APPENDIX 5-15

SUBSTATION DRAINAGE REPORT AND DRAWINGS

SUBSTATION DRAINAGE REPORT

05/12/2024
Doc No. IRE1-HMV-OSS-EL-RP-4002
Rev 04

Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
IRE1	IRE1-HMV-ONS-EL-RP-4002	01	06/12/2023	SH	GF	IB	Planning
IRE1	IRE1-HMV-ONS-EL-RP-4002	02	28/06/2024	SM	SH	IB	Planning
IRE1	IRE1-HMV-ONS-EL-RP-4002	03	29/11/2024	SM	SH	IB	Planning
IRE1	IRE1-HMV-ONS-EL-RP-4002	04	05/12/2024	SM	SH	IB	Planning

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QUALITY
I.S. EN ISO 9001:2015
NSAI Certified
HEALTH & SAFETY
I.S. ISO 45001:2018
NSAI Certified
ENVIRONMENT
I.S. EN ISO 14001:2015
NSAI Certified

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1. Introduction

Malachy Walsh and Partners (MWP) were commissioned by H&MV Engineering Ltd to act as Civil and Structural Engineering design consultants for the proposed substation Complex at Ballymacrinan, County Clare. This report outlines the engineering design philosophy employed for the proposed drainage systems serving the development and also outlines the situation concerning a clean water supply.

1.1 Site Location

The proposed 220kV GIS substation is located within the townland of Ballymacrinan, County Clare. It is situated less than 2km to the northwest of Moneypoint Power Station located at Kilrush county Clare on the Shannon Estuary. The ground level in the site falls from southwest to northwest, towards the N68 roadway. The high point in the site is 23.08m AOD and the low point is 16.85m AOD. The proposed development will consist of a substation compound and associated access roads and site services.

Figure 1 - Site Location

1.2 Proposed Development

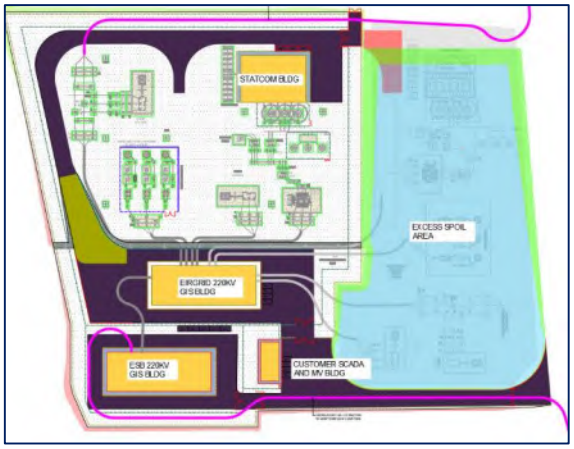


Figure 2 - Proposed Substation Development

The proposed substation development primarily comprises the provision of a 220kV ESB GIS Building, an Eirgrid 220kV GIS substation compound along with outdoor compensation compounds, and ancillary works which is described as follows:

The proposed ESB 220kV Substation Compound is to be located on south side of site. The site of the proposed development has an area of c. 0.36 hectares. The proposed ESB 220kV Substation Compound includes the provision of a two storey GIS Substation building (with a gross floor area of 1,813sqm). This two storey GIS has been designed to meet EirGrid's standard specifications. The GIS substation would predominately comprise powder coated profiled metal cladding panels and all service/escape doors would be finished to match the cladding.

The proposed Eirgrid 220kV Substation Compound along with outdoor compensation compounds is to be located on centre and north sides of site. The site of the proposed development has an area of c. 2.2 hectares. The proposed EIRGRID 220kV GIS Substation Compound includes the provision of a two-storey GIS Substation building (with a gross floor area of 1,813sqm) and one transformer with associated ancillary equipment and enclosures, one STATCOM building (with a gross floor area of 670sqm), one outdoor Harmonic Filter (with a footprint area of 1,050sqm), one Shunt Reactor (with a footprint area of 200sqm), and one outdoor incomer bay equipped with Shunt Reactor (with a footprint area of 1,100sqm). This two-storey GIS has been designed to meet EirGrid's standard specifications. The GIS substation would predominately comprise powder-coated profiled metal cladding panels and all service/escape doors would be finished to match the cladding.

Additionally, a single-storey Client SCADA and MV power Building (with a gross floor area of 135.6 sqm), lightning masts, car parking, associated underground services and roads within a 2.6m high fenced compound and all associated construction and ancillary works. The client SCADA building would block work with a screed finish.

2. Site Characteristics

2.1 Site Topography

The site of the proposed substation development slopes from south to north at an average approximate gradient of (1 in 40). The high point in the site is 23.08m AOD and the low point is 16.85m AOD. The proposed development will consist of a substation compound and associated access roads and site services.

2.2 Site Hydrology

The most significant hydrological feature in the vicinity of the proposed substation development is the Shannon River Estuary, located approximately 706m beyond the southern boundary of the site.

2.3 Existing Municipal Drainage System

There is no public sewer system in the vicinity of the site to make a connection to the public system viable. The site is currently in green field condition and functioning as agricultural land.

3. Proposed Drainage Strategy

3.1 Foul Drainage

The foul drainage design includes 3 No. 5m^3 wastewater holding tank to be installed. Emptying times of the holding tank may vary depending on usage on the site but should be emptied every 6 months at a minimum.

Irish Water code of practice for Wastewater specifies a design daily flow rate of 50 litres/person for an industrial setting (office/no canteen). Assuming the tank is emptied at a minimum of once every 6 months or once the storage volume reaches 4m^3 (80% capacity), this equates to a total of 40 days of use in a 6-month period assuming two operatives per visit:

4m^3 Tank volume / (0.05m^3 design load per person per day x 2 operatives) = 40 days

This volume is more than adequate to cater for the expected maintenance visits and usage of the individual buildings on the site, including a suitable buffer for any unforeseen visits.

An alarm will be fitted to the tank to advise the maintenance management that the system is close to capacity such as 80%. This is so that the system can be emptied to prevent the risk of it overflowing. A vent pipe is proposed to serve the tanks to reduce the risk of odour nuisance on the site due to the tanks.

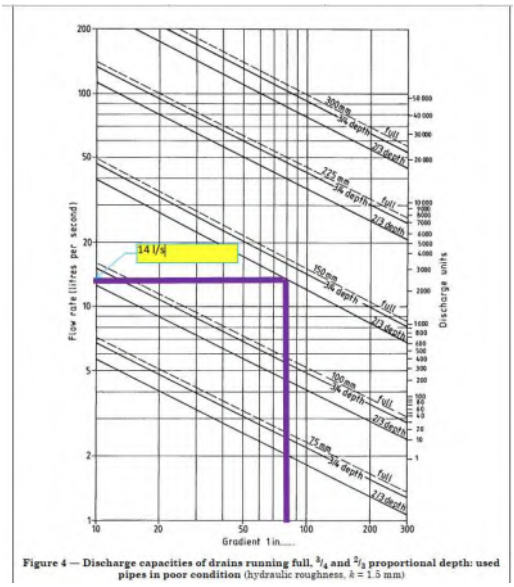


Figure 4 — Discharge capacities of drains running full, $^3/_4$ and $^2/_3$ proportional depth: used pipes in poor condition (hydraulic roughness, k = 1.5 mm)

Figure 3 - Extract from BS 8301 showing capacity of 150mm diameter pipe at 2/3 depth

3.2 Storm Drainage

3.2.1 Proposed Storm Drainage Strategy

The storm drainage proposals incorporate the following elements;

- sewers not surcharging in the 30-year event.
- Sewers are not flooding in the 100-year event with 20% climate change.
- A 20% additional climate change allowance is also included in the design of the surface water system and the attenuation tank. Refer to Appendix C for calculations for the sizing of the surface water drainage system.

Refer to Appendix A for storm water layout drawings.

3.2.1.1 Collection & Conveyance

Stormwater runoff will be collected from the hardstanding areas as follows.

Buildings

Buildings will be drained via rainwater downpipes to an underground gravity system before attenuation and discharge.

Total Contributing drainage area=3210m²

Bund areas

The bunds will be constructed with benching to fall to a sump where it will be connected to the underground gravity system and will pass through a Full retention oil separator before attenuation and discharge.

Total Contributing drainage area=224m²

Asphalt Roadways

The Proposed access roads and car parking areas that are present throughout the site will be constructed with the use of permeable asphalt. High voids within porous asphalt pavements cause water to filter through the pavement structure into an underlying drainage base and then into the water table. An area of impermeable asphalt will be located at the site entrance due to the perceived increased durability required from turning movements off the public road. A filter drain will be located inside this to capture the runoff from this area and will be sized to act as a localised soakaway independent of the system within the site.

Total Contributing drainage area=8,459m²

Compound Stone

The remaining compound and any runoff from the access road are to drain via natural infiltration through the compound stone and the 6F2 material. Previous installations of this drainage mechanism have shown this approach is successful and the infiltration rate through the 6f2 material is adequate.

Spoil Area

The proposed spoil area for the development to the north of the site will feature proposed landscaping measures which will assist in providing a permeable surface for natural storm water filtration and osmosis of the planting which will be provided.

3.2.1.2 Water Quality

All runoff collected within the traffo bund will pass through a designated full retention petrol/oil interceptor chosen to accommodate the required peak flow. Current design shows this as a peak flow of 10.3l/s requiring an NSFA020 unit to accommodate design requirements

See Appendix B for details on Kingspan Klargester fuel/oil separator to be used on this project. An operation and maintenance system for this oil interceptor will be provided by the Oil interceptor manufacturer and included in the Safety File for this project.

Sumps will be utilised on all systems to remove silt from the stormwater runoff.

3.2.2 Attenuation

Stormwater runoff will be attenuated within the site using an attenuation tank system. Inlet and outlet manholes will be constructed with 300mm sumps with the outlet manhole fitted with a hydro brake flow restrictor set to greenfield runoff rates for the site. The attenuation tanks are sized as follows;

System 1 – Draining From ESB Substation Compound

Contributing impermeable area – 860m²

Tank Construction - Stormtech System OSEA

Dimensions – 2 x 15 x 0.8m Deep

Volume(Effective) – 14.4m³

Outflow Restriction Type - Hydrobrake

Outflow Rate – 3l/s

System 2 – Draining From Eirgrid Compound

Contributing impermeable area – 2420m²

Tank Construction - Stormtech System OSEA

Dimensions – 3.5 x 20 x 1.2m Deep

Volume(Effective) – 50.4m³

Outflow Restriction Type - Hydrobrake

Outflow Rate – 6l/s

System 3 – Draining From Scada building

Contributing impermeable area – 150m²

Tank Construction - Stormtech System OSEA

Dimensions – 2 x 10 x 0.6m Deep

Volume(Effective) – 7.2m³

Outflow Restriction Type - Hydrobrake

Outflow Rate – 3l/s

3.2.3 Discharge

Discharge from the site will be into an existing stream to the north of the site. As shown above the peak discharge rate for the site will be 12l/s with hydrobrakes being used as flow control devices.

Rip-Rap aprons will be located at the storm water outlets which will reduce the potential for erosion at the outfall points.

Soakaway tests will also be undertaken at detailed design stage to assess the viability of forming a dual infiltration/attenuation tank to further reduce discharge into the existing stream.

3.2.4 Storm Drainage Calculations

3.2.4.1 Determination of Peak Flow

Runoff rates from a developed site were estimated using the Modified Rational Approach method which is advised with TII (DN-DNG-03066). The equation is as follows:

$$Q = 1.3\ x\ 2.78\ x\ Cv\ \ x\ i\ x\ Ai$$

Q =The design event peak runoff rate(l/s)
Ai = The impervious area. Assumed to be permeable throughout the site.
i =The intensity which is based on the FSR method. The M5-60 and r values were taken from the Met Eireann Depth Duration Frequency Tables for the site.
Cv =The non-dimensional runoff coefficient which is dependent on the catchment characteristics. This can be taken as the mean value 0.75 for the summer profile and 0.84 for the winter profile. TII allow for it to be calculated based on the following formulas.

The CIRIA SUDS Manual (2015) advises to calculate the PR (Percentage Runoff) using the UKWIR equation. This equation is included hereunder and used the default values advised by the SUDS manual except for the following.

