DOSA

DENIS O'SULLIVAN & ASSOCIATES

CONSULTING ENGINEERS

RESIDENTIAL DEVELOPMENT, INNISCARRA VIEW, BALLINCOLLIG, CORK

INFRASTRUCTURE REPORT

DATE 07/04/2025

REVISION 2

JOB NO. 6843

Joyce House, Barrack Square, Ballincollig, Co. Cork

T 021 4871781 E info@dosa.ie W www.dosa.ie

DOCUMENT CONTROL

PROJECT NAME: Residential Development, Inniscarra View, Ballincollig, Cork

PROJECT NUMBER: 6843

REVISION	DATE	FILE NAME:	Residential Development, Inniscarra View, Ballincollig, Cork		
2	07.04.2025	DESCRIPTION:	Infrastructure Report		
			PREPARED	CHECKED	APPROVED
		INITIAL	SO'G	LO'T	SO'G
		DATE	07.04.2025	07.04.2025	07.04.2025
#	Insert Date	FILE NAME:			
		DESCRIPTION:			
			PREPARED	CHECKED	APPROVED
		INITIAL			
		DATE	Insert Date	Insert Date	Insert Date
#	Insert Date	FILE NAME:			
		DESCRIPTION:	Insert description		
			PREPARED	CHECKED	APPROVED
		INITIAL	Initials	Initials	Initials
		DATE	Insert Date	Insert Date	Insert Date
#	Insert Date	FILE NAME:			
		DESCRIPTION:	Insert description		
			PREPARED	CHECKED	APPROVED
		INITIAL	Initials	Initials	Initials
		DATE	Insert Date	Insert Date	Insert Date
#	Insert Date	FILE NAME:			
		DESCRIPTION:	Insert description		
			PREPARED	CHECKED	APPROVED
		INITIAL	Initials	Initials	Initials
		DATE	Insert Date	Insert Date	Insert Date

Contents

1 Introduction

Denis O'Sullivan & Associates were engaged as Consulting Engineers for the proposed development at Inniscarra View, Ballincollig, Cork.

The proposed development consists of the development of 8 no. residential units.

1.1 Objectives

Denis O'Sullivan & Associates carried out a number of site investigations and their findings have been incorporated to deal with solutions to:

- Surface Water Drainage Network
- Foul Drainage Network
- Water Supply

1.2 Site Location

The subject site is located within the built-up area of Ballincollig, approx. 5 km to the west of Cork City Centre. The site is immediately surrounded by residential dwellings to the North, South, East and West. The site bounds a mixture of existing buildings, private amenity space and Ballincollig Main Street. A snapshot of the application boundary is outlined in Figure 1 below.

Figure 1 – Context Map

1.3 Proposed Development

The proposed development provides a total of 8no. units consisting of ground floor and duplex apartments, townhouses and a detached accessible unit.

2 *Surface Water System*

The current site contains an existing residential unit and vacant plot. It is proposed that the surface runoff from the proposed development would be collected and discharge directly to the public network in the Inniscarra View estate road to the east of the proposed site as shown on the Proposed Drainage Layout Drawing No. 6483-0020.

In order to reduce the effects of the surface runoff on potential flooding, a Stormwater Management Plan will be applied to surface water discharges into adjacent watercourses. The Stormwater Management Plan can be applied to control the rate of runoff from new development. The maximum permitted surface water outflow from the new development is to be restricted to that of the existing Greenfield site by the usage of attenuation storage.

Control of runoff by attenuation methods requires a hydraulic control to restrict the magnitude of flows passing downstream, together with an upstream storage capacity to contain the volume of runoff held back by the hydraulic control. The flows are proposed to be attenuated in the surface water system by adopting flood storage attenuation tanks along with restricted outlets as the control devise. The storage volume required has been designed using the computer aided design package Windes 10.4.

The attenuation strategy for the site is for the detention of flow in a concrete attenuation tank.

2.1 Surface Water Drainage Network

The surface water drainage network for the proposed development was modelled using the Microdrainage software application. The surface water pipe lengths, slopes, contributing impermeable areas, upstream invert levels, upstream cover levels and pipe diameters were entered into the model using the drawings supplied.

2.2 Design Criteria:

The proposed surface water drains have been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the Department of the Environment's Recommendations for Site Development Works for Housing Areas, the Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal" and BS EN 752: 2008 Drain and Sewer Systems Outside Buildings.

- Return period for pipe work design 2 years
- Return period for attenuation design 100 years
- Soil Type 2
- Allowable Outflow 0.70 l/sec
- Time of entry 5 minutes
- M5 – 60 18.800 mm
- Ratio "r" 0.250
- Pipe Friction (Ks) 0.6 mm
- Minimum Velocity (based on pipe flowing full) 1.0 m/s
- Rainfall Runoff from Roads and Footpaths 100%
- Rainfall Runoff from Roofs 80%

- Rainfall Runoff from Driveways 80%
- Rainfall Runoff from Green Areas 20%
- Rainfall Depth Factored for Climate Change (as per GDSDS) 20%

(in accordance with GDSDS Volume 2, Chapter 6, Table 6.2 – see below)

Climate Change Category	Characteristics
River flows	20% increase in flows for all return periods up to 100 years
Sea level	400+mm rise (see Climate Change policy document for sea levels as a function of return period)
Rainfall	10% increase in depth (factor all intensities by 1.1)
	Modify time series rainfall in accordance with the GDSDS climate change policy document

Table 6.2 Climate Change Factors to be Applied to Drainage Design

The global variables required for the model were the M5-60 and Rainfall Ratio. These two factors may be read from maps contained in the Wallingford procedure. They enable the program to calculate the intensity, duration and frequency characteristics of storms.

M5-60 is the rainfall depth based on a 60-minute storm of 5 years return period. Ratio R is the ratio of the 60-minute storm to the 2-day storm for the 5-year return period events. These values are as follows:

- M5-60 = 18.800mm
- Ratio R = 0.250

Microdrainage generates design storms using the principles set out in the Flood Studies Report (NERC 1975).

A summer rainfall profile was used for the design of the pipework and a winter rainfall profile was used for the design of the storm water attenuation to give the critical design. A summer profile gives higher rainfall intensities and results in higher runoff rates and is used to determine the required capacity of the pipework. A winter rainfall profile gives a flatter more sustained profile and results in higher runoff volumes and is used to determine the attenuation/storage requirements.

