

PRIORY FARM SOLAR ARRAY, GREAT WYMONDLEY

**SURFACE WATER DRAINAGE AND OVERLAND FLOW
MANAGEMENT PLAN AND POLLUTION PREVENTION PLAN**

Final Report v1.4
May 2025

Report Title **Priory Farm Solar Array, Great Wymondley**
Surface Water Drainage and Overland Flow Management Plan and Pollution Prevention Plan
Final Report v1.4

Client AGR Solar 4 Limited

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List of Abbreviations

AEP	Annual Exceedance Probability	FWMA	Flood and Water Management Act
AOD	Above Ordnance Datum	FWS	Flood Warning System
ASGWF	Areas Susceptible to Groundwater Flooding	GSPZ	Groundwater Source Protection Zone
bgl	Below Ground Level	ha	Hectare
BGS	British Geological Survey	IDB	Internal Drainage Board
BRE	Building Research Establishment	km	Kilometres
BSI	British Standards Institute	LFRMS	Local Flood Risk Management Strategy
CC	Climate Change	LiDAR	Light Detection and Ranging
CCMA	Coastal Change Management Area	LLFA	Lead Local Flood Authority
CDA	Critical Drainage Area	LPA	Local Planning Authority
CFMP	Catchment Flood Management Plan	m	Metres
CEMP	Construction Environmental Management Plan	NFM	Natural Flood Management
CIRIA	Construction Industry Research and Information Association	NGR	National Grid Reference
CRT	Canal and River Trust	NPPF	National Planning Policy Framework
DEFRA	Department for Environment, Food and Rural Affairs	NVZ	Nitrate Vulnerable Zone
EA	Environment Agency	OS	Ordnance Survey
FCERM	Flood and Coastal Erosion Risk Management	PFRA	Preliminary Flood Risk Assessment
FFL	Finished Floor Level	PPG	Planning Practice Guidance
FMP	Flood Management Plan	PPP	Pollution Prevention Plan
FRA	Flood Risk Assessment	RBD	River Basin District
FRDA	Flood Risk and Drainage Assessment	RBMP	River Basin Management Plan
FRDSA	Flood Risk, Drainage and Sequential Assessment	RFI	Request for Information (to the EA)
FRMP	Flood Risk Management Plan	RMA	Risk Management Authority
FRSA	Flood Risk and Sequential Assessment	RoFSW	Risk of Flooding from Surface Water
FRSSA	Flood Risk Sequential Site Assessment	SFRA	Strategic Flood Risk Assessment
FWA	Flood Warning Area	SMP	Shoreline Management Plan
FWEP	Flood Warning and Evacuation Plan	SoP	Standard of Protection
		SSSI	Site of Special Scientific Interest
		SuDS	Sustainable Drainage System
		SWMP	Surface Water Management Plan
		WFD	Water Framework Directive

1 INTRODUCTION

1.1 Background

Planning permission for the construction of a solar array with associated battery storage containers and ancillary development including means of access and grid connection cable on land at Graveley Lane, to the east of Great Wymondley, Hertfordshire was granted on 11 March 2024, under planning appeal reference APP/X1925/V/23/3323321 in respect of planning application reference 21/03380/FP.

Planning condition 17 states:

No development, including ground works and ground preparation works, shall take place until a surface water drainage scheme, based on sustainable drainage principles and an assessment of the hydrological and hydrogeological context of the development, has been submitted to and approved in writing by the local planning authority. The surface water drainage scheme shall subsequently be implemented in accordance with the approved details before the development is completed. The submitted surface water drainage scheme shall include:

- i. Methods to ensure that surface water run-off generated from the development site does not exceed run-off rates from the undeveloped site for the corresponding rainfall event up to and including 1 in 100 years + climate change critical storm.*
- ii. Methods to ensure that the scheme provides betterment in respect of the pre-development overland flow paths for the 1 in 30-year event.*
- iii. A condition survey of the 285m culvert that crosses the northern part of the site.*
- iv. Retention of the existing overland flow pathways across the site free of obstruction.*
- v. Detailed drawings of the attenuation basins including location, size, volume, depth, inlet and outlet features, connecting pipe runs and all calculations and modelling to ensure that the scheme caters for all rainfall events up to and including the 1 in 100 year plus climate change event.*
- vi. Detailed drawings of all proposed discharge locations, including headwall details, and evidence of land ownership with evidence of any required third-party permissions.*
- vii. Run-off quality treatment.*
- viii. Provision of half drain down times for surface water drainage features within 24 hours.*
- ix. Silt traps for protection of any residual tanked elements.*
- x. Arrangements for maintenance and management of the scheme.*
- xi. A timetable for implementation of the scheme.*

The development shall be carried out in accordance with the approved scheme and timetable.

Reason - To ensure adequate drainage provision and to avoid an increased risk of flooding, both on and off the site.

Planning Condition 18 states:

No development shall take place until a scheme of interim and temporary drainage measures during the construction period have been submitted to, and approved in writing by, the local planning authority. The scheme shall provide full details of the responsibility for maintaining the temporary systems and demonstrate how the site will be drained to ensure there is no increase in the off-site flows, nor any pollution, debris and sediment to any receiving watercourse or sewer system. Construction shall be carried out in accordance with the approved scheme.

1.2 Purpose of Report

This report has been prepared on behalf of AGR Solar 4 Limited ("the applicant") to accompany an application to fully discharge planning condition 17 and planning condition 18.

1.3 Structure of the Report

The report is structured as follows:

- Section 1** Introduction and report structure;
- Section 2** Provides background information relating to the site, the solar farm, and flood risk;
- Section 3** Provides details of the surface water drainage and overland flow management scheme for the operational phase of the solar farm, and presents the information required to discharge planning condition 17;
- Section 4** Provides details of the temporary scheme to manage surface water runoff during the construction phase of the solar farm, and presents the information required to discharge planning condition 18;
- Section 5** Summary.

1.4 Relevant Documents and Planning Policy

The information presented in this document has been informed by the following documents, policy, and information:

- Using Modelling for Flood Risk Assessments, Environment Agency, 12 December 2023, <https://www.gov.uk/guidance/using-modelling-for-flood-risk-assessments#when-to-consider-using-modelling>;
- National Geoscience Data Centre's Single Onshore Borehole Index, <https://www.bgs.ac.uk/products/onshore/SOBI.html>;
- Soilscales, Soil and AgriFood Institute, Cranfield University, www.landis.org.uk/soilscales;
- BGS Mapping of Surface Geology, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>;
- MAGIC Website, Natural England, Available at <https://magic.defra.gov.uk/>;
- CIRIA SuDS Manual (C753), December 2015;
- Non-Statutory Technical Standards for Sustainable Drainage, DEFRA, March 2015;
- Flood Investigation Report - Little Wymondley, Hertfordshire, Doc. Ref. ERP-INV-04, Final Report v04, November 2014, Hertfordshire County Council;
- Flood Alleviation Feasibility Study - Little Wymondley, Doc. Ref. MCL250-07_DG03, Report v2, August 2015, McCloy Consulting Ltd;
- Hydrologic Response of Solar Farms, Cook LM and McCuen RH, Journal of Hydrologic Engineering, Vol. 18(5), pp 536-541, American Society of Civil Engineers, 2013;
- SuDS Design Guidance for Hertfordshire, Hertfordshire County Council, March 2015;
- LLFA Summary Guidance for Developers - Management of Surface Water Drainage (Factsheet), Hertfordshire County Council, August 2021.

1.5 Third Party Surveys, Drawings and Assessments

The assessment has been informed by the following third-party surveys, drawings and assessments:

- General Arrangement, Axis, Drg No. 3004-01-003, October 2021, Rev U, (**Appendix A** of this report);
- Solar Farm Elements: PV Frame and Panels (Axis, Drg No. 3004-01-004, October 2021); Inverter/Transformer Station (Axis, Drg No. 3004-01-005, Rev A, October 2021); Switchgear Building (Axis, Drg No. 3004-01-008, Rev B, February 2025); Battery Storage Container (Axis, Drg No. 3004-01-009, Rev A, October 2021); Welfare Building (Axis, Drg No. 3004-01-016, February 2025); Solar MV Transformer (Axis, Drg No. 3004-01-015, February 2025); Storage Building (Axis, Drg No. 3004-01-006, October 2021); – All in **Appendix B** of this report;
- Topographical survey, Terra Measurement. Survey undertaken in May and August 2024 (**Appendix C** of this report);
- Infiltration Test Report, Subadra, Report ref. IN23854 CL 001, February 2023 (**Appendix D** of this report);
- Pipe Survey, Invek Surveys Ltd, Drainage Layout drawing, Drawing ref: A1_2284/01_Rev_00, 19 September 2024 (**Appendix E** of this report);
- Priory Farm Solar Array, Great Wymondley – Construction Environmental Management Plan (CEMP), Axis, Report ref: 3004-01-CEMP v6, February 2025.

1.6 Explanatory Note on Flood Probability

This flood risk assessment section of this report refers to the likelihood of a flood event occurring in terms of an annual exceedance probability (AEP) expressed as a percentage. This terminology is consistent with the definition of flood zones presented in Table 1 of the PPG (refer to **Section 4.3** of this report).

The AEP is the reciprocal of the return period which describes the rarity of an event in terms of its statistical reoccurrence interval in years. For example, a '1 in 30 year flood' has a $1/30 = 0.033$ (3.3%) probability of occurring or being exceeded in any one year, whilst a '1 in 100 year flood' has a $1/100 = 0.01$ (1.0%) probability of occurring or being exceeded in any one year.

Annual Exceedance Probability	Annual Exceedance Probability (expressed as a %)	Return Period (years)	Alternative Expression
1.000	100.0%	1	1 in 1
0.500	50.0%	2	1 in 2
0.435	43.5%	2.3	1 in 2.3 (QBAR)
0.100	10.0%	10	1 in 10
0.050	5.0%	20	1 in 20
0.033	3.3%	30	1 in 30
0.020	2.0%	50	1 in 50
0.010	1.0%	100	1 in 100
0.005	0.5%	200	1 in 200
0.001	0.1%	1,000	1 in 1000

2 BACKGROUND DETAILS

2.1 Details of the Development

The proposals are for the construction of a solar farm (“the development”) on an 88 ha site east of Great Wymondley (“the site”). The site comprises two land parcels separated by Graveley Lane - “the northern site” (45.01 ha) and “the southern site” (39.51 ha) respectively (refer **Figure 1**). The site boundary shown on **Figure 1**, and on other figures in this report, do not show the cable connection route, and two soft landscaping strips of land located to the west of the southern site, neither of which are relevant to this report.

The development comprises the following elements: photovoltaic solar panels and associated support frames, inverter/transformer stations, battery storage containers, storage container, switchgear container, control container, welfare container, storage building, access tracks, fencing, and soft landscaping (“the development”).

The layout of the development is provided in **Appendix A** and illustrative drawings of the elements are presented in **Appendix B**.



Figure 1: Site Location

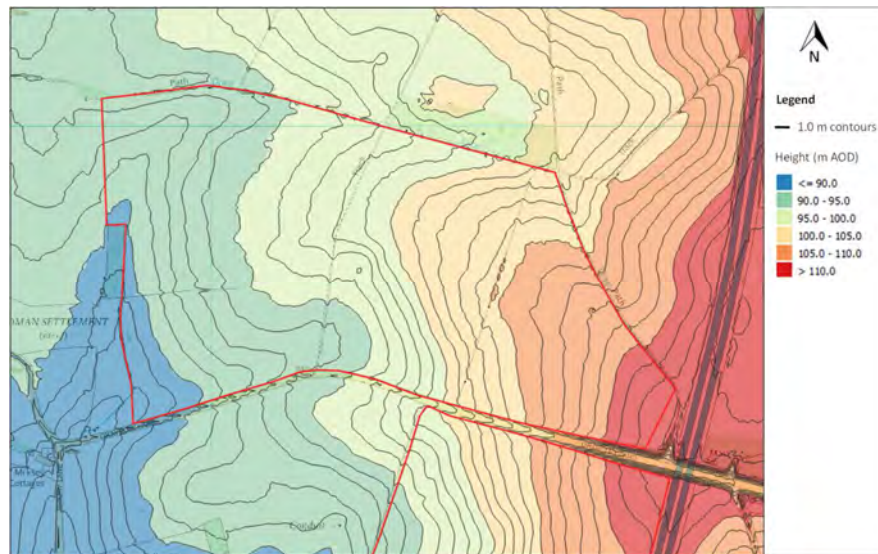
2.2 Site Topography

A topographic survey of the site has been undertaken by Terra Measurement. Survey in May and August 2024 (**Appendix C**). EA 1 m LiDAR data has been used to develop a digital terrain model of the site as illustrated in **Figure 2**. Site levels are generally as follows:

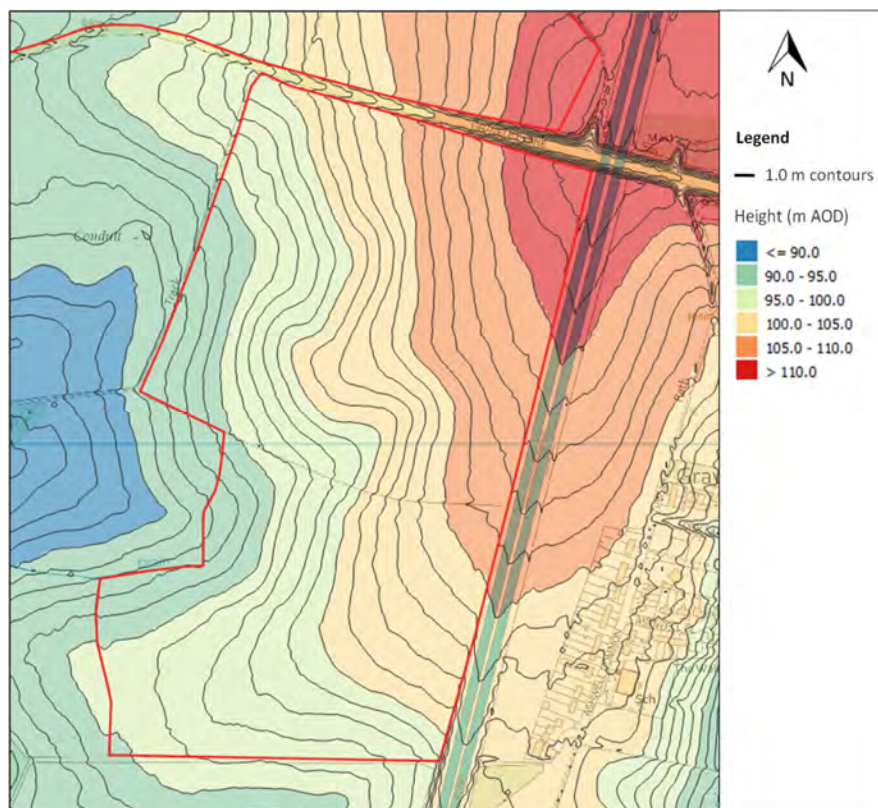
- Northern site: Site levels fall from west to east from of 112.8 to 89.7 m AOD;
- Southern site: Site levels fall from northwest to southeast / west to east from of 112.7 to 91.3 m AOD.

2.3 Watercourses in the Vicinity of the Site

An agricultural drainage ditch runs along the northern boundary of the northern site in a westerly direction. At the northwest corner of the northern site, the drain enters a 285 m long, 300 mm diameter pipe. The pipe crosses the northwestern corner of the northern site and outfalls into an open channel - effectively the headwater of an ordinary watercourse referred to as Priory Lane Stream. Priory Lane Stream flows a distance of approximately 1,250 m in a southerly direction to its confluence with Ash Brook. The watercourse is culverted from Graveley Lane to Wymondley Priory. Two small open ditches/watercourses flow into Priory Lane Stream at Wymondley Priory. (Refer **Figure 3**).



(a) Northern Site



(b) Southern Site

Figure 2: Site Levels from EA LiDAR

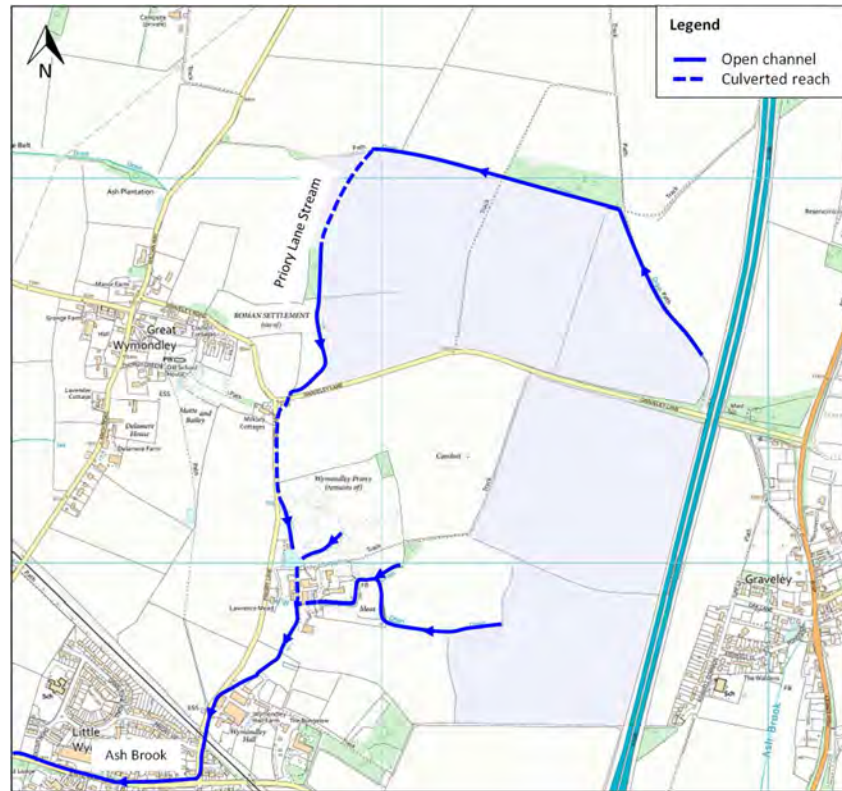


Figure 3: Watercourses in the Vicinity of the Site

2.4 Assessment of Flood Risk

A detailed assessment of flood risk was presented in the documents that accompanied the planning application and were submitted as evidence to the planning inquiry. A summary follows:

2.4.1 Risk of Flooding from Rivers (and from the Sea)

The site is indicated to be located in Flood Zone 1 (defined in the PPG as land at a low probability, i.e. <0.1% AEP of river or sea flooding).

The catchment of Priory Lane Stream is too small for the watercourse to be represented on the EA Flood Map for Planning. In such an instance, the EA Risk of Flooding from Surface Water mapping provides a useful proxy of flood risk from this source (see **Section 2.4.2** below).

2.4.2 Risk of Flooding from Surface Water

The EA risk of flooding from surface water map (<https://check-long-term-flood-risk.service.gov.uk/>) presents the approximate maximum extent and depth of flooding from surface water. The EA mapping is presented in **Figure 4** and **Figure 5** (northern site) and **Figure 6** and **Figure 7** (southern site).



Figure 4: EA Risk of Flooding from Surface Water Runoff – Extent (Northern Site)
(Source: open.gov dataset)



(a) 3.3% AEP Event

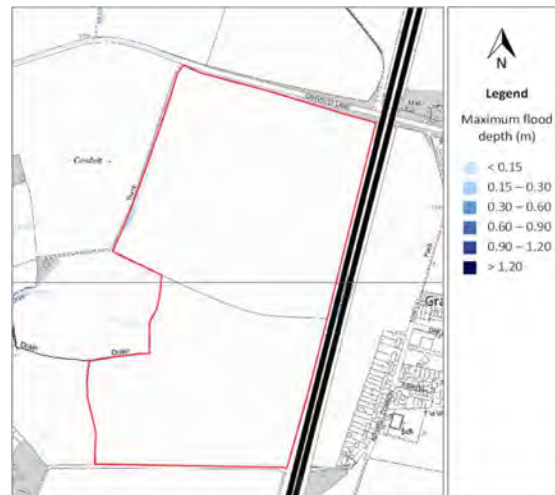


(b) 1.0% AEP Event

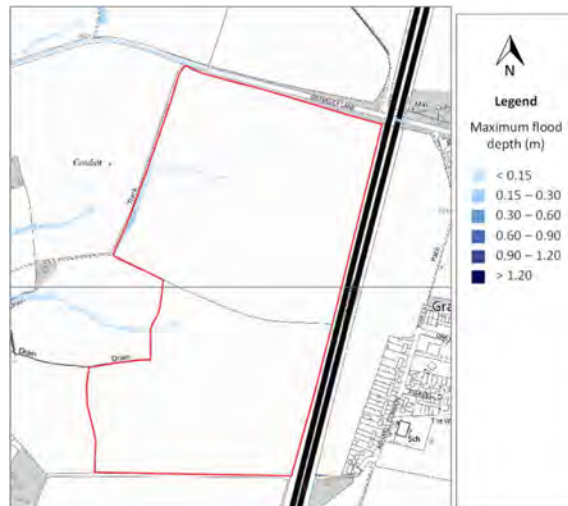
Figure 5: EA Risk of Flooding from Surface Water Runoff - Depth (Northern Site)
(Source: open.gov dataset)



Figure 6: EA Risk of Flooding from Surface Water Runoff – Extent (Southern Site)
(Source: open.gov dataset)



(a) 3.3% AEP Event



(b) 1.0% AEP Event

Figure 7: EA Risk of Flooding from Surface Water Runoff - Depth (Southern Site)
(Source: open.gov dataset)

Risk of Flooding Across the Northern Site (Figures 4 and 5)

The EA mapping indicates the following:

- Generally, the northern site is at a Very Low risk of surface water flooding. This is because the ground slope is sufficient to limit the ponding of surface water
- An overland flow pathway is indicated across the north-west part, becoming more pronounced as the severity of the event increases. Site visits have determined that no formal channel is evident, and the flow path is located within a subtle linear depression across the field. The flow path corresponds to the position of a 300 mm pipe that was installed (presumably for agricultural purposes) to convey runoff from the northern boundary of the site to the north-east corner of a wooded area (refer **Section 3.2**).
- Some ponding of surface water is indicated to occur in a localised low spot in the central southern part (adjacent to an access track).
- A minor overland flow pathway is indicated across the southwest part, adjacent to Graveley Lane. The flow path is not evident during the 3.3% AEP event, and there is limited flooding during the 1.0% AEP event (the maximum depth of flooding is < 0.15 m).

Risk of Flooding Across the Southern Site (Figures 6 and 7)

The EA mapping indicates the following:

- The southern site is at a Very Low risk of surface water flooding. This is because the ground slope is sufficient to limit the ponding of surface water.
- A minor overland flow pathway is indicated along the northwest boundary. The maximum depth of flooding is indicated to be in the range 0.15 – 0.30 m during the 3.3% and 1.0% AEP events. Site visits have determined that no formal channel is evident.

2.4.3 Risk of Flooding from Other Sources

The site is assessed to be at a Low/Negligible risk of flooding from all other known sources.

2.5 Historical Flooding

There are no records of historic flooding of the site in the EA recorded flood outlines database.

2.6 Off Site Flood Risk

Little Wymondley has a history of flooding, with records of flooding in 1926-1956, 1968, 1993, 2000/01, December 2013, February 2014, and March 2016.

The principal source of flooding in Little Wymondley is Ash Brook. Ash Brook drains a catchment of approximately 14 sq km, of which the site comprises approximately 5%. Whilst the site contributes a relatively small percentage of total flow in Ash Brook, runoff from the site must still be managed so that the development does not increase flood risk.

3 SURFACE WATER RUNOFF AND OVERLAND FLOW MANAGEMENT DURING THE OPERIONAL PHASE OF THE SOLAR FARM (PLANNING CONDITION 17)

3.1 Introduction

The information presented in the section of the report addresses Planning Condition 17.

3.2 Impact of the Solar Farm on Runoff Rates - Condition 17(i) and (ii)

3.2.1 Background

Condition 17 states that the submitted surface water drainage scheme shall include:

- Condition 17(i): *“Methods to ensure that surface water run-off generated from the development site does not exceed run-off rates from the undeveloped site for the corresponding rainfall event up to and including 1 in 100 years + climate change critical storm.”*
- Condition 17(ii): *“Methods to ensure that the scheme provides betterment in respect of the pre-development overland flow paths for the 1 in 30-year event”.*

To fulfil the above conditions, site specific hydraulic modelling of surface water runoff (direct rainfall modelling) has been undertaken to more accurately model the overland flow pathways at the site. The modelling also allows the effect of climate change, and the potential effect of the solar panels on surface water runoff to be modelled and mitigated. The model outputs are presented in **Section 3.2.4** (existing situation) and **Section 3.2.5** (solar farm situation) of this document.

To mitigate the potential effect of the presence of the solar panels, surface water runoff and overland flow would be positively managed as follows:

- The site would comprise of permanent management grassland (not bare earth);
- Runoff generated across the internal access tracks and compounds would be positively managed by a surface water drainage scheme;
- Surface water runoff / overland flow generated from the panelled part of the site would be attenuated as required through the provision of overland flow attenuation areas.

3.2.2 Overview of Surface Water Drainage Scheme

Site access tracks, including permeable turning/passing areas, and compounds will drain to a network of filter drains and surface water will be conveyed to three surface water drainage basins, one located in the northern site and two located in the southern site. The basins would be formed by shallow excavation.

Runoff from events up to and including the 1.0% AEP event plus 25% CC would be released at a controlled rate via outlet control devices to: (i) Priory Lane Stream (northern site); Existing drainage ditches (southern site). This approach mimics the existing drainage regime.

Note: Infiltration testing undertaken from 9 to 10 February 2023 across eight trial pits concluded that the disposal of surface water by infiltration was unlikely to be a viable drainage solution at the locations tested (**Appendix D**). Accordingly, the approach complies with the drainage hierarchy set out in the PPG.

Notwithstanding the design principle, some infiltration will occur. This will reduce peak runoff rates compared to the scheme design. As such, the surface water drainage scheme may provide additional betterment over and above the design.

3.2.3 Overview of Overland Flow Management Scheme

Overland flow generated from the panelled part of the site would be intercepted and temporarily stored in two overland flow storage areas formed by constructing low bunds.

Stored runoff would be released at a controlled rate via an outlet control device to: (i) Priory Lane Stream (northern site); Existing drainage ditches (southern site). This approach mimics the existing drainage regime.

3.2.4 Site Specific Direct Rainfall Modelling

Surface water runoff / overland flow across the site has been simulated using a 2D (gridded) direct rainfall hydraulic model. Ground levels have been derived using the latest (2021) LiDAR data with a 1.0 m spatial resolution.

The 2D model has been run for 6-hour duration rainfall events (the critical storm duration) for a 3.3% and 1.0% AEP event and a 1.0% AEP event plus 25% climate change (25% is the central allowance for the Upper and Bedford Ouse management catchment for the 2070s epoch, i.e. for a development with a lifetime to the year 2125).

The planning permission for the solar farm has a 40 year restriction, i.e. to the year 2064. As such the model outputs for the climate change events are conservative (pre-cautionary) and over-estimate peak runoff rates over the lifetime of the solar farm.

Outputs from the 2D direct rainfall modelling for the 3.3% and 1.0% AEP events, and the 1.0% AEP event plus 25% CC for the existing, pre-development (baseline) conditions are presented in **Figure 8** (northern site) and **Figure 9** (southern site).

The outputs from the modelling (summarised below) closely replicate the EA surface water flood mapping:

- Northern site (**Figure 8**): The site is at a Very Low risk of surface water flooding. The maximum flood depth in the northwest part of the site is indicated to be 0.22 m, 0.24 m and 0.26 m during the 3.3%, 1.0% AEP events and the 1.0% AEP event plus 25%CC respectively. The maximum flood depth in the central part of the site is indicated to be 0.21 m, 0.21 m and 0.22 m during the 3.3%, 1.0% AEP events and the 1.0% AEP event plus 25%CC respectively. The maximum flood depth along the southwest flow pathway is indicated to be 0.05 m, 0.06 m and 0.07 m during the 3.3%, 1.0% AEP events and the 1.0% AEP event plus 25%CC respectively.
- Southern site (**Figure 9**): The direct runoff modelling confirms that the southern site is at a Very Low risk of surface water flooding. A minor overland flow pathway is indicated along the northwest boundary. The maximum depth of flooding is indicated to be 0.15 m, 0.16 m and 0.18 m during the 3.3%, 1.0% AEP events and the 1.0% AEP event plus 25%CC respectively.

3.2.5 Effect of the Surface Water Drainage and Overland Flow Management Schemes on Peak Site Runoff

Research into the impact of solar-farm panels on runoff rates and volumes was undertaken by researchers at the University of Maryland in the early 2010s. The published research paper found that for a large scale solar farm site where the ground comprised of well managed vegetation such as grass cover, as is the case in this instance, runoff rates were found to increase by 0.31% and runoff volumes by 0.35% compared to the pre-panelled scenario, if no mitigation was provided.

The direct rainfall modelling has been used to model the effect of the solar farm after the surface water drainage and overland flow management schemes (outlined in **Section 3.1.2** and **Section 3.1.3** above) have been implemented.

To replicate the potential effect of the solar panels, the direct rainfall has been increased by 0.35%. Outputs from the 2D direct rainfall modelling for the 3.3% and 1.0% AEP events, and the 1.0% AEP event plus 25% CC for the post-development conditions are presented in **Figure 10** (northern site) and **Figure 11** (southern site).

Although not easily discernible on the 2D direct rainfall model outputs plots, the runoff hydrographs (**Figure 12**) and table of peak flows (**Table 1**) indicate that the surface water drainage and overland flow management schemes reduce the peak runoff rate from the completed solar farm site by 12.1%, 14.0%, and 2.7% for the 3.3%, 1.0% AEP events and the 1.0% AEP event plus 25%CC respectively.



(a) 3.3% AEP Event

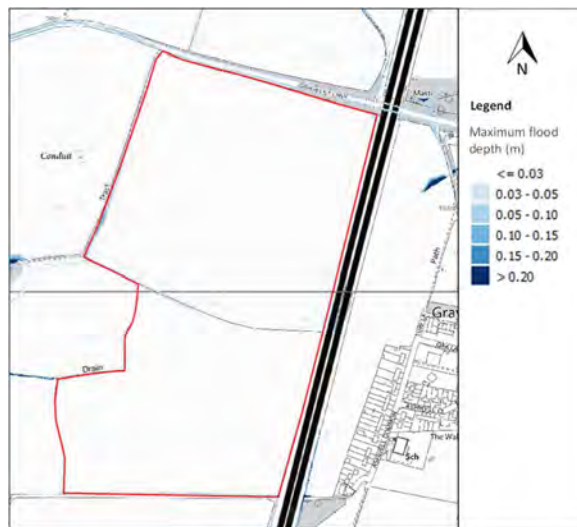


(b) 1.0% AEP Event

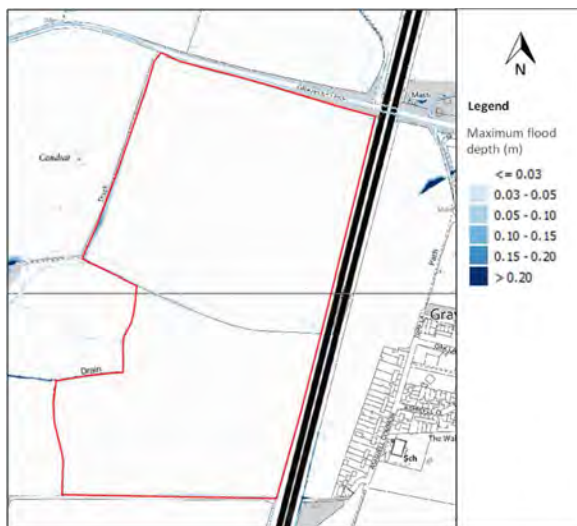


(c) 1.0% AEP Event Plus 25% CC

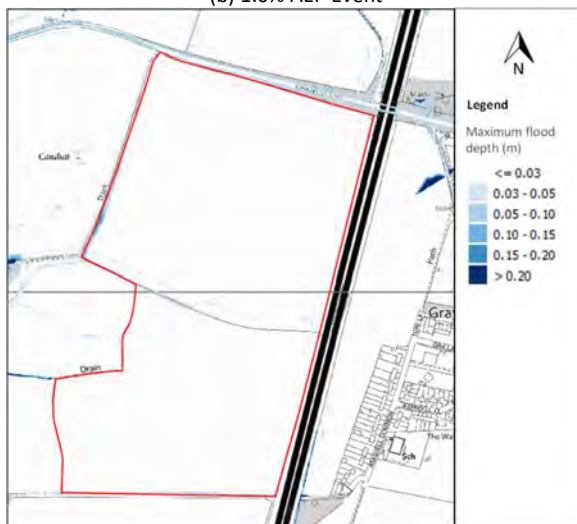
Figure 8: Direct 2D Rainfall Modelling for Existing Situation (Northern Site)



(a) 3.3% AEP Event



(b) 1.0% AEP Event



(c) 1.0% AEP Event Plus 25% CC

Figure 9: Direct 2D Rainfall Modelling for Existing Situation (Southern Site)

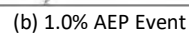
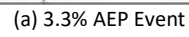
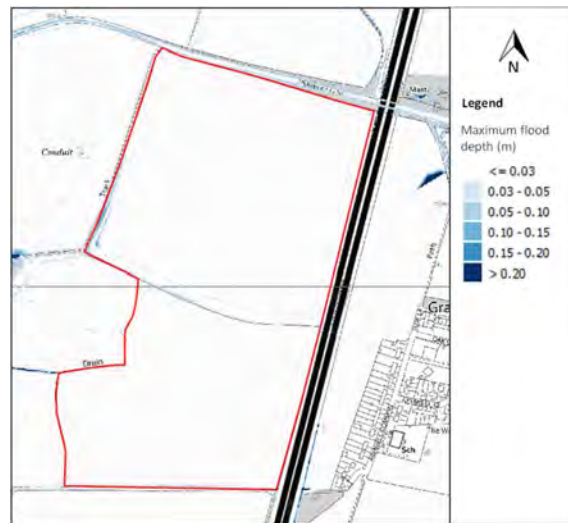
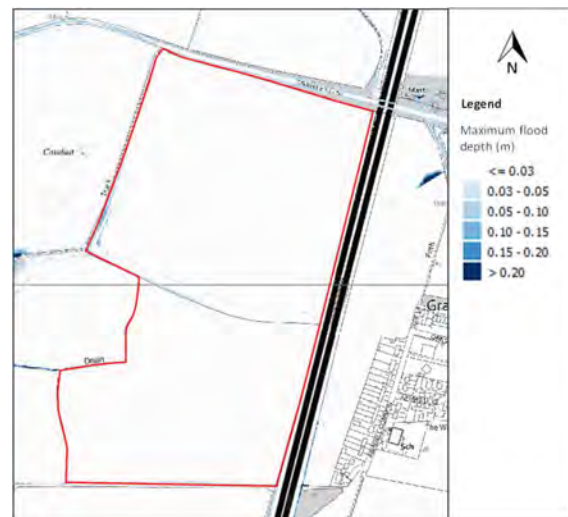


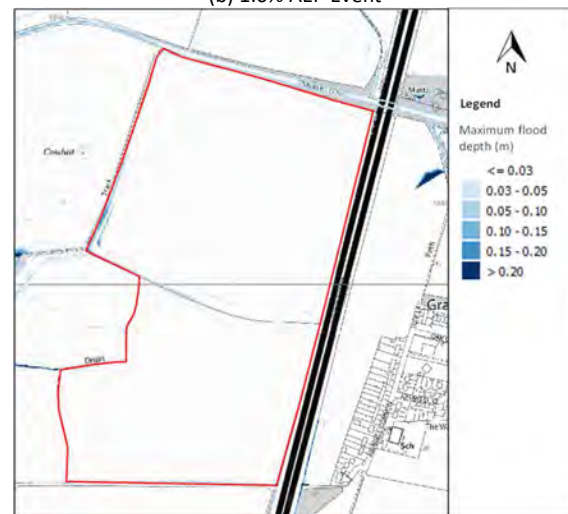
Figure 10: Direct 2D Rainfall Modelling for Solar Farm Situation (Northern Site)



(a) 3.3% AEP Event

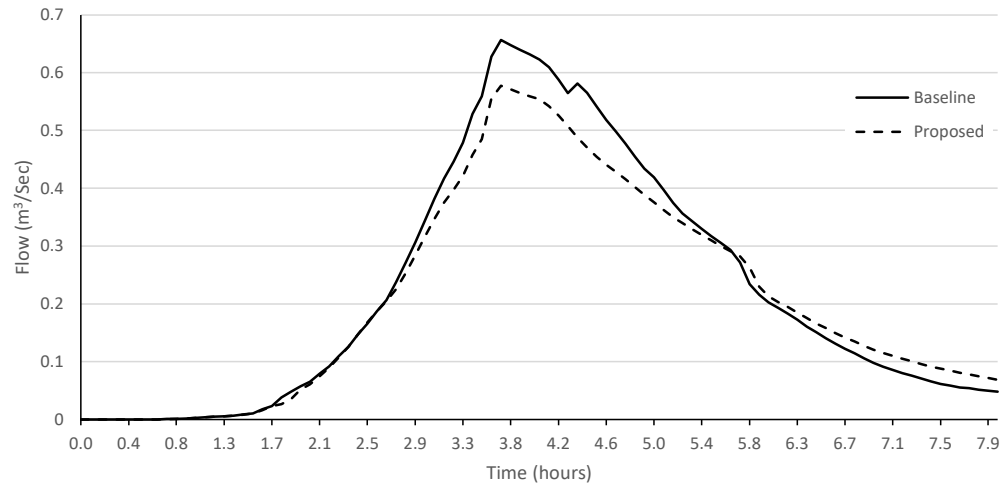


(b) 1.0% AEP Event

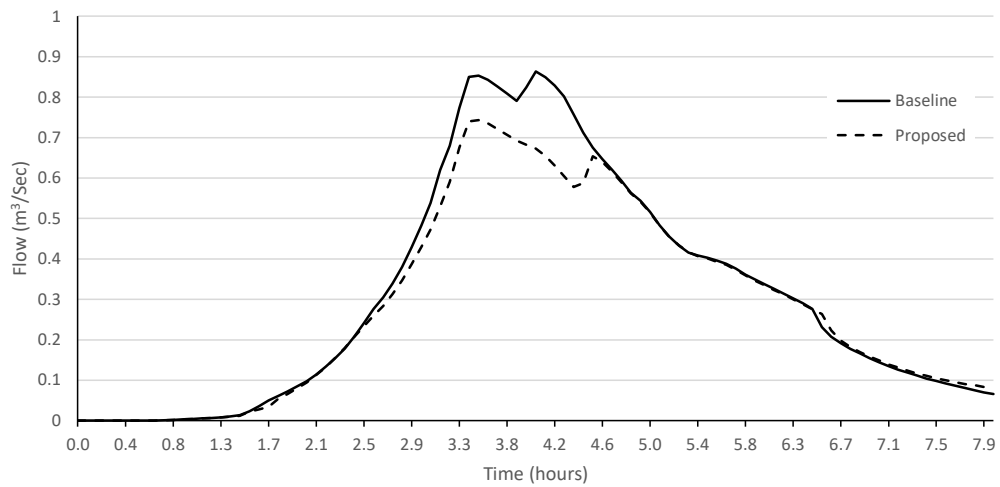


(c) 1.0% AEP Event Plus 25% CC

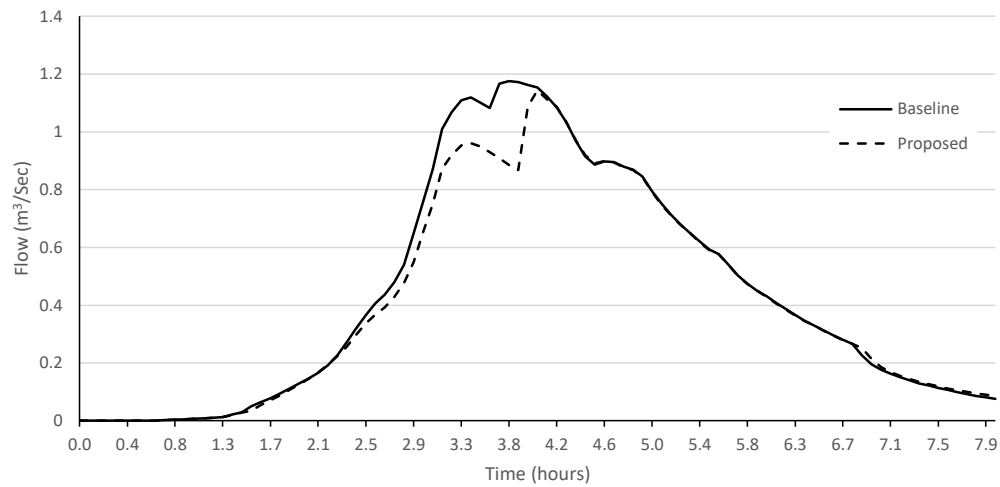
Figure 11: Direct 2D Rainfall Modelling for Solar Situation (Southern Site)



(a) 3.3% AEP Event



(b) 1.0% AEP Event



(c) 1.0% AEP Plus 25%CC Event

Figure 12: Comparison of Peak Runoff From Existing and Solar Farm Scenarios

Table 1: Pre and Post Solar Farm Peak Flows (Betterment)

Event	Peak Runoff (cu m/s)		Reduction (betterment)	
	Existing Situation	Solar Farm Scenario	cu m/s	%
3.3%	0.6563	0.5770	0.0793	12.1
1.0%	0.8637	0.7431	0.1206	14.0
1.0% Plus 25% CC	1.1757	1.1438	0.0319	2.7

3.2.6 Conclusion

The analysis presented above demonstrates:

- Surface water runoff from the developed (solar farm) site does not exceed run-off rates from the undeveloped site for the corresponding rainfall event up to and including 1.0% AEP critical storm event plus climate change;
- The surface water drainage and overland flow management schemes significantly reduce the peak runoff rated from the site (betterment) for the 3.3% AEP event. (The schemes also provide betterment in the 1.0% AEP event and the 1.0% plus 25% CC event.