- SPR was assumed to be 0.40 as the soil type 4 is most representative of the site based on the underlying clays.
- PIMP was set as 100 %.
- The PR value and cv values were estimated to be 0.75 and 0.84 respectively based on this approach.
- A literary review was conducted to verify if the calculated answer was accurate based on previous studies and are listed in the table below:

Value	Surface Use/Type	Source
0.44	Gravel	Tatamy Borough, Pennsylvania, Ordinance No. 283-2020
0.95	Parking/Other Impervious	
0.70-0.95	Asphalt and Concrete	Innovyze
0.7-0.85	Brick	
0.5-0.8	Loght Industrial	
0.5	Unpaved Parking	Donahue, 2013 Determining Appropriate Nutrient and Sediment Loading Coefficients for Modeling Effects of Changes in Landuse and Landcover in Alberta Watersheds
0.35-0.4	Gravel Road	Li et al, 2014, A New Method for Urban Storm Flood Inundation Simulation with Fine CD-TIN Surface
0.8-1	Paved Areas	CIRA SUDS Manual 2015

Table 1 - Cv Value Recommendations

Innovyze states that this value should be multiplied by a frequency adjustment factor of 1.25 for a 1-year event.

alculations

The storm sewer was designed using Microdrainage software. The stormwater design report is included in Appendix C. Below is a summary of the parameters used.

Design Characteristic	Value	Source
Site Area(ha)	4.98	Site Boundary
Ai(ha)	.343	Impermeable area in Microdrainage calculations
SAAR(mm)	1204	UKSUDS Greenfield Runoff Calculator
Soil Factor	4	FSR Soil Mapping
M5-60	14	Met Eireann Rainfall Data
r	.249	Met Eireann Rainfall Data(M5-60/M5-2DAY)
PIMP	100	
Climate Change Factor	20	County Development Plan
Cv(Summer)	.75	Modified Rational Method
Cv(Winter)	.84	Modified Rational Method

Table 2 - Calculation Parameters

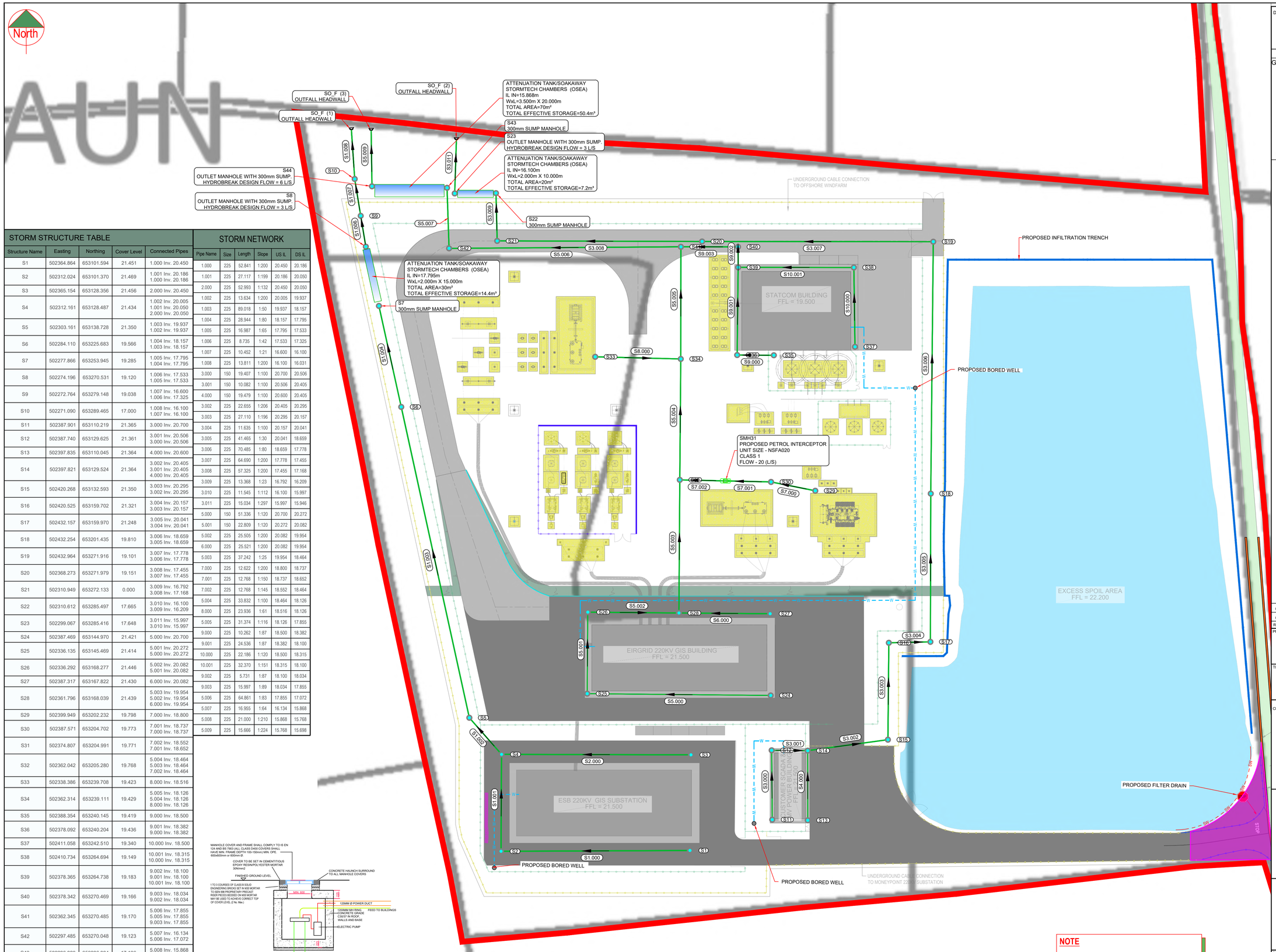
3.3 Water Supply

There is no existing water supply serving the site. It is proposed that three no. bored wells will supply water to the compound as detailed in drawing number IRE1-HMV-ONS-EL-LA-4039. Design water demand for the buildings was estimated at 50 l/p based on Uisce Eireann's Code of practice recommendations. Two operatives are assumed

per building which equates to a 300 l/d water demand for the development. Water supply will be designated as non-potable and will be for sanitary use only. Signage will be placed at water points to indicate this.

Appendix A

Layout Drawing



STORM STRUCTURE TABLE

Structure Name	Easting	Northing	Cover Level	Connected Pipes
S1	502364.864	653101.594	21.451	1.000 Inv. 20.450
S2	502312.024	653101.370	21.469	1.001 Inv. 20.186 1.000 Inv. 20.186
S3	502365.154	653128.356	21.456	2.000 Inv. 20.450
S4	502312.161	653128.487	21.434	1.002 Inv. 20.005 1.001 Inv. 20.050 2.000 Inv. 20.050
S5	502303.161	653138.728	21.350	1.003 Inv. 19.937 1.002 Inv. 19.937
S6	502284.110	653225.683	19.566	1.004 Inv. 18.157 1.003 Inv. 18.157
S7	502277.866	653253.945	19.285	1.005 Inv. 17.795 1.004 Inv. 17.795
S8	502274.196	653270.531	19.120	1.006 Inv. 17.533 1.005 Inv. 17.533
S9	502272.764	653279.148	19.038	1.007 Inv. 16.600 1.006 Inv. 17.325
S10	502271.090	653289.465	17.000	1.008 Inv. 16.100 1.007 Inv. 16.100
S11	502387.901	653110.219	21.365	3.000 Inv. 20.700
S12	502387.740	653129.625	21.361	3.001 Inv. 20.506 3.000 Inv. 20.506
S13	502397.835	653110.045	21.364	4.000 Inv. 20.600
S14	502397.821	653129.524	21.364	3.002 Inv. 20.405 3.001 Inv. 20.405 4.000 Inv. 20.405
S15	502420.268	653132.593	21.350	3.003 Inv. 20.295 3.002 Inv. 20.295
S16	502420.525	653159.702	21.321	3.004 Inv. 20.157 3.003 Inv. 20.157
S17	502432.157	653159.970	21.248	3.005 Inv. 20.041 3.004 Inv. 20.041
S18	502432.254	653201.435	19.810	3.006 Inv. 18.659 3.005 Inv. 18.659
S19	502432.964	653271.916	19.101	3.007 Inv. 17.778 3.006 Inv. 17.778
S20	502368.273	653271.979	19.151	3.008 Inv. 17.455 3.007 Inv. 17.455
S21	502310.949	653272.133	0.000	3.009 Inv. 16.792 3.008 Inv. 17.168
S22	502310.612	653285.497	17.665	3.010 Inv. 16.100 3.009 Inv. 16.209
S23	502299.067	653285.416	17.648	3.011 Inv. 15.997 3.010 Inv. 15.997
S24	502387.469	653144.970	21.421	5.000 Inv. 20.700
S25	502336.135	653145.469	21.414	5.001 Inv. 20.272 5.000 Inv. 20.272
S26	502336.292	653168.277	21.446	5.002 Inv. 20.082 5.001 Inv. 20.082
S27	502387.317	653167.822	21.430	6.000 Inv. 20.082
S28	502361.796	653168.039	21.439	5.003 Inv. 19.954 5.002 Inv. 19.954 6.000 Inv. 19.954
S29	502399.949	653202.232	19.798	7.000 Inv. 18.800
S30	502387.571	653204.702	19.773	7.001 Inv. 18.737 7.000 Inv. 18.737
S31	502374.807	653204.991	19.771	7.002 Inv. 18.552 7.001 Inv. 18.652
S32	502362.042	653205.280	19.768	5.004 Inv. 18.464 5.003 Inv. 18.464 7.002 Inv. 18.464
S33	502338.386	653239.708	19.423	8.000 Inv. 18.516
S34	502362.314	653239.111	19.429	5.005 Inv. 18.126 5.004 Inv. 18.126 8.000 Inv. 18.126
S35	502388.354	653240.145	19.419	9.000 Inv. 18.500
S36	502378.092	653240.204	19.436	9.001 Inv. 18.382 9.000 Inv. 18.382
S37	502411.058	653242.510	19.340	10.000 Inv. 18.500
S38	502410.734	653264.694	19.149	10.001 Inv. 18.315 10.000 Inv. 18.315
S39	502378.365	653264.738	19.183	9.002 Inv. 18.100 9.001 Inv. 18.100 10.001 Inv. 18.100
S40	502378.342	653270.469	19.166	9.003 Inv. 18.034 9.002 Inv. 18.034
S41	502362.345	653270.485	19.170	5.006 Inv. 17.855 5.005 Inv. 17.855 9.003 Inv. 17.855
S42	502297.485	653270.048	19.123	5.007 Inv. 16.134 5.006 Inv. 17.072
S43	502296.920	653286.994	17.186	5.008 Inv. 15.868 5.007 Inv. 15.868
S44	502275.924	653287.411	17.386	5.009 Inv. 15.768 5.008 Inv. 15.768
SO_F (1)	502270.166	653303.245	16.267	1.008 Inv. 16.031
SO_F (2)	502299.543	653300.443	16.183	3.011 Inv. 15.946
SO_F (3)	502275.693	653303.075	15.934	5.009 Inv. 15.698

STORM NETWORK

Pipe Name	Size	Length	Slope	US IL	DS IL
1.000	225	52.841	1:200	20.450	20.186
1.001	225	27.117	1:199	20.186	20.050
2.000	225	52.993	1:132	20.450	20.050
1.002	225	13.634	1:200	20.005	19.937
1.003	225	89.018	1:50	19.937	18.157
1.004	225	28.944	1:80	18.157	17.795
1.005	225	16.987	1:65	17.795	17.533
1.006	225	8.735	1:42	17.533	17.325
1.007	225	10.452	1:21	16.600	16.100
1.008	225	13.811	1:200	16.100	16.031
3.000	150	19.407	1:100	20.700	20.506
3.001	150	10.082	1:100	20.506	20.405
4.000	150	19.479	1:100	20.600	20.405
3.002	225	22.655	1:206	20.405	20.295
3.003	225	27.110	1:196	20.295	20.157
3.004	225	11.635	1:100	20.157	20.041
3.005	225	41.465	1:30	20.041	18.659
3.006	225	70.485	1:80	18.659	17.778
3.007	225	64.690	1:200	17.778	17.455
3.008	225	57.325	1:200	17.455	17.168
3.009	225	13.368	1:23	16.792	16.209
3.010	225	11.545	1:112	16.100	15.997
3.011	225	15.034	1:297	15.997	15.946
5.000	150	51.336	1:120	20.700	20.272
5.001	150	22.809	1:120	20.272	20.082
5.002	225	25.505	1:200	20.082	19.954
6.000	225	25.521	1:200	20.082	19.954
5.003	225	37.242	1:25	19.954	18.464
7.000	225	12.622	1:200	18.800	18.737
7.001	225	12.768	1:150	18.737	18.652
7.002	225	12.768	1:145	18.552	18.464
5.004	225	33.832	1:100	18.464	18.126
8.000	225	23.936	1:61	18.516	18.126
5.005	225	31.374	1:116	18.126	17.855
9.000	225	10.262	1:87	18.500	18.382
9.001	225	24.536	1:87	18.382	18.100
10.000	225	22.186	1:120	18.500	18.315
10.001	225	32.370	1:151	18.315	18.100
9.002	225	5.731	1:87	18.100	18.034
9.003	225	15.997	1:89	18.034	17.855
5.006	225	64.861	1:83	17.855	17.072
5.007	225	16.955	1:64	16.134	15.868
5.008	225	21.000	1:210	15.868	15.768
5.009	225	15.666	1:224	15.768	15.698