The surface water drainage network was assessed for compliance with maximum and minimum velocities, pipe length etc. The network was designed to ensure velocities in the network and pipe gradients did not exceed the maximum velocity of 4.0m/s. The minimum velocity allowed was 1.00m/s.

The design of the drainage network was assessed using events with a range of different durations to determine the critical event for each return period analysed as follows:

- 1 in 2-year return period events were used to ensure that the system did not surcharge;
- 1 in 100 year return period events were used to ensure that flooding did not occur.

2.2.1 Pre-Development Conditions

For this development, the permissible outflow is calculated using the estimation method contained in the Institute of Hydrology Report No. 124: Flood estimation for small catchments.

$$QBAR = 0.00108 \times (AREA)^{0.89} \times (SAAR)^{1.17} \times (SOIL)^{2.17}$$

QBAR = The Mean Annual Peak Flow (Permissible outflow in m3.sec

AREA = Area of the Catchment (site) in km^2

SAAR = Standard Annual Average Rainfall

SOIL = Soil index

As the development is smaller than 50 ha, the analysis for determining the permissible outflow uses 50 ha in the formula and linearly interpolates the flow rate value based on the ratio of the development to 50 ha. This is a statistical based method within the Microdrainage Software utilizing the Regional Flood Frequency by Catchment Characteristics to give the Index Flood (QBAR)

Design summary sheets for the QBAR value are contained in Appendix B.

The Mean Annual Peak Flow (permissible outflow) was calculated for the particular design development areas.

The allowable runoff estimation method utilises IH 124 and the Soil Index value taken from the Micrcodrainage Design Package mapping system gives a Soil Index of 0.3.

2.2.2 Post-Development Conditions

The stormwater management plan adopted for the particular development involves using an attenuation tank located in the parking areas of the site.

All surface water runoff arising from the paved development will be drained away from the site. The tank will be designed for a 100-year storm event. The maximum discharge from the tank will be limited to calculated permissible runoff (QBAR) for the catchment area.

Based on the proposed development design there will be a change in the land surface. Therefore, due to this proposed change a corresponding increase in the peak rate of surface runoff from the site will arise during times of high rainfall.

Contributing Area	Permissible Outflow (l/sec)
Catchment Area	0.700 l/sec

The flood peak runoff rates from the post-development grassy permeable area (Q_p grass) and the post-development impervious area (Q_p imp.) using the Rational Method (100% impermeability of hard surfaces) are calculated using Windes 10.4. The Sources Control Module of the Microdrainage Software was used to design the attenuation tank capacities. This module also provides the critical storm duration for the attenuation tank during the design process.

It should be noted that climate change has been accounted for in the design. As per volume 5 of the GDSDS a factor of 20% has been incorporated into the design.

2.3 Attenuation Tank

2.3.1 Volume of Attenuation Tank

The capacity of the attenuation tank is designed to cater for the capacity required for a 1 in 100-year ARI event. This capacity are summarised as follows:

Basin No.	Capacity (m^3)	Restricted Outlet (l/sec)
1	30.0	0.700 l/sec

2.4 Hydrocarbon Treatment

A petrol interceptor is a trap used to filter out hydrocarbon pollutants from rainwater runoff. It is used in construction to prevent fuel contamination of streams carrying away the runoff.

Petrol interceptors work on the premise that some hydrocarbons such as petroleum and diesel float on the top of water. The contaminated water enters the interceptor typically after flowing off roads or hardstanding areas before being deposited into the first tank inside the interceptor.

The first tank builds up a layer of the hydrocarbon as well as other scum. Typically, petrol interceptors have 3 separate tanks each connected with a dip pipe, as more liquid enters the interceptor the water enters into the second tank leaving the majority of the hydrocarbon behind as it cannot enter the dip pipe, whose opening into the second tank is below the surface.

However, some of the contaminants may by chance enter the second tank. This second tank will not build up as much of the hydrocarbon on its surface. As before, the water is pushed into the third tank and more water enters the second.

The third tank should be practically clear of any hydrocarbon floating on its surface. As a precaution, the outlet pipe is also a dip pipe when the water leaves the third tank via the outlet pipe it should be contaminant free.

A summary of the proposed interceptor is as per the table below.

Table 2.4 – Petrol Interceptor Details

Catchment Reference	Petrol Interceptor Make & Model	Oil Storage Capacity (l)
Catchment Area	1 No. Conder CSNB3s	45.0 litres

2.5 Silt Control

The proposed petrol interceptor from Conder Environmental also includes a silt storage capacity in addition to the oil storage capacity that allow silt to be collected in the interceptor prior to discharge to the proposed detention basins. This silt build-up can then be removed from the

interceptor. The amount of silt storage from the proposed petrol interceptor is outlined in Table 2.5 below.

Table 2.5 – Petrol Interceptor Silt Storage Details

Catchment Reference	Petrol Interceptor Make & Model	Silt Storage Capacity (l)
Catchment Area	1 No. Conder CSNB3s	300.0 litres

2.6 Construction & Operational Stage Run-Off

Both construction and operational phase surface-water drainage from the proposed development site will ultimately discharge into the adjacent stormwater watercourses. Where surface-water run-off occurs at the site during the construction phase, it will be managed and controlled prior to discharge into the environment by implementing standard environmental controls. Temporary banks shall be in place to ensure that runoff is directed to a temporary detention pond which shall be provided to reduce the amount of silt in the run-off. The location of these banks and temporary detention ponds will be indicated and confirmed in a Construction Stage Construction & Environmental Management Plan. The development will also include the construction of a gravity surface-water drainage network throughout the site. The surface-water drainage network will include the installation of dedicated attenuation facilities upstream of proposed outfall to the public network, to attenuate discharges to the undeveloped Greenfield run-off rates with the operation of proprietary hydro-brake flow-control devices. The attenuation facility is sized on the basis of a design storm with a 100-year return period and an additional 20% allowance for the effect of climate change.

The attenuation facilities will be in the form of a concrete attenuation tank. This will be an off-line component of the drainage network into which runoff is diverted once flows reach a specified threshold.

3 *Foul Sewer System*

3.1 Foul Sewer Design

A Pre-Connection Enquiry was submitted to Irish Water on 25th November 2024. The Irish Water Reference Number for this enquiry is CDS24010203. The response to this Enquiry is included in Appendix A of this Report. This confirmed that based on analysis of the capacity currently available in the Irish Water network as assessed by Irish Water, the proposed connection to the Irish Water network can be facilitated without infrastructure upgrade by Irish Water.