The scheme complies with planning condition 17(i) and 17(ii).

3.3 Survey of the Pipe that crosses the Northern Part of the Site - Condition 17(iii)

A survey of the pipe that crosses the northwest corner of the northern site was undertaken by Invek Surveys Ltd on 19 September 2024 (refer **Appendix E**). The survey identified the pipe to be a circular 300 mm diameter, vitreous clay / concrete pipe.

The length of the pipe is estimated to be 275 m long, and its alignment has been confirmed by a geophysical survey. The survey company was not able to survey beyond the first 19 m of the pipe due to the presence of some straw preventing further progress the recording equipment. The survey company was unable to survey the downstream end of the pipe because it was fully submerged.

The presence of straw will not significantly affect the conveyance of runoff through the pipe during high flow conditions.

The survey complies with planning condition 17(iii).

3.4 Retention of Overland Flow Pathways Across the Site - Condition 17(iv)

All The internal site access tracks and areas of hardstanding would be constructed at ground level and would not impede flow pathways.

All containers and buildings are raised above ground level on concrete plinths (refer **Appendix B**) and would not impede the flow of any surface water runoff. The sole exception is the switchgear building; however, there is only one unit of this type, and it is not located across any overland pathways as confirmed by **Figure 13**.

The majority PV panels are raised on sheet steel posts (70 x 110 mm cross-sectional area) and the PV panels are raised a minimum of 800 mm above ground level. As such, the PV frames and panels will not impede overland flow. In areas of archaeology,, the PV frames are supported on concrete plinths. These areas are almost entirely outside of overland flow pathways, and irrespective, would not impede surface water runoff.

The scheme complies with planning condition 17(iv).

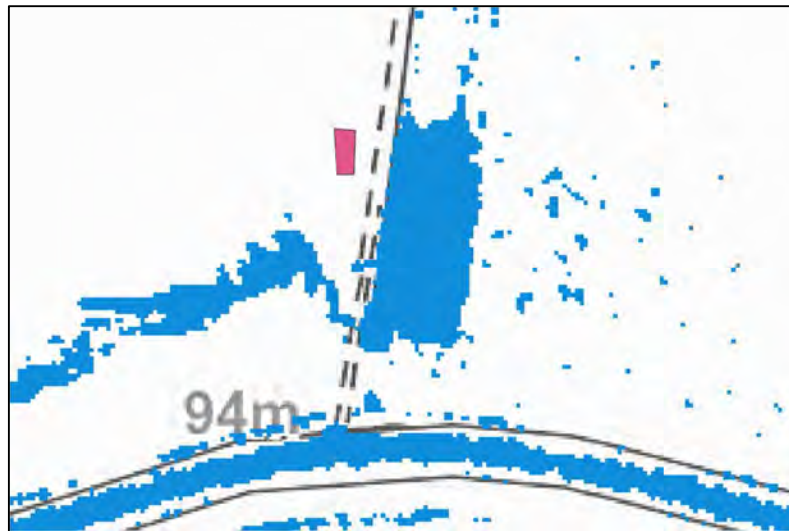


Figure 13: Location of Switchgear Container and Overland Flow (1.0 AEP Event Plus 35% Climate Change)

3.5 Details of Surface Water Drainage and Overland Flow Management Schemes *Condition 17(v)*

An illustrative plan showing the location of the overland flow storage areas and surface water drainage basins for the operational phase of the solar farm is provided in **Figure 14**.

Detailed drawings of the overland flow storage areas and surface water drainage basins, including location, size, volume, depth, inlet and outlet features, and connecting pipe runs are provided as listed below:

- Surface water drainage layout drawings (6 no sheets) - **Appendix F**;
- Surface water drainage basin and outfall details (1 no. sheet) – **Appendix G**;
- Drainage details (1 no. sheet) – **Appendix H**;
- Overland flow storage areas bund details (1 no. sheet) – **Appendix I**;
- Headwall details (2 no. sheets) – **Appendix J**;

The surface water drainage scheme has been designed to accommodate runoff generated for events up to an including the 1.0% AEP event plus climate change. Hydraulic calculations are provided in **Appendix K**.

The information required by planning condition 17(v) is provided as set out above.

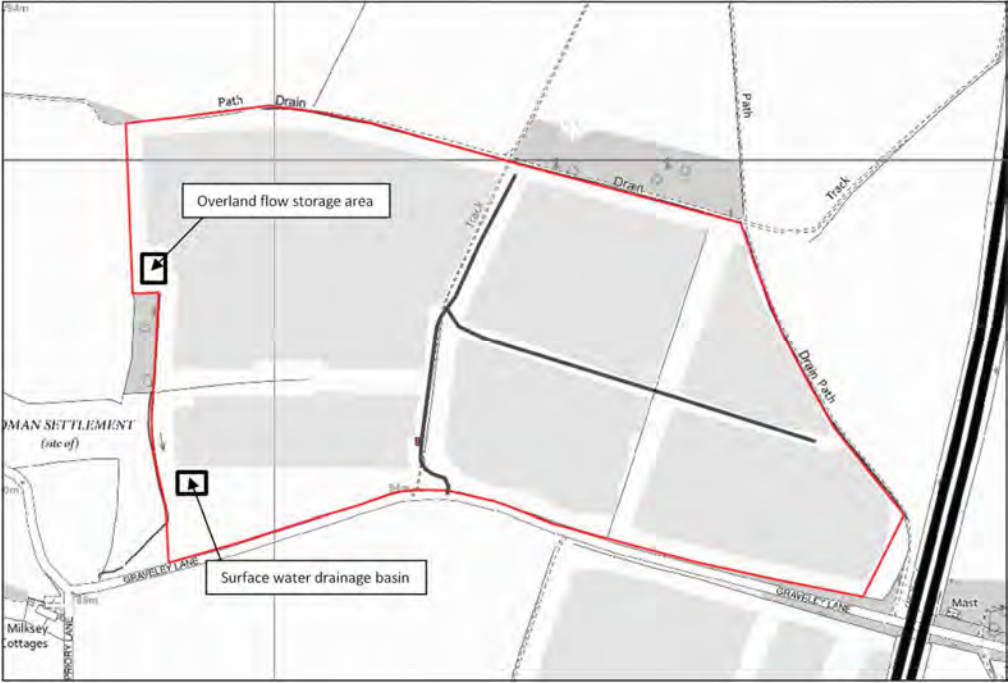
3.6 Details of Outfall Locations, Headwall Details and Land Ownership - *Condition 17(vi)*

The location of outfalls from the surface water drainage basins and overland flow storage areas are presented on the layout sheets provided in **Appendix F** and details of the headwalls are provided in **Appendix J**.

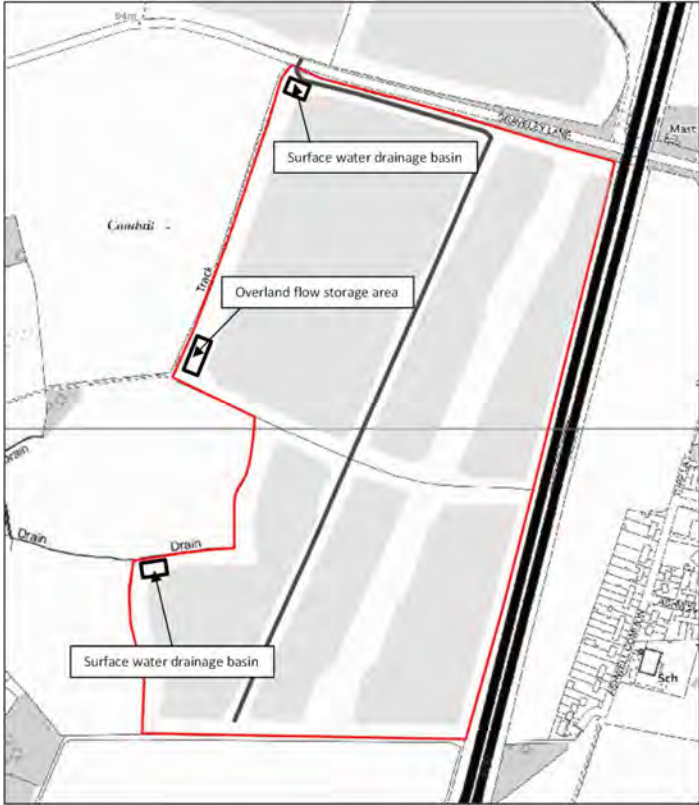
Regarding land ownership: All surface water drainage and overland flow management infrastructure is located with the planning application red-line boundary and on land covered by the option agreement between AGR Solar 4 Ltd and the landowner.

For the avoidance of doubt, all land is owned by a single landowner and the extent of land ownership covers the entirety of the land located within the planning application red-line boundary and a considerable distance beyond. No third-party land permissions are required.

The information required by planning condition 17(vi) is provided as set out above.



(a) Northern Site



(b) Southern Site

Figure 14: Overland Flow Storage Areas and Surface Water Drainage Basins

3.7 Runoff Quality Treatment - Condition 17(vii)

The Simple Index Approach as set out in the 2015 SuDS Manual (Chapter 26) has been applied to assess surface water quality and the mitigation provided by the proposed SuDS elements as set out below:

The pollution hazard index for the proposed land uses (SuDS Manual, Table 26.2):

- a) Access tracks: Pollution hazard level = Low; Total suspended solids (TSS) = 0.5; Metals = 0.4; Hydrocarbons = 0.4;
- b) Runoff from container roofs: Pollution hazard level = Low; TSS = 0.3; Metals = 0.2; Hydrocarbons = 0.05.

The SuDS Manual states that where the principal destination of runoff is to a surface water body but small amounts of infiltration may occur from unlined components, as is the case for the solar farm, the groundwater indices should be used for the discharge to groundwater and the surface water indices should be used for the main surface water discharge.

Accordingly:

- Mitigation Index for the primary treatment component (infiltration trench) - as per SuDS Manual Table 26.4 Indicative SuDS mitigation indices for discharges to groundwater:
 - c) TSS = 0.4; Metals = 0.4; Hydrocarbons = 0.4;
- Mitigation Index for the secondary treatment component (detention basin) - as per SuDS Manual Table 26.3 Indicative SuDS mitigation indices for discharges to surface waters:
 - d) TSS = 0.5; Metals = 0.5; Hydrocarbons = 0.6;
- And by application of *Total Mitigation Index = Mitigation Index 1 + (0.5 * Mitigation Index 2)*
 - e) TSS = 0.65; Metals = 0.65; Hydrocarbons = 0.7.

Application of the Simple Index Approach confirms that the proposed SuDS drainage scheme provides more than adequate quality treatment of runoff from the access tracks and other areas of hardstanding.

The information required by planning condition 17(vii) is provided as set out above.

3.8 Drain Down Times for Surface Water Drainage Features- Condition 17(viii)

There is a requirement for all the surface water attenuation basins to have a half drain down time of less than 24 hours for the critical 1.0% AEP event plus climate change (design storm).

- Northern attenuation basin: Volume stored in critical storm = 303.6 m³; Volume stored after 24 hours = 148.1 m³, i.e. 48.8%;
- Southern attenuation basin 1: Volume stored in critical storm = 62.3 m³; Volume stored after 24 hours = 0.0 m³ (completely empty), i.e. 0%;
- Southern attenuation basin 2: Volume stored in critical storm = 245.7 m³; Volume stored after 24 hours = 118.2 m³, i.e. 48.1%.

As such the basins comply with the requirement to drain to half capacity (or more) within 24 hours of the commencement of the critical 1.0% AEP event plus climate change (the design storm).

The information required by planning condition 17(viii) is provided as set out above.

3.9 Silt Traps for Tanked Elements - Condition 17(ix)

All attenuation storage in the surface water drainage and overland flow management schemes is provided within surface based attenuation facilities as presented in the various appendices listed in **Section 3.5** above.

All conveyance for the access tracks and compound areas is via perforated pipes wrapped in geotextiles. As such, no silt traps are required although catch pits are provided on the flow control devices.

The information required by planning condition 17(ix) is set out above.

3.10 Arrangements for Maintenance and Management of the Scheme - Condition 17(x)

AGR Solar 4 Limited will be responsible for all operations and maintenance of the operational solar farm site, including maintenance and management of the surface water drainage system and overland flow storage areas.

The maintenance and management will be in accordance with the schedule for the sustainable drainage provided in **Table 2** below. The requirements have been incorporated into the site-wide maintenance schedule.

Table 2: Maintenance Schedule for Operational Surface Water Drainage Scheme and Overland Flow Storage Areas

Schedule	Required action	Frequency
Attenuation Basin and Conveyance Swales		
Regular maintenance	Remove litter and debris	Monthly
	Cut grass	Monthly during grow season Or as required)
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly for first year, then annually or as required
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets/outlets	Annually (or as required)
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every two years, or as required
	Remove sediments from inlets/outlets and main basin when required	
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	
	Repair/rehabilitation of inlets/outlets	
	Relevel uneven surface and reinstate design levels	
Filter Drain		
Regular maintenance	Remove litter including leaf litter and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly (or as required)

Schedule	Required action	Frequency
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly (or as required)
	Clear perforated pipework of blockages	As required
Flow Control Unit		
Routine maintenance	Remove litter and debris and inspect for sediment accumulation	Six Monthly
	Remove sediment from sump	As necessary – Indicated by system inspections
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six Monthly
	Inspect flow control unit and establish appropriate replacement frequencies	Six Monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every six months

The information required by planning condition 17(x) is set out above.

3.11 Timetable for Implementation of the Scheme - Condition 17(xi)

The construction period is anticipated to last approximately 36 weeks. The construction phases are set out below (Source: CEMP, Axis Report ref: 3004-01-CEMP v6, February 2025):

- **Phase One - Pre-Construction Surveys and Site Preparation Works:** This phase includes topographical, archaeological, geotechnical and detailed surface water and ecological surveys to inform the detailed design work and submission of all regulatory information.
- **Phase Two - Site Mobilisation and Enabling Works:** This phase includes erection of temporary construction traffic signage, forming the new site accesses and passing bays, and **the installation of the interim and temporary drainage measures** (covered by Planning Condition 18 and described in **Section 4** of this document). During this phase the site will be fenced, CCTV installed and the temporary welfare compounds and materials, plant and equipment laydown and storage areas formed. During this phase and prior to any construction works taking place, all the temporary fencing / protection measures for sensitive ecological, arboricultural and archaeological features will be put into place. The timing of this phase is dependent upon the completion and approval of the detailed design (and discharge of all other Pre-Construction planning conditions).
- **Phase Three – Construction:** All materials plant and equipment delivered to site, and the internal access roads, Grasscrete laybys, Battery Energy Storage System (BESS) and Solar PV configurations will be set out and constructed. **The overland flow storage areas and surface water drainage scheme, will be constructed during this phase.**
- **Phase Four - Commissioning and Testing:** This phase includes both the ‘cold’ commissioning, ‘G99’ Testing and Site Energisation and Performance testing. This phase may overlap with the construction phase. The conclusion of this phase ends the construction works on BESS and Solar PV on site.
- **Phase Five - Principal Contractor Demobilise from Site:** During this phase the Principal Contractor would close down the construction site, remove and reinstate the temporary welfare and materials laydown areas. The temporary passing bay on Graveley Lane would be removed and the public highway returned to its pre-construction configuration. The final action for the contractor is to modify

(reduce in scale) the two site accesses on Graveley Lane in accordance with the design approved by the local planning authority.

- **Phase Six: Landscape Archaeological and Ecological Works:** This phase is the delivery of the landscaping, archaeological and ecological works as set out in the Landscape and Ecological Management Plan (LEMP), WSI and Skylark Mitigation Strategy (SMS). The LEMP, WSI and SMS are subject to separate submission to discharge Conditions 9, 13 and 22 respectively. Implementation of the LEMP is to some degree governed by planting and other works taking place in the appropriate planting season following the commencement of the development. Implementation of the WSI would be prior to commencement of development and would be undertaken on a field-by-field basis and areas become free of crops.
- **Phase Seven: Operational Phase:** The development will be operational for 40 years from the date of the first export of electricity generated.
- **Phase Eight: Decommissioning and Restoration:** The planning consent granted includes provisions for the decommissioning and restoration of the site to its pre-construction condition. These works are the subject of separate local planning authority approvals through the discharge of other planning conditions. This phase will take place after the development ceases operation, which includes a trigger earlier than the 40-year period in the case that the export of electricity to the grid ceases for a continuous period of 12 months at any point after the date of first export (other than for operational reasons outside of the operator's control).

The information required by planning condition 17(xi) is provided as set out above.

4 SURFACE WATER RUNOFF MANAGEMENT DURING THE CONSTRUCTION PHASE OF THE SOLAR FARM - POLLUTION PREVENTION PLAN (PLANNING CONDITION 18)

4.1 Introduction

Details of the interim and temporary drainage measures that will be implemented during Phase 2 of the construction works (site mobilisation and enabling works as described in **Section 3.10**) are presented below.

The information provided includes details of the responsibility for maintaining the temporary systems and demonstrates that there is no increase in the off-site flows, nor any pollution, debris and sediment to any receiving watercourse or sewer system, as required by planning condition 18.

4.2 Description of the Interim and Temporary Drainage Measures

Interim and temporary drainage measures will be installed during the site mobilisation and enabling works to ensure that there is no increase in the off-site flows, and to mitigate the risk of contaminants, sediments or debris being conveyed to a receiving watercourse.

An illustrative plan showing the location of the temporary runoff controls is provided in **Figure 15** and detailed drawings are provided in **Appendix L** (6 no. sheets). The operating principles are summarised below:

- Surface water runoff will be intercepted at low points across the site using bunds and dished channels (conveyance swales) to direct the surface water into the attenuation basins.
- The stored runoff will be pumped from the temporary storage areas to the downstream receptors via silt capture channels (in combination with gel flocculant) to treat the runoff before it leaves the site.

The attenuation basins are capable of accommodating the 50% AEP rainfall event.

4.3 Arrangements for Maintenance and Management of the Scheme

AGR Solar 4 Limited will be responsible for all operations and maintenance of the operational solar farm site, including maintenance and management of the surface water drainage system and overland flow storage areas.

The maintenance and management will be in accordance with the schedule for the sustainable drainage provided in **Table 3** below. The requirements are incorporated into the site-wide maintenance schedule.

4.4 Completion of the Construction Phase

On completion of Phase 3 of the construction works, as described in **Section 3.10**:

- Two of temporary storage areas will be converted to surface water drainage basins and integrated into the operational phase surface water drainage scheme described in **Section 3.4** of this report;
- Two of the temporary storage areas will be converted to operational phase, overland flow storage areas as described in **Section 3.4** of this report.
- Two of the temporary storage areas will be decommissioned.

Figure 15: Temporary Runoff Controls – Construction Phase

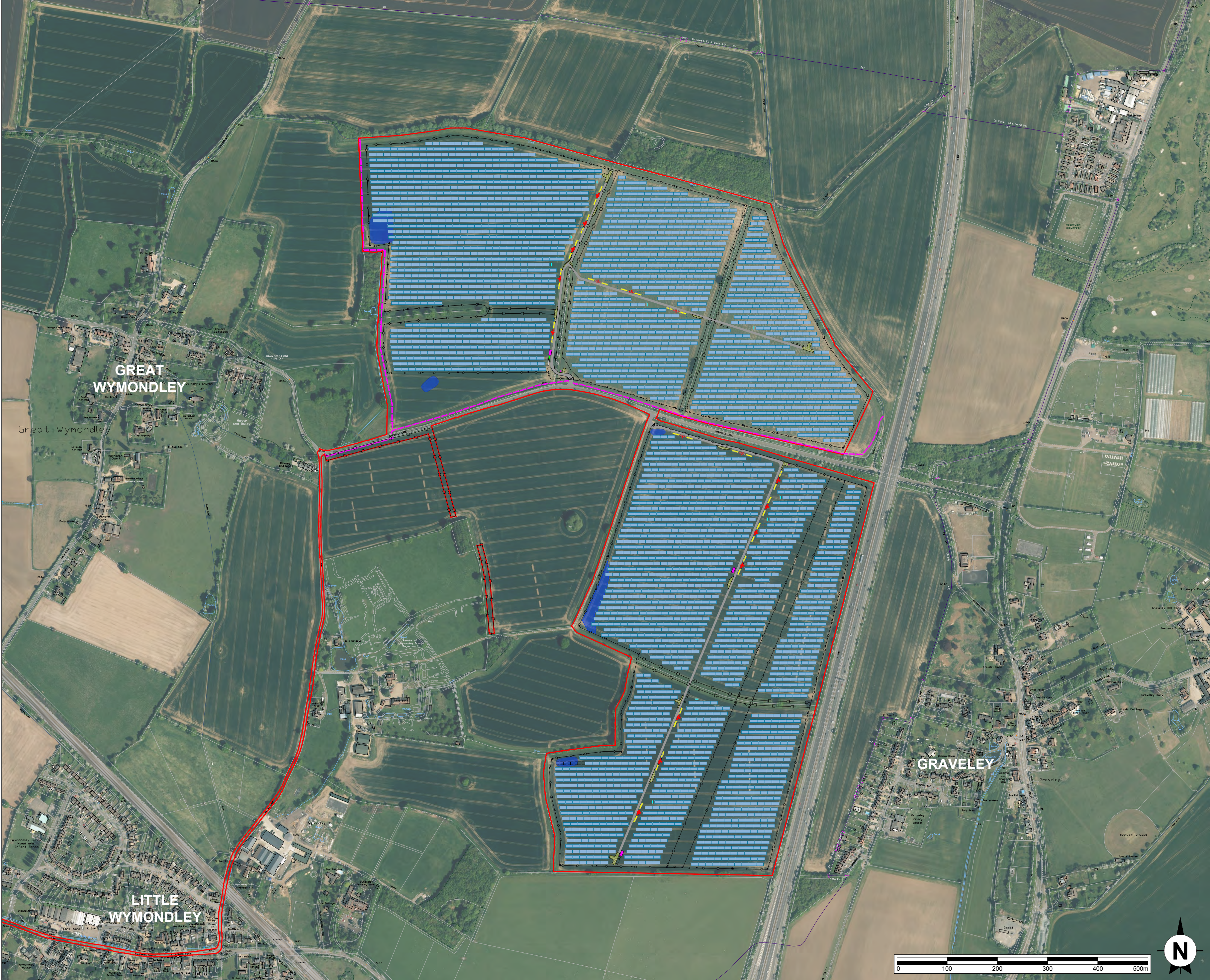
5 SUMMARY

This report accompanies an application to completely discharge Planning Condition 17 and Planning Condition 18 - conditions relating to the management of surface water runoff and overland flow from the solar farm site during the operational and construction phases, to ensure that the risk of flooding and pollution is properly mitigated.

APPENDICES

Appendix A

General Arrangement Drawing



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Revision History		Date
M	Updated Drainage Basin	16-12-24
N	Updated BESS Unit Layout	06-01-25
O	Updated BESS Layout and Infrastructure	13-02-25
P	Revised Layout	20-02-25
Q	Solar Transformer Units revised	26-02-25
R	30m Easement from Gas Pipeline updated	26-03-25
S	Gates relocated	22-04-25
T	Permissive Path updated inline with Landscape Proposal	28-04-25
U	Update made to Grasscrete and Legend	01-05-25

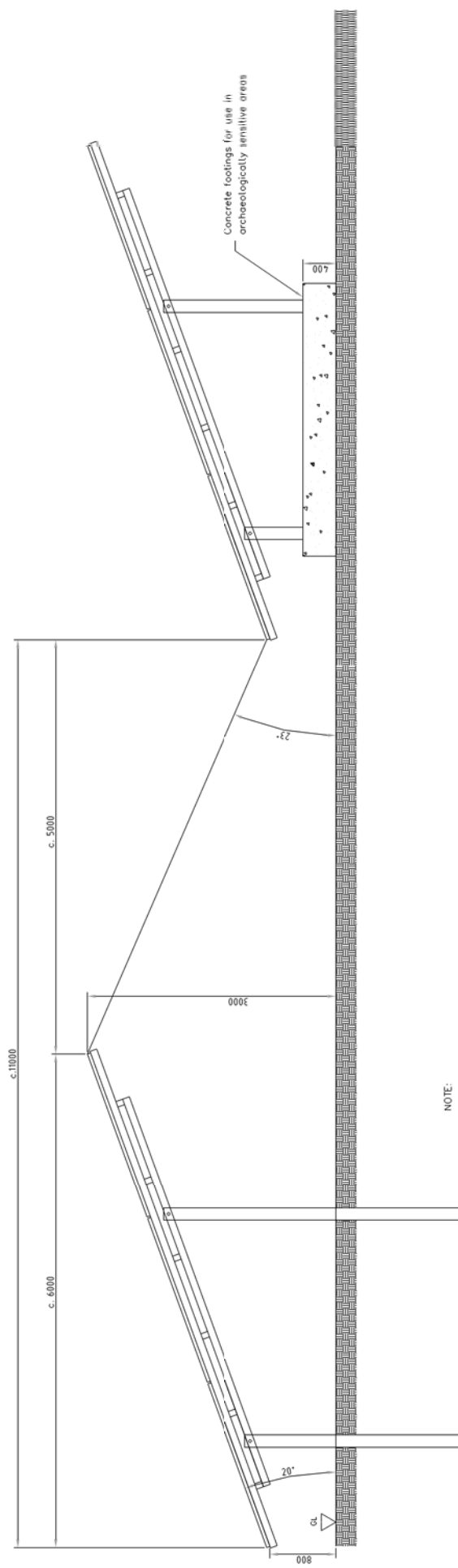
- Site Boundary
- Photovoltaic Panels
- Solar Transformer
- Inverter / Transformer Station
- Battery Storage Container
- Storage
- Welfare
- Switchgear Building
- Deer / stock fence 2.1m
- Stock fence 1.2m
- Proposed access track
- Permissive Path
- Surface Water Attenuation Basin / Flood Storage Area
- Permeable Grasscrete Turning/Passing Area
- Items Omitted/Relocated
- Water Hydrant
- CCTV

Client Office: Well House Barns Bretton Cheshire CH4 8DH		South Manchester Office: Canella House 76 Water Lane Wilmslow SK9 5BB	axis
0844 8700 007 - www.axisped.co.uk			
client: AGR			
project: PRIORITY FARM SOLAR ARRAY			
drawing title: GENERAL ARRANGEMENT			
date: October 2021		drawn by: TR	checked: PR
drawing number: 3004-01-003		status: ---	
scale(s): 1:5,000@A2		rev: U	
planning environment design			

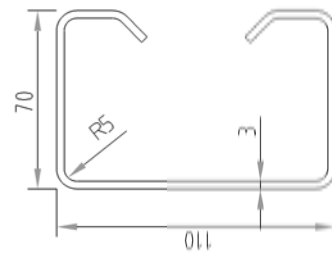
Appendix B

Solar Farm Elements

PV Frame and Panel; Inverter/Transformer Station; Switchgear Building;
Battery Storage Container; Welfare Building; Solar MV Transformer; Storage Building



NOTE:
Module orientation, configuration and tilt angle are indicative only and may vary at the detailed technical design stage, but will not exceed the overall height detailed in this planning application.



Rom Driven Posts (Scale 1:2)

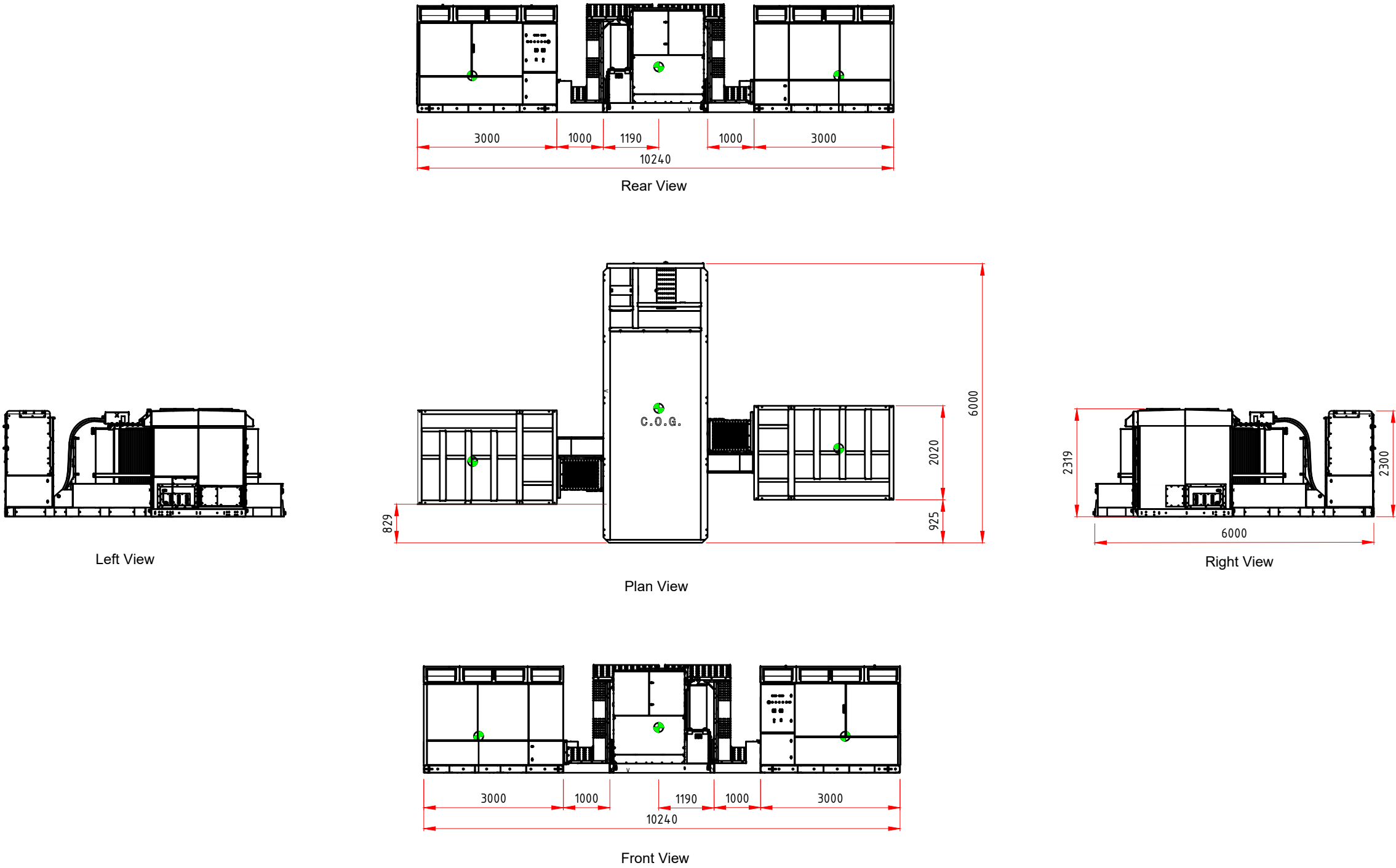
Steel sheet with trapezoidal shape, ram driven into the ground with defined depth. This item affords soil examinations and eventually loading tests to evaluate the transferable forces.