STANDARD BORED WELL DETAIL

SCALE 1: 50

NOTE

CONCRETE ENCASEMENT REQUIRED WHERE COVER IS LESS THAN;
900mm - FOOTPATHS
1200mm - ROADS
ENCASEMENT TO BE IN ACCORDANCE WITH UISCE EIREANN STANDARD DETAILS AND CODE OF PRACTICE

GENERAL NOTES

1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, BILLS OF QUANTITIES, ARCHITECTURAL, SERVICES AND ENGINEERING DRAWINGS.
2. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER
3. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE
4. ALL LEVELS ARE IN METRES RELATED TO ORDNANCE DATUM.
5. DRAWINGS ARE NOT TO BE SCALED

- SITE BOUNDARY
- PROPOSED STORM DRAIN (300,225mm Ø Rise/Run 1:150)
- PROPOSED STORM MANHOLE
- PROPOSED FILTER DRAIN (SW)
- PROPOSED WATERMAIN (W)
- PROPOSED BORED WELL
- PROPOSED ATTENUATION TANK
- PROPOSED PETROL INTERCEPTOR
- PROPOSED HEADWALL
- PROPOSED PERMEABLE ASPHALT ACCESS ROAD
- PROPOSED IMPERMEABLE ASPHALT ACCESS ROAD

REV	DATE	DESCRIPTION	BY	APP
01	29.11.24	ISSUED FOR PLANNING	RH	SH
01	18.11.24	ISSUED FOR PLANNING	RH	SH

PROJECT:
SCEIRDE ROCKS OFFSHORE WIND FARM

TITLE:
PROPOSED STORM DRAINAGE

CLIENT:
FUINNEAMH SCEIRDE TEO

H&MV ENGINEERING
High Voltage Specialists

MWP
ENGINEERING AND ENVIRONMENTAL CONSULTANTS
CORK | TRALEE | LONDON | LIMERICK
mwp.ie

DRAWN:	CHECKED:	APPROVED:
RH	SH	IB
PROJECT NUMBER: 24204	DATE: NOV' 2024	SCALE @ A1: 1:500
STATUS DESCRIPTION: FOR PLANNING		STATUS: S4
DRAWING NUMBER: IRE1-HMV-ONS-EL-PD-4039		REV: 02

FOUL STRUCTURE TABLE				
Name	Easting	Northing	Cover Level	Connected Pipes
F1	502336.956	653155.780	21.439	1.000 Inv. 20.550
F2	502334.690	653155.736	21.418	1.001 Inv. 20.512 1.000 Inv. 20.512
F3	502315.901	653115.087	21.439	2.000 Inv. 20.650
F4	502315.919	653117.749	21.440	2.001 Inv. 20.606 2.000 Inv. 20.606
F5	502315.919	653122.610	21.440	2.002 Inv. 20.525 2.001 Inv. 20.525
F6	502313.567	653122.657	21.419	2.003 Inv. 20.486 2.002 Inv. 20.486
F7	502389.267	653129.171	21.373	3.000 Inv. 20.600
F8	502391.470	653129.148	21.373	3.001 Inv. 20.563 3.000 Inv. 20.563
FO_F (1)	502334.704	653171.952	20.399	1.001 Inv. 20.242
FO_F (2)	502313.279	653134.827	20.441	2.003 Inv. 20.284
FO_F (3)	502396.096	653134.885	20.598	3.001 Inv. 20.440

FOUL NETWORK					
Pipe Name	Size	Length	Slope	US IL	DS IL
1.000	150	2.267	1:60	20.550	20.512
1.001	150	16.216	1:60	20.512	20.242
2.000	150	2.663	1:61	20.650	20.606
2.001	150	4.861	1:60	20.606	20.525
2.002	150	2.353	1:60	20.525	20.486
2.003	150	12.173	1:60	20.486	20.284
3.000	150	2.203	1:60	20.600	20.563
3.001	150	7.369	1:60	20.563	20.440

NOTE

CONCRETE ENCASEMENT REQUIRED WHERE COVER IS LESS THAN;
900mm - FOOTPATHS
1200mm - ROADS
ENCASEMENT TO BE IN ACCORDANCE WITH UISCE EIREANN STANDARD DETAILS AND CODE OF PRACTICE

NOTES

GENERAL NOTES

1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT SPECIFICATIONS, BILLS OF QUANTITIES, ARCHITECTURAL, SERVICES AND ENGINEERING DRAWINGS.
2. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER
3. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE
4. ALL LEVELS ARE IN METRES RELATED TO ORDNANCE DATUM.
5. DRAWINGS ARE NOT TO BE SCALED

SITE BOUNDARY

PROPOSED FOUL DRAIN

PROPOSED FOUL MANHOLE

PROPOSED HOLDING TANK

REV	DATE	DESCRIPTION	BY	APP
01	29.11.24	ISSUED FOR PLANNING	RH	SH
01	18.11.24	ISSUED FOR PLANNING	RH	SH

PROJECT:
SCEIRDE ROCKS OFFSHORE WIND FARM

TITLE:
PROPOSED FOUL DRAINAGE

CLIENT:
FUINNEAMH SCEIRDE TEO

H&MV ENGINEERING
High Voltage Specialists

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DRAWN:	CHECKED:	APPROVED:
RH	SH	IB

PROJECT NUMBER:	DATE:	SCALE @ A1:
24204	NOV' 2024	1:500

STATUS DESCRIPTION	STATUS:
FOR PLANNING	S4

DRAWING NUMBER:	REV:
IRE1-HMV-ONS-EL-PD-4045	02

NOTES

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REV	DATE	DESCRIPTION	BY	APP
02	29.11.24	ISSUED FOR PLANNING	R.H	S.H
01	18.11.24	ISSUED FOR PLANNING	R.H	S.H

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PROJECT: SCEIRDE ROCKS OFFSHORE WIND FARM

CLIENT: H&MV ENGINEERING / FUINNEAMH SCEIRDE TEO

TITLE: PROPOSED DRAINAGE SECTIONS

DRAWN:	CHECKED:	APPROVED:
R.H	S.H	I.B
PROJECT NUMBER: 24204	DATE: FEB' 2024	SCALE @ A0: 1:500
STATUS DESCRIPTION: FOR PLANNING		STATUS: S4
DRAWING NUMBER: IRE1-HMV-ONS-EL-PD-4040		REV: 02

Appendix B

Petrol Interceptor Data Sheet

SEPARATORS

A RANGE OF FUEL/OIL SEPARATORS
FOR PEACE OF MIND

Kingspan

Klargester

60 YEARS OF
Expertise &
1955–2015 Innovation

Separators

A RANGE OF FUEL/OIL SEPARATORS FOR PEACE OF MIND

Surface water drains normally discharge to a watercourse or indirectly into underground waters (groundwater) via a soakaway. Contamination of surface water by oil, chemicals or suspended solids can cause these discharges to have a serious impact on the receiving water.

The Environment Regulators, Environment Agency, England and Wales, SEPA, Scottish Environmental Protection Agency in Scotland and Department of Environment & Heritage in Northern Ireland, have published guidance on surface water disposal, which offers a range of means of dealing with pollution both at source and at the point of discharge from site (so called 'end of pipe' treatment). These techniques are known as 'Sustainable Drainage Systems' (SuDS).

Where run-off is draining from relatively low risk areas such as car-parks and non-operational areas, a source control approach, such as permeable surfaces or infiltration trenches, may offer a suitable means of treatment, removing the need for a separator.

Oil separators are installed on surface water drainage systems to protect receiving waters from pollution by oil, which may be present due to minor leaks from vehicles and plant, from accidental spillage.

Effluent from industrial processes and vehicle washing should normally be discharged to the foul sewer (subject to the approval of the sewerage undertaker) for further treatment at a municipal treatment works.

SEPARATOR STANDARDS AND TYPES

A British (and European) standard (EN 858-1 and 858-2) for the design and use of prefabricated oil separators has been adopted. New prefabricated separators should comply with the standard.

SEPARATOR CLASSES

The standard refers to two 'classes' of separator, based on performance under standard test conditions.

CLASS I

Designed to achieve a concentration of less than 5mg/l of oil under standard test conditions, should be used when the separator is required to remove very small oil droplets.

CLASS II

Designed to achieve a concentration of less than 100mg/l oil under standard test conditions and are suitable for dealing with discharges where a lower quality requirement applies (for example where the effluent passes to foul sewer).

Both classes can be produced as full retention separators. The oil concentration limits of 5 mg/l and 100 mg/l are only applicable under standard test conditions. It should not be expected that separators will comply with these limits when operating under field conditions.

FULL RETENTION SEPARATORS

Full retention separators treat the full flow that can be delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr.

On large sites, some short term flooding may be an acceptable means of limiting the flow rate and hence the size of full retention systems.

BYPASS SEPARATORS

Bypass separators fully treat all flows generated by rainfall rates of up to 6.5mm/hr. This covers over 99% of all rainfall events. Flows above this rate are allowed to bypass the separator. These separators are used when it is considered an acceptable risk not to provide full treatment for high flows, for example where the risk of a large spillage and heavy rainfall occurring at the same time is small.

FORECOURT SEPARATORS

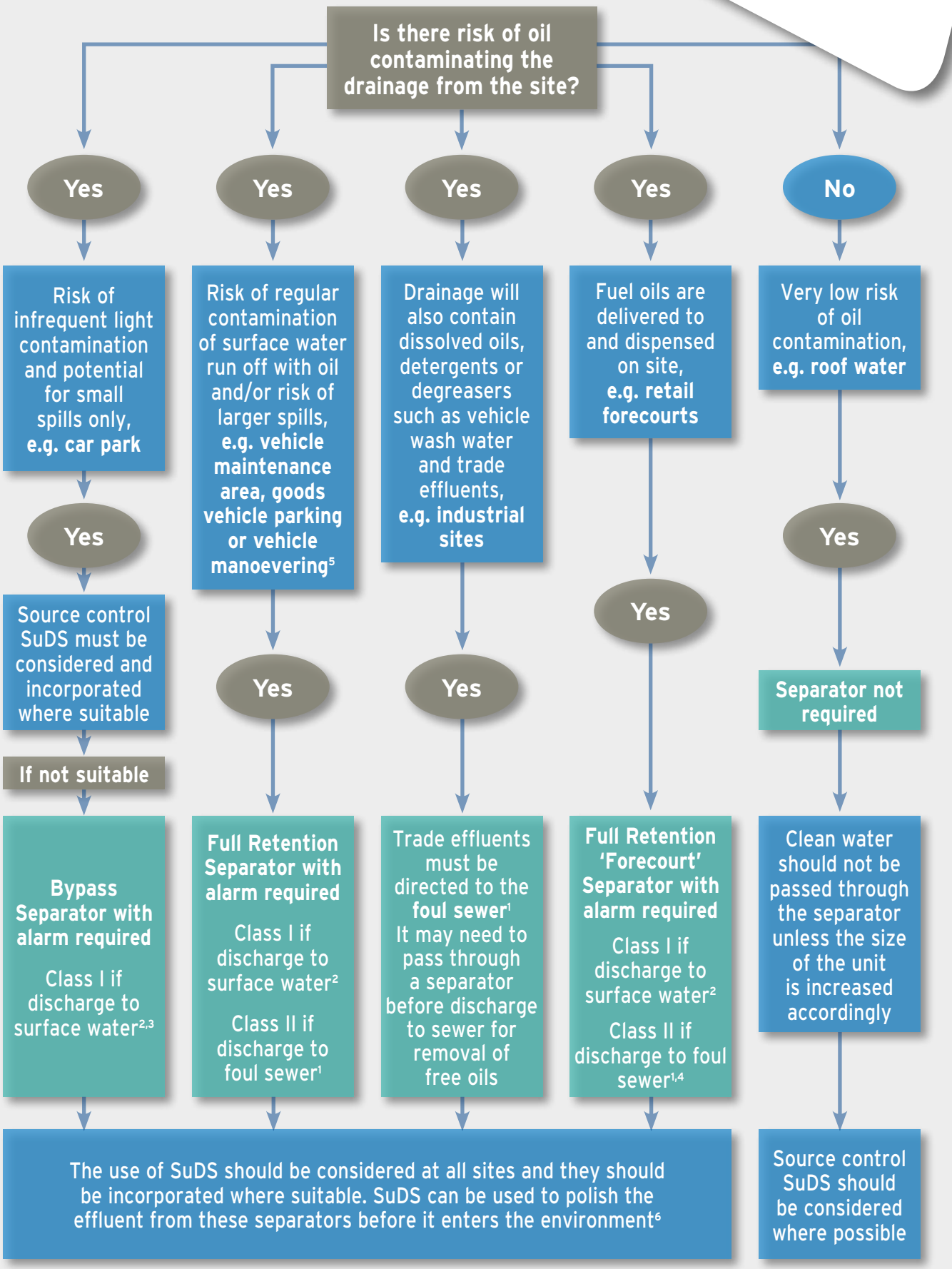
Forecourt separators are full retention separators specified to retain on site the maximum spillage likely to occur on a petrol filling station. They are required for both safety and environmental reasons and will treat spillages occurring during vehicle refuelling and road tanker delivery. The size of the separator is increased in order to retain the possible loss of the contents of one compartment of a road tanker, which may be up to 7,600 litres.