The foul sewer has been designed using the System 1 and Simulation Modules of the Micro-drainage package. The foul network design addresses present day design issues and can view velocities at Full Bore, Proportional Depth and 1/3 flow.

A model of the proposed foul drainage network was built using the micro-drainage software applications. The model was analysed and amended until the results met with the design criteria specified.

The network has been designed to achieve self-cleansing velocities at 1/3 flow whilst maintaining minimum gradients. Design summary sheets are contained in Appendix E.

3.1.1 Development Breakdown

8 No. Residential units

Section 3.6 of The Irish Water Code of Practice Wastewater Infrastructure states that for the gravity sewers shall be designed to carry a minimum wastewater volume of 6 times the dry weather flow (6DWF) which is to be taken as 446 litres per apartment.

Loading = (8) (446) / (24) (60) (60) = 0.041 litres/second

6DWF = 0.246 litres/second

There is an existing 300mm IW sewer on the public roadway adjacent to the proposed development and it is proposed to connect into this sewer.

The layout of the proposed foul sewer network is shown on the Proposed Drainage Layout Drawing No. 6483-0020.

The overall quantity of wastewater for the proposed development is estimated at 3.57m^3 per day.

All works will be in accordance with Irish Water Code of Practice for Wastewater Supply & the Wastewater Infrastructure Standard Details Document Number: IW-CDS-5030-01.

4 Water Supply

As with the drainage network, a Pre-Connection Enquiry was submitted to Irish Water under Reference No. CDS24010203.

It is proposed to provide individual 25mm HDPE connections to tie into the existing public main located on the roadways adjacent to the site with associated metering requirements.

Water distribution supply to each building will be sized to cater for the requirements of those particular uses. Metered connections will be made to the main in accordance with Irish Water specifications and details.

The layout of the proposed watermain network is shown on the Proposed Watermain Layout Plan 6483-0030.

All works will be in accordance with Irish Water Code of Practice for Water Supply & the Water Infrastructure Standard Details Document Number: IW-CDS-5020-01.

4.1 Sources of Water for Fire Fighting

Water for firefighting purposes will be provided from the public water main (see Watermain Layout Drawing No. 6483-0030) complying with the requirements of TGD 'B'.

4.2 Provision of Hydrants

External Fire hydrants are not required for this building as the ground floor area of the building does not exceed 1000m^{2,} so fire hydrants are not required for these buildings. An existing external Fire Hydrant will be provided as indicated on the drawings and is installed in accordance with IS EN 14339: 2005 Underground fire hydrants. The fire hydrants are in accordance with Diagram 30 of TGD 'B'.

5 *Summary of Results*

The storm water network was built and analysed using the Microdrainage Software application and were assessed for a 1 in 2-year storm & 1 in 100 year storm. A summary of the results is shown in Tables 5.1 below and in the Microdrainage outputs in the Appendices.

The global variables, pipeline and manhole schedules for both the surface water network and foul network were printed and are included in the Appendices. These show the basic pipe details such as pipe length, diameter, roughness coefficient, upstream invert, velocity, etc.

Table 5.1 Summary of Surcharge and Flooding

Attenuation Tank Reference	Storm Event	Results
Attenuation Tank	1 in 2 year	No surcharge of the stormwater network
	1 in 100 year	Surcharge

The stormwater system is designed to ensure no surcharge occurs during a 1 in 2-year return period event.

No flooding was predicted to occur for the 1 in 100-year return period event. Surcharging and flood risk occurred for a number of critical storm events but this is allowed and does not compromise the network.

Table 5.2 Outlet Control Summary

Attenuation Tank Reference	Hydrobrake Reference	Limiting Discharge (l/s)	Design Head (m)	Hydrobrake Diameter (mm)
Attenuation Tank	MD4	0.70 l/sec	1.500	58

Table 5.3: Storage Tank Summary

Attenuation Tank Reference	Storage Type	Capacity (m^3)	Invert Level (m)	Maximum Storage Level (m)
Attenuation Tank	RC Tank	30.0	25.888	27.388

The foul water network model was built and analysed using the Micro-drainage Software application and was assessed to ensure velocities maintained a self-cleansing velocity. The system will consist of an internal gravity network discharging to the existing Irish Water asset.

Appendix A – Irish Water Confirmation of Feasibility

CONFIRMATION OF FEASIBILITY

Stephen O'Grady

Dosa Engineers
Joyce House
Barrack Square
Ballincollig
Cork
P31KP84

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

24 March 2025

Our Ref: CDS24010203 Pre-Connection Enquiry
Fatima, Poulavone, Ballincollig, Cork

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 8 unit(s) at Fatima, Poulavone, Ballincollig, Cork, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann
- **Wastewater Connection** - Feasible without infrastructure upgrade by Uisce Éireann

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

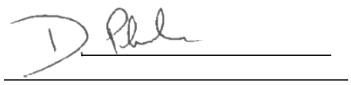
Where can you find more information?

- **Section A -** What is important to know?

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections, email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Appendix B – Allowable Runoff QBAR Values

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	0.110	Urban	0.000
SAAR (mm)	1131	Region Number	Ireland South

Results	**l/s**
QBAR Rural	0.7
QBAR Urban	0.7
Q100 years	1.3
Q1 year	0.6
Q2 years	0.7
Q5 years	0.8
Q10 years	0.9
Q20 years	1.0
Q25 years	1.1
Q30 years	1.1
Q50 years	1.2
Q100 years	1.3
Q200 years	1.4
Q250 years	n/a
Q1000 years	n/a

WARNING: Irish growth curves are not defined above 200 years.