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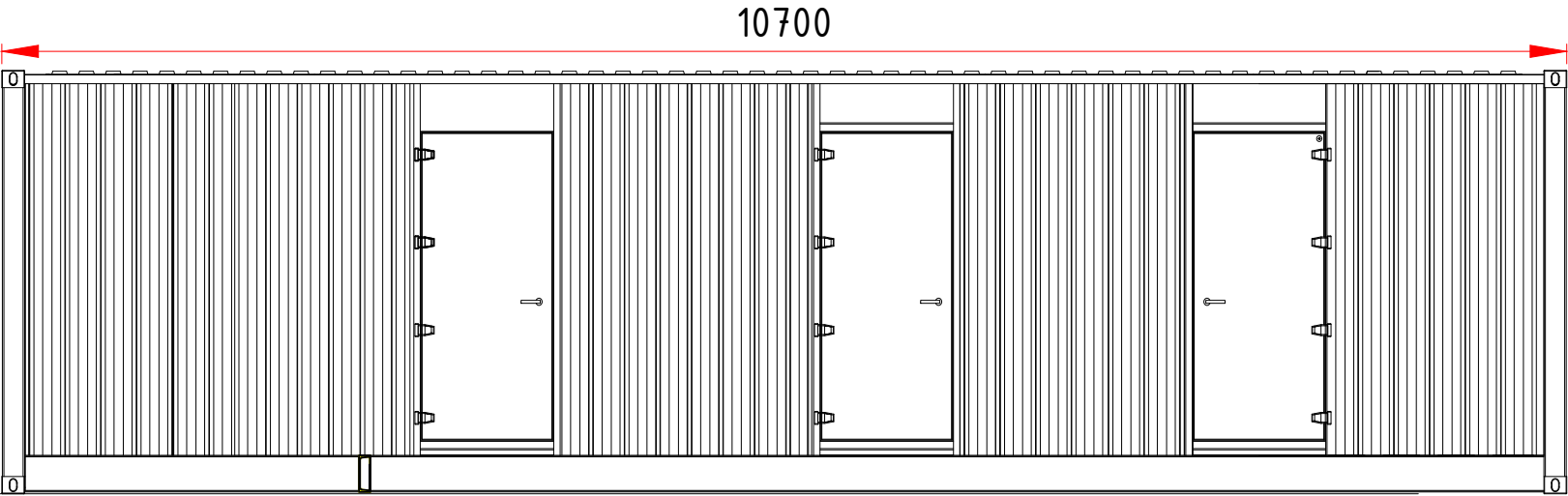
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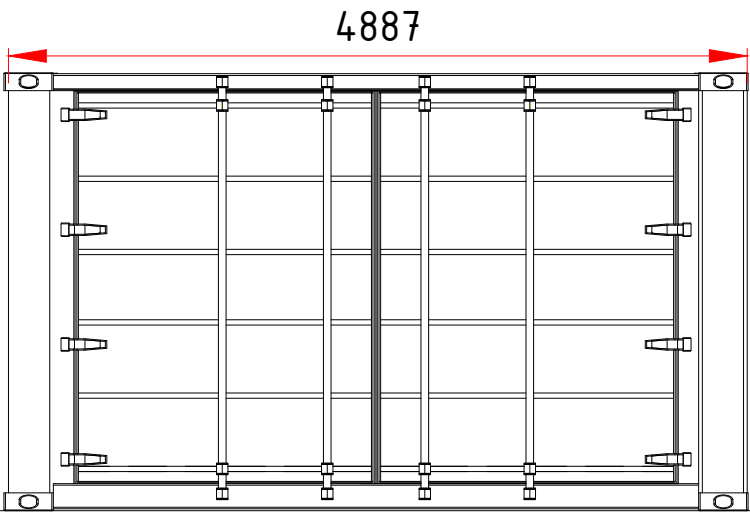
Revision History		Date
A	Updated Inverter/Transformer Unit	17-12-24



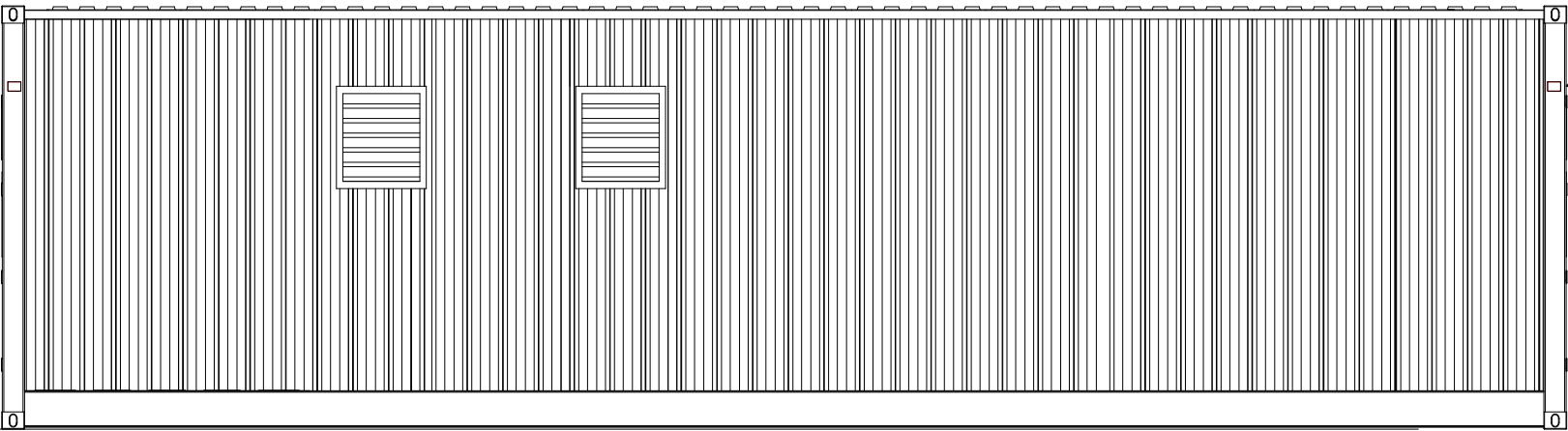
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client: AGR				
project: PRIORY FARM SOLAR ARRAY				
drawing title: INDICATIVE INVERTER / TRANSFORMER STATION				
date: October 2021		drawn by: SM	checked: PR	
drawing number: 3004-01-005		status: For Planning		
scale(s): 1:100@A3		rev: A		
planning environment design				



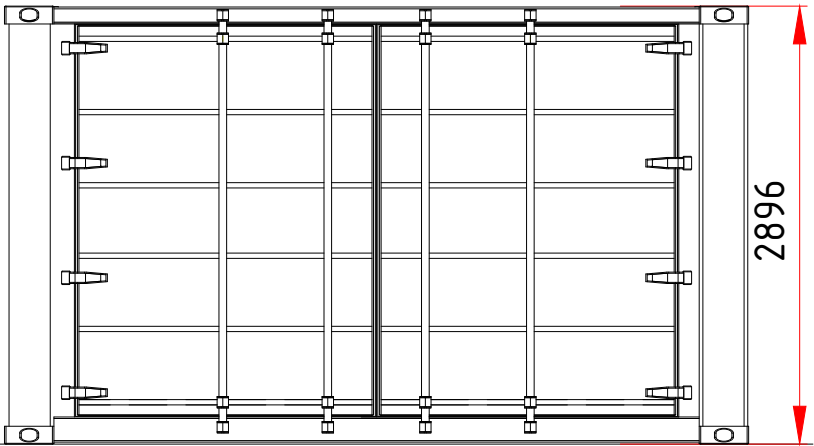
VIEW C



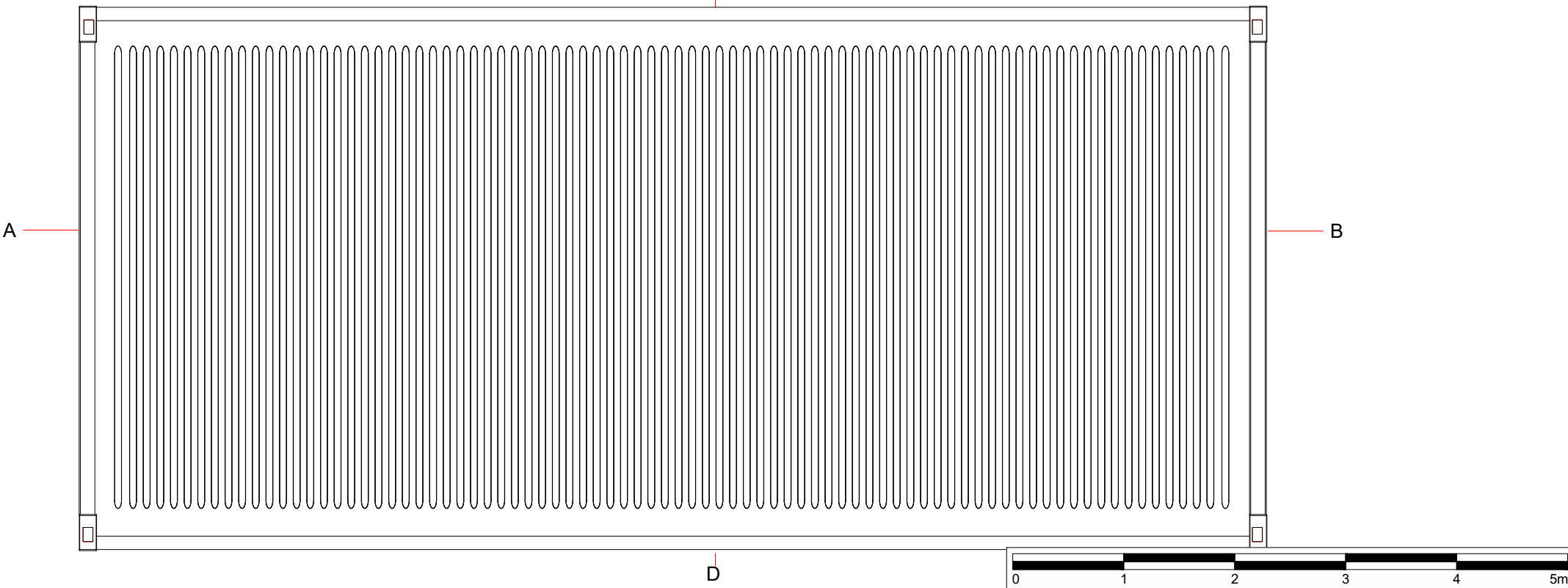
VIEW B



VIEW D



VIEW A



D

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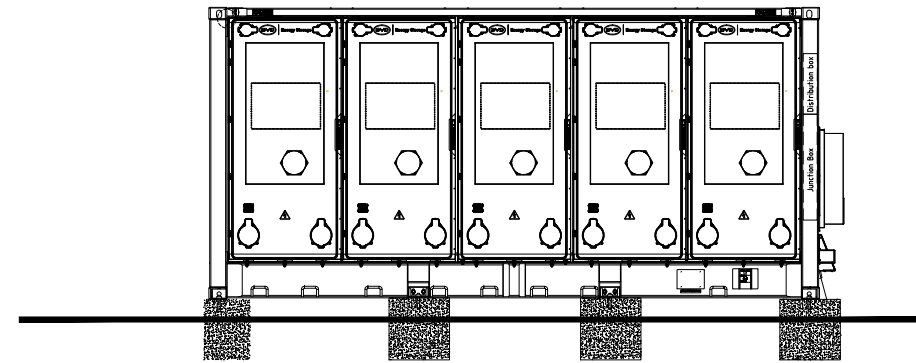
Revision History		Date
A	Switchgear building revised	26-02-25
B	Dimensions updated	04-03-25

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0844 8700 007		www.axisped.co.uk		
client: AGR				
project: PRIORY FARM SOLAR ARRAY				
drawing title: SWITCHGEAR BUILDING				
date: February 2025		drawn by:	checked:	
drawing number: 3004-01-008		SK	AR	
		status: For Planning		
scale(s): 1:50@A3		rev:	B	
planning environment design				

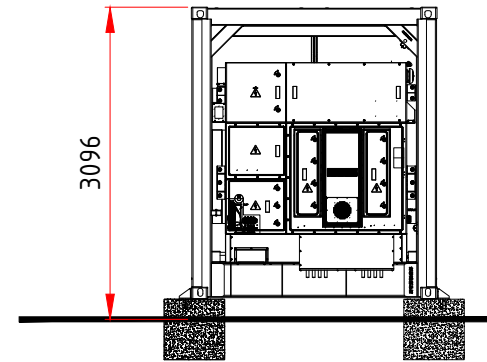
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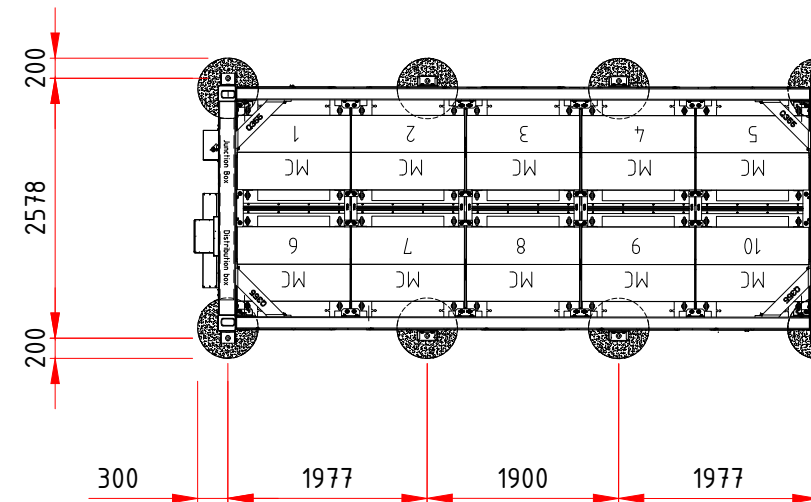
● Revision History		● Date
A	Updated BESS Units	17-12-24



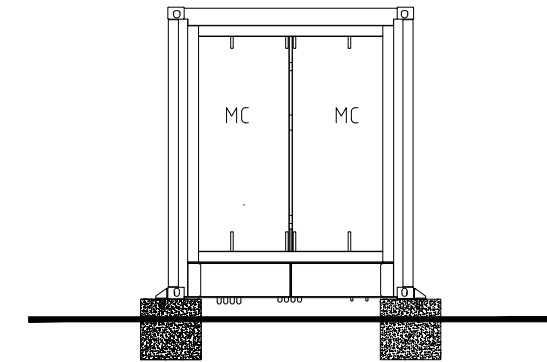
Rear View



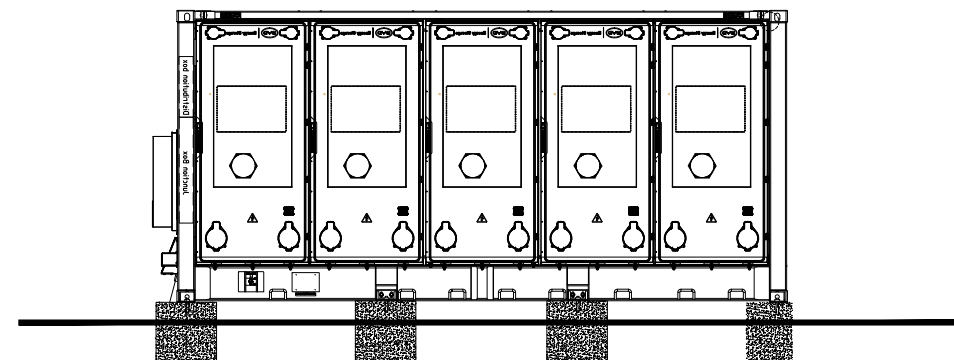
Left View



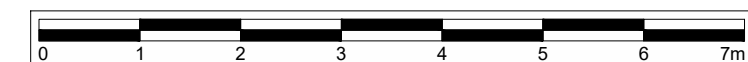
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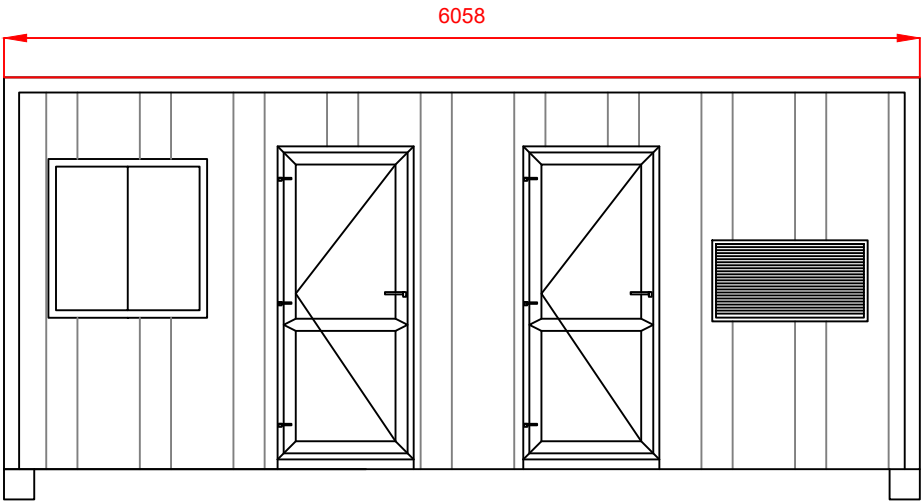
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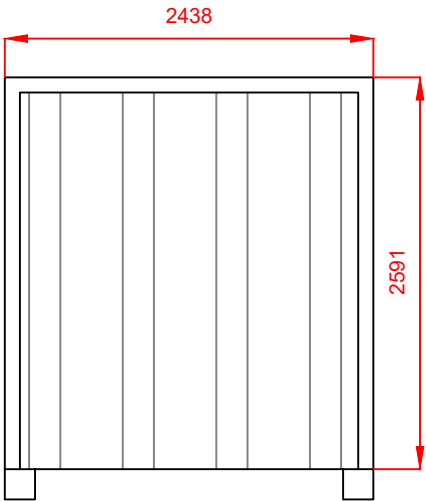
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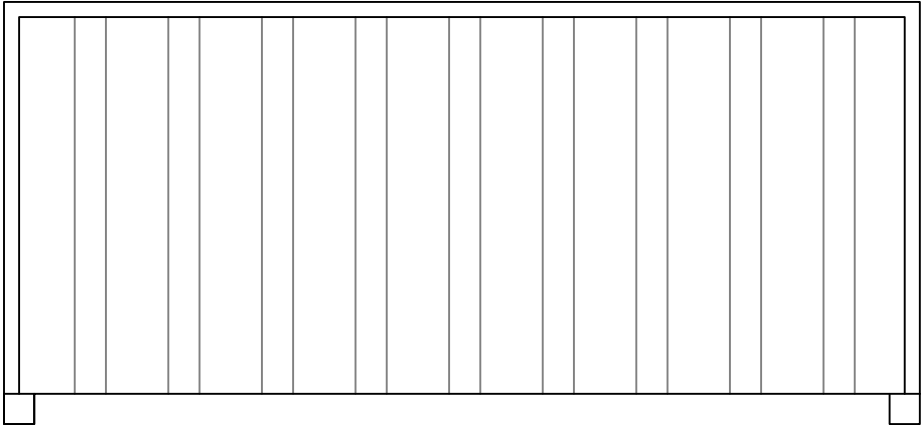
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0844 8700 007 - www.axisped.co.uk				
client: AGR				
project: PRIORY FARM SOLAR ARRAY				
drawing title: BATTERY STORAGE CONTAINER				
date: <i>October 2021</i>		drawn by: SM		checked: FR
drawing number: 3004-01-009		status:		
scale(s): 1:75 @ A3		rev: A		
p l a n n i n g e n v i r o n m e n t d e s i g n				



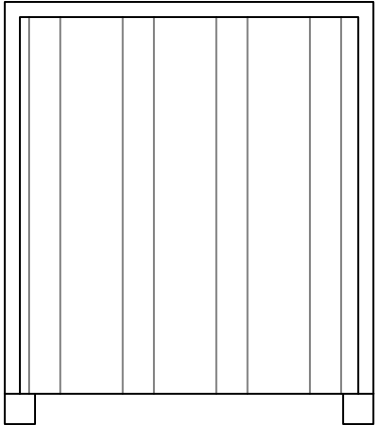
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SIDE

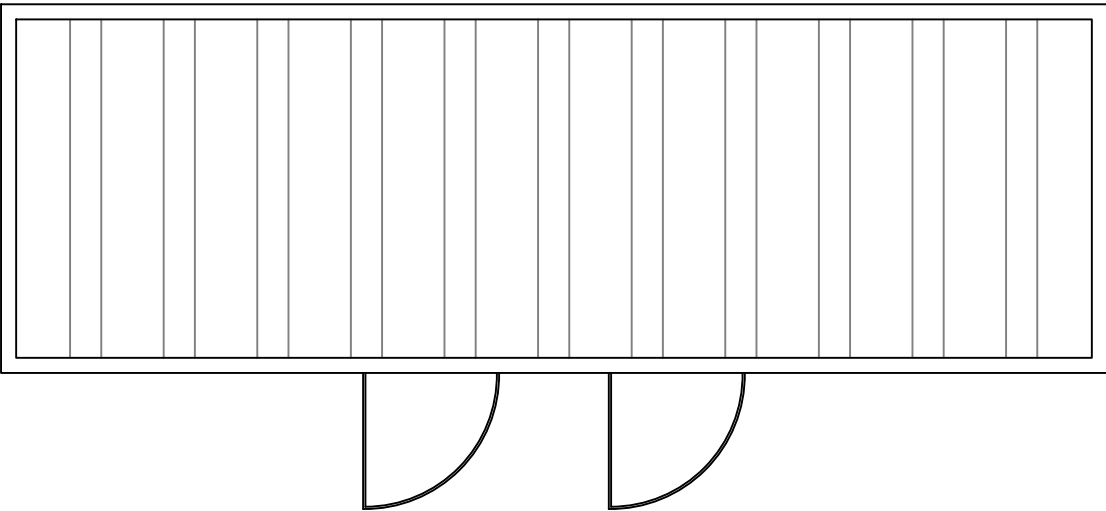


REAR



SIDE

ELEVATIONS



PLAN



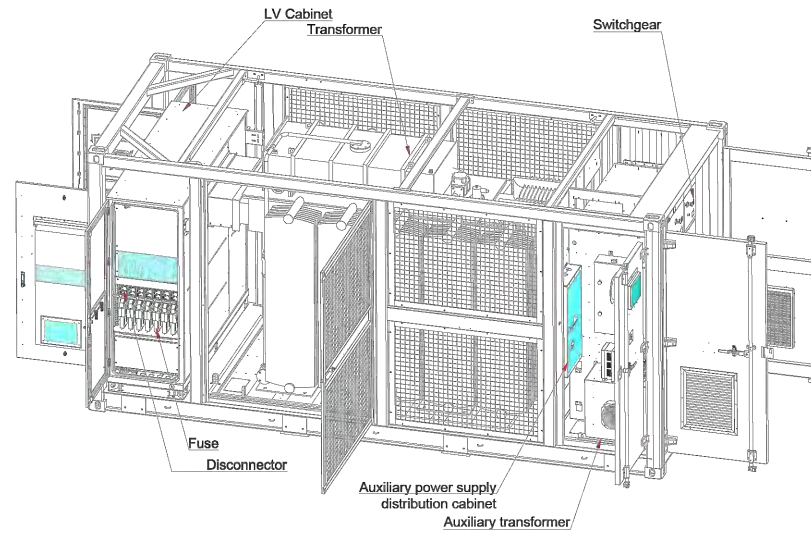
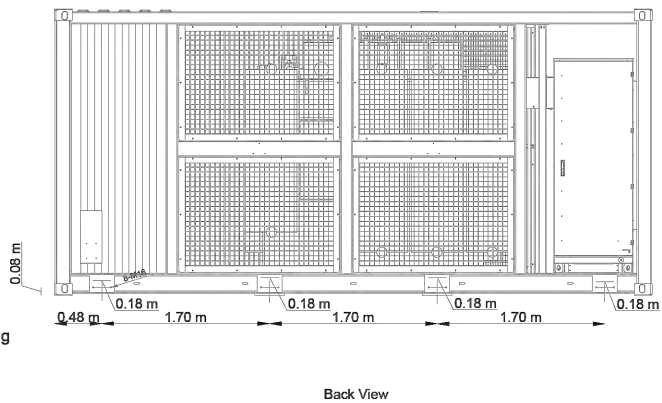
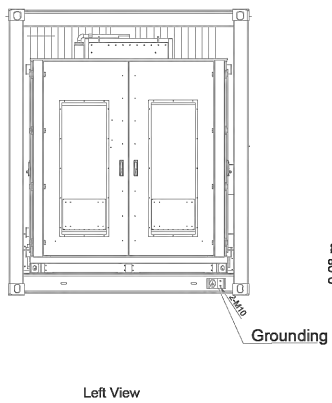
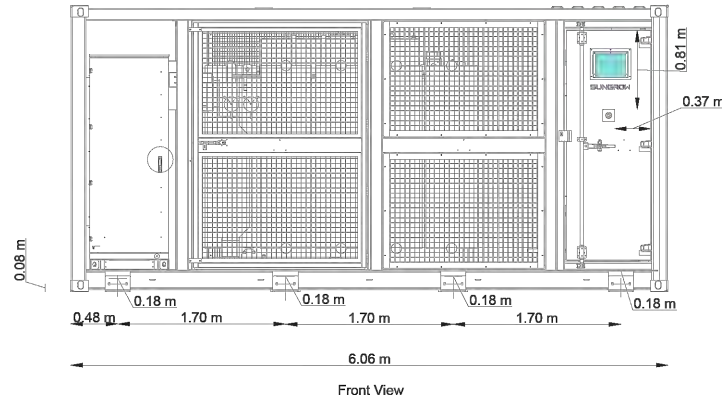
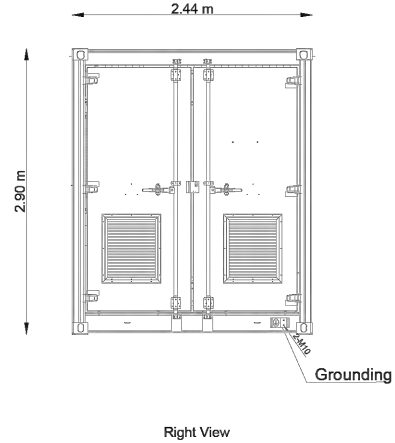
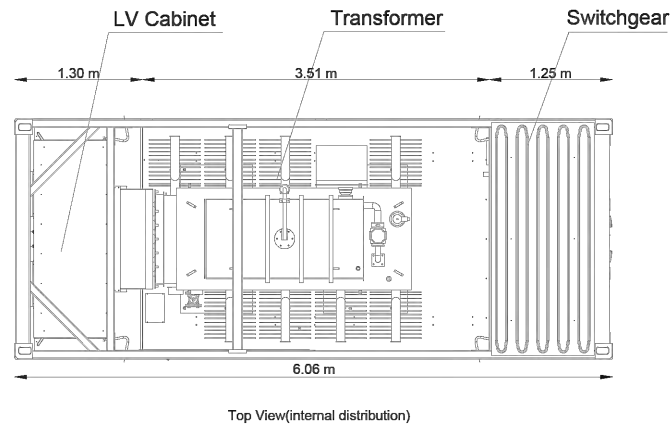
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Follow any figured dimensions - do not scale for construction purposes. IF IN DOUBT ASK.

Revision History		Date

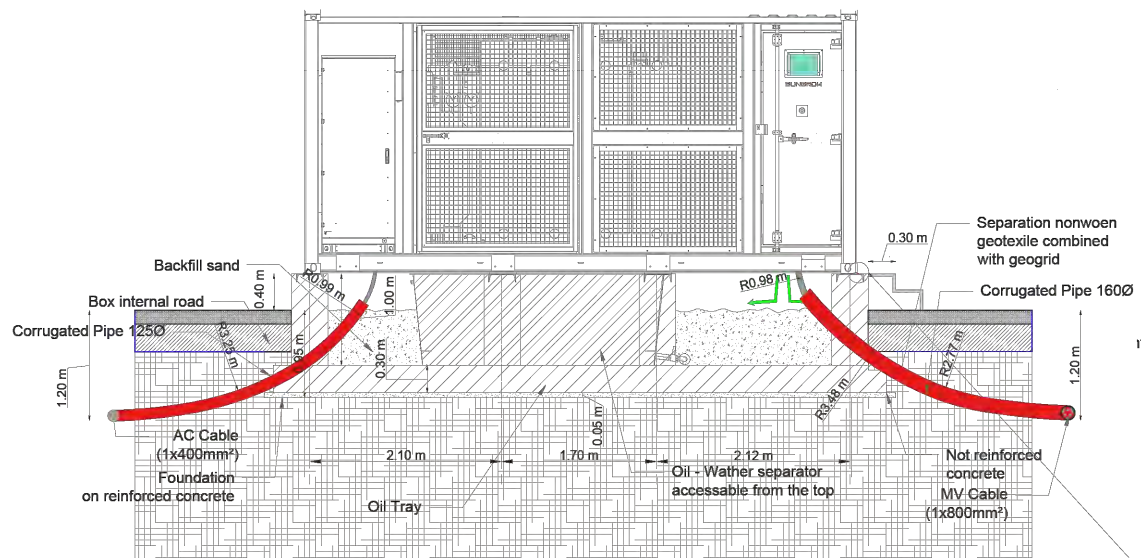
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Chester Office: Well House Barns Bruton Cheshire CH4 5DH South Manchester Office: Canella House 76 Water Lane Willeslow SK3 5BB		axis	
0844 8700 007 - www.axisped.co.uk			
client: AGR			
project: PRIORY FARM SOLAR ARRAY			
drawing title: WELFARE BUILDING			
date: February 2025	drawn by: SK	checked: AR	
drawing number: 3004-01-016	status: --		
scale(s): 1:50@A3	rev:		
planning environment design			

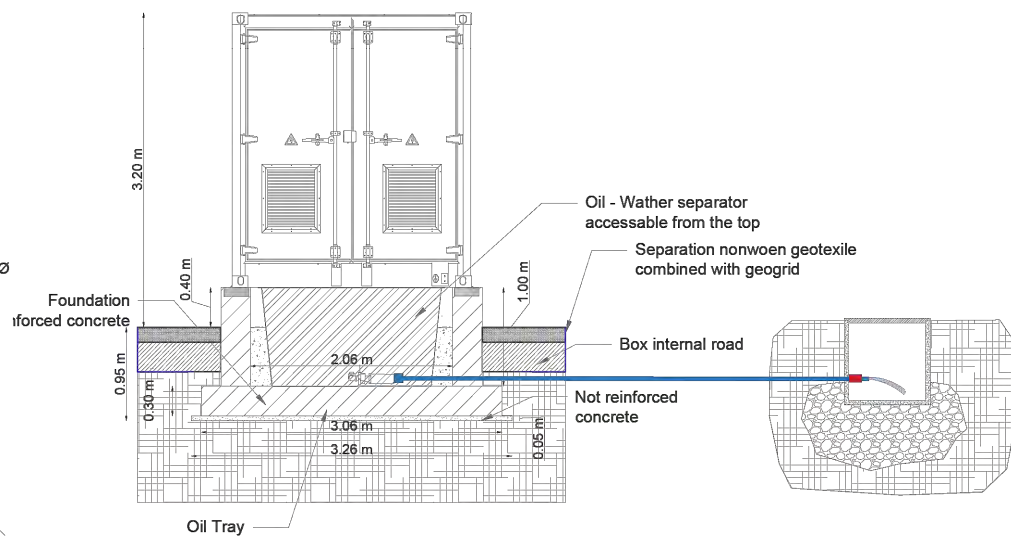


3D View - out of scale
(Without roof and door)

Section - particular of foundation



Particular of typical drainage



0344 8700 007
axis.co.uk



Client

AGR

Project

Priory Farm Solar Array

Drawing Title

Solar MV Transformer

Scale

1:75 @A3

Date

February 2025

Dwg no

3004-01-15

Status

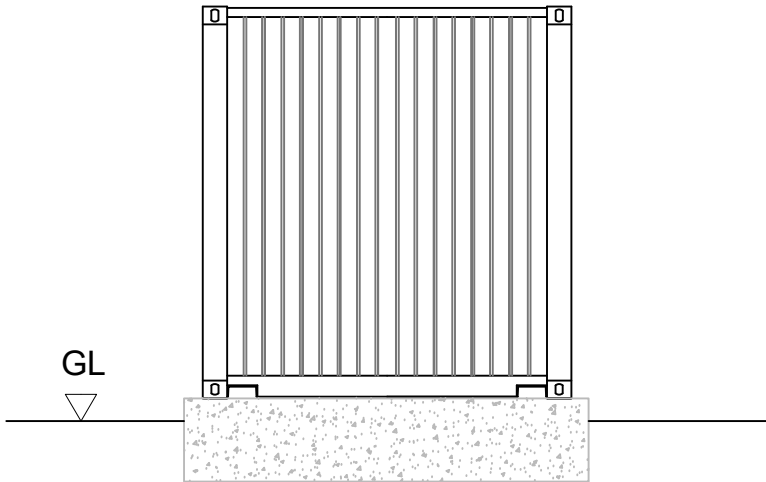
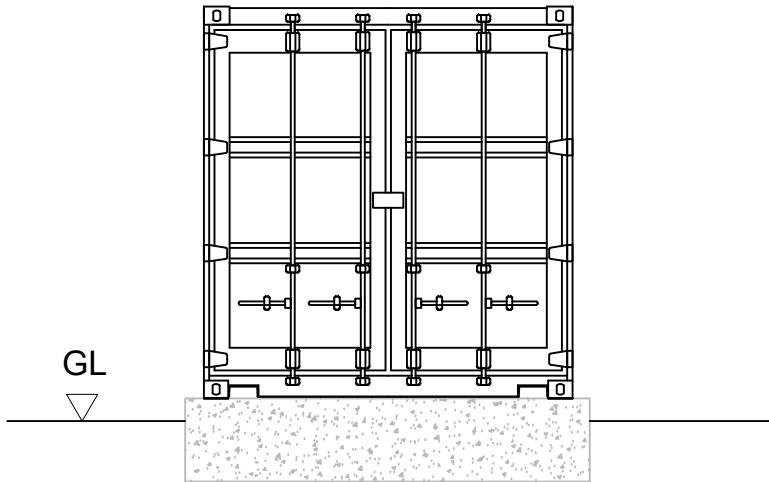
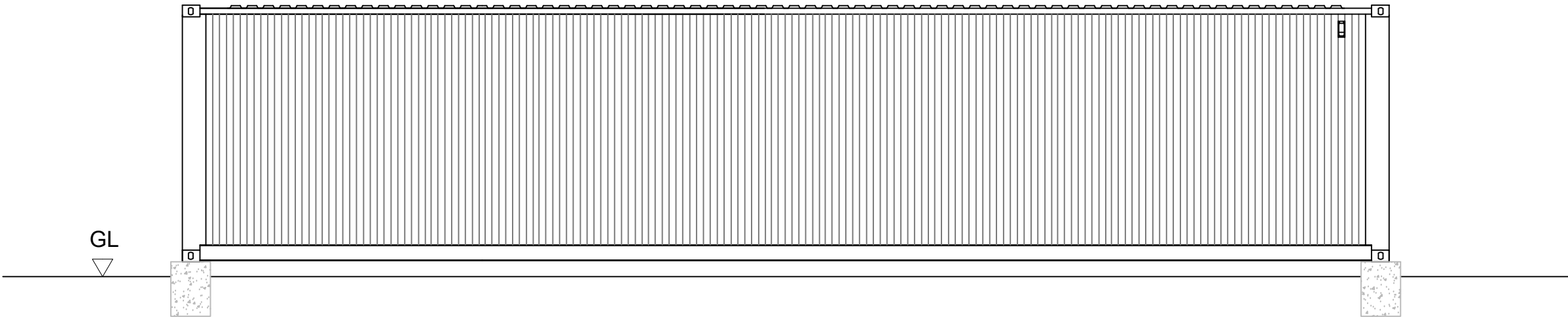
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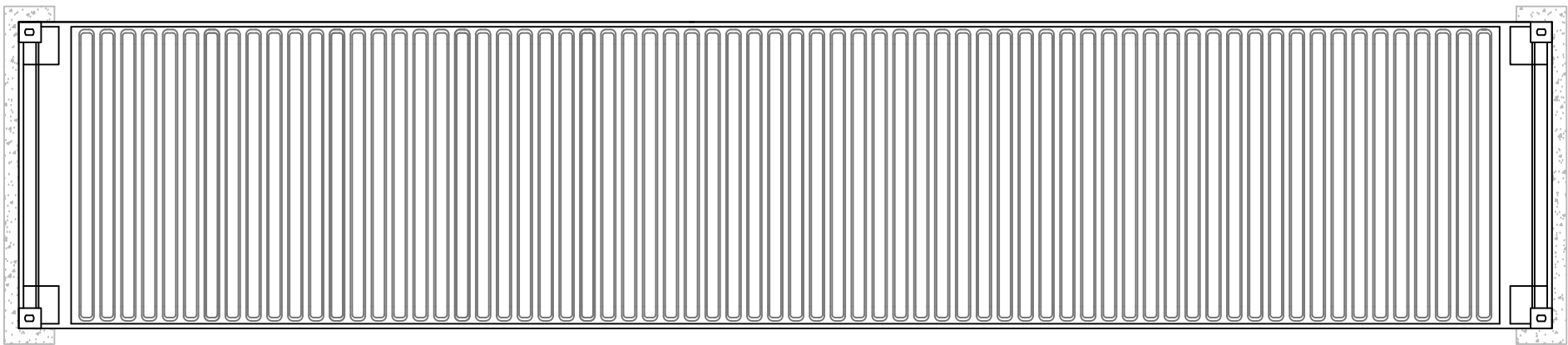
SK

Rev

AR



ELEVATIONS



PLAN



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Revision History		Date

Chester Office: Well House Barns Brutton Chester CH4 5DH South Manchester Office: Canella House 76 Water Lane Willeslow SK3 5BB 0844 8700 007 - www.axisped.co.uk	axis
client: AGR	
project: PRIORY FARM SOLAR ARRAY	
drawing title: STORAGE BUILDING	
date: October 2021	drawn by: SM checked: PR
drawing number: 3004-01-006	status: --
scale(s): 1:50@A3	rev:
planning environment design	

Appendix C
Topographic Survey

Provided as a separate document due to file size

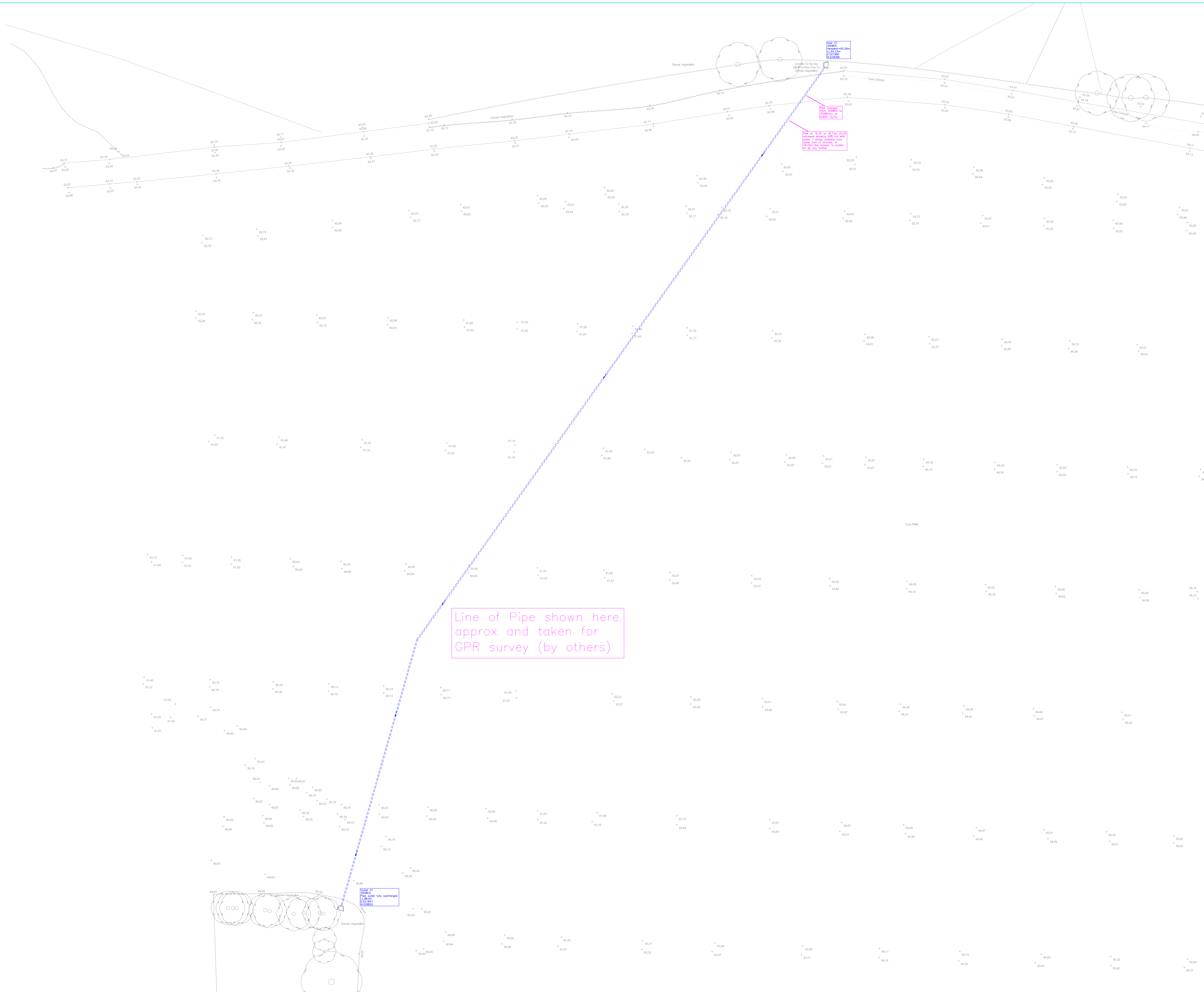
Appendix D

Infiltration Test Report

Provided as a separate document due to file size

Appendix E

Pipe Survey



Legend/Notes:



SW Sewer



Warrington Business Park, Long Lane, Warrington, Cheshire, WA2 8TX
Tel: 01925 244376 Fax: 01925 241517
Email: kevin@invek.com www.invek.com

Client
Weetwood

Drawing Title

Great Wymondley
Drainage Layout

Scale(s)
N.T.S

Date
19.09.24

Job Number
2284

Drawn
PW

Checked
RD

Approved
KN

Sheet Size, Drawing Number & Revision

A1_2284/01_Rev_00



Invek Surveys Ltd

Great Wymondley

19 September 2024



www.wincan.com

GRADE 3,4 & 5 Summary

STRUCTURAL DEFECTS

Structural defects			
Section	PLR	Grade	Fault description
Acceptable Structural Condition			

Grade 3; Best practice suggests consideration be given to repair in the medium term

Grade 4; Best practice suggests consideration be given to a repair to avoid potential collapse

Grade 5; Best practice suggests this pipe is at risk of collapse at any time; urgent consideration should be given to a repair to avoid collapse

SERVICE / OPERATIONAL DEFECTS

Service defects			
Section	PLR	Grade	Fault description
1	Inlet 01 X	5	Multiple defects at 6.0m

Grade 3; Best practice suggests consideration be given to maintenance activities in the medium term

Grade 4; Best practice suggests consideration be given to maintenance activity to avoid potential blockage

Grade 5; Best practice suggests this pipe is at immediate risk of backing up / causing flooding

Abandoned Surveys

Camera no access			
Section	PLR	Fault description	
1	Inlet 01 X	Settled deposits, other, 50% cross-sectional area loss, End	

Information

These summaries are based on the SRM grading from the WRC

Structural Defects (SRM 4)

Project name : Great Wymondley	Project Number :	Contact :	Date : 19/09/2024
-----------------------------------	------------------	-----------	----------------------

No.	PLR	Dir.	Use	Shape / Size	Date	Mat.	Total Length	Insp. Length	Peak HWG	Peak Score	Grade	Mean Score	Total Score
1	Inlet 01X	D	S	C 300	19/09/2024	VC	18.73	18.73	1	1	1	0.11	2

Inspection report

Date : 19/09/2024	Job number :	Weather : no rain or snow	Operator : Invek	Section number : 1	PLR SUFFIX: X
Weather no rain or snow	Vehicle :	Camera :	Preset :	Cleaned : no	Operator : Invek

Place : Road : Location Inspection	Great Wymondeley Graveley Lane Fields Inlet 01 (D/S) Outlet 01	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	Inlet 01 Outlet 01
Direction Use:	Surface water	Pipe shape :	Circular	
Year laid :		Pipe size :	300 mm	
Purpose :	Sample survey to determine asset condition	Pipe material :	Vitrified clay	
Total length :	18.73 m	Lining :		

Comment :

1:144	Position	Code	Observation	MPEG	Photo	Grade
	0.00	OF	Start node type, outfall, reference number : Inlet 01			0
	0.00	WL	Water level, 0% of the vertical dimension	00:00:04	1_2A	0
	0.00	S01	DES Settled deposits, fine, 15% cross-sectional area loss, Start Remarks: Silt and grass / straw	00:00:04	1_3A	3
	3.40	JDM	Joint displaced, medium	00:00:27	1_4A	1
	4.70	JDM	Joint displaced, medium	00:00:33	1_5A	1
	6.00	F01	DES Settled deposits, fine, 15% cross-sectional area loss, End Remarks: Silt and grass / straw	00:00:45		3
	6.00	S02	DEX Settled deposits, other, 40% cross-sectional area loss, Start Remarks: Grass / straw	00:00:45	1_7A	4
	7.40	F02	DEX Settled deposits, other, 40% cross-sectional area loss, End Remarks: Grass / straw	00:00:55		4
	7.40	S03	DEX Settled deposits, other, 20% cross-sectional area loss, Start Remarks: Grass / straw	00:00:55	1_9A	3
	9.80	MC	Material changes, concrete	00:02:03	1_10A	0
	10.00	F03	DEX Settled deposits, other, 20% cross-sectional area loss, End Remarks: Grass / straw	00:01:09		3
	10.00	S04	DEX Settled deposits, other, 5% cross-sectional area loss, Start Remarks: Grass / straw	00:01:09	1_11A	2
	12.50	DEX	Settled deposits, other, 25% cross-sectional area loss Remarks: Grass / straw	00:02:28	1_12A	4
	16.30	F04	DEX Settled deposits, other, 5% cross-sectional area loss, End Remarks: Grass / straw	00:02:49		2
	16.30	S05	DEX Settled deposits, other, 50% cross-sectional area loss, Start Remarks: Grass / straw	00:02:49	1_14A	4

Inspection Report

Date : 19/09/2024	Job number :	Weather : no rain or snow	Operator : Invek	Section number : 1	PLR : X
Weather no rain or snow	Vehicle :	Camera :	Preset :	Cleaned : no	Grade:

<

Inspection pictures

Place : Great Wymondley	Road : Graveley Lane	Date : 19/09/2024	Section number : 1	PLR Suffix : X
-----------------------------------	--------------------------------	-----------------------------	------------------------------	--------------------------



Photo: 1_2A
0m, Water level, 0% of the vertical dimension



Photo: 1_3A
0m, Settled deposits, fine, 15% cross-sectional area loss, Start
Remarks: Silt and grass / straw

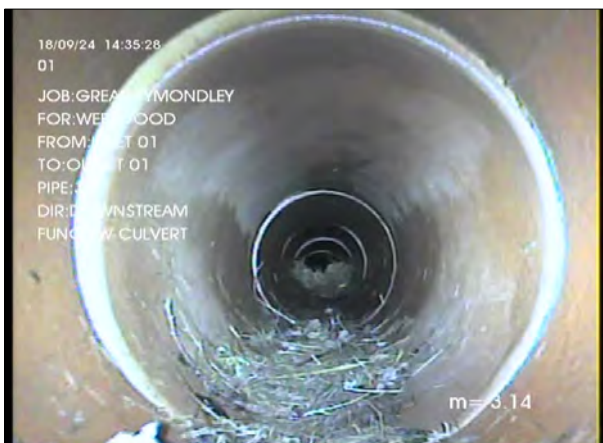


Photo: 1_4A
3.4m, Joint displaced, medium



Photo: 1_5A
4.7m, Joint displaced, medium

Inspection pictures

Place : Great Wymondley	Road : Graveley Lane	Date : 19/09/2024	Section number : 1	PLR Suffix : X
-----------------------------------	--------------------------------	-----------------------------	------------------------------	--------------------------



Photo: 1_7A
6m, Settled deposits, other, 40% cross-sectional area loss, Start
Remarks: Grass / straw



Photo: 1_9A
7.4m, Settled deposits, other, 20% cross-sectional area loss,
Start Remarks: Grass / straw



Photo: 1_10A
9.8m, Material changes, concrete



Photo: 1_11A
10m, Settled deposits, other, 5% cross-sectional area loss, Start
Remarks: Grass / straw

Inspection pictures

Place : Great Wymondley	Road : Graveley Lane	Date : 19/09/2024	Section number : 1	PLR Suffix : X
-----------------------------------	--------------------------------	-----------------------------	------------------------------	--------------------------



Photo: 1_12A
 12.5m, Settled deposits, other, 25% cross-sectional area loss
 Remarks: Grass / straw



Photo: 1_14A
 16.3m, Settled deposits, other, 50% cross-sectional area loss,
 Start Remarks: Grass / straw



Photo: 1_16A
 18.73m, Survey abandoned Remarks: Unable to pass grass /
 straw build up.

Report Information

This page can be edited to contain any information you feel is necessary.

A disclaimer.

Any terms and conditions

Appendix F

Surface Water Drainage Layout Drawings



NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV K, DEC 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).

KEY

- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FILTER DRAIN
- PROPOSED PERMEABLE GRASSCRETE
- PROPOSED EXTERNAL LEVEL
- EXISTING LEVEL
- SITE BOUNDARY
- OVERLAND FLOW ROUTE

REV **DATE** **DESCRIPTION** **DRAWN** **CHECK**

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P6	21.11.24	UPDATED AS PER FENCE ARRANGEMENT	WC	JA
P5	16.10.24	UPDATED TO SUIT NEW LAYOUT	WC	JA
P4	08.08.23	FENCE LINES REMOVED	JA	KT
P3	24.07.23	DRAINAGE LAYOUT UPDATED	JA	KT
P2	30.05.22	SITE LAYOUT UPDATED	JA	KT
P1	24.05.22	INITIAL ISSUE	JA	KT

Client
AGR SOLAR 4 LIMITED

Drawing Status
PLANNING

Project
LAND EAST OF GREAT WYMONDLEY

Title
PROPOSED DRAINAGE LAYOUT SHEET 1 OF 6

Date
MAY 2022

Scale
1:500

Drawn
JA

Checked
KT

Project No
5208

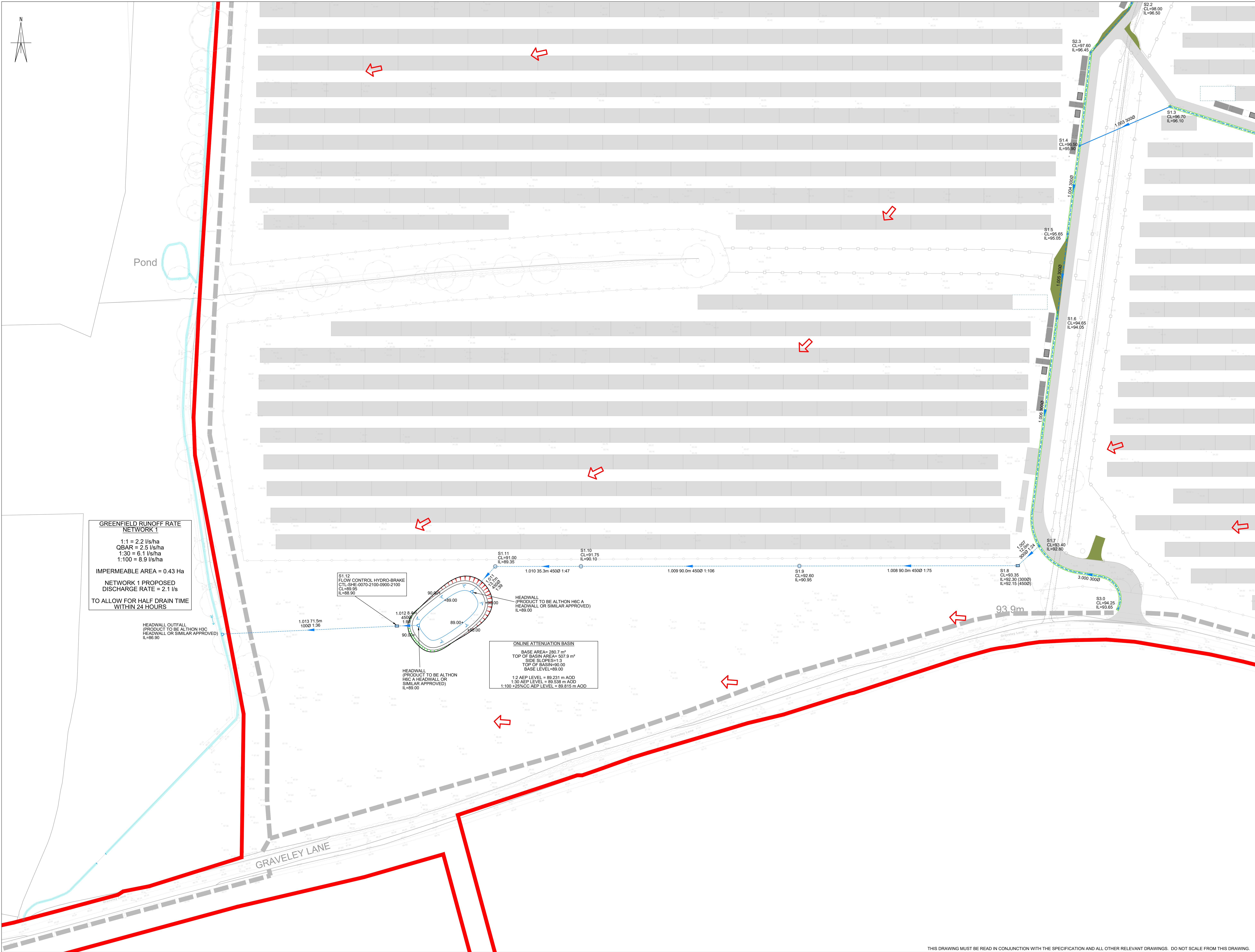
Drawing No
100

Revision
P7

Westwood
Development • Planning • Environment

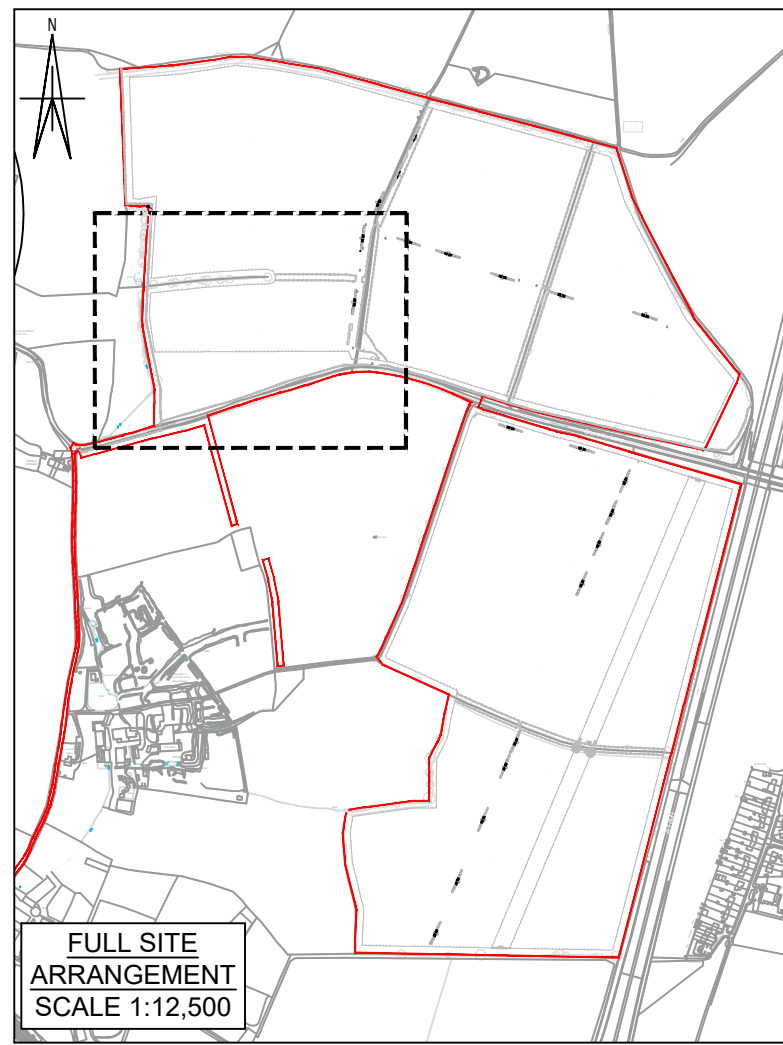
Park House, Florrd
Byrmer Gwair, Mold
CH7 1FG
Tel 01352 700045
info@westwood.net
www.westwood.net

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NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV K, DEC 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).



KEY

- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FILTER DRAIN
- PROPOSED PERMEABLE GRASSCRETE
- PROPOSED EXTERNAL LEVEL
- EXISTING LEVEL
- SITE BOUNDARY
- OVERLAND FLOW ROUTE

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P5	16.10.24	UPDATED TO SUIT NEW LAYOUT	WC	JA
P4	08.08.23	FENCE LINES REMOVED	JA	KT
P3	24.07.23	DRAINAGE LAYOUT UPDATED	JA	KT
P2	30.05.22	SITE LAYOUT UPDATED	JA	KT
P1	24.05.22	INITIAL ISSUE	JA	KT

REV	DATE	DESCRIPTION	DRAWN	CHECK
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Weetwood
Development • Planning • Environment

Park House, Florid
Byrner Gwair, Mold
CH7 1FG
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
AGR SOLAR 4 LIMITED

Drawing Status	Date
PLANNING	MAY 2022
Project	Scale (A0)
LAND EAST OF GREAT WYMONDLEY	1:500
Project No	Drawn
5208	JA
Drawing No	Checked
101	KT
Revision	
P7	

Title
PROPOSED DRAINAGE LAYOUT
SHEET 2 OF 6

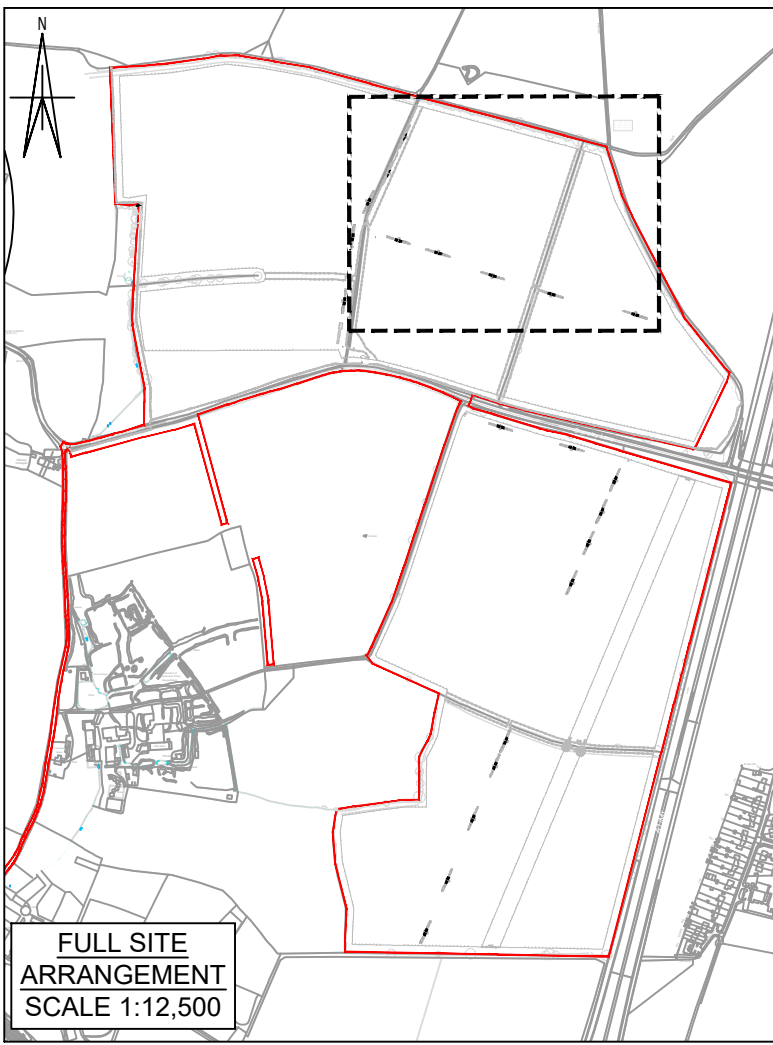
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Station	Existing	Proposed	Level
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PH1	522447.813	228487.220	100.280
PH2	522387.203	228483.317	98.950
PH3	522388.963	228517.518	97.528

NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV K, DEC 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT TOPOGRAPHICAL SURVEY (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).



KEY

- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FILTER DRAIN
- PROPOSED PERMEABLE GRASSCRETE
- PROPOSED EXTERNAL LEVEL
- EXISTING LEVEL
- SITE BOUNDARY
- OVERLAND FLOW ROUTE

P7	11.12.24	UPDATED AS PER NEW ACCESS ROAD ARRANGEMENT	WC	JA
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P4	08.08.23	FENCE LINES REMOVED	JA	KT
P3	24.07.23	DRAINAGE LAYOUT UPDATED	JA	KT
P2	30.05.22	SITE LAYOUT UPDATED	JA	KT
P1	24.05.22	INITIAL ISSUE	JA	KT

REV	DATE	DESCRIPTION	DRAWN	CHECK
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Byrner Gwair, Mold
CH7 1FG
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
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Drawing Status
PLANNING

Date
MAY 2022

Project
LAND EAST OF GREAT WYMONDLEY

Scale (A0)
1:500

Drawn
JA

Checked
KT

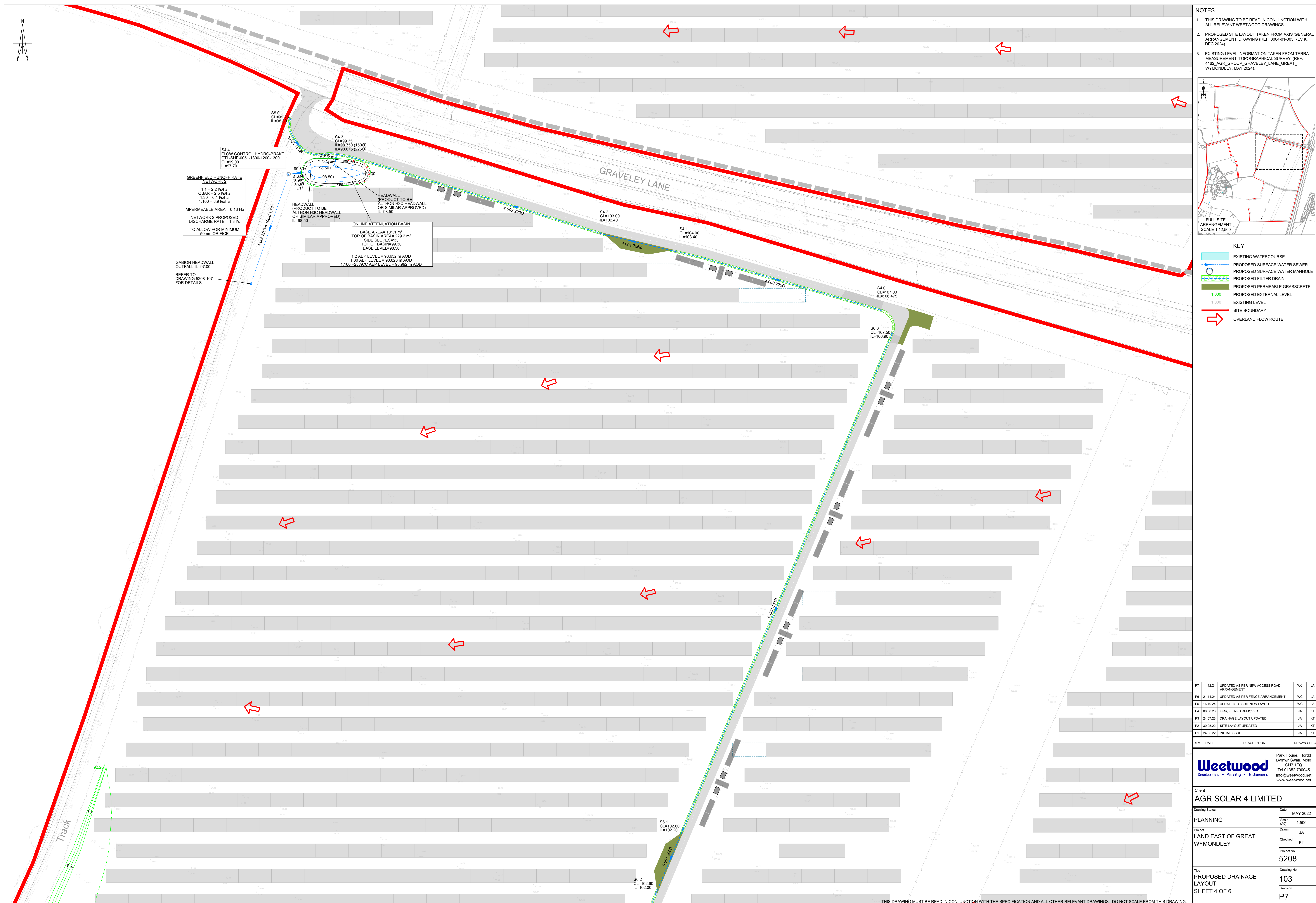
Project No
5208

Title
PROPOSED DRAINAGE LAYOUT SHEET 3 OF 6

Drawing No
102

Revision
P7

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NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV K, DEC 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT TOPOGRAPHICAL SURVEY (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).

KEY

- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FILTER DRAIN
- PROPOSED PERMEABLE GRASSCRETE
- PROPOSED EXTERNAL LEVEL
- EXISTING LEVEL
- SITE BOUNDARY
- OVERLAND FLOW ROUTE

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P4	21.11.24	UPDATED AS PER FENCE ARRANGEMENT	WC	JA
P3	16.10.24	UPDATED TO SUIT NEW LAYOUT	WC	JA
P2	08.08.23	FENCE LINES REMOVED	JA	KT
P1	24.07.23	INITIAL ISSUE	JA	KT

REV	DATE	DESCRIPTION	DRAWN	CHECK

Weetwood
Development • Planning • Environment

Park House, Florid
Byrmer Gwair, Mold
CH7 1FG
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
AGR SOLAR 4 LIMITED

Drawing Status	Date
PLANNING	JULY 2023

Project	Drawn
LAND EAST OF GREAT WYMONDLEY	JA

Checked	
KT	

Project No	
5208	

Drawing No	
105	

Revision	
P5	

Title
PROPOSED DRAINAGE LAYOUT
SHEET 6 OF 6

Appendix G

Surface Water Drainage Basin Details

- | | | | | |
|-----|----------|---|---------------|----|
| P2 | 07.01.25 | BASIN LEVELS UPDATED AS PER UPDATED DRAINAGE LAYOUT | WC | JA |
| P1 | 21.11.24 | INITIAL ISSUE | WC | JA |
| REV | DATE | DESCRIPTION | DRAWN CHECKED | |

P2	07.01.25	BASIN LEVELS UPDATED AS PER UPDATED DRAINAGE LAYOUT	WC	JA
P1	21.11.24	INITIAL ISSUE	WC	JA
REV. DATE			DESCRIPTION	
			DRAWN CHECKED	



Weetwood
Development & Planning & Environment

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www.weetwood.net

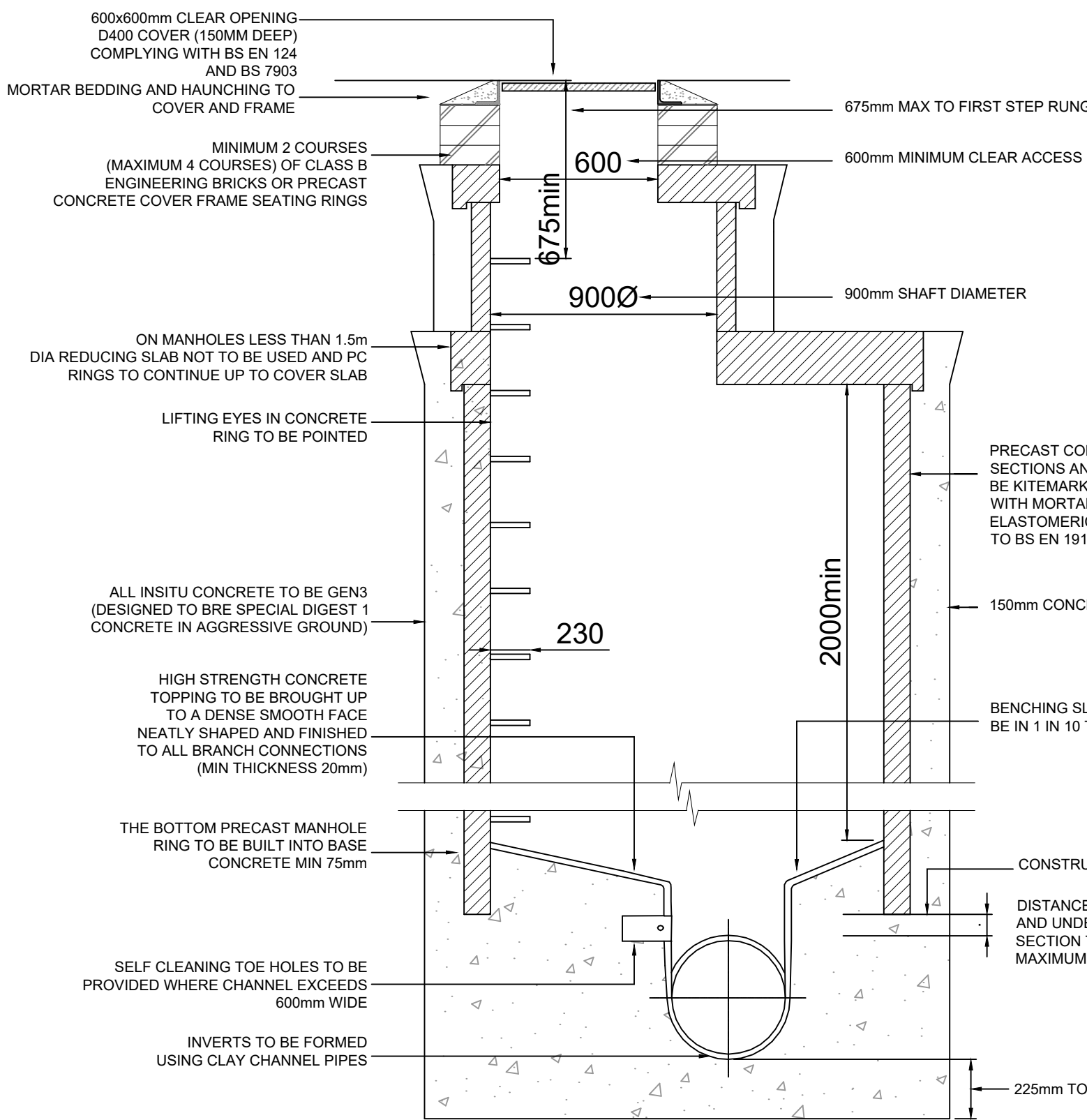
Client

AGR SOLAR 4 LIMITED

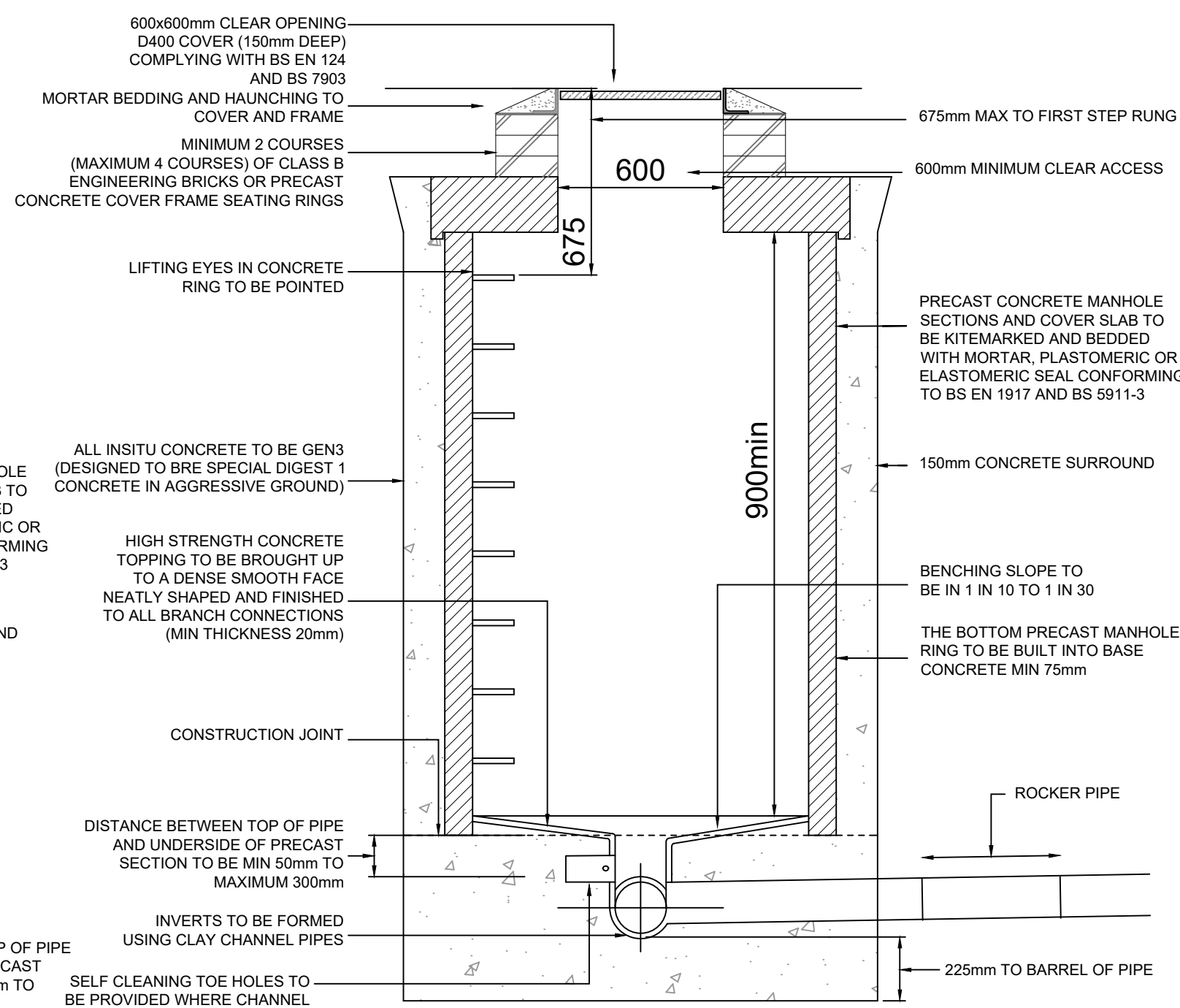
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	WC
	Checked
	TB
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	5208
Title OUTFALL & BASIN DETAILS	Drawing No 602 Revision P2