SELECTING THE RIGHT SEPARATOR

The chart on the following page gives guidance to aid selection of the appropriate type of fuel/oil separator for use in surface water drainage systems which discharge into rivers and soakaways.

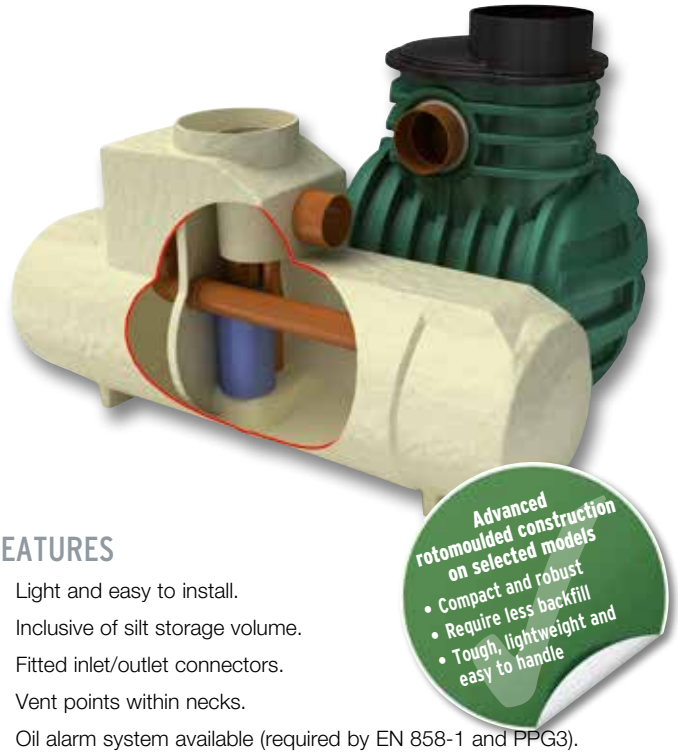
For further detailed information, please consult the Environment Agency Pollution Prevention Guideline 03 (PPG 3) 'Use and design of oil separators in surface water drainage systems' available from their website.

Kingspan Klargester has a specialist team who provide technical assistance in selecting the appropriate separator for your application.



1 You must seek prior permission from your local sewer provider before you decide which separator to install and before you make any discharge.
2 You must seek prior permission from the relevant environmental body before you decide which separator to install.
3 In this case, if it is considered that there is a low risk of pollution a source control SuDS scheme may be appropriate.
4 In certain circumstances, the sewer provider may require a Class 1 separator for discharges to sewer to prevent explosive atmospheres from being generated.
5 Drainage from higher risk areas such as vehicle maintenance yards and goods vehicle parking areas should be connected to foul sewer in preference to surface water.
6 In certain circumstances, a separator may be one of the devices used in the SuDS scheme. Ask us for advice.

Bypass NSB RANGE



APPLICATION

Bypass separators are used when it is considered an acceptable risk not to provide full treatment, for very high flows, and are used, for example, where the risk of a large spillage and heavy rainfall occurring at the same time is small, e.g.

- Surface car parks.
- Roadways.
- Lightly contaminated commercial areas.

PERFORMANCE

Klargester were one of the first UK manufacturers to have separators tested to EN 858-1. Klargester have now added the NSB bypass range to their portfolio of certified and tested models. The NSB number denotes the maximum flow at which the separator treats liquids. The British Standards Institute (BSI) tested the required range of Kingspan Klargester Bypass separators and certified their performance in relation to their flow and process performance assessing the effluent qualities to the requirements of EN 858-1. Klargester bypass separator designs follow the parameters determined during the testing of the required range of bypass separators.

Each bypass separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Oil storage volume.
- Silt storage capacity.
- Coalescer.

The unit is designed to treat 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB = 0.0018A(m2). Flows generated by higher rainfall rates will pass through part of the separator and bypass the main separation chamber.

Class I separators are designed to achieve a concentration of 5mg/litre of oil under standard test conditions.

FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or rotomoulded construction (subject to model).

To specify a nominal size bypass separator, the following information is needed:-

- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the flow is not pumped.
- The drain invert inlet depth.
- Pipework type, size and orientation.

SIZES AND SPECIFICATIONS

UNIT NOMINAL SIZE	FLOW (l/s)	PEAK FLOW RATE (l/s)	DRAINAGE AREA (m²)	STORAGE CAPACITY (litres) SILT	OIL	UNIT LENGTH (mm)	UNIT DIA. (mm)	ACCESS SHAFT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT	STANDARD FALL ACROSS (mm)	MIN. INLET INVERT (mm)	STANDARD PIPEWORK DIA.
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	160
NSBP004	4.5	45	2500	450	60	1700	1350	600	1420	1320	100	500	160
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	160
NSBE010	10	100	5560	1000	150	2069	1220	750	1450	1350	100	700	315
NSBE015	15	150	8335	1500	225	2947	1220	750	1450	1350	100	700	315
NSBE020	20	200	11111	2000	300	3893	1220	750	1450	1350	100	700	375
NSBE025	25	250	13890	2500	375	3575	1420	750	1680	1580	100	700	375
NSBE030	30	300	16670	3000	450	4265	1420	750	1680	1580	100	700	450
NSBE040	40	400	22222	4000	600	3230	1920	600	2185	2035	150	1000	500
NSBE050	50	500	27778	5000	750	3960	1920	600	2185	2035	150	1000	600
NSBE075	75	750	41667	7500	1125	5841	1920	600	2235	2035	200	950	675
NSBE100	100	1000	55556	10000	1500	7661	1920	600	2235	2035	200	950	750
NSBE125	125	1250	69444	12500	1875	9548	1920	600	2235	2035	200	950	750

Rotomoulded chamber construction GRP chamber construction * Some units have more than one access shaft – diameter of largest shown.

Full Retention NSF RANGE

APPLICATION

Full retention separators are used in high risk spillage areas such as:

- Fuel distribution depots.
- Vehicle workshops.
- Scrap Yards

PERFORMANCE

Kingspan Klargester were the first UK manufacturer to have the required range (3-30 l/sec) certified to EN 858-1 in the UK. The NSF number denotes the flow at which the separator operates.

The British Standards Institute (BSI) have witnessed the performance tests of the required range of separators and have certified their performance, in relation to their flow and process performance to ensure that they met the effluent quality requirements of EN 858-1. Larger separator designs have been determined using the formulas extrapolated from the test range.

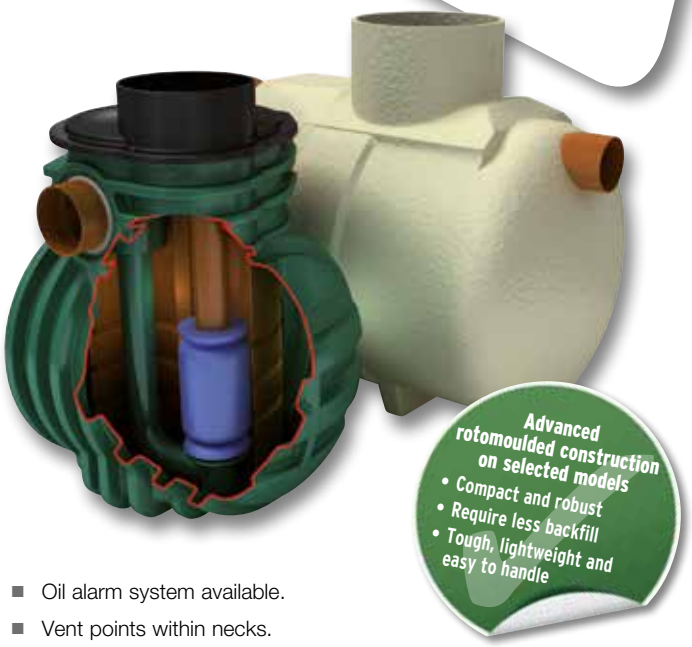
Each full retention separator design includes the necessary volume requirements for:

- Oil separation capacity.
- Silt storage capacity.
- Automatic closure device.
- Oil storage volume.
- Coalescer (Class I units only).

Klargester full retention separators treat the whole of the specified flow.

FEATURES

- Light and easy to install.
- Class I and Class II designs.
- 3-30 l/sec range independently tested and performance sampled, certified by the BSI.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.



- Oil alarm system available.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or rotomoulded construction (subject to model).

To specify a nominal size full retention separator, the following information is needed:-

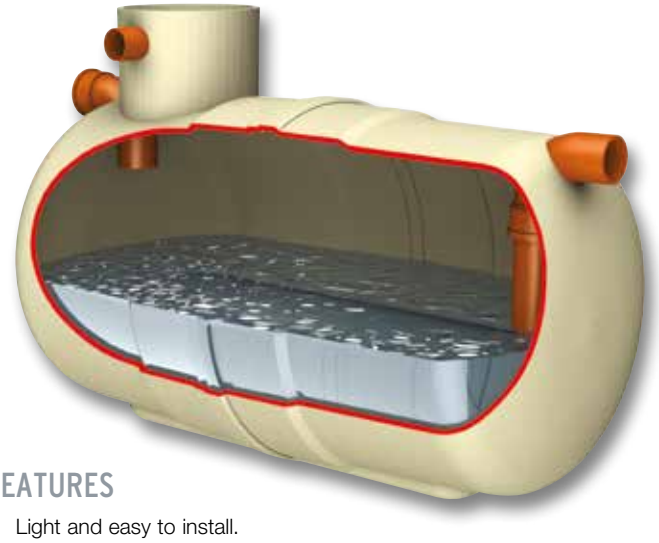
- The calculated flow rate for the drainage area served. Our designs are based on the assumption that any interconnecting pipework fitted elsewhere on site does not impede flow into or out of the separator and that the influent is not pumped.
- The required discharge standard. This will decide whether a Class I or Class II unit is required.
- The drain invert inlet depth.
- Pipework type, size and orientation.

SIZES AND SPECIFICATIONS

UNIT NOMINAL SIZE	FLOW (l/s)	DRAINAGE AREA (m^2) PPG-3 (0.018)	STORAGE CAPACITY (litres) SILT	OIL	UNIT LENGTH (mm)	UNIT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT	MIN. INLET INLET (mm)	STANDARD PIPEWORK DIA. (mm)
NSFP003	3	170	300	30	1700	1350	1420	1345	500	160
NSFP006	6	335	600	60	1700	1350	1420	1345	500	160
NSFA010	10	555	1000	100	2610	1225	1050	1000	500	200
NSFA015	15	835	1500	150	3910	1225	1050	1000	500	200
NSFA020	20	1115	2000	200	3200	2010	1810	1760	1000	315
NSFA030	30	1670	3000	300	3915	2010	1810	1760	1000	315
NSFA040	40	2225	4000	400	4640	2010	1810	1760	1000	315
NSFA050	50	2780	5000	500	5425	2010	1810	1760	1000	315
NSFA065	65	3610	6500	650	6850	2010	1810	1760	1000	315
NSFA080	80	4445	8000	800	5744	2820	2500	2450	1000	300
NSFA100	100	5560	10000	1000	6200	2820	2500	2450	1000	400
NSFA125	125	6945	12500	1250	7365	2820	2500	2450	1000	450
NSFA150	150	8335	15000	1500	8675	2820	2550	2450	1000	525
NSFA175	175	9725	17500	1750	9975	2820	2550	2450	1000	525
NSFA200	200	11110	20000	2000	11280	2820	2550	2450	1000	600

Rotomoulded chamber construction GRP chamber construction

Washdown & Silt



APPLICATION

This unit can be used in areas such as car wash and other cleaning facilities that discharge directly into a foul drain, which feeds to a municipal treatment facility.