Appendix C – 1 in 2 Year Design Sheets

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	Add Flow / Climate Change (%)	20
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	0.200
Ratio R	0.250	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.157	4-8	0.029

Total Area Contributing (ha) = 0.186

Total Pipe Volume (m³) = 2.702

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	T.E. (mins)	DWF (l/s)	k (mm)	HYD SECT	DIA (mm)
S1.000	24.750	0.165	150.0	0.040	5.00	0.0	0.600	o	225
S1.001	4.000	0.027	150.0	0.000	0.00	0.0	0.600	o	225
S1.002	17.300	0.115	150.0	0.016	0.00	0.0	0.600	o	225
S1.003	3.400	0.023	150.0	0.000	0.00	0.0	0.600	o	225
S1.004	8.220	0.055	150.0	0.130	0.00	0.0	0.600	o	225
S1.005	10.275	0.051	200.0	0.000	0.00	0.0	0.600	o	225

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ Area (ha)	Σ DWF (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.39	26.250	0.040	0.0	0.0	1.1	1.07	42.4	6.5
S1.001	50.00	5.45	26.085	0.040	0.0	0.0	1.1	1.07	42.4	6.5
S1.002	50.00	5.72	26.058	0.056	0.0	0.0	1.5	1.07	42.4	9.1
S1.003	50.00	5.77	25.943	0.056	0.0	0.0	1.5	1.07	42.4	9.1
S1.004	50.00	5.90	25.920	0.186	0.0	0.0	5.0	1.07	42.4	30.2
S1.005	50.00	5.19	25.866	0.000	0.7	0.0	0.1	0.92	36.6	0.7

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SSW.007	27.300	1.050	1050	S1.000	26.250	225				
SSW.006	27.290	1.205	1050	S1.001	26.085	225	S1.000	26.085	225	
SSW.005	27.320	1.262	1050	S1.002	26.058	225	S1.001	26.058	225	
SSW.004	27.600	1.657	1050	S1.003	25.943	225	S1.002	25.943	225	
SSW.003	27.600	1.680	1050	S1.004	25.920	225	S1.003	25.920	225	
SSW.002	27.770	1.904	1200	S1.005	25.866	225	S1.004	25.866	225	
SSW.001	27.750	1.936	0		OUTFALL		S1.005	25.814	225	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
S1.000	o	225	SSW.007	27.300	26.250	0.825	1050
S1.001	o	225	SSW.006	27.290	26.085	0.980	1050
S1.002	o	225	SSW.005	27.320	26.058	1.037	1050
S1.003	o	225	SSW.004	27.600	25.943	1.432	1050
S1.004	o	225	SSW.003	27.600	25.920	1.455	1050
S1.005	o	225	SSW.002	27.770	25.866	1.679	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
S1.000	24.750	150.0	SSW.006	27.290	26.085	0.980	1050
S1.001	4.000	150.0	SSW.005	27.320	26.058	1.037	1050
S1.002	17.300	150.0	SSW.004	27.600	25.943	1.432	1050
S1.003	3.400	150.0	SSW.003	27.600	25.920	1.455	1050
S1.004	8.220	150.0	SSW.002	27.770	25.866	1.679	1200
S1.005	10.275	200.0	SSW.001	27.750	25.814	1.711	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.005	SSW.001	27.750	25.814	25.814	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000
PIMP (% impervious)	100	Additional Flow - % of Total Flow	20.000
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	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Region	Scotland and Ireland
Return Period (years)	100	M5-60 (mm)	18.800

Synthetic Rainfall Details

Ratio R	0.250	Cv (Winter)	0.840
Profile Type	Summer	Storm Duration (mins)	30
Cv (Summer)	0.750		

Online Controls for Storm

Hydro-Brake® Manhole: SSW.002, DS/PN: S1.005, Volume (m³): 2.4

Design Head (m) 1.500 Hydro-Brake® Type Md4 Invert Level (m) 25.866
Design Flow (l/s) 0.7 Diameter (mm) 28

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.2	1.200	0.7	3.000	1.1	7.000	1.6
0.200	0.3	1.400	0.7	3.500	1.1	7.500	1.7
0.300	0.3	1.600	0.8	4.000	1.2	8.000	1.7
0.400	0.4	1.800	0.8	4.500	1.3	8.500	1.8
0.500	0.4	2.000	0.9	5.000	1.4	9.000	1.8
0.600	0.5	2.200	0.9	5.500	1.4	9.500	1.9
0.800	0.5	2.400	0.9	6.000	1.5		
1.000	0.6	2.600	1.0	6.500	1.6		

Storage Structures for Storm

Tank or Pond Manhole: SSW.002, DS/PN: S1.005

Invert Level (m) 25.866

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	20.0	1.500	20.0

Appendix D – 1 in 100 Year Design Sheets

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	Add Flow / Climate Change (%)	20
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	0.200
Ratio R	0.250	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.157	4-8	0.029

Total Area Contributing (ha) = 0.186

Total Pipe Volume (m³) = 2.702

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	T.E. (mins)	DWF (l/s)	k (mm)	HYD SECT	DIA (mm)
S1.000	24.750	0.165	150.0	0.040	5.00	0.0	0.600	o	225
S1.001	4.000	0.027	150.0	0.000	0.00	0.0	0.600	o	225
S1.002	17.300	0.115	150.0	0.016	0.00	0.0	0.600	o	225
S1.003	3.400	0.023	150.0	0.000	0.00	0.0	0.600	o	225
S1.004	8.220	0.055	150.0	0.130	0.00	0.0	0.600	o	225
S1.005	10.275	0.051	200.0	0.000	0.00	0.0	0.600	o	225

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ Area (ha)	Σ DWF (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.39	26.250	0.040	0.0	0.0	1.1	1.07	42.4	6.5
S1.001	50.00	5.45	26.085	0.040	0.0	0.0	1.1	1.07	42.4	6.5
S1.002	50.00	5.72	26.058	0.056	0.0	0.0	1.5	1.07	42.4	9.1
S1.003	50.00	5.77	25.943	0.056	0.0	0.0	1.5	1.07	42.4	9.1
S1.004	50.00	5.90	25.920	0.186	0.0	0.0	5.0	1.07	42.4	30.2
S1.005	50.00	5.19	25.866	0.000	0.7	0.0	0.1	0.92	36.6	0.7

