

MARGAM GREEN ENERGY PLANT, LONGLANDS LANE, MARGAM

FLOOD CONSEQUENCES ASSESSMENT AND DRAINAGE STATEMENT

Final Report v1.2

June 2025

Report Title **Margam Green Energy Plant, Longlands Lane, Margam**
Flood Consequences Assessment and Drainage Statement
Final Report v1.2

Client Axis PED Ltd

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List of Abbreviations

AEP	Annual Exceedance Probability	LFRMS	Local Flood Risk Management Strategy
AOD	Above Ordnance Datum	LiDAR	Light Detection and Ranging
ASGWF	Areas Susceptible to Groundwater Flooding	LLFA	Lead Local Flood Authority
bgl	Below Ground Level	LPA	Local Planning Authority
BGS	British Geological Survey	l/s	Litres per Second
BRE	Building Research Establishment	m	Metres
BSI	British Standards Institute	m ²	Square Metres
CC	Climate Change	m ³	Cubic Metres
CCMA	Coastal Change Management Area	NFM	Natural Flood Management
CFMP	Catchment Flood Management Plan	NGR	National Grid Reference
CIRIA	Construction Industry Research and Information Association	NRW	Natural Resources Wales
CRT	Canal and River Trust	NVZ	Nitrate Vulnerable Zone
DCWW	Dŵr Cymru Welsh Water	OS	Ordnance Survey
DEFRA	Department for Environment, Food and Rural Affairs	PFRA	Preliminary Flood Risk Assessment
DS	Drainage Statement	PPW	Planning Policy Wales
EA	Environment Agency	QBAR	Mean annual maximum runoff rate
FCA	Flood Consequences Assessment	QMED	Median annual maximum runoff rate
FCADS	Flood Consequences Assessment and Drainage Statement	RBD	River Basin District
FCERM	Flood and Coastal Erosion Risk Management	RBMP	River Basin Management Plan
FFL	Finished Floor Level	RFI	Request for Information (to NRW)
FMP	Flood Management Plan	RMA	Risk Management Authority
FRMP	Flood Risk Management Plan	RoFSW	Risk of Flooding from Surface Water
FWA	Flood Warning Area	SAC	Special Area of Conservation
FWEP	Flood Warning and Evacuation Plan	SFCA	Strategic Flood Consequences Assessment
FWMA	Flood and Water Management Act	SMP	Shoreline Management Plan
FWS	Flood Warning System	SoP	Standard of Protection
GSPZ	Groundwater Source Protection Zone	SSSI	Site of Special Scientific Interest
ha	Hectare	SAB	SuDS Approving Body
IDD	Internal Drainage Districts	SuDS	Sustainable Drainage System
km	Kilometres	SWMP	Surface Water Management Plan
		TAN15	Technical Advice Note 15
		WFD	Water Framework Directive

1 INTRODUCTION

1.1 Purpose of Report

Weetwood Services Ltd ('Weetwood') has been instructed by Axis PED Ltd on behalf of Eco2 ("the applicant") to prepare a FCADS report to accompany a full planning application for a two-storey office building, car parking, contractor cabins and site entrance works at Margam Green Energy Plant (GEP), Longlands Lane, Margam.

The assessment has been undertaken in accordance with the requirements of the updated TAN15 dated March 2025.

1.2 Background

The current overall planning permission for Margam GEP is ref. P2020/0668.

The proposed development will be in the location of the spares building previously approved in October 2020 under planning application ref. P2020/0613.

Axis prepared a FCA in support of the P2020/0613 application, which referred to and included (as Annex A) an earlier FCA prepared by Weetwood in July 2014 (Ref. 2765/FCA v1.1) to accompany the planning application for the wider Margam GEP. However, Weetwood prepared a DA in June 2020 (Ref. 4756/DA/Final/v1.1/2020-06-09) to accompany the application.

More recently, Weetwood prepared a FCA in November 2022 (Ref. 4756/FCA/Final/v2.2/2022-11-11) to accompany a planning application for development at the site entrance to Margam GEP (Ref. P2022/0972), which was approved in January 2023. This did not include a DA; however, a Surface Water Drainage Scheme technical note was prepared by Weetwood in May 2023 and submitted to Neath Port Talbot Council to accompany an application to discharge Condition 3 of the Decision Notice (Ref. P/2023/423). The discharge of condition application was approved in September 2023.

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 development site
- Section 3** Presents national and local flood risk and drainage planning policy
- Section 4** Assesses the potential risk of flooding to the development site
- Section 5** Presents an illustrative surface water drainage scheme
- Section 6** Presents a summary of key findings and the recommendations

1.4 Relevant Documents and Planning Policy

The assessment has been informed by the following documents, policy and information:

- Technical Advice Note 15: Development, Flooding and Coastal Erosion, Welsh Government, March 2025;
- Replacement Local Development Plan 2023 - 2038: Preferred Strategy, Neath Port Talbot Council, December 2024;
- Planning Policy Wales, Welsh Government, February 2024;
- South West Wales - Stage 1 Strategic Flood Consequences Assessment, City and County of Swansea Council, November 2022;
- Flood Consequences Assessments: Climate Change Allowances, Welsh Government, September 2021, https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf
- Future Wales - the National Plan 2040, Welsh Government, February 2021;
- Design and Construction Guidance: Sewerage Sector Guidance Appendix C, Water UK, Approved Version 2.0, March 2020;

- Statutory Standards for Sustainable Drainage Systems - Designing, Constructing, Operating and Maintaining Surface Water Drainage Systems, Welsh Government, October 2018, <https://gov.wales/sites/default/files/publications/2019-06/statutory-national-standards-for-sustainable-drainage-systems.pdf>
- Preliminary Flood Risk Assessment Addendum, Neath Port Talbot Council, December 2017;
- BRE Digest 365 Soakaway Design, BRE, February 2016;
- The SuDS Manual (C753), CIRIA, December 2015;
- Flood Risk Management Plan, Neath Port Talbot Council, December 2015;
- Rainfall Runoff Management for Developments (Ref. SC030219), DEFRA/EA, October 2013;
- Local Flood Risk Management Strategy, Neath Port Talbot Council, June 2013;
- Local Development Plan 2011 - 2026, Neath Port Talbot Council, January 2016;
- Preliminary Flood Risk Assessment, Neath Port Talbot Council, March 2011;
- HR Wallingford Greenfield Runoff Tool, www.uksuds.com;
- Soilscales, Soil and AgriFood Institute, Cranfield University, www.landis.org.uk/soilscales;
- National Geoscience Data Centre's Single Onshore Borehole Index, <https://www.bgs.ac.uk/products/onshore/SOBI.html>;
- BGS Mapping of Surface Geology, <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>.

1.5 Third Party Surveys, Drawings and Assessments

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

- Proposed Site Entrance R4.0, Fitchner Consulting Engineers, February 2025 (**Appendix A**);
- Post Site Elevations R1.0, Fitchner Consulting Engineers, March 2025 (**Appendix A**);
- Topographic Survey, Corner Point Surveys, Ref. S20025, May 2020 (**Appendix B**);
- Private Foul and Surface Water Drainage Plan, MLM Multidisciplinary Consulting, Ref. MLM-581146-SBU-C524 P11, August 2015 (**Appendix C**).

1.6 Explanatory Note on Flood Probability

This report refers to the likelihood of a flood event occurring in terms of an AEP expressed as a percentage. This terminology is consistent with the definition of the development advice zones presented in Figure 1 of TAN15 (2025) and the flood zones on the Flood Map for Planning (refer to **Section 4.2** 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 $1/100 = 0.010$ (1.0%) probability of occurring or being exceeded in any one year.

AEP	AEP (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
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 1,000

2 SITE DETAILS AND PROPOSED DEVELOPMENT

2.1 Site Location

The approximately 3.7 ha Margam GEP site is located south of Harbour Way (A4241) and north of Heolcae'r-Bont at OS NGR SS 789 863, as shown in **Figure 1**. The “application site” equates to an area of 0.275 ha and is located in the south of the Margam GEP site.

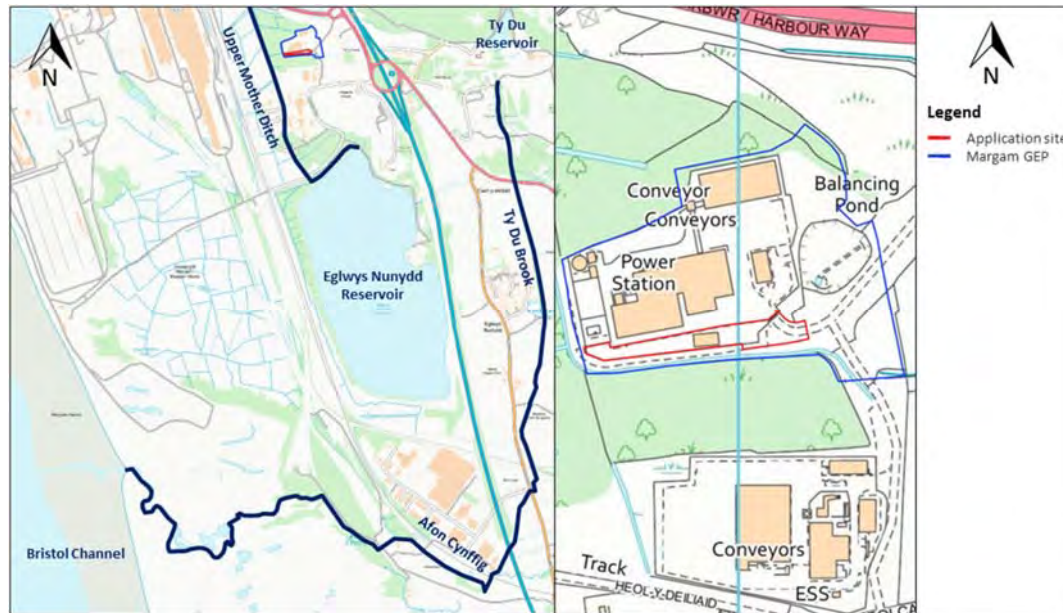


Figure 1: Site Location and Location of Surface Waterbodies

2.2 Existing and Proposed Development

The application site currently comprises an area of existing developed land to the south of Margam GEP, including the site entrance, existing buildings and areas of hardstanding.

The proposals comprise a two-storey office building, car parking, contractor cabins and site entrance works. Vehicular access will continue to be provided via the existing access road to the east leading north-east to Harbour Way. The proposed site plan is provided in **Appendix A**.

TAN15 classifies general industrial development as Less Vulnerable to flood risk.

2.3 Surface Waterbodies in the Vicinity of the Site

The Bristol Channel is located approximately 2.0 km west of the application site.

The Afon Afan is located approximately 4.1 km to the north-west of the application site and outfalls to the Bristol Channel.

The Afon Cynffig flows west/north-west approximately 2.9 km to the south of the application site, outfalling to the Bristol Channel.

Ty Du Brook flows south from Ty Du Reservoir within Margam Country Park approximately 1.2 km east of the application site, before passing beneath the M4 and outfalling to the Afon Cynffig.

Upper Mother Ditch is located approximately 100 m west of the application site. A number of other existing drainage ditches are also present within the locality, including one along the southern boundary of the Margam GEP site, which outfalls to Upper Mother Ditch.

The Afon Afan, Afon Cynffig and Ty Du Brook downstream of the A48 are classified as main river.

Eglwys Nunydd Reservoir is located approximately 700 m south of the site.

2.4 Topographic Levels

A topographic survey of the site has been undertaken by Corner Point Surveys (**Appendix B**) and LiDAR data has been used to develop a digital terrain model of the site and surrounding area as illustrated in **Figure 2**.

Ground levels on the application site are typically indicated to be in the region of 6.6 - 7.3 m AOD, rising to 8.2 m AOD in the east.

Ground levels on the access road leading towards Harbour Way range between 7.5 - 9.4 m AOD.

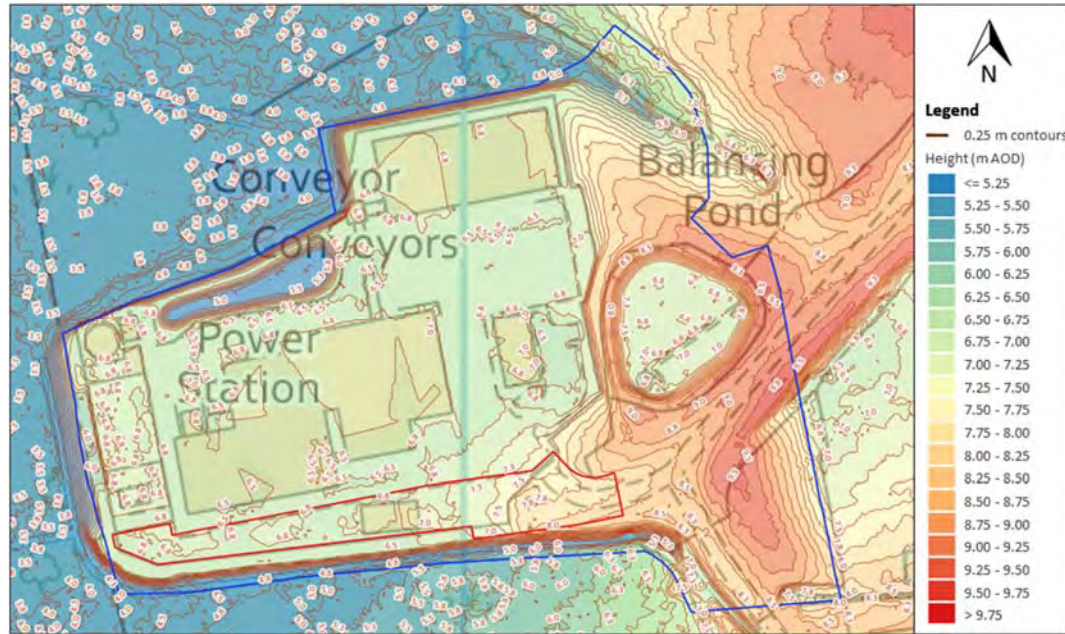


Figure 2: Digital Terrain Model from LiDAR Data

2.5 Ground Conditions

According to the Soilsapes soils dataset produced by the Cranfield Soil and AgriFood Institute¹, soil conditions at the site and within the surrounding area are described as loamy and clayey soils of coastal flats with naturally high groundwater.

BGS mapping of surface geology² indicates the underlying bedrock formation comprises South Wales Middle Coal Measures Formation - Mudstone, Siltstone and Sandstone, overlain by Tidal Flat Deposits - Clay, Silt and Sand superficial deposits.

According to the BGS and NRW aquifer designation dataset³ the superficial deposits at the site are classified as a Secondary (undifferentiated) aquifer whilst the underlying bedrock is classified as a Secondary A aquifer. The site is not shown to be located within a designated GSPZ⁴.

¹ www.landis.org.uk/soilsapes/

² <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

³ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

⁴ https://datamap.gov.wales/layers/inspire-nrw:NRW_Source_Protection_Zones

3 PLANNING POLICY AND GUIDANCE

3.1 National Planning Policy and Policy Guidance

Future Wales - the National Plan 2040 sets out the national development framework for Wales with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

Policy 8 - Flooding states that *“flood risk management that enables and supports sustainable strategic growth and regeneration in National and Regional Growth Areas will be supported. The Welsh Government will work with Flood Risk Management Authorities and developers to plan and invest in new and improved infrastructure, promoting nature-based solutions as a priority. Opportunities for multiple social, economic and environmental benefits must be maximised when investing in flood risk management infrastructure. It must be ensured that projects do not have adverse impacts on international and national statutory designated sites for nature conservation and the features for which they have been designated”*.

PPW sets out government's planning policies for Wales and how these are expected to be applied. TAN15 (2025) provides technical guidance which supplements the policy within PPW and seeks to ensure that flood risk is taken into account at all stages in the planning process and is appropriately addressed.

The general approach of TAN15 is to set out a precautionary framework to guide planning decisions in areas at high risk of flooding. The overarching aim of TAN15 is to provide a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. It also provides advice on the consequences of the risks and adapting to and living with flood risk.

National policy requires that planning applications for new development proposals should incorporate SuDS to appropriate operational standards and with maintenance arrangements in place unless there is clear evidence that this would be inappropriate.

Statutory standards for sustainable drainage were published by Welsh Government in October 2018 in relation to the design, construction, operation and maintenance of sustainable drainage systems serving new developments of more than one house or where the construction area is equal to or greater than 100 m². These standards set out how surface water runoff generated during the 100%, 3.3% and 1% AEP rainfall events and for events exceeding the 1% AEP event should be managed, how peak runoff rates should be restricted and how runoff volumes should be controlled. Approval is subsequently required from the SAB before construction can commence.

3.2 Local Planning Policy

The Local Development Plan 2011 - 2026 was adopted by Neath Port Talbot Council in January 2016. Policy SP 1 Climate Change states that *“The causes and consequences of climate change will be addressed by implementing the following measures...In relation to the consequences of climate change: 1. Likely increased food risk will be taken into account and addressed by ensuring that there is greater resilience by avoiding development on land that is at risk from flooding in the first instance in accordance with the sequential approach set out in national guidance or in locations that could increase the risk of flooding elsewhere...”*.

The Council is preparing a Replacement Local Development Plan 2023 - 2038. The Preferred Strategy (December 2024) was consulted on between 12 December 2024 and 6 February 2025. Objective 14 Flooding and Pollution states *“Ensure that environmental issues and future changes including flood risk, coastal and fluvial change and pollution issues are appropriately avoided, addressed and adverse impacts minimised”*.

The following policies are also relevant in respect of flood risk and drainage:

SP2 Climate Change states *“Development proposals will be required to make a positive contribution towards mitigating, adapting and building resilience to the impacts of climate change. Proposals should take account of the need to...5. Avoid development in areas identified as being at risk of flooding or that increases the risk of flooding and coastal erosion”*.

SP18 Environmental Protection states *“The quality of the environment will be safeguarded and enhanced and potential adverse impacts of existing or anticipated environmental problems will be addressed (including through de-risking approaches) in relation to the following...3. Flood risk and coastal erosion”.*

3.3 Water Framework Directive

The WFD provides a legal framework for the protection, improvement and sustainable use of inland surface waters, groundwater, transitional waters, and coastal waters across England and Wales, and seeks to:

- Prevent deterioration in the status of surface water and groundwater bodies;
- Protect, enhance and restore surface water and groundwater bodies (except artificial or heavily modified water bodies) with the aim of achieving good ecological, chemical and groundwater quantitative status by December 2021;
- Protect and enhance artificial and heavily modified water bodies with the aim of achieving good ecological potential and good chemical status by December 2021;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment and progressively reduce pollution of groundwater.

The WFD applies to any proposed development which has the potential to impact on a waterbody. Where this is the case, NRW may require evidence demonstrating that the proposed development does not compromise the aims of the WFD.

3.4 Ordinary Watercourse Consent

Ordinary Watercourse Consent may be required from Neath Port Talbot Council for any temporary or permanent works to or within an ordinary watercourse.

4 REVIEW OF FLOOD RISK

4.1 Historical Records of Flooding

The Flood Map for Planning - Recorded Flood Extents and associated database⁵ indicates that there are no records of flooding at or within the immediate vicinity of the site.

4.2 Risk of Flooding from the Sea (Tidal / Coastal) and Rivers (Fluvial)

The Flood Map for Planning - Rivers and Sea (**Figure 3**) indicates the site to be located in flood zone 1, with a small area in the west in flood zone 2 (rivers).

The flood zones are defined as follows and include the effects of climate change:

- Flood zone 1 (Rivers and Sea): Less than a 0.1% chance of flooding from rivers and the sea in a given year
- Flood Zone 2 (Rivers): Areas with a 0.1% to 1.0% chance of flooding from rivers in a given year
- Flood Zone 3 (Rivers): Areas with more than a 1.0% chance of flooding from rivers in a given year
- Flood Zone 2 (Sea): Areas with a 0.1% to 0.5% chance of flooding from the sea in a given year
- Flood Zone 3 (Sea): Areas with more than a 0.5% chance of flooding from the sea in a given year
- TAN15 Defended Zones: Areas that benefit from RMA flood defences with a present day 1.0% AEP and 0.5% AEP SoP for rivers and the sea respectively

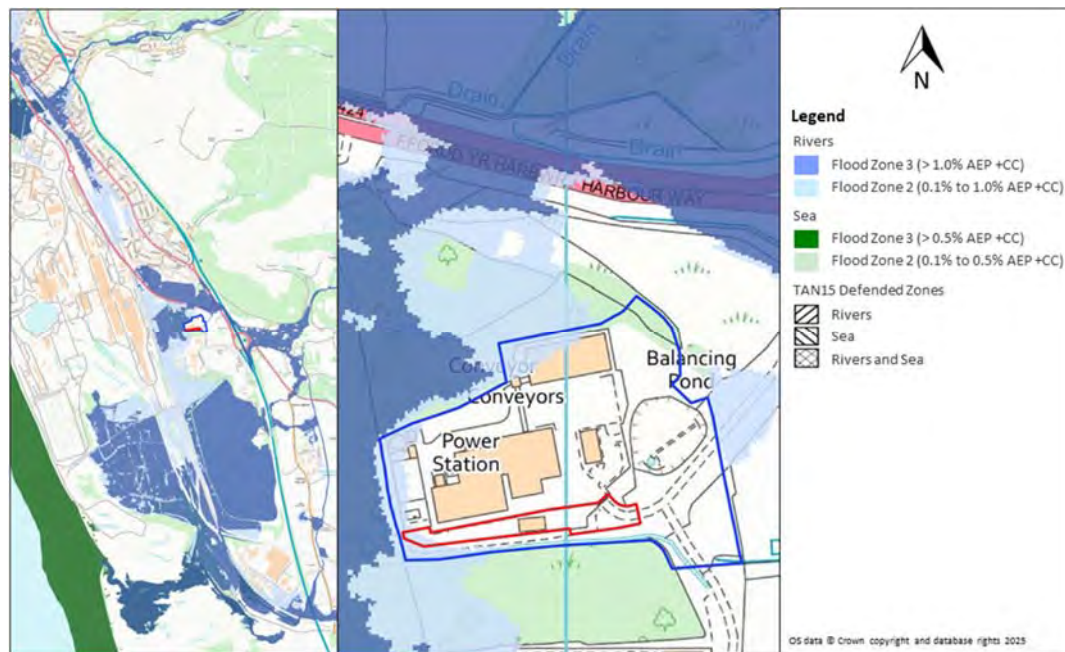


Figure 3: Flood Map for Planning - Rivers and Sea

Source: NRW website; Accessed: March 2025

The Flood Map for Planning - Rivers and Sea (**Figure 3**) indicates that the application site is not at a direct risk of flooding from the Bristol Channel to the west, nor from the Afon Afan to the north in up to a 0.1% AEP event including an allowance for climate change. The risk to the site subsequently originates from the Afon Cynffig and Ty Du Brook, which are both fluvially and tidally influenced within the vicinity of the site.

A 1D-2D ESTRY-TUFLOW hydraulic model of the Afon Cynffig and Ty Du Brook was developed by Capita on behalf of NRW as part of the Margam: Flood Risk Modelling study (March 2015). This was utilised and refined by JBA Consulting (commissioned by Tata Steel) to accompany the Margam Flood Map Challenge (February 2023). The 2023 modelling study assesses the risk of flooding from the Afon Cynffig and Ty Du Brook for a

⁵ https://datamap.gov.wales/layers/inspire-nrw:NRW_HISTORIC_FLOODMAP

range of events including a 1.0% and 0.1% AEP fluvially dominated event and a 0.5% and 0.1% AEP tidally dominated event with an allowance for climate change to the year 2122.

The modelled outputs are provided in **Figure 4**.

The modelled outputs indicate that no flooding of the application site is expected in up to a 0.1% AEP tidally dominated event (2122) and 1.0% AEP fluvially dominated event (2122). The mapped flood extents indicate some flooding in the west of the site during a 0.1% AEP fluvially dominated event (2122), with a maximum flood level of 4.86 m AOD; however, this is below minimum site levels (i.e. circa. 6.6 m AOD - refer to **Section 2.4**) and as such, the mapped flood extents may not provide an accurate representation of the risk to the site. Notwithstanding this, no built development is proposed within the area of identified risk, as this area will be utilised for landscape and ecological management.

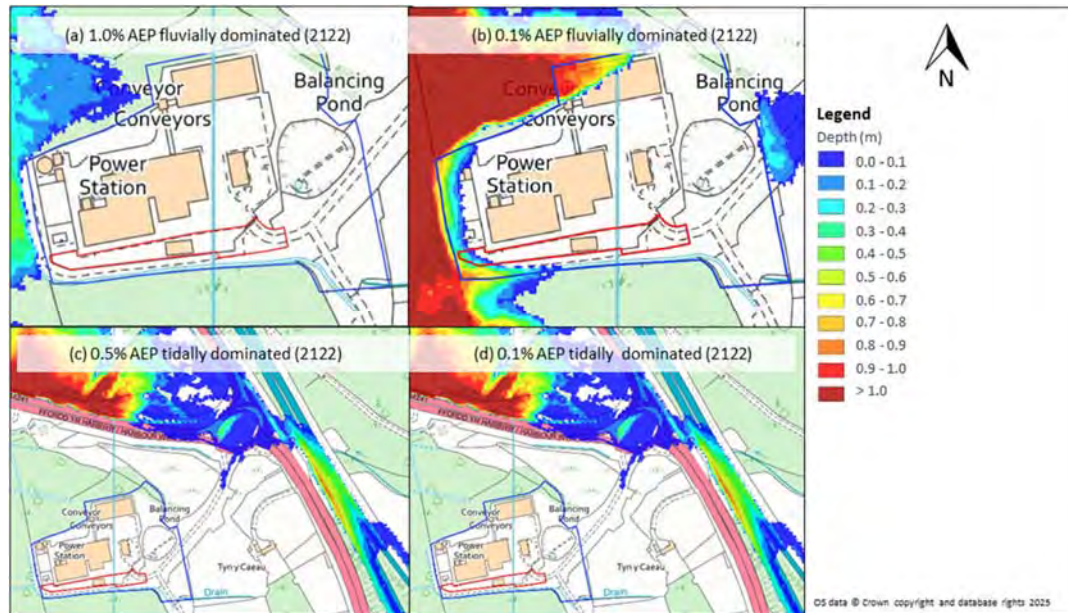


Figure 4: Afon Cyfffig and Ty Du Brook Modelled Flood Extents

Source: Margam Flood Map Challenge, JBA Consulting (Tata Steel), February 2023

4.3 Flood Risk from Small Watercourses and Surface Water (Pluvial)

As detailed in **Section 2.3**, a number of drainage ditches are located within the vicinity of the application site, including Upper Mother Ditch. No modelled information is available for these watercourses. The Flood Map for Planning - Surface Water and Small Watercourses (**Figure 5**) has therefore been utilised to assess the risk of flooding from these sources and pluvial surface water. This mapping indicates that no flooding of the application site is expected in up to a 0.1% AEP event including an allowance for climate change.

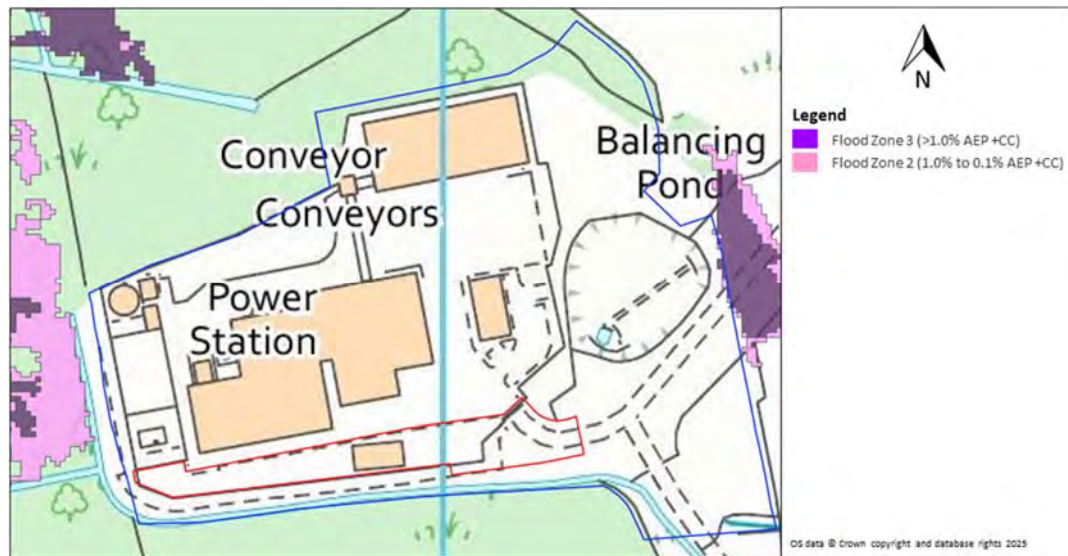


Figure 5: Flood Map for Planning - Surface Water and Small Watercourses

Source: NRW website; Accessed: March 202

4.4 Flood Risk from Reservoirs, Canals and Other Water Impounding Structures

The Flood Map for Planning - Flood Risk from Reservoirs (**Figure 6**) indicates that the western part of the application site is within the maximum extent of flooding from Eglwys Nunydd Reservoir located approximately 700 m south of the site. However, all large reservoirs are regularly inspected by reservoir panel engineers with essential safety work carried out as required. As such, reservoir flooding is extremely unlikely to occur.

There are no canals or other impounded waterbodies located within the immediate vicinity of the site.

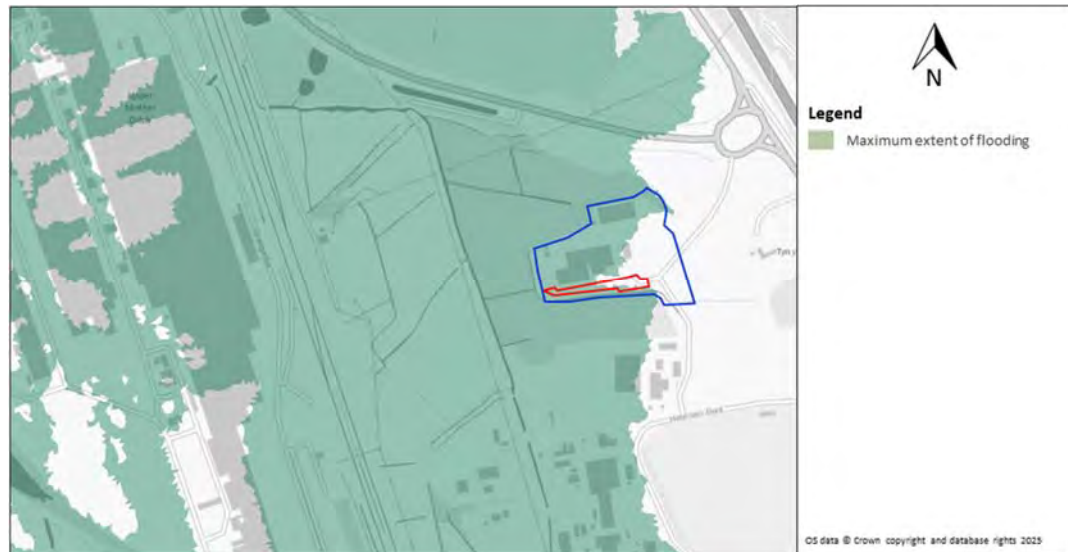


Figure 6: Flood Map for Planning - Flood Risk from Reservoirs

Source: NRW website; Accessed: March 2025

4.5 Flood Risk from Groundwater

The JBA Groundwater Flood Risk Indicator map (**Figure 7**) indicates that the application site is at a Negligible risk during a 1.0% AEP groundwater flood event.

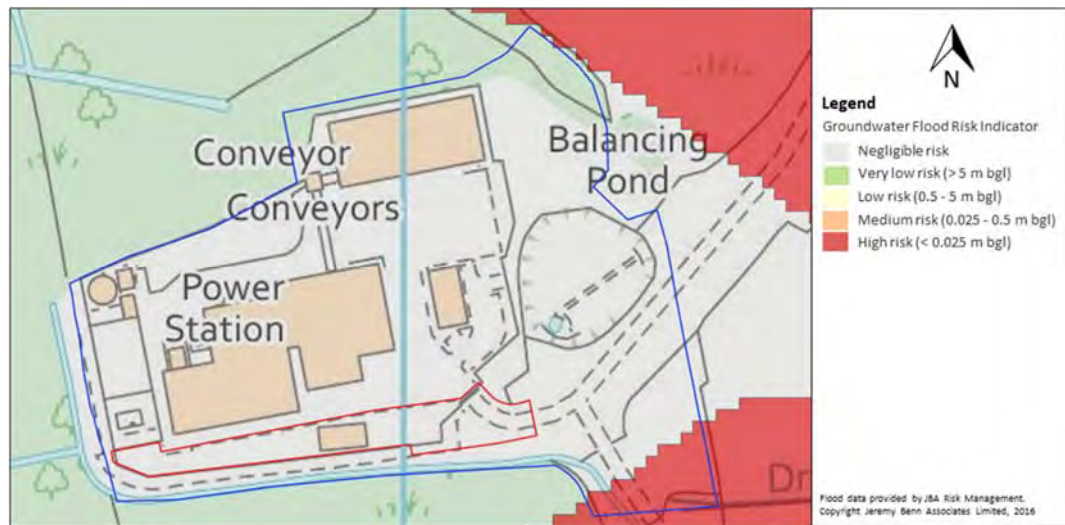


Figure 7: JBA Groundwater Flood Risk Indicator Map

Source: Blue Sky Maps; Accessed: October 2022

4.6 Flood Risk Mitigation

The risk of flooding to the proposed development from all identified sources is assessed to be low, with the exception of the Afon Cynffig and Ty Du Brook, which may pose a risk in the west of the application site during a 0.1% AEP fluvially dominated event (2122).

No built development is proposed within the area of identified risk, as this area will be utilised for landscape and ecological management.

Ground levels within the proposed developable area of the site will be at a minimum of 7.0 m AOD, which is 2.14 m above the flood level indicated in the west of the site during a 0.1% AEP fluvially dominated event (2122). As such, this will ensure that the proposed development complies with Figure 5 of TAN15.

In accordance with standard practice, the finished floor level of the proposed two-storey office should be at least 0.15 m above adjacent ground levels following any reprofiling of the site, with ground levels sloping down from the building.

This measure will, subject to the implementation of an appropriately designed surface water drainage scheme (Section 5), enable any potential overland flows to be conveyed safely across the site without affecting property.

4.7 Flood Risk Elsewhere

In accordance with Figure 2 and para. 11.4 of TAN15 developers must ensure that there is no increase in flooding elsewhere for floods up to the severity of the 0.1% AEP event including an allowance for climate change and should consider breach and blockage where necessary.

The site is not considered to be at risk of flooding in up to a 0.1% AEP fluvial and tidal event including an allowance for climate change. Whilst the current flood mapping indicates that there is a small area in the west that is at risk during the 0.1% fluvial event including an allowance for climate change, the modelled flood level is much lower than surveyed site levels. Irrespective, no built development or ground raising is proposed within the area of perceived risk, as this area will be utilised for landscape and ecological management. As such the proposals would not be expected to impact flood risk elsewhere and no compensatory flood storage would need be provided on site.

5 SURFACE WATER MANAGEMENT

5.1 Surface Water Drainage at the Existing Site

A private foul and surface water drainage plan for the Margam GEP site, prepared by MLM Multidisciplinary Consulting, is provided in **Appendix C**. This indicates that surface water runoff from roofs and hardstanding discharges to the drainage ditch along the southern boundary of the Margam GEP site via channel drains, gulleys and a network of surface water sewers. Flows are controlled by a vortex control with attenuation storage provided in the pipe network and an attenuation basin.

The application site does not appear to be positively drained other than the hardstanding area to the site entrance. As such, surface water runoff from the remaining areas is expected to infiltrate where conditions allow and flow overland in a direction determined by topography, either towards the Margam GEP drainage system or the drainage ditch along the southern boundary.

The application site has a total area of 0.275 ha, of which 0.15 ha will consist of new impermeable areas to be positively drained. Areas outside of this are expected to continue to drain as existing.

The greenfield surface water runoff rates for the application site, calculated using the HR Wallingford Greenfield Runoff Tool⁶ are presented in **Table 1**. Details of the input parameters and the output results are provided in **Appendix D**.

Table 1: Greenfield Runoff Rate

AEP of Rainfall Event	Greenfield Runoff Rate (l/s/ha)	Greenfield Runoff Rate for 0.15 ha Application Site (l/s)
100.0%	4.7	0.7
QBAR	5.3	0.8
3.3%	9.5	1.4
1.0%	11.6	1.7

5.2 Surface Water Drainage at the Redeveloped Application Site

5.2.1 Disposal of Surface Water

In accordance with Welsh Government guidance, surface water runoff should be disposed of according to the following hierarchy: Rainwater collected for use; Into the ground (infiltration); To a surface water body; To a surface water sewer or highway drain; To a combined sewer.

As detailed in **Section 2.5**, the application site is underlain by soils with impeded drainage and potentially shallow groundwater levels. As such the disposal of surface water via infiltration is unlikely to be feasible; however, infiltration tests have not been undertaken at this stage. Such tests should be undertaken at the detailed design stage in accordance with the guidelines in BRE365.

Given that the Margam GEP site discharges surface water runoff into the ditch along the southern boundary, and in the event that infiltration is not a practicable method for the disposal of surface water (Priority Level 2), it is subsequently proposed to direct all runoff from the application site to the drainage ditch along the southern boundary in accordance with Priority Level 3.

5.2.2 Post Development Impermeable Area

The area of impermeable surfaces within the proposed development has been calculated to be 0.15 ha, based on **Appendix A**.

5.2.3 Peak Flow Control (Standard S2)

Correspondence from Neath Port Talbot Council⁷ confirms that surface water runoff should aim to achieve greenfield runoff rates post development. The greenfield QBAR rate will be achieved so far as is practicable;

⁶ www.uksuds.com

⁷ Email from, Neath Port Talbot Council (Joanna Weeks) on 17 January 2025

however, a flow control designed to 0.8 l/s would be prone to blockage, and thus increase flood risk. It is therefore proposed to utilise a flow control with a minimum diameter of 50 mm to reduce the risk of blockage, which equates to a rate of 1.3 l/s.

5.2.4 Volume Control (Standard S2)

Where reasonably practicable, for sites which have been previously developed, the runoff volume from the proposed development to any highway drain, sewer or surface water body in the 1.0% AEP, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

As outlined within The SuDS Manual extra runoff volumes in extreme events may be managed by releasing all runoff (above the 100.0% AEP event) from the application site at a maximum rate of 2 l/s/ha or QBAR, whichever is the higher value.

It is therefore proposed to restrict peak discharge rates to the greenfield QBAR rate recognising a minimum rate of 1.3 l/s would apply in up to the 1.0% AEP event, including an allowance for climate change.

5.2.5 Attenuation Storage

Attenuation storage will be provided to store surface water runoff generated across roofs and hardstanding.

The attenuation storage facility has been modelled using Causeway Flow (**Appendix E**). The required storage volume has been sized to store the 1.0% AEP rainfall event including a 30% increase in rainfall intensity to allow for climate change in accordance with local guidance.

Assuming a peak discharge rate of 1.3 l/s, a total storage volume of 80.2 m³ would be required.

The storage volume could be accommodated within the pipe-network and a geo-cellular storage tank, with an area of 90.0 m² and a depth of 0.8 m.

A preliminary surface water drainage layout is provided in **Appendix F**.

5.2.6 Exceedance Routes

Flows resulting from rainfall in excess of the 1.0% AEP rainfall event including an allowance for climate change will be managed in exceedance routes. It is assumed that as the development proposals progress, the design of the application site would ensure flood flows are directed away from built development.

5.2.7 Water Quality and Pollution Control (Standard S3)

Table 26.2 of the CIRIA SuDS Manual and Table G3.1 of the Statutory Standards for SuDS identifies low traffic roads and commercial roofs as having a low pollution hazard level. Table 26.2 indicates that the pollution hazard indices for total suspended solids, hydrocarbons and metals are 0.50, 0.40 and 0.40, and 0.30, 0.20 and 0.05 for low traffic roads and commercial roofs respectively.

It is proposed to utilise permeable paving within parking bays which would be expected to provide enhanced water quality treatment within the surface structure, including filtration, adsorption, biodegradation and sedimentation. Table 26.3 of the CIRIA SuDS Manual indicates that the SuDS mitigation indices for permeable pavements for total suspended solids, hydrocarbons and metals are 0.70, 0.60 and 0.70 respectively.

It is proposed to utilise a gravel surface adjacent to the two-storey office building and contractor cabins to intercept runoff from roof areas. The gravel surface will provide treatment similar to that of a filter drain. Table 26.3 of the CIRIA SuDS Manual indicates that the SuDS mitigation indices for filter drains for total suspended solids, hydrocarbons and metals are 0.40, 0.40 and 0.40 respectively.

In addition, a bypass separator, catchpit manholes and silt traps in channels drains will also help prevent contaminants discharging into the downstream receptor.

5.2.8 Amenity and Biodiversity (Standard S4 and Standard S5)

The proposed layout includes a soft landscaped area in the west of the application site. This will help provide aesthetic benefits and interception of surface water, thus helping with volume control (via evapotranspiration).

It is generally recommended that native vegetation is used to maximise the biodiversity value of these areas. However, it may be valuable to include some non-native vegetation to support pollinators, such as butterflies and bees.

The implementation of soft landscaping will also help provide users of the application site with health and wellbeing benefits.

5.2.9 Maintenance of SuDS

SuDS elements will be the responsibility of the owner of the property and could be maintained by a management company.

An indicative maintenance schedule is presented in **Table 2**.

Table 2: Maintenance Requirements

Schedule	Required action	Frequency
Permeable Paving		
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth- if required, take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies accumulation rates and establish appropriate removal frequencies	Annually
	Monitor inspection chambers	
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

Schedule	Required action	Frequency
Occasional maintenance	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)
	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
Geo-cellular attenuation storage tank		
Regular maintenance	Inspect and identify any areas that are not operating correctly	Monthly for 3 months, then annually
	Remove debris from the catchment surface	Monthly
	Remove sediment from internal forebays	Annually, or as required
Remedial action	Repair inlet/outlet and vents	As required
Monitoring	Inspect catchpit manholes and note rate of sediment accumulation	Monthly in the first year and then annually
	Inspect inlet/outlet and vents to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years, or as required
Typical Proprietary Treatment System (e.g. bypass separator)		
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six Monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six Monthly
	Inspect filter media 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
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

6 SUMMARY AND RECOMMENDATIONS

This report has been prepared for Axis PED Ltd on behalf of Eco2 to accompany a full planning application for a two-storey office building, car parking, contractor cabins and site entrance works at Margam GEP, Longlands Lane, Margam.

The Flood Map for Planning - Rivers and Sea indicates the site to be located in flood zone 1, with a small area in the west in flood zone 2 (rivers).

An assessment of flood risk from all identified potential sources of flooding has been undertaken using best available information. The risk of flooding to the proposed development is assessed to be negligible / low with the exception of the Afon Cynffig and Ty Du Brook, which may pose a risk in the west of the application site during a 0.1% AEP fluvially dominated event (2122).

No built development is proposed within the area of identified risk, as this area will be utilised for landscape and ecological management.

Ground levels within the proposed developable area of the site will be at a minimum of 7.0 m AOD, which is 2.14 m above the flood level indicated in the west of the site during a 0.1% AEP fluvially dominated event (2122). As such, this will ensure that the proposed development complies with Figure 5 of TAN15.

In accordance with standard practice, the finished floor level of the proposed two-storey office should be at least 0.15 m above adjacent ground levels following any reprofiling of the site, with ground levels sloping down from the building.

The proposals would not be expected to have an adverse impact on flood risk elsewhere.

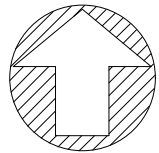
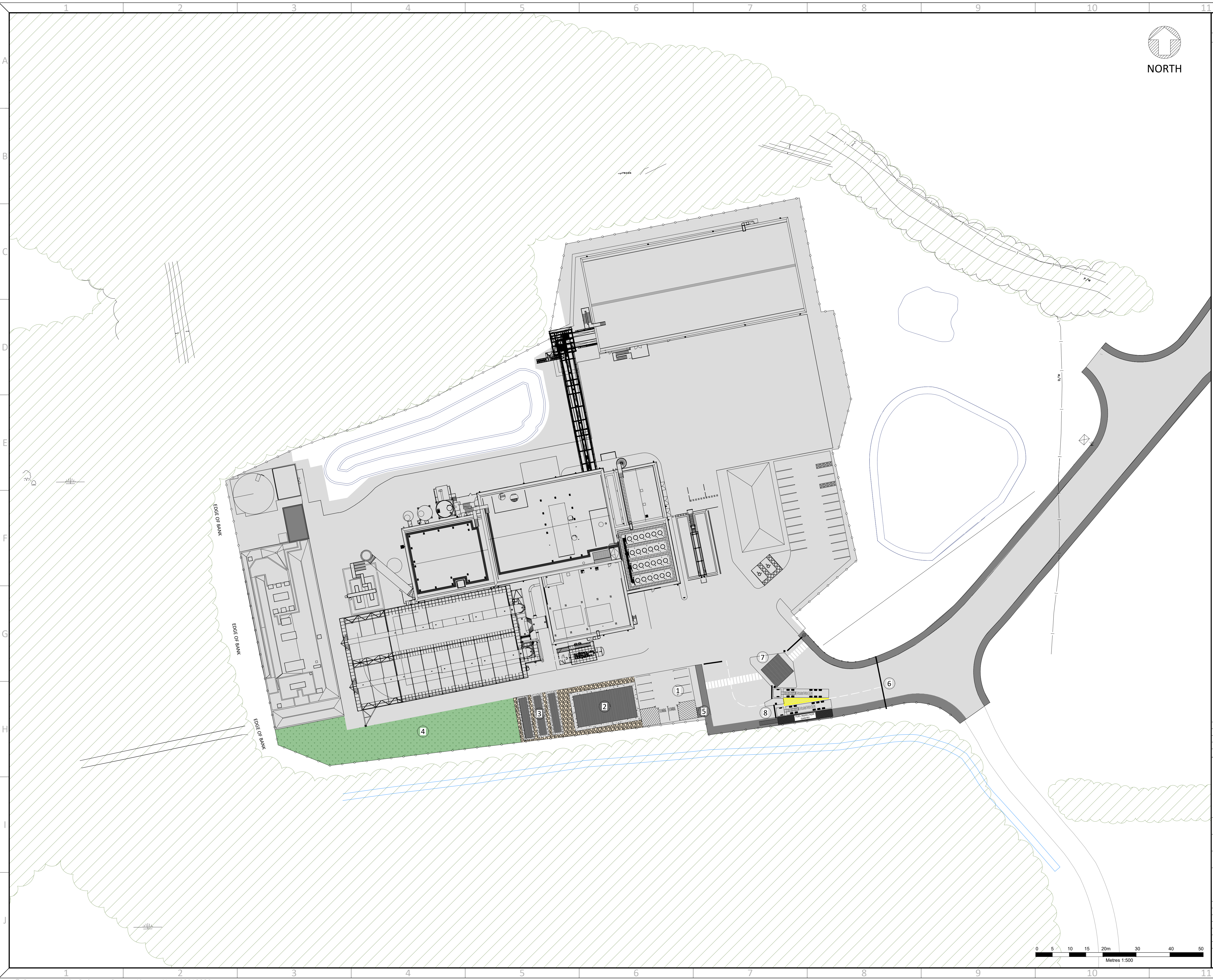
The assessment presents a preliminary scheme for the management of surface water from the proposed redevelopment. A summary of the principal findings is provided below:

- Other than the site entrance, the application site is not currently positively drained.
- Given the existing ground conditions, surface water runoff from the redeveloped application site, which will not continue to drain as per current arrangements, will be disposed of into the drainage ditch located along the southern boundary, and will be restricted to 1.3 l/s in up to the 1.0% AEP storm event including a 30% climate change allowance.
- Attenuation storage will be provided in the pipe network and a geo-cellular tank.
- Surface water runoff will be treated via permeable paving, a gravel surface (filter drain) and a bypass separator, providing sufficient water quality treatment as demonstrated by application of the 'Simple Index Approach' presented in CIRIA's SUDS Manual.
- SuDS elements will be the responsibility of the owner of the property.

In conclusion, this report demonstrates that the proposed development may be completed in accordance with the requirements of planning policy.

APPENDIX A

Proposed Site Plan



NORTH

ALL INFORMATION ON THIS DRAWING IS INDICATIVE ONLY, AND
MAY BE SUBJECT TO
FURTHER DESIGN DEVELOPMENT.

DO NOT SCALE

NOTES:

1. New Eco2 car park
2. New Eco2 office block
3. Contractor cabins
4. LEMP area
5. Smoking Shelter with Pedestrian access
6. Proposed Entrance Gate
7. Proposed Security Lodge
8. Raising Arm Barriers with Facial Recognition

KEY:-

- Hardstanding
- Soft Landscaping
- Concrete Plinth
- Gravel Area

R4.0	FOR PLANNING	DTW	AO1	DMM	21.02.25
R3.0	PATH REMOVED	DTW	AO1	ERM	18.11.24
R2.0	CLIENT COMMENTS	DTW	AO1	ERM	14.10.24
R1.0	PRELIMINARY	DTW	AO1	ERM	11.10.24
REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

FICHTNER

CONSULTING ENGINEERS LIMITED

Kingsgate, Wellington Road North,
Stockport, Cheshire, SK4 1LW, UK
Tel: 0161 476 0032
Website: www.fichtner.co.uk

CLIENT:

SG ENGINEERING SERVICES

SITE:

MARGAM ENERGY PARK

PROJECT:

SITE ENTRANCE WORKS

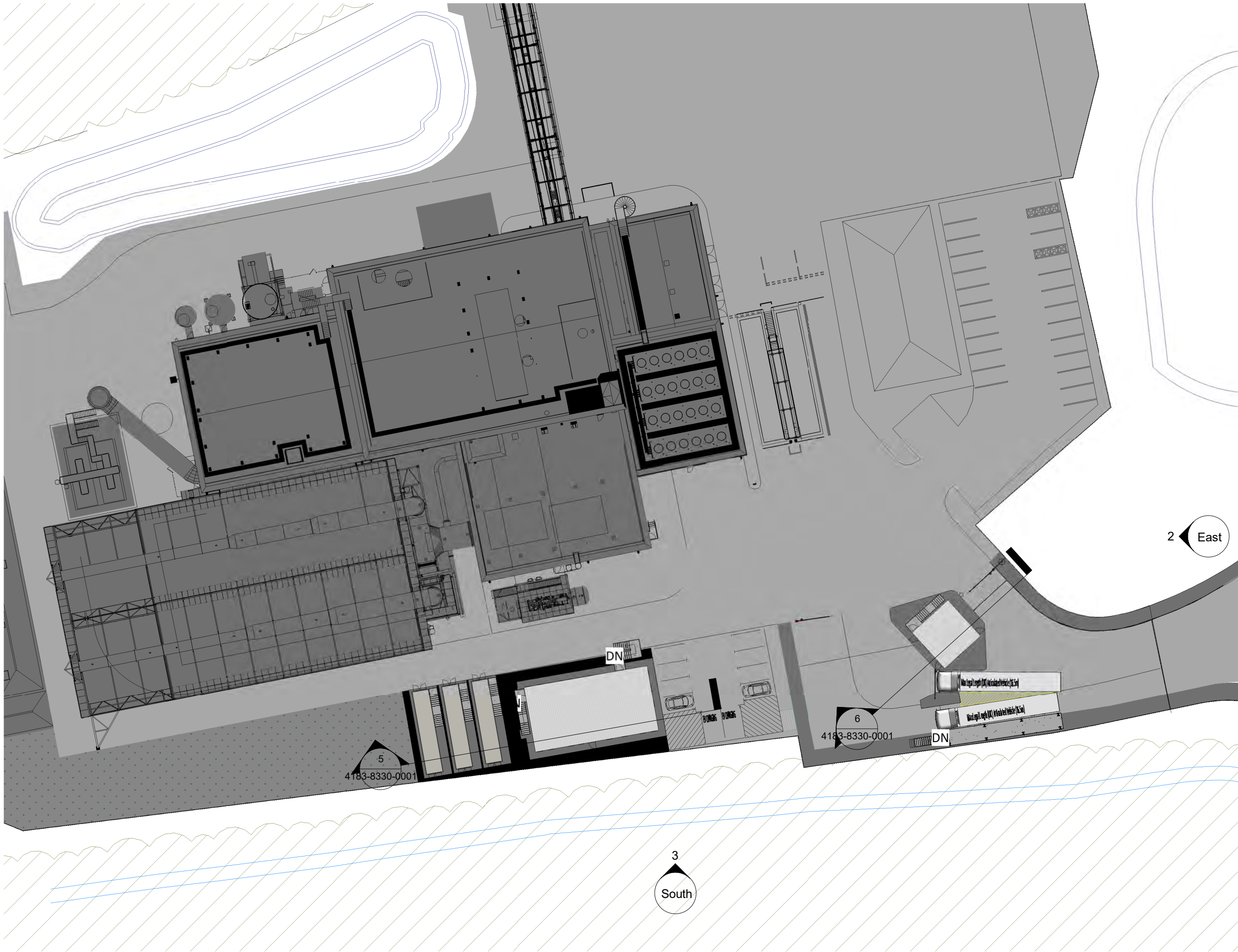
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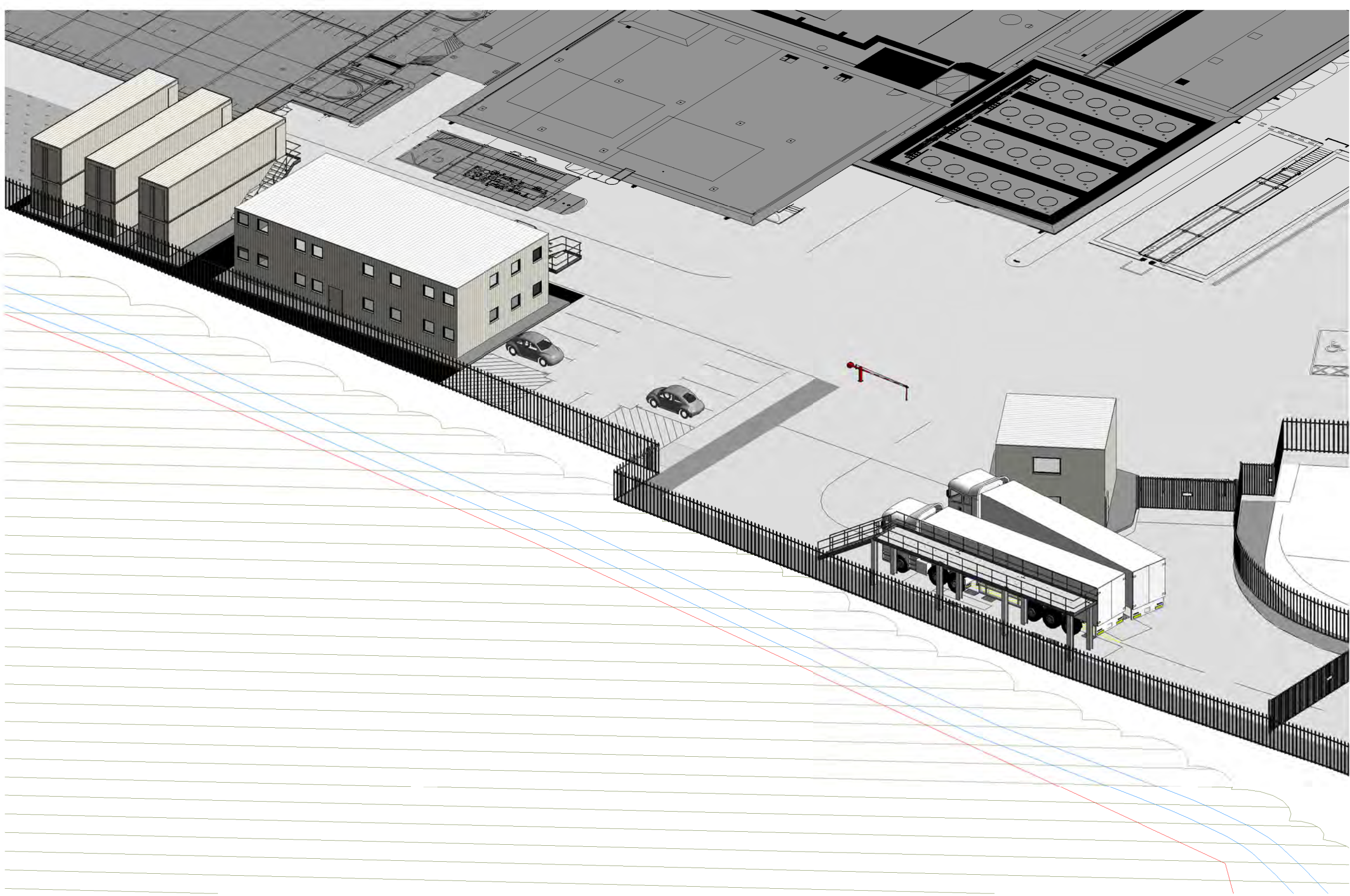
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CHECKED BY:	AO1	DATE:	10.10.24
APPROVED BY:	ERM	DATE:	10.10.24
FILENAME:	4183-8310-0001DW PROPOSED SITE ENTRANCE R4.0		
OFFICE OF ISSUE:	STOCKPORT		
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Sheet 1 of 1