If emulsifiers are present the discharge must not be allowed to enter an NS Class I or Class II unit.

- Car wash.
- Tool hire depots.
- Truck cleansing.
- Construction compounds cleansing points.

PERFORMANCE

Such wash down facilities must not be allowed to discharge directly into surface water but must be directed to a foul connection leading to a municipal treatment works as they utilise emulsifiers, soaps and detergents, which can dissolve and disperse the oils.

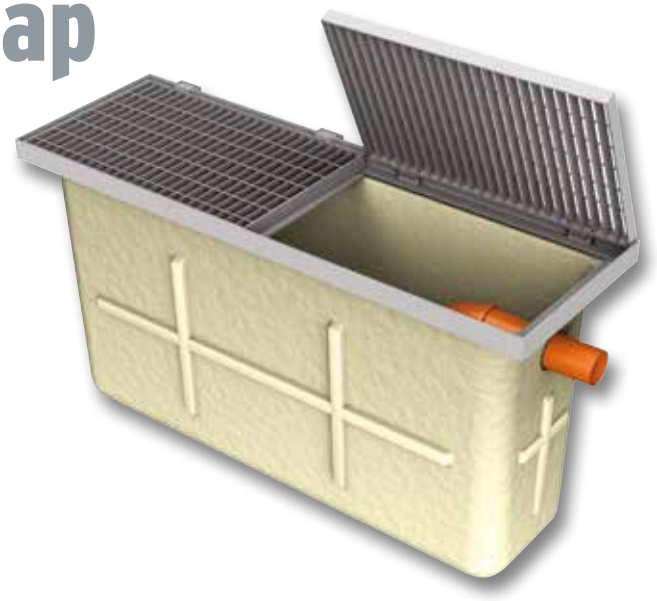
FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.

SIZES AND SPECIFICATIONS

REF.	TOTAL CAPACITY (litres)	MAX. REC. SILT	MAX. FLOW RATE (l/s)	LENGTH (mm)	DIAMETER (mm)	ACCESS SHAFT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT (mm)	STANDARD FALL ACROSS UNIT (mm)	MIN. INLET INVERT (mm)	STANDARD PIPEWORK DIA. (mm)	APPROX EMPTY (kg)
W1/010	1000	500	3	1123	1225	460	1150	1100	50	500	160	60
W1/020	2000	1000	5	2074	1225	460	1150	1100	50	500	160	120
W1/030	3000	1500	8	2952	1225	460	1150	1100	50	500	160	150
W1/040	4000	2000	11	3898	1225	460	1150	1100	50	500	160	180
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160	320
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160	585
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160	680
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160	770
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160	965
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160	1200

Car Wash Silt Trap



APPLICATION

Car Wash silt trap is designed for use before a separator in car wash applications to ensure effective silt removal.

FEATURES

- FACTA Class B covers.
- Light and easy to install.
- Maintenance from ground level.

Forecourt

APPLICATION

The forecourt separator is designed for installation in petrol filling station forecourts and similar applications. The function of the separator is to intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the drainage system, thus protecting the environment against hydrocarbon contaminated surface water run-off and gross spillage.

PERFORMANCE

Operation ensures that the flow cannot exit the unit without first passing through the coalescer assembly.

In normal operation, the forecourt separator has sufficient capacity to provide storage for separated pollutants within the main chamber, but is also able to contain up to 7,600 litres of pollutant arising from the spillage of a fuel delivery tanker compartment on the petrol forecourt. The separator has been designed to ensure that oil cannot exit the separator in the event of a major spillage, subsequently the separator should be emptied immediately.

FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- Class I and Class II design.
- Oil storage volume.
- Coalescer (Class I unit only).
- Automatic closure device.
- Oil alarm system available.

INSTALLATION

The unit should be installed on a suitable concrete base slab and surrounded with concrete or pea gravel backfill. See sales drawing for installation.

If the separator is to be installed within a trafficked area, then a suitable cover slab must be designed to ensure that loads are not transmitted to the unit.

The separator should be installed and vented in accordance with Health and Safety Guidance Note HS(G)41 for filling stations, subject to Local Authority requirements.

SIZES AND SPECIFICATIONS

ENVIROCEPTOR CLASS	TOTAL CAP. (litres)	DRAINAGE AREA (m^2)	MAX. FLOW RATE (l/s)	LENGTH (mm)	DIAMETER (mm)	ACCESS SHAFT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT (mm)	STD. FALL ACROSS UNIT (mm)	MIN. INLET INVERT (mm)	STD. PIPEWORK (mm)	EMPTY WEIGHT (kg)
I	10000	555	10	3963	1920	600	2110	2060	50	400	160	500
II	10000	555	10	3963	1920	600	2110	2060	50	400	160	500
I	10000	1110	20	3963	1920	600	2110	2060	50	400	200	500
II	10000	1110	20	3963	1920	600	2110	2060	50	400	200	500

Alarm Systems

British European Standard EN 858-1 and Environment Agency Pollution Prevention Guideline PPG3 requires that all separators are to be fitted with an oil level alarm system and that it should be installed and calibrated by a suitably qualified technician so that it will respond to an alarm condition when the separator requires emptying.

- Easily fitted to existing tanks.
- Excellent operational range.
- Visual and audible alarm.
- Additional telemetry option.

PROFESSIONAL INSTALLERS

Kingspan Klargester Accredited Installers
Experience shows that correct installation is a prerequisite for the long-lasting and successful operation of any wastewater treatment product. This is why using an installer with the experience and expertise to install your product is highly recommended.

Services include :

- Site survey to establish ground conditions and soil types
- Advice on system design and product selection
- Assistance on gaining environmental consents and building approvals
- Tank and drainage system installation
- Connection to discharge point and electrical networks
- Waste emptying and disposal

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Klargester

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email: klargesterinfo@kingspan.com

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Certificate No. OHS 575489

Issue No. 21: September 2015

Appendix C

Storm Calculations

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Junctions Storm Phase: Phase	MWP:		

Name	Junction Type	Easting (m)	Northing (m)	Cover Elevation (m)	Depth (m)	Invert Elevation (m)	Sump Depth (m)	Chamber Shape	Diameter (m)	Lock
2	Manhole	502312.024	653101.370	21.438	1.253	20.186	0.000	Circular	1.200	Elevations
11	Manhole	502365.154	653128.356	21.456	1.006	20.450	0.000	Circular	1.200	Elevations
1	Manhole	502364.864	653101.594	21.451	1.001	20.450	0.000	Circular	1.200	Elevations
32	Manhole	502336.292	653168.277	21.439	1.357	20.082	0.000	Circular	1.200	Elevations
33	Manhole	502361.796	653168.039	21.433	1.479	19.954	0.000	Circular	1.200	Elevations
3	Manhole	502312.161	653128.487	21.481	1.431	20.050	0.000	Circular	1.200	Elevations
34	Manhole	502387.317	653167.822	21.427	1.345	20.082	0.000	Circular	1.200	Elevations
30	Manhole	502387.469	653144.970	21.421	0.721	20.700	0.000	Circular	1.200	Elevations
31	Manhole	502336.135	653145.469	21.418	1.146	20.272	0.000	Circular	1.200	Elevations
12	Manhole	502387.901	653110.219	21.365	0.665	20.700	0.000	Circular	1.200	Elevations
25	Manhole	502397.835	653110.045	21.364	0.764	20.600	0.000	Circular	1.200	Elevations
14	Manhole	502397.821	653129.524	21.364	0.959	20.405	0.000	Circular	1.200	Elevations
13	Manhole	502387.740	653129.625	21.361	0.855	20.506	0.000	Circular	1.200	Elevations
4	Manhole	502303.161	653138.728	21.350	1.413	19.937	0.000	Circular	1.200	Elevations
15	Manhole	502420.268	653132.593	21.350	1.055	20.295	0.000	Circular	1.200	Elevations
16	Manhole	502420.525	653159.702	21.350	1.193	20.157	0.000	Circular	1.200	Elevations
17	Manhole	502432.157	653159.970	21.350	1.309	20.041	0.000	Circular	1.200	Elevations
18	Manhole	502432.254	653201.435	19.806	1.147	18.659	0.000	Circular	1.200	Elevations
36	Manhole	502399.949	653202.232	19.798	0.998	18.800	0.000	Circular	1.200	Elevations
37	Manhole	502387.571	653204.702	19.773	1.037	18.737	0.000	Circular	1.200	Elevations
38	Manhole	502374.807	653204.991	19.771	1.219	18.552	0.000	Circular	1.200	Elevations
35	Manhole	502362.042	653205.280	19.768	1.304	18.464	0.000	Circular	1.200	Elevations
5	Manhole	502284.110	653225.683	19.564	1.407	18.157	0.000	Circular	1.200	Elevations
43	Manhole	502378.092	653240.204	19.436	1.054	18.382	0.000	Circular	1.200	Elevations
39	Manhole	502362.314	653239.111	19.429	1.303	18.126	0.000	Circular	1.200	Elevations
40	Manhole	502338.386	653239.708	19.423	0.907	18.516	0.000	Circular	1.200	Elevations
42	Manhole	502388.354	653240.145	19.419	0.919	18.500	0.000	Circular	1.200	Elevations
45	Manhole	502411.058	653242.510	19.416	0.916	18.500	0.000	Circular	1.200	Elevations
6	Manhole	502277.866	653253.945	19.281	1.786	17.495	0.300	Circular	1.200	Elevations
44	Manhole	502378.365	653264.738	19.186	1.086	18.100	0.000	Circular	1.200	Elevations
41	Manhole	502362.345	653270.485	19.246	1.391	17.855	0.000	Circular	1.200	Elevations
47	Manhole	502378.342	653270.469	19.219	1.185	18.034	0.000	Circular	1.200	Elevations
20	Manhole	502368.273	653271.979	19.257	1.803	17.455	0.000	Circular	1.200	Elevations
46	Manhole	502410.734	653264.694	19.177	0.862	18.315	0.000	Circular	1.200	Elevations
48	Manhole	502297.485	653270.048	19.290	2.290	17.000	0.000	Circular	1.200	Elevations
7	Manhole	502274.196	653270.531	19.115	1.882	17.233	0.300	Circular	1.200	Elevations
19	Manhole	502432.964	653271.916	19.202	1.424	17.778	0.000	Circular	1.200	Elevations
8	Manhole	502272.764	653279.148	19.029	2.429	16.600	0.000	Circular	1.200	Elevations
22	Manhole	502310.612	653285.497	17.890	1.425	16.465	0.300	Circular	1.200	Elevations
23	Manhole	502299.067	653285.416	17.946	1.949	15.997	0.300	Circular	1.200	Elevations
50	Manhole	502275.924	653287.411	17.386	1.632	15.754	0.300	Circular	1.200	Elevations
49	Manhole	502296.920	653286.994	17.300	1.546	15.754	0.300	Circular	1.200	Elevations
9	Manhole	502271.090	653289.465	17.000	0.900	16.100	0.000	Circular	1.200	Elevations

10	Simple Junction	502270.166	653303.245							
24	Simple Junction	502299.543	653300.443							
51	Simple Junction	502275.693	653303.075							
21	Manhole	502310.949	653272.133	19.261	2.469	16.792	0.000	Circular	1.200	Elevations

Inlets

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
2	Inlet	1.000	(None)	No Restriction
11	Inlet	Catchment Area (5)	(None)	No Restriction
1	Inlet	Catchment Area (4)	(None)	No Restriction
32	Inlet	5.001	(None)	No Restriction
	Inlet (1)	Catchment Area	(None)	No Restriction
33	Inlet	5.002	(None)	No Restriction
	Inlet (1)	6.000	(None)	No Restriction
3	Inlet	1.001	(None)	No Restriction
	Inlet (1)	2.000	(None)	No Restriction
34	Inlet	Catchment Area (1)	(None)	No Restriction
30	Inlet	Catchment Area (3)	(None)	No Restriction
31	Inlet	5.000	(None)	No Restriction
	Inlet (1)	Catchment Area (2)	(None)	No Restriction
12	Inlet	Catchment Area (6)	(None)	No Restriction
25	Inlet	Catchment Area (7)	(None)	No Restriction
14	Inlet	3.001	(None)	No Restriction
	Inlet (1)	4.000	(None)	No Restriction
13	Inlet	3.000	(None)	No Restriction
4	Inlet	1.002	(None)	No Restriction
15	Inlet	3.002	(None)	No Restriction
16	Inlet	3.003	(None)	No Restriction
17	Inlet	3.004	(None)	No Restriction
18	Inlet	3.005	(None)	No Restriction
36	Inlet	Catchment Area (11)	(None)	No Restriction
37	Inlet	7.000	(None)	No Restriction
	Inlet (1)	Catchment Area (12)	(None)	No Restriction
38	Inlet	7.001	(None)	No Restriction
35	Inlet	5.003	(None)	No Restriction
	Inlet (1)	7.002	(None)	No Restriction
5	Inlet	1.003	(None)	No Restriction
43	Inlet	9.000	(None)	No Restriction
	Inlet (1)	Catchment Area (8)	(None)	No Restriction
39	Inlet	5.004	(None)	No Restriction
	Inlet (1)	8.000	(None)	No Restriction