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SSW.007	27.300	1.050	1050	S1.000	26.250	225				
SSW.006	27.290	1.205	1050	S1.001	26.085	225	S1.000	26.085	225	
SSW.005	27.320	1.262	1050	S1.002	26.058	225	S1.001	26.058	225	
SSW.004	27.600	1.657	1050	S1.003	25.943	225	S1.002	25.943	225	
SSW.003	27.600	1.680	1050	S1.004	25.920	225	S1.003	25.920	225	
SSW.002	27.770	1.904	1200	S1.005	25.866	225	S1.004	25.866	225	
SSW.001	27.750	1.936	0		OUTFALL		S1.005	25.814	225	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
S1.000	o	225	SSW.007	27.300	26.250	0.825	1050
S1.001	o	225	SSW.006	27.290	26.085	0.980	1050
S1.002	o	225	SSW.005	27.320	26.058	1.037	1050
S1.003	o	225	SSW.004	27.600	25.943	1.432	1050
S1.004	o	225	SSW.003	27.600	25.920	1.455	1050
S1.005	o	225	SSW.002	27.770	25.866	1.679	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
S1.000	24.750	150.0	SSW.006	27.290	26.085	0.980	1050
S1.001	4.000	150.0	SSW.005	27.320	26.058	1.037	1050
S1.002	17.300	150.0	SSW.004	27.600	25.943	1.432	1050
S1.003	3.400	150.0	SSW.003	27.600	25.920	1.455	1050
S1.004	8.220	150.0	SSW.002	27.770	25.866	1.679	1200
S1.005	10.275	200.0	SSW.001	27.750	25.814	1.711	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.005	SSW.001	27.750	25.814	25.814	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000
PIMP (% impervious)	100	Additional Flow - % of Total Flow	20.000
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	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Region	Scotland and Ireland
Return Period (years)	100	M5-60 (mm)	18.800

Synthetic Rainfall Details

Ratio R	0.250	Cv (Winter)	0.840
Profile Type	Summer	Storm Duration (mins)	30
Cv (Summer)	0.750		

Online Controls for Storm

Hydro-Brake® Manhole: SSW.002, DS/PN: S1.005, Volume (m³): 2.4

Design Head (m) 1.500 Hydro-Brake® Type Md4 Invert Level (m) 25.866
Design Flow (l/s) 0.7 Diameter (mm) 28

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.2	1.200	0.7	3.000	1.1	7.000	1.6
0.200	0.3	1.400	0.7	3.500	1.1	7.500	1.7
0.300	0.3	1.600	0.8	4.000	1.2	8.000	1.7
0.400	0.4	1.800	0.8	4.500	1.3	8.500	1.8
0.500	0.4	2.000	0.9	5.000	1.4	9.000	1.8
0.600	0.5	2.200	0.9	5.500	1.4	9.500	1.9
0.800	0.5	2.400	0.9	6.000	1.5		
1.000	0.6	2.600	1.0	6.500	1.6		

Storage Structures for Storm

Tank or Pond Manhole: SSW.002, DS/PN: S1.005

Invert Level (m) 25.866

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	20.0	1.500	20.0

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 100
Climate Change (%) 0

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
S1.000	1440 Winter	100	0%	100/15 Summer	100/30 Winter			15
S1.001	1440 Winter	100	0%	100/15 Summer	100/30 Summer			16
S1.002	1440 Winter	100	0%	100/15 Summer	100/60 Summer			14
S1.003	60 Winter	100	0%	100/15 Summer				
S1.004	60 Winter	100	0%	100/15 Summer				
S1.005	60 Winter	100	0%	100/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m^3)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
S1.000	SSW.007	27.336	0.861	0.000	0.02	0.0	0.9	FLOOD RISK
S1.001	SSW.006	27.336	1.026	0.000	0.05	0.0	1.5	FLOOD RISK
S1.002	SSW.005	27.336	1.053	0.000	0.04	0.0	1.5	FLOOD RISK
S1.003	SSW.004	27.392	1.224	0.000	0.23	0.0	6.4	FLOOD RISK
S1.004	SSW.003	27.430	1.285	0.000	1.04	0.0	34.3	FLOOD RISK
S1.005	SSW.002	27.429	1.338	0.000	0.02	0.0	0.8	SURCHARGED

Appendix E – Foul Sewer Design Sheets

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)	446.00	Maximum Backdrop Height (m)	1.500
Persons per House	1.00	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 Inverts

Network Design Table for Foul - Main

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	DWF (l/s)	k (mm)	HYD SECT	DIA (mm)
F1.000	30.350	0.506	60.0	0.000	6	0.0	1.500	o	150
F2.000	21.250	0.656	32.4	0.000	2	0.0	1.500	o	150
F1.001	3.750	0.025	150.0	0.000	0	0.0	1.500	o	150

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ DWF (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	26.250	0.000	0.0	6	0.0	11	0.34	1.13	20.0	0.2
F2.000	26.400	0.000	0.0	2	0.0	6	0.29	1.54	27.3	0.1
F1.001	25.744	0.000	0.0	8	0.0	15	0.27	0.71	12.6	0.2

Manhole Schedules for Foul - Main

MH Name	MH CL (m)	MH Depth (m)	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
FFS.033	27.300	1.050	1050	F1.000	26.250	150				
FFS.002	27.750	1.350	1050	F2.000	26.400	150				
FFS.001	27.080	1.336	1050	F1.001	25.744	150	F1.000	25.744	150	
							F2.000	25.744	150	
FExis MH	27.210	1.491	0		OUTFALL		F1.001	25.719	150	

PIPELINE SCHEDULES for Foul - Main

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
F1.000	o	150	FFS.033	27.300	26.250	0.900	1050
F2.000	o	150	FFS.002	27.750	26.400	1.200	1050
F1.001	o	150	FFS.001	27.080	25.744	1.186	1050

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH DIAM., L*W (mm)
F1.000	30.350	60.0	FFS.001	27.080	25.744	1.186	1050
F2.000	21.250	32.4	FFS.001	27.080	25.744	1.186	1050
F1.001	3.750	150.0	FExis MH	27.210	25.719	1.341	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)
F1.001	FExis MH	27.210	25.719	25.500	0	0

Simulation Criteria for Foul - Main

Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000
PIMP (% impervious)	100	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	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.500	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		

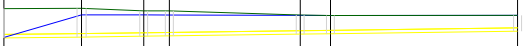
Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.000
Return Period (years)	0	Profile Type	Summer
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	0.000	Cv (Winter)	0.840

Synthetic Rainfall Details

Storm Duration (mins) 30

Appendix F – Storm Water Longitudinal Sections

MH Name	SSW.001				SSW.005		SSW.007	
Hor Scale 1000 Ver Scale 500 Datum (m)15.000								
PN					S1.002		S1.000	
Dia (mm)					225		225	
Slope (1:X)					150.0		150.0	
Cover Level (m)	27.750	27.770	27.600		27.320	27.290	27.300	
Invert Level (m)		25.814 25.866	25.866 25.920		25.943 26.058	26.085	26.085 26.250	
Length (m)					17.300		24.750	