Appendix H

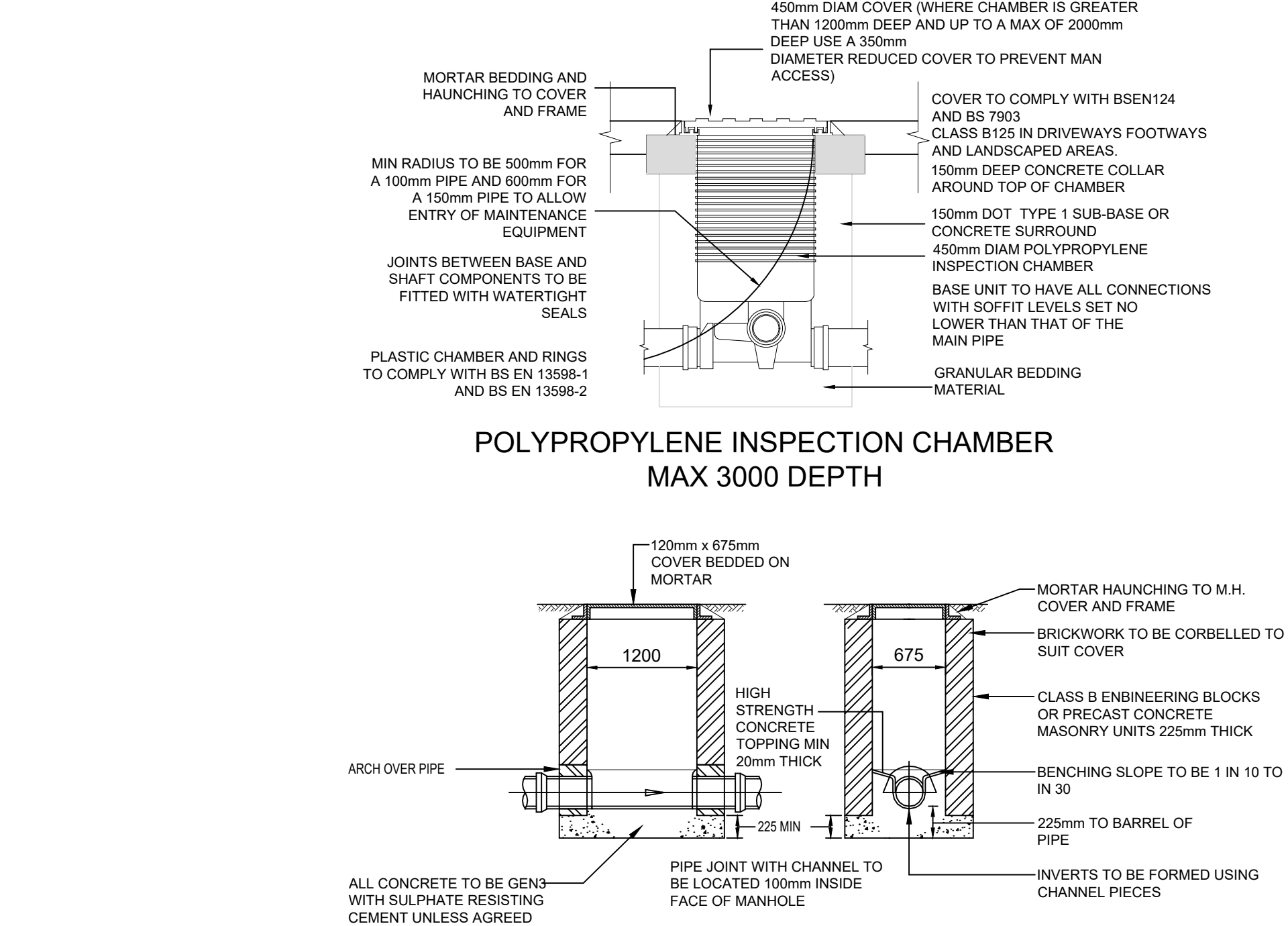
Surface Water Drainage Scheme Details



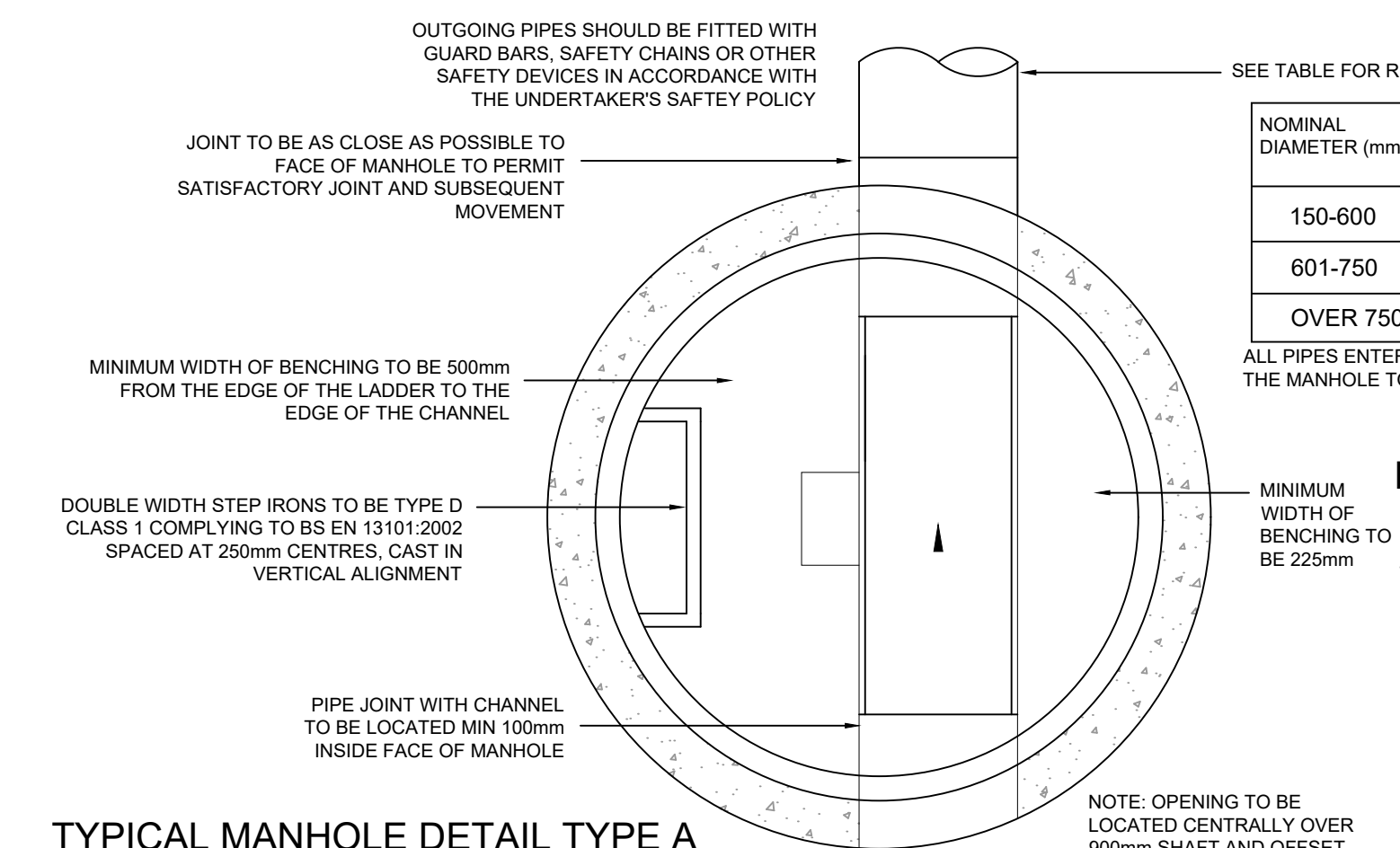
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DEPTH FROM COVER LEVEL TO
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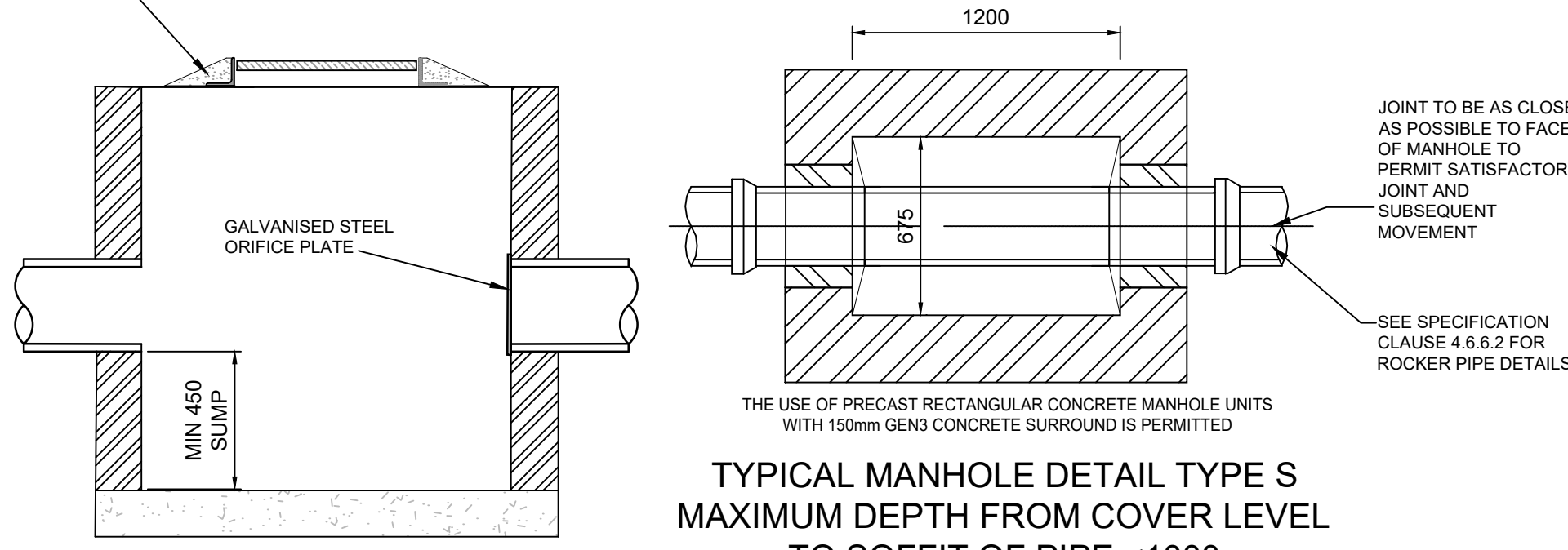
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TO SOFFIT OF PIPE 3000



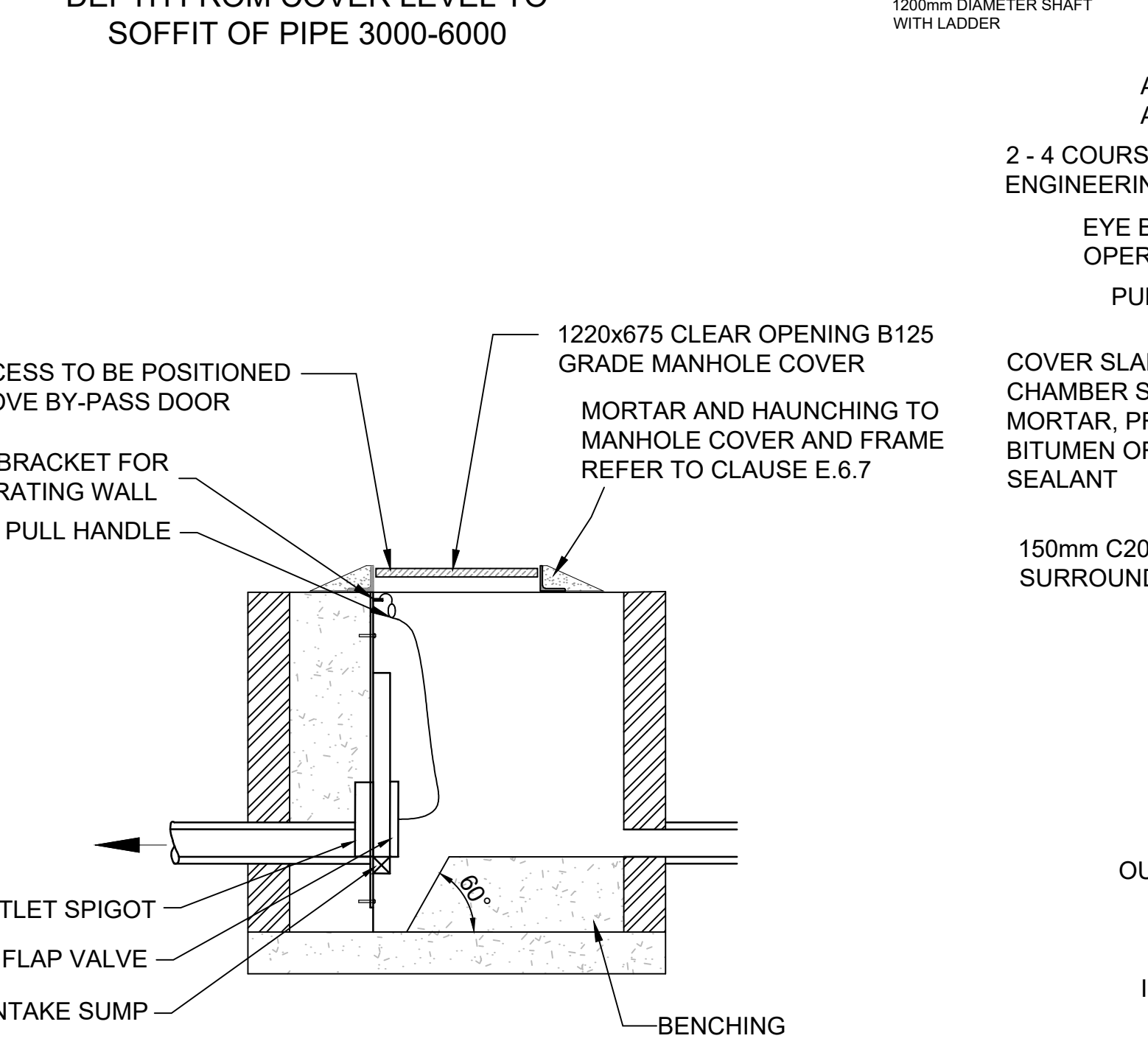
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TO SOFFIT OF PIPE <1000



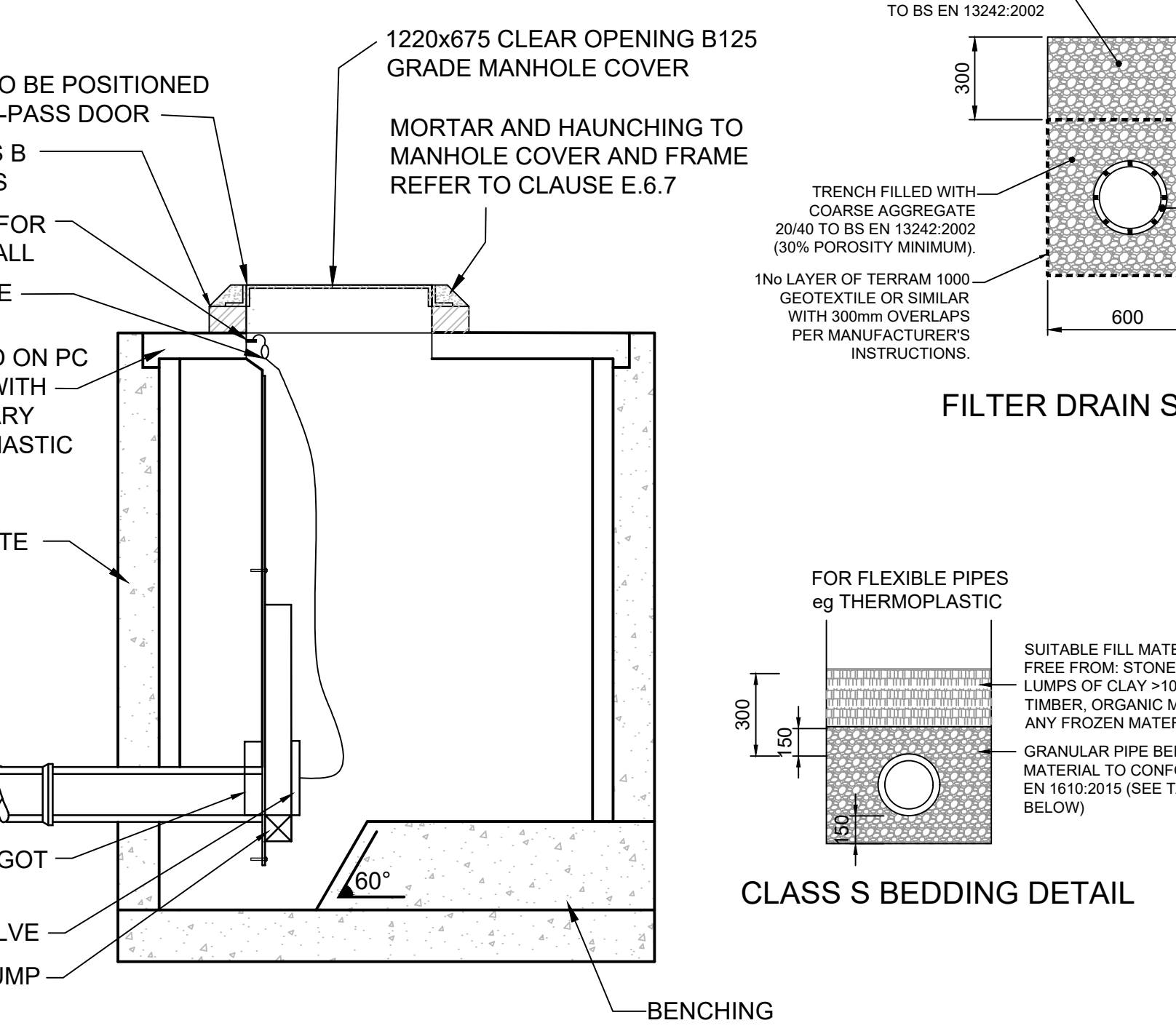
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MAXIMUM DEPTH FROM COVER LEVEL
TO SOFFIT OF PIPE 3000



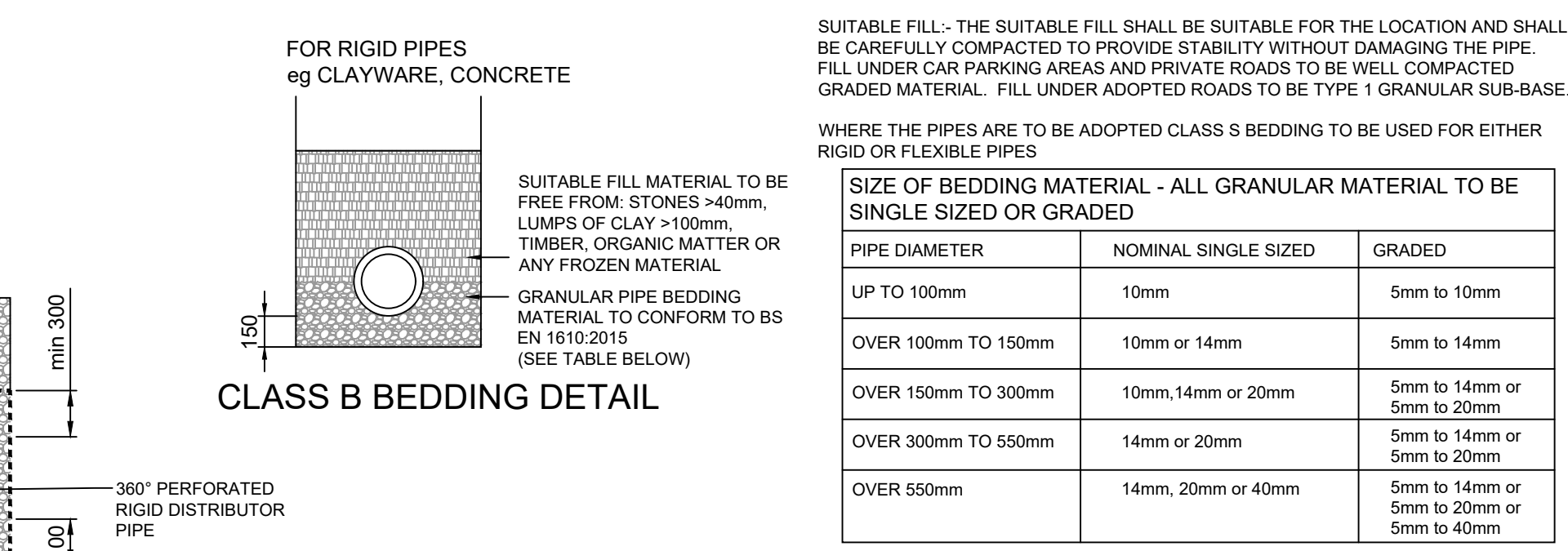
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BRICK MANHOLE DETAIL



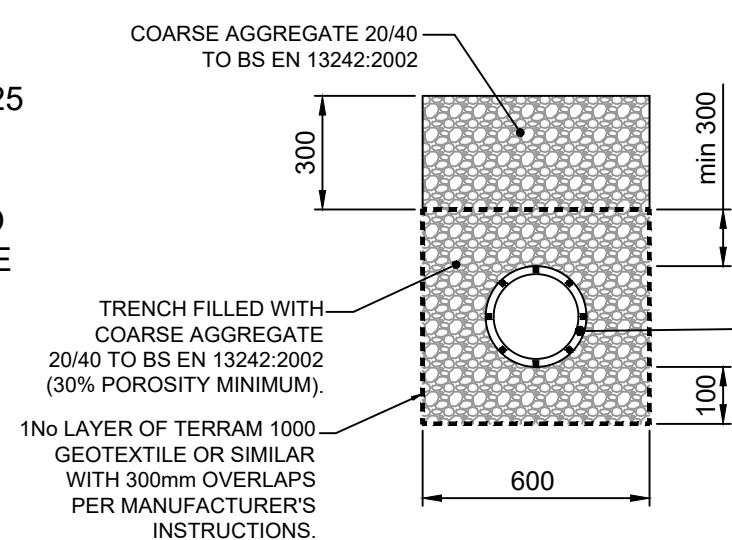
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(REFER TO HYDRO-INTERNATIONAL DESIGN
SPECIFICATIONS FOR FLOW CONTROL DIMENSIONS)



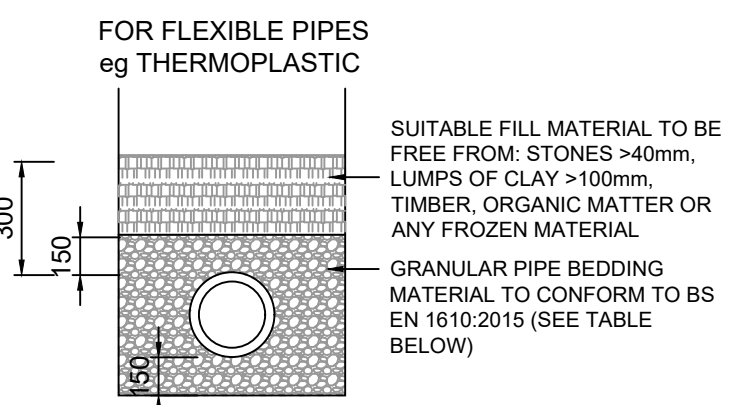
TYPICAL FLOW CONTROL MANHOLE DETAIL
(REFER TO HYDRO-INTERNATIONAL DESIGN
SPECIFICATIONS FOR FLOW CONTROL DIMENSIONS)



CLASS B BEDDING DETAIL



FILTER DRAIN SECTION



CLASS S BEDDING DETAIL

PRODUCT NAME	DIAMETER (mm)	MANUFACTURER	MATERIAL
Supersleve	100&150 (I.D)	Hepworth	Vitrified Clay
Superseal	100&225 (I.D)	Hepworth	Vitrified Clay
Densieve	100,150&225 (I.D)	Naylor	Vitrified Clay
Denseal	100,150&225 (I.D)	Naylor	Vitrified Clay
Ultra-Drain	110&160 (O.D)	Uponor	uPVC
Plastidrain	110&160 (O.D)	Hepworth	uPVC
Osmadrain	110&160 (O.D)	Wavin	uPVC
Osma Ultrarb	150&225 (I.D)	Wavin	uPVC
Solid Wall	110&160 (O.D)	Marley	uPVC
Quantum	150&225 (I.D)	Marley	uPVC
Underground Drain	110&160 (O.D)	Polypipe	uPVC
Ridgisever	150&225 (I.D)	Polypipe	uPVC

MANUFACTURER	PRODUCT NAME	MATERIAL	MAX DEPTH
Naylor	Plastic Inspection Chamber	Polypropylene	Up to 1200mm
Hepworth	PPIC	Polypropylene	Up to 1200mm
Uponor	Inspection Chamber (450mmØ)	Polypropylene	Up to 1200mm
Marshall	Inspection Chamber To B55911 pt2	Precast concrete	Up to 1000mm
Wavin	Osma Ultrarb Inspection Chamber	Polypropylene	Up to 1200mm
Wavin	Osma Drain Universal Inspection Chamber	Polypropylene	Up to 1200mm
Wavin	Non Entry Inspection Chamber	Polypropylene	Up to 2000mm
Marley	Inspection Chamber (450mmØ)	Polypropylene	Up to 1200mm
Polypipe	110mm Inspection Chamber (460mmØ)	Polypropylene	Up to 1200mm

CONCRETE PROTECTION
CLASS 1 SULPHATE CONDITIONS
ADOPTABLE STANDARDS AND AREAS SUBJECT TO HEAVY LOADING
GEN3 OR GEN 3
AREAS SUBJECT TO LIGHT LOADING eg. PRIVATE DRIVES, SMALL CAR PARKS
GEN1 OR ST2
FOR BURIED CONCRETE EXPOSED TO SULPHATE CONDITIONS
CLASS 2
CLASS 3
CLASS 4A
CLASS 4B
FND 2
FND 3
FND 4A
FND 4B

- NOTES
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS
 - ALL LEVELS ARE IN METERS (AOD)
 - ALL DISTANCES ARE IN MILLIMETERS

- NOTES
- THE WORKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, NATIONAL BUILDING SPECIFICATION (NBS), WELSH MINISTERS STANDARDS, SEWERS FOR ADOPTION, 7TH EDITION & VOLUME 1 OF THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS

THE LOCATION LINE & LEVEL OF ALL KNOWN EXISTING DRAINAGE PIPEWORK INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY.

IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE AND LEVEL, BY WAY OF HAND EXCAVATED TRIAL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE INSTALLATIONS.

THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THROUGHOUT THE DURATION OF THE CONTRACT A FULL TRAFFIC MANAGEMENT SYSTEM TO ENSURE SAFE PASSAGE OF VEHICLES/PEDESTRIANS IN THE VICINITY OF THE WORKS.

ALL TRAFFIC SIGNS, SIGNALS, BARRIERS ETC. SHALL BE IN ACCORDANCE WITH CHAPTER 8 OF THE TRAFFIC SIGNS MANUAL.

THE CONTRACTOR SHALL MAKE ADEQUATE PROVISION FOR DEALING WITH AND DISPOSING OF GROUND/SURFACE WATER ENCOUNTERED DURING EXCAVATIONS

ALL SOFT / HARD PAVED AREAS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED FOLLOWING THE INSTALLATION OF ALL DRAINAGE WORKS. ALL SURFACE MARKINGS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED.

ALL SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OFF SITE.

UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL PROVIDE AS BUILT SETTING OUT CO-ORDINATE AND LEVEL INFORMATION.

PIPEWORK WITH LESS THAN 750mm OF COVER IN TRAFFICKED AREAS TO BE CONCRETE ENCASED. (BEDDING CLASS Z).

PIPEWORK WITH MORE THAN 750mm OF COVER TO HAVE GRANULAR BED AND SURROUND. (BEDDING CLASS S).

ALL GULLY CONNECTIONS SUBJECT TO TRAFFIC LOADING TO HAVE CLASS Z BEDDING & SURROUND

ROCKER PIPES TO BE PROVIDED AT ENTRY & EXIT OF MANHOLES FOR ALL PIPES OF 750Ø AND LESS

ALL MANHOLES SHALL BE WATERTIGHT.

P1	12.11.24	Issued for Approval	WC	TB
Rev	Date	Description	Drawn	Check

Park House, Ffordd Byrnwr Gwair, Mold CH7 1FQ
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www.weetwood.net

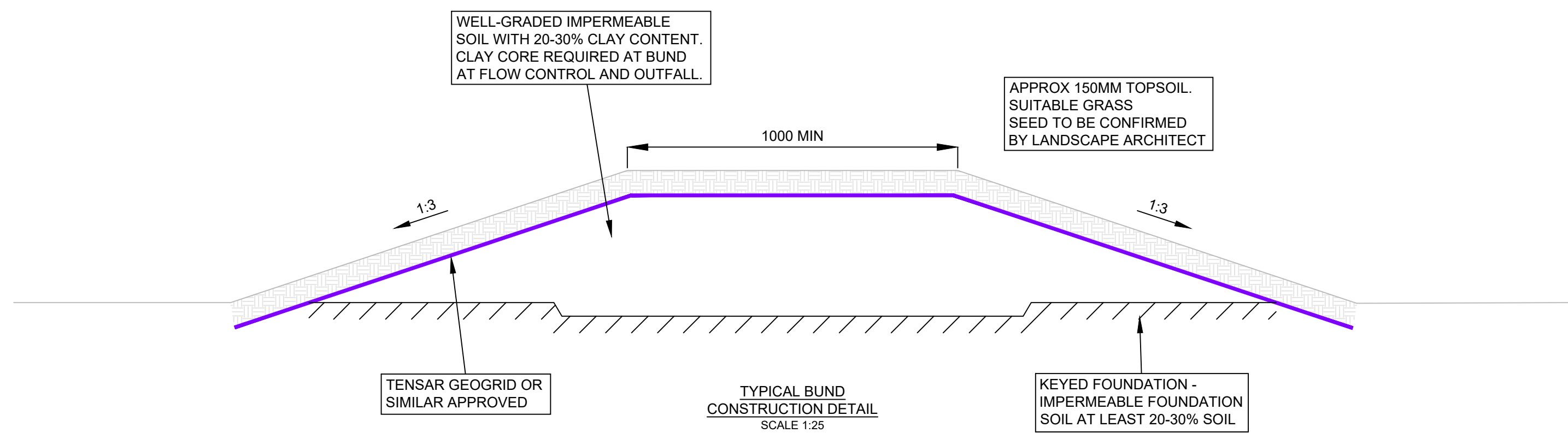
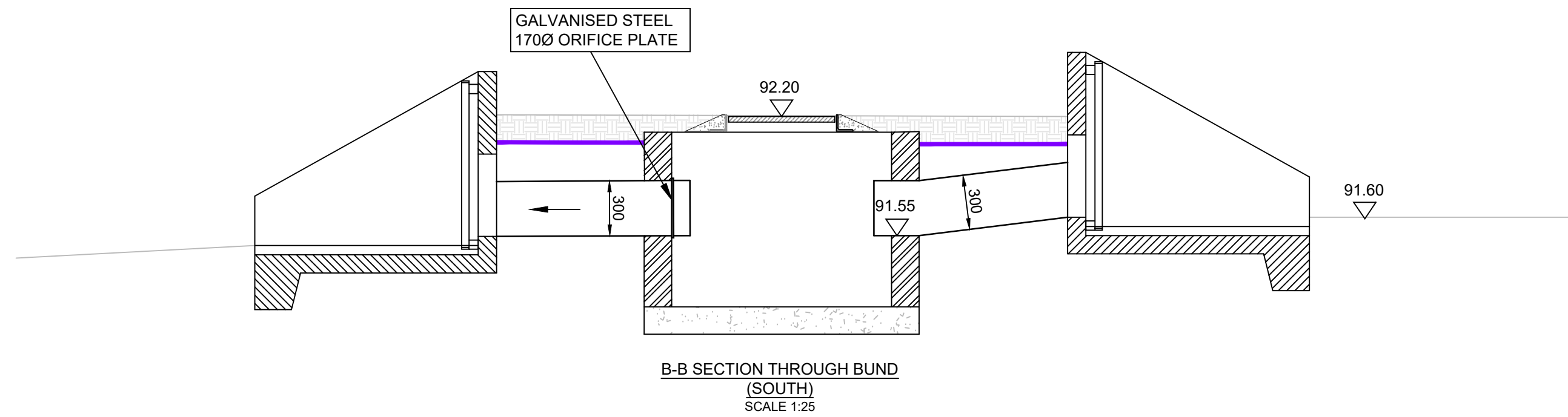
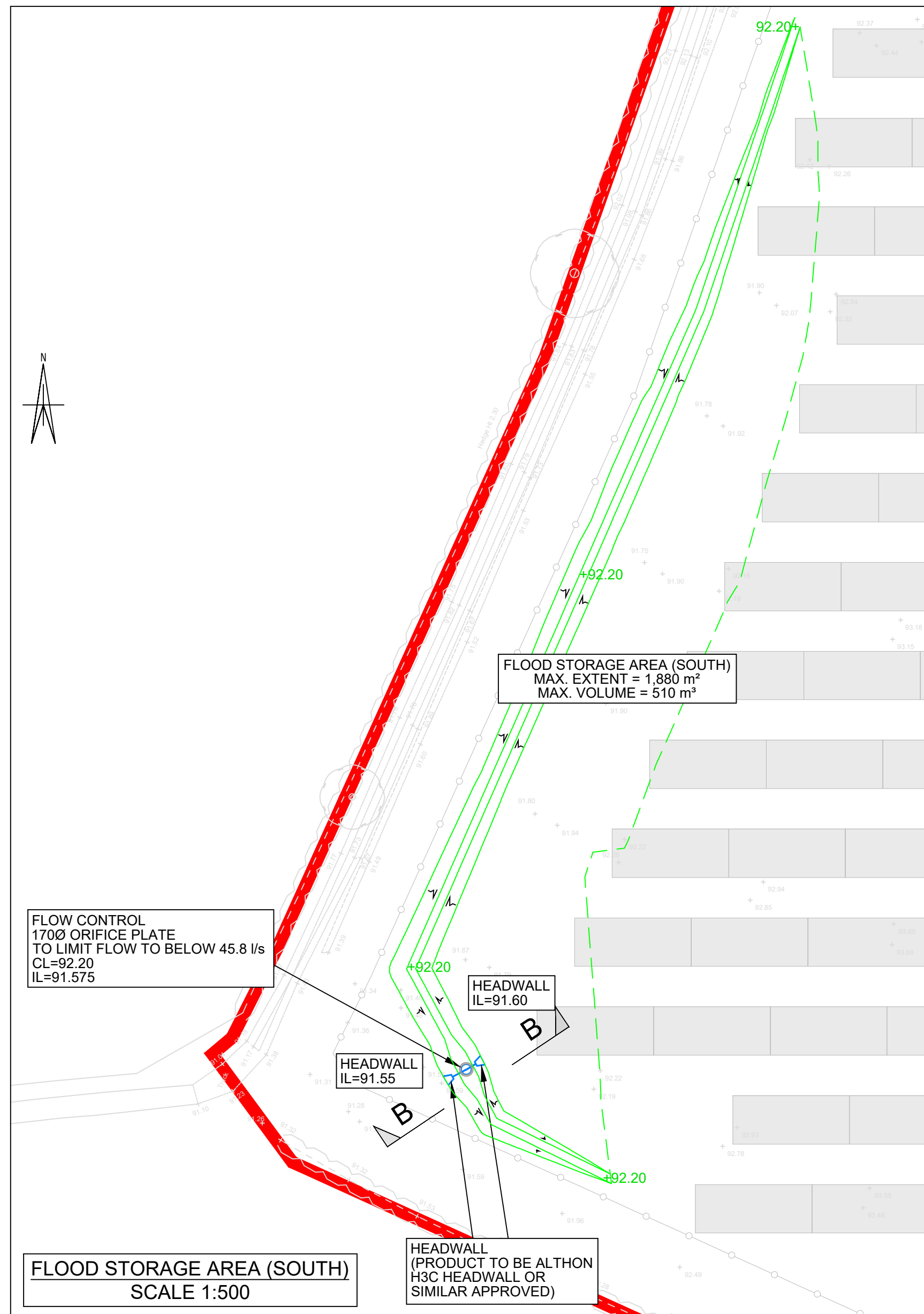
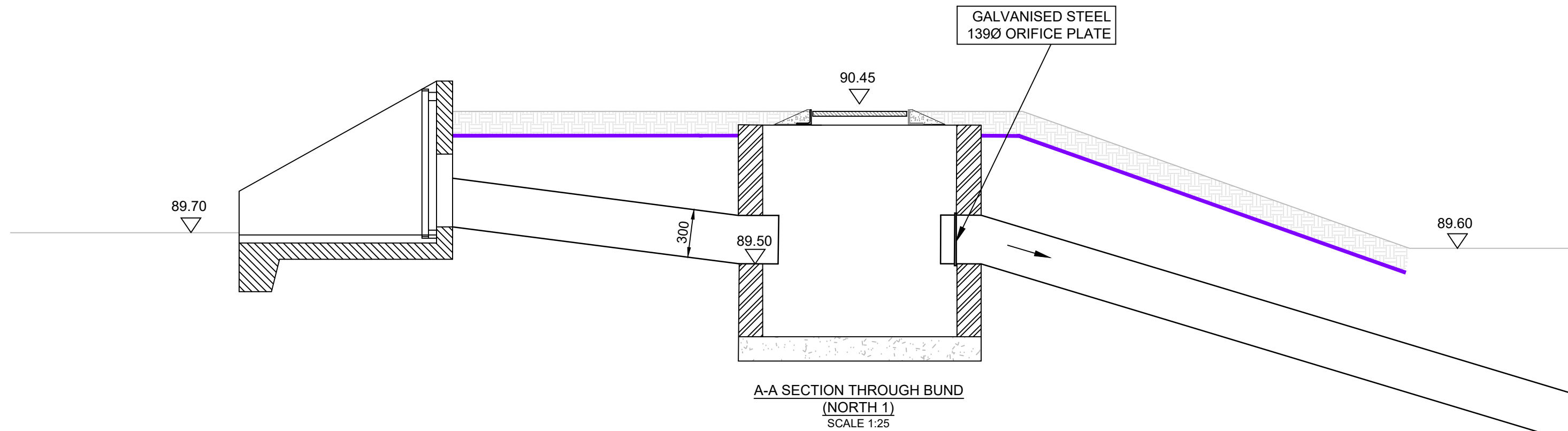
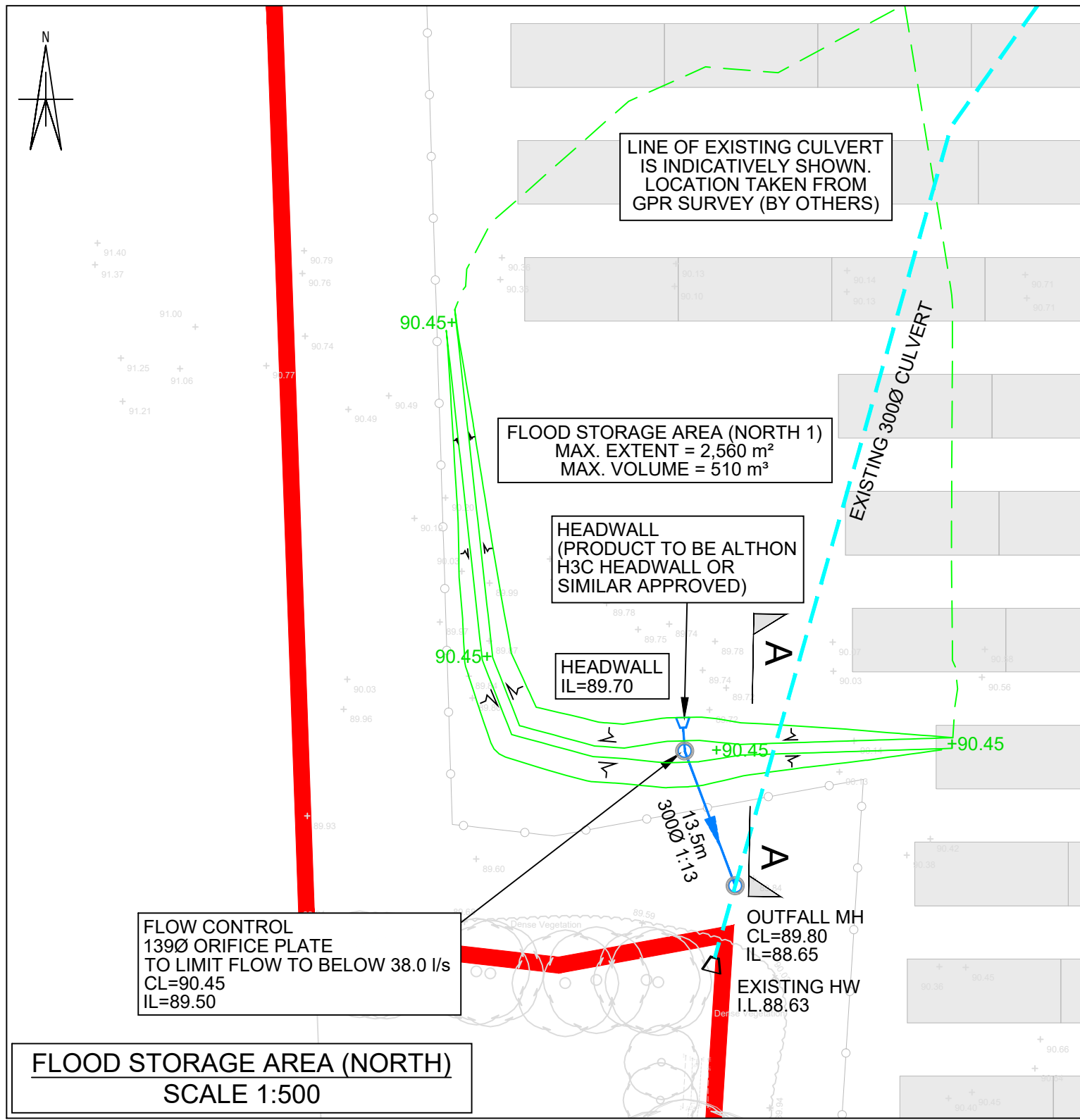
Client

AGR SOLAR 4 LIMITED

Drawing Status	Date
PLANNING	NOV 2024
Project	Scale (A1)
LAND EAST OF GREAT WYMONDLEY	AS STATED
Drawn	WC
Checked	TB
Project No	5208
Title	Drawing No
TYPICAL DRIANAGE DETAILS	603
Revision	P1

Appendix I

Overland Flow Storage Area Bund Details



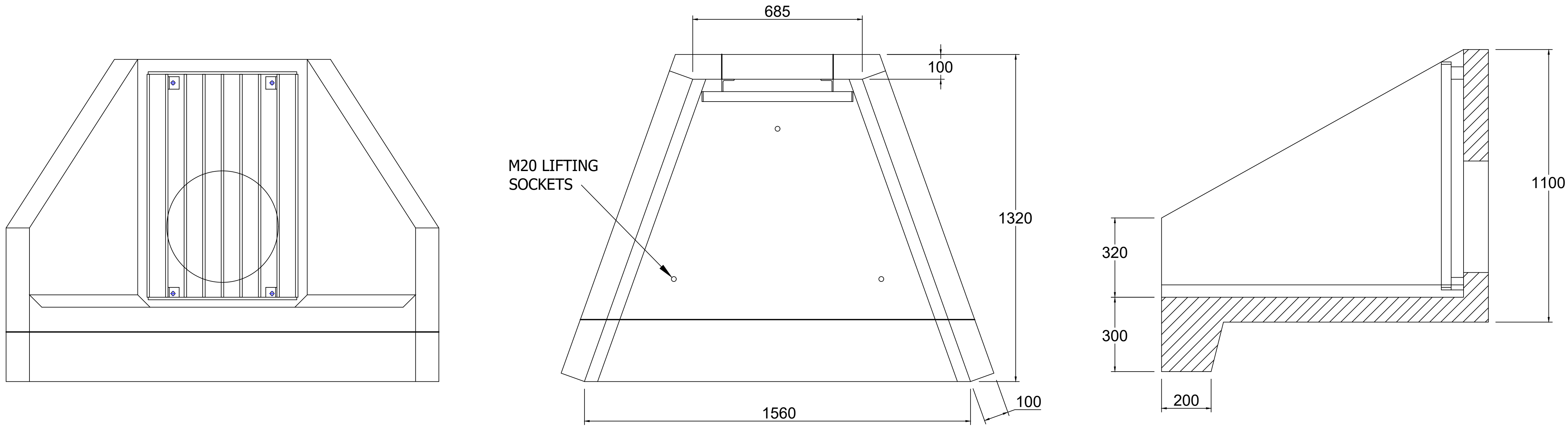
NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV F, JUL 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4162_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).

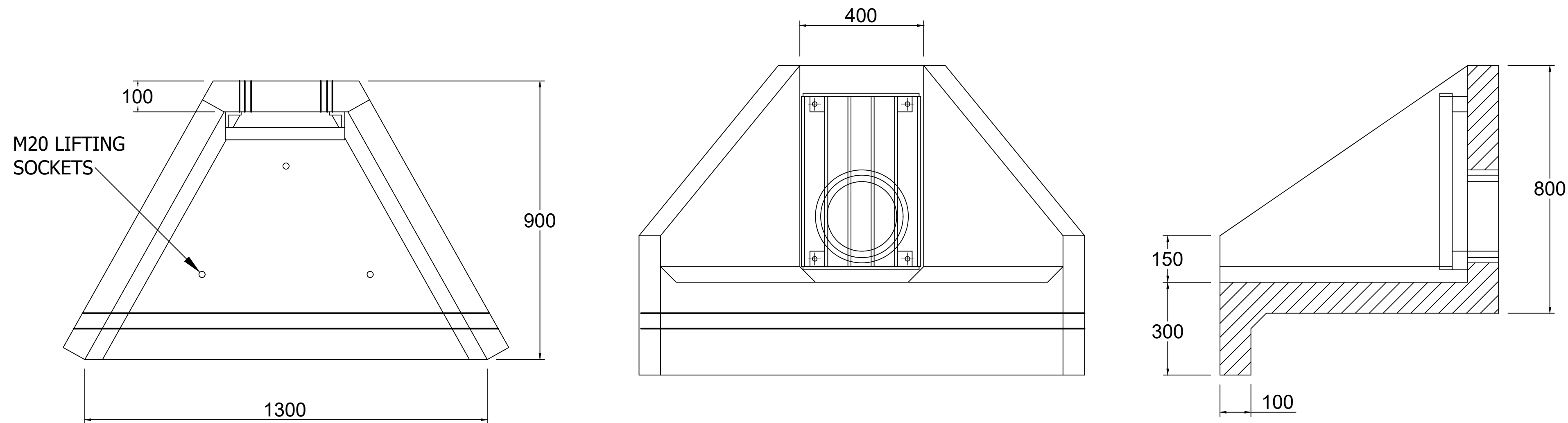
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REV	DATE	DESCRIPTION	DRAWN CHECK	
Weetwood Development • Planning • Environment			Park House, Ffordd Brynwr Gwair, Mold CH7 1FQ Tel 01352 700045 info@weetwood.net www.weetwood.net	
Client				
AGR SOLAR 4 LIMITED				
Drawing Status			Date	
			NOV 2024	
PLANNING			Scale (A1) AS STATED	
Project			Drawn	
			WC	
			Checked	
			TB	
LAND EAST OF GREAT WYMONDLEY			Project No	
			5208	
Title			Drawing No	
			601	
FLOOD STORAGE BUND DETAILS			Revision	
			P1	

Appendix J

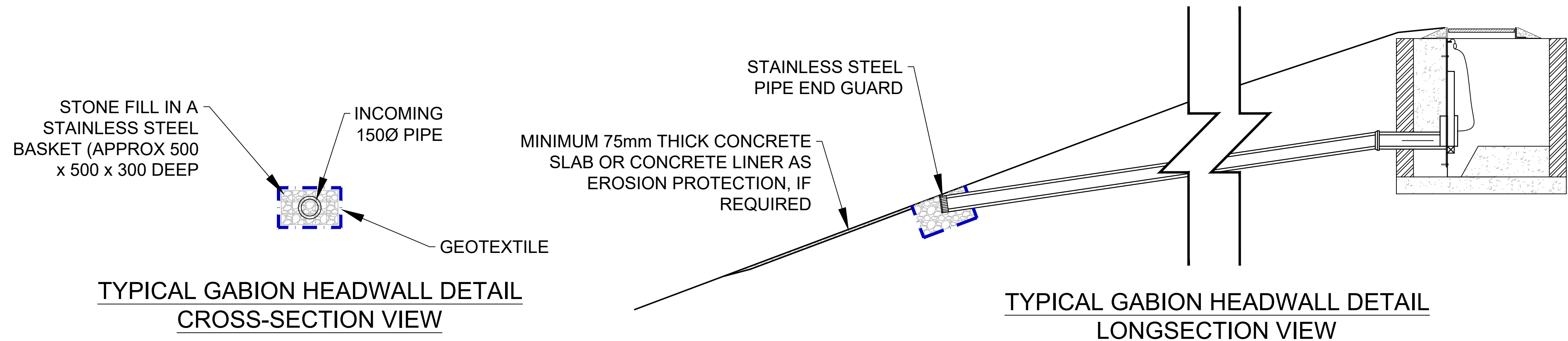
Headwall Details



H6C A HEADWALL



H3C A HEADWALL



TYPICAL GABION HEADWALL DETAIL
CROSS-SECTION VIEW

TYPICAL GABION HEADWALL DETAIL
LONGSECTION VIEW

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS
- ALL DISTANCES ARE IN MILLIMETERS

P1	12.11.24	First Issue	WC	TB
Rev	Date	Description	Drawn	Check

Weetwood
Development • Planning • Environment

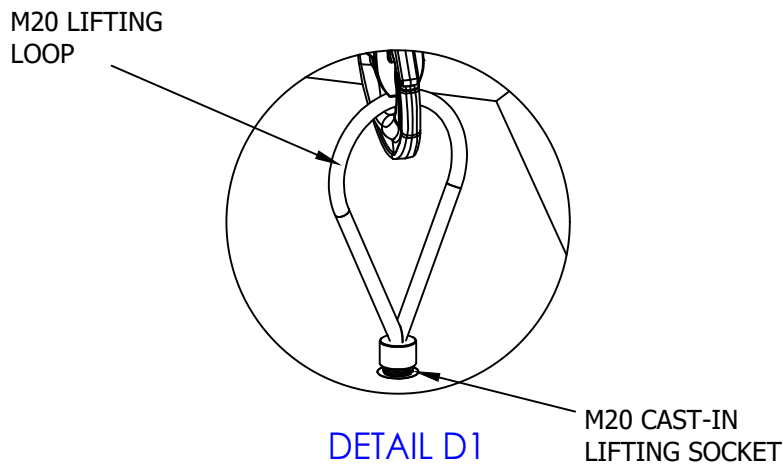
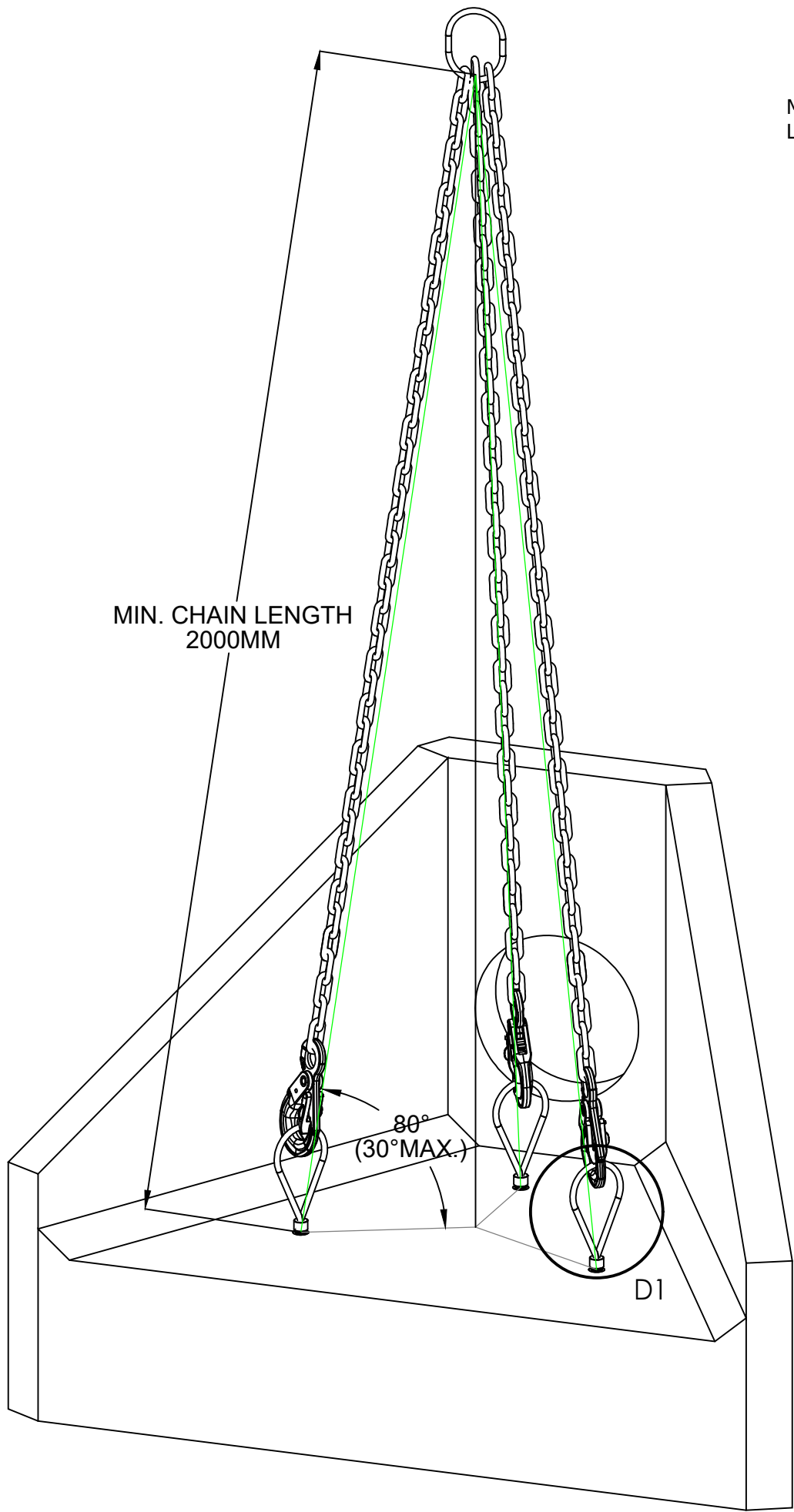
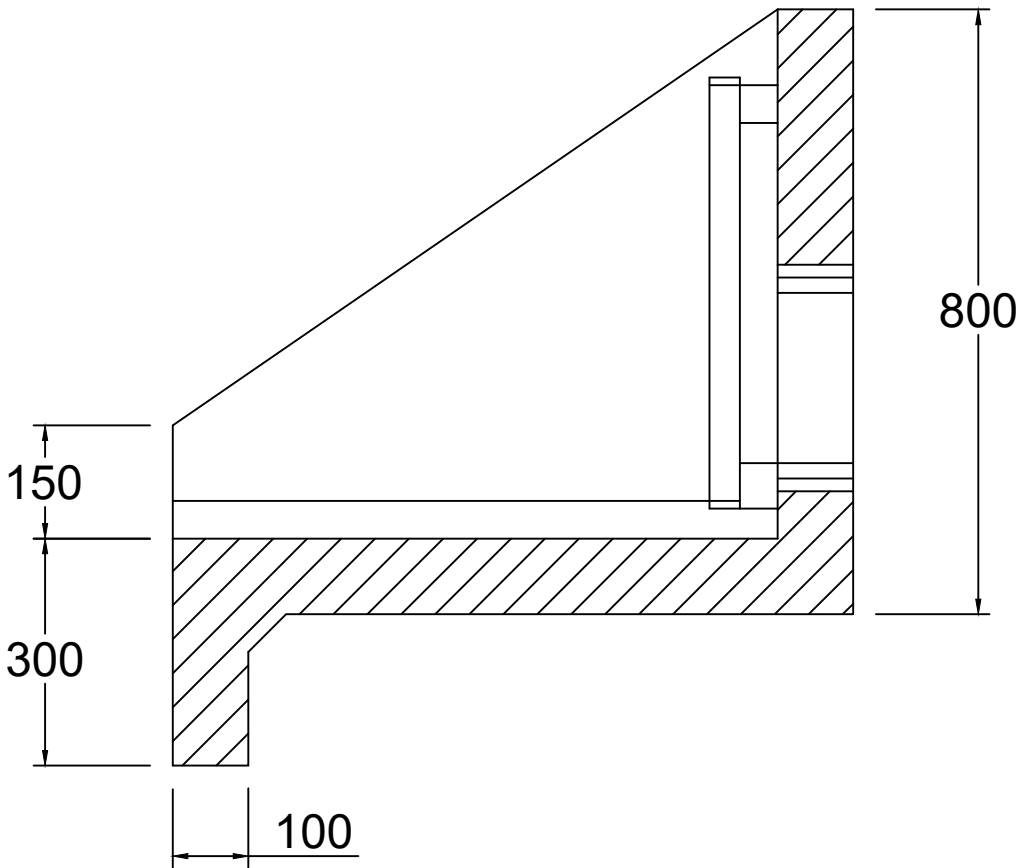
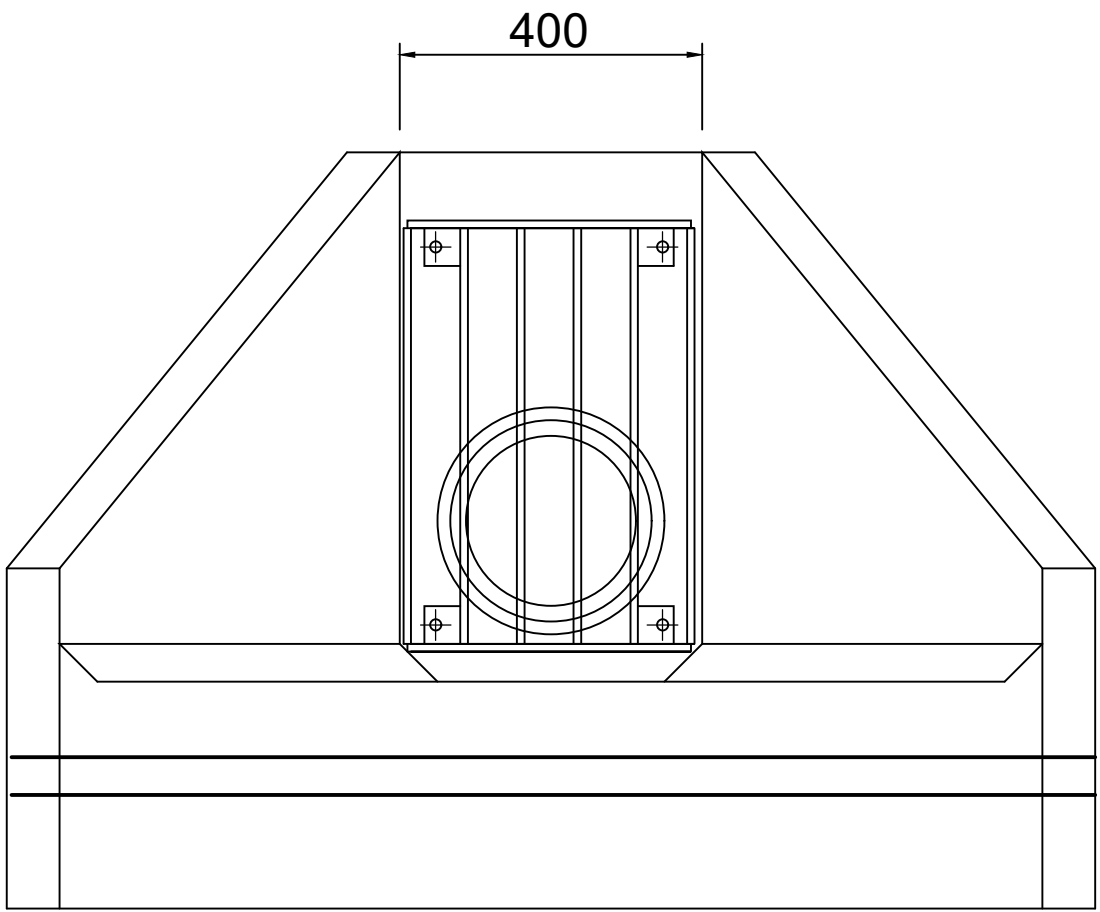
Park House, Ffordd
Byrnwr Gwair, Mold
CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
AGR SOLAR 4 LIMITED

Drawing Status	Date
PLANNING	NOV 2024
Project	Scale (A1)
LAND EAST OF GREAT WYMONDLEY	NTS
	Drawn
	WC
	Checked
	TB

Project No
5208

Title	Drawing No
HEADWALL CONSTRUCTION DETAILS	604
	Revision
	P1



RD20 Threaded Lifting Loop
Safe Working Load: 2000kg each

Manufactured from zinc plated steel wire rope with a precision bright steel threaded portion. Threaded lifting loops are ideally suited to axial lifting procedures but can be used up to and including angled lifts of 30 degrees.

Use and Operation

The threaded lifting loop must be fully threaded into the lifting socket prior to commencing a lifting operation. It is imperative that the two mating surfaces are parallel to each other.

- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS
 2. ALL DISTANCES ARE IN MILLIMETERS

P1	12.11.24	First Issue	WC	TB
Rev	Date	Description	Drawn	Check

Weetwood
Development • Planning • Environment

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Byrnwr Gwair, Mold
CH7 1FQ
Tel 01352 700045
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www.weetwood.net

Client	
AGR SOLAR 4 LIMITED	
Drawing Status	Date
PLANNING	NOV 2024
Scale (A1)	NTS
Project	Drawn
LAND EAST OF GREAT WYMONDLEY	WC
	Checked
	TB
	Project No
	5208
Title	Drawing No
HEADWALL DETAILS ALTHON H3C	605
	Revision
	P1

Appendix K

Hydraulic Calculations for Surface Water Drainage Scheme

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	0.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
1.0	0.231	5.00	108.100	600		522693.097	228626.706	0.600
1.3	0.014	5.00	96.700	600		522240.560	228768.812	0.600
2.0	0.128	5.00	97.500	600		522295.338	228966.799	0.600
1.4	0.099	5.00	96.500	600		522203.444	228752.392	0.600
3.0	0.055	5.00	93.850	600		522188.550	228568.978	0.600
1.7			93.400	600		522183.656	228583.972	0.600
1.8			93.350	1200	675	522177.467	228582.210	1.200
1.9			92.600	1500		522087.467	228582.077	1.650
1.10			91.750	1500		521997.468	228581.943	1.650
1.11			91.000	1500		521962.136	228578.842	1.650
HW1			90.000	1		521952.212	228568.102	1.000
HW2		5.00	90.000	1		521930.884	228554.575	1.000
1.12/FC			89.950	1200	675	521921.601	228554.297	1.050
Outfall			87.000	1		521848.189	228555.041	0.100

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1.0	1.3	474.300	0.600	107.500	96.100	11.400	41.6	300	8.23	0.0
1.003	1.3	1.4	40.600	0.600	96.100	95.900	0.200	203.0	300	8.85	0.0
2.000	2.0	1.4	236.100	0.600	96.900	95.900	1.000	236.1	300	8.86	0.0
1.004	1.4	1.7	169.900	0.600	95.900	92.800	3.100	54.8	300	10.19	0.0
3.000	3.0	1.7	47.100	0.600	93.250	92.800	0.450	104.7	300	5.51	0.0
1.007	1.7	1.8	12.000	0.600	92.800	92.300	0.500	24.0	300	10.26	0.0
1.008	1.8	1.9	90.000	0.600	92.150	90.950	1.200	75.0	450	10.89	0.0
1.009	1.9	1.10	90.000	0.600	90.950	90.100	0.850	105.9	450	11.65	0.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.444	172.8	0.0	0.300	0.300	0.231	0.0	0	0.000
1.003	1.100	77.7	0.0	0.300	0.300	0.245	0.0	0	0.000
2.000	1.019	72.0	0.0	0.300	0.300	0.128	0.0	0	0.000
1.004	2.128	150.4	0.0	0.300	0.300	0.472	0.0	0	0.000
3.000	1.536	108.6	0.0	0.300	0.300	0.055	0.0	0	0.000
1.007	3.222	227.8	0.0	0.300	0.750	0.527	0.0	0	0.000
1.008	2.349	373.6	0.0	0.750	1.200	0.527	0.0	0	0.000
1.009	1.975	314.1	0.0	1.200	1.200	0.527	0.0	0	0.000

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.010	1.10	1.11	35.300	0.600	90.100	89.350	0.750	47.1	450	11.85	0.0
1.011	1.11	HW1	13.700	0.600	89.350	89.000	0.350	39.1	450	11.92	0.0
1.012	HW2	1.12/FC	8.400	0.600	89.000	88.900	0.100	84.0	450	5.06	0.0
1.013	1.12/FC	Outfall	71.500	0.600	88.900	86.900	2.000	35.8	100	5.98	0.0

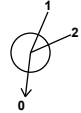
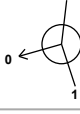
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.010	2.969	472.2	0.0	1.200	1.200	0.527	0.0	0	0.000
1.011	3.257	518.0	0.0	1.200	0.550	0.527	0.0	0	0.000
1.012	2.219	352.9	0.0	0.550	0.600	0.000	0.0	0	0.000
1.013	1.294	10.2	0.0	0.950	0.000	0.000	0.0	0	0.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	474.300	41.6	300	Circular	108.100	107.500	0.300	96.700	96.100	0.300
1.003	40.600	203.0	300	Circular	96.700	96.100	0.300	96.500	95.900	0.300
2.000	236.100	236.1	300	Circular	97.500	96.900	0.300	96.500	95.900	0.300
1.004	169.900	54.8	300	Circular	96.500	95.900	0.300	93.400	92.800	0.300
3.000	47.100	104.7	300	Circular	93.850	93.250	0.300	93.400	92.800	0.300
1.007	12.000	24.0	300	Circular	93.400	92.800	0.300	93.350	92.300	0.750
1.008	90.000	75.0	450	Circular	93.350	92.150	0.750	92.600	90.950	1.200
1.009	90.000	105.9	450	Circular	92.600	90.950	1.200	91.750	90.100	1.200
1.010	35.300	47.1	450	Circular	91.750	90.100	1.200	91.000	89.350	1.200
1.011	13.700	39.1	450	Circular	91.000	89.350	1.200	90.000	89.000	0.550
1.012	8.400	84.0	450	Circular	90.000	89.000	0.550	89.950	88.900	0.600
1.013	71.500	35.8	100	Circular	89.950	88.900	0.950	87.000	86.900	0.000

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	1.0	600		Manhole	Adoptable	1.3	600		Manhole	Adoptable
1.003	1.3	600		Manhole	Adoptable	1.4	600		Manhole	Adoptable
2.000	2.0	600		Manhole	Adoptable	1.4	600		Manhole	Adoptable
1.004	1.4	600		Manhole	Adoptable	1.7	600		Manhole	Adoptable
3.000	3.0	600		Manhole	Adoptable	1.7	600		Manhole	Adoptable
1.007	1.7	600		Manhole	Adoptable	1.8	1200	675	Manhole	Adoptable
1.008	1.8	1200	675	Manhole	Adoptable	1.9	1500		Manhole	Adoptable
1.009	1.9	1500		Manhole	Adoptable	1.10	1500		Manhole	Adoptable
1.010	1.10	1500		Manhole	Adoptable	1.11	1500		Manhole	Adoptable
1.011	1.11	1500		Manhole	Adoptable	HW1	1		Manhole	Adoptable
1.012	HW2	1		Manhole	Adoptable	1.12/FC	1200	675	Manhole	Adoptable
1.013	1.12/FC	1200	675	Manhole	Adoptable	Outfall	1		Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
1.0	522693.097	228626.706	108.100	0.600	600			0	1.000	107.500	300
1.3	522240.560	228768.812	96.700	0.600	600			1	1.000	96.100	300
							0	1.003	96.100	300	
2.0	522295.338	228966.799	97.500	0.600	600			0	2.000	96.900	300
1.4	522203.444	228752.392	96.500	0.600	600			1	2.000	95.900	300
							2	1.003	95.900	300	
							0	1.004	95.900	300	
3.0	522188.550	228568.978	93.850	0.600	600			0	3.000	93.250	300
1.7	522183.656	228583.972	93.400	0.600	600			1	3.000	92.800	300
							2	1.004	92.800	300	
							0	1.007	92.800	300	
1.8	522177.467	228582.210	93.350	1.200	1200	675		1	1.007	92.300	300
							0	1.008	92.150	450	
1.9	522087.467	228582.077	92.600	1.650	1500			1	1.008	90.950	450
							0	1.009	90.950	450	
1.10	521997.468	228581.943	91.750	1.650	1500			1	1.009	90.100	450
							0	1.010	90.100	450	
1.11	521962.136	228578.842	91.000	1.650	1500			1	1.010	89.350	450
							0	1.011	89.350	450	
HW1	521952.212	228568.102	90.000	1.000	1			1	1.011	89.000	450
HW2	521930.884	228554.575	90.000	1.000	1			0	1.012	89.000	450
1.12/FC	521921.601	228554.297	89.950	1.050	1200	675		1	1.012	88.900	450
							0	1.013	88.900	100	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
Outfall	521848.189	228555.041	87.000	0.100	1		1 	1.013	86.900	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	20.0		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	25	0	0

Node 1.12/FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	88.900	Product Number	CTL-SHE-0070-2100-0900-2100
Design Depth (m)	0.900	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.1	Min Node Diameter (mm)	0

Node HW2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	30.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	89.000	Main Channel Slope (1:X)	9999.0
Safety Factor	2.0	Time to half empty (mins)	952	Main Channel n	0.050

Inlets

HW1

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	280.7	0.0	1.000	507.9	0.0	1.001	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	11	107.581	0.081	30.6	0.6446	0.0000	OK
15 minute winter	1.3	14	96.205	0.105	29.0	0.0784	0.0000	OK
15 minute winter	2.0	12	96.991	0.091	16.9	0.4124	0.0000	OK
15 minute winter	1.4	14	96.003	0.103	40.0	0.3674	0.0000	OK
15 minute winter	3.0	10	93.302	0.052	7.3	0.1095	0.0000	OK
15 minute winter	1.7	14	92.892	0.092	40.4	0.0261	0.0000	OK
15 minute winter	1.8	15	92.248	0.098	39.9	0.0791	0.0000	OK
15 minute winter	1.9	15	91.061	0.111	39.7	0.1970	0.0000	OK
15 minute winter	1.10	16	90.187	0.087	39.3	0.1546	0.0000	OK
15 minute winter	1.11	15	89.448	0.098	39.1	0.1734	0.0000	OK
360 minute winter	HW1	352	89.231	0.231	12.5	0.0000	0.0000	OK
360 minute winter	HW2	336	89.231	0.231	15.0	0.0000	0.0000	OK
360 minute winter	1.12/FC	352	89.245	0.345	11.1	0.2794	0.0000	SURCHARGED
15 minute summer	Outfall	1	86.900	0.000	2.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.3	27.3	1.870	0.158	8.2336	
15 minute winter	1.3	1.003	1.4	19.6	0.920	0.252	0.8758	
15 minute winter	2.0	2.000	1.4	14.6	0.810	0.203	4.4449	
15 minute winter	1.4	1.004	1.7	36.7	1.854	0.244	3.3633	
15 minute winter	3.0	3.000	1.7	7.1	0.844	0.066	0.5628	
15 minute winter	1.7	1.007	1.8	39.9	2.313	0.175	0.2074	
15 minute winter	1.8	1.008	1.9	39.7	1.451	0.106	2.5116	
15 minute winter	1.9	1.009	1.10	39.3	1.528	0.125	2.3365	
15 minute winter	1.10	1.010	1.11	39.1	1.698	0.083	0.8217	
15 minute winter	1.11	1.011	HW1	39.5	2.518	0.076	0.2426	
360 minute winter	HW1	Flow through pond	HW2	8.3	0.017	0.004	70.5946	
360 minute winter	HW2	1.012	1.12/FC	11.1	0.358	0.031	0.8920	
360 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.1				108.5

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	11	107.639	0.139	83.4	1.1079	0.0000	OK
15 minute winter	1.3	13	96.311	0.211	81.6	0.1577	0.0000	OK
15 minute winter	2.0	11	97.063	0.163	46.2	0.7421	0.0000	OK
15 minute winter	1.4	13	96.102	0.202	124.1	0.7244	0.0000	OK
15 minute winter	3.0	10	93.335	0.085	19.9	0.1804	0.0000	OK
15 minute winter	1.7	13	92.990	0.190	129.9	0.0537	0.0000	OK
15 minute winter	1.8	13	92.330	0.180	127.5	0.1455	0.0000	OK
15 minute winter	1.9	14	91.159	0.209	128.5	0.3684	0.0000	OK
15 minute winter	1.10	15	90.264	0.164	127.4	0.2907	0.0000	OK
360 minute winter	1.11	376	89.543	0.193	31.5	0.3419	0.0000	OK
360 minute winter	HW1	368	89.538	0.538	36.3	0.0000	0.0000	OK
360 minute winter	HW2	368	89.538	0.538	28.2	0.0000	0.0000	SURCHARGED
360 minute winter	1.12/FC	368	89.538	0.638	12.3	0.5171	0.0000	SURCHARGED
15 minute summer	Outfall	1	86.900	0.000	2.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.3	76.8	2.293	0.445	19.1525	
15 minute winter	1.3	1.003	1.4	61.2	1.213	0.788	2.0977	
15 minute winter	2.0	2.000	1.4	42.4	1.024	0.589	10.2606	
15 minute winter	1.4	1.004	1.7	117.0	2.401	0.778	8.2757	
15 minute winter	3.0	3.000	1.7	19.5	0.989	0.179	1.3931	
15 minute winter	1.7	1.007	1.8	127.5	3.010	0.560	0.5087	
15 minute winter	1.8	1.008	1.9	128.5	1.972	0.344	5.8862	
15 minute winter	1.9	1.009	1.10	127.4	2.063	0.406	5.5659	
15 minute winter	1.10	1.010	1.11	127.6	2.286	0.270	1.9719	
360 minute winter	1.11	1.011	HW1	36.3	1.234	0.070	1.5315	
360 minute winter	HW1	Flow through pond	HW2	28.2	0.023	0.014	183.5304	
360 minute winter	HW2	1.012	1.12/FC	12.3	0.356	0.035	1.3309	
360 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.1				202.8