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Junctions Storm Phase: Phase	MWP:		

Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
40	Inlet	Catchment Area (13)	(None)	No Restriction
42	Inlet	Catchment Area (10)	(None)	No Restriction
45	Inlet	Catchment Area (9)	(None)	No Restriction
6	Inlet	1.004	(None)	No Restriction
44	Inlet	9.001	(None)	No Restriction
	Inlet (1)	10.001	(None)	No Restriction
41	Inlet	5.005	(None)	No Restriction
	Inlet (1)	9.003	(None)	No Restriction
47	Inlet	9.002	(None)	No Restriction
20	Inlet	3.007	(None)	No Restriction
46	Inlet	10.000	(None)	No Restriction
48	Inlet	5.006	(None)	No Restriction
7	Inlet (1)	1.006	(None)	No Restriction
19	Inlet	3.006	(None)	No Restriction
8	Inlet	1.007	(None)	No Restriction
22	Inlet	3.009	(None)	No Restriction
23	Inlet (1)	3.011	(None)	No Restriction
50	Inlet (1)	5.009	(None)	No Restriction
49	Inlet	5.007	(None)	No Restriction
9	Inlet	1.008	(None)	No Restriction
10	Inlet	1.009	(None)	No Restriction
24	Inlet	3.012	(None)	No Restriction
51	Inlet	5.010	(None)	No Restriction
21	Inlet	3.008	(None)	No Restriction

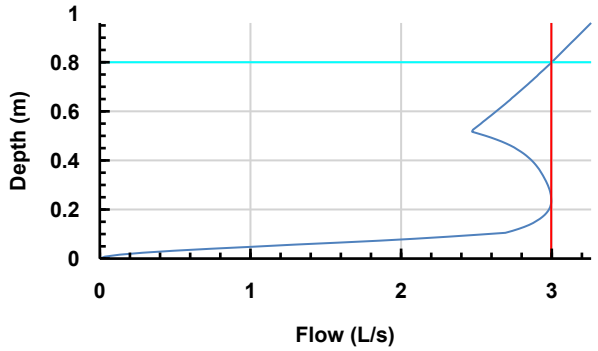
Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
2	Outlet	1.001	Free Discharge
11	Outlet	2.000	Free Discharge
1	Outlet	1.000	Free Discharge
32	Outlet	5.002	Free Discharge
33	Outlet	5.003	Free Discharge
3	Outlet	1.002	Free Discharge
34	Outlet	6.000	Free Discharge
30	Outlet	5.000	Free Discharge
31	Outlet	5.001	Free Discharge
12	Outlet	3.000	Free Discharge
25	Outlet	4.000	Free Discharge
14	Outlet	3.002	Free Discharge
13	Outlet	3.001	Free Discharge
4	Outlet	1.003	Free Discharge
15	Outlet	3.003	Free Discharge
16	Outlet	3.004	Free Discharge
17	Outlet	3.005	Free Discharge
18	Outlet	3.006	Free Discharge

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Junctions Storm Phase: Phase	MWP:		

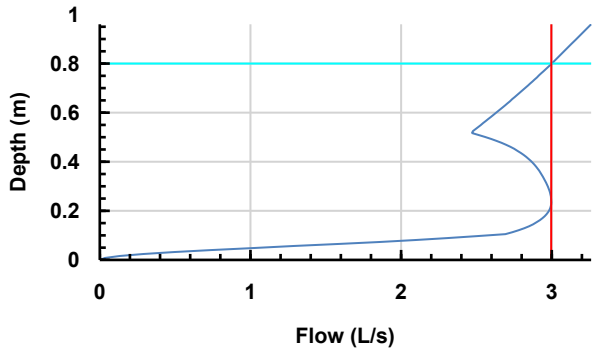
Junction	Outlet Name	Outgoing Connection	Outlet Type
36	Outlet	7.000	Free Discharge
37	Outlet	7.001	Free Discharge
38	Outlet	7.002	Free Discharge
35	Outlet	5.004	Free Discharge
5	Outlet	1.004	Free Discharge
43	Outlet	9.001	Free Discharge
39	Outlet	5.005	Free Discharge
40	Outlet	8.000	Free Discharge
42	Outlet	9.000	Free Discharge
45	Outlet	10.000	Free Discharge
6	Outlet	1.005	Free Discharge
44	Outlet	9.002	Free Discharge
41	Outlet	5.006	Free Discharge
47	Outlet	9.003	Free Discharge
20	Outlet	3.008	Free Discharge
46	Outlet	10.001	Free Discharge
48	Outlet	5.007	Free Discharge
7	Outlet	1.007	Hydro-Brake®
19	Outlet	3.007	Free Discharge
8	Outlet	1.008	Free Discharge
22	Outlet	3.010	Free Discharge
	Outlet	3.012	Hydro-Brake®

Invert Elevation (m)	17.533
Design Depth (m)	0.800
Design Flow (L/s)	3.0
Objective	Minimize Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☑
Unit Reference	SHE-0085-3000-0800-3000



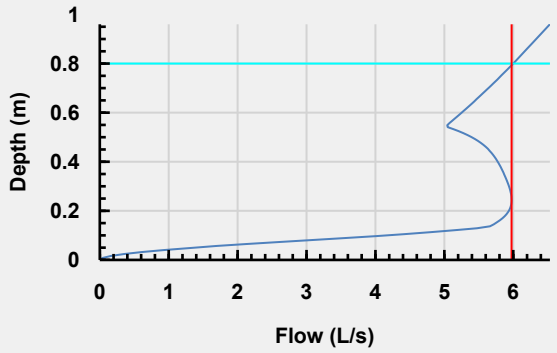
SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Junctions Storm Phase: Phase	MWP:		

Junction	Outlet Name	Outgoing Connection	Outlet Type
23	Invert Elevation (m): 15.997 Design Depth (m): 0.800 Design Flow (L/s): 3.0 Objective: Minimize Upstream Storage Requirements Application: Surface Water Only Sump Available: ☑ Unit Reference: SHE-0085-3000-0800-3000		
	Outlet	5.010	Hydro-Brake®



SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Junctions Storm Phase: Phase	MWP:		

Junction	Outlet Name	Outgoing Connection	Outlet Type
50	Invert Elevation (m): 15.768 Design Depth (m): 0.800 Design Flow (L/s): 6.0 Objective: Minimize Upstream Storage Requirements Application: Surface Water Only Sump Available: ☑ Unit Reference: SHE-0118-6000-0800-6000		
49	Outlet	5.008	Free Discharge
9	Outlet	1.009	Free Discharge
21	Outlet	3.009	Free Discharge



Cellular Storage

Type : Tank

Dimensions

Exceedance Elevation (m)	18.665
Depth (m)	2.897
Base Elevation (m)	15.768
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	60
Average Slope (1:x)	0.00
Total Volume (m³)	52.097

Depth (m)	Area (m²)	Volume (m³)
0.000	70.00	0.000
1.200	70.00	50.400

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	5.008
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	5.009
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	19.464

Cellular Storage (1)

Type : Tank

Dimensions

Exceedance Elevation (m)	17.311
Depth (m)	1.211
Base Elevation (m)	16.100
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	60
Average Slope (1:x)	0.00
Total Volume (m³)	7.811

Depth (m)	Area (m²)	Volume (m³)
0.000	20.00	0.000
0.600	20.00	7.200

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	3.010
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	3.011
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	10.000

Cellular Storage (2)

Type : Tank

Dimensions

Exceedance Elevation (m)	19.120
Depth (m)	1.587
Base Elevation (m)	17.533
Freeboard (mm)	0
Initial Depth (m)	0.000
Porosity (%)	60
Average Slope (1:x)	0.00
Total Volume (m³)	15.187

Depth (m)	Area (m²)	Volume (m³)
0.000	30.00	0.000
0.800	30.00	14.400

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	1.005
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	1.006
Outlet Type	Free Discharge

Advanced

Perimeter	Circular
Length (m)	15.000

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Connections Storm Phase: Phase	MWP:		

Name	From	To	Length (m)	Connection Type	Slope (1:x)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Elevation (m)	Upstream Invert Elevation (m)	Downstream Cover Elevation (m)	Downstream Invert Elevation (m)
1.000	1	2	52.841	Pipe	199.999	0.010		225	21.451	20.450	21.438	20.186
1.001	2	3	27.117	Pipe	199.391	0.010		225	21.438	20.186	21.481	20.050
2.000	11	3	52.993	Pipe	132.482	0.010		225	21.456	20.450	21.481	20.050
1.002	3	4	13.634	Pipe	120.653	0.010		225	21.481	20.050	21.350	19.937
1.003	4	5	89.018	Pipe	50.000	0.010		225	21.350	19.937	19.564	18.157
1.004	5	6	28.944	Pipe	79.955	0.010		225	19.564	18.157	19.281	17.795
1.007	7	8	8.735	Pipe	41.997	0.010		225	19.115	17.533	19.029	17.325
1.008	8	9	10.452	Pipe	20.904	0.010		225	19.029	16.600	17.000	16.100
1.009	9	10	13.811	Pipe	200.164	0.010		225	17.000	16.100	16.325	16.031
3.000	12	13	19.407	Pipe	100.001	0.010		150	21.365	20.700	21.361	20.506
3.001	13	14	10.082	Pipe	99.820	0.010		150	21.361	20.506	21.364	20.405
4.000	25	14	19.479	Pipe	99.891	0.010		150	21.364	20.600	21.364	20.405
3.002	14	15	22.655	Pipe	205.957	0.010		225	21.364	20.405	21.350	20.295
3.003	15	16	27.110	Pipe	196.450	0.010		225	21.350	20.295	21.350	20.157
3.004	16	17	11.635	Pipe	100.306	0.010		225	21.350	20.157	21.350	20.041
3.005	17	18	41.465	Pipe	30.000	0.010		225	21.350	20.041	19.806	18.659
3.006	18	19	70.485	Pipe	80.000	0.010		225	19.806	18.659	19.202	17.778
3.007	19	20	64.690	Pipe	199.998	0.010		225	19.202	17.778	19.257	17.455
3.008	20	21	57.325	Pipe	200.000	0.010		225	19.257	17.455	19.261	17.168
3.009	21	22	13.368	Pipe	40.833	0.010		225	19.261	16.792	17.890	16.465
3.012	23	24	15.034	Pipe	296.710	0.010		225	17.946	15.997	16.171	15.946
5.000	30	31	51.336	Pipe	119.944	0.010		150	21.421	20.700	21.418	20.272
5.001	31	32	22.809	Pipe	120.046	0.010		150	21.418	20.272	21.439	20.082
5.002	32	33	25.505	Pipe	200.004	0.010		225	21.439	20.082	21.433	19.954
6.000	34	33	25.522	Pipe	200.006	0.010		225	21.427	20.082	21.433	19.954
5.003	33	35	37.242	Pipe	25.000	0.010		225	21.433	19.954	19.768	18.464
7.000	36	37	12.622	Pipe	200.006	0.010		225	19.798	18.800	19.773	18.737
7.001	37	38	12.768	Pipe	150.212	0.010		225	19.773	18.737	19.771	18.652
7.002	38	35	12.768	Pipe	145.091	0.010		225	19.771	18.552	19.768	18.464
5.004	35	39	33.832	Pipe	100.095	0.010		225	19.768	18.464	19.429	18.126
8.000	40	39	23.936	Pipe	61.375	0.010		225	19.423	18.516	19.429	18.126
5.005	39	41	31.374	Pipe	115.770	0.010		225	19.429	18.126	19.246	17.855
9.000	42	43	10.262	Pipe	87.001	0.010		225	19.419	18.500	19.436	18.382
9.001	43	44	24.536	Pipe	87.006	0.010		225	19.436	18.382	19.186	18.100
10.000	45	46	22.186	Pipe	120.001	0.010		225	19.416	18.500	19.177	18.315
10.001	46	44	32.370	Pipe	150.557	0.010		225	19.177	18.315	19.186	18.100
9.002	44	47	5.732	Pipe	86.845	0.010		225	19.186	18.100	19.219	18.034
9.003	47	41	15.997	Pipe	89.367	0.010		225	19.219	18.034	19.246	17.855
5.006	41	48	64.861	Pipe	200.000	0.010		225	19.246	17.855	19.290	17.531
5.007	48	49	16.955	Pipe	30.000	0.010		225	19.290	17.000	17.300	16.435
5.010	50	51	15.666	Pipe	200.000	0.010		225	17.386	15.768	15.993	15.690

