



**DEARDEN STREET
BURY
BL8 2PB**

**DRAINAGE OPERATION AND
MAINTENANCE PLAN**

26th FEBRUARY 2026
DOC REF: 25044-DOC-002-A

**Issue Sheet.**

Prepared	Date		Checked	Date
M M	26-02-26		M M	26-02-26

Revisions	Comment	Date
A	Initial Issue	26-02-26

The report is based on the information that has been acquired and / or made available to Advant Engineers via the various searches and consultations undertaken as part of the Flood Risk Assessment. In some cases, anecdotal information has been relied upon, where documented evidence has been lacking.

The conclusions drawn in the above report are considered correct although any subsequent additional information may allow refinement of the conclusions.

All work carried out in preparing this report has utilised and is based upon Advant Engineers current professional knowledge and understanding of current UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and cause any conclusions to become inappropriate or incorrect.

This report has been prepared using information contained in maps and documents prepared by others. Advant Engineers can accept no responsibility for the accuracy of such information.



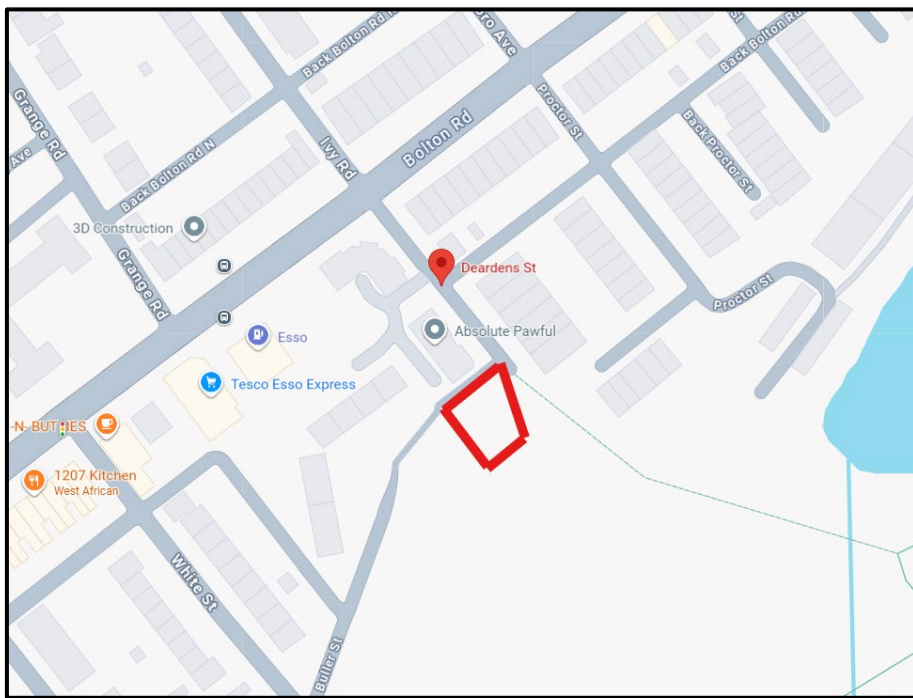
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1. Introduction.

- 1.1. Advant Engineers has been commissioned to undertake an Operation and Maintenance plan for the proposed drainage in support of discharging a planning condition in regard to the development located at the end of Dearden Street in Bury.
- 1.2. The proposal is for a 5 unit residential scheme located on a disused brownfield site, the site can be located at the following co-ordinates 379118E, 410317N and the nearest postcode is BL8 2PB as shown on the map below.



- 1.3. This report is to outline the SUDS drainage operations and maintenance strategy, this will determine the different SUDS features on the site, the necessary maintenance of the SUDS features and the frequency in which they should be inspected.
- 1.4. This report should be read in conjunction with drawings 20013-101 and associated architectural and engineering drawings. (See Appendix A)



2. SUDS Drainage Layout

- 2.1. Surface water from the roofs will be collect by means of guttering and rainwater down pipes, and runoff from the driveways will be collected via linear drainage such as and ACO drain, these will then be connected directly into the adopted surface water system.
- 2.2. The surface water drainage for the site consists below ground pipes and chambers that discharge to the public sewer, the attenuation on site is provided within a cellular tank and the flow is restricted by a Vortex Flow Control, specifically a Hydro Brake Unit by Hydro International. (See Drawing 20013-101 for drainage layout plan).
- 2.3. The tank on site has been sized to accommodate the 1 in 100 year + 40% climate change rainfall event, and it has been located under a shared private drive.
- 2.4. Details of the tank can be found in Appendix B.