Appendix G – Foul Sewer Longitudinal Sections

Denis O'Sullivan & Associates		Page 1
Unit 5, Joyce House Barrack Square Ballincollig, Co. Cork	Residential Development Poulavone Ballincollig, Cork	
Date 11/09/2024 File FS Model.MDX	Designed By S.O.'Grady Checked By	
Micro Drainage	Network W.12.4	

MH Name	FExis MH		FFS.033	
Hor Scale 1000 Ver Scale 500 Datum (m)15.000			2.000	
PN			F1.000	
Dia (mm)			150	
Slope (1:X)			60.0	
Cover Level (m)	27.210	27.080	27.300	
Invert Level (m)		25.744	25.744 26.250	
Length (m)			30.350	

MH Name	FFS.001	FFS.002	
Hor Scale 1000 Ver Scale 500 Datum (m)15.000		1.000	
PN		F2.000	
Dia (mm)		150	
Slope (1:X)		32.4	
Cover Level (m)	27.080	27.750	
Invert Level (m)		25.744 26.400	
Length (m)		21.250	

Appendix H – Hydrobrake Details

Hydro-Brake® Optimum

Reduce Storage Needs

Product Summary

The Hydro-Brake® Optimum Vortex Flow Control is a versatile, self-activating device with a unique geometry designed to harness the energy of vortex flow.

The Hydro-Brake® Optimum is used to maximize savings on new construction projects by minimizing stormwater detention volumes. Also an economical retrofit solution, the Hydro-Brake® Optimum can be installed in over-discharging ponds and catch basins to restrict the outflow without requiring the construction of additional detention volumes.

With large openings that guard against blockages and an installation base upwards of 25,000 units, the Hydro-Brake® is a trusted and proven solution used to reduce the rate of stormwater runoff.

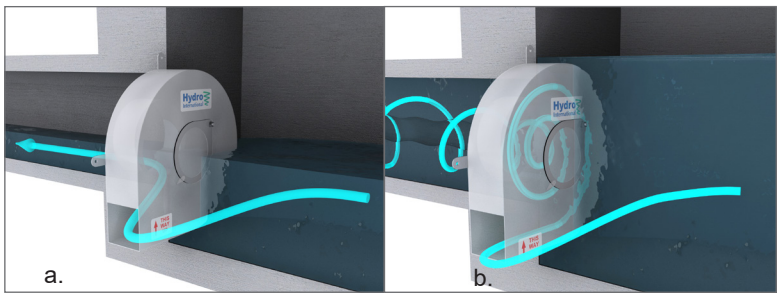


Fig.1 The Hydro-Brake® operates like (a) a large orifice under low flow conditions, and (b) a small orifice under higher flow / higher head conditions when a vortex air core forms within the device and throttles the flow.

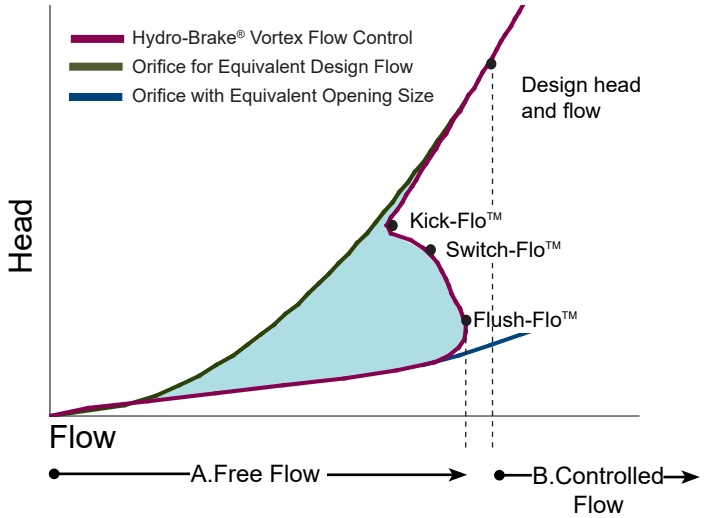


Fig.2 The characteristic of the Hydro-Brake® vs. an equivalent orifice.

The Hydro-Brake® Vortex Flow Control optimizes flow control to allow for higher discharge rates at lower heads than conventional flow control options. The head/discharge curves shown below illustrate the behavior of a Hydro-Brake® Vortex Flow Control compared to an orifice (Fig.2).

How it Works

Reduce Storage Volumes by 40%

The Hydro-Brake® Optimum operates on simple fluid hydraulics. Flow enters the volute tangentially through the inlet. Under low flow conditions, the Hydro-Brake® Optimum acts as a large orifice and water passes directly from the inlet to the outlet (Fig.1a).

As flow increases and reaches the Flush-Flo™ point, high peripheral velocities initiate the throttling action. As head increases, the valve approaches the Switch-Flo™ and Kick-Flo™ points and an air-filled core starts to form in the volute. As head continues to increase, the air core fully stabilizes and the valve discharge is throttled to that of a smaller orifice (Fig.1b).

Benefits

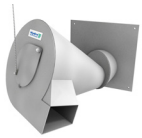
- Reduced stormwater storage volumes by up to 40%
- Up to 50% savings in project storage costs
- Self-activating with no moving parts or power requirements
- Available in wall-mounted or floor-mounted geometries
- Area of opening is 3-6 times larger than the equivalent orifice
- Virtually maintenance free
- Proven performance with over 25,000 installations worldwide

Stormwater Solutions

→ hydro-int.com/hydro-brake

Sizing & Design

Three series of Hydro-Brake® Optimum Vortex Flow Controls are available to suit various applications and design constraints. Refer to the Hydro-Brake® Optimum Design Chart for typical sizing guidelines.

Series	S Series	V Series	C Series
Typical Geometry			
Models	SH STH SXH SMH SMXH	SV SXV SMV	C CX CH
Typical Applications	• Flow control at the inlet of the storm drain system • Outlet flow control for stormwater detention systems	• Erosion control & energy dissipation • Roof runoff control for “Blue Roof” detention schemes	• Outlet flow control for flood dams and levees • Outlet flow control for stormwater detention systems
Typical Mount Style	Wall Mount	Downspout/Roof Mount Floor Mount Pipe Mount	Floor Mount
Typical Diameter Range*	2 - 16 in (5 - 41 cm)	2 - 16 in (5 - 41 cm)	3 - 20 in (7.5 - 51 cm)
Typical Flow Range**	0.05 - 5.6 cfs (1 - 157 L/s)	0.05 - 6.0 cfs (1 - 174 L/s)	0.18 - 14.3 cfs (5.3 - 405 L/s)

**Listed diameter ranges are typical guidelines only. Hydro-Brake® Optimum Vortex Flow Controls can be manufactured to any specified diameter up to 6'.*
***Flow ranges listed are for 4' - 6.5' of head.*
Contact Hydro International for site-specific sizing and design requirements.