3.010	22	Cellular Storage (1)	1.023	Pipe	200.000	0.010		225	17.890	16.465	17.921	16.460
3.011	Cellular Storage (1)	23	1.181	Pipe	200.000		0.6	225	17.879	16.100	17.946	16.094
5.008	49	Cellular Storage	1.243	Pipe	200.000	0.010		225	17.300	15.868	18.665	15.862
5.009	Cellular Storage	50	1.063	Pipe	200.000		0.6	225	18.665	15.768	17.386	15.763
1.005	6	Cellular Storage (2)	1.335	Pipe	200.000	0.010		225	19.281	17.795	19.268	17.788
1.006	Cellular Storage (2)	7	1.153	Pipe	200.000		0.6	225	19.126	17.533	19.115	17.527

Name	Part Family	Lock	Min. Cover Depth (m)	Min. Downstream Invert Elevation (m)	Flow Restriction (L/s)	Velocity (m/s)	Culvert Type	Culvert Entrance
1.000		All	0.000	0.000			(None)	(None)
1.001		All	0.000	0.000			(None)	(None)
2.000		All	0.000	0.000			(None)	(None)
1.002		All	0.000	0.000			(None)	(None)
1.003		All	0.000	0.000			(None)	(None)
1.004		All	0.000	0.000			(None)	(None)
1.007		All	0.000	0.000	3.3		(None)	(None)
1.008		All	0.000	0.000			(None)	(None)
1.009		All	0.000	0.000			(None)	(None)
3.000		All	0.000	0.000			(None)	(None)
3.001		All	0.000	0.000			(None)	(None)
4.000		All	0.000	0.000			(None)	(None)
3.002		All	0.000	0.000			(None)	(None)
3.003		All	0.000	0.000			(None)	(None)
3.004		All	0.000	0.000			(None)	(None)
3.005		All	0.000	0.000			(None)	(None)
3.006		All	0.000	0.000			(None)	(None)
3.007		All	0.000	0.000			(None)	(None)
3.008		All	0.000	0.000			(None)	(None)
3.009		All	0.000	0.000			(None)	(None)
3.012		All	0.000	0.000	3.3		(None)	(None)
5.000		All	0.000	0.000			(None)	(None)
5.001		All	0.000	0.000			(None)	(None)
5.002		All	0.000	0.000			(None)	(None)
6.000		All	0.000	0.000			(None)	(None)
5.003		All	0.000	0.000			(None)	(None)
7.000		All	0.000	0.000			(None)	(None)
7.001		All	0.000	0.000			(None)	(None)
7.002		All	0.000	0.000			(None)	(None)
5.004		All	0.000	0.000			(None)	(None)

8.000		All	0.000	0.000			(None)	(None)
5.005		All	0.000	0.000			(None)	(None)
9.000		All	0.000	0.000			(None)	(None)
9.001		All	0.000	0.000			(None)	(None)
10.000		All	0.000	0.000			(None)	(None)
10.001		All	0.000	0.000			(None)	(None)
9.002		All	0.000	0.000			(None)	(None)
9.003		All	0.000	0.000			(None)	(None)
5.006		All	0.000	0.000			(None)	(None)
5.007		All	0.000	0.000			(None)	(None)
5.010		All	0.000	0.000	6.5		(None)	(None)
3.010		All	0.000	0.000			(None)	(None)
3.011		All	0.000	0.000			(None)	(None)
5.008		All	0.000	0.000			(None)	(None)
5.009		All	0.000	0.000			(None)	(None)
1.005		All	0.000	0.000			(None)	(None)
1.006		All	0.000	0.000			(None)	(None)

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Network Design Criteria Storm Phase: Phase	MWP:		

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimize Excavation
Design Level	Level Crowns
Min. Cover Depth (m)	1.200
Min. Slope (1:x)	500.00
Max. Slope (1:x)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Manhole Options

Apply Offset	☐

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	MWP:		

Sceirde Rocks: 30 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Elevation (m)	Max. DS Elevation (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	Sceirde Rocks: 30 years: +20 %: 120 mins: Winter	16.679	16.679	0.911	0.911	23.3	38.252	0.000	0.000	6.3	66.314	26.576	OK
Cellular Storage (1)	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	16.141	16.141	0.041	0.041	2.6	0.492	0.000	0.000	2.2	2.305	93.696	OK
Cellular Storage (2)	Sceirde Rocks: 30 years: +20 %: 120 mins: Winter	18.112	18.112	0.579	0.579	8.0	10.420	0.000	0.000	3.3	24.582	31.391	OK

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	MWP:		

Sceirde Rocks: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Elevation (m)	Max. DS Elevation (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	Sceirde Rocks: 100 years: +20 %: 180 mins: Winter	17.301	17.301	1.533	1.533	23.5	50.615	0.000	0.000	8.0	101.990	2.844	OK
Cellular Storage (1)	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	16.154	16.154	0.054	0.054	3.4	0.651	0.000	0.000	2.9	3.065	91.662	OK
Cellular Storage (2)	Sceirde Rocks: 100 years: +20 %: 120 mins: Winter	18.312	18.312	0.779	0.779	9.8	14.023	0.000	0.000	3.4	31.759	7.666	OK

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Connections Summary Storm Phase: Phase	MWP:		

Sceirde Rocks: 30 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Elevation (m)	Max. US Water Elevation (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	1	2	21.451	20.527	0.074	4.815	0.9	0.24	9.7	OK
1.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	2	3	21.438	20.256	0.083	4.776	0.6	0.21	8.6	OK
2.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	11	3	21.456	20.522	0.084	5.511	0.8	0.22	11.3	OK
1.002	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	3	4	21.481	20.147	0.083	10.229	1.3	0.34	17.9	OK
1.003	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	4	5	21.350	20.006	0.070	10.222	1.5	0.2	16.4	OK
1.004	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	5	6	19.564	18.232	0.120	14.402	1.0	0.24	15.7	OK
1.007	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	7	8	19.115	17.886	0.029	3.285	1.0	0.03	3.0	Surcharged
1.008	Sceirde Rocks: 30 years: +20 %: 15 mins: Summer	Pipe	8	9	19.029	16.624	0.033	3.185	0.8	0.02	3.0	OK
1.009	Sceirde Rocks: 30 years: +20 %: 180 mins: Winter	Pipe	9	10	17.000	16.142	0.042	28.365	0.6	0.07	3.0	OK
3.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	12	13	21.365	20.732	0.031	0.909	0.7	0.1	1.9	OK
3.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	13	14	21.361	20.536	0.037	0.904	0.5	0.09	1.8	OK
4.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	25	14	21.364	20.631	0.038	0.910	0.5	0.1	1.9	OK
3.002	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	14	15	21.364	20.450	0.043	1.804	0.6	0.08	3.3	OK

3.003	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	15	16	21.350	20.337	0.038	1.790	0.6	0.07	2.8	OK
3.004	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	16	17	21.350	20.192	0.030	2.539	0.9	0.05	2.8	OK
3.005	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	17	18	21.350	20.066	0.028	2.539	1.0	0.03	2.8	OK
3.006	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	18	19	19.806	18.692	0.038	1.748	0.8	0.05	3.0	OK
3.007	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	19	20	19.202	17.822	0.037	1.672	0.7	0.08	3.1	OK
3.008	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	20	21	19.257	17.493	0.038	2.464	0.6	0.06	2.6	OK
3.009	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	21	22	19.261	16.818	0.034	2.458	0.7	0.03	2.6	OK
3.012	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	23	24	17.946	16.125	0.040	2.253	0.5	0.07	2.3	OK
5.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	30	31	21.421	20.753	0.065	2.359	0.6	0.26	4.8	OK
5.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	31	32	21.418	20.350	0.087	4.717	0.8	0.5	9.0	OK
5.002	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	32	33	21.439	20.178	0.078	7.459	1.1	0.34	14.1	OK
6.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	34	33	21.427	20.140	0.060	2.762	0.7	0.14	5.7	OK
5.003	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	33	35	21.433	20.015	0.086	10.200	1.4	0.16	18.9	OK
7.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	36	37	19.798	18.856	0.065	2.465	0.5	0.13	5.2	OK
7.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	37	38	19.773	18.810	0.071	4.766	0.9	0.2	9.6	OK
7.002	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	38	35	19.771	18.621	0.090	4.763	0.6	0.19	9.4	OK

5.004	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	35	39	19.768	18.575	0.116	14.916	1.3	0.44	25.9	OK
8.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	40	39	19.423	18.558	0.082	2.662	0.5	0.07	5.6	OK
5.005	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	39	41	19.429	18.247	0.164	17.495	1.0	0.54	29.2	OK
9.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	42	43	19.419	18.553	0.064	3.185	0.7	0.11	6.7	OK
9.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	43	44	19.436	18.458	0.089	7.050	1.0	0.23	14.6	OK
10.000	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	45	46	19.416	18.561	0.060	3.753	0.9	0.15	7.9	OK
10.001	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	46	44	19.177	18.375	0.081	3.738	0.6	0.15	7.3	OK
9.002	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	44	47	19.186	18.202	0.095	10.758	1.3	0.33	20.5	OK
9.003	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	47	41	19.219	18.122	0.152	10.755	1.0	0.32	20.1	OK
5.006	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	41	48	19.246	18.088	0.204	28.064	1.2	1.06	43.6	Surcharged
5.007	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	48	49	19.290	17.110	0.106	28.030	2.4	0.42	44.3	OK
5.010	Sceirde Rocks: 30 years: +20 %: 120 mins: Winter	Pipe	50	51	17.386	16.678	0.060	66.165	0.7	0.15	6.2	Surcharged
3.010	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	22	Cellular Storage (1)	17.890	16.508	0.040	2.444	0.5	0.06	2.6	OK
3.011	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	Cellular Storage (1)	23	17.879	16.141	0.039	2.305	0.5	0.06	2.2	OK
5.008	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	49	Cellular Storage	17.300	16.275	0.225	27.408	1.1	1.05	43.4	Surcharged
5.009	Sceirde Rocks: 30 years: +20 %: 15 mins: Winter	Pipe	Cellular Storage	50	18.665	16.275	0.225	7.308	0.2	0.19	7.0	Surcharged

1.005	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	6	Cellular Storage (2)	19.281	18.003	0.211	13.961	0.9	0.38	15.6	OK
1.006	Sceirde Rocks: 30 years: +20 %: 30 mins: Winter	Pipe	Cellular Storage (2)	7	19.126	18.002	0.225	8.362	0.6	0.13	4.8	Surcharged

SCEIRDE ROCKS:	Date: 16/07/2024		
	Designed by: SM	Checked by: SH	Approved By: IB
Report Details: Type: Connections Summary Storm Phase: Phase	MWP:		

Sceirde Rocks: 100 years: Increase Rainfall (%): +20: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Elevation (m)	Max. US Water Elevation (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	1	2	21.451	20.539	0.085	6.208	0.9	0.3	12.6	OK
1.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	2	3	21.438	20.266	0.097	6.165	0.7	0.27	11.3	OK
2.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	11	3	21.456	20.533	0.098	7.101	0.9	0.29	14.6	OK
1.002	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	3	4	21.481	20.163	0.096	13.205	1.4	0.44	23.4	OK
1.003	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	4	5	21.350	20.017	0.082	13.199	1.7	0.26	21.7	OK
1.004	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	5	6	19.564	18.244	0.217	18.702	1.1	0.31	20.4	OK
1.007	Sceirde Rocks: 100 years: +20 %: 600 mins: Summer	Pipe	7	8	19.115	17.975	0.029	49.158	1.0	0.03	3.0	Surcharged
1.008	Sceirde Rocks: 100 years: +20 %: 120 mins: Summer	Pipe	8	9	19.029	16.624	0.033	28.047	0.8	0.02	3.0	OK
1.009	Sceirde Rocks: 100 years: +20 %: 180 mins: Winter	Pipe	9	10	17.000	16.142	0.042	36.718	0.6	0.07	3.0	OK
3.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	12	13	21.365	20.737	0.036	1.176	0.8	0.12	2.4	OK
3.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	13	14	21.361	20.541	0.043	1.170	0.5	0.11	2.3	OK
4.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	25	14	21.364	20.636	0.043	1.177	0.6	0.12	2.4	OK
3.002	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	14	15	21.364	20.456	0.050	2.338	0.7	0.11	4.3	OK

