	118
180 min Winter	22.297	0.0	26.8	170
240 min Winter	17.851	0.0	28.8	194
360 min Winter	12.957	0.0	31.5	270
480 min Winter	10.330	0.0	33.6	346
600 min Winter	8.659	0.0	35.2	418
720 min Winter	7.492	0.0	36.6	488
960 min Winter	5.959	0.0	38.7	624
1440 min Winter	4.309	0.0	41.8	864
2160 min Winter	3.110	0.0	44.9	0
2880 min Winter	2.466	0.0	46.9	0
4320 min Winter	1.775	0.0	49.6	0
5760 min Winter	1.405	0.0	51.2	0

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Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
7200 min Winter	13.800	0.000	0.0	0.3	0.3	0.0	Flood Risk
8640 min Winter	13.800	0.000	0.0	0.3	0.3	0.0	Flood Risk
10080 min Winter	13.800	0.000	0.0	0.3	0.3	0.0	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
7200 min Winter	1.171	0.0	52.2	0
8640 min Winter	1.008	0.0	52.7	0
10080 min Winter	0.889	0.0	53.0	0

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.053

Time (mins) From:	To:	Area (ha)
0	4	0.053

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Model Details

Storage is Online Cover Level (m) 14.100

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	19.1
Membrane Percolation (mm/hr)	1000	Length (m)	27.5
Max Percolation (l/s)	145.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	13.800	Cap Volume Depth (m)	0.300

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0050-1000-0750-1000
Design Head (m)	0.750
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	50
Invert Level (m)	13.100
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.750	1.0	Kick-Flo®	0.445	0.8
Flush-Flo™	0.222	1.0	Mean Flow over Head Range	-	0.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.9	1.200	1.2	3.000	1.9	7.000	2.8
0.200	1.0	1.400	1.3	3.500	2.0	7.500	2.9
0.300	0.9	1.600	1.4	4.000	2.1	8.000	2.9
0.400	0.9	1.800	1.5	4.500	2.3	8.500	3.0
0.500	0.8	2.000	1.6	5.000	2.4	9.000	3.1
0.600	0.9	2.200	1.6	5.500	2.5	9.500	3.2
0.800	1.0	2.400	1.7	6.000	2.6		
1.000	1.1	2.600	1.7	6.500	2.7		

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Annex 2

Proposed Drainage Layout (Revised)

N

KEY

- SITE BOUNDARY
- PROPOSED HARDSTANDING (TYPE 3 AGGREGATE - REDUCED FINES)
- EXISTING WATERCOURSE

Inv 11

Inv 10

DRAINAGE AREAS PLAN
(1:6250)

NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
2. THE PROPOSED SITE LAYOUT IS TAKEN FROM SOLAR2 'PROPOSED SITE LAYOUT' (NOV 2023).

NO FORMAL OUTFALL
REQUIRED FOR ACCESS ROADS
OR INVERTER STATIONS

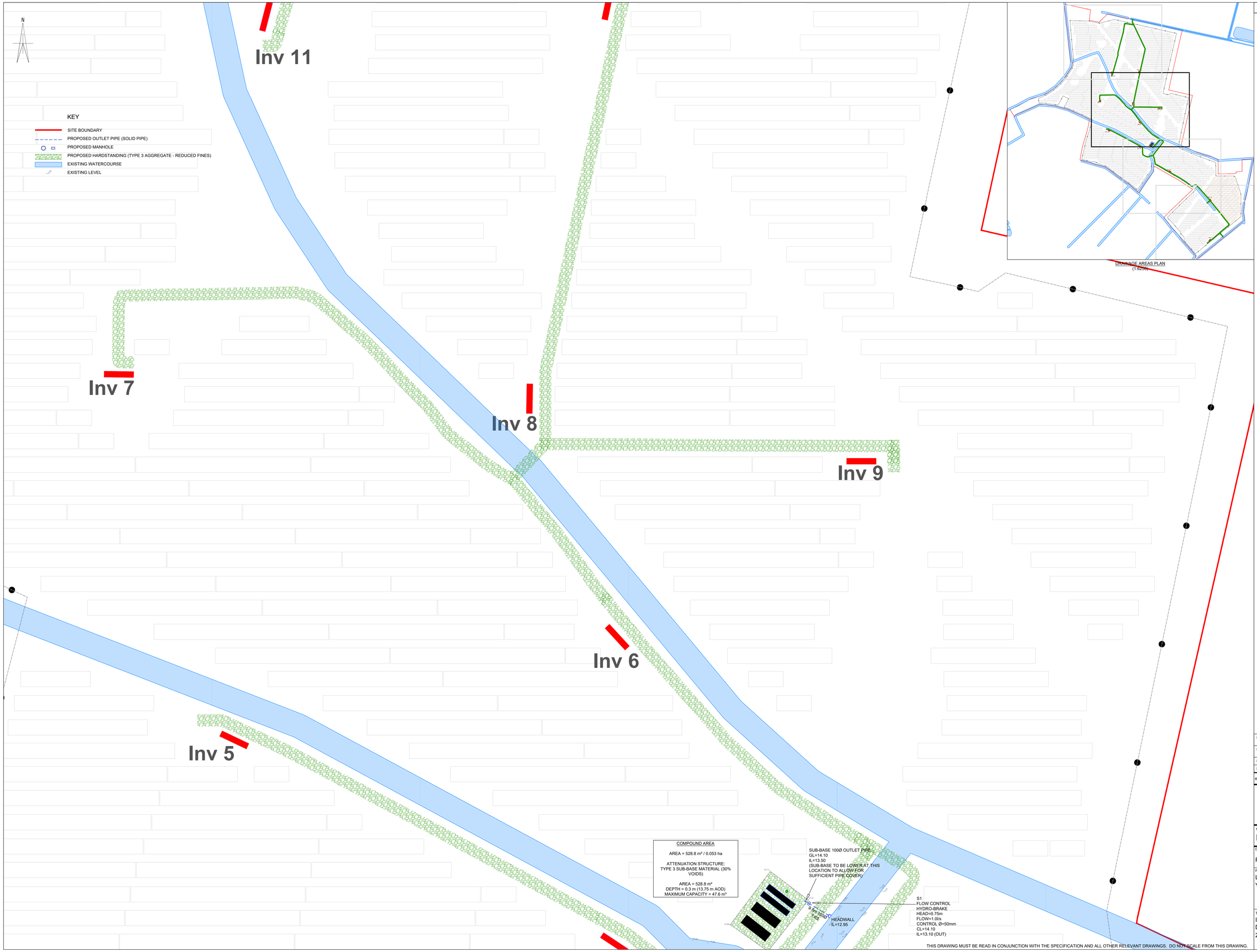
REV	DATE	DESCRIPTION	DRAWN	CHECK
P4	04.12.23	DRAINAGE LAYOUT AMENDED TO SUIT REVISED SITE PLAN	TB	KT
P3	24.10.23	DRAINAGE AMENDED TO SUIT LLFA COMMENTS	TB	KT
P2	21.03.23	SOLAR PANELS OMITTED	TB	KT
P1	24.02.23	INITIAL ISSUE	TB	KT

Weetwood
Development • Planning • Environment
Park House, Ffordd
Bynwr Gwair, Mold
CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
HESSAY SOLAR LIMITED

Drawing Status: PRELIMINARY	Date: FEB 2023
	Scale (A0): 1:500
Project: LAND AT HESSAY YORK	Drawn: TB
	Checked: KT
	Project No: 5767
Title: INDICATIVE SURFACE WATER DRAINAGE LAYOUT 1 OF 4	Drawing No: 101
	Revision: P4

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. DO NOT SCALE FROM THIS DRAWING.



NOTES

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
2. THE PROPOSED SITE LAYOUT IS TAKEN FROM SOLAR2 'PROPOSED SITE LAYOUT' (NOV 2023).
3. TOPOGRAPHICAL SURVEY INFORMATION TAKEN FROM FIRST POINT SURVEYS 'TOPOGRAPHICAL SURVEY' DRAWING (REF: 7124, MAR 2023).

NO FORMAL OUTFALL
REQUIRED FOR ACCESS ROADS
OR INVERTER STATIONS

REV	DATE	DESCRIPTION	DRAWN	CHECK
P4	04.12.23	DRAINAGE LAYOUT AMENDED TO SUIT REVISED SITE PLAN	TB	KT
P3	24.10.23	DRAINAGE AMENDED TO SUIT LLFA COMMENTS	TB	KT
P2	21.03.23	SOLAR PANELS OMITTED	TB	KT
P1	24.02.23	INITIAL ISSUE	TB	KT

Weetwood
Development • Planning • Environment
Park House, Ffordd
Bymwr Gwair, Mold
CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
HESSAY SOLAR LIMITED

Drawing Status
PRELIMINARY

Date
FEB 2023

Scale (A0)
1:500

Project
LAND AT HESSAY
YORK

Drawn
TB

Checked
KT

Project No
5767

Title
INDICATIVE SURFACE WATER
DRAINAGE LAYOUT
2 OF 4

Drawing No
102

Revision
P4

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COMPOUND AREA

AREA = 528.8 m² / 0.053 ha

ATTENUATION STRUCTURE:
TYPE 3 SUB-BASE MATERIAL (30% VOIDS)

AREA = 528.8 m²
DEPTH = 0.3 m (13.75 m AOD)
MAXIMUM CAPACITY = 47.6 m³

SUB-BASE 100Ø OUTLET PIPE
GL=14.10
IL=13.50
(SUB-BASE TO BE LOWER AT THIS LOCATION TO ALLOW FOR SUFFICIENT PIPE COVER)

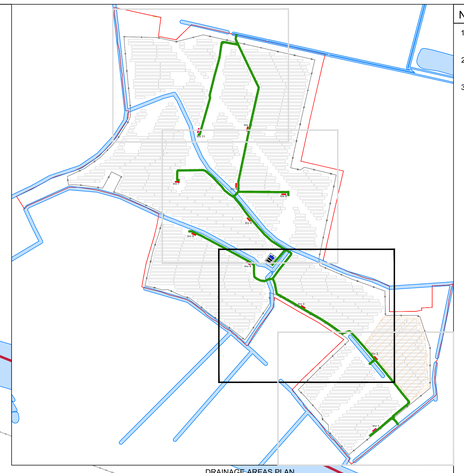
S1
FLOW CONTROL
HYDRO-BRAKE
HEAD=0.75m
FLOW=1.0l/s
CONTROL Ø=50mm
CL=14.10
IL=13.10 (OUT)

HEADWALL
IL=12.95

Inv 4

Inv 3

Inv 2



DRAINAGE AREAS PLAN
(1:6250)

KEY

- SITE BOUNDARY
- PROPOSED OUTLET PIPE (SOLID PIPE)
- PROPOSED MANHOLE
- PROPOSED HARDSTANDING (TYPE 3 AGGREGATE - REDUCED FINES)
- EXISTING WATERCOURSE
- EXISTING LEVEL

NOTES

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Weetwood
Development • Planning • Environment
Park House, Ffordd Bynwr Gwair, Mold
CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
HESSAY SOLAR LIMITED

Drawing Status
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Project
LAND AT HESSAY
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Title
INDICATIVE SURFACE WATER DRAINAGE LAYOUT
3 OF 4

Date	FEB 2023
Scale (A0)	1:500
Drawn	TB
Checked	KT
Project No	5767
Drawing No	103
Revision	P4

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N

Inv 2

Inv 1

SITE PLAN
(1:6250)

KEY

SITE BOUNDARY
PROPOSED HARDSTANDING (TYPE 3 AGGREGATE - REDUCED FINES)
EXISTING WATERCOURSE

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NOTES

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REV	DATE	DESCRIPTION	DRAWN	CHECK
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Weetwood
Development • Planning • Environment
Park House, Ffordd Bynwr Gwair, Mold CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
HESSAY SOLAR LIMITED

Drawing Status
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Project
LAND AT HESSAY
YORK

Title
INDICATIVE SURFACE WATER DRAINAGE LAYOUT
4 OF 4

Date: FEB 2023
Scale (A0): 1:500
Drawn: TB
Checked: KT
Project No: 5767
Drawing No: 104
Revision: P4

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