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 98.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	11	107.684	0.184	131.6	1.4671	0.0000	OK
15 minute winter	1.3	14	96.578	0.478	129.4	0.3578	0.0000	FLOOD RISK
15 minute winter	2.0	11	97.123	0.223	73.0	1.0165	0.0000	OK
15 minute winter	1.4	14	96.335	0.435	195.7	1.5595	0.0000	FLOOD RISK
15 minute winter	3.0	10	93.358	0.108	31.3	0.2289	0.0000	OK
30 minute summer	1.7	20	93.050	0.250	179.1	0.0709	0.0000	OK
15 minute winter	1.8	12	92.370	0.220	177.8	0.1780	0.0000	OK
30 minute summer	1.9	21	91.204	0.254	177.3	0.4484	0.0000	OK
30 minute winter	1.10	22	90.301	0.201	177.8	0.3551	0.0000	OK
480 minute winter	1.11	488	89.815	0.465	50.6	0.8216	0.0000	SURCHARGED
480 minute winter	HW1	488	89.815	0.815	79.8	0.0000	0.0000	OK
480 minute winter	HW2	488	89.815	0.815	57.1	0.0000	0.0000	FLOOD RISK
480 minute winter	1.12/FC	488	89.815	0.915	11.6	0.7411	0.0000	FLOOD RISK
15 minute summer	Outfall	1	86.900	0.000	2.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1.0	1.000	1.3	121.9	2.485	0.705	27.0206	
15 minute winter	1.3	1.003	1.4	81.5	1.301	1.048	2.8590	
15 minute winter	2.0	2.000	1.4	66.8	1.119	0.927	14.7541	
15 minute winter	1.4	1.004	1.7	154.1	2.510	1.024	11.3054	
15 minute winter	3.0	3.000	1.7	30.8	1.050	0.283	1.9508	
30 minute summer	1.7	1.007	1.8	177.9	3.159	0.781	0.6715	
15 minute winter	1.8	1.008	1.9	179.7	2.149	0.481	7.5254	
30 minute summer	1.9	1.009	1.10	177.9	2.223	0.566	7.2033	
30 minute winter	1.10	1.010	1.11	177.9	2.521	0.377	2.4916	
480 minute winter	1.11	1.011	HW1	79.8	1.259	0.154	2.1707	
480 minute winter	HW1	Flow through pond	HW2	57.1	0.024	0.029	303.6143	
480 minute winter	HW2	1.012	1.12/FC	11.6	0.264	0.033	1.3309	
480 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.1				216.4

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	0.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
4.0	0.118	5.00	107.000	600		522635.259	228404.233	0.525
5.0	0.027	5.00	99.250	600		522378.329	228487.561	0.450
4.3			99.350	600		522398.203	228472.229	0.675
HW1			99.300	1		522396.712	228465.335	0.800
HW2		5.00	99.300	1		522384.991	228462.770	0.800
4.4			99.000	1200	675	522377.100	228463.160	1.300
Outfall			98.000	1		522360.834	228415.777	1.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.000	246.700	31.6	225	Circular	107.000	106.475	0.300	99.350	98.675	0.450
5.000	30.100	602.0	150	Circular	99.250	98.800	0.300	99.350	98.750	0.450
4.003	6.900	39.4	225	Circular	99.350	98.675	0.450	99.300	98.500	0.575
4.004	8.900	11.1	225	Circular	99.300	98.500	0.575	99.000	97.700	1.075
4.005	52.900	75.6	225	Circular	99.000	97.700	1.075	98.000	97.000	0.775

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
4.000	4.0	600		Manhole	Adoptable	4.3	600		Manhole	Adoptable
5.000	5.0	600		Manhole	Adoptable	4.3	600		Manhole	Adoptable
4.003	4.3	600		Manhole	Adoptable	HW1	1		Manhole	Adoptable
4.004	HW2	1		Manhole	Adoptable	4.4	1200	675	Manhole	Adoptable
4.005	4.4	1200	675	Manhole	Adoptable	Outfall	1		Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
4.0	522635.259	228404.233	107.000	0.525	600					
							0	4.000	106.475	225
5.0	522378.329	228487.561	99.250	0.450	600					
							0	5.000	98.800	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
4.3	522398.203	228472.229	99.350	0.675	600			1 2 0	5.000 4.000 4.003	98.750 98.675 98.675	150 225 225
HW1	522396.712	228465.335	99.300	0.800	1			1	4.003	98.500	225
HW2	522384.991	228462.770	99.300	0.800	1						
								0	4.004	98.500	225
4.4	522377.100	228463.160	99.000	1.300	1200	675		1 0	4.004 4.005	97.700 97.700	225 225
Outfall	522360.834	228415.777	98.000	1.000	1			1	4.005	97.000	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s) x
Summer CV	0.750	Drain Down Time (mins)	1440	Check Discharge Volume x
Winter CV	0.840	Additional Storage (m³/ha)	20.0	

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	25	0	0

Node 4.4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	97.700	Product Number	CTL-SHE-0051-1300-1200-1300
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.3	Min Node Diameter (mm)	1200

Node HW2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	11.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	98.500	Main Channel Slope (1:X)	9999.0
Safety Factor	2.0	Time to half empty (mins)	28	Main Channel n	0.050

Inlets

HW1

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	86.4	0.0	0.800	217.2	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	4.0	11	106.535	0.060	15.6	0.2873	0.0000	OK
15 minute winter	5.0	11	98.876	0.076	3.6	0.1134	0.0000	OK
15 minute winter	4.3	12	98.759	0.084	17.9	0.0237	0.0000	OK
240 minute winter	HW1	192	98.632	0.132	4.7	0.0000	0.0000	OK
240 minute winter	HW2	192	98.632	0.132	2.9	0.0000	0.0000	OK
240 minute winter	4.4	192	98.632	0.932	2.3	0.7552	0.0000	SURCHARGED
15 minute summer	Outfall	1	97.000	0.000	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	4.0	4.000	4.3	14.6	1.453	0.157	2.6595	
15 minute winter	5.0	5.000	4.3	3.3	0.460	0.465	0.2173	
15 minute winter	4.3	4.003	HW1	17.1	2.024	0.206	0.0610	
240 minute winter	HW1	Flow through pond	HW2	2.9	0.016	0.002	12.8559	
240 minute winter	HW2	4.004	4.4	2.3	0.392	0.015	0.2851	
240 minute winter	4.4	Hydro-Brake®	Outfall	1.2				26.9

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	4.0	11	106.579	0.104	42.6	0.4947	0.0000	OK
15 minute winter	5.0	11	98.949	0.149	9.7	0.2213	0.0000	OK
15 minute winter	4.3	11	98.828	0.153	49.8	0.0432	0.0000	OK
240 minute winter	HW1	236	98.823	0.323	19.8	0.0000	0.0000	OK
240 minute winter	HW2	236	98.823	0.323	10.0	0.0000	0.0000	SURCHARGED
240 minute winter	4.4	236	98.823	1.123	1.9	0.9094	0.0000	FLOOD RISK
15 minute summer	Outfall	1	97.000	0.000	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	4.0	4.000	4.3	40.6	1.812	0.438	5.7386	
15 minute winter	5.0	5.000	4.3	9.2	0.614	1.291	0.4273	
15 minute winter	4.3	4.003	HW1	49.6	2.436	0.597	0.1688	
240 minute winter	HW1	Flow through pond	HW2	10.0	0.018	0.008	36.3725	
240 minute winter	HW2	4.004	4.4	1.9	0.524	0.012	0.3540	
240 minute winter	4.4	Hydro-Brake®	Outfall	1.3				57.6

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	4.0	11	106.612	0.137	67.3	0.6541	0.0000	OK
15 minute winter	5.0	11	99.101	0.301	15.4	0.4459	0.0000	FLOOD RISK
240 minute winter	4.3	240	98.992	0.317	15.5	0.0897	0.0000	SURCHARGED
240 minute winter	HW1	240	98.992	0.492	15.3	0.0000	0.0000	OK
240 minute winter	HW2	240	98.992	0.492	7.9	0.0000	0.0000	SURCHARGED
240 minute winter	4.4	240	98.992	1.292	2.6	1.0464	0.0000	FLOOD RISK
15 minute summer	Outfall	1	97.000	0.000	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	4.0	4.000	4.3	64.4	2.006	0.694	8.0030	
15 minute winter	5.0	5.000	4.3	13.9	0.792	1.947	0.5299	
240 minute winter	4.3	4.003	HW1	15.3	1.207	0.184	0.2744	
240 minute winter	HW1	Flow through pond	HW2	7.9	0.021	0.006	62.2535	
240 minute winter	HW2	4.004	4.4	2.6	0.364	0.016	0.3540	
240 minute winter	4.4	Hydro-Brake®	Outfall	1.3				89.2

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
6.0	0.193	5.00	107.500	600		522640.148	228393.644	0.600
7.0	0.127	5.00	96.300	600		522308.873	227603.320	0.600
6.5	0.114	5.00	96.250	600		522397.628	227816.369	0.600
6.6			95.750	1200		522389.171	227819.937	1.050
6.7			94.000	1500		522315.319	227819.702	1.575
6.8			92.800	1200	675	522241.234	227819.467	1.100
HW1			92.700	1		522229.698	227818.248	1.100
HW2		5.00	92.600	1		522191.099	227814.847	1.000
6.9 / FC			92.500	1200	675	522190.233	227812.262	1.050
Outfall			91.500	1		522176.766	227823.458	0.700

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
6.000	6.0	6.5	626.149	0.600	106.900	95.650	11.250	55.7	300	9.94	50.0
7.000	7.0	6.5	230.797	0.600	95.700	95.650	0.050	4615.9	300	22.32	50.0
6.005	6.5	6.6	9.179	0.600	95.650	94.700	0.950	9.7	300	22.35	50.0
6.006	6.6	6.7	73.852	0.600	94.700	92.500	2.200	33.6	300	22.80	50.0
6.007	6.7	6.8	74.400	0.600	92.425	91.700	0.725	102.6	375	23.50	50.0
6.008	6.8	HW1	16.100	0.600	91.700	91.600	0.100	161.0	375	23.68	50.0
6.009	HW2	6.9 / FC	9.700	0.600	91.600	91.450	0.150	64.7	375	5.07	50.0
6.010	6.9 / FC	Outfall	16.700	0.600	91.450	90.800	0.650	25.7	100	5.25	50.0

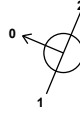
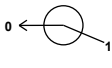
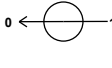
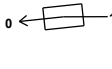
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
6.000	2.111	149.2	26.2	0.300	0.300	0.193	0.0	85	1.602
7.000	0.222	15.7	17.2	0.300	0.300	0.127	0.0	300	0.225
6.005	5.086	359.5	58.8	0.300	0.750	0.434	0.0	82	3.790
6.006	2.722	192.4	58.8	0.750	1.200	0.434	0.0	113	2.401
6.007	1.788	197.5	58.8	1.200	0.725	0.434	0.0	140	1.566
6.008	1.425	157.4	58.8	0.725	0.725	0.434	0.0	159	1.325
6.009	2.256	249.2	0.0	0.625	0.675	0.000	0.0	0	0.000
6.010	1.529	12.0	0.0	0.950	0.600	0.000	0.0	0	0.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
6.000	626.149	55.7	300	Circular	107.500	106.900	0.300	96.250	95.650	0.300
7.000	230.797	4615.9	300	Circular	96.300	95.700	0.300	96.250	95.650	0.300
6.005	9.179	9.7	300	Circular	96.250	95.650	0.300	95.750	94.700	0.750
6.006	73.852	33.6	300	Circular	95.750	94.700	0.750	94.000	92.500	1.200
6.007	74.400	102.6	375	Circular	94.000	92.425	1.200	92.800	91.700	0.725
6.008	16.100	161.0	375	Circular	92.800	91.700	0.725	92.700	91.600	0.725
6.009	9.700	64.7	375	Circular	92.600	91.600	0.625	92.500	91.450	0.675
6.010	16.700	25.7	100	Circular	92.500	91.450	0.950	91.500	90.800	0.600

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
6.000	6.0	600		Manhole	Adoptable	6.5	600		Manhole	Adoptable
7.000	7.0	600		Manhole	Adoptable	6.5	600		Manhole	Adoptable
6.005	6.5	600		Manhole	Adoptable	6.6	1200		Manhole	Adoptable
6.006	6.6	1200		Manhole	Adoptable	6.7	1500		Manhole	Adoptable
6.007	6.7	1500		Manhole	Adoptable	6.8	1200	675	Manhole	Adoptable
6.008	6.8	1200	675	Manhole	Adoptable	HW1	1		Manhole	Adoptable
6.009	HW2	1		Manhole	Adoptable	6.9 / FC	1200	675	Manhole	Adoptable
6.010	6.9 / FC	1200	675	Manhole	Adoptable	Outfall	1		Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
6.0	522640.148	228393.644	107.500	0.600	600					
7.0	522308.873	227603.320	96.300	0.600	600					
6.5	522397.628	227816.369	96.250	0.600	600					
6.6	522389.171	227819.937	95.750	1.050	1200					
6.7	522315.319	227819.702	94.000	1.575	1500					
6.8	522241.234	227819.467	92.800	1.100	1200	675				
HW1	522229.698	227818.248	92.700	1.100	1					

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
HW2	522191.099	227814.847	92.600	1.000	1			0	6.009	91.600	375
6.9 / FC	522190.233	227812.262	92.500	1.050	1200	675		1	6.009	91.450	375
								0	6.010	91.450	100
Outfall	522176.766	227823.458	91.500	0.700	1			1	6.010	90.800	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	20.0		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	25	0	0

Node 6.9 / FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	91.450	Product Number	CTL-SHE-0063-1700-0900-1700
Design Depth (m)	0.900	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.7	Min Node Diameter (mm)	0

Node HW2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	33.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	91.600	Main Channel Slope (1:X)	9999.0
Safety Factor	2.0	Time to half empty (mins)	776	Main Channel n	0.050

Inlets

HW1

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	222.5	0.0	1.000	473.7	0.0	1.001	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	6.0	12	106.975	0.075	25.5	0.5050	0.0000	OK
30 minute winter	7.0	22	95.860	0.160	12.7	0.7247	0.0000	OK
15 minute winter	6.5	13	95.713	0.063	38.0	0.2557	0.0000	OK
15 minute winter	6.6	14	94.786	0.086	33.7	0.0970	0.0000	OK
15 minute winter	6.7	14	92.528	0.103	33.8	0.1821	0.0000	OK
15 minute winter	6.8	14	91.830	0.130	33.5	0.1056	0.0000	OK
360 minute winter	HW1	352	91.826	0.226	10.4	0.0000	0.0000	OK
360 minute winter	HW2	352	91.826	0.226	11.0	0.0000	0.0000	OK
360 minute winter	6.9 / FC	360	91.841	0.391	9.5	0.3167	0.0000	SURCHARGED
15 minute summer	Outfall	1	90.800	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	6.0	6.000	6.5	19.3	1.621	0.129	7.5349	
30 minute winter	7.0	7.000	6.5	7.8	0.333	0.498	5.5841	
15 minute winter	6.5	6.005	6.6	33.7	2.527	0.094	0.1246	
15 minute winter	6.6	6.006	6.7	33.8	2.059	0.176	1.2127	
15 minute winter	6.7	6.007	6.8	33.5	1.159	0.169	2.1790	
15 minute winter	6.8	6.008	HW1	34.3	1.748	0.218	0.3507	
360 minute winter	HW1	Flow through pond	HW2	6.6	0.017	0.006	56.4284	
360 minute winter	HW2	6.009	6.9 / FC	9.5	0.238	0.038	0.8715	
360 minute winter	6.9 / FC	Hydro-Brake®	Outfall	1.7				89.8

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	6.0	12	107.032	0.132	69.7	0.8895	0.0000	OK
15 minute winter	7.0	12	96.031	0.331	45.8	1.4931	0.0000	FLOOD RISK
15 minute winter	6.5	13	95.776	0.126	123.1	0.5139	0.0000	OK
15 minute winter	6.6	13	94.869	0.169	113.5	0.1913	0.0000	OK
15 minute winter	6.7	13	92.628	0.203	112.4	0.3587	0.0000	OK
360 minute winter	6.8	368	92.112	0.412	21.6	0.3339	0.0000	SURCHARGED
360 minute winter	HW1	368	92.112	0.512	20.5	0.0000	0.0000	OK
360 minute winter	HW2	368	92.112	0.512	17.1	0.0000	0.0000	SURCHARGED
360 minute winter	6.9 / FC	368	92.112	0.662	9.6	0.5364	0.0000	SURCHARGED
15 minute summer	Outfall	1	90.800	0.000	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	6.0	6.000	6.5	59.5	2.109	0.399	17.8874	
15 minute winter	7.0	7.000	6.5	32.1	0.562	2.046	11.3607	
15 minute winter	6.5	6.005	6.6	113.5	3.300	0.316	0.3165	
15 minute winter	6.6	6.006	6.7	112.4	2.811	0.584	2.9553	
15 minute winter	6.7	6.007	6.8	112.8	1.652	0.571	5.0751	
360 minute winter	6.8	6.008	HW1	20.5	0.779	0.130	1.7758	
360 minute winter	HW1	Flow through pond	HW2	11.0	0.024	0.010	146.4727	
360 minute winter	HW2	6.009	6.9 / FC	9.6	0.218	0.038	1.0699	
360 minute winter	6.9 / FC	Hydro-Brake®	Outfall	1.7				162.7

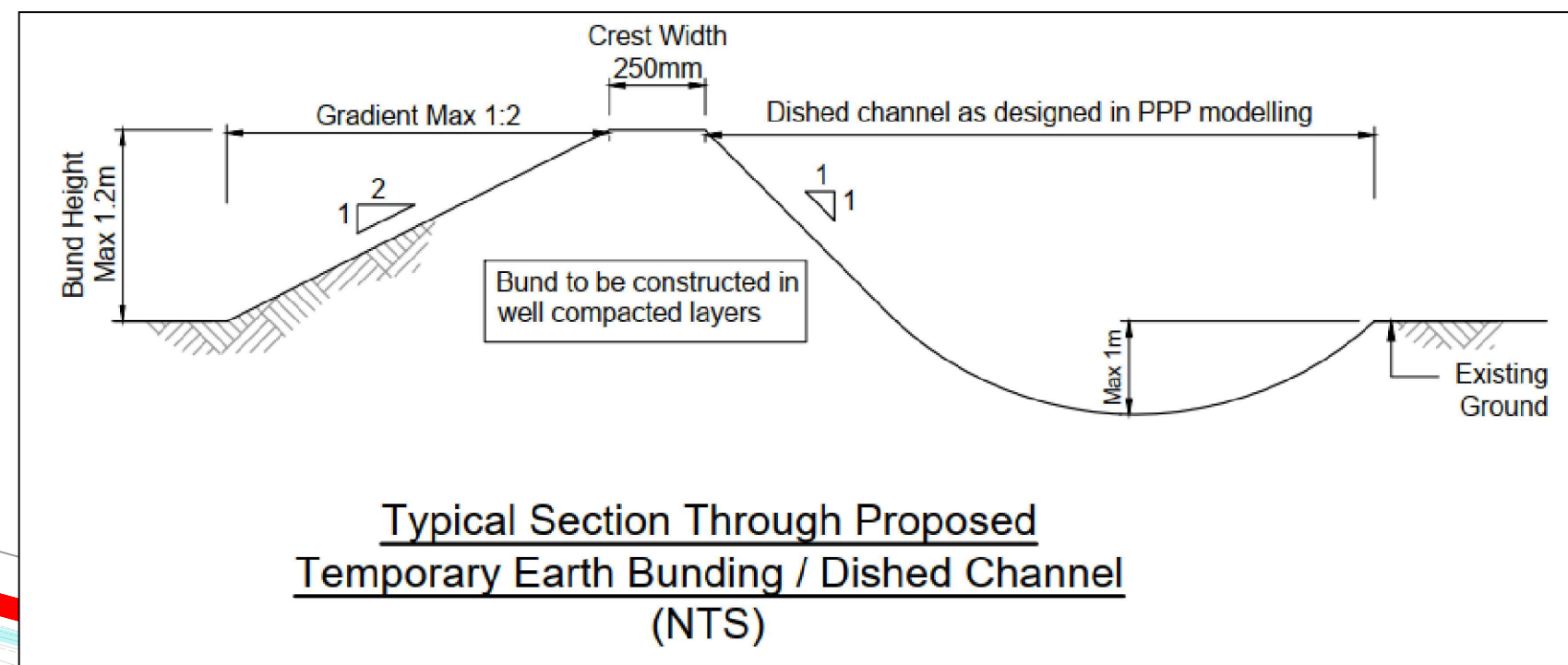
Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	6.0	11	107.075	0.175	109.9	1.1741	0.0000	OK
15 minute winter	7.0	12	96.285	0.585	72.4	2.6398	0.0000	FLOOD RISK
15 minute winter	6.5	13	95.824	0.174	198.7	0.7099	0.0000	OK
15 minute winter	6.6	13	94.946	0.246	183.5	0.2785	0.0000	OK
15 minute winter	6.7	13	92.721	0.296	183.0	0.5227	0.0000	OK
480 minute winter	6.8	488	92.371	0.671	26.3	0.5435	0.0000	SURCHARGED
480 minute winter	HW1	488	92.371	0.771	25.3	0.0000	0.0000	OK
480 minute winter	HW2	488	92.371	0.771	15.7	0.0000	0.0000	FLOOD RISK
480 minute winter	6.9 / FC	488	92.371	0.921	9.3	0.7460	0.0000	FLOOD RISK
15 minute summer	Outfall	1	90.800	0.000	1.7	0.0000	0.0000	OK

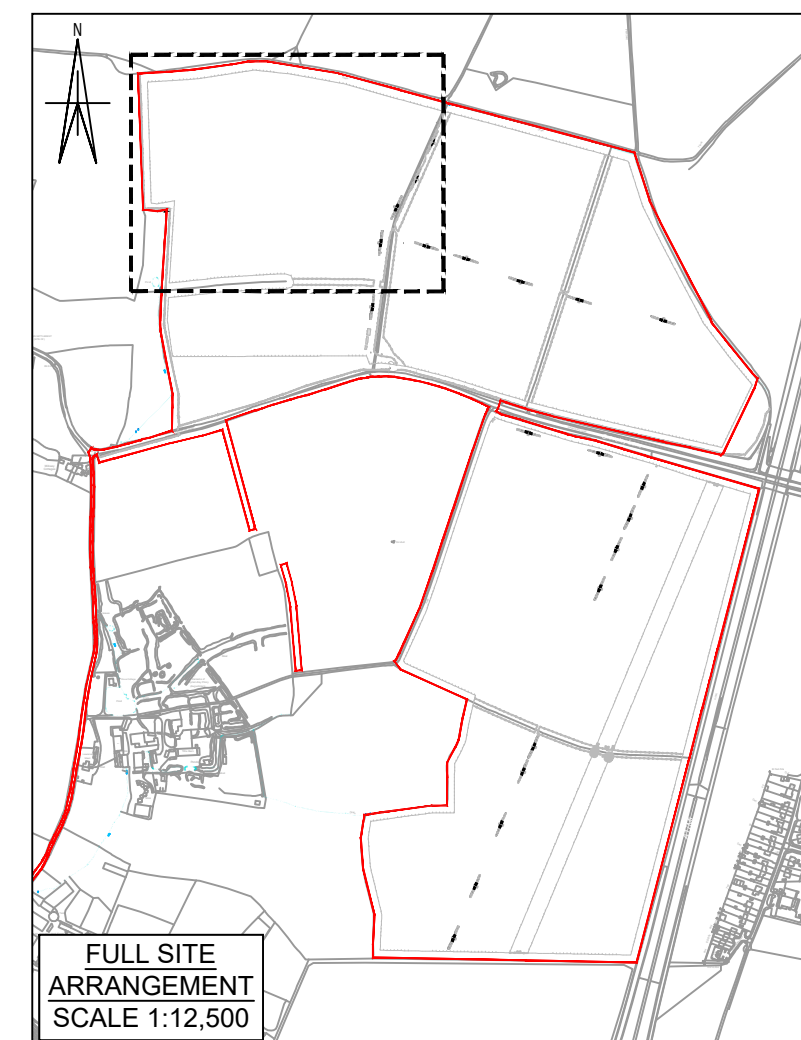
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	6.0	6.000	6.5	96.4	2.317	0.646	26.4104	
15 minute winter	7.0	7.000	6.5	49.2	0.779	3.135	13.0102	
15 minute winter	6.5	6.005	6.6	183.5	3.545	0.510	0.4783	
15 minute winter	6.6	6.006	6.7	183.0	3.061	0.951	4.4262	
15 minute winter	6.7	6.007	6.8	181.5	1.838	0.919	7.3250	
480 minute winter	6.8	6.008	HW1	25.3	0.800	0.161	1.7758	
480 minute winter	HW1	Flow through pond	HW2	13.5	0.025	0.013	245.7339	
480 minute winter	HW2	6.009	6.9 / FC	9.3	0.272	0.037	1.0699	
480 minute winter	6.9 / FC	Hydro-Brake®	Outfall	1.7				177.2

Appendix L

Pollution Prevention Scheme Layout



- NOTES**
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WETWOOD DRAWINGS.
 2. PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REF J, JUL 2024).
 3. EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4102_AGR GROUP, GRAVELEY LANE, GREAT WYMONDLEY, MAY 2023).
 4. WETWOOD IS NOT IN CONTROL OF THE OPERATION OF THE THIRD PARTY WATER TREATMENT SYSTEMS. AS SUCH, WETWOOD DOES NOT TAKE RESPONSIBILITY FOR THE RISK OF WATER DISCHARGING FROM THE SITE AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFICIACY OF ANY WATER TREATMENT SYSTEMS.
- THERE IS POTENTIAL FOR THE PROPOSED TREATMENT DRAINAGE SYSTEM TO BE OVERLOADED FOR LONGER MAGNETIC EVENTS I.E. EVENTS WITH AN AEP OF LESS THAN 1:2.



- KEY**
- PROPOSED SILT FENCING AND/OR HAY BALES (EMBEDDED)
 - PROPOSED DISHD CHANNEL
 - PROPOSED OUTLET PIPE (SOLID PIPE)
 - PROPOSED ATTENUATION BASIN
 - ▲ PROPOSED PUMP
 - PROPOSED PUMP HOSE/RIISING MAIN
 - EXISTING WATERCOURSE
 - 22.49+ EXISTING GROUND LEVEL
 - 22.49- PROPOSED GROUND LEVEL
 - SITE BOUNDARY
 - EXISTING TOPOGRAPHICAL LEVEL

P3	18.12.24	UPDATED LAYOUT IN BACKGROUND	WC	JA
P2	21.11.24	UPDATED BASIN SIZES & LOCATIONS	WC	JA
P1	30.09.24	INITIAL ISSUE	TB	JA

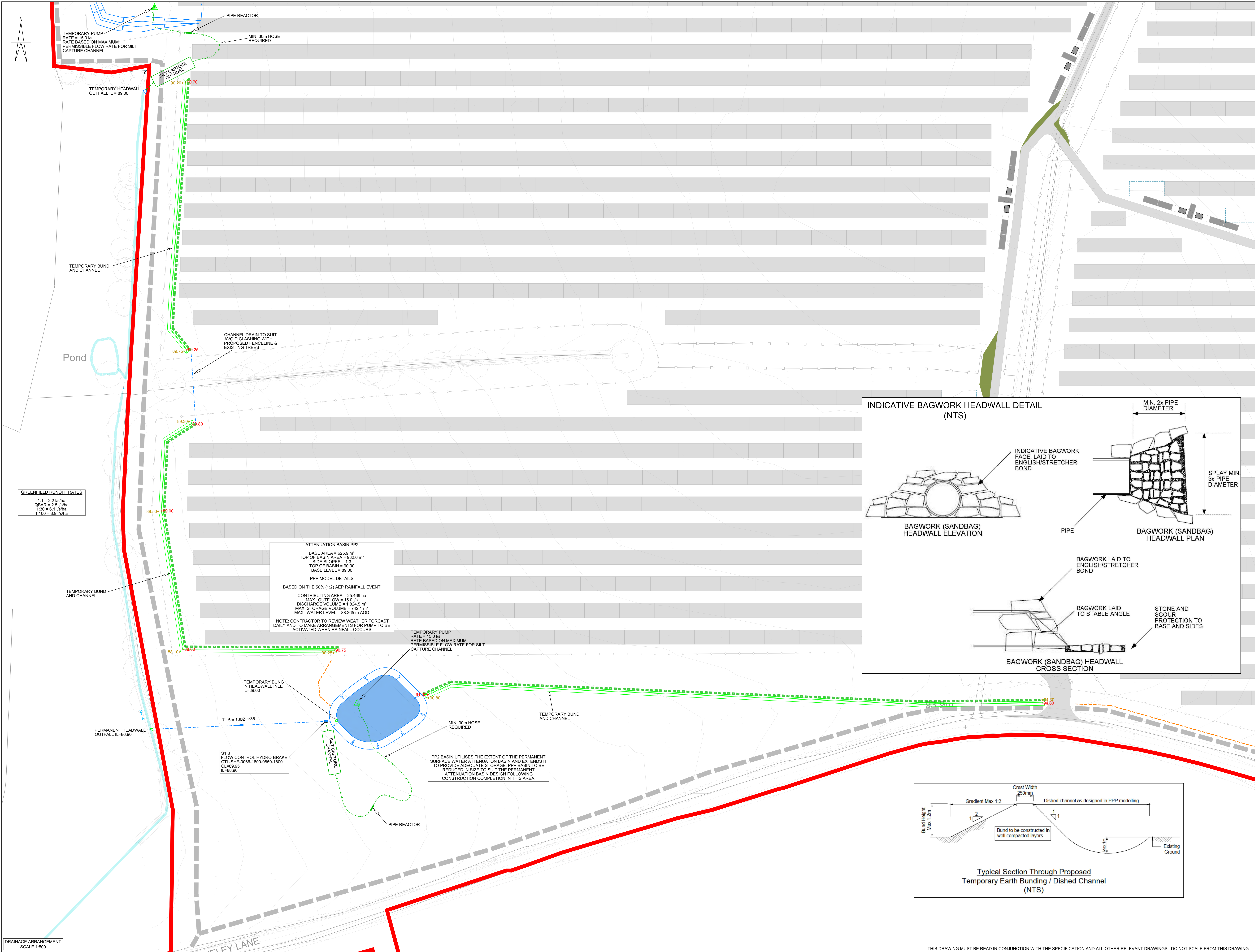
REV	DATE	DESCRIPTION	DRAWN CHECKED
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Weetwood
Development • Planning • Environment

Client
AGR SOLAR 4 LIMITED

Drawing Status	Date
PRELIMINARY	SEP 2024
Project LAND EAST OF GREAT WYMONDLEY	Scale (A3)
	1:500
	Drawn
	TB
Title POLLUTION PREVENTION PLAN SHEET 1 OF 6	Checked
	JA
	Project No
	5208
	Drawing No
	151
	Revision
	P3

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



NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV F, JUL 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).
- WEETWOOD IS NOT IN CONTROL OF THE CONSTRUCTION SITE OR OPERATION OF THE THIRD PARTY WATER TREATMENT SYSTEMS. AS SUCH, WEETWOOD DOES NOT TAKE RESPONSIBILITY FOR THE QUALITY OF WATER DISCHARGING FROM THE SITE AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFICACY OF ANY WATER TREATMENT SYSTEMS.
- THERE IS POTENTIAL FOR THE PROPOSED TEMPORARY DRAINAGE SYSTEM TO BE OVERWHELMED FOR LARGER MAGNITUDE EVENTS I.E. EVENTS WITH AN AEP OF LESS THAN 1:2.

KEY

- PROPOSED SILT FENCING AND/OR HAY BALES (EMBEDDED)
- PROPOSED DISHED CHANNEL
- PROPOSED OUTLET PIPE (SOLID PIPE)
- PROPOSED ATTENUATION BASIN
- PROPOSED PUMP
- PROPOSED PUMP HOSE/RISE MAIN
- EXISTING WATERCOURSE
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- SITE BOUNDARY
- EXISTING TOPOGRAPHICAL LEVEL

INDICATIVE BAGWORK HEADWALL DETAIL (NTS)

BAGWORK (SANDBAG) HEADWALL ELEVATION

INDICATIVE BAGWORK FACE LAID TO ENGLISH/STRETCHER BOND

PIPE

BAGWORK (SANDBAG) HEADWALL PLAN

BAGWORK LAID TO ENGLISH/STRETCHER BOND

BAGWORK LAID TO STABLE ANGLE

STONE AND SCOUR PROTECTION TO BASE AND SIDES

BAGWORK (SANDBAG) HEADWALL CROSS SECTION

ATTENUATION BASIN PP2

BASE AREA = 625.9 m²
TOP OF BASIN AREA = 932.6 m²
SIDE SLOPES = 1:3
TOP OF BASIN = 89.00
BASE LEVEL = 89.00

PP2 MODEL DETAILS

BASED ON THE 50% (1:2) AEP RAINFALL EVENT

CONTRIBUTING AREA = 25.469 ha
MAX. OUTFLOW = 16.0 l/s
DISCHARGE VOLUME = 1,824.5 m³
MAX. STORAGE VOLUME = 742.1 m³
MAX. WATER LEVEL = 88.265 m AOD

NOTE: CONTRACTOR TO REVIEW WEATHER FORECAST DAILY AND TO MAKE ARRANGEMENTS FOR PUMP TO BE ACTIVATED WHEN RAINFALL OCCURS

GREENFIELD RUNOFF RATES

1:1 = 2.2 l/s/ha
GBAR = 2.5 l/s/ha
1:30 = 6.1 l/s/ha
1:100 = 8.9 l/s/ha

Typical Section Through Proposed Temporary Earth Bunding / Dishd Channel (NTS)

Bund Height Max 1.2m

Gradient Max 1:2

Crest Width 250mm

Dishd channel as designed in PPP modelling

Bund to be constructed in well compacted layers

Existing Ground

REV	DATE	DESCRIPTION	DRAWN	CHECK
P3	18.12.24	UPDATED LAYOUT IN BACKGROUND	WC	JA
P2	21.11.24	UPDATED BASIN SIZES & LOCATIONS	WC	JA
P1	30.09.24	INITIAL ISSUE	TB	JA

Client
AGR SOLAR 4 LIMITED

Drawn Status
PRELIMINARY

Project
LAND EAST OF GREAT WYMONDLEY

Title
POLLUTION PREVENTION PLAN SHEET 2 OF 6

Date
SEP 2024

Scale (A0)
1:500

Drawn
TB

Checked
JA

Project No
5208

Drawing No
152

Revision
P3

Client
AGR SOLAR 4 LIMITED

Drawn Status
PRELIMINARY

Project
LAND EAST OF GREAT WYMONDLEY

Title
POLLUTION PREVENTION PLAN SHEET 2 OF 6

Date
SEP 2024

Scale (A0)
1:500

Drawn
TB

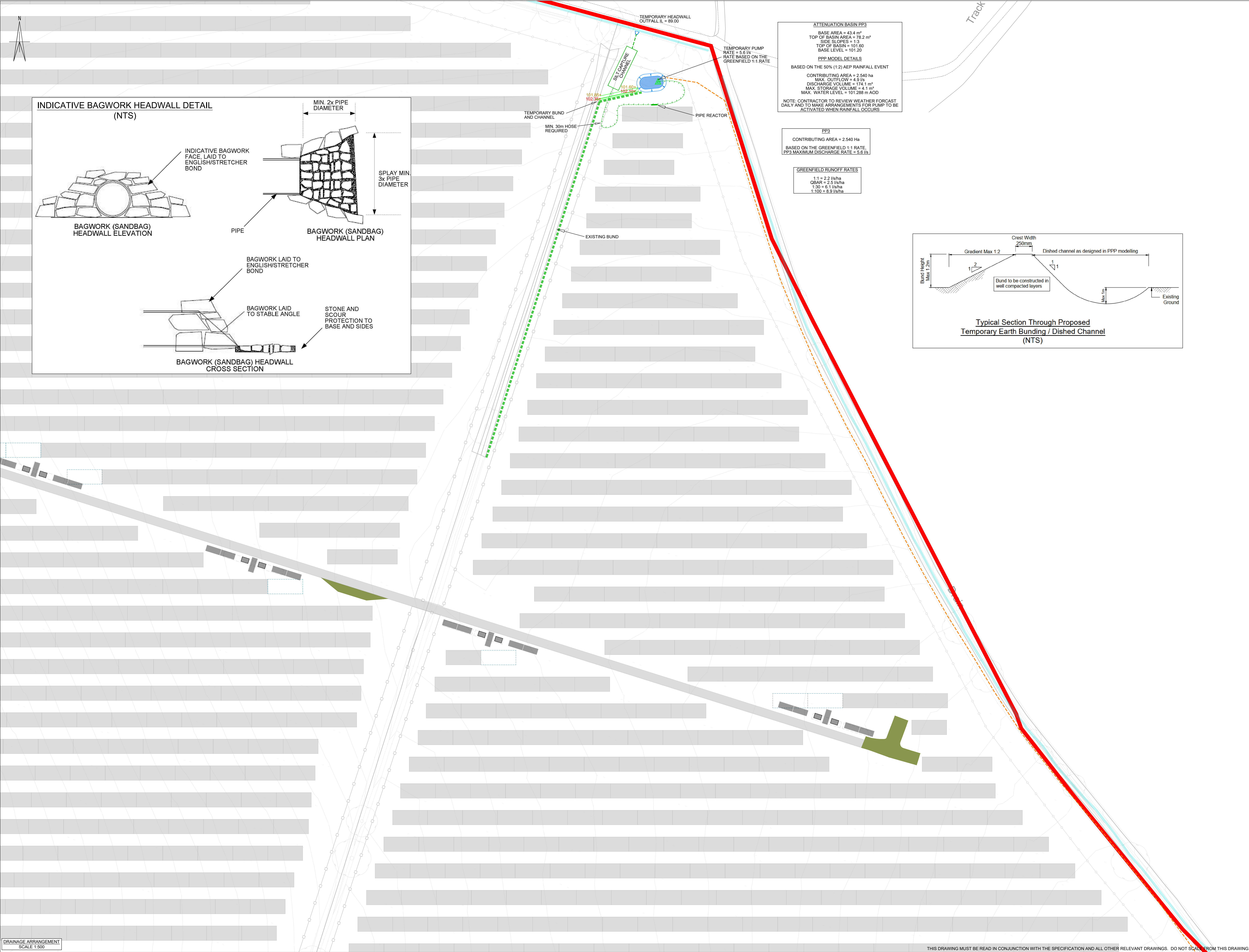
Checked
JA

Project No
5208

Drawing No
152

Revision
P3

Park House, Fford
Bymer Gwair, Mold
CH7 1FG
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NOTES

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- THERE IS POTENTIAL FOR THE PROPOSED TEMPORARY DRAINAGE SYSTEM TO BE OVERWHELMED FOR LARGER MAGNITUDE EVENTS I.E. EVENTS WITH AN AEP OF LESS THAN 1:2.

FULL SITE ARRANGEMENT SCALE 1:12,500

KEY

- PROPOSED SILT FENCING AND/OR HAY BALES (EMBEDDED)
- PROPOSED DISHED CHANNEL
- PROPOSED OUTLET PIPE (SOLID PIPE)
- PROPOSED ATTENUATION BASIN
- PROPOSED PUMP
- PROPOSED PUMP HOSE/RISE MAIN
- EXISTING WATERCOURSE
- EXISTING GROUND LEVEL
- PROPOSED GROUND LEVEL
- SITE BOUNDARY
- EXISTING TOPOGRAPHICAL LEVEL

P3	18.12.24	UPDATED LAYOUT IN BACKGROUND	WC	JA
P2	21.11.24	UPDATED BASIN SIZES & LOCATIONS	WC	JA
P1	30.09.24	INITIAL ISSUE	TB	JA
REV	DATE	DESCRIPTION	DRAWN CHECK	

Client

AGR SOLAR 4 LIMITED

Drawing Status

PRELIMINARY

Project

LAND EAST OF GREAT WYMONDLEY

Title

POLLUTION PREVENTION PLAN SHEET 3 OF 6

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Client

AGR SOLAR 4 LIMITED

Drawing Status

PRELIMINARY

Project

LAND EAST OF GREAT WYMONDLEY

Title

POLLUTION PREVENTION PLAN SHEET 3 OF 6

Date

SEP 2024

Scale (A0)

1:500

Drawn

TB

Checked

JA

Project No

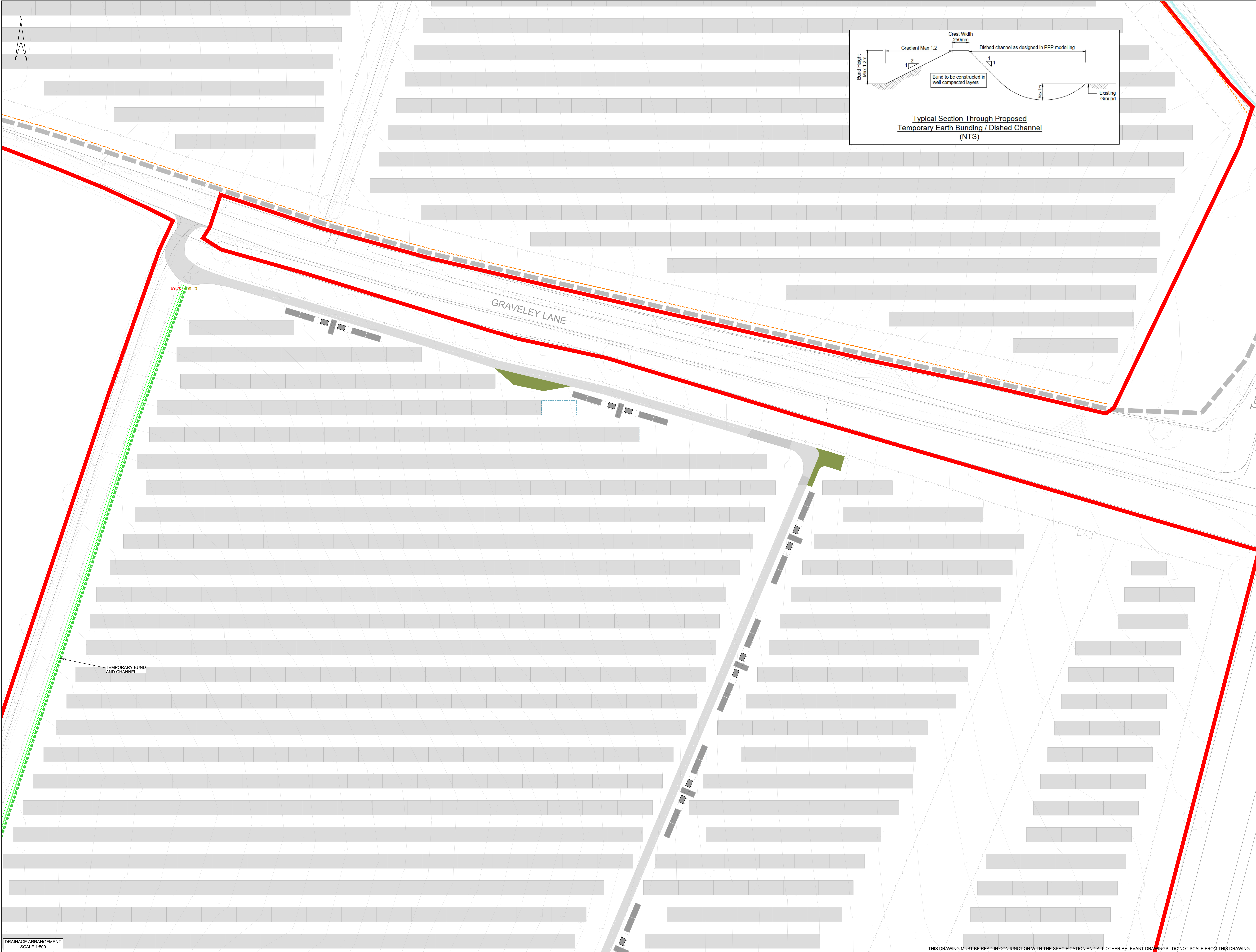
5208

Drawing No

153

Revision

P3



NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
- PROPOSED SITE LAYOUT TAKEN FROM AXIS 'GENERAL ARRANGEMENT' DRAWING (REF: 3004-01-003 REV F, JUL 2024).
- EXISTING LEVEL INFORMATION TAKEN FROM TERRA MEASUREMENT 'TOPOGRAPHICAL SURVEY' (REF: 4102_AGR_GROUP_GRAVELEY_LANE_GREAT_WYMONDLEY, MAY 2024).
- WEETWOOD IS NOT IN CONTROL OF THE CONSTRUCTION SITE OR OPERATION OF THE THIRD PARTY WATER TREATMENT SYSTEMS. AS SUCH, WEETWOOD DOES NOT TAKE RESPONSIBILITY FOR THE QUALITY OF WATER DISCHARGING FROM THE SITE AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFICACY OF ANY WATER TREATMENT SYSTEMS.
- THERE IS POTENTIAL FOR THE PROPOSED TEMPORARY DRAINAGE SYSTEM TO BE OVERWHELMED FOR LARGER MAGNITUDE EVENTS I.E. EVENTS WITH AN AEP OF LESS THAN 1:2.

KEY

- PROPOSED SILT FENCING AND/OR HAY BALES (EMBEDDED)
- PROPOSED DISHED CHANNEL
- PROPOSED OUTLET PIPE (SOLID PIPE)
- PROPOSED ATTENUATION BASIN
- PROPOSED PUMP
- PROPOSED PUMP HOSE/ISING MAIN
- EXISTING WATERCOURSE
- 22.49+ EXISTING GROUND LEVEL
- 22.49- PROPOSED GROUND LEVEL
- SITE BOUNDARY
- EXISTING TOPOGRAPHICAL LEVEL

P3	18.12.24	UPDATED LAYOUT IN BACKGROUND	WC	JA
P2	21.11.24	UPDATED BASIN SIZES & LOCATIONS	WC	JA
P1	30.09.24	INITIAL ISSUE	TB	JA

REV	DATE	DESCRIPTION	DRAWN	CHECK



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Client
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Drawing Status	Date
PRELIMINARY	SEP 2024

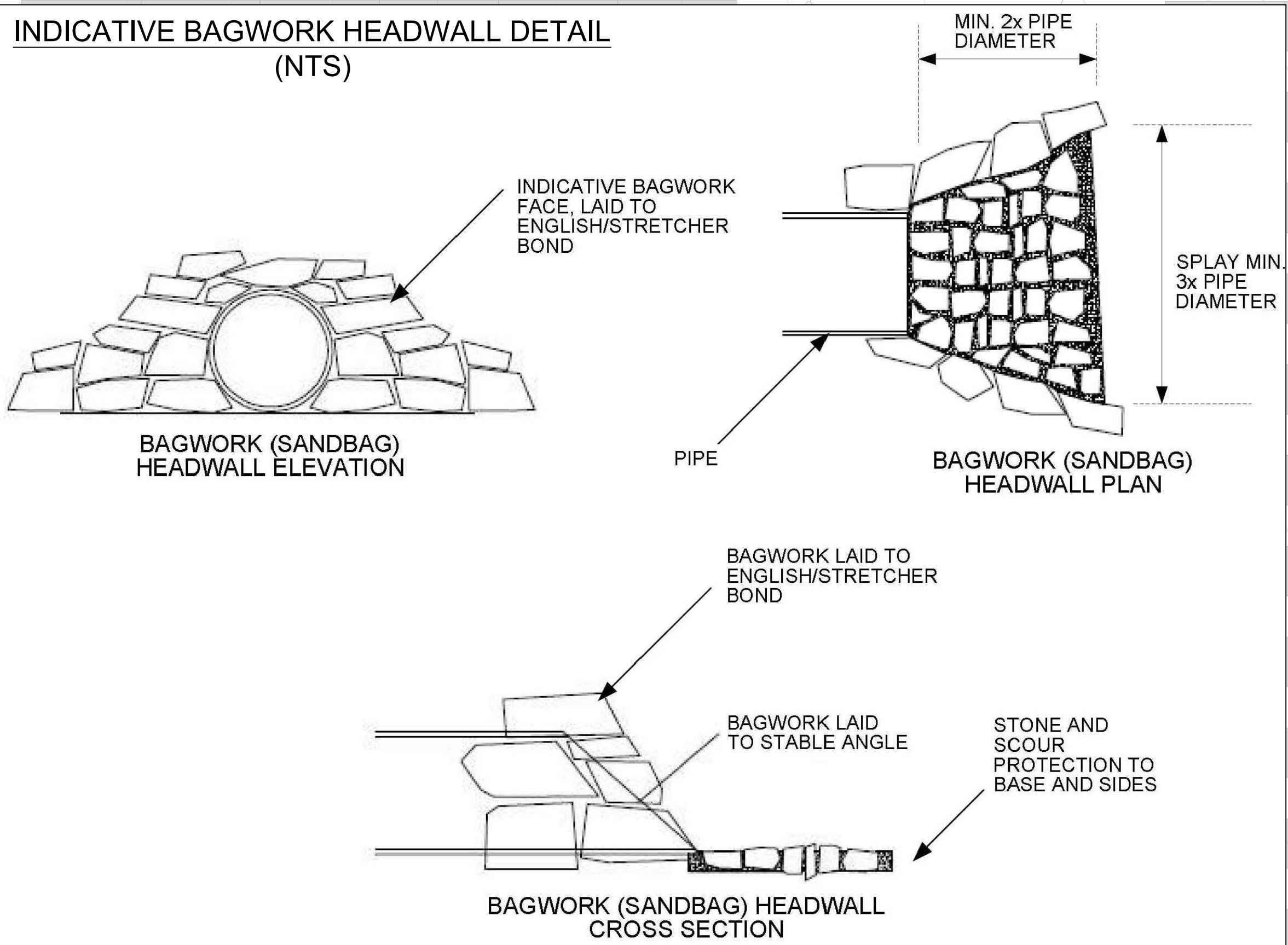
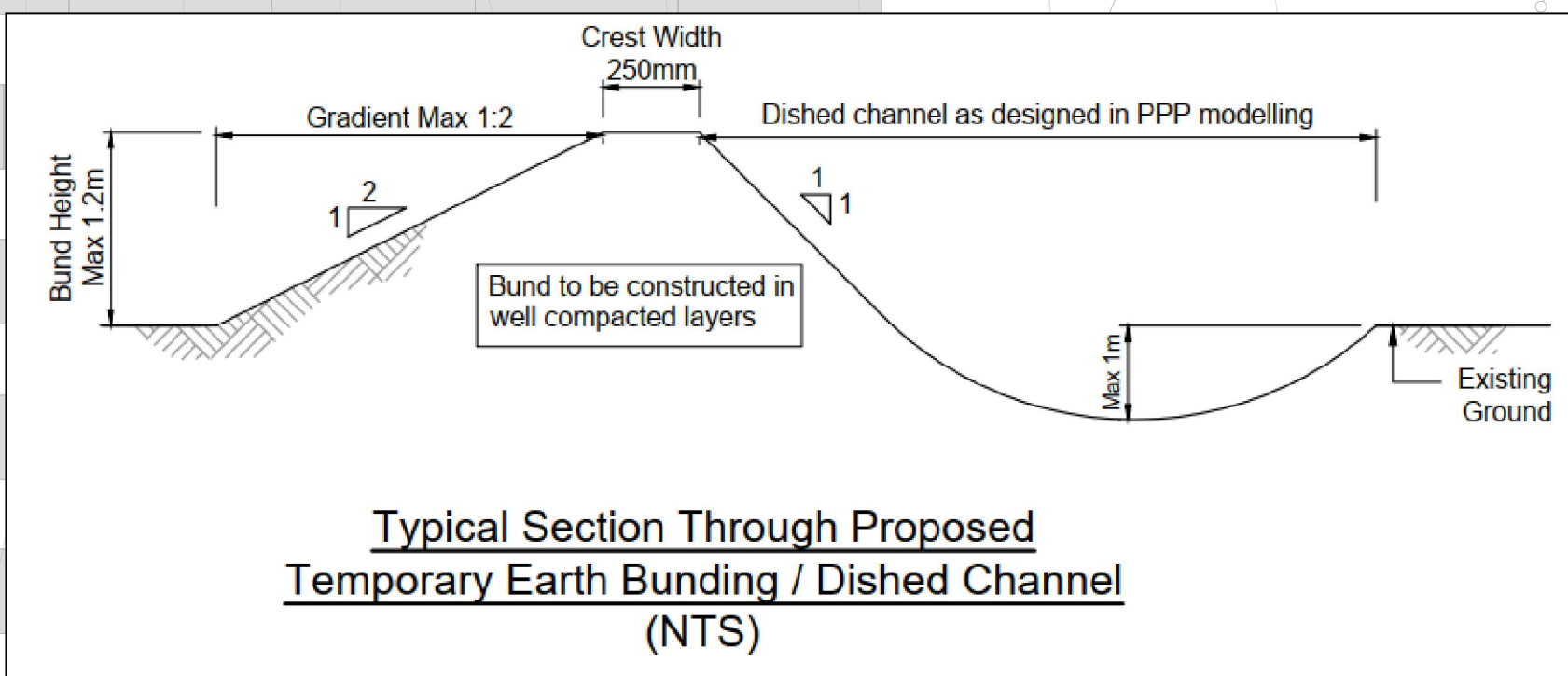
Project	Drawn
LAND EAST OF GREAT WYMONDLEY	TB

Checked	JA
Project No	5208

Title	Drawing No
POLLUTION PREVENTION PLAN	154

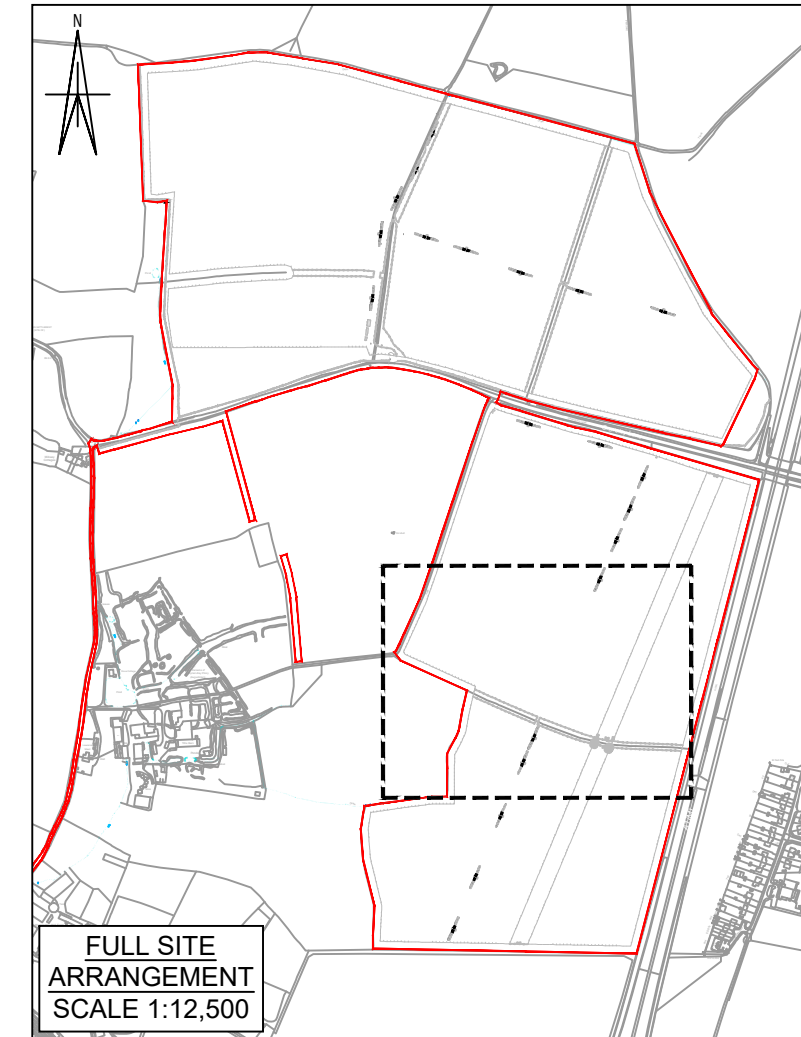
SHEET 4 OF 6	Revision
	P3

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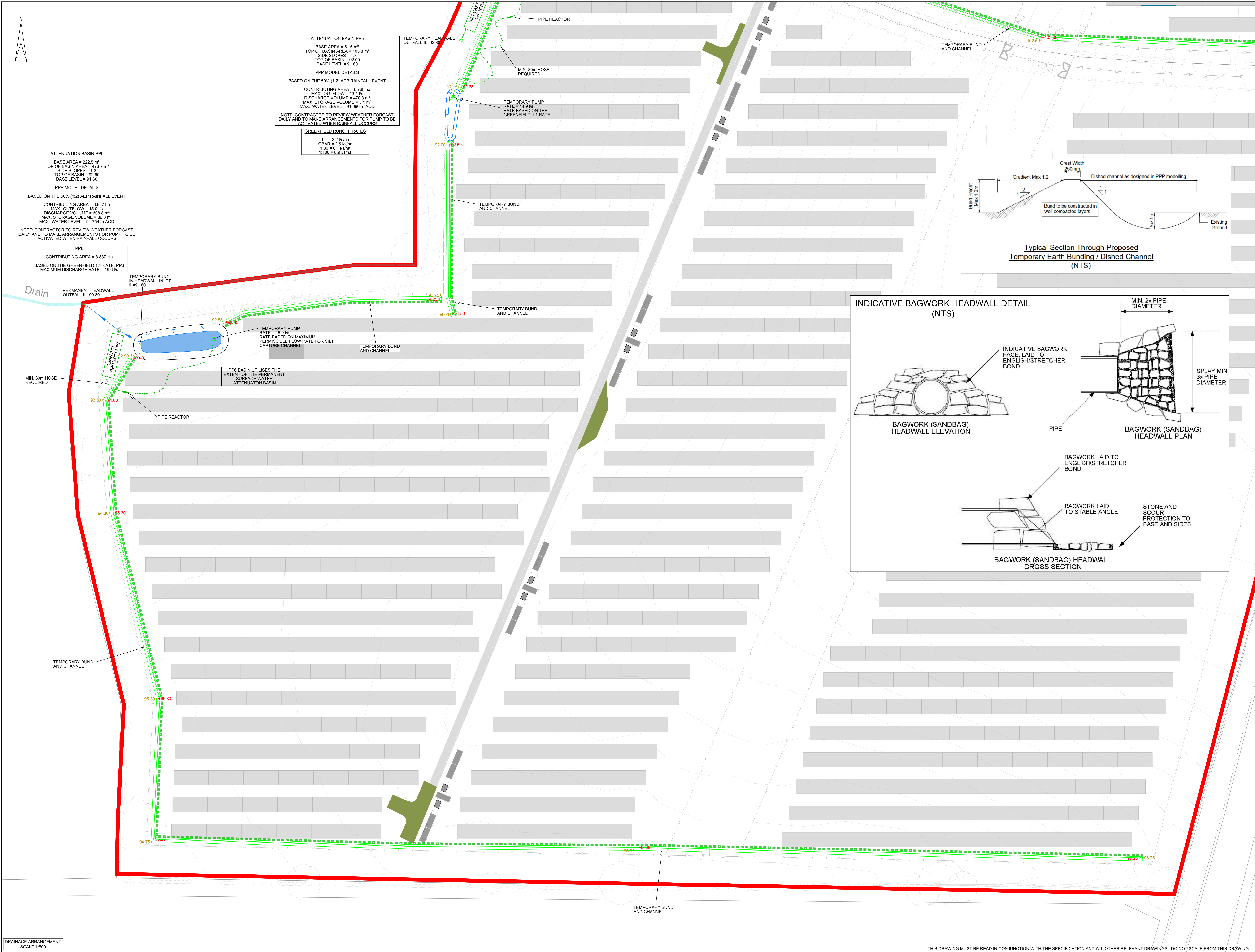
P3	18.12.24	UPDATED LAYOUT IN BACKGROUND	WC	JA
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Client AGR SOLAR 4 LIMITED	
Drawing Status PRELIMINARY	Date SEP 2024
Project LAND EAST OF GREAT WYMONDLEY	Scale (A0) 1:500
Project No 5208	Drawn TB
Drawing No 155	Checked JA
Title POLLUTION PREVENTION PLAN	Project No 5208
SHEET 5 OF 6	Drawing No 155
	Revision P3

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ATTENUATION BASIN PP5
BASE AREA = 51.6 m²
TOP OF BASIN AREA = 105.8 m²
SIDE SLOPES = 1:3
TOP OF BASIN = 92.00
BASE LEVEL = 91.60
PPP MODEL DETAILS
BASED ON THE 50% (1:2) AEP RAINFALL EVENT
CONTRIBUTING AREA = 6.788 ha
MAX. OUTFLOW = 13.4 l/s
DISCHARGE VOLUME = 470.3 m³
MAX. STORAGE VOLUME = 5.1 m³
MAX. WATER LEVEL = 91.600 m AOD
NOTE: CONTRACTOR TO REVIEW WEATHER FORECAST DAILY AND TO MAKE ARRANGEMENTS FOR PUMP TO BE ACTIVATED WHEN RAINFALL OCCURS
GREENFIELD RUNOFF RATES
1:1 = 2.2 l/s/ha
QBAR = 2.5 l/s/ha
1:50 = 6.1 l/s/ha
1:100 = 8.9 l/s/ha

ATTENUATION BASIN PP6
BASE AREA = 222.5 m²
TOP OF BASIN AREA = 473.7 m²
SIDE SLOPES = 1:3
TOP OF BASIN = 92.60
BASE LEVEL = 91.60
PPP MODEL DETAILS
BASED ON THE 50% (1:2) AEP RAINFALL EVENT
CONTRIBUTING AREA = 8.887 ha
MAX. OUTFLOW = 15.0 l/s
DISCHARGE VOLUME = 608.8 m³
MAX. STORAGE VOLUME = 36.8 m³
MAX. WATER LEVEL = 91.754 m AOD
NOTE: CONTRACTOR TO REVIEW WEATHER FORECAST DAILY AND TO MAKE ARRANGEMENTS FOR PUMP TO BE ACTIVATED WHEN RAINFALL OCCURS

PP6
CONTRIBUTING AREA = 8.887 Ha
BASED ON THE GREENFIELD 1:1 RATE, PP6
MAXIMUM DISCHARGE RATE = 19.6 l/s

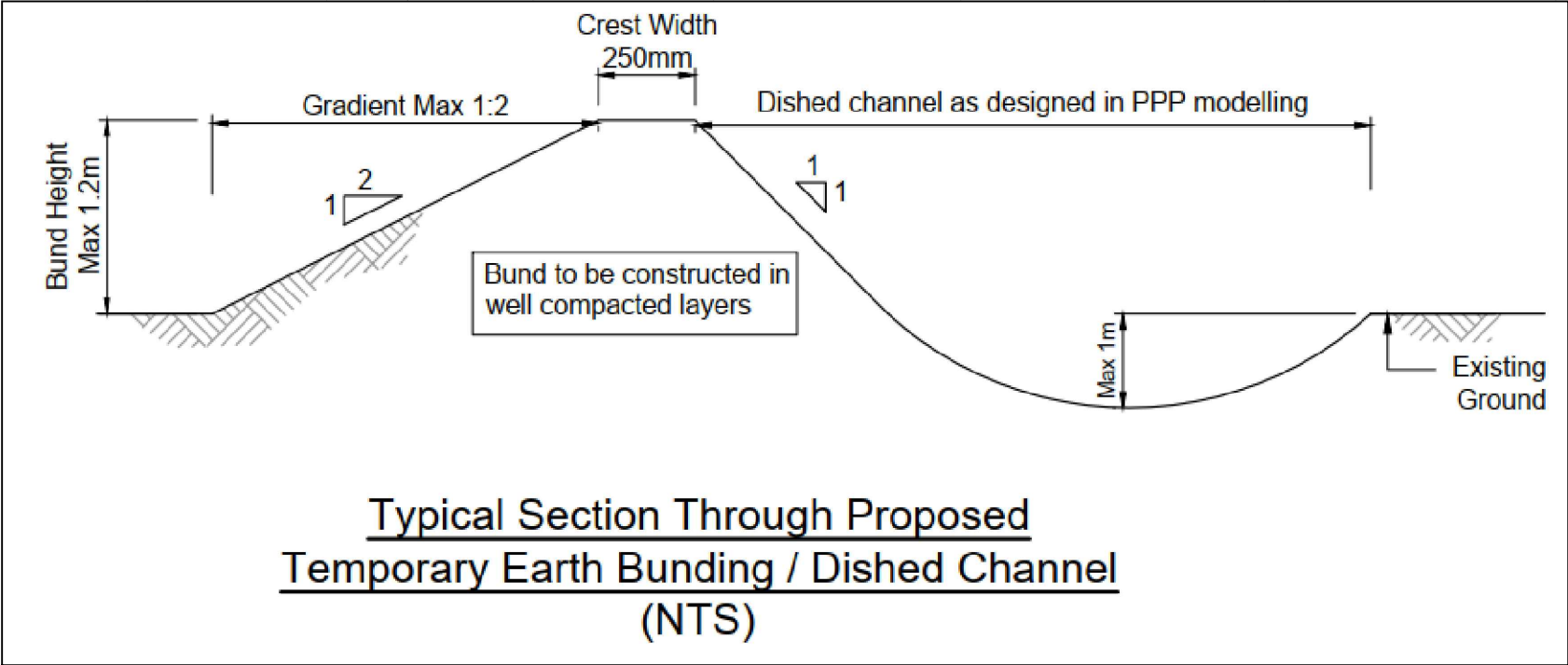
TEMPORARY BUND
IN HEADWALL INLET
IL=91.60

TEMPORARY PUMP
RATE = 15.0 l/s
RATE BASED ON MAXIMUM
PERMISSIBLE FLOW RATE FOR SILT
CAPTURE CHANNEL
PP6 BASIN UTILISES THE
EXTENT OF THE PERMANENT
SURFACE WATER
ATTENUATION BASIN

PIPE REACTOR

TEMPORARY BUND
AND CHANNEL

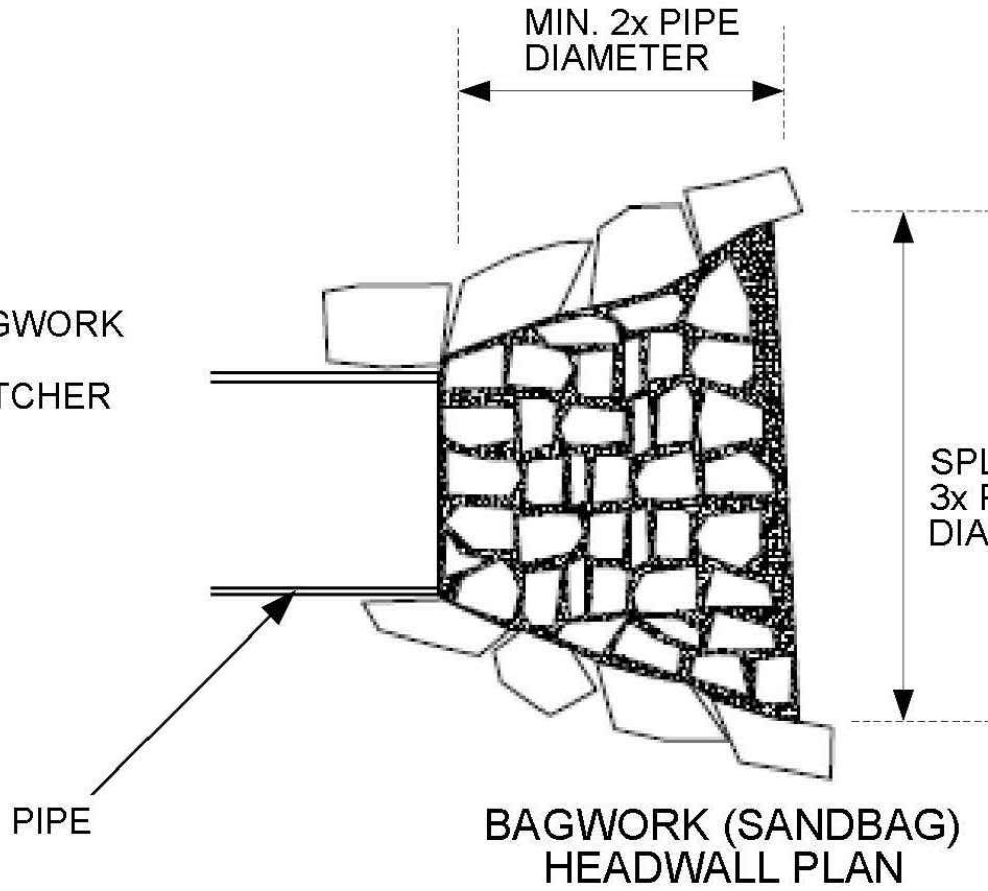
TEMPORARY BUND
AND CHANNEL



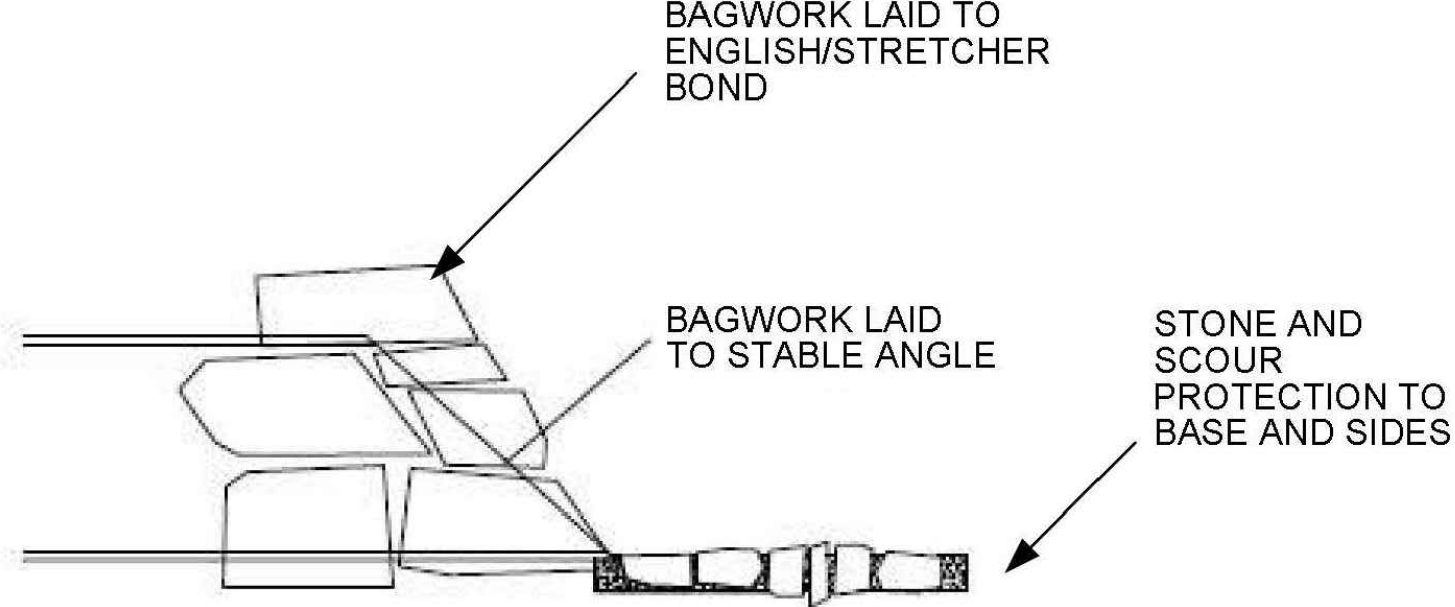
INDICATIVE BAGWORK HEADWALL DETAIL (NTS)



BAGWORK (SANDBAG) HEADWALL ELEVATION



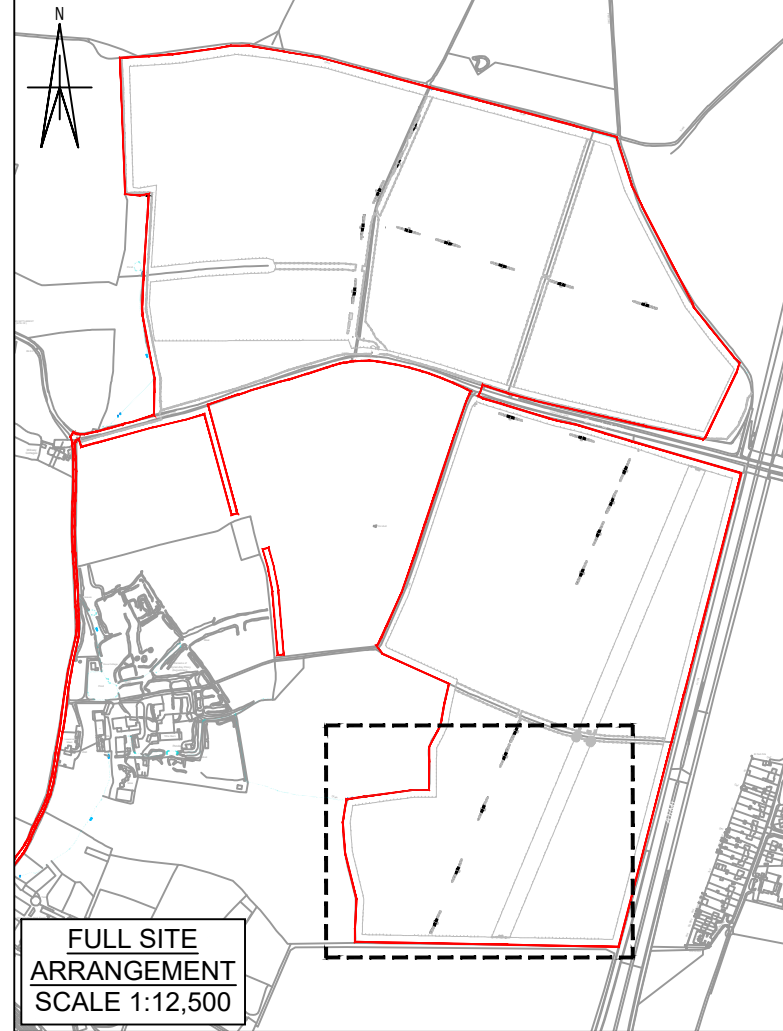
BAGWORK (SANDBAG) HEADWALL PLAN



BAGWORK (SANDBAG) HEADWALL CROSS SECTION

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PRELIMINARY	SEP 2024
Project	Scale (A0)
LAND EAST OF GREAT WYMONDLEY	1:500
Project No	Drawn
5208	TB
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156	JA
Revision	
P3	

DRAINAGE ARRANGEMENT
SCALE 1:500

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Surface Water Drainage
Foul Water Drainage
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Environmental Permit and Land Drainage Applications
Sequential, Justification and Exception Tests
Expert Witness and Planning Appeals
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