3.003	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	15	16	21.350	20.343	0.044	2.323	0.7	0.09	3.8	OK
3.004	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	16	17	21.350	20.197	0.034	3.306	0.9	0.06	3.6	OK
3.005	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	17	18	21.350	20.069	0.032	3.306	1.0	0.03	3.6	OK
3.006	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	18	19	19.806	18.695	0.043	2.281	0.9	0.06	3.7	OK
3.007	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	19	20	19.202	17.828	0.045	2.201	0.7	0.1	4.2	OK
3.008	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	20	21	19.257	17.499	0.044	3.228	0.6	0.08	3.4	OK
3.009	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	21	22	19.261	16.822	0.040	3.222	0.7	0.04	3.4	OK
3.012	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	23	24	17.946	16.149	0.044	3.012	0.5	0.08	2.7	OK
5.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	30	31	21.421	20.760	0.077	3.042	0.7	0.34	6.2	OK
5.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	31	32	21.418	20.365	0.102	6.086	0.9	0.64	11.6	OK
5.002	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	32	33	21.439	20.193	0.090	9.627	1.2	0.45	18.4	OK
6.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	34	33	21.427	20.149	0.069	3.560	0.7	0.18	7.4	OK
5.003	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	33	35	21.433	20.024	0.101	13.164	1.4	0.21	24.6	OK
7.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	36	37	19.798	18.864	0.075	3.178	0.6	0.16	6.7	OK
7.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	37	38	19.773	18.822	0.082	6.147	1.0	0.26	12.5	OK
7.002	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	38	35	19.771	18.633	0.106	6.145	0.7	0.25	12.1	OK

5.004	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	35	39	19.768	18.595	0.151	19.207	1.3	0.58	33.8	OK
8.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	40	39	19.423	18.563	0.119	3.428	0.5	0.1	7.2	OK
5.005	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	39	41	19.429	18.338	0.225	22.578	1.0	0.71	38.6	OK
9.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	42	43	19.419	18.562	0.075	4.105	0.8	0.14	8.7	OK
9.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	43	44	19.436	18.470	0.115	9.083	1.1	0.3	18.8	OK
10.000	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	45	46	19.416	18.570	0.069	4.841	1.0	0.19	10.2	OK
10.001	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	46	44	19.177	18.383	0.113	4.828	0.6	0.2	9.5	OK
9.002	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	44	47	19.186	18.281	0.210	13.876	1.4	0.42	26.6	OK
9.003	Sceirde Rocks: 100 years: +20 %: 15 mins: Summer	Pipe	47	41	19.219	18.221	0.225	12.383	1.0	0.4	24.6	OK
5.006	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	41	48	19.246	18.250	0.225	36.289	1.3	1.25	51.7	Surcharged
5.007	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	48	49	19.290	17.122	0.116	36.254	2.5	0.49	52.0	OK
5.010	Sceirde Rocks: 100 years: +20 %: 60 mins: Winter	Pipe	50	51	17.386	16.933	0.062	37.005	0.7	0.16	6.5	Surcharged
3.010	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	22	Cellular Storage (1)	17.890	16.515	0.047	3.208	0.6	0.08	3.4	OK
3.011	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	Cellular Storage (1)	23	17.879	16.154	0.055	3.065	0.5	0.08	2.9	OK
5.008	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	49	Cellular Storage	17.300	16.459	0.225	35.413	1.3	1.23	50.9	Surcharged
5.009	Sceirde Rocks: 100 years: +20 %: 180 mins: Winter	Pipe	Cellular Storage	50	18.665	17.301	0.225	101.990	0.2	0.22	8.0	Surcharged

1.005	Sceirde Rocks: 100 years: +20 %: 30 mins: Winter	Pipe	6	Cellular Storage (2)	19.281	18.192	0.225	17.490	1.0	0.49	20.4	Surcharged
1.006	Sceirde Rocks: 100 years: +20 %: 15 mins: Winter	Pipe	Cellular Storage (2)	7	19.126	18.003	0.225	4.196	0.7	0.19	6.8	Surcharged

Appendix D

Foul Calculations

FOUL SEWERAGE DESIGN

Design Criteria for Foul - Main

Pipe Sizes STANDARD Manhole Sizes STANDARD

Industrial Flow (l/s/ha)	0.00	Add Flow / Climate Change (%)	0
Industrial Peak Flow Factor	0.00	Minimum Backdrop Height (m)	0.200
Flow Per Person (l/per/day)	222.00	Maximum Backdrop Height (m)	1.500
Persons per House	3.00	Min Design Depth for Optimisation (m)	1.200
Domestic (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.75
Domestic Peak Flow Factor	6.00	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Foul - Main

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.000	2.267	0.038	59.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.001	16.216	0.270	60.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F2.000	2.663	0.044	60.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F2.001	4.861	0.081	60.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F2.002	2.353	0.039	60.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F2.003	12.173	0.202	60.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F3.000	2.203	0.037	59.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F3.001	7.369	0.123	60.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.000	20.550	0.000	0.0	0	0.0	0	0.00	1.14	20.1	0.0
F1.001	20.512	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0
F2.000	20.650	0.000	0.0	0	0.0	0	0.00	1.13	19.9	0.0
F2.001	20.606	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0
F2.002	20.525	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0
F2.003	20.486	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0
F3.000	20.600	0.000	0.0	0	0.0	0	0.00	1.14	20.1	0.0
F3.001	20.563	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0

Manhole Schedules for Foul - Main

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
F1	21.439	0.889	Open Manhole	1200	F1.000	20.550	150				
F2	21.418	0.906	Open Manhole	1200	F1.001	20.512	150	F1.000	20.512	150	
F	21.173	0.931	Open Manhole	0		OUTFALL		F1.001	20.242	150	
F3	21.439	0.789	Open Manhole	1200	F2.000	20.650	150				
F4	21.440	0.834	Open Manhole	1200	F2.001	20.606	150	F2.000	20.606	150	
F5	21.440	0.915	Open Manhole	1200	F2.002	20.525	150	F2.001	20.525	150	
F6	21.419	0.933	Open Manhole	1200	F2.003	20.486	150	F2.002	20.486	150	
F	21.350	1.066	Open Manhole	0		OUTFALL		F2.003	20.284	150	
F7	21.373	0.773	Open Manhole	1200	F3.000	20.600	150				
F8	21.373	0.810	Open Manhole	1200	F3.001	20.563	150	F3.000	20.563	150	
F	21.350	0.910	Open Manhole	0		OUTFALL		F3.001	20.440	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
F1	502336.956	653155.780	502336.956	653155.780	Required	
F2	502334.690	653155.736	502334.690	653155.736	Required	
F	502334.704	653171.952			No Entry	
F3	502315.901	653115.087	502315.901	653115.087	Required	
F4	502315.919	653117.749	502315.919	653117.749	Required	
F5	502315.919	653122.610	502315.919	653122.610	Required	
F6	502313.567	653122.657	502313.567	653122.657	Required	
F	502313.279	653134.827			No Entry	
F7	502389.267	653129.171	502389.267	653129.171	Required	

Manhole Schedules for Foul - Main

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
F8	502391.470	653129.148	502391.470	653129.148	Required	
F	502396.096	653134.885			No Entry	

Free Flowing Outfall Details for Foul - Main

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
F1.001	F	21.173	20.242	0.000	0	0

Free Flowing Outfall Details for Foul - Main

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
F2.003	F	21.350	20.284	0.000	0	0

Free Flowing Outfall Details for Foul - Main

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
F3.001	F	21.350	20.440	0.000	0	0

Simulation Criteria for Foul - Main

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Appendix E

Rainfall Return Period table

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 102484, Northing: 153194,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	3.0,	3.7,	4.1,	4.6,	4.9,	5.1,	5.8,	6.6,	7.0,	7.7,	8.2,	8.6,	9.2,	9.6,	10.0,	N/A ,
10 mins	4.2,	5.2,	5.7,	6.4,	6.8,	7.1,	8.1,	9.2,	9.8,	10.7,	11.4,	12.0,	12.8,	13.4,	13.9,	N/A ,
15 mins	5.0,	6.1,	6.7,	7.5,	8.0,	8.4,	9.5,	10.8,	11.5,	12.6,	13.4,	14.1,	15.0,	15.8,	16.3,	N/A ,
30 mins	6.5,	7.9,	8.7,	9.7,	10.3,	10.8,	12.3,	13.9,	14.8,	16.1,	17.2,	18.1,	19.3,	20.2,	20.9,	N/A ,
1 hours	8.4,	10.3,	11.2,	12.5,	13.4,	14.0,	15.9,	17.9,	19.1,	20.7,	22.1,	23.2,	24.7,	25.9,	26.8,	N/A ,
2 hours	11.0,	13.4,	14.6,	16.2,	17.3,	18.1,	20.5,	23.0,	24.6,	26.7,	28.4,	29.7,	31.7,	33.1,	34.3,	N/A ,
3 hours	12.8,	15.6,	17.0,	18.9,	20.1,	21.0,	23.8,	26.7,	28.5,	30.9,	32.9,	34.4,	36.6,	38.3,	39.6,	N/A ,
4 hours	14.3,	17.4,	18.9,	21.0,	22.4,	23.4,	26.5,	29.7,	31.6,	34.3,	36.5,	38.2,	40.6,	42.4,	43.9,	N/A ,
6 hours	16.7,	20.3,	22.0,	24.5,	26.0,	27.2,	30.7,	34.4,	36.7,	39.7,	42.2,	44.1,	47.0,	49.1,	50.8,	N/A ,
9 hours	19.5,	23.6,	25.6,	28.4,	30.2,	31.6,	35.6,	39.9,	42.5,	46.0,	48.9,	51.1,	54.3,	56.7,	58.7,	N/A ,
12 hours	21.7,	26.3,	28.6,	31.7,	33.6,	35.1,	39.6,	44.3,	47.2,	51.0,	54.2,	56.6,	60.2,	62.9,	65.0,	N/A ,
18 hours	25.4,	30.7,	33.2,	36.8,	39.1,	40.8,	46.0,	51.4,	54.7,	59.1,	62.8,	65.5,	69.6,	72.7,	75.1,	N/A ,
24 hours	28.3,	34.2,	37.0,	41.0,	43.5,	45.4,	51.1,	57.0,	60.7,	65.6,	69.6,	72.7,	77.2,	80.5,	83.2,	92.1,
2 days	36.3,	43.3,	46.6,	51.1,	54.0,	56.2,	62.7,	69.3,	73.4,	78.8,	83.3,	86.7,	91.6,	95.3,	98.2,	107.9,
3 days	43.3,	51.1,	54.8,	59.9,	63.1,	65.5,	72.7,	80.0,	84.5,	90.4,	95.3,	98.9,	104.2,	108.2,	111.3,	121.7,
4 days	49.7,	58.3,	62.3,	67.9,	71.4,	74.0,	81.8,	89.7,	94.5,	100.8,	106.1,	110.0,	115.7,	119.9,	123.3,	134.4,
6 days	61.4,	71.4,	76.1,	82.5,	86.5,	89.4,	98.3,	107.3,	112.8,	119.9,	125.8,	130.2,	136.5,	141.2,	145.0,	157.3,
8 days	72.2,	83.5,	88.7,	95.9,	100.4,	103.7,	113.5,	123.5,	129.5,	137.3,	143.8,	148.6,	155.6,	160.7,	164.8,	178.1,
10 days	82.6,	95.0,	100.8,	108.6,	113.5,	117.1,	127.9,	138.7,	145.2,	153.7,	160.7,	165.9,	173.4,	178.9,	183.3,	197.7,
12 days	92.6,	106.0,	112.3,	120.8,	126.1,	130.0,	141.6,	153.2,	160.2,	169.3,	176.8,	182.3,	190.4,	196.2,	200.9,	216.2,
16 days	111.8,	127.3,	134.5,	144.2,	150.2,	154.6,	167.8,	180.9,	188.7,	199.0,	207.4,	213.6,	222.5,	229.1,	234.3,	251.3,
20 days	130.4,	147.8,	155.8,	166.6,	173.3,	178.2,	192.8,	207.2,	215.9,	227.2,	236.4,	243.2,	253.0,	260.2,	266.0,	284.5,
25 days	153.1,	172.6,	181.6,	193.8,	201.2,	206.7,	222.9,	239.0,	248.6,	261.1,	271.3,	278.8,	289.6,	297.5,	303.8,	324.1,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf