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CADARN
CONSULTING ENGINEERS

DRAINAGE STRATEGY

PROPOSED RESIDENTIAL DEVELOPMENT AT MAES MONA, AMLWCH (PHASE I)

October 2024
Suitability S2
Revision P02

Prepared on Behalf of:
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S2	P01	01.07.2024	First Issue.			
S2	P02	09.10.2024	Amended to match SAB comments.			

CONTENTS PAGES

TABLES PAGES

APPENDICES

1.0 Introduction

1.1 Project Background

1.1.1 Cadarn Consulting Engineers Ltd have been appointed by Isle of Anglesey County Council to provide a drainage strategy, for both surface water and foul, for the proposed residential development at Maes Mona, Amlwch, Isle of Anglesey, LL68 9AT (National Grid Reference: **SH 43767 92952**). Refer to the drawing enclosed in **APPENDIX A** for the proposed site location plan.

1.1.2 Cadarn Consulting Engineers Ltd reserve the right to undertake further investigation into the adequacy of the recommendations made within this report, if works on site have not commenced within twelve months of the issuing of this report.

1.2 Scope of Proposed Drainage Strategy

1.2.1 This report aims to provide a suitable drainage strategy for the discharge of surface water and foul effluent generated by the proposed development.

1.2.2 The purpose of the calculations enclosed within this report and accompanying details are to produce a drainage layout that complies with the relevant legislation of the TAN 15, CIRIA C753 '*The SuDS Manual*' and Approved Document H of the Building Regulations 2010.

1.2.3 Schedule 3 of the Flood and Water Management Act 2010 came into effect in Wales on the 7th of January 2019. As a result of this all new permitted developments of more than 100m² which are notified after 7 January 2019 must include Sustainable urban Drainage Systems (SuDS) and the design of such systems must be approved by the local SuDS Approval Body (SAB). Any proposed surface water system or SuDS feature which accommodates more than one property must be adopted by the SAB.

1.3 Proposed Development

1.3.1 The proposal involves the construction of 16 no. dwellings with associated car parking and garden spaces, as well as a series of small public amenity areas.

1.3.2 The site will be accessed from the existing estate road in Maes Mona housing estate, which will be accessed at the southern boundary of the site. Refer to the drawing enclosed in **APPENDIX B** for the proposed site layout of the development.

1.4 Site Hydrology

1.4.1 The site generally falls in a western direction, with the lowest point of the site being located at the south-western corner of the site where the site meets with the neighbouring football playing field. The existing above ground flood routing is indicated on the attached layout contained within **APPENDIX E**.

1.5 Existing Land Drainage Features / Watercourses.

1.5.1 An existing land drainage feature has been identified along the western boundary of the site. This is then culverted beneath the neighbouring football field. The existing topographic survey and drainage layout is contained within **APPENDIX D**.

1.6 Existing Nearby Drainage

1.6.1 Given that the development is to be located on an undeveloped greenfield site, surface water currently infiltrates naturally into the ground. Similarly, there are no foul discharge systems for the site of the proposed development.

1.6.2 During the site investigation, a surface water network was identified within the housing estate, which is owned by the IOACC highways department. After the network was surveyed by Invek, it was concluded that the system was very shallow and that the proposed site is naturally lower than the surface water system. Additionally, within the housing estate, there is a Ø150mm combined sewerage system which serves as the foul system for the estate. Refer to the DCWW apparatus maps contained within **APPENDIX C**.

1.6.3 After a site walkaround, it was identified that an existing surface water network was situated within the estate road of the Maes Mona housing estate.

2.0 Design Criteria

2.1.1 The following design criteria will apply to the surface water run-off and foul discharge design for the site:

- Approved Document H, Building Regulations.
- BRE Digest 365;
- BS EN 752:2017;
- CIRIA C753 'The SuDS Manual' 2015;
- DEFRA / Environment Agency 'Preliminary Rainfall Runoff Management for Developments' Technical Report;
- Discharge Units from BS EN 12056: Part 2;
- Flood & Water Management Act 2010;
- Highways Act 1991;
- Institute of Hydrology Report (IHR) 124;
- Land Drainage Act 1991;
- Modified Rational Method;
- Sewers for Adoption 7th Edition;
- Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems
- Technical Advice Note (TAN) 15: Development and Flood Risk;
- Wallingford Procedure;
- Water Industries Act 1991.

3.0 Porosity Testing

3.1 General Overview

3.1.1 The main purpose of the investigation was to undertake soil infiltration tests, in accordance with BRE Digest 365, to determine if the underlying strata is suitable for utilising infiltration systems for the disposal of surface water run-off generated from the proposal.

3.1.2 On the 16th of November 2022, an intrusive site investigation was carried out to undertake porosity testing on the site of the proposal, which consisted of 2 No. trial holes, None of which was porosity tested due to groundwater in both trial holes.

3.1.3 The trial pit was located as per the attached trial pit location plan drawing contained within **APPENDIX F.**

3.2 Test Results

3.2.1 The soil infiltration calculations are summarised within **Table 1** below. Refer to the porosity test calculation sheet contained within **APPENDIX G** for further information.

Table 1. Porosity Test Results

Ref	Test No.	Depth	Ground Water Depth	Soil Infiltration Rate
TP-3	01	1.000m	0.900m	Abandoned
TP-4	01	2.000m	1.300m	Abandoned

3.2.1 **TP-3** was excavated to a depth of 1000mm. Ground water was encountered at 0.900m therefore, the test was abandoned. No further testing was carried out in this trial hole.

3.2.2 **TP-4** was excavated to a depth of 2000mm. Ground water was encountered at 1.300m therefore, the test was abandoned. No further testing was carried out in this trial hole. The proposed window samples logs are contained within **APPENDIX H**.

3.3 Photographs of Trial Pits

Figure 1. Trial Pit 3

Figure 2. Trial Pit 4

3.4 Conclusion

3.4.1 The results of the testing undertaken on the 16th of November 2022 indicate that the use of soakaways as a method of surface water disposal is not considered to be a suitable method of discharge, and an alternative method of discharge should be investigated.

4.0 Surface Water Drainage Design

4.1 Guiding Principles

4.1.1 The disposal of surface water has been designed in strict accordance with the provision of TAN 15, the Flood and Water Management Act 2010 and other best practice documents, such as CIRIA C753 'SuDS Manual' 2015.

4.2 Method of discharge

4.2.1 In accordance with the SuDS Manual 2015, surface water should be managed and discharged from a new development in line with the following hierarchy:

- **Priority level 1**: Re-use of water;
- **Priority level 2**: Infiltration into ground;
- **Priority level 3**: Discharge to a water body;
- **Priority level 4**: Discharge to a surface water run-off drain;
- **Priority level 5**: Discharge to a combined surface water run-off and foul drain.

4.2.2 Re-use of surface water cannot be considered as the sole method of surface water disposal. Paragraph G1.1 of the Statutory SuDS Guidance for Wales states that "*As much of the runoff as possible (subject to technical or cost constraints) should be discharged to each destination before a lower priority destination (level) is considered.*" therefore, attempts must be made to reuse as much surface water as possible.

4.2.3 To partially satisfy **Priority Level 1**, it is proposed to install above-ground water butts. These water butts will be connected to a single rainwater downpipe located at the rear of each property. This strategic implementation is intended to provide residents with the capability to utilise collected rainwater for purposes such as irrigating plants and maintaining the rear garden areas.

4.2.4 Infiltration testing has been undertaken by '*Cadarn*' as part of the geo-environmental site investigation report, the result of this concludes that the infiltration characteristics of the site are not suitable for the use of infiltration systems. Porosity calculations can be provided upon request, As a result, achieving **Priority Level 2** is not feasible based on the current site conditions.

4.2.5 As stated within **Section 1.5**, there is an open land drainage feature located on the south-western boundary which currently serves the site, therefore it is proposed to communicate flows to this at a controlled rate. As a result achieving **Priority Level 3**.

4.3 Compliance with SAB

4.3.1 Statutory standards for sustainable drainage systems (SuDS) in Wales require the use of "green" SuDS features, such as swales, detention basins, and ponds, to enhance a site's biodiversity and amenity while also filtering surface water before its release to the discharge point. However, this may not always be possible due to site constraints. The proposed attenuation method for this site has incorporated SuDS features to achieve the required levels of treatment and to enhance the site's amenity and biodiversity. The proposed drainage layout is provided in **APPENDIX I**.

4.4 Climate Change

4.4.1 In the realm of managing surface water, addressing climate change is an essential aspect. TAN 15 states that an allowance for climate change should be provided within the on-site attenuation, without specifying what allowance should be made. The NPPF, which is the English equivalent of TAN 15, does however provide guidance derived from DEFRA FCDPAG3 'Economic Appraisal Supplementary Note to Operating Authorities – Climate Change Impacts' October 2006 (see **Table 2**). This document considers the effects of climate change for different design criteria.

Table 2. Climate Change Requirements.

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak Rainfall Intensity	+5%	+10%	+20%	**+30%**
Peak River Flow	+10%	+20%		
Offshore Wind Speed	+5%		+10%	
Extreme Wave Height	+5%		+10%	

4.4.2 The proposed development will have a design life of 100 years; based on the NPPF's guidance, the development therefore requires an allowance of 30% for climate change to be applied to the peak rainfall intensity.

4.5 Design Philosophy

4.5.1 Based upon existing site information and the details of the proposed development, an assessment of the site run-off has been undertaken utilising the 'Flow' hydraulic modelling package as shown in **APPENDIX J**. This has enabled the existing greenfield run-off flows to be assessed and quantified, in accordance with IHR 124.

4.5.2 The tables below summarise the existing effective areas with their corresponding run-off coefficients, as per the Wallingford procedure, IHR 124.

Table 3. Overall site greenfield areas. (Phase I & II)

Site	Site Area
Overall Site Area	**17,420.420 m²**

Table 4. Overall site greenfield areas (Phase I).

Site	Site Area
Overall Site Area	**6,909.783 m²**

4.5.3 The areas provided within **Table 3** are provided on the existing greenfield area drawing contained within **APPENDIX K**.

Table 5. Overall developed areas. (Phase I)

Site	Site Area
Overall developed area	**5,831.620 m²**

4.5.4 The areas provided within **Table 5** are provided on the proposed developed areas drawing contained within **APPENDIX L**.

4.5.5 Reference should be made to the attached hydraulic model output calculations containing the run-off rates for the site within **APPENDIX J**, which are summarised as follows:

Table 6. Greenfield run-off rates for overall site area over different return periods.

Reference	1 in 1 Year	1 in 30 Year	1 in 100 Year
Greenfield Rate	4.9 l/s	10.1 l/s	12.2 l/s

Considering total areas as noted in **Table 4 above.*

Table 7. Greenfield run-off rates for overall developed area over different return periods.

Reference	1 in 1 Year	1 in 30 Year	1 in 100 Year
Developed area Rate	4.1 l/s	8.5 l/s	10.3 l/s

**Overall developed areas. (Phase I)*

4.5.6 Following investigations on site the soil value has been increased from 2 to 4 as a result of the very poor infiltration rate recorded on site. The porosity calcs is contained within **APPENDIX G** and the window sample logs is contained within **APPENDIX H**.

4.5.7 The proposed flow control device within the site is to be restricted to mimic the developed area run-off rates as close as possible, therefore a vortex flow control device is proposed restricting flow to the following discharge rates. The proposed drainage layout is contained within **APPENDIX I**.

4.6 Drainage System

1:1-year return period – 4.1 l/s
1:30-year return period – 5.3 l/s
1:100-year return period – 5.9 l/s

4.7 Method of Storage

4.7.1 Surface water run-off generated from all proposed hardstanding areas for the 1 in 100-year return period plus an allowance of 30% for climate change is to be attenuated onsite within an above ground basin, below ground attenuation crates and the below ground piped drainage network. This section of the report should be read in conjunction with the proposed on-site drainage arrangement enclosed in **APPENDIX I**.

4.7.2 The proposed developed areas accounted for are summarised within **Table 8** and illustrated on the proposed developed areas plan contained within **APPENDIX L**.

Table 8. Proposed Developed Areas

Surface	Total Area	Coefficient	Effective Area
Roofs	978.602 m²	1.00	978.602 m²
External Paths	821.104 m²	1.00	821.104 m²
Parking	503.119 m²	1.00	503.119 m²
Road	1,054.24 m²	1.00	1,054.24 m²
Private Road	150.678 m²	1.00	150.678 m²
Pumping Station	98.415 m²	1.00	98.415 m²
SuDs Basin	174.415 m²	0.35	61.045 m²
Grassed	2,051.050 m²	0.35	717.866 m²
Total	5,831.620 m²		3,563.965 m²
Total – Grass Removed	3,780.573 m²		2,846.099 m²
Effective Area (Grassed removed) + urban creep 10%			**3,130.709 m²**

4.7.3 The 'Flow' hydraulic modelling package output is contained within **APPENDIX J**, which indicates sufficient storge is provided within the site.

4.8 Drainage System Maintenance

4.8.1 The SuDS Manual 2015 requires appropriate measures to be in place for the maintenance of surface water drainage systems and sustainable drainage features.

4.8.2 The maintenance schedule shown in **Table 9 – Table 12** have been derived in strict accordance with the SuDS Manual 2015 and from a risk-assessed approach during the design stage. These schedules are not exhaustive and should be reassessed at regular intervals to determine if any additional maintenance requirements are required to preserve the performance and condition of the site drainage system.

4.8.3 The proposed surface water drainage network (besides private drainage within an individual property boundary) is to be adopted and maintained by the SAB. The maintenance schedule for each component of the proposed drainage network is contained within **Table 9 – Table 12.**

4.8.4 Provided preventive maintenance measures are undertaken in accordance with the frequencies recommended in **Table 9 – Table 12** the need for corrective maintenance should rarely arise.

4.8.5 Maintenance activities should be detailed in the Principal Contractor's Health and Safety Plan and Risk Assessments and should be updated on a regular basis to ensure the continued performance and long-term condition of the drainage system.

Table 9. Operation and maintenance requirements for pipework & chambers.

Maintenance Schedule	Required Action	Typical Frequency
Monitoring	Inspect using CCTV drain surveys to ensure they are in good condition and operating as designed.	Every 5 years (or as required)
	Inspect chambers to ensure they are in good condition and that accumulation of sediment, debris etc. is not preventing them from operating as designed.	Annually
Regular Maintenance	Remove any accumulation of silt, sediment, leaves, debris etc.	Bi-annually
Occasional Maintenance	High-pressure water jet for removal of silt builds up and avoid blockages, particularly at bends or changes in direction.	Every 5 years (or as required)
Remedial Actions/ Corrective Maintenance	High-pressure water jet to remove blockages.	As Required.

*Hydrobrake flow control device to be maintained in accordance with hydro internationals recommendations, or equally approved system.

*contraflow orifice chamber to be maintained in accordance with hydro internationals recommendations, or equally approved system.

Table 10. Operation and maintenance requirements for RWH systems

**In line with table 11.6 of the CIRIA C753 'The SuDS Manual 2015.*

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspection of the tanks for debris and sediment build-up, inlets/outlets/withdrawal devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets gutters, withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional Maintenance	Cleaning and/or replacement of any filters	Three monthly (or as required)
Remedial Actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 11. Operation and maintenance requirements for attenuation storage tanks.

**In line with table 21.3 of the CIRIA C753 'The SuDS Manual 2015.*

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface or filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows 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

Table 12. Operation and maintenance requirements for detention basins.

**In line with table 22.1 of the CIRIA C753 'The SuDS Manual 2015.*

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – Meadow grass in and around basin	Half yearly (spring - before nesting season, and autumn)
	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
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in chapter 23
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal

		requirements where effective upstream source is provided)
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

4.9 Surface Water Treatment

4.9.1 Managing the quality of surface water runoff so that receiving waters and/or groundwater are protected is strongly linked to hydraulic control of runoff.

4.9.2 For the design of the development, a simple index approach has been used, which provides simple pollution indices based on land use.

4.9.3 Considering the intended land use for the proposed development, it falls under the residential roofs and low traffic roads. Conforming to the SuDS Manual 2015, and referencing Table 26.2, residential roofs and low traffic roads are classified as having a 'low' pollution hazard level. **Table 13** shows the pollution hazard indices for the land use.

Table 13. Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Soils (PMI_{TSS})	Hydrocarbons (PMI_{HM})	Heavy Metals (PMI_{PAH})
Residential Roofs	Very Low	0.2	0.05	0.2
Low Traffic Roads / Residential Car Parks	Low	0.5	0.4	0.4

4.9.4 The SuDS Manual 2015 also provides pollution mitigation indices for different SuDS drainage features, as detailed in **Table 14**. The increase in surface water pollution resulting from the hardstanding areas during normal conditions is likely to be negligible. However, this risk increases during rainfall events of greater intensity.

Table 14. Pollution Mitigation Indices

SuDS Component	Pollution Mitigation Indices		
	Total Suspended Soils (PMI_{TSS})	Hydrocarbons (PMI_{HM})	Heavy Metals (PMI_{PAH})
Filter Strip	0.4	0.5	0.4
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention System	**0.8**	**0.8**	**0.8**
Permeable Pavement	**0.7**	**0.7**	**0.6**
Detention Basin	**0.5**	**0.6**	**0.5**
Pond	0.7	0.5	0.7
Wetland	0.8	0.8	0.8
Proprietary Treatment Systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1-year return period event, for inflow concentrations relevant to the contributing drainage.		

4.9.5 In line with the earlier discussion, the forthcoming design envisions the incorporation of raingardens, which can aptly be classified as bioretention systems. The raingardens serve as effective tools for treating surface water by promoting natural filtration processes. Additionally, the contemplation of employing porous paving for the driveways within the property development lends further merit to the approach.

4.9.6 The proposed use of porous paving for the driveways of the properties of the development will provide some level of treatment as per **Table 14** for surface water which lands on the area occupied by it, prior to it entering the surface water system.

4.9.7 The proposed use a granular strip located beneath the downpipes from the roof will provide the required level of treatment for surface water which lands on the area occupied by it, prior to it entering the surface water system.

4.9.8 The sum of the highlighted mitigation values with in each column of **Table 14** surpass the hazard values within **Table 15,** therefore highlighting suitable treatment of the surface water run-off from the site is provided.

Table 15. Pollution Mitigation vs Hazard Indices

Land Use – Low traffic roads & residential roofs	Total Suspended Soils (PMI_{TSS})	Hydrocarbons (PMI_{HM})	Heavy Metals (PMI_{PAH})
Pollution Hazard Indices	**1.30**	**1.40**	**1.30**
Pollution Mitigation Indices	2.40 (>0.70)	2.40 (>0.45)	2.10 (>0.60)

5.0 Foul Drainage Design

5.1 Method of Discharge

5.1.1 Design of the foul sewers included within the proposal has been carried out in accordance with BS EN 12056 Part 2, Approved Document H of the Building Regulations 2010 and other best practice documents, such as the 'Sewers for Adoption' 7th edition. In accordance with Approved Document H, the preference in terms of the priority for discharging foul effluent is to discharge into a public foul sewerage system.

5.1.2 As noted in **Section 1.6**, there is a Ø150mm gravity foul sewer located within the estate road of Maes Mona. The hierarchy outlined in Approved Document H of the Building Regulations 2010 can therefore be satisfied by connecting to this sewer. Due to the site's natural contours, this will be achieved by conveying the foul waste from the new properties into a common sewer within the site's highway. This sewer will then convey by gravity into a foul pumping station located to the south-east of the site. The waste will subsequently be pumped under pressure from the pumping station at the southeastern side of the site, up to the foul sewer within the estate road of Maes Mona via a rising main.

5.1.3 Where the foul effluent is to be drained under gravity (i.e. upstream of the foul pumping station), it shall be accommodated within Ø150mm pipework designed to a minimum gradient of 1:80. This design is suitable for foul effluent drained under gravity from more than ten properties.

5.1.4 Document H of the Building Regulations 2010 states that "where foul drainage from a building is to be pumped, the effluent receiving chamber should be sized to contain 24 hour inflow to allow for disruption in service". The design flow rate for foul from each property is based on an average daily consumption of 150 litres/head/day. Conservatively assuming that 3 persons occupy each property (equating to 87 persons), the total volume of flow from the site is 13 m^3/day.

5.1.5 The receiving chamber shall therefore be sized to receive a minimum foul volume of 13 m^3. The receiving chamber proposed for the site is the 15,000-litre capacity (= 15 m^3) *XL T-T Planet Range* package pumping station, which satisfies the required adoptable standards and quality requirements of each of the UK's Local Water Companies, including Dŵr Cymru / Welsh Water (which is a requirement for drainage systems that connect into a Water Company's existing utilities). Equally approved receiving chambers are also available for installation as part of the site's drainage system.

5.1.6 The rising main will be designed, in accordance with the supplier's technical standards and quality requirements, to discharge the foul arising from the site into the combined sewer within a velocity range of 0.75–1.8 m/s.

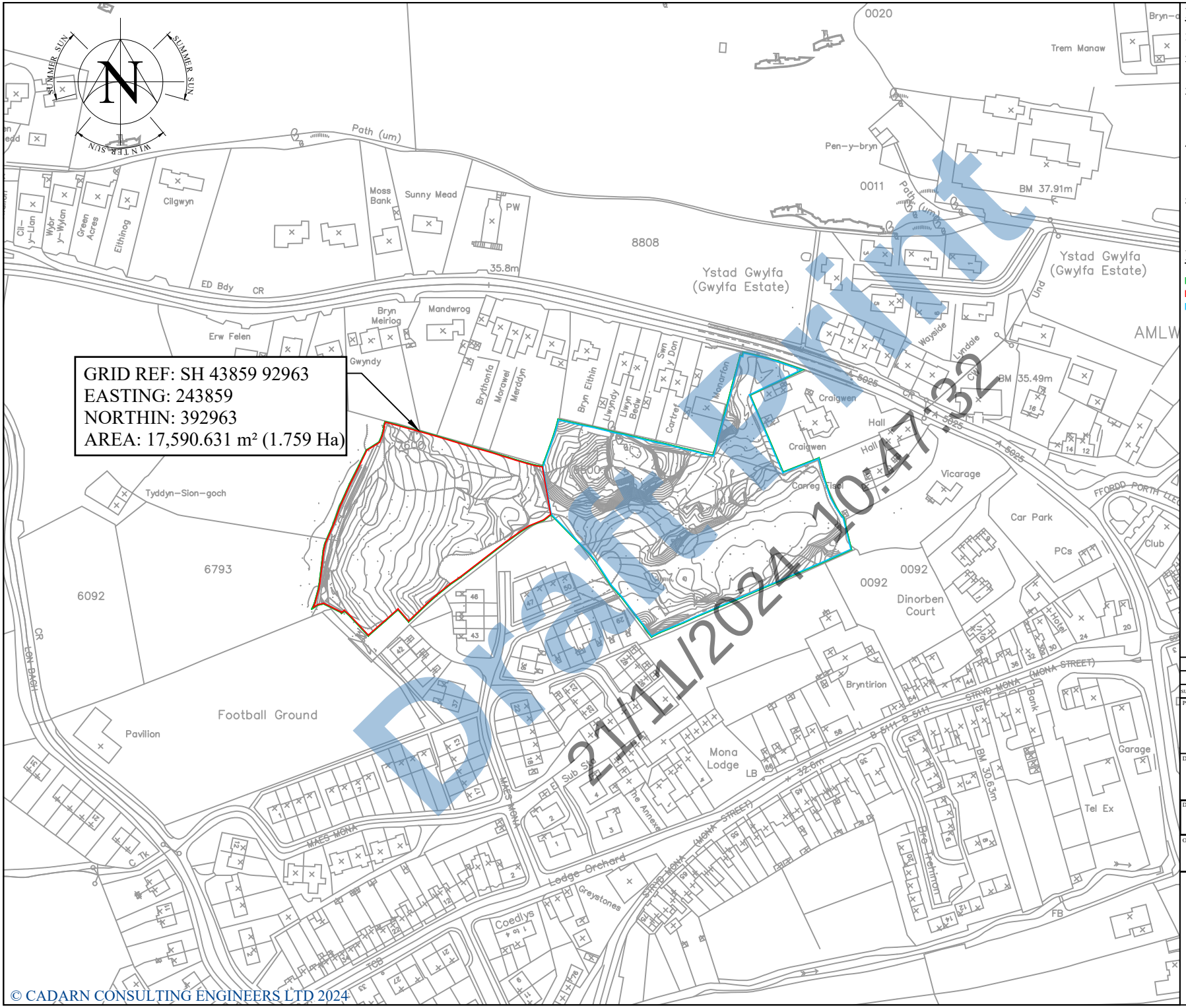
5.1.7 The design of the foul drainage system, along with the surface water system, for the proposed development is illustrated in the drawing enclosed in **APPENDIX I**.

5.2 Drainage System Maintenance

5.2.1 The site's foul drainage system shall be adopted by the Local Water Company, Dŵr Cymru / Welsh Water, who shall be responsible for maintaining the system in strict accordance with their own standards and any relevant codes and regulations.

APPENDICES

APPENDIX A - Site Location Plan



NOTES

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KEY

DENOTES PROPOSED SITE BOUNDARY.
DENOTES PROPOSED PHASE 1 BOUNDARY.
DENOTES PROPOSED PHASE 2 BOUNDARY.

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE	DESCRIPTION	Orig.	Chk'd	App'd	Auth.
S2	P02	27.03.24	UPDATED BOUNDARY				
S2	P01	24.11.22	FIRST ISSUE				

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT AT MAES MONA, AMLWCH

DRAWING TITLE:
SITE LOCATION PLAN

DRAWING No:
08722-CCE-XX-XX-DR-C-0001

ORIGINATOR:	DATE:	SCALE @ A4:	SUITABILITY:	REVISION:
M.Jones	24.11.2022	1:2500	S2	P02

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APPENDIX B - Proposed Site Layout

NOTES

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KEY

DENOTES EXTENT OF PROPOSED SITE BOUNDARY

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE	DESCRIPTION	Orig.	Chkd	Appd	Auth.
S2	P02	09.10.24	UPDATED TO MATCH SAB COMMENTS				
S2	P01	14.08.24	FIRST ISSUE				

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT
AT MAES MONA, AMLWCH

DRAWING TITLE:
PROPOSED SITE LAYOUT

DRAWING No:
08722-CCE-XX-XX-DR-C-0017

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
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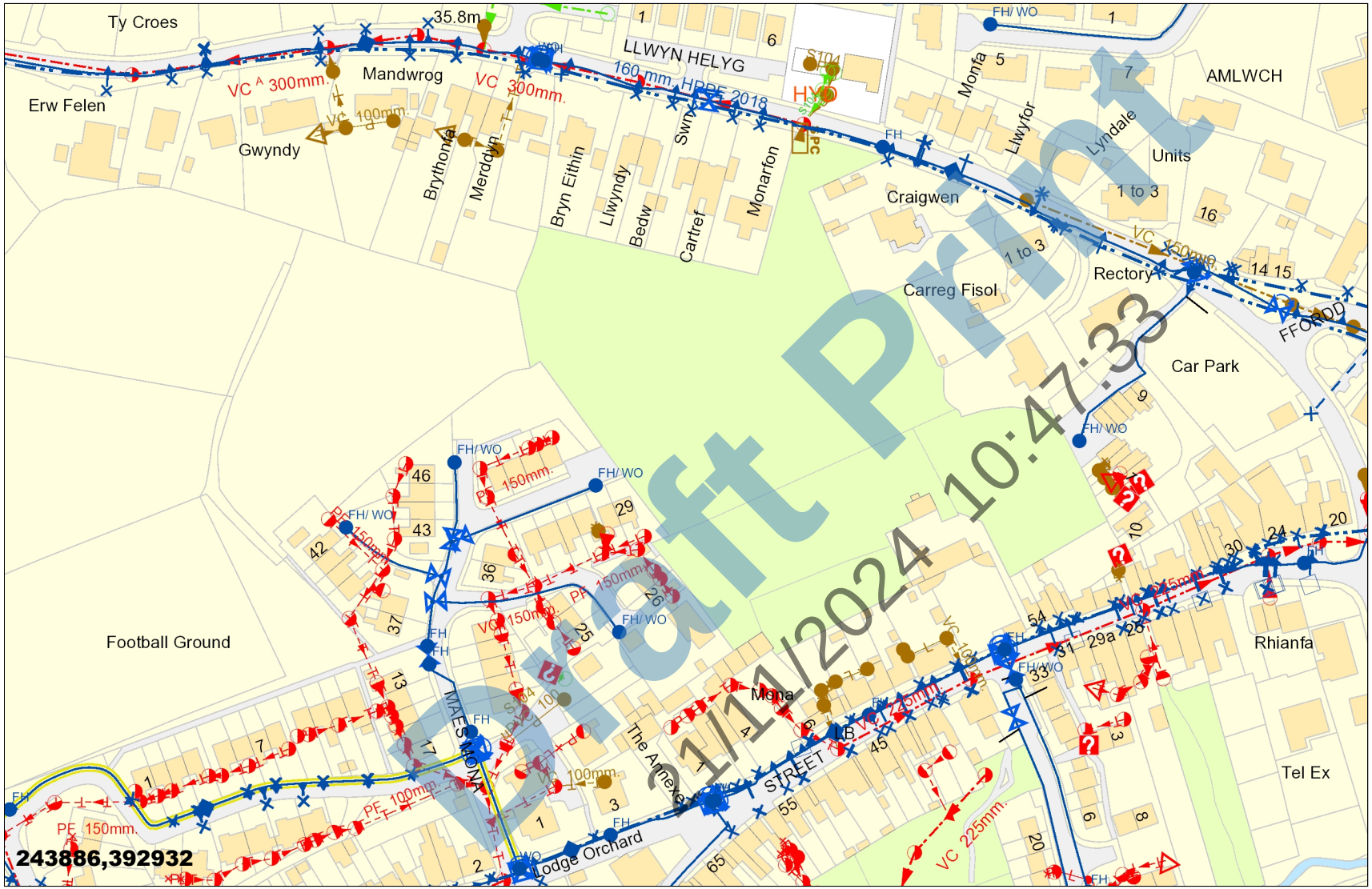
APPENDIX C - Dŵr Cymru / Welsh Water Apparatus Map

Dŵr Cymru
Welsh Water

Maes Mona

21/08/2023

Scale: 1: 2081



LEGEND

Clean Water

- Sluice Val
- Air Val, SINGLE
- Tap
- Pressure Reducing Valve
- Meter
- BULK Meter
- FH
- Cap
- Existing Main
- NON COMPANY

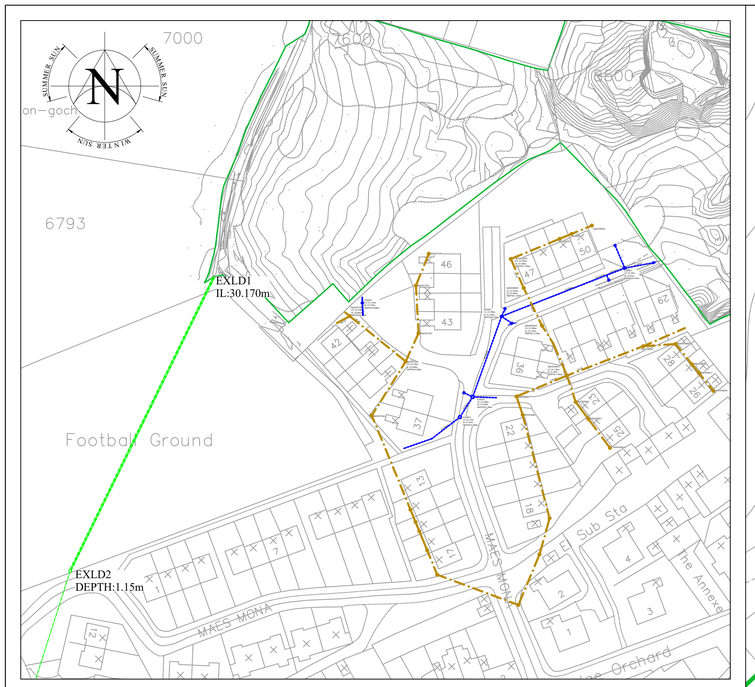
Sewerage External

- Foul
- Surface Water
- Combined
- Rising Main
- Private
- Treatment Works
- Pumping Station
- Special Purpose
- Unknown End
- Change, Combined Overflow
- Outfall, FOUL
- Lamp Hole, Foul
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

EXACT LOCATION OF ALL APPARATUS TO BE DETERMINED ON SITE

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be Asbestos Cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

APPENDIX D - Existing Topographic Survey And Drainage Layout



IL:30.170m

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE ON DRAWING.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
5. REPRODUCED FROM THE ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NO. AC0000855691

KEY

- DENOTES PROPSOED DEVELOPMENT SITE BOUNDARY.
- DENOTES EXISTING DCWW FOUL SEWER.
- DENOTES EXISTING HIGHWAY DARIANAGE / CULVETRED LAND DRIANAGE SYSTEM.

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE	DESCRIPTION	Org.	Ckd	Appd	Auth.
S2	P02	27.03.24	UPDATED LAYOUT				
S2	P01	22.05.23	FIRST ISSUE				

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT
AT MAES MONA, AMLWCH

DRAWING TITLE:
EXISTING TOPOGRAPHIC
SURVEY AND DRAINAGE

DRAWING No:
08722-CCE-XX-XX-DR-C-0004

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	22.05.2023	1:250	S2	P02

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E-mail: Admin@cadarnconsulting.co.uk

APPENDIX E - Existing Above Ground Flood Routing

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
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3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS.
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KEY

DENOTES SITE BOUNDARY

DENOTES EXISTING SURFACE WATER FLOW ARROWS.

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE	DESCRIPTION	Org.	Ckd.	Appd.	Auth.
S2	P01	27.03.24	FIRST ISSUE				

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT
AT MAES MONA, AMLWCH

DRAWING TITLE:

EXISTING FLOOD ROUTING

DRAWING No:

08722-CCE-XX-XX-DR-C-0003

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	27.03.2024	1:500	S2	P01

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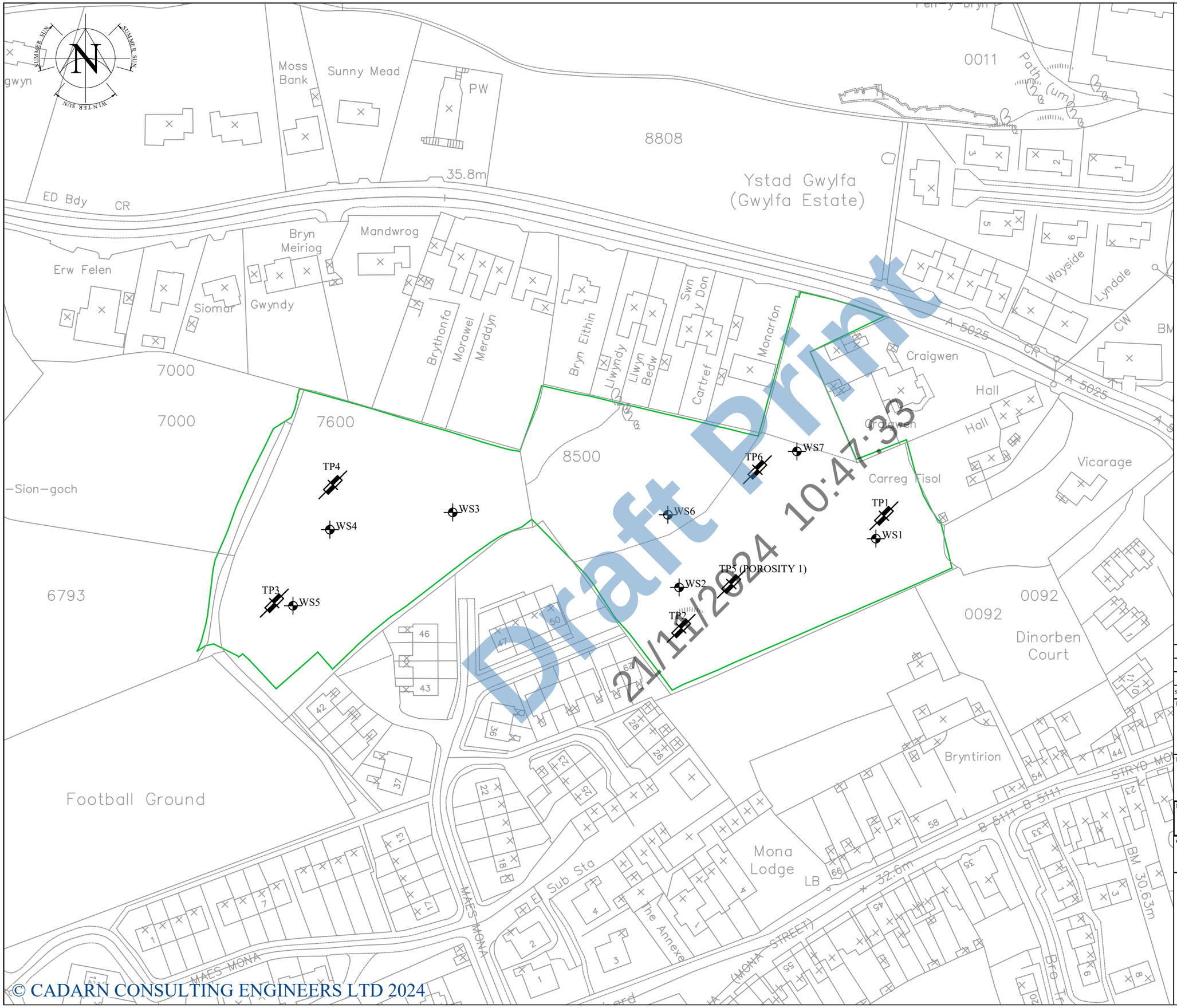
APPENDIX F - Trial Pit & Window Sample Location Plan



NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE ON DRAWING.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
5. REPRODUCED FROM THE ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NO. AC0000855691

KEY

DENOTES PROPOSED SITE BOUNDARY.

TP0 — DENOTES LOCATION OF TRAIL PIT.

WS0 — DENOTES LOCATION OF WINDOW SAMPLE

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE	DESCRIPTION	Org.	Chk'd	App'd	Auth.
S2	P03	09.10.24	UPDATED LAYOUT				
S2	P02	01.07.24	UPDATED LAYOUT				
S2	P01	11.11.22	FIRST ISSUE				

PROJECT TITLE:

RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

DRAWING TITLE:

TRAIL HOLE & WINDOW SAMPLE LOCATION PLAN

DRAWING REF:

08722-CCE-XX-XX-DR-C-0016

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	11.11.2022	1:250	S2	P03

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APPENDIX G - Porosity Testing Calculations

CADARN CONSULTING ENGINEERS

TP5 - INFILTRATION CALCUALTIONS

Site:	Maes Mona , Amlwch
Doc Ref:	Job Ref - 08722

Trial Pit Dimensions:	Length (m) 3.800	Width (m) 0.600	Depth (m) 1.900

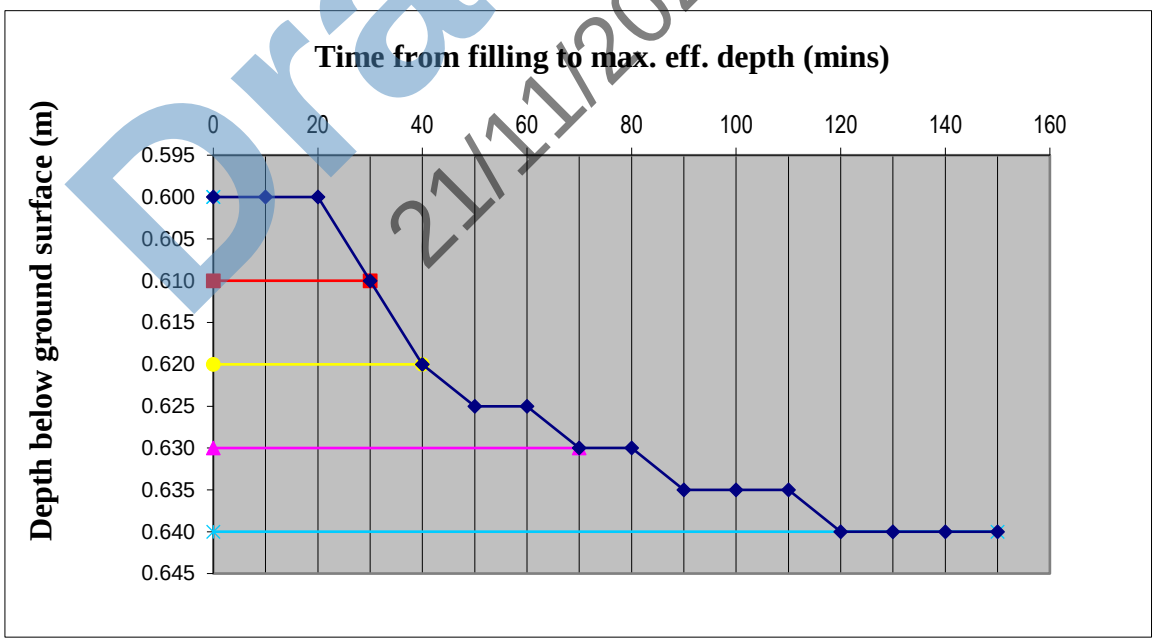
Depth of Groundwater from GL (m):	N/A	**Thus Effective depth (m) =**	1.300

Time (mins)	Depth of water from (m)	Rate of change (m/min)
0	0.600	
10	0.600	0.0000
20	0.600	0.0000
30	0.610	0.0010
40	0.620	0.0010
50	0.625	0.0005
60	0.625	0.0000
70	0.630	0.0005
80	0.630	0.0000
90	0.635	0.0005
100	0.635	0.0000
110	0.635	0.0000
120	0.640	0.0005
130	0.640	0.0000
140	0.640	0.0000
150	0.640	0.0000
Test Abandoned		

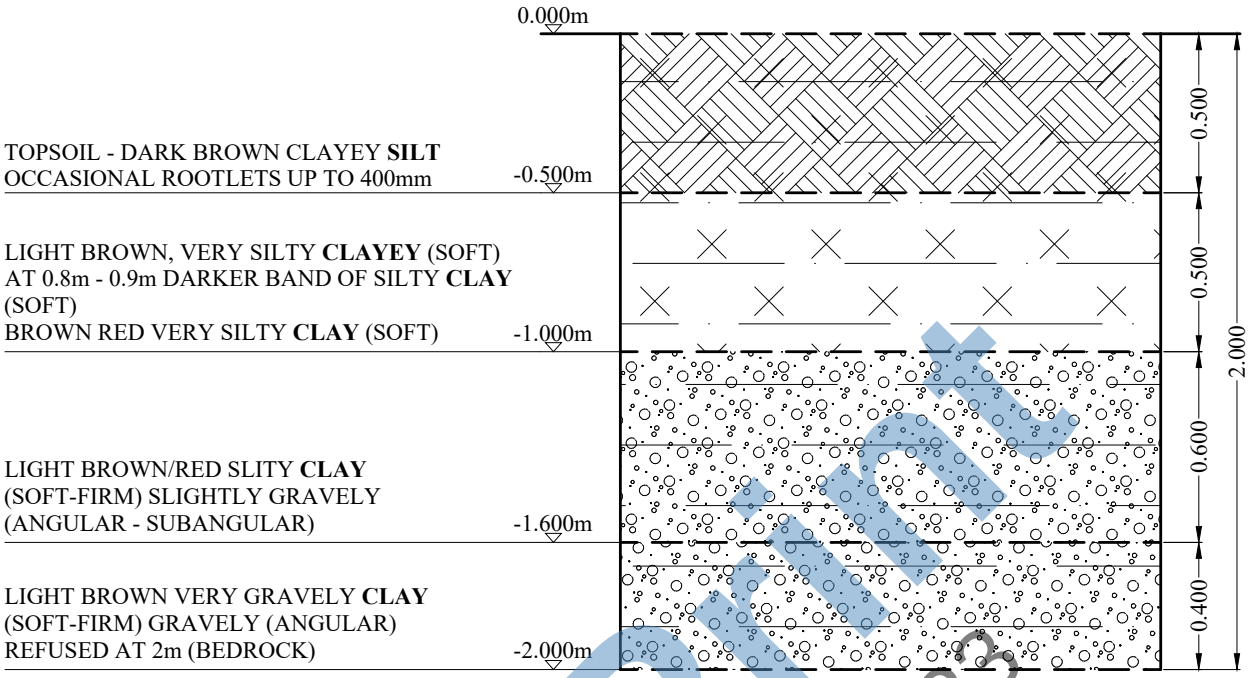
Volume Outflow, Vp75-25	0.046 m^3
Surface Area, ap50	7.912 m^2
Time Taken, tp75-25	40.00 min

Soil Infiltration Rate, f	2.40E-06 m/s
Over Effective depth of	1.300 m
Part H Vp	120.00 s/mm

depth (%Full)	depth (m)	time (min)
0	0.640	0
	0.640	150.00
25	0.630	0.00
	0.630	70.00
50	0.620	0
	0.620	40.00
75	0.610	0
	0.610	30.00
100	0.600	0
	0.600	0.00



APPENDIX H – Window Sample Logs



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S2	P02	29.03.24	CADARN LAYOUT UPDATED		
S2	P01	11.11.22	DESCRIPTION		
SUIT	REV	DATE	DESCRIPTION	Orig.	Chk'd	Appr'd	Auth'd

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0009**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS1** WINDOW SAMPLE LOG

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Address: CADARN Consulting Engineers Ltd,
Suite B,
Anglesey Business Centre,
Bryn Cefni,
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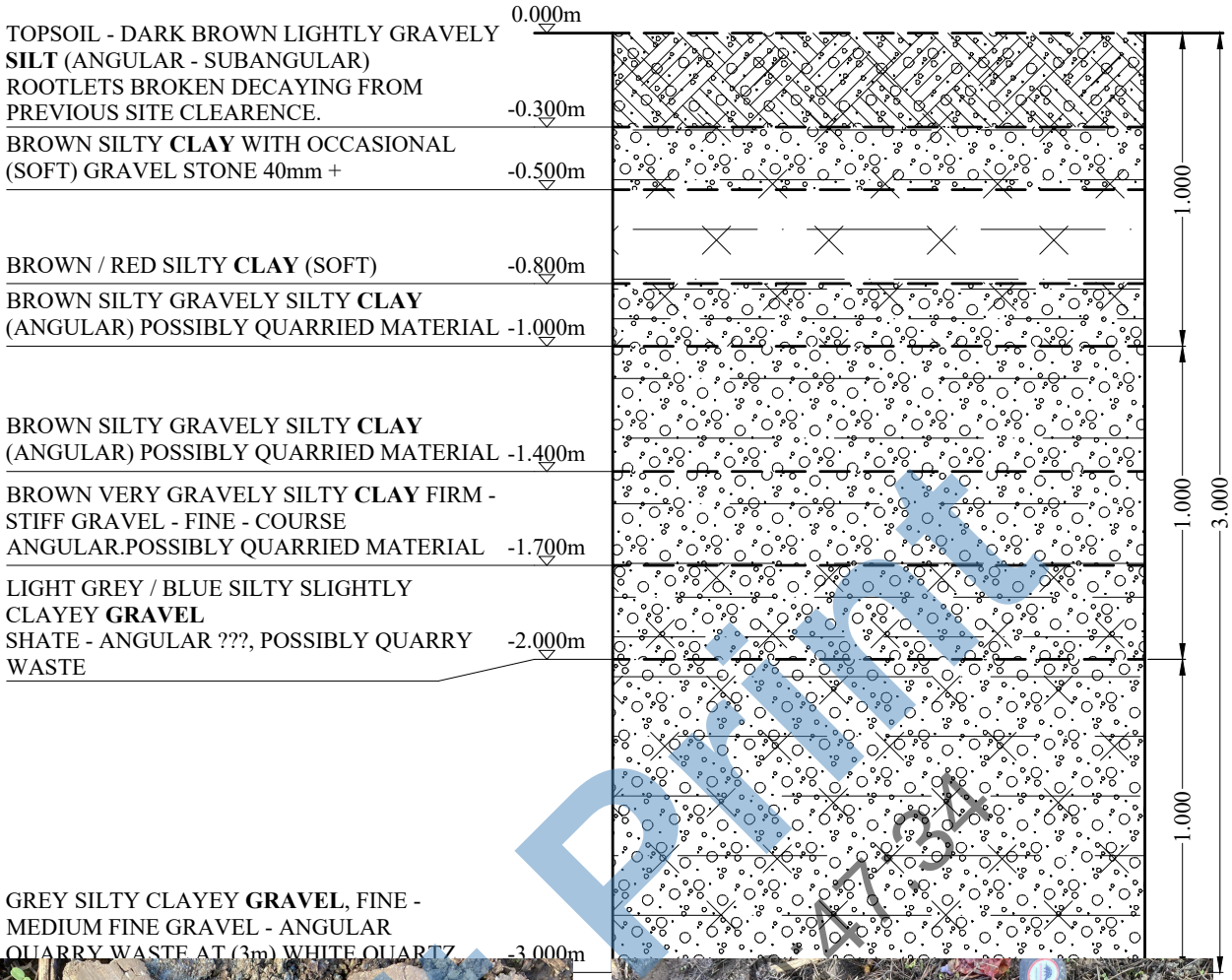
Tel: 01407 730912
E-mail: Admin@cadarnconsulting.co.uk



NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	Org	Chk'd	App'd	Auth'd
S2	P02 29.03.24	CADARN LAYOUT UPDATED				
S2	P01 11.11.22	DESCRIPTION				

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0010**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS2** WINDOW SAMPLE LOG

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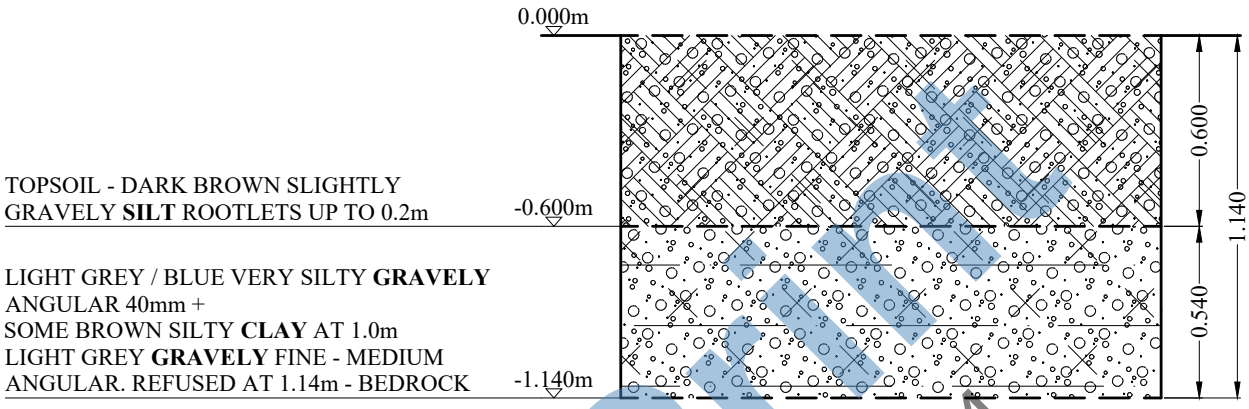

TOPSOIL - DARK BROWN SLIGHTLY GRAVELY **SILT** ROOTLETS UP TO 0.2m

LIGHT GREY / BLUE VERY SILTY **GRAVELY** ANGULAR 40mm +
SOME BROWN SILTY **CLAY** AT 1.0m
LIGHT GREY **GRAVELY** FINE - MEDIUM ANGULAR. REFUSED AT 1.14m - BEDROCK

NOT FOR CONSTRUCTION

S2	P02	29.03.24	CADARN LAYOUT UPDATED						
S2	P01	11.11.22	DESCRIPTION						
SUIT	REV	DATE	DESCRIPTION	Org.	Chk'd	Appr'd	Auth'd		

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0011**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS3** WINDOW SAMPLE LOG

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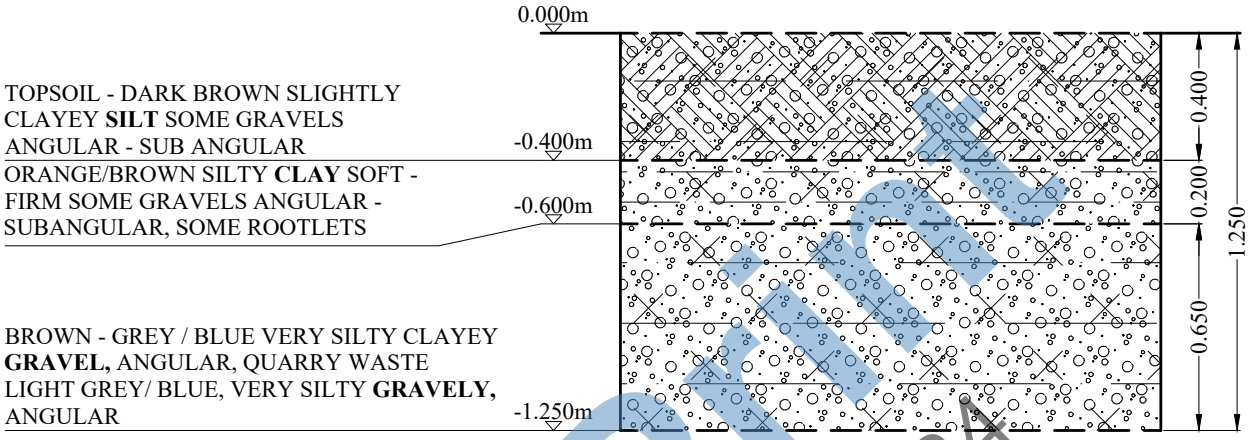

NOT FOR CONSTRUCTION

S2	P02	29.03.24	CADARN LAYOUT UPDATED						
S2	P01	11.11.22	DESCRIPTION						
SUIT	REV	DATE	DESCRIPTION	Org.	Chk'd	Appr'd	Auth'd		

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0012**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS4** WINDOW SAMPLE LOG

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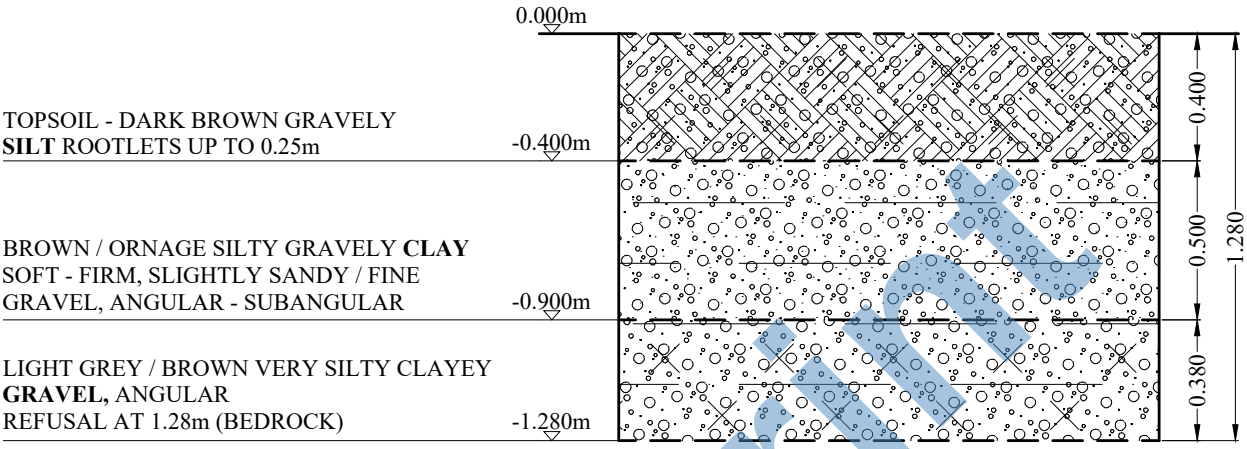

NOT FOR CONSTRUCTION

S2	P02	29.03.24	CADARN LAYOUT UPDATED						
S2	P01	11.11.22	DESCRIPTION						
SUIT	REV	DATE	DESCRIPTION	Org.	Chk'd	Appr'd	Auth'd		

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0013**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS5**
WINDOW SAMPLE LOG

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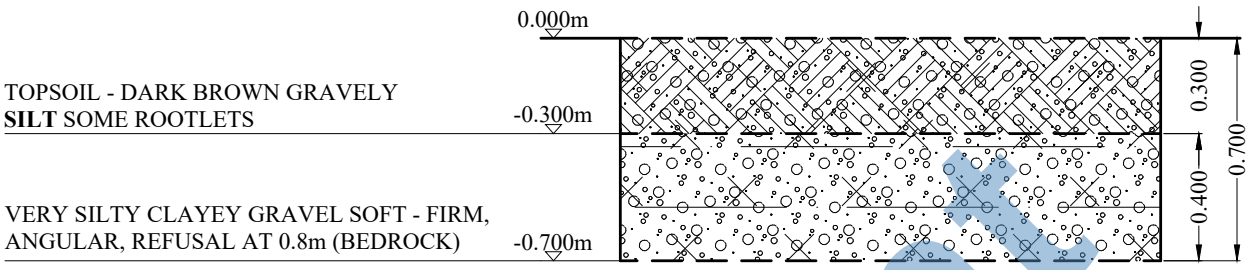

NOT FOR CONSTRUCTION

S2	P02	29.03.24	CADARN LAYOUT UPDATED						
S2	P01	11.11.22	DESCRIPTION						
SUIT	REV	DATE	DESCRIPTION	Org.	Chk'd	Appr'd	Auth'd		

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0014**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS6**
WINDOW SAMPLE LOG

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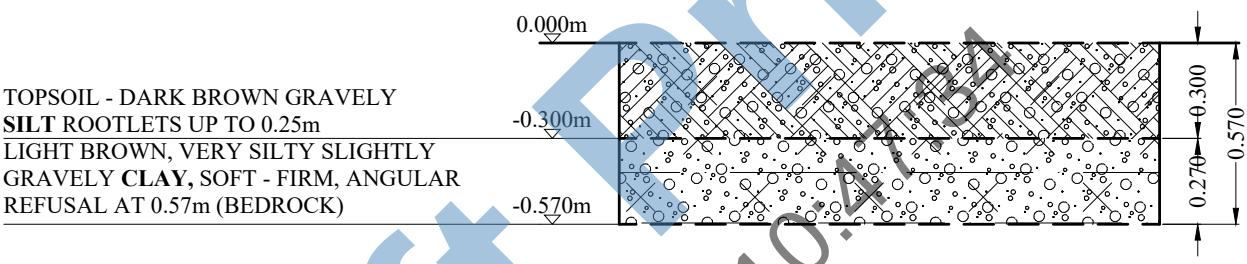
Tel: 01407 730912
E-mail: Admin@cadarnconsulting.co.uk



TOPSOIL - DARK BROWN GRAVELY **SILT** ROOTLETS UP TO 0.25m

LIGHT BROWN, VERY SILTY SLIGHTLY GRAVELY **CLAY,** SOFT - FIRM, ANGULAR

REFUSAL AT 0.57m (BEDROCK)

NOT FOR CONSTRUCTION

S2	P02	29.03.24	CADARN LAYOUT UPDATED			
S2	P01	11.11.22	DESCRIPTION			
SUIT	REV	DATE	DESCRIPTION	Org.	Chk'd	Appr'd	Auth'd

DRAWING STATUS:

DRAWING Ref: **08722-CCE-XX-XX-DR-C-0015**

PROJECT TITLE: RESIDENTIAL DEVELOPMENT AT, MAES MONA, AMLWCH

ORIGINATOR:	DATE:	SCALE:	ORIGINAL SIZE:
M.Jones	11.11.2022	1:25	A4

DRAWING TITLE: **WS7** WINDOW SAMPLE LOG

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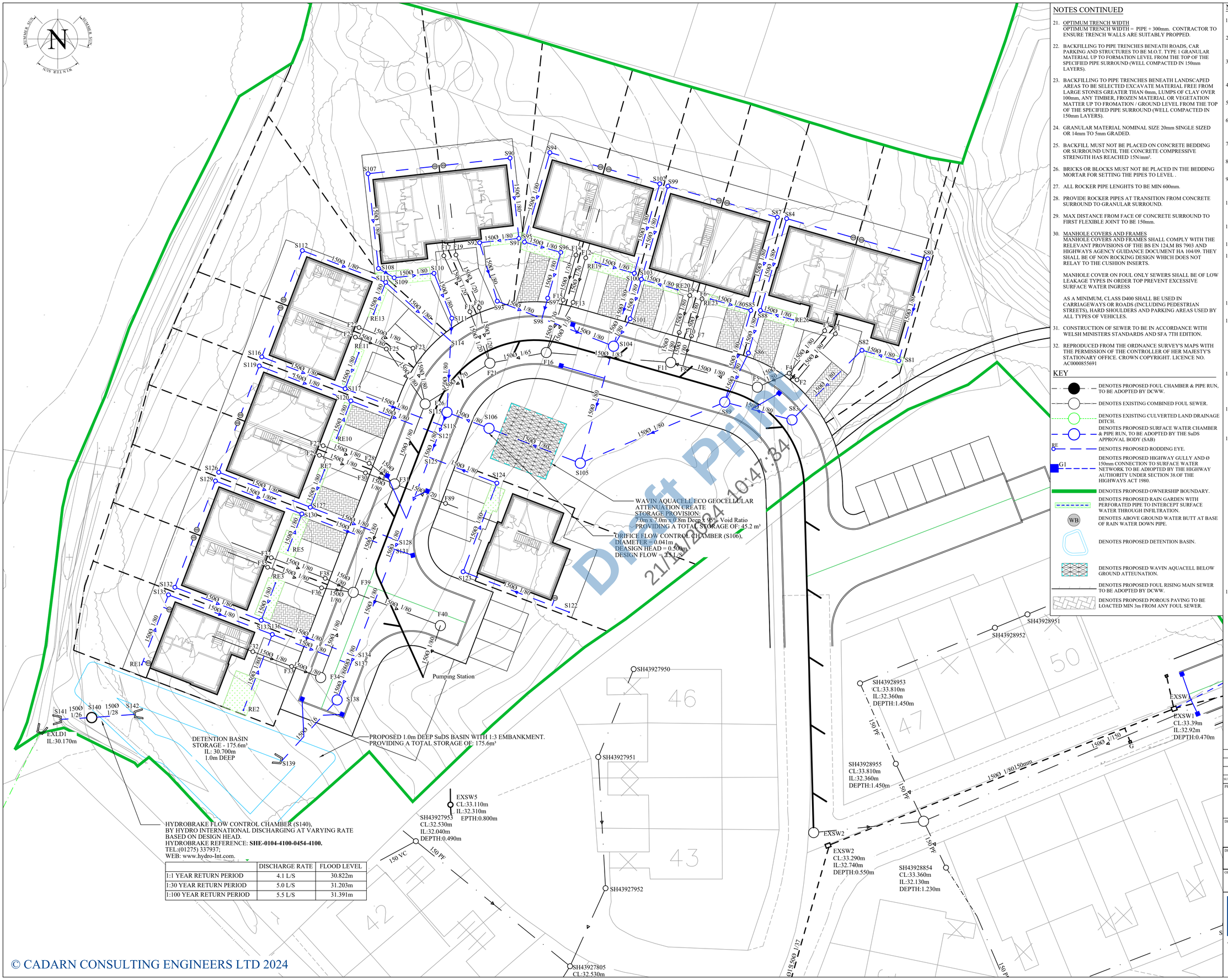
APPENDIX I - Proposed Drainage Layout



	DISCHARGE RATE	FLOOD LEVEL
1:1 YEAR RETURN PERIOD	4.1 L/S	30.822m
1:30 YEAR RETURN PERIOD	5.0 L/S	31.203m
1:100 YEAR RETURN PERIOD	5.5 L/S	31.391m

NOTES CONTINUED

21. OPTIMUM TRENCH WIDTH
OPTIMUM TRENCH WIDTH = PIPE + 300mm. CONTRACTOR TO ENSURE TRENCH WALLS ARE SUITABLY PROPPED.

22. BACKFILLING TO PIPE TRENCHES BENEATH ROADS, CAR PARKING AND STRUCTURES TO BE M.O.T. TYPE 1 GRANULAR MATERIAL UP TO FORMATION LEVEL FROM THE TOP OF THE SPECIFIED PIPE SURROUND (WELL COMPACTED IN 150mm LAYERS).

23. BACKFILLING TO PIPE TRENCHES BENEATH LANDSCAPED AREAS TO BE SELECTED EXCAVATE MATERIAL FREE FROM LARGE STONES GREATER THAN 0mm, LUMPS OF CLAY OVER 100mm, ANY TIMBER, FROZEN MATERIAL OR VEGETATION MATTER UP TO FROMATION / GROUND LEVEL FROM THE TOP OF THE SPECIFIED PIPE SURROUND (WELL COMPACTED IN 150mm LAYERS).

24. GRANULAR MATERIAL NOMINAL SIZE 20mm SINGLE SIZED OR 14mm TO 5mm GRADED.

25. BACKFILL MUST NOT BE PLACED ON CONCRETE BEDDING OR SURROUND UNTIL THE CONCRETE COMPRESSIVE STRENGTH HAS REACHED 15N/mm².

26. BRICKS OR BLOCKS MUST NOT BE PLACED IN THE BEDDING MORTAR FOR SETTING THE PIPES TO LEVEL .

27. ALL ROCKER PIPE LENGHTS TO BE MIN 600mm.

28. PROVIDE ROCKER PIPES AT TRANSITION FROM CONCRETE SURROUND TO GRANULAR SURROUND.

29. MAX DISTANCE FROM FACE OF CONCRETE SURROUND TO FIRST FLEXIBLE JOINT TO BE 150mm.

30. MANHOLE COVERS AND FRAMES
MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF THE BS EN 124,M BS 7903 AND HIGHWAYS AGENCY GUIDANCE DOCUMENT HA 104/09. THEY SHALL BE OF NON ROCKING DESIGN WHICH DOES NOT RELAY TO THE CUSHION INSERTS.

MANHOLE COVER ON FOUL ONLY SEWERS SHALL BE OF LOW LEAKAGE TYPES IN ORDER TOP PREVENT EXCESSIVE SURFACE WATER INGRESS

AS A MINIMUM, CLASS D400 SHALL BE USED IN CARRIAGEWAYS OR ROADS (INCLUDING PEDESTRIAN STREETS), HARD SHOULDERS AND PARKING AREAS USED BY ALL TYPES OF VEHICLES.

31. CONSTRUCTION OF SEWER TO BE IN ACCORDANCE WITH WELSH MINISTERS STANDARDS AND SFA 7TH EDITION.

32. REPRODUCED FROM THE ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NO. AC0000855691

KEY

- DENOTES PROPOSED FOUL CHAMBER & PIPE RUN, TO BE ADOPTED BY DCWW.
- DENOTES EXISTING COMBINED FOUL SEWER.
- DENOTES EXISTING CULVERTED LAND DRAINAGE DITCH.
- DENOTES PROPOSED SURFACE WATER CHAMBER & PIPE RUN, TO BE ADOPTED BY THE SuDS APPROVAL BODY (SAB)
- RE — DENOTES PROPOSED RODDING EYE.
- G1 — DENOTES PROPOSED HIGHWAY GULLY AND Ø 150mm CONNECTION TO SURFACE WATER NETWORK TO BE ADIOPTED BY THE HIGHWAY AUTHORITY UNDER SECTION 38.OF THE HIGHWAYS ACT 1980.
- DENOTES PROPOSED OWNERSHIP BOUNDARY.
- DENOTES PROPOSED RAIN GARDEN WITH PERFORATED PIPE TO INTERCEPT SURFACE WATER THROUGH INFILTRATION.
- WB — DENOTES ABOVE GROUND WATER BUTT AT BASE OF RAIN WATER DOWN PIPE.
- DENOTES PROPOSED DETENTION BASIN.
- DENOTES PROPOSED WAVIN AQUACELL BELOW GROUND ATTEUNATION.
- DENOTES PROPOSED FOUL RISING MAIN SEWER TO BE ADOPTED BY DCWW.
- DENOTES PROPOSED POROUS PAVING TO BE LOACTED MIN 3m FROM ANY FOUL SEWER.

NOTES

1. ALL LEVELS IN METERS UNLESS NOTED OTHERWISE ON DRAWING.
2. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
4. PLEASE REFER TO ARCHITECTS DRAWINGS FOR FINAL BUILDING LOCATION.
5. THE LOCAL AUTHORITY AND SERVICE COMPANIES ARE TO BE NOTIFIED PRIOR TO COMMENCEMENT OF WORK ON SITE.
6. ALL DRAINAGE COMPONENTS ARE TO COMPLY WITH CURRENT BRITISH STANDARDS AND BUILDING REGULATIONS REQUIREMENTS.
7. ALL WORKS TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITYS ROADS FOR ADOPTION SPECIFICATION.
8. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS (SHW SERIES 500).
9. DRAIN PIPE THROUGH WALLS OR BENEATH FOUNDATIONS (SPREAD ONLY) TO HAVE R.C BRIDGE LINTELS OVER AND PIPE SURROUNDED IN FLEXIBLE MATERIAL (50mm).
10. FINAL LOCATIONS AND DETAILS OF SOIL VENT PIPES, STUB STACKS, RAINWATER DOWN PIPES, GULLIES ETC. TO BE CONFIRMED BY REFERENCE TO ARCHITECT' DRAWINGS.
11. ALL THRESHOLD DRAIN DETAILS TO BE TO ARCHITECT' DETAILS.
12. ALL PIPES INTO CHAMBERS TO SOFFIT TO SOFFIT U.N.O.
13. AT ALL OUTFALL POINTS TO AN EXISTING NETWORK, THE POSITION AND INVERT LEVEL OF EXISTING DRAINS MUST BE CONFIRMED WELL IN ADVANCE OF THE PROGRAMMED DATE FOR INSTALLING ANY OF THE UPSTREAM DRAINAGE, OR ORDERING OF ANY MATERIALS IN ORDER TO ALLOW TIME FOR ANY NECESSARY REVISIONS TO THE HYDRAULIC DESIGN.
14. ALL GRAVITY UPVC PIPEWORK TO BE TO BS 4660 OR BS 5481 WHERE RELEVANT UNLESS NOTED OTHERWISE.
15. ALL NON ADOPTABLE DOMESTIC FOUL AND SURFACE WATER PIPE RUNS SHALL CONSIST OF 100mm DIA. PIPES LAID AT NO FLATTER THAN 1/80 FALLS U.N.O. A SEWER OR LATERAL DRAIN WITH A NOMINAL INTERNAL DIAMETER OF 100mm, OR A LATERAL DRAIN SERVING TEN OR LESS PROPERTIES IS LAID TO A GRADIENT NOT FLATTER THAN 1:80, WHERE THERE IS AT LEAST ONE WC CONNECTED AND 1:40 IF THERE IS NO WC CONNECTED.
16. ALL CONNECTIONS FROM HIGHWAY GULLIES TO BE 150mm DIA. LAID AT FALLS OF BETWEEN 1/20 AND 1/100 WITH TYPE S BED AND SURROUND TO ALL CONNECTIONS WITH MIN. 1.20m COVER, TYPE Z BED AND SURROUND TO ALL OTHER CONNECTIONS.
17. THERMOPLASTIC PIPES & FITTINGS:
THERMOPLASTIC PIPES, JOINTS & FITTINGS FOR GRAVITY SEWERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 1401-1, BS EN 1852 & BS EN 12666-1.
18. THERMOPLASTIC STRUCTURED WALL PIPE:
THERMOPLASTIC STRUCTURED WALL SEWER PIPE SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 13476-1 & WIS 4-35-01 AND BS EN 13476-2 OR BS EN 13476-3. PIPES SHALL BE BSI KITEMARKED OR HAVE EQUIVALENT THIRD PART CERTIFICATION. PIPES LESS THAN OR EQUAL TO 500mm IN DIAMETER SHALL HAVE NOMINAL SHORT-TERM RING STIFFNESS NOT LESS THAN 8KN/m² (SN8) OR BE SUBJECT TO A QUALITY SYSTEM FOR STORAGE & EMBEDMENT.

Nom. SHORT TERM RING STIFFNESS OF 2KN/m² (SN2) IS ACCEPTABLE FOR PIPES GREATER THAN Ø500mm, SUBJECT TO SUPPORTING STRUCTURAL DESIGN LOAD CALCULATIONS BEING PROVIDED.

TRANSPORTATION, HANDLING, STORAGE AND LAYING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

WHERE A FITTING IS INSTALLED ON A SEWER LENGTH, IT SHALL HAVE THE SAME INTERNAL BORE AS THE SEWER. Max. LENGTH OF PIPE FOR LAYING IS 3.0m OR Ø x 10, WHICHEVER IS THE GREATER, UNLESS WELDED JOINTS ARE USED.

19. CONNECTION TO THE PUBLIC SEWER
A SECTION 106 APPLICATION TO CONNECT MUST BE MADE TO DCWW. THE DEVELOPER SHALL GIVE 21 DAYS NOTICE PRIOR TO CONNECTION, THE WORKS MAY ONLY BE UNDERTAKEN BY A DCWW HEALTH AND SAFETY APPROVED CONTRACTOR.

NOT FOR CONSTRUCTION

S2	P03	09.10.24	UPDATED TO MATCH SAB COMMENTS				
S2	P02	01.07.24	UPDATED LAYOUT				
S2	P01	27.03.24	FIRST ISSUE				
SUITABILITY	REV	DATE	DESCRIPTION	Org.	Ckd	Appd	Auth.

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT AT MAES MONA, AMLWCH

DRAWING TITLE:
PROPOSED SuDS APPROVAL BODY (SAB) LAYOUT **PHASE 1**

DRAWING No:
08722-CCE-XX-XX-DR-C-0008

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	27.03.2024	1:200	S2	P03

CADARN CONSULTING ENGINEERS

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APPENDIX J - 'Causeway Flow' Hydraulic Model

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	30	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S80	0.007	5.00	34.850	460	243824.521	392973.794	0.786
S81	0.006	5.00	34.890	460	243821.100	392961.775	0.982
S82	0.004	5.00	35.015	460	243816.756	392963.010	1.559
S83			35.183	1200	243808.514	392954.804	2.890
S84	0.007	5.00	34.850	460	243807.879	392978.527	0.932
RE26	0.006	5.00	34.994	100	243808.670	392966.587	1.800
S85	0.003	5.00	35.002	460	243804.797	392967.689	2.211
S86			35.016	460	243803.373	392962.679	2.746
S87	0.006	5.00	34.800	460	243806.779	392978.679	1.328
RE23	0.005	5.00	34.900	100	243798.929	392969.044	2.067
S88	0.003	5.00	34.926	460	243803.656	392967.699	2.596
S89			34.955	1200	243800.583	392956.896	2.765
S90	0.006	5.00	33.850	460	243775.274	392985.655	0.631
S91	0.004	5.00	33.881	460	243776.318	392976.192	0.781
S92			34.000	460	243771.685	392975.681	0.958
S93	0.002	5.00	34.155	460	243773.768	392968.794	1.833
S94	0.005	5.00	34.300	460	243779.974	392986.301	0.686
S95	0.004	5.00	34.298	460	243776.976	392975.759	1.232
S96	0.003	5.00	34.369	460	243781.254	392974.543	1.525
S97			34.297	460	243779.719	392969.148	2.014
S98	0.029	5.00	34.220		243779.038	392966.753	1.969
S99	0.006	5.00	34.800	460	243793.882	392982.346	0.659
RE20	0.005	5.00	34.869	100	243795.042	392970.150	1.424
S100	0.003	5.00	34.816	460	243790.760	392971.369	1.816
S101			34.599	1200	243789.440	392966.727	2.082
S102	0.005	5.00	34.300	460	243792.920	392982.619	0.720
RE19	0.004	5.00	34.375	100	243785.339	392973.381	0.867
S103	0.003	5.00	34.462	460	243789.922	392972.078	1.430
S104			34.511	1200	243787.477	392963.484	2.373
S105			33.995	1200	243783.555	392949.698	2.036
S106			33.911	1200	243772.799	392953.807	2.096
S107	0.006	5.00	33.850	460	243758.536	392983.809	0.488
S108			33.850	460	243759.767	392972.647	1.049
S109	0.006	5.00	33.760	460	243761.615	392971.559	1.066
S110	0.002	5.00	34.004	460	243766.309	392972.077	1.547
S111			34.034	460	243768.415	392966.783	2.147
S112	0.005	5.00	33.500	460	243750.789	392974.757	0.991
RE13	0.007	5.00	33.672	100	243759.186	392967.272	1.489
S113			33.623	460	243760.613	392971.010	1.640
S114			33.973		243768.275	392964.103	2.119
S115			33.766	1200	243767.838	392955.701	2.017

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S116	0.005	5.00	33.500	460	243746.009	392962.227	1.204
RE11	0.008	5.00	33.622	100	243757.446	392962.705	1.476
S117			33.516	460	243755.833	392958.478	1.483
S118			33.714		243767.237	392954.127	1.986
S119	0.006	5.00	33.450	460	243745.712	392961.164	1.170
RE10	0.008	5.00	33.525	100	243754.835	392952.653	1.417
S120			33.714	460	243756.510	392957.044	1.724
S121			33.680		243766.844	392953.098	1.966
S122	0.008	5.00	33.525	100	243782.234	392932.148	0.693
S123	0.006	5.00	33.584	460	243769.741	392936.913	0.919
S124	0.004	5.00	33.675	460	243773.725	392947.354	1.150
S125	0.026	5.00	33.590		243765.804	392950.376	1.913
S126	0.006	5.00	33.446	460	243740.932	392948.634	1.334
RE7	0.007	5.00	33.525	100	243753.406	392948.906	1.585
S127			33.412	460	243751.730	392944.513	1.590
S128			33.267		243762.058	392940.568	1.721
S129	0.005	5.00	32.971	460	243740.540	392947.607	0.873
RE5	0.007	5.00	33.072	100	243749.088	392939.422	1.131
S130			33.084	460	243750.728	392943.720	1.259
S131	0.003	5.00	33.233		243761.668	392939.547	1.701
S132	0.005	5.00	32.955	460	243735.760	392935.078	1.025
RE3	0.008	5.00	33.038	100	243747.623	392935.582	1.263
S133			32.958	460	243745.948	392931.191	1.301
S134			32.820		243756.883	392927.020	1.455
RE1	0.008	5.00	32.675	100	243731.865	392925.965	0.528
S135			32.675	460	243735.003	392934.190	0.749
RE2	0.009	5.00	32.627	100	243743.845	392920.598	0.790
S136			32.824	460	243747.248	392929.519	1.226
S137	0.037	5.00	32.786		243756.491	392925.994	1.435
S138			32.648	1200	243754.891	392921.806	1.353
S139			31.700		243748.365	392914.625	1.000
S142			31.700		243730.973	392920.099	1.001
S140			31.700	1200	243725.959	392919.727	1.180
S141			30.582		243722.398	392919.521	0.200

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	S80	S81	12.497	0.600	34.064	33.908	0.156	80.1	150	5.19	50.0
1.001	S81	S82	4.517	0.600	33.908	33.456	0.452	10.0	150	5.21	50.0
1.002	S82	S83	11.631	0.600	33.456	32.293	1.163	10.0	150	5.27	50.0
1.003	S83	S89	8.203	0.600	32.293	32.190	0.103	79.6	150	5.39	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	1.124	19.9	1.6	0.636	0.832	0.007	0.0	29	0.679
1.001	3.204	56.6	3.1	0.832	1.409	0.013	0.0	24	1.720
1.002	3.204	56.6	4.0	1.409	2.740	0.017	0.0	27	1.847
1.003	1.127	19.9	4.0	2.740	2.615	0.017	0.0	45	0.882

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)
2.000	S84	S85	11.267	0.600	33.918	32.791	1.127	10.0	150	5.06	50.0
3.000	RE26	S85	4.027	0.600	33.194	32.791	0.403	10.0	150	5.02	50.0
2.001	S85	S86	5.209	0.600	32.791	32.270	0.521	10.0	150	5.09	50.0
2.002	S86	S89	6.421	0.600	32.271	32.191	0.080	80.3	150	5.18	50.0
4.000	S87	S88	11.415	0.600	33.472	32.330	1.142	10.0	150	5.06	50.0
5.000	RE23	S88	4.915	0.600	32.833	32.341	0.492	10.0	150	5.03	50.0
4.001	S88	S89	11.232	0.600	32.331	32.191	0.140	80.2	150	5.23	50.0
1.004	S89	S105	18.487	0.600	32.190	31.959	0.231	80.0	150	5.66	50.0
6.000	S90	S91	9.520	0.600	33.219	33.100	0.119	80.0	150	5.14	50.0
6.001	S91	S92	4.661	0.600	33.100	33.042	0.058	80.4	150	5.21	50.0
6.002	S92	S93	7.195	0.600	33.042	32.322	0.720	10.0	150	5.25	50.0
6.003	S93	S98	5.651	0.600	32.322	32.251	0.071	79.6	150	5.33	50.0
7.000	S94	S95	10.960	0.600	33.614	33.066	0.548	20.0	150	5.08	50.0
7.001	S95	S96	4.447	0.600	33.066	32.844	0.222	20.0	150	5.11	50.0
7.002	S96	S97	5.609	0.600	32.844	32.283	0.561	10.0	150	5.14	50.0
7.003	S97	S98	2.490	0.600	32.283	32.252	0.031	80.3	150	5.18	50.0
6.004	S98	S104	9.050	0.600	32.252	32.139	0.113	80.1	150	5.47	50.0
8.000	S99	S100	11.413	0.600	34.141	33.000	1.141	10.0	150	5.06	50.0
9.000	RE20	S100	4.452	0.600	33.445	33.000	0.445	10.0	150	5.02	50.0
8.001	S100	S101	4.825	0.600	33.000	32.517	0.483	10.0	150	5.08	50.0
8.002	S101	S104	3.791	0.600	32.518	32.139	0.379	10.0	150	5.10	50.0
10.000	S102	S103	10.959	0.600	33.580	33.032	0.548	20.0	150	5.08	50.0
11.000	RE19	S103	4.765	0.600	33.508	33.032	0.476	10.0	150	5.02	50.0
10.001	S103	S104	8.935	0.600	33.032	32.138	0.894	10.0	150	5.13	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)
2.000	3.204	56.6	1.6	0.782	2.061	0.007	0.0	17	1.407
3.000	3.204	56.6	1.4	1.650	2.061	0.006	0.0	16	1.345
2.001	3.204	56.6	3.8	2.061	2.596	0.016	0.0	26	1.822
2.002	1.123	19.8	3.8	2.595	2.614	0.016	0.0	44	0.866
4.000	3.204	56.6	1.4	1.178	2.446	0.006	0.0	16	1.345
5.000	3.204	56.6	1.2	1.917	2.435	0.005	0.0	15	1.280
4.001	1.123	19.8	3.3	2.445	2.614	0.014	0.0	41	0.834
1.004	1.125	19.9	11.0	2.615	1.886	0.047	0.0	80	1.154
6.000	1.125	19.9	1.4	0.481	0.631	0.006	0.0	27	0.654
6.001	1.122	19.8	2.3	0.631	0.808	0.010	0.0	35	0.756
6.002	3.204	56.6	2.3	0.808	1.683	0.010	0.0	21	1.584
6.003	1.127	19.9	2.8	1.683	1.819	0.012	0.0	38	0.796
7.000	2.262	40.0	1.2	0.536	1.082	0.005	0.0	18	1.013
7.001	2.262	40.0	2.1	1.082	1.375	0.009	0.0	23	1.194
7.002	3.204	56.6	2.8	1.375	1.864	0.012	0.0	23	1.666
7.003	1.123	19.8	2.8	1.864	1.818	0.012	0.0	38	0.799
6.004	1.124	19.9	12.5	1.818	2.222	0.053	0.0	86	1.187
8.000	3.204	56.6	1.4	0.509	1.666	0.006	0.0	16	1.345
9.000	3.204	56.6	1.2	1.274	1.666	0.005	0.0	15	1.280
8.001	3.204	56.6	3.3	1.666	1.932	0.014	0.0	24	1.746
8.002	3.204	56.6	3.3	1.931	2.222	0.014	0.0	24	1.746
10.000	2.262	40.0	1.2	0.570	1.280	0.005	0.0	18	1.013
11.000	3.204	56.6	0.9	0.717	1.280	0.004	0.0	13	1.179
10.001	3.204	56.6	2.8	1.280	2.223	0.012	0.0	23	1.666

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)
6.005	S104	S105	14.333	0.600	32.138	31.959	0.179	80.1	150	5.68	50.0
1.005	S105	S106	11.514	0.600	31.959	31.815	0.144	80.0	150	5.85	50.0
1.006	S106	S115	5.310	0.600	31.815	31.749	0.066	80.5	150	5.93	50.0
12.000	S107	S108	11.229	0.600	33.362	32.801	0.561	20.0	150	5.08	50.0
12.001	S108	S109	2.145	0.600	32.801	32.694	0.107	20.0	150	5.10	50.0
12.002	S109	S110	4.722	0.600	32.694	32.458	0.236	20.0	150	5.13	50.0
12.003	S110	S111	5.698	0.600	32.457	31.887	0.570	10.0	150	5.16	50.0
12.004	S111	S114	2.683	0.600	31.888	31.854	0.034	78.9	150	5.20	50.0
13.000	S112	S113	10.515	0.600	32.509	31.983	0.526	20.0	150	5.08	50.0
14.000	RE13	S113	4.001	0.600	32.183	31.983	0.200	20.0	150	5.03	50.0
13.001	S113	S114	10.316	0.600	31.983	31.854	0.129	80.0	150	5.23	50.0
12.005	S114	S115	8.413	0.600	31.854	31.749	0.105	80.1	150	5.36	50.0
1.007	S115	S118	1.686	0.600	31.749	31.728	0.021	80.3	150	5.95	50.0
15.000	S116	S117	10.516	0.600	32.296	32.033	0.263	40.0	150	5.11	50.0
16.000	RE11	S117	4.524	0.600	32.146	32.033	0.113	40.0	150	5.05	50.0
15.001	S117	S118	12.205	0.600	32.033	31.728	0.305	40.0	150	5.24	50.0
1.008	S118	S121	1.101	0.600	31.728	31.714	0.014	78.7	150	5.97	50.0
17.000	S119	S120	11.557	0.600	32.280	31.991	0.289	40.0	150	5.12	50.0
18.000	RE10	S120	4.700	0.600	32.108	31.990	0.118	39.8	150	5.05	50.0
17.001	S120	S121	11.061	0.600	31.991	31.714	0.277	39.9	150	5.24	50.0
1.009	S121	S125	2.913	0.600	31.714	31.678	0.036	80.9	150	6.01	50.0
19.000	S122	S123	13.371	0.600	32.832	32.665	0.167	80.1	150	5.20	50.0
19.001	S123	S124	11.175	0.600	32.665	32.525	0.140	79.8	150	5.36	50.0
19.002	S124	S125	8.477	0.600	32.525	31.677	0.848	10.0	150	5.41	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)
6.005	1.124	19.9	18.6	2.223	1.886	0.079	0.0	115	1.274
1.005	1.125	19.9	29.6	1.886	1.946	0.126	0.0	150	1.146
1.006	1.121	19.8	29.6	1.946	1.867	0.126	0.0	150	1.142
12.000	2.262	40.0	1.4	0.938	0.899	0.006	0.0	19	1.055
12.001	2.262	40.0	1.4	0.899	0.916	0.006	0.0	19	1.055
12.002	2.262	40.0	2.8	0.916	1.396	0.012	0.0	27	1.302
12.003	3.204	56.6	3.3	1.397	1.997	0.014	0.0	24	1.746
12.004	1.133	20.0	3.3	1.996	1.969	0.014	0.0	41	0.841
13.000	2.262	40.0	1.2	0.841	1.490	0.005	0.0	18	1.013
14.000	2.262	40.0	1.6	1.339	1.490	0.007	0.0	21	1.116
13.001	1.125	19.9	2.8	1.490	1.969	0.012	0.0	38	0.801
12.005	1.124	19.9	6.1	1.969	1.867	0.026	0.0	57	0.991
1.007	1.123	19.8	35.7	1.867	1.836	0.152	0.0	150	1.144
15.000	1.596	28.2	1.2	1.054	1.333	0.005	0.0	21	0.786
16.000	1.596	28.2	1.9	1.326	1.333	0.008	0.0	26	0.905
15.001	1.596	28.2	3.1	1.333	1.836	0.013	0.0	33	1.044
1.008	1.134	20.0	38.8	1.836	1.816	0.165	0.0	150	1.155
17.000	1.596	28.2	1.4	1.020	1.573	0.006	0.0	23	0.827
18.000	1.600	28.3	1.9	1.267	1.574	0.008	0.0	26	0.907
17.001	1.598	28.2	3.3	1.573	1.816	0.014	0.0	34	1.067
1.009	1.118	19.8	42.0	1.816	1.762	0.179	0.0	150	1.139
19.000	1.124	19.9	1.9	0.543	0.769	0.008	0.0	31	0.711
19.001	1.126	19.9	3.3	0.769	1.000	0.014	0.0	41	0.836
19.002	3.204	56.6	4.2	1.000	1.763	0.018	0.0	28	1.896

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	S125	S128	10.499	0.600	31.678	31.547	0.131	80.1	150	6.17	50.0
20.000	S126	S127	11.557	0.600	32.112	31.823	0.289	40.0	150	5.12	50.0
21.000	RE7	S127	4.702	0.600	31.940	31.822	0.118	39.8	150	5.05	50.0
20.001	S127	S128	11.056	0.600	31.823	31.547	0.276	40.1	150	5.24	50.0
1.011	S128	S131	1.093	0.600	31.546	31.532	0.014	78.1	150	6.18	50.0
22.000	S129	S130	10.904	0.600	32.098	31.825	0.273	39.9	150	5.11	50.0
23.000	RE5	S130	4.600	0.600	31.941	31.826	0.115	40.0	150	5.05	50.0
22.001	S130	S131	11.709	0.600	31.826	31.533	0.293	40.0	150	5.24	50.0
1.012	S131	S134	13.410	0.600	31.533	31.365	0.168	79.8	150	6.38	49.4
24.000	S132	S133	10.904	0.600	31.930	31.657	0.273	39.9	150	5.11	50.0
25.000	RE3	S133	4.700	0.600	31.775	31.657	0.118	39.8	150	5.05	50.0
24.001	S133	S134	11.703	0.600	31.658	31.365	0.293	39.9	150	5.24	50.0
1.013	S134	S137	1.098	0.600	31.365	31.351	0.014	78.4	150	6.40	49.4
26.000	RE1	S135	8.804	0.600	32.147	31.927	0.220	40.0	150	5.09	50.0
26.001	S135	S136	13.106	0.600	31.926	31.598	0.328	40.0	150	5.23	50.0
27.000	RE2	S136	9.548	0.600	31.837	31.598	0.239	40.0	150	5.10	50.0
26.002	S136	S137	9.892	0.600	31.599	31.352	0.247	40.1	150	5.33	50.0
1.014	S137	S138	4.482	0.600	31.351	31.295	0.056	80.0	150	6.46	49.2
1.015	S138	S139	9.704	0.600	31.295	30.700	0.595	16.3	150	6.53	49.0
1.016	S139	S142	18.233	0.600	30.700	30.699	0.001	18233.3	150	11.10	38.3
1.017	S142	S140	5.028	0.600	30.699	30.520	0.179	28.1	150	11.14	38.2
1.018	S140	S141	3.567	0.600	30.520	30.382	0.138	25.8	150	11.17	38.1

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	1.124	19.9	52.4	1.762	1.570	0.223	0.0	150	1.145
20.000	1.596	28.2	1.4	1.184	1.439	0.006	0.0	23	0.827
21.000	1.600	28.3	1.6	1.435	1.440	0.007	0.0	24	0.869
20.001	1.594	28.2	3.1	1.439	1.570	0.013	0.0	33	1.043
1.011	1.138	20.1	55.4	1.571	1.551	0.236	0.0	150	1.160
22.000	1.598	28.2	1.2	0.733	1.109	0.005	0.0	21	0.787
23.000	1.596	28.2	1.6	0.981	1.108	0.007	0.0	24	0.867
22.001	1.596	28.2	2.8	1.108	1.550	0.012	0.0	32	1.022
1.012	1.126	19.9	58.3	1.550	1.305	0.251	0.0	150	1.147
24.000	1.598	28.2	1.2	0.875	1.151	0.005	0.0	21	0.787
25.000	1.600	28.3	1.9	1.113	1.151	0.008	0.0	26	0.907
24.001	1.598	28.2	3.1	1.150	1.305	0.013	0.0	33	1.046
1.013	1.136	20.1	61.3	1.305	1.285	0.264	0.0	150	1.157
26.000	1.596	28.2	1.9	0.378	0.598	0.008	0.0	26	0.905
26.001	1.596	28.2	1.9	0.599	1.076	0.008	0.0	26	0.905
27.000	1.596	28.2	2.1	0.640	1.076	0.009	0.0	28	0.942
26.002	1.594	28.2	4.0	1.075	1.284	0.017	0.0	38	1.126
1.014	1.125	19.9	73.5	1.285	1.203	0.318	0.0	150	1.146
1.015	2.507	44.3	73.2	1.203	0.850	0.318	0.0	150	2.554
1.016	0.067	1.2	57.2	0.850	0.851	0.318	0.0	150	0.068
1.017	1.906	33.7	57.1	0.851	1.030	0.318	0.0	150	1.942
1.018	1.990	35.2	56.9	1.030	0.050	0.318	0.0	150	2.027

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	12.497	80.1	150	Circular	34.850	34.064	0.636	34.890	33.908	0.832
1.001	4.517	10.0	150	Circular	34.890	33.908	0.832	35.015	33.456	1.409
1.002	11.631	10.0	150	Circular	35.015	33.456	1.409	35.183	32.293	2.740
1.003	8.203	79.6	150	Circular	35.183	32.293	2.740	34.955	32.190	2.615
2.000	11.267	10.0	150	Circular	34.850	33.918	0.782	35.002	32.791	2.061
3.000	4.027	10.0	150	Circular	34.994	33.194	1.650	35.002	32.791	2.061
2.001	5.209	10.0	150	Circular	35.002	32.791	2.061	35.016	32.270	2.596
2.002	6.421	80.3	150	Circular	35.016	32.271	2.595	34.955	32.191	2.614
4.000	11.415	10.0	150	Circular	34.800	33.472	1.178	34.926	32.330	2.446
5.000	4.915	10.0	150	Circular	34.900	32.833	1.917	34.926	32.341	2.435
4.001	11.232	80.2	150	Circular	34.926	32.331	2.445	34.955	32.191	2.614
1.004	18.487	80.0	150	Circular	34.955	32.190	2.615	33.995	31.959	1.886
6.000	9.520	80.0	150	Circular	33.850	33.219	0.481	33.881	33.100	0.631
6.001	4.661	80.4	150	Circular	33.881	33.100	0.631	34.000	33.042	0.808
6.002	7.195	10.0	150	Circular	34.000	33.042	0.808	34.155	32.322	1.683
6.003	5.651	79.6	150	Circular	34.155	32.322	1.683	34.220	32.251	1.819
7.000	10.960	20.0	150	Circular	34.300	33.614	0.536	34.298	33.066	1.082
7.001	4.447	20.0	150	Circular	34.298	33.066	1.082	34.369	32.844	1.375
7.002	5.609	10.0	150	Circular	34.369	32.844	1.375	34.297	32.283	1.864
7.003	2.490	80.3	150	Circular	34.297	32.283	1.864	34.220	32.252	1.818
6.004	9.050	80.1	150	Circular	34.220	32.252	1.818	34.511	32.139	2.222
8.000	11.413	10.0	150	Circular	34.800	34.141	0.509	34.816	33.000	1.666
9.000	4.452	10.0	150	Circular	34.869	33.445	1.274	34.816	33.000	1.666
8.001	4.825	10.0	150	Circular	34.816	33.000	1.666	34.599	32.517	1.932
8.002	3.791	10.0	150	Circular	34.599	32.518	1.931	34.511	32.139	2.222

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S80	460	Manhole	Adoptable	S81	460	Manhole	Adoptable
1.001	S81	460	Manhole	Adoptable	S82	460	Manhole	Adoptable
1.002	S82	460	Manhole	Adoptable	S83	1200	Manhole	Adoptable
1.003	S83	1200	Manhole	Adoptable	S89	1200	Manhole	Adoptable
2.000	S84	460	Manhole	Adoptable	S85	460	Manhole	Adoptable
3.000	RE26	100	Manhole	Adoptable	S85	460	Manhole	Adoptable
2.001	S85	460	Manhole	Adoptable	S86	460	Manhole	Adoptable
2.002	S86	460	Manhole	Adoptable	S89	1200	Manhole	Adoptable
4.000	S87	460	Manhole	Adoptable	S88	460	Manhole	Adoptable
5.000	RE23	100	Manhole	Adoptable	S88	460	Manhole	Adoptable
4.001	S88	460	Manhole	Adoptable	S89	1200	Manhole	Adoptable
1.004	S89	1200	Manhole	Adoptable	S105	1200	Manhole	Adoptable
6.000	S90	460	Manhole	Adoptable	S91	460	Manhole	Adoptable
6.001	S91	460	Manhole	Adoptable	S92	460	Manhole	Adoptable
6.002	S92	460	Manhole	Adoptable	S93	460	Manhole	Adoptable
6.003	S93	460	Manhole	Adoptable	S98		Junction	
7.000	S94	460	Manhole	Adoptable	S95	460	Manhole	Adoptable
7.001	S95	460	Manhole	Adoptable	S96	460	Manhole	Adoptable
7.002	S96	460	Manhole	Adoptable	S97	460	Manhole	Adoptable
7.003	S97	460	Manhole	Adoptable	S98		Junction	
6.004	S98		Junction		S104	1200	Manhole	Adoptable
8.000	S99	460	Manhole	Adoptable	S100	460	Manhole	Adoptable
9.000	RE20	100	Manhole	Adoptable	S100	460	Manhole	Adoptable
8.001	S100	460	Manhole	Adoptable	S101	1200	Manhole	Adoptable
8.002	S101	1200	Manhole	Adoptable	S104	1200	Manhole	Adoptable

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)
10.000	10.959	20.0	150	Circular	34.300	33.580	0.570	34.462	33.032	1.280
11.000	4.765	10.0	150	Circular	34.375	33.508	0.717	34.462	33.032	1.280
10.001	8.935	10.0	150	Circular	34.462	33.032	1.280	34.511	32.138	2.223
6.005	14.333	80.1	150	Circular	34.511	32.138	2.223	33.995	31.959	1.886
1.005	11.514	80.0	150	Circular	33.995	31.959	1.886	33.911	31.815	1.946
1.006	5.310	80.5	150	Circular	33.911	31.815	1.946	33.766	31.749	1.867
12.000	11.229	20.0	150	Circular	33.850	33.362	0.338	33.850	32.801	0.899
12.001	2.145	20.0	150	Circular	33.850	32.801	0.899	33.760	32.694	0.916
12.002	4.722	20.0	150	Circular	33.760	32.694	0.916	34.004	32.458	1.396
12.003	5.698	10.0	150	Circular	34.004	32.457	1.397	34.034	31.887	1.997
12.004	2.683	78.9	150	Circular	34.034	31.888	1.996	33.973	31.854	1.969
13.000	10.515	20.0	150	Circular	33.500	32.509	0.841	33.623	31.983	1.490
14.000	4.001	20.0	150	Circular	33.672	32.183	1.339	33.623	31.983	1.490
13.001	10.316	80.0	150	Circular	33.623	31.983	1.490	33.973	31.854	1.969
12.005	8.413	80.1	150	Circular	33.973	31.854	1.969	33.766	31.749	1.867
1.007	1.686	80.3	150	Circular	33.766	31.749	1.867	33.714	31.728	1.836
15.000	10.516	40.0	150	Circular	33.500	32.296	1.054	33.516	32.033	1.333
16.000	4.524	40.0	150	Circular	33.622	32.146	1.326	33.516	32.033	1.333
15.001	12.205	40.0	150	Circular	33.516	32.033	1.333	33.714	31.728	1.836
1.008	1.101	78.7	150	Circular	33.714	31.728	1.836	33.680	31.714	1.816
17.000	11.557	40.0	150	Circular	33.450	32.280	1.020	33.714	31.991	1.573
18.000	4.700	39.8	150	Circular	33.525	32.108	1.267	33.714	31.990	1.574
17.001	11.061	39.9	150	Circular	33.714	31.991	1.573	33.680	31.714	1.816
1.009	2.913	80.9	150	Circular	33.680	31.714	1.816	33.590	31.678	1.762
19.000	13.371	80.1	150	Circular	33.525	32.832	0.543	33.584	32.665	0.769

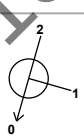
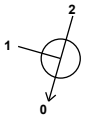
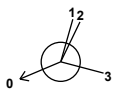
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
10.000	S102	460	Manhole	Adoptable	S103	460	Manhole	Adoptable
11.000	RE19	100	Manhole	Adoptable	S103	460	Manhole	Adoptable
10.001	S103	460	Manhole	Adoptable	S104	1200	Manhole	Adoptable
6.005	S104	1200	Manhole	Adoptable	S105	1200	Manhole	Adoptable
1.005	S105	1200	Manhole	Adoptable	S106	1200	Manhole	Adoptable
1.006	S106	1200	Manhole	Adoptable	S115	1200	Manhole	Adoptable
12.000	S107	460	Manhole	Adoptable	S108	460	Manhole	Adoptable
12.001	S108	460	Manhole	Adoptable	S109	460	Manhole	Adoptable
12.002	S109	460	Manhole	Adoptable	S110	460	Manhole	Adoptable
12.003	S110	460	Manhole	Adoptable	S111	460	Manhole	Adoptable
12.004	S111	460	Manhole	Adoptable	S114		Junction	
13.000	S112	460	Manhole	Adoptable	S113	460	Manhole	Adoptable
14.000	RE13	100	Manhole	Adoptable	S113	460	Manhole	Adoptable
13.001	S113	460	Manhole	Adoptable	S114		Junction	
12.005	S114		Junction		S115	1200	Manhole	Adoptable
1.007	S115	1200	Manhole	Adoptable	S118		Junction	
15.000	S116	460	Manhole	Adoptable	S117	460	Manhole	Adoptable
16.000	RE11	100	Manhole	Adoptable	S117	460	Manhole	Adoptable
15.001	S117	460	Manhole	Adoptable	S118		Junction	
1.008	S118		Junction		S121		Junction	
17.000	S119	460	Manhole	Adoptable	S120	460	Manhole	Adoptable
18.000	RE10	100	Manhole	Adoptable	S120	460	Manhole	Adoptable
17.001	S120	460	Manhole	Adoptable	S121		Junction	
1.009	S121		Junction		S125		Junction	
19.000	S122	100	Manhole	Adoptable	S123	460	Manhole	Adoptable

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)
19.001	11.175	79.8	150	Circular	33.584	32.665	0.769	33.675	32.525	1.000
19.002	8.477	10.0	150	Circular	33.675	32.525	1.000	33.590	31.677	1.763
1.010	10.499	80.1	150	Circular	33.590	31.678	1.762	33.267	31.547	1.570
20.000	11.557	40.0	150	Circular	33.446	32.112	1.184	33.412	31.823	1.439
21.000	4.702	39.8	150	Circular	33.525	31.940	1.435	33.412	31.822	1.440
20.001	11.056	40.1	150	Circular	33.412	31.823	1.439	33.267	31.547	1.570
1.011	1.093	78.1	150	Circular	33.267	31.546	1.571	33.233	31.532	1.551
22.000	10.904	39.9	150	Circular	32.971	32.098	0.723	33.084	31.825	1.109
23.000	4.600	40.0	150	Circular	33.072	31.941	0.981	33.084	31.826	1.108
22.001	11.709	40.0	150	Circular	33.084	31.826	1.108	33.233	31.533	1.550
1.012	13.410	79.8	150	Circular	33.233	31.533	1.550	32.820	31.365	1.305
24.000	10.904	39.9	150	Circular	32.955	31.930	0.875	32.958	31.657	1.151
25.000	4.700	39.8	150	Circular	33.038	31.775	1.113	32.958	31.657	1.151
24.001	11.703	39.9	150	Circular	32.958	31.658	1.150	32.820	31.365	1.305
1.013	1.098	78.4	150	Circular	32.820	31.365	1.305	32.786	31.351	1.285
26.000	8.804	40.0	150	Circular	32.675	32.147	0.378	32.675	31.927	0.598
26.001	13.106	40.0	150	Circular	32.675	31.926	0.599	32.824	31.598	1.076
27.000	9.548	40.0	150	Circular	32.627	31.837	0.640	32.824	31.598	1.076
26.002	9.892	40.1	150	Circular	32.824	31.599	1.075	32.786	31.352	1.284
1.014	4.482	80.0	150	Circular	32.786	31.351	1.285	32.648	31.295	1.203
1.015	9.704	16.3	150	Circular	32.648	31.295	1.203	31.700	30.700	0.850
1.016	18.233	18233.3	150	Circular	31.700	30.700	0.850	31.700	30.699	0.851
1.017	5.028	28.1	150	Circular	31.700	30.699	0.851	31.700	30.520	1.030
1.018	3.567	25.8	150	Circular	31.700	30.520	1.030	30.582	30.382	0.050

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
19.001	S123	460	Manhole	Adoptable	S124	460	Manhole	Adoptable
19.002	S124	460	Manhole	Adoptable	S125		Junction	
1.010	S125		Junction		S128		Junction	
20.000	S126	460	Manhole	Adoptable	S127	460	Manhole	Adoptable
21.000	RE7	100	Manhole	Adoptable	S127	460	Manhole	Adoptable
20.001	S127	460	Manhole	Adoptable	S128		Junction	
1.011	S128		Junction		S131		Junction	
22.000	S129	460	Manhole	Adoptable	S130	460	Manhole	Adoptable
23.000	RE5	100	Manhole	Adoptable	S130	460	Manhole	Adoptable
22.001	S130	460	Manhole	Adoptable	S131		Junction	
1.012	S131		Junction		S134		Junction	
24.000	S132	460	Manhole	Adoptable	S133	460	Manhole	Adoptable
25.000	RE3	100	Manhole	Adoptable	S133	460	Manhole	Adoptable
24.001	S133	460	Manhole	Adoptable	S134		Junction	
1.013	S134		Junction		S137		Junction	
26.000	RE1	100	Manhole	Adoptable	S135	460	Manhole	Adoptable
26.001	S135	460	Manhole	Adoptable	S136	460	Manhole	Adoptable
27.000	RE2	100	Manhole	Adoptable	S136	460	Manhole	Adoptable
26.002	S136	460	Manhole	Adoptable	S137		Junction	
1.014	S137		Junction		S138	1200	Manhole	Adoptable
1.015	S138	1200	Manhole	Adoptable	S139		Junction	
1.016	S139		Junction		S142		Junction	
1.017	S142		Junction		S140	1200	Manhole	Adoptable
1.018	S140	1200	Manhole	Adoptable	S141		Junction	

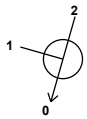
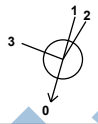
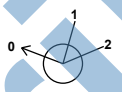
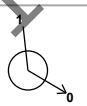
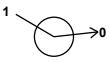
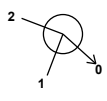
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S80	243824.521	392973.794	34.850	0.786	460		0 1.000	34.064	150
S81	243821.100	392961.775	34.890	0.982	460		1 1.000 0 1.001	33.908 33.908	150 150
S82	243816.756	392963.010	35.015	1.559	460		1 1.001 0 1.002	33.456 33.456	150 150
S83	243808.514	392954.804	35.183	2.890	1200		1 1.002 0 1.003	32.293 32.293	150 150
S84	243807.879	392978.527	34.850	0.932	460		0 2.000	33.918	150
RE26	243808.670	392966.587	34.994	1.800	100		0 3.000	33.194	150
S85	243804.797	392967.689	35.002	2.211	460		1 3.000 2 2.000 0 2.001	32.791 32.791 32.791	150 150 150
S86	243803.373	392962.679	35.016	2.746	460		1 2.001 0 2.002	32.270 32.271	150 150
S87	243806.779	392978.679	34.800	1.328	460		0 4.000	33.472	150
RE23	243798.929	392969.044	34.900	2.067	100		0 5.000	32.833	150
S88	243803.656	392967.699	34.926	2.596	460		1 5.000 2 4.000 0 4.001	32.341 32.330 32.331	150 150 150
S89	243800.583	392956.896	34.955	2.765	1200		1 4.001 2 2.002 3 1.003 0 1.004	32.191 32.191 32.190 32.190	150 150 150 150
S90	243775.274	392985.655	33.850	0.631	460		0 6.000	33.219	150

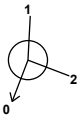
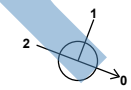
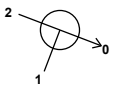
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S91	243776.318	392976.192	33.881	0.781	460	1	6.000	33.100	150
						0	6.001	33.100	150
S92	243771.685	392975.681	34.000	0.958	460	1	6.001	33.042	150
						0	6.002	33.042	150
S93	243773.768	392968.794	34.155	1.833	460	1	6.002	32.322	150
						0	6.003	32.322	150
S94	243779.974	392986.301	34.300	0.686	460	0	7.000	33.614	150
S95	243776.976	392975.759	34.298	1.232	460	1	7.000	33.066	150
						0	7.001	33.066	150
S96	243781.254	392974.543	34.369	1.525	460	1	7.001	32.844	150
						0	7.002	32.844	150
S97	243779.719	392969.148	34.297	2.014	460	1	7.002	32.283	150
						0	7.003	32.283	150
S98	243779.038	392966.753	34.220	1.969		1	7.003	32.252	150
						2	6.003	32.251	150
						0	6.004	32.252	150
S99	243793.882	392982.346	34.800	0.659	460	0	8.000	34.141	150
RE20	243795.042	392970.150	34.869	1.424	100	0	9.000	33.445	150
S100	243790.760	392971.369	34.816	1.816	460	1	9.000	33.000	150
						2	8.000	33.000	150
						0	8.001	33.000	150
S101	243789.440	392966.727	34.599	2.082	1200	1	8.001	32.517	150
						0	8.002	32.518	150
S102	243792.920	392982.619	34.300	0.720	460	0	10.000	33.580	150

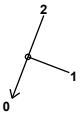
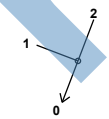
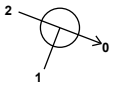
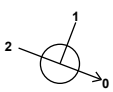
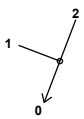
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE19	243785.339	392973.381	34.375	0.867	100		0	11.000	33.508	150
S103	243789.922	392972.078	34.462	1.430	460		1	11.000	33.032	150
							2	10.000	33.032	150
							0	10.001	33.032	150
S104	243787.477	392963.484	34.511	2.373	1200		1	10.001	32.138	150
							2	8.002	32.139	150
							3	6.004	32.139	150
							0	6.005	32.138	150
S105	243783.555	392949.698	33.995	2.036	1200		1	6.005	31.959	150
							2	1.004	31.959	150
							0	1.005	31.959	150
S106	243772.799	392953.807	33.911	2.096	1200		1	1.005	31.815	150
							0	1.006	31.815	150
S107	243758.536	392983.809	33.850	0.488	460		0	12.000	33.362	150
S108	243759.767	392972.647	33.850	1.049	460		1	12.000	32.801	150
							0	12.001	32.801	150
S109	243761.615	392971.559	33.760	1.066	460		1	12.001	32.694	150
							0	12.002	32.694	150
S110	243766.309	392972.077	34.004	1.547	460		1	12.002	32.458	150
							0	12.003	32.457	150
S111	243768.415	392966.783	34.034	2.147	460		1	12.003	31.887	150
							0	12.004	31.888	150
S112	243750.789	392974.757	33.500	0.991	460		0	13.000	32.509	150
RE13	243759.186	392967.272	33.672	1.489	100		0	14.000	32.183	150
S113	243760.613	392971.010	33.623	1.640	460		1	14.000	31.983	150
							2	13.000	31.983	150
							0	13.001	31.983	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S114	243768.275	392964.103	33.973	2.119		 1	13.001	31.854	150
						2	12.004	31.854	150
						0	12.005	31.854	150
S115	243767.838	392955.701	33.766	2.017	1200	 1	12.005	31.749	150
						2	1.006	31.749	150
						0	1.007	31.749	150
S116	243746.009	392962.227	33.500	1.204	460				
						0	15.000	32.296	150
RE11	243757.446	392962.705	33.622	1.476	100				
						0	16.000	32.146	150
S117	243755.833	392958.478	33.516	1.483	460	 1	16.000	32.033	150
						2	15.000	32.033	150
						0	15.001	32.033	150
S118	243767.237	392954.127	33.714	1.986		 1	15.001	31.728	150
						2	1.007	31.728	150
						0	1.008	31.728	150
S119	243745.712	392961.164	33.450	1.170	460				
						0	17.000	32.280	150
RE10	243754.835	392952.653	33.525	1.417	100				
						0	18.000	32.108	150
S120	243756.510	392957.044	33.714	1.724	460	 1	18.000	31.990	150
						2	17.000	31.991	150
						0	17.001	31.991	150
S121	243766.844	392953.098	33.680	1.966		 1	17.001	31.714	150
						2	1.008	31.714	150
						0	1.009	31.714	150
S122	243782.234	392932.148	33.525	0.693	100				
						0	19.000	32.832	150
S123	243769.741	392936.913	33.584	0.919	460	 1	19.000	32.665	150
						0	19.001	32.665	150
S124	243773.725	392947.354	33.675	1.150	460	1	19.001	32.525	150
						 0	19.002	32.525	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S125	243765.804	392950.376	33.590	1.913			1 19.002	31.677	150
							2 1.009	31.678	150
							0 1.010	31.678	150
S126	243740.932	392948.634	33.446	1.334	460		0 20.000	32.112	150
RE7	243753.406	392948.906	33.525	1.585	100		0 21.000	31.940	150
S127	243751.730	392944.513	33.412	1.590	460		1 21.000	31.822	150
							2 20.000	31.823	150
							0 20.001	31.823	150
S128	243762.058	392940.568	33.267	1.721			1 20.001	31.547	150
							2 1.010	31.547	150
							0 1.011	31.546	150
S129	243740.540	392947.607	32.971	0.873	460		0 22.000	32.098	150
RE5	243749.088	392939.422	33.072	1.131	100		0 23.000	31.941	150
S130	243750.728	392943.720	33.084	1.259	460		1 23.000	31.826	150
							2 22.000	31.825	150
							0 22.001	31.826	150
S131	243761.668	392939.547	33.233	1.701			1 22.001	31.533	150
							2 1.011	31.532	150
							0 1.012	31.533	150
S132	243735.760	392935.078	32.955	1.025	460		0 24.000	31.930	150
RE3	243747.623	392935.582	33.038	1.263	100		0 25.000	31.775	150
S133	243745.948	392931.191	32.958	1.301	460		1 25.000	31.657	150
							2 24.000	31.657	150
							0 24.001	31.658	150
S134	243756.883	392927.020	32.820	1.455			1 24.001	31.365	150
							2 1.012	31.365	150
							0 1.013	31.365	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE1	243731.865	392925.965	32.675	0.528	100				
						0	26.000	32.147	150
S135	243735.003	392934.190	32.675	0.749	460	1	26.000	31.927	150
						0	26.001	31.926	150
RE2	243743.845	392920.598	32.627	0.790	100				
						0	27.000	31.837	150
S136	243747.248	392929.519	32.824	1.226	460	1	27.000	31.598	150
						2	26.001	31.598	150
						0	26.002	31.599	150
S137	243756.491	392925.994	32.786	1.435		1	26.002	31.352	150
						2	1.013	31.351	150
						0	1.014	31.351	150
S138	243754.891	392921.806	32.648	1.353	1200	1	1.014	31.295	150
						0	1.015	31.295	150
S139	243748.365	392914.625	31.700	1.000		1	1.015	30.700	150
						0	1.016	30.700	150
S142	243730.973	392920.099	31.700	1.001		1	1.016	30.699	150
						0	1.017	30.699	150
S140	243725.959	392919.727	31.700	1.180	1200	1	1.017	30.520	150
						0	1.018	30.520	150
S141	243722.398	392919.521	30.582	0.200		1	1.018	30.382	150

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
Rainfall Events	Singular	Additional Storage (m³/ha)	0.0
FSR Region	England and Wales	Starting Level (m)	
M5-60 (mm)	18.000	Check Discharge Rate(s)	✓
Ratio-R	0.300	1 year (l/s)	4.1
Summer CV	1.000	30 year (l/s)	8.5
Winter CV	1.000	100 year (l/s)	10.3
Analysis Speed	Normal	Check Discharge Volume	x
Skip Steady State	x		

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 %)
1	30	10	0
30	30	10	0
100	30	10	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.80
Greenfield Method	IH124	Growth Factor 100 year	2.18
Positively Drained Area (ha)	0.583	Betterment (%)	0
SAAR (mm)	1087	QBar	4.7
Soil Index	4	Q 1 year (l/s)	4.1
SPR	0.47	Q 30 year (l/s)	8.5
Region	9	Q 100 year (l/s)	10.3
Growth Factor 1 year	0.88		

Node S140 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	30.520	Product Number	CTL-SHE-0104-4100-0454-4100
Design Depth (m)	0.454	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.1	Min Node Diameter (mm)	1200

Node S106 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.500	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.5		
Invert Level (m)	31.815	Diameter (m)	0.041		

Node S142 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	30.699
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	76.0	0.0	1.000	275.1	0.0

Node S106 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	31.815
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	384

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	59.5	0.0	0.800	59.5	0.0	0.801	0.0	0.0

Results for 1 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S80	10	34.093	0.029	1.5	0.0048	0.0000	OK
15 minute summer	S81	10	33.931	0.023	2.8	0.0038	0.0000	OK
15 minute summer	S82	10	33.481	0.025	3.5	0.0042	0.0000	OK
15 minute summer	S83	11	32.336	0.043	3.5	0.0481	0.0000	OK
15 minute summer	S84	10	33.935	0.017	1.5	0.0028	0.0000	OK
15 minute summer	RE26	10	33.210	0.016	1.3	0.0001	0.0000	OK
15 minute summer	S85	10	32.816	0.025	3.4	0.0041	0.0000	OK
15 minute summer	S86	10	32.312	0.042	3.3	0.0070	0.0000	OK
15 minute summer	S87	10	33.488	0.016	1.3	0.0026	0.0000	OK
15 minute summer	RE23	11	32.847	0.014	1.0	0.0001	0.0000	OK
15 minute summer	S88	10	32.369	0.039	2.9	0.0065	0.0000	OK
15 minute summer	S89	11	32.264	0.074	9.6	0.0834	0.0000	OK
15 minute summer	S90	10	33.245	0.026	1.3	0.0043	0.0000	OK
15 minute summer	S91	10	33.136	0.036	2.1	0.0060	0.0000	OK
15 minute summer	S92	11	33.062	0.020	2.0	0.0033	0.0000	OK
15 minute summer	S93	11	32.358	0.036	2.5	0.0059	0.0000	OK
15 minute summer	S94	11	33.630	0.016	1.0	0.0027	0.0000	OK
15 minute summer	S95	11	33.089	0.023	1.8	0.0038	0.0000	OK
15 minute summer	S96	11	32.865	0.021	2.4	0.0035	0.0000	OK
15 minute summer	S97	12	32.341	0.058	2.4	0.0096	0.0000	OK
15 minute summer	S98	12	32.341	0.090	11.1	0.0000	0.0000	OK
15 minute summer	S99	10	34.157	0.016	1.3	0.0026	0.0000	OK
15 minute summer	RE20	11	33.459	0.014	1.0	0.0001	0.0000	OK
15 minute summer	S100	10	33.024	0.024	2.9	0.0040	0.0000	OK
15 minute summer	S101	10	32.541	0.024	2.9	0.0271	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 summer	S80	1.000	S81	1.5	0.723	0.074	0.0255	
15 minute summer	S81	1.001	S82	2.7	1.494	0.048	0.0083	
15 minute summer	S82	1.002	S83	3.5	1.186	0.062	0.0352	
15 minute summer	S83	1.003	S89	3.5	0.560	0.176	0.0522	
15 minute summer	S84	2.000	S85	1.5	1.008	0.026	0.0168	
15 minute summer	RE26	3.000	S85	1.3	0.909	0.023	0.0058	
15 minute summer	S85	2.001	S86	3.3	1.139	0.059	0.0156	
15 minute summer	S86	2.002	S89	3.3	0.553	0.167	0.0398	
15 minute summer	S87	4.000	S88	1.3	0.581	0.023	0.0265	
15 minute summer	RE23	5.000	S88	1.0	0.745	0.018	0.0077	
15 minute summer	S88	4.001	S89	2.8	0.500	0.143	0.0674	
15 minute summer	S89	1.004	S105	9.7	0.645	0.488	0.2424	
15 minute summer	S90	6.000	S91	1.3	0.490	0.064	0.0249	
15 minute summer	S91	6.001	S92	2.0	0.917	0.103	0.0106	
15 minute summer	S92	6.002	S93	2.1	0.929	0.036	0.0163	
15 minute summer	S93	6.003	S98	2.5	0.379	0.124	0.0397	
15 minute summer	S94	7.000	S95	1.0	0.740	0.025	0.0149	
15 minute summer	S95	7.001	S96	1.8	1.129	0.045	0.0071	
15 minute summer	S96	7.002	S97	2.4	0.975	0.042	0.0213	
15 minute summer	S97	7.003	S98	2.9	0.401	0.147	0.0213	
15 minute summer	S98	6.004	S104	10.8	0.939	0.543	0.1291	
15 minute summer	S99	8.000	S100	1.3	0.941	0.023	0.0158	
15 minute summer	RE20	9.000	S100	1.0	0.791	0.018	0.0058	
15 minute summer	S100	8.001	S101	2.9	1.592	0.051	0.0087	
15 minute summer	S101	8.002	S104	2.9	0.438	0.050	0.0366	

Results for 1 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S102	11	33.596	0.016	1.0	0.0027	0.0000	OK
15 minute summer	RE19	11	33.521	0.013	0.8	0.0001	0.0000	OK
15 minute summer	S103	11	33.053	0.021	2.4	0.0035	0.0000	OK
15 minute summer	S104	12	32.327	0.189	16.0	0.2136	0.0000	SURCHARGED
15 minute summer	S105	12	32.209	0.250	24.1	0.2823	0.0000	SURCHARGED
360 minute summer	S106	240	32.162	0.347	6.7	20.0262	0.0000	SURCHARGED
15 minute summer	S107	10	33.381	0.019	1.3	0.0031	0.0000	OK
15 minute summer	S108	10	32.819	0.018	1.3	0.0031	0.0000	OK
15 minute summer	S109	10	32.721	0.027	2.6	0.0045	0.0000	OK
15 minute summer	S110	10	32.480	0.023	2.9	0.0038	0.0000	OK
15 minute summer	S111	11	31.932	0.045	2.9	0.0074	0.0000	OK
15 minute summer	S112	11	32.525	0.016	1.0	0.0027	0.0000	OK
15 minute summer	RE13	10	32.203	0.020	1.5	0.0002	0.0000	OK
15 minute summer	S113	10	32.018	0.035	2.5	0.0059	0.0000	OK
30 minute summer	S114	20	31.929	0.075	5.2	0.0000	0.0000	OK
15 minute summer	S115	13	31.927	0.178	5.9	0.2009	0.0000	SURCHARGED
15 minute summer	S116	11	32.315	0.019	1.0	0.0032	0.0000	OK
15 minute summer	RE11	10	32.171	0.025	1.7	0.0002	0.0000	OK
15 minute summer	S117	10	32.064	0.031	2.7	0.0052	0.0000	OK
15 minute summer	S118	13	31.925	0.197	8.2	0.0000	0.0000	SURCHARGED
15 minute summer	S119	10	32.302	0.022	1.3	0.0036	0.0000	OK
15 minute summer	RE10	10	32.133	0.025	1.7	0.0002	0.0000	OK
15 minute summer	S120	10	32.024	0.034	3.0	0.0056	0.0000	OK
15 minute summer	S121	13	31.923	0.209	10.7	0.0000	0.0000	SURCHARGED
15 minute summer	S122	10	32.861	0.029	1.7	0.0002	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 summer	S102	10.000	S103	1.0	0.788	0.025	0.0140	
15 minute summer	RE19	11.000	S103	0.8	0.750	0.014	0.0053	
15 minute summer	S103	10.001	S104	2.4	0.388	0.042	0.0854	
15 minute summer	S104	6.005	S105	14.4	0.844	0.726	0.2523	
15 minute summer	S105	1.005	S106	23.8	1.574	1.198	0.2013	
360 minute summer	S106	Orifice	S115	2.0				
15 minute summer	S107	12.000	S108	1.3	1.024	0.032	0.0141	
15 minute summer	S108	12.001	S109	1.3	0.755	0.032	0.0036	
15 minute summer	S109	12.002	S110	2.5	1.223	0.063	0.0098	
15 minute summer	S110	12.003	S111	2.9	0.985	0.051	0.0174	
15 minute summer	S111	12.004	S114	2.9	0.594	0.146	0.0155	
15 minute summer	S112	13.000	S113	1.0	0.507	0.025	0.0222	
15 minute summer	RE13	14.000	S113	1.5	0.668	0.037	0.0091	
15 minute summer	S113	13.001	S114	2.4	0.561	0.123	0.0548	
30 minute summer	S114	12.005	S115	5.3	0.731	0.267	0.1110	
15 minute summer	S115	1.007	S118	5.6	0.640	0.280	0.0297	
15 minute summer	S116	15.000	S117	1.0	0.520	0.035	0.0208	
15 minute summer	RE11	16.000	S117	1.7	0.735	0.060	0.0104	
15 minute summer	S117	15.001	S118	2.6	0.647	0.094	0.1221	
15 minute summer	S118	1.008	S121	7.8	0.730	0.388	0.0194	
15 minute summer	S119	17.000	S120	1.3	0.589	0.045	0.0253	
15 minute summer	RE10	18.000	S120	1.7	0.698	0.060	0.0114	
15 minute summer	S120	17.001	S121	2.9	0.638	0.103	0.1128	
15 minute summer	S121	1.009	S125	9.9	0.771	0.502	0.0513	
15 minute summer	S122	19.000	S123	1.7	0.521	0.084	0.0432	

Results for 1 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S123	10	32.707	0.042	3.0	0.0070	0.0000	OK
15 minute summer	S124	11	32.551	0.026	3.7	0.0043	0.0000	OK
15 minute summer	S125	13	31.916	0.239	19.0	0.0000	0.0000	SURCHARGED
15 minute summer	S126	10	32.134	0.022	1.3	0.0036	0.0000	OK
15 minute summer	RE7	10	31.963	0.023	1.5	0.0002	0.0000	OK
15 minute summer	S127	10	31.855	0.033	2.8	0.0054	0.0000	OK
15 minute summer	S128	13	31.847	0.301	18.5	0.0000	0.0000	SURCHARGED
15 minute summer	S129	11	32.117	0.019	1.0	0.0032	0.0000	OK
15 minute summer	RE5	10	31.965	0.024	1.5	0.0002	0.0000	OK
15 minute summer	S130	10	31.856	0.031	2.5	0.0051	0.0000	OK
15 minute summer	S131	13	31.838	0.306	19.5	0.0000	0.0000	SURCHARGED
15 minute summer	S132	11	31.949	0.019	1.0	0.0032	0.0000	OK
15 minute summer	RE3	10	31.800	0.025	1.7	0.0002	0.0000	OK
15 minute summer	S133	13	31.696	0.039	2.7	0.0065	0.0000	OK
15 minute summer	S134	13	31.694	0.329	20.1	0.0000	0.0000	SURCHARGED
15 minute summer	RE1	10	32.173	0.026	1.7	0.0002	0.0000	OK
15 minute summer	S135	10	31.951	0.025	1.7	0.0041	0.0000	OK
15 minute summer	RE2	10	31.863	0.026	1.9	0.0002	0.0000	OK
15 minute summer	S136	13	31.679	0.081	3.5	0.0135	0.0000	OK
15 minute summer	S137	13	31.679	0.328	29.8	0.0000	0.0000	SURCHARGED
15 minute summer	S138	13	31.544	0.249	28.5	0.2817	0.0000	SURCHARGED
15 minute summer	S139	13	31.283	0.583	27.1	0.0000	0.0000	SURCHARGED
240 minute summer	S142	192	30.966	0.267	14.7	27.4255	0.0000	SURCHARGED
240 minute summer	S140	192	30.963	0.443	10.2	0.5008	0.0000	SURCHARGED
15 minute summer	S141	1	30.382	0.000	4.1	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 summer	S123	19.001	S124	2.9	0.969	0.146	0.0339	
15 minute summer	S124	19.002	S125	3.7	0.459	0.065	0.0833	
15 minute summer	S125	1.010	S128	15.7	1.139	0.793	0.1848	
15 minute summer	S126	20.000	S127	1.3	0.606	0.045	0.0246	
15 minute summer	RE7	21.000	S127	1.5	0.656	0.052	0.0107	
15 minute summer	S127	20.001	S128	2.7	0.305	0.097	0.1122	
15 minute summer	S128	1.011	S131	16.6	1.163	0.825	0.0192	
15 minute summer	S129	22.000	S130	1.0	0.524	0.035	0.0215	
15 minute summer	RE5	23.000	S130	1.5	0.699	0.053	0.0098	
15 minute summer	S130	22.001	S131	2.5	0.268	0.087	0.1176	
15 minute summer	S131	1.012	S134	18.3	1.043	0.919	0.2361	
15 minute summer	S132	24.000	S133	1.0	0.505	0.035	0.0248	
15 minute summer	RE3	25.000	S133	1.7	0.721	0.060	0.0114	
15 minute summer	S133	24.001	S134	2.6	0.364	0.094	0.1235	
15 minute summer	S134	1.013	S137	20.4	1.157	1.014	0.0193	
15 minute summer	RE1	26.000	S135	1.7	0.862	0.059	0.0171	
15 minute summer	S135	26.001	S136	1.6	0.641	0.058	0.0727	
15 minute summer	RE2	27.000	S136	1.9	0.709	0.067	0.0533	
15 minute summer	S136	26.002	S137	3.5	0.277	0.123	0.1344	
15 minute summer	S137	1.014	S138	28.5	1.628	1.434	0.0789	
15 minute summer	S138	1.015	S139	27.1	1.548	0.612	0.1708	
15 minute summer	S139	1.016	S142	26.6	1.853	22.661	0.3202	
240 minute summer	S142	1.017	S140	10.2	0.689	0.304	0.0885	
240 minute summer	S140	Hydro-Brake®	S141	4.1				83.1

Results for 30 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S80	10	34.109	0.045	3.6	0.0075	0.0000	OK
15 minute summer	S81	10	33.944	0.036	6.7	0.0061	0.0000	OK
15 minute summer	S82	10	33.496	0.040	8.6	0.0066	0.0000	OK
30 minute summer	S83	21	32.801	0.508	8.1	0.5747	0.0000	SURCHARGED
15 minute summer	S84	10	33.944	0.026	3.6	0.0043	0.0000	OK
15 minute summer	RE26	10	33.218	0.024	3.1	0.0002	0.0000	OK
15 minute summer	S85	10	32.829	0.038	8.2	0.0064	0.0000	OK
30 minute summer	S86	21	32.799	0.529	7.6	0.0878	0.0000	SURCHARGED
15 minute summer	S87	10	33.496	0.024	3.1	0.0040	0.0000	OK
15 minute summer	RE23	10	32.855	0.021	2.5	0.0002	0.0000	OK
30 minute summer	S88	21	32.800	0.470	6.7	0.0780	0.0000	SURCHARGED
30 minute summer	S89	21	32.794	0.604	14.5	0.6832	0.0000	SURCHARGED
15 minute summer	S90	10	33.259	0.040	3.1	0.0067	0.0000	OK
15 minute summer	S91	10	33.157	0.057	5.1	0.0095	0.0000	OK
15 minute summer	S92	10	33.072	0.030	5.0	0.0050	0.0000	OK
30 minute summer	S93	21	33.060	0.738	5.8	0.1225	0.0000	SURCHARGED
15 minute summer	S94	10	33.639	0.025	2.5	0.0042	0.0000	OK
15 minute summer	S95	10	33.103	0.037	4.5	0.0061	0.0000	OK
30 minute summer	S96	21	33.062	0.218	5.7	0.0363	0.0000	SURCHARGED
30 minute summer	S97	21	33.059	0.776	5.7	0.1288	0.0000	SURCHARGED
30 minute summer	S98	21	33.057	0.806	19.0	0.0000	0.0000	SURCHARGED
15 minute summer	S99	10	34.165	0.024	3.1	0.0040	0.0000	OK
15 minute summer	RE20	10	33.467	0.022	2.5	0.0002	0.0000	OK
15 minute summer	S100	9	33.037	0.037	7.1	0.0061	0.0000	OK
30 minute summer	S101	21	32.981	0.464	6.7	0.5249	0.0000	SURCHARGED

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 summer	S80	1.000	S81	3.6	0.916	0.179	0.0487	
15 minute summer	S81	1.001	S82	6.6	1.890	0.117	0.0158	
15 minute summer	S82	1.002	S83	8.6	1.434	0.151	0.1239	
30 minute summer	S83	1.003	S89	6.2	0.590	0.311	0.1444	
15 minute summer	S84	2.000	S85	3.6	1.302	0.063	0.0313	
15 minute summer	RE26	3.000	S85	3.1	1.168	0.054	0.0108	
15 minute summer	S85	2.001	S86	8.1	1.352	0.144	0.0551	
30 minute summer	S86	2.002	S89	5.8	0.594	0.294	0.1130	
15 minute summer	S87	4.000	S88	3.1	0.711	0.054	0.1107	
15 minute summer	RE23	5.000	S88	2.5	0.810	0.044	0.0471	
30 minute summer	S88	4.001	S89	5.7	0.534	0.285	0.1977	
30 minute summer	S89	1.004	S105	12.3	0.699	0.619	0.3255	
15 minute summer	S90	6.000	S91	3.1	0.619	0.154	0.0473	
15 minute summer	S91	6.001	S92	5.0	1.176	0.252	0.0202	
15 minute summer	S92	6.002	S93	5.0	0.946	0.088	0.0724	
30 minute summer	S93	6.003	S98	3.9	0.353	0.197	0.0995	
15 minute summer	S94	7.000	S95	2.5	0.987	0.062	0.0290	
15 minute summer	S95	7.001	S96	4.5	1.445	0.113	0.0450	
30 minute summer	S96	7.002	S97	5.7	0.941	0.101	0.0987	
30 minute summer	S97	7.003	S98	5.1	0.322	0.255	0.0438	
30 minute summer	S98	6.004	S104	16.4	0.943	0.825	0.1593	
15 minute summer	S99	8.000	S100	3.1	1.243	0.054	0.0289	
15 minute summer	RE20	9.000	S100	2.5	1.065	0.044	0.0108	
15 minute summer	S100	8.001	S101	7.0	2.013	0.124	0.0502	
30 minute summer	S101	8.002	S104	5.7	0.467	0.101	0.0667	

Results for 30 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S102	10	33.605	0.025	2.5	0.0042	0.0000	OK
15 minute summer	RE19	10	33.527	0.019	2.0	0.0002	0.0000	OK
15 minute summer	S103	10	33.065	0.033	6.0	0.0055	0.0000	OK
30 minute summer	S104	21	32.978	0.840	25.5	0.9499	0.0000	SURCHARGED
240 minute summer	S105	180	32.721	0.762	16.9	0.8622	0.0000	SURCHARGED
240 minute summer	S106	180	32.716	0.901	16.7	46.2676	0.0000	SURCHARGED
15 minute summer	S107	10	33.391	0.029	3.1	0.0047	0.0000	OK
15 minute summer	S108	10	32.831	0.030	3.1	0.0050	0.0000	OK
15 minute summer	S109	10	32.737	0.043	6.1	0.0071	0.0000	OK
30 minute summer	S110	22	32.503	0.046	6.8	0.0077	0.0000	OK
30 minute summer	S111	22	32.503	0.616	6.8	0.1023	0.0000	SURCHARGED
15 minute summer	S112	10	32.534	0.025	2.5	0.0042	0.0000	OK
30 minute summer	RE13	22	32.504	0.321	3.3	0.0026	0.0000	SURCHARGED
30 minute summer	S113	22	32.503	0.520	5.6	0.0863	0.0000	SURCHARGED
30 minute summer	S114	22	32.502	0.648	7.8	0.0000	0.0000	SURCHARGED
30 minute summer	S115	22	32.496	0.747	7.0	0.8444	0.0000	SURCHARGED
30 minute summer	S116	22	32.499	0.203	3.5	0.0337	0.0000	SURCHARGED
30 minute summer	RE11	22	32.497	0.351	3.8	0.0028	0.0000	SURCHARGED
30 minute summer	S117	22	32.497	0.464	7.3	0.0770	0.0000	SURCHARGED
30 minute summer	S118	22	32.495	0.767	8.6	0.0000	0.0000	SURCHARGED
30 minute summer	S119	22	32.497	0.217	2.9	0.0361	0.0000	SURCHARGED
30 minute summer	RE10	22	32.496	0.388	3.8	0.0031	0.0000	SURCHARGED
30 minute summer	S120	22	32.496	0.506	5.9	0.0840	0.0000	SURCHARGED
30 minute summer	S121	22	32.494	0.780	12.1	0.0000	0.0000	SURCHARGED
15 minute summer	S122	10	32.878	0.046	4.1	0.0004	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 summer	S102	10.000	S103	2.5	1.035	0.062	0.0264	
15 minute summer	RE19	11.000	S103	2.0	0.972	0.035	0.0099	
15 minute summer	S103	10.001	S104	6.0	0.483	0.105	0.0914	
30 minute summer	S104	6.005	S105	23.0	1.304	1.156	0.2523	
240 minute summer	S105	1.005	S106	16.7	1.070	0.839	0.2027	
240 minute summer	S106	Orifice	S115	3.3				
15 minute summer	S107	12.000	S108	3.1	1.277	0.077	0.0270	
15 minute summer	S108	12.001	S109	3.0	0.922	0.076	0.0071	
15 minute summer	S109	12.002	S110	6.1	1.546	0.152	0.0186	
30 minute summer	S110	12.003	S111	6.8	1.110	0.120	0.0633	
30 minute summer	S111	12.004	S114	6.7	0.635	0.336	0.0472	
15 minute summer	S112	13.000	S113	2.5	0.652	0.062	0.1029	
30 minute summer	RE13	14.000	S113	3.3	0.772	0.082	0.0704	
30 minute summer	S113	13.001	S114	3.7	0.636	0.185	0.1816	
30 minute summer	S114	12.005	S115	6.0	0.741	0.303	0.1481	
30 minute summer	S115	1.007	S118	8.1	0.752	0.409	0.0297	
30 minute summer	S116	15.000	S117	2.4	0.653	0.085	0.1851	
30 minute summer	RE11	16.000	S117	3.8	0.888	0.135	0.0796	
30 minute summer	S117	15.001	S118	5.3	0.660	0.187	0.2149	
30 minute summer	S118	1.008	S121	9.7	0.789	0.485	0.0194	
30 minute summer	S119	17.000	S120	2.9	0.709	0.103	0.2035	
30 minute summer	RE10	18.000	S120	3.4	0.845	0.121	0.0827	
30 minute summer	S120	17.001	S121	5.0	0.674	0.176	0.1947	
30 minute summer	S121	1.009	S125	12.6	0.795	0.637	0.0513	
15 minute summer	S122	19.000	S123	4.1	0.664	0.205	0.0822	

Results for 30 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S123	10	32.733	0.068	7.2	0.0112	0.0000	OK
15 minute summer	S124	10	32.566	0.041	9.1	0.0067	0.0000	OK
30 minute summer	S125	22	32.489	0.812	22.6	0.0000	0.0000	SURCHARGED
30 minute summer	S126	22	32.403	0.291	2.9	0.0483	0.0000	SURCHARGED
30 minute summer	RE7	22	32.404	0.464	4.1	0.0037	0.0000	SURCHARGED
30 minute summer	S127	22	32.404	0.582	5.4	0.0966	0.0000	SURCHARGED
30 minute summer	S128	22	32.401	0.855	19.8	0.0000	0.0000	SURCHARGED
30 minute summer	S129	22	32.393	0.295	2.7	0.0490	0.0000	SURCHARGED
30 minute summer	RE5	23	32.391	0.450	3.3	0.0036	0.0000	SURCHARGED
30 minute summer	S130	22	32.392	0.567	5.0	0.0941	0.0000	SURCHARGED
30 minute summer	S131	22	32.390	0.858	20.6	0.0000	0.0000	SURCHARGED
30 minute summer	S132	22	32.212	0.282	2.9	0.0468	0.0000	SURCHARGED
30 minute summer	RE3	22	32.212	0.437	4.2	0.0035	0.0000	SURCHARGED
30 minute summer	S133	22	32.211	0.554	5.0	0.0920	0.0000	SURCHARGED
30 minute summer	S134	22	32.209	0.844	23.7	0.0000	0.0000	SURCHARGED
30 minute summer	RE1	22	32.198	0.051	3.8	0.0004	0.0000	OK
30 minute summer	S135	22	32.197	0.271	5.8	0.0449	0.0000	SURCHARGED
30 minute summer	RE2	22	32.198	0.361	4.3	0.0029	0.0000	SURCHARGED
30 minute summer	S136	22	32.196	0.598	7.8	0.0992	0.0000	SURCHARGED
30 minute summer	S137	22	32.190	0.839	35.9	0.0000	0.0000	SURCHARGED
30 minute summer	S138	22	31.977	0.682	34.6	0.7710	0.0000	SURCHARGED
60 minute summer	S139	40	31.597	0.897	32.0	0.0000	0.0000	FLOOD RISK
360 minute winter	S142	344	31.328	0.629	18.1	87.2490	0.0000	SURCHARGED
360 minute winter	S140	344	31.322	0.802	5.7	0.9073	0.0000	SURCHARGED
15 minute summer	S141	1	30.382	0.000	4.3	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)
15 minute summer	S123	19.001	S124	7.1	1.233	0.355	0.0646	
15 minute summer	S124	19.002	S125	9.0	0.701	0.159	0.0909	
30 minute summer	S125	1.010	S128	18.2	1.136	0.918	0.1848	
30 minute summer	S126	20.000	S127	2.9	0.697	0.101	0.2035	
30 minute summer	RE7	21.000	S127	2.9	0.752	0.104	0.0828	
30 minute summer	S127	20.001	S128	4.1	0.321	0.145	0.1946	
30 minute summer	S128	1.011	S131	17.9	1.140	0.888	0.0192	
30 minute summer	S129	22.000	S130	2.4	0.614	0.084	0.1920	
30 minute summer	RE5	23.000	S130	2.9	0.793	0.104	0.0810	
30 minute summer	S130	22.001	S131	3.7	0.294	0.131	0.2061	
30 minute summer	S131	1.012	S134	21.0	1.195	1.057	0.2361	
30 minute summer	S132	24.000	S133	2.4	0.576	0.084	0.1920	
30 minute summer	RE3	25.000	S133	2.8	0.814	0.098	0.0827	
30 minute summer	S133	24.001	S134	3.3	0.427	0.118	0.2060	
30 minute summer	S134	1.013	S137	24.2	1.373	1.204	0.0193	
30 minute summer	RE1	26.000	S135	3.8	1.079	0.135	0.1007	
30 minute summer	S135	26.001	S136	3.7	0.657	0.131	0.2307	
30 minute summer	RE2	27.000	S136	4.2	0.768	0.150	0.1681	
30 minute summer	S136	26.002	S137	4.0	0.292	0.141	0.1741	
30 minute summer	S137	1.014	S138	34.6	1.968	1.743	0.0789	
30 minute summer	S138	1.015	S139	33.5	1.901	0.755	0.1708	
60 minute summer	S139	1.016	S142	31.7	1.801	26.956	0.3210	
360 minute winter	S142	1.017	S140	5.7	0.469	0.168	0.0885	
360 minute winter	S140	Hydro-Brake®	S141	5.3				160.3

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S80	10	34.116	0.052	4.6	0.0086	0.0000	OK
15 minute summer	S81	10	33.950	0.042	8.5	0.0069	0.0000	OK
360 minute summer	S82	240	33.530	0.074	2.9	0.0123	0.0000	OK
360 minute summer	S83	240	33.530	1.237	2.9	1.3988	0.0000	SURCHARGED
15 minute summer	S84	10	33.947	0.029	4.6	0.0048	0.0000	OK
360 minute summer	RE26	240	33.530	0.336	1.0	0.0027	0.0000	SURCHARGED
360 minute summer	S85	240	33.530	0.739	2.7	0.1226	0.0000	SURCHARGED
360 minute summer	S86	240	33.530	1.260	2.7	0.2091	0.0000	SURCHARGED
360 minute summer	S87	240	33.530	0.058	1.0	0.0096	0.0000	OK
360 minute summer	RE23	240	33.530	0.697	0.8	0.0056	0.0000	SURCHARGED
360 minute summer	S88	240	33.530	1.200	2.3	0.1992	0.0000	SURCHARGED
360 minute summer	S89	240	33.530	1.340	6.4	1.5151	0.0000	SURCHARGED
360 minute summer	S90	240	33.534	0.315	1.0	0.0523	0.0000	SURCHARGED
360 minute summer	S91	240	33.534	0.434	1.7	0.0720	0.0000	SURCHARGED
360 minute summer	S92	240	33.534	0.492	1.7	0.0817	0.0000	SURCHARGED
360 minute summer	S93	240	33.534	1.212	2.0	0.2012	0.0000	SURCHARGED
15 minute summer	S94	10	33.643	0.029	3.3	0.0048	0.0000	OK
360 minute summer	S95	240	33.534	0.468	1.5	0.0777	0.0000	SURCHARGED
360 minute summer	S96	240	33.534	0.690	2.0	0.1145	0.0000	SURCHARGED
360 minute summer	S97	240	33.534	1.251	2.0	0.2076	0.0000	SURCHARGED
360 minute summer	S98	240	33.534	1.283	7.8	0.0000	0.0000	SURCHARGED
15 minute summer	S99	10	34.168	0.027	3.9	0.0044	0.0000	OK
360 minute summer	RE20	240	33.532	0.087	0.8	0.0007	0.0000	OK
360 minute summer	S100	240	33.533	0.533	2.3	0.0884	0.0000	SURCHARGED
360 minute summer	S101	240	33.532	1.015	2.3	1.1485	0.0000	SURCHARGED

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 summer	S80	1.000	S81	4.6	0.977	0.230	0.0585	
15 minute summer	S81	1.001	S82	8.4	2.009	0.149	0.0190	
360 minute summer	S82	1.002	S83	2.9	0.952	0.051	0.1526	
360 minute summer	S83	1.003	S89	2.4	0.422	0.119	0.1444	
15 minute summer	S84	2.000	S85	4.6	1.397	0.081	0.1106	
360 minute summer	RE26	3.000	S85	1.0	0.830	0.018	0.0709	
360 minute summer	S85	2.001	S86	2.7	0.905	0.047	0.0917	
360 minute summer	S86	2.002	S89	2.3	0.409	0.116	0.1130	
360 minute summer	S87	4.000	S88	1.0	0.462	0.018	0.1361	
360 minute summer	RE23	5.000	S88	0.8	0.747	0.014	0.0865	
360 minute summer	S88	4.001	S89	1.8	0.384	0.089	0.1977	
360 minute summer	S89	1.004	S105	6.0	0.446	0.304	0.3255	
360 minute summer	S90	6.000	S91	1.0	0.447	0.050	0.1676	
360 minute summer	S91	6.001	S92	1.7	0.869	0.085	0.0821	
360 minute summer	S92	6.002	S93	1.7	0.746	0.030	0.1267	
360 minute summer	S93	6.003	S98	1.6	0.326	0.082	0.0995	
15 minute summer	S94	7.000	S95	3.3	1.096	0.082	0.1078	
360 minute summer	S95	7.001	S96	1.5	1.072	0.037	0.0783	
360 minute summer	S96	7.002	S97	2.0	0.857	0.035	0.0987	
360 minute summer	S97	7.003	S98	1.5	0.332	0.078	0.0438	
360 minute summer	S98	6.004	S104	7.5	0.769	0.376	0.1593	
15 minute summer	S99	8.000	S100	3.9	1.315	0.069	0.1081	
360 minute summer	RE20	9.000	S100	0.8	0.757	0.014	0.0629	
360 minute summer	S100	8.001	S101	2.3	1.427	0.040	0.0849	
360 minute summer	S101	8.002	S104	2.0	0.351	0.035	0.0667	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S102	10	33.609	0.029	3.3	0.0048	0.0000	OK
360 minute summer	RE19	240	33.533	0.025	0.7	0.0002	0.0000	OK
360 minute summer	S103	240	33.533	0.501	2.0	0.0831	0.0000	SURCHARGED
360 minute summer	S104	240	33.532	1.394	11.2	1.5771	0.0000	SURCHARGED
360 minute summer	S105	240	33.528	1.569	16.7	1.7742	0.0000	SURCHARGED
360 minute summer	S106	240	33.518	1.703	16.4	47.1745	0.0000	SURCHARGED
15 minute summer	S107	10	33.394	0.032	3.9	0.0053	0.0000	OK
15 minute summer	S108	10	32.835	0.034	3.9	0.0057	0.0000	OK
30 minute summer	S109	23	32.800	0.106	7.4	0.0175	0.0000	OK
30 minute summer	S110	23	32.799	0.342	8.6	0.0567	0.0000	SURCHARGED
30 minute summer	S111	23	32.797	0.910	8.4	0.1511	0.0000	SURCHARGED
30 minute summer	S112	23	32.798	0.289	4.6	0.0479	0.0000	SURCHARGED
30 minute summer	RE13	23	32.797	0.614	4.3	0.0049	0.0000	SURCHARGED
30 minute summer	S113	23	32.797	0.814	6.7	0.1352	0.0000	SURCHARGED
30 minute summer	S114	23	32.796	0.942	9.7	0.0000	0.0000	SURCHARGED
30 minute summer	S115	23	32.789	1.040	7.3	1.1763	0.0000	SURCHARGED
30 minute summer	S116	23	32.792	0.496	3.1	0.0823	0.0000	SURCHARGED
30 minute summer	RE11	23	32.792	0.646	5.0	0.0052	0.0000	SURCHARGED
30 minute summer	S117	23	32.791	0.758	8.7	0.1259	0.0000	SURCHARGED
30 minute summer	S118	23	32.789	1.060	10.1	0.0000	0.0000	SURCHARGED
30 minute summer	S119	23	32.791	0.510	3.7	0.0847	0.0000	SURCHARGED
30 minute summer	RE10	23	32.791	0.683	5.0	0.0055	0.0000	SURCHARGED
30 minute summer	S120	23	32.791	0.801	6.8	0.1329	0.0000	SURCHARGED
30 minute summer	S121	23	32.788	1.074	13.2	0.0000	0.0000	SURCHARGED
15 minute summer	S122	10	32.884	0.052	5.2	0.0004	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 summer	S102	10.000	S103	3.3	1.123	0.082	0.1030	
360 minute summer	RE19	11.000	S103	0.7	0.727	0.012	0.0464	
360 minute summer	S103	10.001	S104	2.0	0.289	0.035	0.1573	
360 minute summer	S104	6.005	S105	10.7	0.654	0.539	0.2523	
360 minute summer	S105	1.005	S106	16.4	1.150	0.824	0.2027	
360 minute summer	S106	Orifice	S115	4.6				
15 minute summer	S107	12.000	S108	3.9	1.348	0.097	0.0324	
15 minute summer	S108	12.001	S109	3.9	1.012	0.097	0.0086	
30 minute summer	S109	12.002	S110	7.4	1.625	0.185	0.0728	
30 minute summer	S110	12.003	S111	8.4	1.102	0.149	0.1003	
30 minute summer	S111	12.004	S114	5.8	0.641	0.290	0.0472	
30 minute summer	S112	13.000	S113	3.1	0.595	0.078	0.1851	
30 minute summer	RE13	14.000	S113	3.9	0.762	0.098	0.0704	
30 minute summer	S113	13.001	S114	4.1	0.634	0.208	0.1816	
30 minute summer	S114	12.005	S115	7.3	0.734	0.368	0.1481	
30 minute summer	S115	1.007	S118	8.2	0.778	0.413	0.0297	
30 minute summer	S116	15.000	S117	3.0	0.669	0.108	0.1851	
30 minute summer	RE11	16.000	S117	5.2	0.893	0.185	0.0796	
30 minute summer	S117	15.001	S118	5.3	0.687	0.189	0.2149	
30 minute summer	S118	1.008	S121	10.7	0.818	0.532	0.0194	
30 minute summer	S119	17.000	S120	3.3	0.726	0.117	0.2035	
30 minute summer	RE10	18.000	S120	3.8	0.857	0.135	0.0827	
30 minute summer	S120	17.001	S121	5.2	0.743	0.186	0.1947	
30 minute summer	S121	1.009	S125	14.1	0.845	0.715	0.0513	
15 minute summer	S122	19.000	S123	5.2	0.705	0.260	0.0982	

Results for 100 year +30% CC +10% A Critical Storm Duration. Lowest mass balance: 98.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	S123	23	32.787	0.122	8.7	0.0203	0.0000	OK
30 minute summer	S124	23	32.785	0.260	11.2	0.0432	0.0000	SURCHARGED
30 minute summer	S125	23	32.782	1.105	27.0	0.0000	0.0000	SURCHARGED
30 minute summer	S126	23	32.701	0.589	5.4	0.0977	0.0000	SURCHARGED
30 minute summer	RE7	23	32.701	0.761	4.7	0.0061	0.0000	SURCHARGED
30 minute summer	S127	23	32.701	0.879	5.7	0.1459	0.0000	SURCHARGED
30 minute summer	S128	23	32.698	1.152	19.7	0.0000	0.0000	SURCHARGED
30 minute summer	S129	23	32.689	0.591	6.1	0.0981	0.0000	FLOOD RISK
30 minute summer	RE5	23	32.689	0.748	4.3	0.0060	0.0000	SURCHARGED
30 minute summer	S130	23	32.689	0.864	5.3	0.1433	0.0000	SURCHARGED
30 minute summer	S131	23	32.686	1.154	22.1	0.0000	0.0000	SURCHARGED
30 minute summer	S132	22	32.503	0.573	3.2	0.0950	0.0000	SURCHARGED
30 minute summer	RE3	22	32.503	0.728	5.0	0.0058	0.0000	SURCHARGED
30 minute summer	S133	22	32.502	0.845	6.0	0.1402	0.0000	SURCHARGED
30 minute summer	S134	22	32.497	1.132	25.2	0.0000	0.0000	SURCHARGED
30 minute summer	RE1	22	32.488	0.341	5.0	0.0027	0.0000	FLOOD RISK
30 minute summer	S135	22	32.486	0.560	6.1	0.0930	0.0000	FLOOD RISK
30 minute summer	RE2	22	32.486	0.649	5.6	0.0052	0.0000	FLOOD RISK
30 minute summer	S136	22	32.484	0.886	7.2	0.1471	0.0000	SURCHARGED
30 minute summer	S137	22	32.477	1.126	39.0	0.0000	0.0000	SURCHARGED
60 minute summer	S138	39	32.233	0.938	35.8	1.0608	0.0000	SURCHARGED
30 minute summer	S139	21	31.700	1.000	36.5	0.0000	0.0000	FLOOD RISK
480 minute winter	S142	464	31.520	0.821	18.4	129.5801	0.0000	FLOOD RISK
480 minute winter	S140	464	31.513	0.993	7.6	1.1230	0.0000	FLOOD RISK
15 minute summer	S141	1	30.382	0.000	4.5	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)
30 minute summer	S123	19.001	S124	8.7	1.286	0.439	0.1843	
30 minute summer	S124	19.002	S125	10.8	0.824	0.191	0.1492	
30 minute summer	S125	1.010	S126	18.2	1.121	0.916	0.1848	
30 minute summer	S126	20.000	S127	3.3	0.688	0.117	0.2035	
30 minute summer	RE7	21.000	S127	4.3	0.742	0.154	0.0828	
30 minute summer	S127	20.001	S128	3.9	0.310	0.139	0.1946	
30 minute summer	S128	1.011	S131	19.3	1.119	0.960	0.0192	
30 minute summer	S129	22.000	S130	-3.0	0.618	-0.108	0.1920	
30 minute summer	RE5	23.000	S130	3.6	0.783	0.129	0.0810	
30 minute summer	S130	22.001	S131	3.6	0.283	0.126	0.2061	
30 minute summer	S131	1.012	S134	22.5	1.281	1.133	0.2361	
30 minute summer	S132	24.000	S133	2.6	0.594	0.093	0.1920	
30 minute summer	RE3	25.000	S133	3.4	0.803	0.120	0.0827	
30 minute summer	S133	24.001	S134	3.4	0.341	0.121	0.2060	
30 minute summer	S134	1.013	S137	25.7	1.460	1.280	0.0193	
30 minute summer	RE1	26.000	S135	4.9	1.121	0.175	0.1550	
30 minute summer	S135	26.001	S136	4.2	0.652	0.149	0.2307	
30 minute summer	RE2	27.000	S136	4.0	0.753	0.143	0.1681	
30 minute summer	S136	26.002	S137	4.4	0.283	0.157	0.1741	
30 minute summer	S137	1.014	S138	37.5	2.133	1.889	0.0789	
60 minute summer	S138	1.015	S139	35.3	2.003	0.796	0.1708	
30 minute summer	S139	1.016	S142	36.1	2.052	30.718	0.3210	
480 minute winter	S142	1.017	S140	7.6	0.527	0.226	0.0885	
480 minute winter	S140	Hydro-Brake®	S141	5.9				209.5

APPENDIX K - Existing Greenfield Impermeable Area Plan

SURFACE	TOTAL AREA	COEFFICIENT	EFFECTIVE AREA
ROCKY OUTCROP	412.912 m²	1.00	412.912 m²
GRASSED	17,007.508 m²	0.35	5,952.627 m²
TOTAL	17,420.420 m²		6,365.539 m²

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE ON DRAWING.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
5. REPRODUCED FROM THE ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NO. AC0000855691

KEY

- DENOTES PROPOSED SITE BOUNDARY
- DENOTES EXISTING GRASSED AREA OF SITE.
- DENOTES EXISTING ROCKY OUTCROP AREA OF SITE.

NOT FOR CONSTRUCTION

S2	P01	27.03.24	FIRST ISSUE						
SUITABILITY	REV	DATE	DESCRIPTION	Org	Chk'd	Appr'd	Auth.		

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT
AT MAES MONA, AMLWCH

DRAWING TITLE:
EXISTING AREAS

DRAWING No:
08722-CCE-XX-XX-DR-C-0005

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	27.03.2024	1:500	S2	P01

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APPENDIX L - Proposed Developed Areas

PHASE I (LEFT SITE)			
SURFACE	TOTAL AREA	COEFFICIENT	EFFECTIVE AREA
ROOFS	978.602 m²	1.00	978.602 m²
EXTERNAL PATHS	821.104 m²	1.00	821.104 m²
PARKING	503.119 m²	1.00	503.119 m²
ROAD	1,054.240 m²	1.00	1,054.240 m²
PRIVATE ROAD	150.678 m²	1.00	150.678 m²
PUMPING STATION	98.415 m²	1.00	98.415 m²
SuDs BASIN	174.415 m²	0.35	61.045 m²
GRASSED	2,051.047 m²	0.35	717.866 m²
TOTAL	5,831.620 m²		3,563.965 m²

PHASE II (RIGHT SITE)			
SURFACE	TOTAL AREA	COEFFICIENT	EFFECTIVE AREA
ROOFS	1,207.490m²	1.00	1,207.490m²
EXTERNAL PARTH	954.088 m²	1.00	954.088 m²
PARKING	498.454 m²	1.00	498.454 m²
ROAD	1,114.742 m²	1.00	1,114.742 m²
PRIVATE ROAD	127.638 m²	1.00	127.638 m²
SuDs BASIN	242.650 m²	0.35	84.927 m²
GRASSED	1,926.288 m²	0.35	674.200 m²
TOTAL	6,071.350 m²		4,661.540 m²

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE ON DRAWING.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO UNDERTAKING ANY WORKS, ORDERING MATERIALS OR FABRICATING ANY COMPONENTS.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND RELEVANT SPECIFICATION CLAUSES.
5. REPRODUCED FROM THE ORDNANCE SURVEY'S MAPS WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT. LICENCE NO. AC0000855691

KEY

- DENOTES AREA OF PROPOSED SITE BOUNDARY.
- DENOTES AREA OF PROPOSED ROOFS.
- DENOTES AREA OF PROPOSED EXTERNAL PATHS.
- DENOTES AREA OF PROPOSED PARKING.
- DENOTES AREA OF PROPOSED ROAD.
- DENOTES AREA OF PROPOSED PRIVATE ROAD.
- DENOTES AREA OF PROPOSED PUMPING STATION.
- DENOTES AREA OF PROPOSED SuDs BASIN.
- DENOTES AREA OF PROPOSED GRAS.

NOT FOR CONSTRUCTION

SUITABILITY	REV	DATE:	DESCRIPTION	Org.	Ch'd	App'd	Auth.
S2	P02	09.10.24	UPDATED TO MATCH SAB COMMENTS				
S2	P01	05.06.24	FIRST ISSUE				

PROJECT TITLE:
RESIDENTIAL DEVELOPMENT
AT MAES MONA, AMLWCH

DRAWING TITLE:
PROPOSED DEVELOPED AREAS

DRAWING No:
08722-CCE-XX-XX-DR-C-0006

ORIGINATOR:	DATE:	SCALE @ A1:	SUITABILITY:	REVISION:
M.Jones	05.06.2024	1:500	S2	P02

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