Optional Design Accessories

Pivoting Bypass Door

For maintenance access to the outlet pipe.

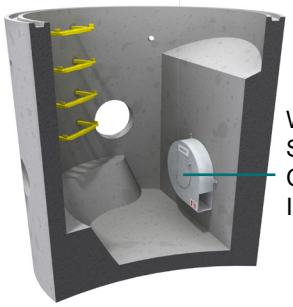
Curved Backplate

To allow for flush-mounting to the wall of a round manhole.

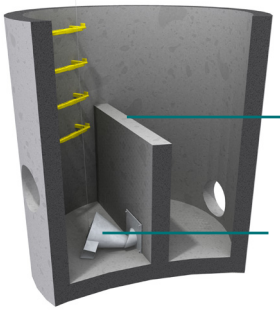
Vortex Suppressor Pipe

To eliminate air core for emergency bypass.

Typical Chamber Configurations

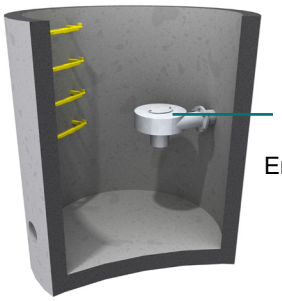


Wall Mounted SXH Model for Catch Basin Inlet Control



Large Storm Bypass Weir

Floor Mounted CH Model for Small Storm Flow Control



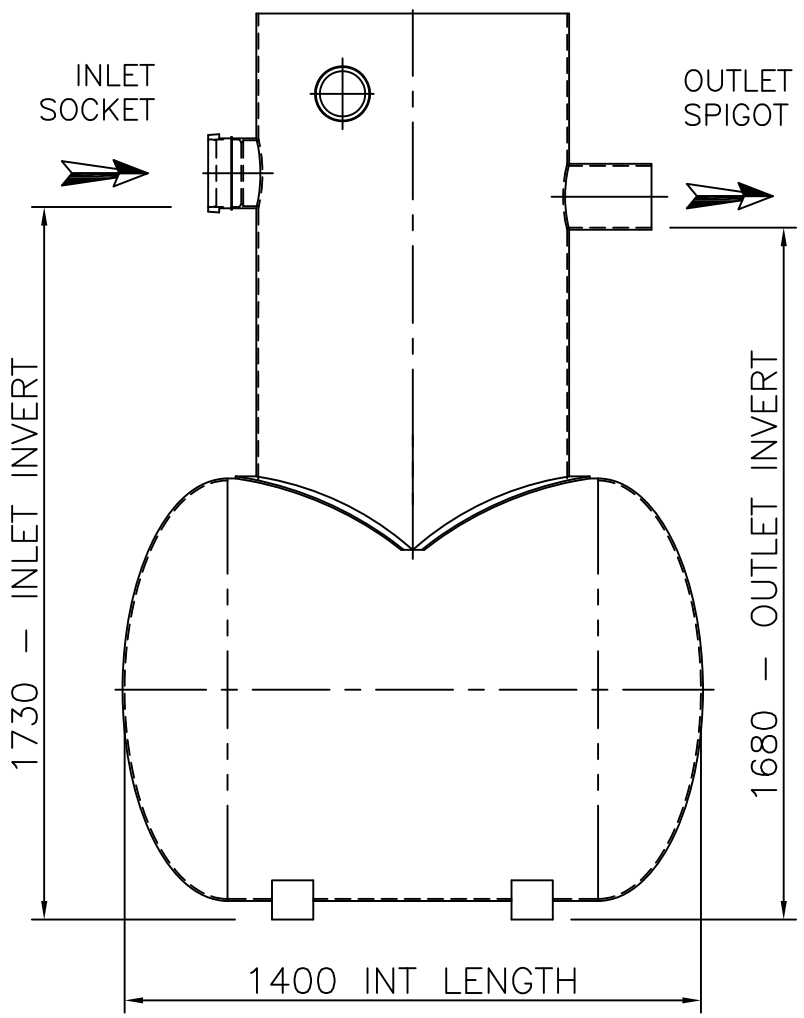
Pipe Mounted SXV Model for Energy & Velocity Dissipation

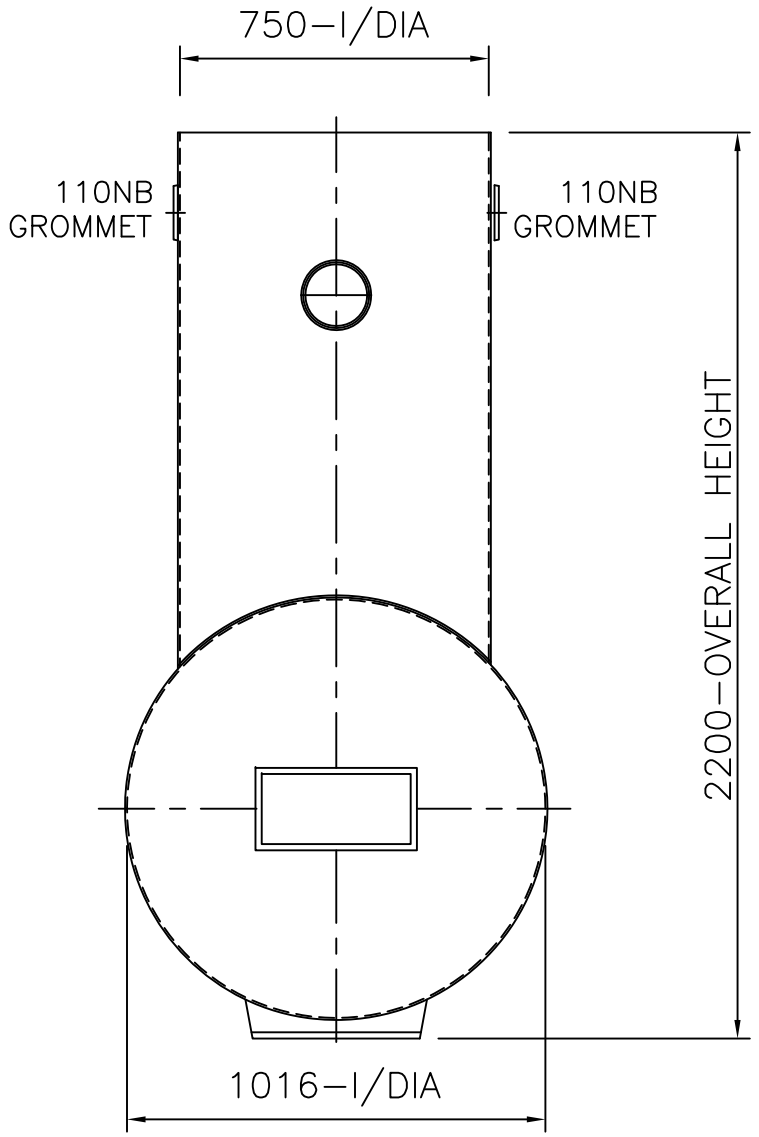
Hydro International®

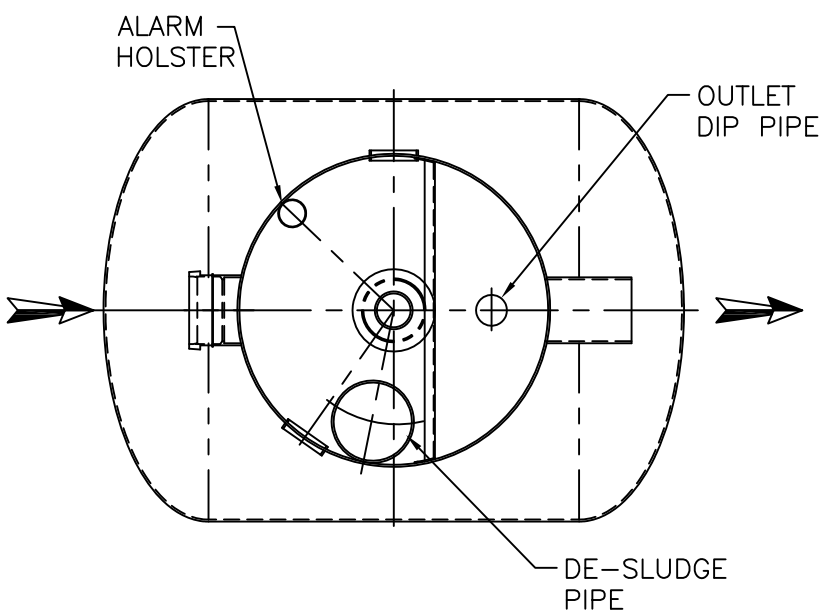
Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200
Email: stormwaterinquiry@hydro-int.com
Web: www.hydro-int.com/hydro-brake

HB_SS_A_2203

Appendix J – Petrol Interceptor Details







IMPORTANT NOTE

DUE TO THE COMPACT DESIGN AND EASE OF INSTALLATION, CONDER SEPARATORS ARE NOW SUPPLIED AS STANDARD WITH AN IN LINE CONFIGURATION.

PIPE SIZE VARIANTS

100, 150, 225 PVC

300 GRP

NOTES:

1. PRODUCT INFORMATION

The Conder range of light liquid separators is produced from high grade GRP. Inlets are provided as sockets and outlets as spigots, Connections may be made by steel-banded flexible couplings, nitrile seal joints, rope-seal and mortar or any other appropriate jointing method.

Ventilation specifications should be in accordance with Local Authority requirements. Vent pipework from multiple chambers must never be manifolded below ground level.

2. PERFORMANCE CHARACTERISTICS

Separators are based on the requirements stated in European Standard EN858-1 and Environment Agency guideline PPG3, in particular:-

a. The nominal size has been established from performance tests where the residual oil at the outlet is less than 5mg/l for class 1 separators and less than 100mg/l for class 2 separators.

3. MAINTENANCE AND USE

It is important to recognise that light liquid separators require regular maintenance. The period between maintenance operations can vary depending on the location and use of the separator, therefore routine inspections shall be undertaken at least every six months and a log maintained of inspection date, depth of oil, depth of silt and any cleaning that is undertaken.

A Conder Alarm should be fitted to every separator to give automatic warning that the light liquid capacity has been reached.

Access to the separator should be kept clear and not used for storage.

4. PRODUCT DEVELOPMENT

In line with our policy of constant improvement and development, we reserve the right to change specification without prior notice.

IMPORTANT INVERT LEVEL NOTE (RIBBED TANKS ONLY!):

The inlet and outlet Invert Level(IL) shown on this drawing is to internals of the shell unless otherwise stated.

For Invert level to the outside of the shell ribs, see the conversion below:

Ø1.0m, 1.2m, 1.5m, 1.8m, 2.5m IL+50mm ('X')

Ø3.0m,4.0m IL+75mm ('X')

TANKS SUPPLIED WITH LOOSE SHAFTS DO NOT COME SUPPLIED WITH A FIXING KIT.
THIS IS THE RESPONSIBILITY OF THE SITE CONTRACTOR.

PREMIER TECH AQUA

1ST ANGLE PROJECTION

TITLE

CNSB3S/21/SALES
BYPASS SEPARATOR

REV.	DATE	BY	CHKD.	APPD.	DESCRIPTION
5	15.08.11	RU	DG	RU	FEET ADDED

A3	DO NOT SCALE IF IN DOUBT ASK ALL DIMENSIONS IN MM	GENERAL TOLERANCES (unless noted otherwise)					THIS DRAWING IS THE PROPERTY OF PREMIER TECH AQUA Ltd. AND IS NOT TO BE COPIED IN PART OR WHOLE WITHOUT WRITTEN PERMISSION
		GRP FABRICATED MACHINED	LINEAR	± 5mm ± 2mm ± 0.5mm	ANGLE	±0.5° ±0.2° ±0.1°	

DRAWN BY	CHKD.	APPD.	SCALE	DRAWING No.	REVISION
RU	PB	RP	NTS	CNSB3S/21 SALES	5
DATE 03.10.05	DATE 03.10.05	DATE 03.10.05			