R4.0



1 Key Plan
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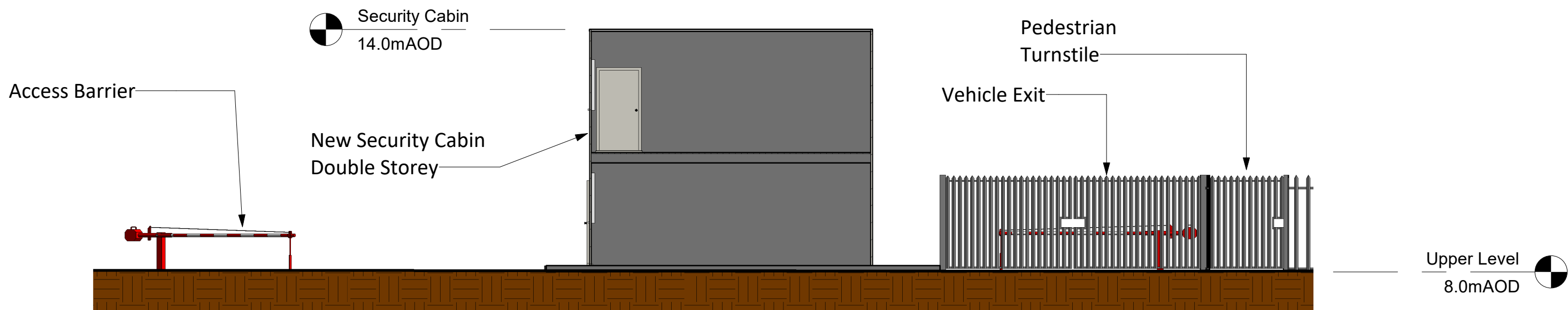
5 Section Through Offices
1 : 100



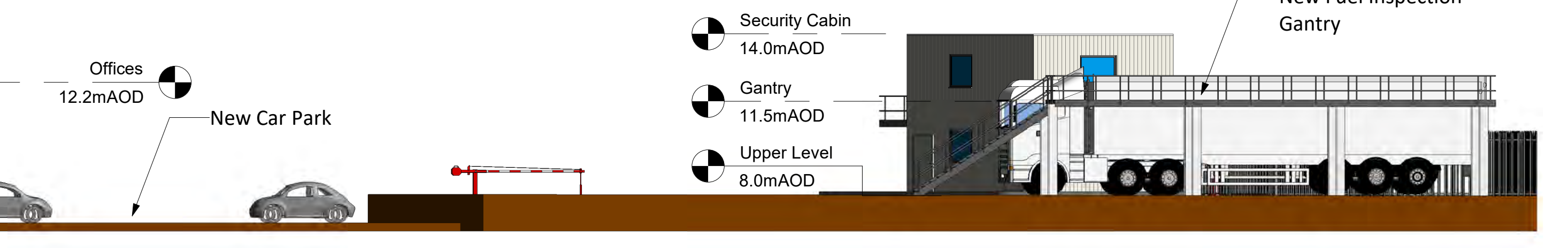
2 East Elevation
1 : 150



3 South Elevation
1 : 150



6 Section Through Security Cabin
1 : 100



ALL INFORMATION ON THIS DRAWING IS INDICATIVE ONLY, AND MAY BE SUBJECT TO FURTHER DESIGN DEVELOPMENT. DO NOT SCALE

NOTES:
All buildings to be RAL 7038 (Agate Grey)

R2.0	FOR PLANNING	DTW	AO1	DMM	15.05.25
R1.0	FOR PLANNING	DTW	AO1	DMM	14.03.25
REV.	DETAILS OF REVISION	DRAWN	CHKD	APR	DATE

FICHTNER
CONSULTING ENGINEERS LIMITED
Kingsgate, Wellington Road North,
Stockport, Cheshire, SK4 1LW, UKTel: 0161 476 0032
Website: www.fichtner.co.uk

CLIENT: SG ENGINEERING SERVICES
SITE: MARGAM ENERGY PARK
PROJECT: SITE ENTRANCE WORKS
TITLE: PROPOSED SITE ELEVATIONS

DRAWING STATUS:	FOR PLANNING	
DRAWN BY:	DTW	DATE:14.03.25
CHECKED BY:	AO1	DATE:14.03.25
APPROVED BY:	DMM	DATE:14.03.25
FILENAME:	4183-8330-0001DW Proposed Site Elevations	
OFFICE OF ISSUE:	STOCKPORT	
SHEET SIZE:	A1	SCALE:
DRAWING No.:	4183-8330-0001	REVISION:
	Sheet1 of1	R2.0

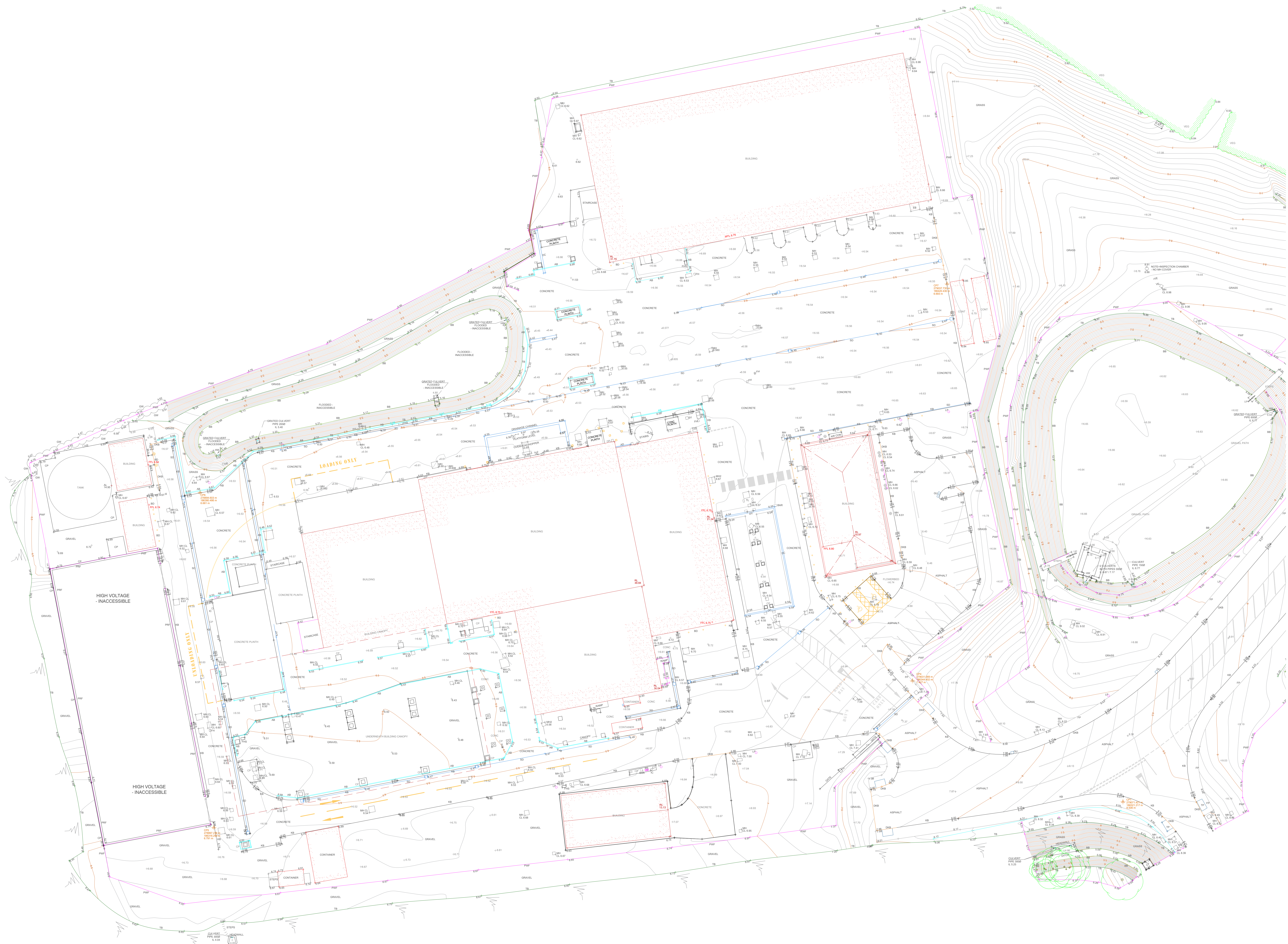
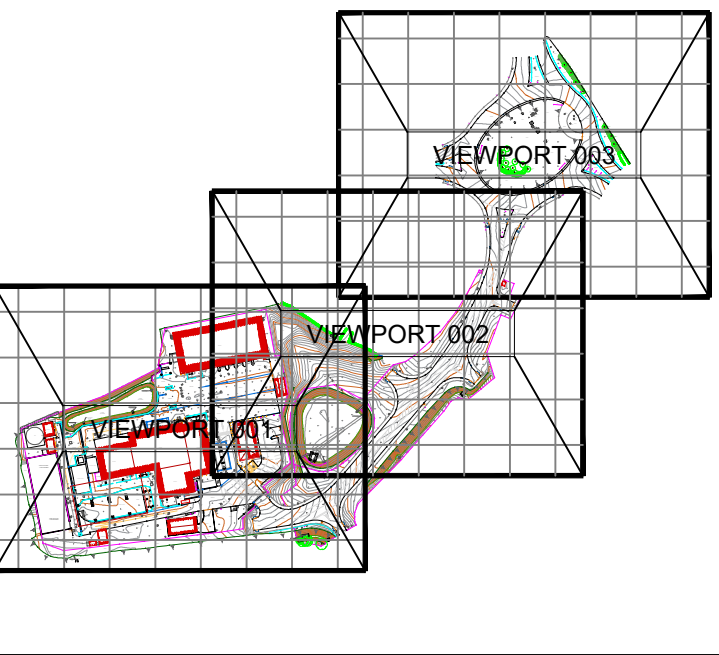
APPENDIX B

Topographic Survey

- GENERAL NOTES**
- The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British Standards, building regulations etc.
 - Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work. Utility locations shown are to be verified by the contractor prior to commencement of work.
 - This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other specialist document provided.
 - Any anomaly or contradictions between any of the above is to be reported immediately to Corner Point Surveys Ltd.
 - The topographical survey has been undertaken to OSTN15 and located to OS Grid and Datum using GPS instrumentation.

LEGEND

AB	ARMCO BARRIER
AL	APEX LEVEL
BAR	BARRIER
BB	BANK BASE
BD	BOLLARD
CL	COVER LEVEL
CONT	CONTAINER
CP	CONCRETE PUNTH
DC	DRAINAGE CHANNEL
DKB	DROP KERB BOTTOM
DP	DOWNPIPE
EB	ELECTRICITY BOX
EVL	EAVE LINE
FFL	FINISHED FLOOR LEVEL
FP	FOOTPATH
GKB	GULLY KERB BOTTOM
GU	GULLY
GW	GABION WALL
HW	HEADWALL
IC	INSPECTION CHAMBER
IL	INVERT LEVEL
KB	KERB BOTTOM
LP	LAMP POST
MH	MANHOLE
PRF	POST & RAIL FENCE
PWF	POST & WIRE FENCE
RL	RIDGE LEVEL
RP	REFLECTOR POST
RS	ROAD SIGN
SD	SLOT DRAIN
ST	STOP TAP
TB	TOP OF BANK
TP	TACTILE PAVING
VE	VENT
VEG	VEGETATION



TOPOGRAPHICAL SURVEY
SHEET 1/3

INFORMATION

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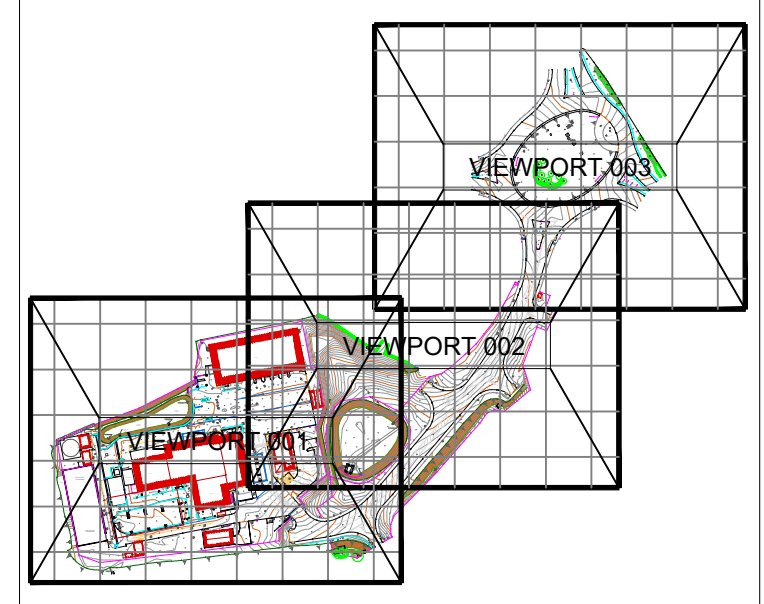
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- GENERAL NOTES**
1. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British Standards, building regulations etc.
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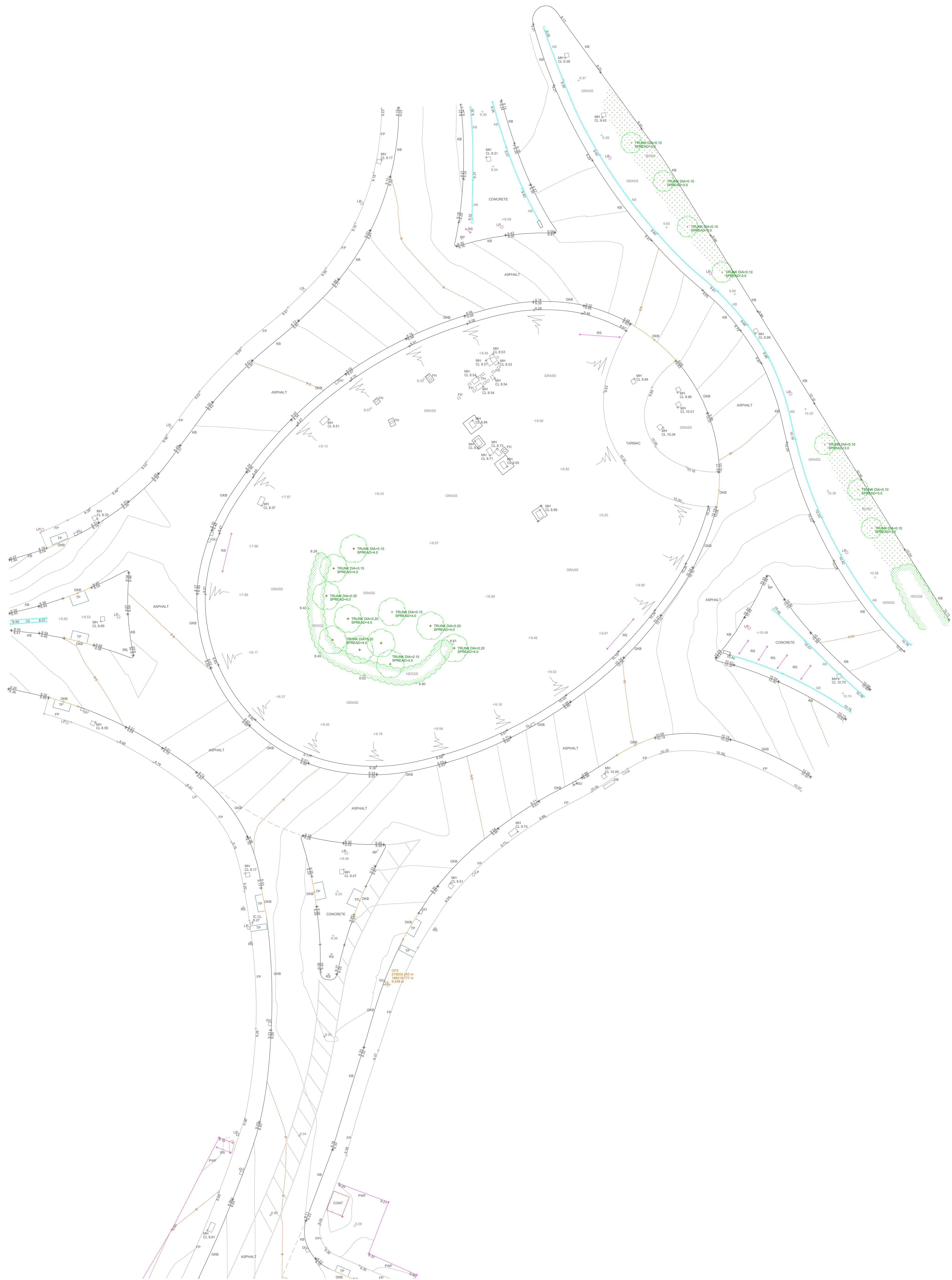
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SHEET 2/3

INFORMATION

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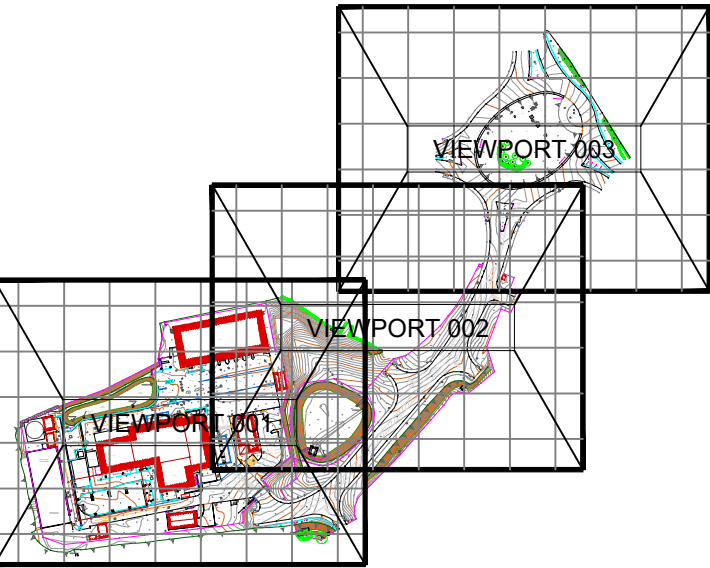
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- GENERAL NOTES**
1. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all aspects with the current building legislation, British Standards, building regulations etc.
 2. Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work. Utility locations shown are to be verified by the contractor prior to commencement of work.
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 5. The topographical survey has been undertaken to OSTN15 and located to OS Grid and Datum using GPS instrumentation.

LEGEND

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PWF	POST & WIRE FENCE
RL	RIDGE LEVEL
RP	REFLECTOR POST
RS	ROAD SIGN
SD	SLOT DRAIN
ST	STOP TAP
TB	TOP OF BANK
TP	TACTILE PAVING
VE	VENT
VEG	VEGETATION



TOPOGRAPHICAL SURVEY
SHEET 3/3

INFORMATION

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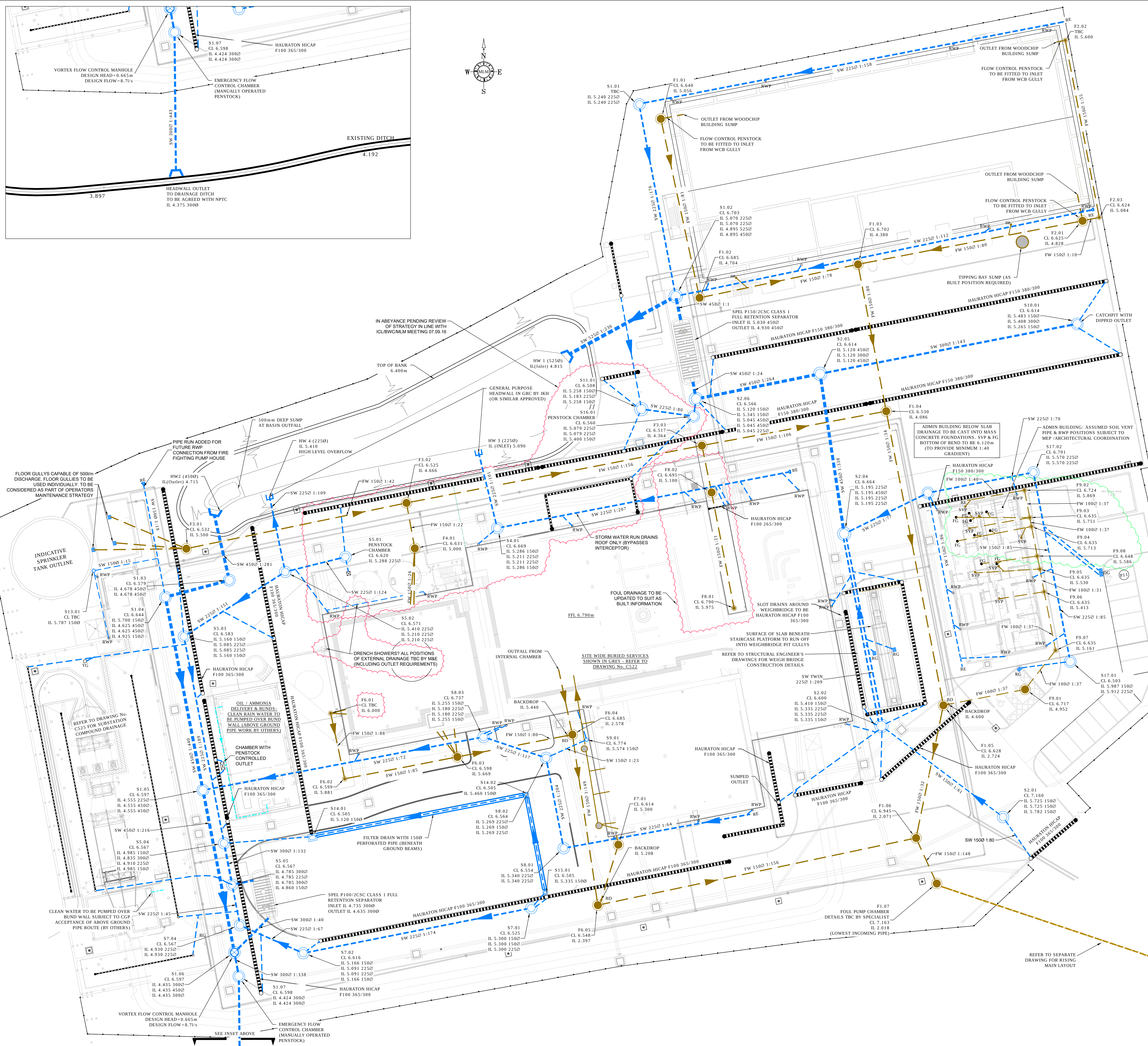
APPENDIX C

Private Foul and Surface Water Drainage Plan

1. ALL PRIVATE DRAINAGE SYSTEMS SHALL BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT H AND BS 752:2008.
2. THE CONTRACTORS ATTENTION IS DRAWN TO DIAGRAMS 7 AND 8 OF THE BUILDING REGULATIONS APPROVED DOCUMENT H (SHOWING DETAILS OF DRAINS LAID BELOW AND NEAR TO BUILDINGS, WHERE GROUND AREAS ARE USED, THEIR LEVEL SHALL BE SET TO AVOID CLASHING WITH DRAIN CONNECTIONS).
3. ACCESS FITTINGS, INSPECTION CHAMBERS AND MANHOLES SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN IN TABLES 11 AND 12 OF THE BUILDING REGULATIONS APPROVED DOCUMENT H AND FROM THE MATERIALS LISTED IN TABLE 14. ACCESSIBLE, INSPECTION CHAMBERS AND MANHOLES SHALL BE CONSTRUCTED FROM PRODUCTS DESIGNATED FOR THE LOCATION IN WHICH THEY ARE TO BE USED. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS/SUPPLIERS RECOMMENDATIONS.
4. ALL PROPOSED ADAPTED SEWERS AND ALL WORKS TO EXISTING PUBLIC SEWERS SHALL BE STRICTLY IN ACCORDANCE WITH THE WATER AUTHORITIES ASSOCIATION SPECIFICATION "SEWERS FOR ADOPTION" 60/79 EDITION AND TO THE REQUIREMENTS AND SATISFACTION OF THE LOCAL WATER AUTHORITY, VIA SECTION 104/106 (WIA APPROVAL POINT).
5. PRIOR TO COMMENCEMENT OF THE WORKS ALL DRAINAGE OUTFLOW POINTS, WHETHER EXISTING SEWER, DRAIN OR WATERCOURSE, SHALL BE VERIFIED BY THE CONTRACTOR. THE EXISTING DRAINAGE SYSTEM IS FOUND TO BE LOWER OR HIGHER OR SIGNIFICANTLY LOWER THAN SHOWN ON THE DRAWINGS THEN THE CONTRACT ADMINISTRATOR SHALL BE NOTIFIED IMMEDIATELY. (SIGNIFICANT REDUCES OF DRAINAGE LEVELS MAY BE NECESSARY).
6. PRIOR TO COMMENCEMENT OF CONSTRUCTION ON-SITE THE CONTRACTOR SHALL NOTIFY THE EXISTING DRAINAGE CONNECTIONS OR SATISFY THEMSELVES THAT THERE ARE NO OBSTRUCTIONS OR OTHER REASONS WHY, THE DRAIN CONNECTIONS CAN NOT BE MADE.
7. PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR IS TO ARRANGE TRACING OF THE EXISTING DRAINAGE TO ENSURE THAT NO 'LIVE' CONNECTIONS REMAIN. ANY SUCH CONNECTIONS MUST BE REPORTED TO THE CONTRACT ADMINISTRATOR, PRIOR TO DIVERSION INTO THE NEW DRAINAGE SYSTEM. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT NO MATERIAL ENTERS THE DRAINS (OTHER THAN THAT WHICH THEY ARE DESIGNED TO CARRY).
8. THE CONTRACTOR SHALL MAKE ALLOWANCE FOR DEALING WITH ANY LIVE FLOWS IN EXISTING DRAINS OR GULLIES.
9. ALL EXISTING CHAMBERS, SEWERS, CHANNELS, PIPES AND OTHER DRAINAGE APPARATUS SHALL BE PROTECTED FROM DAMAGE DURING THE WORKS. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT NO MATERIAL ENTERS THE DRAINS (OTHER THAN THAT WHICH THEY ARE DESIGNED TO CARRY).
10. ALL PRE-CAST AND IN-SITU CONCRETE AND MORTARS USED IN THE CONSTRUCTION OF FLOOD DRAINS AND SEWERS SHALL BE APPROPRIATE SLURRY RESISTING CEMENT.
11. ALL COVER LEVELS SHOWN ON THIS DRAWING ARE MADE FROM EXACT LEVELS OF NEW COVERS AND FRAMES TO BE DETERMINED ON SITE TO MATCH LEVEL AND PROFILE OF FINISHED SURFACE.
12. UNLESS NOTED OTHERWISE ALL PIPEWORK SHALL BE 100mm DIAMETER LAID TO A FALL OF 1 IN 80 OR STEEPER FOR SURFACE WATER AND 1 IN 40 OR STEEPER FOR Foul WATER. DRAIN DOWNES WITH ONE OR MORE W.C.G. CONNECTED MAY BE LAID AT 1 IN 80 OR STEEPER. WHERE APPROPRIATE ROAD GULLY OR LINEAR DRAINAGE CONNECTIONS SHALL BE 150mm DIA AT 1 IN 150 OR STEEPER.
13. UNLESS NOTED OTHERWISE ALL PIPEWORK SHALL BE CONSTRUCTED FROM "SUPER STRENGTH" VITRIFIED CLAY TO BS 65, BS EN 295 OR UPVC TO BS EN 1201 BEDDED AND BACKFILLED AS PER THE MANUFACTURERS RECOMMENDATIONS AND THE ABOVE LISTED PUBLICATIONS.
14. RAINWATER DOWNPIPES THAT DO NOT CONNECT DIRECTLY TO AN ACCESS POINT, SHALL BE FITTED WITH A RODDING ACCESS AT LOW LEVEL ABOVE GROUND.
15. TESTING OF THE SURFACE WATER SYSTEM SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE GUIDANCE IN BS EN:1610:1998.
16. ALL SANITARY PIPEWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH BS EN:12056-2:2000. SYSTEM M (SINGLE DISCHARGE STACK SYSTEM WITH FULLE BORE BRANCH DISCHARGE PIPES), SHALL BE USED UNLESS OTHERWISE SPECIFIED BY ARCHITECT OR M&E ENGINEER.
17. FOR THE EXACT LOCATION OF SOIL PIPES, SUBSTAKES, W.C.'S, R.W.P.s AND OTHER DRAINAGE CONNECTIONS REFER TO THE ARCHITECTURAL BUILDING PLANS OR M&E ENGINEER DRAWINGS.
18. ALL EXTERNAL BUILDING DRAINAGE SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH BS EN:12056-1:2000, BS EN:752-3:1997 (AMENDMENT 2), BS EN:752-4:1988 AND BS EN:1610:1998.
19. TESTING OF THE COMPLETED WASTEWATER SYSTEM SHALL BE CARRIED OUT IN ACCORDANCE WITH BS EN:12056-2:2000 (SANITARY PIPEWORK) AND BS EN:1610:1995, FOR DRAINAGE UNDER AND AROUND BUILDINGS.
20. ALL EXCAVATIONS SHALL BE KEPT FREE OF STANDING WATER. THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL EXCAVATIONS IS MAINTAINED AT ALL TIMES.
21. ALL COVERS, GRATINGS AND FRAMES TO CHAMBERS, GULLIES, CHANNELS ETC. SHALL BE OF THE CORRECT LOAD CLASS TO SUIT THEIR LOCATION IN ACCORDANCE WITH BS EN:12494.

LOAD CLASS A15	PEDESTRIAN AREAS (NOT ACCESSIBLE BY VEHICLES)
LOAD CLASS B125	PRIVATE DRIVES
LOAD CLASS C250	LIGHTLY TRAFFICED ROADS
LOAD CLASS D400	ROADS FOR LIGHT TRUCK PAVEMENTS
LOAD CLASS F600	DOCK FORD LRT TRUCK PAVEMENTS
LOAD CLASS F900	AIRPORTS

22. REFER TO SITE INVESTIGATION REPORT FOR EXISTING GROUND CONDITIONS AND ANY SPECIAL REQUIREMENTS FOR BURIED CONCRETE (SPECIAL REQUIREMENTS FOR BURIED CONCRETE SHALL INCLUDE ALL PRE-CAST AND IN-SITU CONCRETE AND MORTARS), WHERE APPROPRIATE REFER TO CONTAMINATION REPORTS FOR DETAILS OF CHEMICALS AFFECTING CHOICE OF MATERIALS AND OTHER ADDITIONAL REQUIREMENTS.
23. WOOD CHIP STORAGE SLOD DRAINAGE ARRANGEMENTS IN ACCORDANCE WITH POWELL DORSON DRAWING BS01 AL (0) 0242 'BS01-WOODSTOCK BUILDING'ROUND FLOOR-WELFARE PROVISIONS".
24. IS BAG FITTINGS BUILDING DRAINAGE ARRANGEMENTS IN ACCORDANCE WITH POWELL DORSON DRAWING BS10 AL (0) 0240 "BS10-BOILER HOUSE-ROUND FLOOR-WELFARE PROVISIONS".



THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT
ENGINEER'S, ARCHITECT'S AND SPECIALIST'S DRAWINGS AND THE
SPECIFICATION.

DO NOT SCALE FROM THIS DRAWING MANUALLY OR ELECTRONICALLY. WRITTEN PERMISSION MUST BE OBTAINED FROM MLM PRIOR TO SCALING ELECTRONICALLY OR USING THIS ELECTRONIC FILE.

DESIGNERS HAZARD INFORMATION FOR CONSTRUCTION

1. IF YOU DO NOT FULLY UNDERSTAND THE RISKS INVOLVED DURING THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING.

REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT
ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND
SPECIFICATION.

DO NOT SCALE FROM THIS DRAWING MANUALLY. WRITTEN PERMISSION MUST BE OBTAINED PRIOR TO SCALING ELECTRONICALLY OR USING THIS ELECTRONIC FILE.

ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT
BRITISH STANDARDS, EUROPEAN NORMS, CODES OF PRACTICE AND
BUILDING PRACTICE.

ALL DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR PRIOR TO STARTING THE WORKS ON SITE. ANY DISCREPANCIES ARE REPORTED TO THE ENGINEER IMMEDIATELY.

IF YOU DO NOT UNDERSTAND FULLY ANY OF THE DETAILS SHOWN ON THIS DRAWING, CONTACT THE ENGINEER FOR CLARIFICATION.

SURVEY INFORMATION TAKEN FROM AUTOCAD DRAWING
GREENENERGYOGL151214.DXF RECEIVED JANUARY 2015.

THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL AND ALL NECESSARY LICENCES FROM THE THE HIGHWAY AUTHORITY BEFORE CARRYING

D. LOCATION OF EXISTING SEWERS BASED ON RECEIVED DWR CYMRU WATER SEWER RECORD PPA0000281 DATED 14TH OCT 2013.

LOCATION OF HV 11KV AND LV 400, 230 V CABLES SUBJECT TO DESIGN BY ELECTRICAL ENGINEER. VERTICAL CLEARANCE TO CABLES MINIMUM 300mm, INCLUDING CONNECTION TO PLANT BUILDING

CO-ORDINATION WITH DRAINAGE ENGINEER.

NOTE: LINEAR DRAINAGE TO BE COORDINATED WITH EXTERNAL SLAB DESIGN

NOTE: BURIED SERVICES & DRAINAGE IN

05/10/16	REVISED ADMIN DRAINAGE TO ICL COMMENTS	KS
09/09/16	UPDATED ADMIN DRAINAGE, INTERCEPTOR BLOCKS, MANHOLE LOCATIONS	KS
26/08/16	UPDATED TO SUIT REVISED FINISHED GROUND LEVELS	KS
29/07/16	UPDATED TO SUIT BMC LAYOUT	KS
20/04/16	UPDATED SPRINKLER TANK & WEIGHBRIDGE DRAINAGE	KS
20/04/16	ADJUSTMENTS TO SUIT REVISED FINISHED LEVELS, CORRECT MODEL CLASSES	KS
23/02/16	DESIGN DEVELOPED FOR COMMENT	KS
16/01/16	DRAINAGE DESIGN FOR COMMENT	KS
11/09/15	SEE COMMENTS	PB
02/09/15	SEE COMMENTS	PB
25/08/15	FIRST ISSUE	PB

Drawing Status: **PRELIMINARY**

PRELIMINARY

MLM

Multidisciplinary Consulting

1st Floor, 55 Charlotte Street, Birmingham B3 1PX
Tel: 0121 309 0281
Website: www.mlm.uk.com

 Interserve
Ingenuity at work

MARGAM GREEN ENERGY -
BIOMASS PLANT

Drawing Title

PRIVATE FOUL AND SURFAC WATER DRAINAGE PLAN

own/Design	KS/MB	Date	AUGUST 2015	Scales	1:200
checked	MB	approved	IE		

Drawing No. _____ Rev _____

APPENDIX D

Greenfield Runoff Calculations

Calculated by:	warren chan
Site name:	6416
Site location:	Port Talbot SA13 2NW

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.56306° N
Longitude:	3.74752° W
Reference:	967065111
Date:	Jan 16 2025 16:42

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	1
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Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

Hydrological characteristics

	Default	Edited
SAAR (mm):	1183	1183
Hydrological region:	9	9
Growth curve factor 1 year:	0.88	0.88
Growth curve factor 30 years:	1.78	1.78
Growth curve factor 100 years:	2.18	2.18
Growth curve factor 200 years:	2.46	2.46

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	5.31	5.31
1 in 1 year (l/s):	4.67	4.67
1 in 30 years (l/s):	9.45	9.45
1 in 100 year (l/s):	11.57	11.57
1 in 200 years (l/s):	13.06	13.06

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

APPENDIX E

Surface Water Attenuation - Storage Volume Calculation

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)
1.0	0.037	5.00	7.100	1200		278988.856	186317.522	1.550
1.1	0.045	5.00	6.850	1200	675	278988.746	186327.420	1.400
1.2	0.054	5.00	7.000	1200		279000.109	186329.225	1.650
1.3-B.S.			7.150	600		279000.496	186327.161	1.950
1.4			7.300	1200		279001.827	186319.945	2.150
2.0	0.009	5.00	7.450	1200		279021.451	186325.099	1.950
2.1			7.650	1200		279014.232	186315.303	2.300
1.5-F.C.			7.600	1500		279007.047	186314.215	2.500
Outfall			6.000	1		279005.492	186307.303	1.000

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)
1.000	1.0	1.1	9.899	0.600	5.550	5.450	0.100	99.0	225	5.13	50.0
1.001	1.1	1.2	11.505	0.600	5.450	5.350	0.100	115.1	225	5.28	50.0
1.002	1.2	1.3-B.S.	2.100	0.600	5.350	5.300	0.050	42.0	225	5.30	50.0
1.003	1.3-B.S.	1.4	7.338	0.600	5.200	5.150	0.050	146.8	225	5.41	50.0
1.004	1.4	1.5-F.C.	7.751	0.600	5.150	5.100	0.050	155.0	225	5.54	50.0
2.000	2.0	2.1	12.169	0.600	5.500	5.350	0.150	81.1	150	5.18	50.0
2.001	2.1	1.5-F.C.	7.267	0.600	5.350	5.100	0.250	29.1	150	5.25	50.0
1.005	1.5-F.C.	Outfall	7.085	0.600	5.100	5.000	0.100	70.8	150	5.64	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)
1.000	1.314	52.2	5.0	1.325	1.175	0.037	0.0	47	0.837
1.001	1.218	48.4	11.1	1.175	1.425	0.082	0.0	73	0.995
1.002	2.024	80.5	18.4	1.425	1.625	0.136	0.0	73	1.654
1.003	1.077	42.8	18.4	1.725	1.925	0.136	0.0	103	1.038
1.004	1.047	41.6	18.4	1.925	2.275	0.136	0.0	105	1.017
2.000	1.117	19.7	1.2	1.800	2.150	0.009	0.0	25	0.623
2.001	1.874	33.1	1.2	2.150	2.350	0.009	0.0	20	0.890
1.005	1.196	21.1	19.7	2.350	0.850	0.145	0.0	115	1.354

Pipeline Schedule

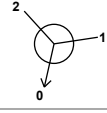
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	9.899	99.0	225	Circular	7.100	5.550	1.325	6.850	5.450	1.175
1.001	11.505	115.1	225	Circular	6.850	5.450	1.175	7.000	5.350	1.425
1.002	2.100	42.0	225	Circular	7.000	5.350	1.425	7.150	5.300	1.625
1.003	7.338	146.8	225	Circular	7.150	5.200	1.725	7.300	5.150	1.925
1.004	7.751	155.0	225	Circular	7.300	5.150	1.925	7.600	5.100	2.275
2.000	12.169	81.1	150	Circular	7.450	5.500	1.800	7.650	5.350	2.150
2.001	7.267	29.1	150	Circular	7.650	5.350	2.150	7.600	5.100	2.350
1.005	7.085	70.8	150	Circular	7.600	5.100	2.350	6.000	5.000	0.850

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	1200		Manhole	Adoptable	1.1	1200	675	Manhole	Adoptable
1.001	1.1	1200	675	Manhole	Adoptable	1.2	1200		Manhole	Adoptable
1.002	1.2	1200		Manhole	Adoptable	1.3-B.S.	600		Manhole	Adoptable
1.003	1.3-B.S.	600		Manhole	Adoptable	1.4	1200		Manhole	Adoptable
1.004	1.4	1200		Manhole	Adoptable	1.5-F.C.	1500		Manhole	Adoptable
2.000	2.0	1200		Manhole	Adoptable	2.1	1200		Manhole	Adoptable
2.001	2.1	1200		Manhole	Adoptable	1.5-F.C.	1500		Manhole	Adoptable
1.005	1.5-F.C.	1500		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	278988.856	186317.522	7.100	1.550	1200						
							0	1.000	5.550	225	
1.1	278988.746	186327.420	6.850	1.400	1200	675		1	1.000	5.450	225
							0	1.001	5.450	225	
1.2	279000.109	186329.225	7.000	1.650	1200			1	1.001	5.350	225
							0	1.002	5.350	225	
1.3-B.S.	279000.496	186327.161	7.150	1.950	600			1	1.002	5.300	225
							0	1.003	5.200	225	
1.4	279001.827	186319.945	7.300	2.150	1200			1	1.003	5.150	225
							0	1.004	5.150	225	
2.0	279021.451	186325.099	7.450	1.950	1200			0	2.000	5.500	150
2.1	279014.232	186315.303	7.650	2.300	1200			1	2.000	5.350	150
							0	2.001	5.350	150	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
1.5-F.C.	279007.047	186314.215	7.600	2.500	1500			1 2	2.001 1.004	5.100 5.100	150 225
Outfall	279005.492	186307.303	6.000	1.000	1			0 1	1.005 1.005	5.100 5.000	150 150

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	30	0	0

Node 1.5-F.C. Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	5.100	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 1.5-F.C. Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	705

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	90.0	0.0	0.800	90.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	5.595	0.045	4.6	0.0719	0.0000	OK
15 minute winter	1.1	10	5.524	0.074	10.2	0.1074	0.0000	OK
15 minute winter	1.2	10	5.436	0.086	16.8	0.1544	0.0000	OK
360 minute winter	1.3-B.S.	272	5.346	0.146	3.9	0.0413	0.0000	OK
360 minute winter	1.4	272	5.346	0.196	3.8	0.2215	0.0000	OK
15 minute winter	2.0	10	5.525	0.025	1.1	0.0311	0.0000	OK
15 minute winter	2.1	11	5.369	0.019	1.1	0.0213	0.0000	OK
360 minute winter	1.5-F.C.	272	5.346	0.246	4.0	21.4535	0.0000	SURCHARGED
360 minute winter	Outfall	272	5.023	0.023	1.0	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	1.1	4.6	0.547	0.087	0.0837	
15 minute winter	1.1	1.001	1.2	10.0	0.792	0.207	0.1459	
15 minute winter	1.2	1.002	1.3-B.S.	16.6	1.370	0.207	0.0256	
360 minute winter	1.3-B.S.	1.003	1.4	3.8	0.577	0.089	0.2346	
360 minute winter	1.4	1.004	1.5-F.C.	3.7	0.648	0.089	0.2964	
15 minute winter	2.0	2.000	2.1	1.1	0.685	0.056	0.0197	
15 minute winter	2.1	2.001	1.5-F.C.	1.1	0.954	0.033	0.0398	
360 minute winter	1.5-F.C.	1.005	Outfall	1.0	0.611	0.049	0.0120	34.9

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	5.619	0.069	10.8	0.1104	0.0000	OK
480 minute winter	1.1	456	5.615	0.165	3.4	0.2402	0.0000	OK
480 minute winter	1.2	456	5.615	0.265	5.6	0.4738	0.0000	SURCHARGED
480 minute winter	1.3-B.S.	456	5.615	0.415	10.4	0.1175	0.0000	SURCHARGED
480 minute winter	1.4	456	5.615	0.465	7.1	0.5262	0.0000	SURCHARGED
480 minute winter	2.0	456	5.615	0.115	0.4	0.1409	0.0000	OK
480 minute winter	2.1	456	5.615	0.265	0.4	0.3000	0.0000	SURCHARGED
480 minute winter	1.5-F.C.	456	5.615	0.515	5.7	44.9631	0.0000	SURCHARGED
480 minute winter	Outfall	920	5.023	0.023	1.0	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	1.1	10.7	0.657	0.205	0.1622	
480 minute winter	1.1	1.001	1.2	3.4	0.615	0.070	0.4087	
480 minute winter	1.2	1.002	1.3-B.S.	10.4	1.033	0.129	0.0835	
480 minute winter	1.3-B.S.	1.003	1.4	7.1	0.539	0.165	0.2918	
480 minute winter	1.4	1.004	1.5-F.C.	5.4	0.665	0.131	0.3083	
480 minute winter	2.0	2.000	2.1	0.4	0.505	0.020	0.1955	
480 minute winter	2.1	2.001	1.5-F.C.	0.4	0.262	0.012	0.1279	
480 minute winter	1.5-F.C.	1.005	Outfall	1.0	0.611	0.049	0.0120	68.2

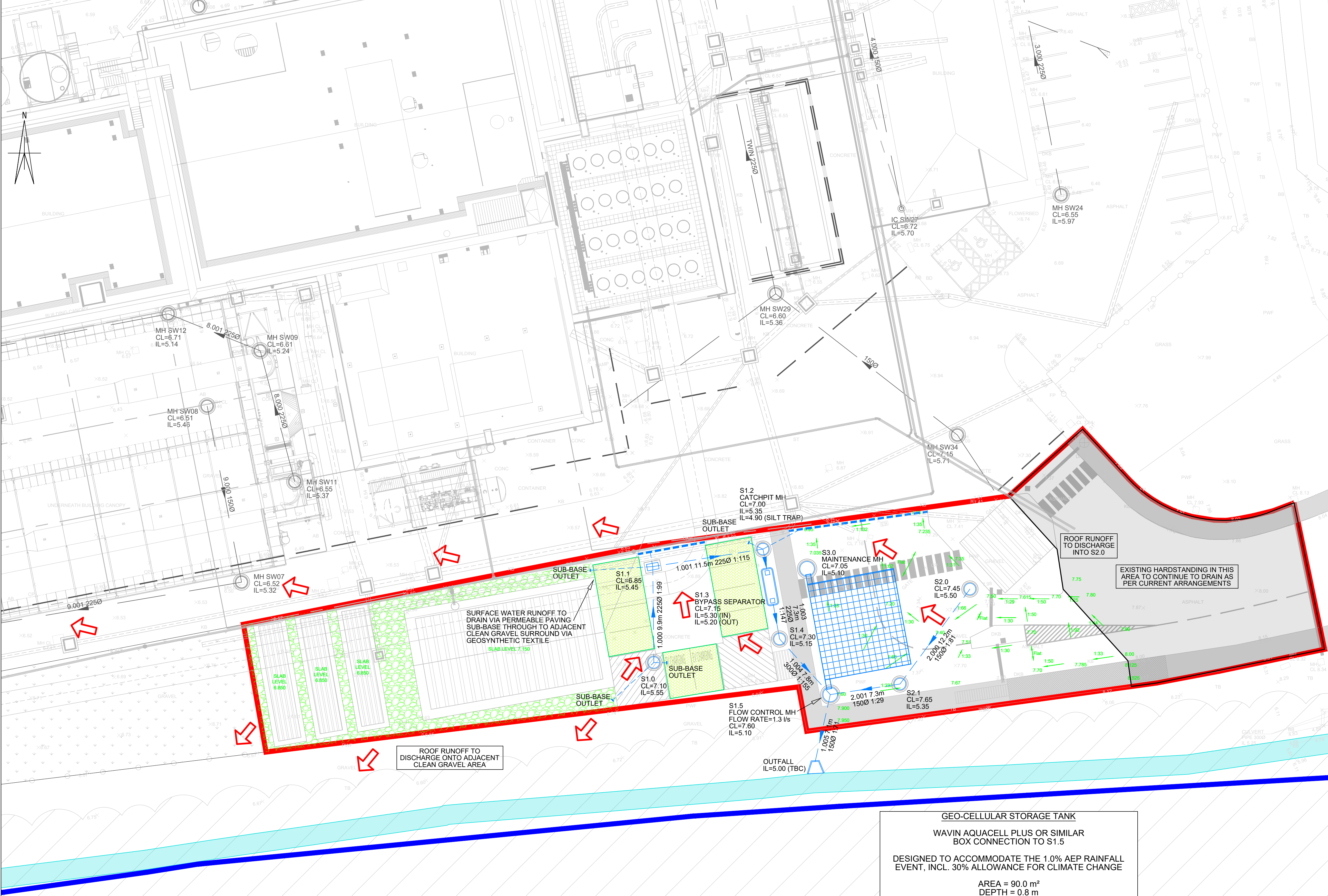
Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	1.0	555	6.290	0.740	2.0	1.1904	0.0000	SURCHARGED
600 minute winter	1.1	555	6.290	0.840	4.4	1.2209	0.0000	SURCHARGED
600 minute winter	1.2	555	6.290	0.940	7.0	1.6793	0.0000	SURCHARGED
600 minute winter	1.3-B.S.	555	6.290	1.090	7.2	0.3085	0.0000	SURCHARGED
600 minute winter	1.4	555	6.290	1.140	6.8	1.2895	0.0000	SURCHARGED
600 minute winter	2.0	555	6.290	0.790	0.5	0.9663	0.0000	SURCHARGED
600 minute winter	2.1	555	6.290	0.940	0.5	1.0633	0.0000	SURCHARGED
600 minute winter	1.5-F.C.	555	6.290	1.190	7.1	70.5457	0.0000	SURCHARGED
600 minute winter	Outfall	555	5.025	0.025	1.3	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)
600 minute winter	1.0	1.000	1.1	2.0	0.449	0.038	0.3937	
600 minute winter	1.1	1.001	1.2	4.2	0.600	0.086	0.4576	
600 minute winter	1.2	1.002	1.3-B.S.	7.2	1.018	0.090	0.0835	
600 minute winter	1.3-B.S.	1.003	1.4	6.8	0.494	0.158	0.2918	
600 minute winter	1.4	1.004	1.5-F.C.	6.8	0.693	0.162	0.3083	
600 minute winter	2.0	2.000	2.1	0.5	0.463	0.025	0.2142	
600 minute winter	2.1	2.001	1.5-F.C.	0.4	0.493	0.011	0.1279	
600 minute winter	1.5-F.C.	1.005	Outfall	1.3	0.650	0.061	0.0140	109.4

APPENDIX F

Surface Water Drainage Layout



- NOTES**
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF WEETWOOD.
 - ANNUAL EXCEEDANCE PROBABILITY RAINFALL EVENTS:
 - 100.0% (1:1) AEP RAINFALL EVENT
 - 43.5% (QBAR) AEP RAINFALL EVENT
 - 3.3% (1:30) AEP RAINFALL EVENT
 - 1.0% (1:100) AEP RAINFALL EVENT
 - PROPOSED SITE LAYOUT TAKEN FROM FICHTNER CONSULTING ENGINEERS 'PROPOSED SITE ENTRANCE' DRAWING (REF: 4183-8310-0001 REV 4.0, FEB 2025).
 - EXISTING LEVEL INFORMATION TAKEN FROM CORNER POINT SURVEYS 'TOPOGRAPHIC SURVEY' (REF: S20025_001, MAY 2020).
 - EXISTING DRAINAGE LOCATION TAKEN FROM SURVEY UNDERTAKEN BY RPS (REF: UAP3464_B, MAR 2021)

DRAINAGE KEY

- EXISTING PRIVATE SURFACE WATER SEWER
- EXISTING WATERCOURSE
- PROPOSED SURFACE WATER SEWER
- PROPOSED DRAINAGE CHANNEL
- EXISTING SURFACE WATER MANHOLE/PPIC
- PROPOSED SURFACE WATER MANHOLE/PPIC
- PROPOSED PERMEABLE PAVING (TREATMENT ONLY)
- PROPOSED GRAVEL SURFACE (TREATMENT ONLY)
- PROPOSED FILTER DRAIN
- PROPOSED ATTENUATION BASIN
- EXISTING LEVEL
- PROPOSED EXTERNAL LEVEL
- PROPOSED GROUND LEVEL FALL
- SITE BOUNDARY
- OVERLAND FLOW ROUTE

GEO-CELLULAR STORAGE TANK
WAVIN AQUACELL PLUS OR SIMILAR
BOX CONNECTION TO S1.5
DESIGNED TO ACCOMMODATE THE 1.0% AEP RAINFALL
EVENT, INCL. 30% ALLOWANCE FOR CLIMATE CHANGE
AREA = 90.0 m²
DEPTH = 0.8 m
VOLUME (95% VOIDS) = 68.4 m³
COVER LEVEL = 7.00 - 7.60 m AOD
SOFFIT LEVEL = 5.90
(1.1 m MINIMUM COVER REQUIRED TO SUIT HGV LOADINGS)
INVERT LEVEL = 5.10

P1	08.05.25	INITIAL ISSUE	WC	TB
REV	DATE	DESCRIPTION	DRAWN BY	CHECK BY
		Weetwood Development • Planning • Environment		
		Park House, Ffordd Byrnwr Gwair, Mold CH7 1FQ Tel 01352 700045 info@weetwood.net www.weetwood.net		

Client AXIS	
Drawing Status PLANNING	Date MAY 2025 Scale (A1) 1:200
Project MARGAM GREEN ENERGY PLANT SOUTH SIDE	Drawn by WC Check by TB
Drawing Number 6416-WTWD-00-XX-DR-D-1101	Revision P1
Drawing Title PROPOSED SURFACE WATER DRAINAGE LAYOUT	

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Surface Water Drainage
Foul Water Drainage
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