3. SUDS Operations and Maintenance

- 3.1. The tank and flow control device with be the responsibility of a management company that the residents will pay a monthly fee for the maintenance and repair of the tank and flow control, however during construction and up to the point of occupation the developer will be responsible for the operation and maintenance of the drainage system and its various SUDS elements.
- 3.2. The convention drainage system, consisting of standard manholes and pipework, are maintained by sub-contractors using specialist machinery to clear gullies, pipework and storage zones of rubbish and sediment. The frequency of this task



is determined by the need, this can be identified by a reduced flow through the pipework, water surcharging or the visible sight of sediment or buildup in the manholes.

3.3. Corrective maintenance should be undertaken on an ad hoc basis dependant on need, these task should include:

- Repair to access chambers / manhole covers
- Jetting and clearing of blockages
- Repair any broken pipes, manhole sections, step irons

3.4. Beyond the convention drainage manholes and pipework, the adoptable system also has a Flow Control manhole and a cellular attenuation tank that requires routine inspection and maintenance as outlined below.

**FLOW CONTROL MANHOLE – HYDROBRAKE UNIT AND PENSTOCK**

MAINTENANCE SCHEDULE	REQUIRED ACTION	FREQUENCY
Regular Maintenance	Vacuum clean the sump in the manhole.	Annually
	Inspect pipework for silt accumulation and jet-vac clean.	Annually
	Clean spindle threads on penstock by hosing down with clean water, then apply grease to the spindle.	Every 6 months
	All other moving parts should be lightly oiled / greased.	As required.
Remedial Actions	Repair / rehabilitate inlets, outlets and vents.	As required.
	Replace hydrobrake unit should it become damage and fail to operate.	As required.
	Anytime the hydrobrake unit is removed then new neoprene seals should be installed.	As required.
Monitoring	Check that flow control manhole is emptying, there should be little or no water after consecutive days of dry weather.	Twice in the first year, once after heavy rainfall, and then once after consecutive days of dry weather. After that annual inspections.
	The hydrobrake has one moving part which is the bypass gate, and the penstock has a gate operated by a rising spindle, both elements should be opened and closed to check their operation.	Every 3 months
	Check for any leakages between the hydrobrake / penstock units and the concrete mounting block.	Annually
	Check tightness of all fixing bolts.	Annually
	Whilst the penstock is in the fully open position, inspect the seals and the sealing surface.	Annually



3.5. The above is scheduled maintenance, additional inspections and cleaning of the hydrobrake chamber should be undertaken in the event of a failure or after every extreme flood event.

3.6. See Appendix C for the Hydrobrake technical data and company brochure.

CONCRETE ATTENUATION TANK – CARLOW CONCRETE

MAINTENANCE SCHEDULE	REQUIRED ACTION	FREQUENCY
Regular Maintenance	Inspect and identify areas that are not operating correctly. If required take remedial action.	Monthly for the first 3 months and then annually.
	Jet clean the inside of the tank for sediment removal	Annually
Remedial Actions	Repair / rehabilitate inlets, outlets and vents.	As required.
Monitoring	Inspect / check all inlets, outlets and vents to ensure that they are in good condition and operating as designed.	Annually

3.7. The above is scheduled maintenance, additional inspections and cleaning of the tank should be undertaken in the event of a failure or after every extreme flood event.

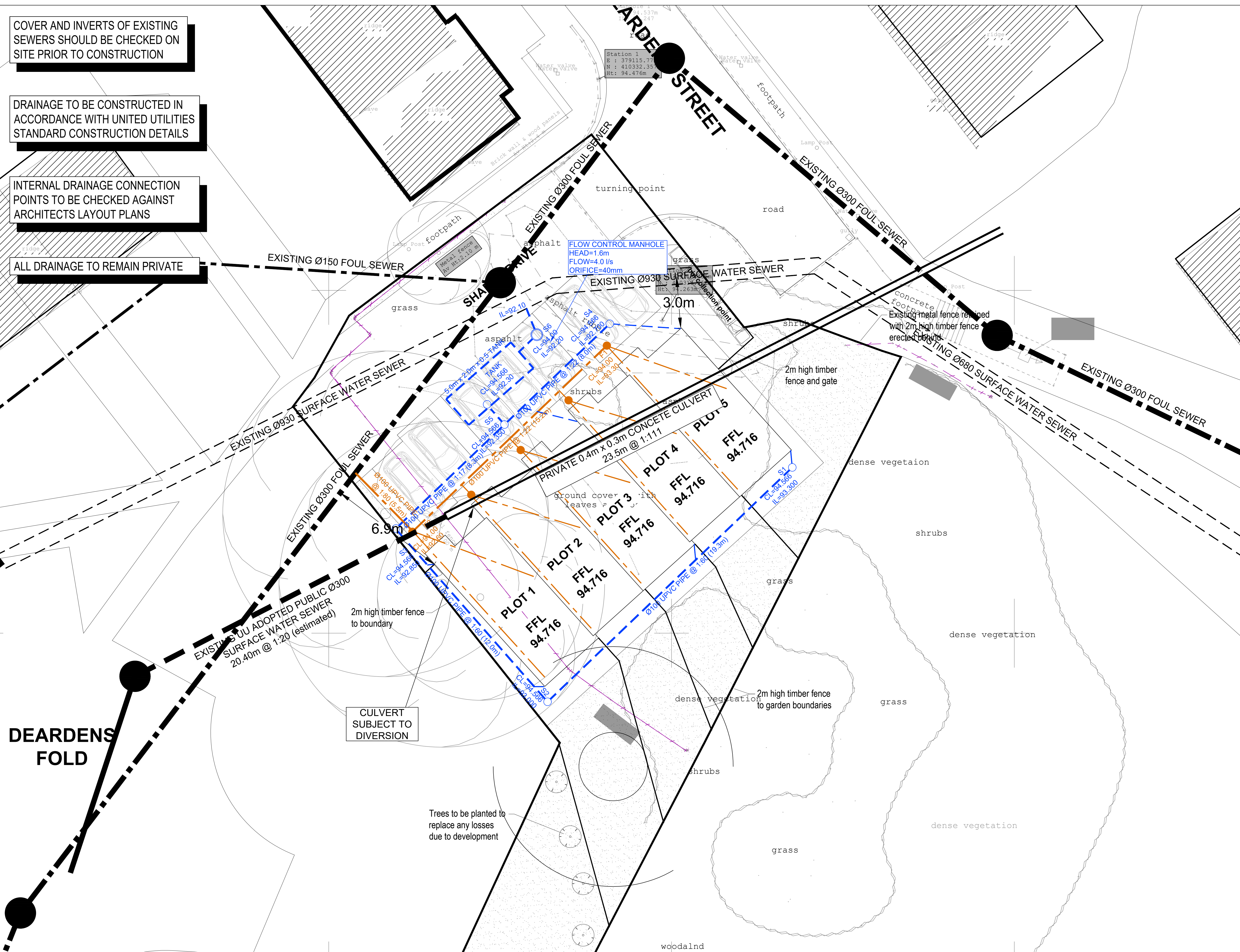
3.8. Access is provided to the tank via the private shared driveway, maintenance vehicles can safely pull off the public highway and park over the tank to undertake maintenance / remedial works.

3.9. See Appendix B for the Tank technical data and company brochure.



Appendix A
DRAINAGE LAYOUT PLAN

ALL DRAINAGE TO REMAIN PRIVATE



Notes

1. This drawing is produced for use in this project only and may not be used for any other purpose. The consulting Engineers accept no liability for the use of this drawing other than the purpose for which it was intended in connection with this project as recorded on the title block fields 'Purpose for Issue' and 'File Status Code'.
2. This drawing may not be reproduced in any form without prior written agreement.
3. Do not scale from the drawing, use written dimensions only.
4. All dimensions are in millimetres unless otherwise specified.
5. Discrepancies must be reported back to the engineer prior to construction.

Key

-  EXISTING FW SEWER
 EXISTING SW SEWER
 PROPOSED SW SEWER
 PROPOSED FW SEWER

DRAINAGE STRATEGY

SURFACE WATER

In accordance with the SuDS Hierarchy then infiltration should be considered in the first instance, a site investigation was undertaken that has shown the ground has some permeability but also has a significant amount of 'made ground' and therefore it states that soakaways are not suitable.

As soakaways are not expected to work and then discharge to a watercourse should be the next considered point of discharge, there is no watercourse in the vicinity of the site and therefore it is proposed to discharge to the public sewer.

Discharge of the surface water is proposed to go to the United Utility Surface Water sewer that crosses the site at a controlled rate with attenuation on site.

The site is currently a greenfield site which requires the discharge rates to be restricted to the equivalent greenfield rates which equate to:

QBar = 0.8 l/s
1 in 1 Year = 0.69 l/s
1 in 30 Year = 1.36 l/s
1 in 100 Year = 1.66 l/s

The above rates are quite low to be achieved as it would require a 25mm orifice to attain a 1.66 l/s discharge rate and therefore it is proposed to restrict to a 4.0 l/s which equates to a 40mm orifice.

It has been envisaged to store up the 1 in 100 year + 40% climate rainfall event on site in a attenuation tank.

FOUL DRAINAGE

It is proposed to discharge to the existing united utility foul sewer that crosses the site.

D	MM	LAYOUT UPDATED	01.10.25
C	MM	STATUS UPDATE	01.08.25
B	MM	DRAINAGE UPDATED	18.12.21
A	MM	INITIAL ISSUE	22.04.21
REV	BY	AMENDMENTS	DATE

FOR APPROVAL

STATUS		CHK'D
PRELIMINARY		MJM
FOR COMMENT		MJM
FOR APPROVAL		MJM
FOR CONSTRUCTION		
AS BUILT		



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CONTRACT
DEARDENS STREET
BURY
NEW BUILD 5 UNITS

TITLE
DRAINAGE LAYOUT

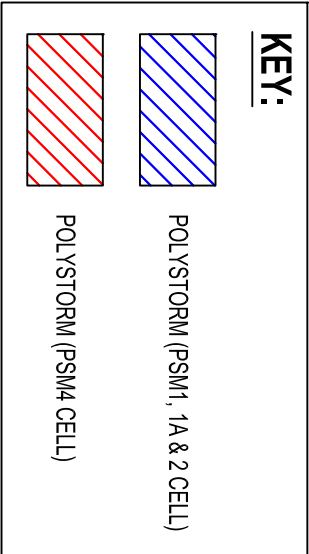
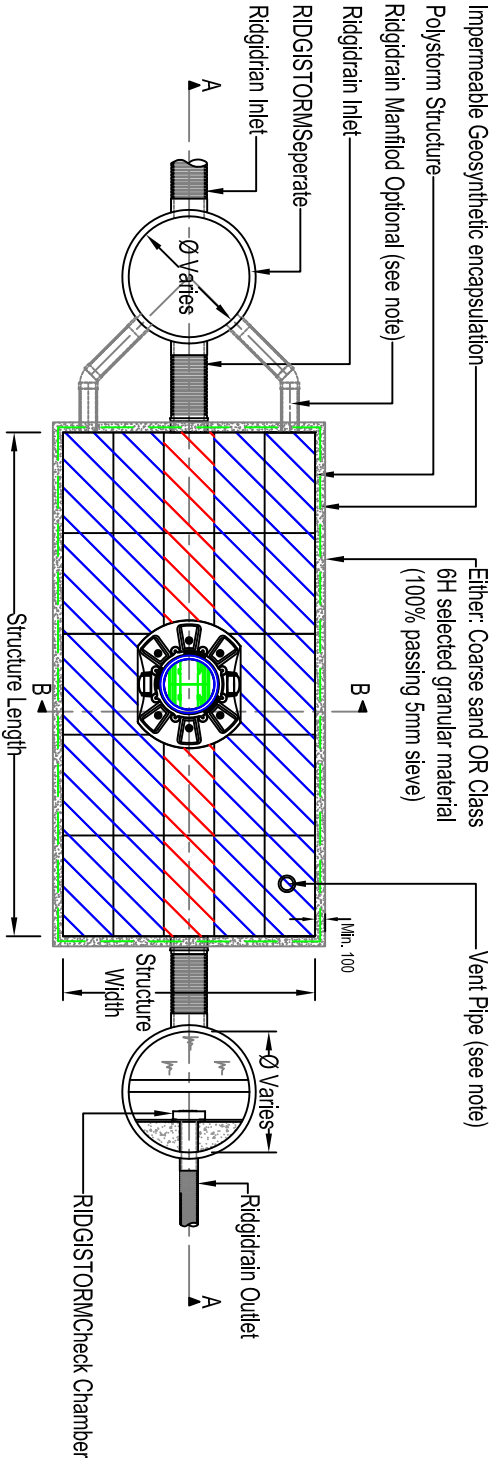
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SCALE	1:125 @ A1	DATE	22.04.21

JOB No 20013	DRG No 101	REV D
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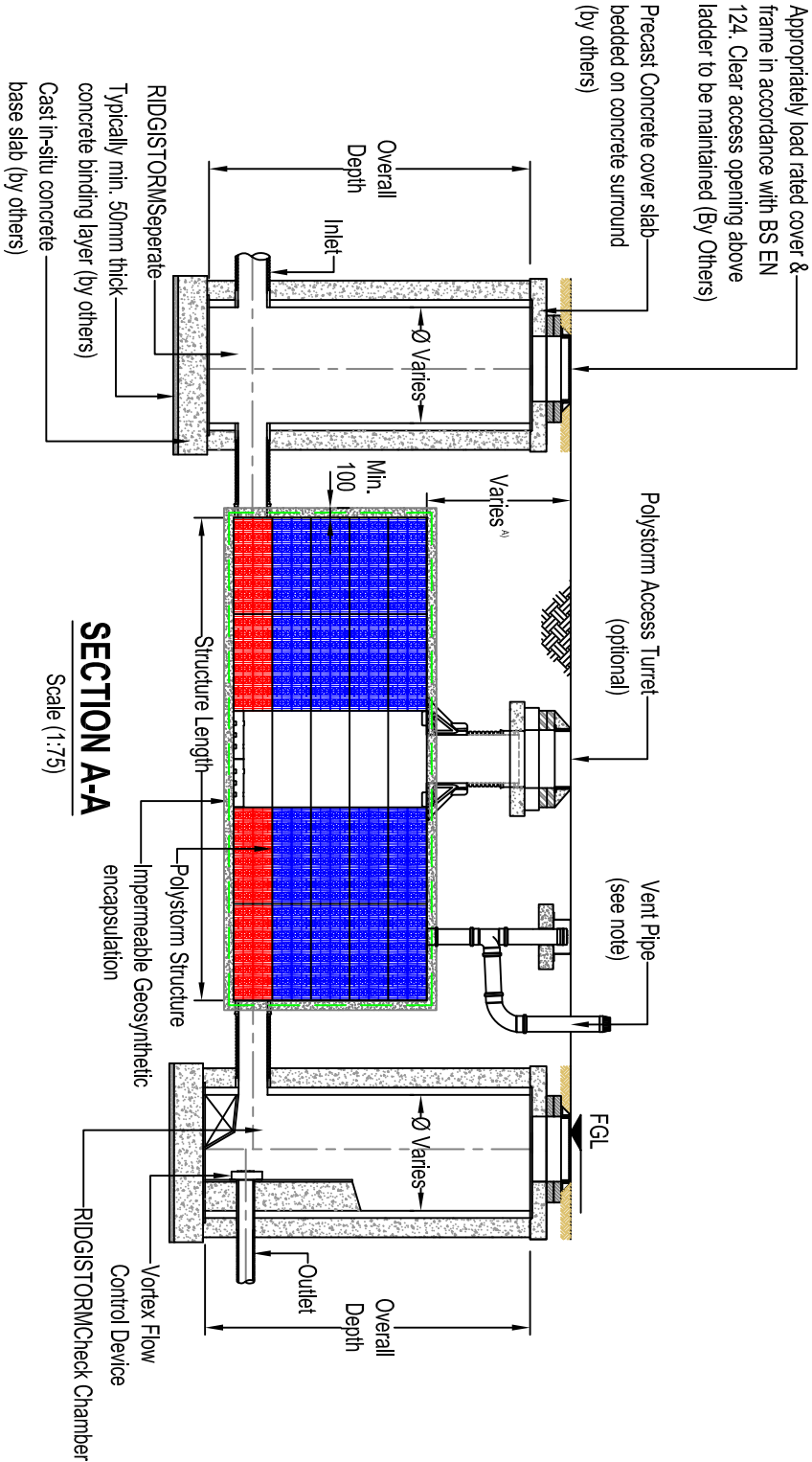


Appendix B

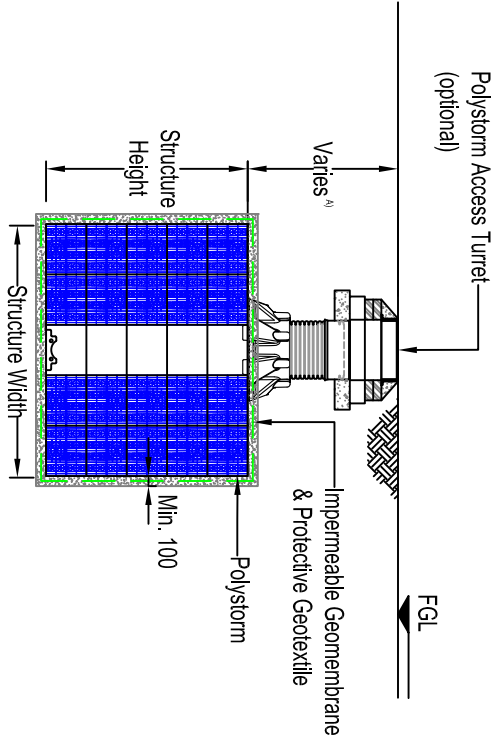
CELLULAR TANK DETAILS



TYPICAL ATTENUATION TANK PLAN
(Scale 1:75)



SECTION A-A
Scale (1:75)



SECTION B-B
Scale (1:75)

- POLYSTORM ACCESS NOTES**
1. Refer to Polypipe drawing No. PSM_SD_PSM_004 for typical integration into Polystorm structure.

VENTILATION NOTE

For information on Ventilation Options please refer to drawing ref: PSM_SD_PSM_002

MANIFOLD NOTE

Where single pipe hydraulic capacity is exceeded manifold detail may be required. For information on Manifold connections please refer to drawing ref: PSM_SD_008

NOTE A

For information on tank cover depths please refer to drawing ref: PSM_SD_PSM_005 or alternatively contact the Technical Team:- 01509 61500

NOTES

1. All dimensions in millimetres, unless otherwise stated.
2. All dimensions are nominal and may vary within manufacturing or construction tolerances.
3. All site temporary and enabling works by others.
4. Polypipe products to be installed in accordance with Polypipe civils recommendations (refer to Polypipe technical guidance for further information), giving due consideration to the requirements of the organisation who will be taking ultimate owner ship of the installation.
5. This drawing is intended for guidance only. Confirmation of the information contained within this document should be sought from the consulting engineers before final design or construction activities commence.

The information in this document is of an illustrative nature and is supplied by Polypipe Civils without charge. This document does not form the whole or any part of a contract or intended contract with the user. The information within this document should not be solely relied upon to determine the suitability or installation requirements of our products for a proposed application and expected site conditions; expert advice should be sought in this respect. Final determination of the suitability of any information or material for the use contemplated and the manner of use is the sole responsibility of the user and the user must assume all risk and liability in connection therewith. Further information with regard to liabilities may be found at www.polypipe.com/disclaimer.

PROJECT		STATUS	
POLYSTORM STANDARD DETAILS		FOR INFORMATION	
TITLE	DATE		DRAWN BY
	17/03/16		JL
	ORIGINAL SIZE		SCALE
POLYSTORM ATTENUATION DETAIL	A3		AS SHOWN
	DRAWING NO.		REV.
PSM_SD_PSM_001			

Polystorm Range

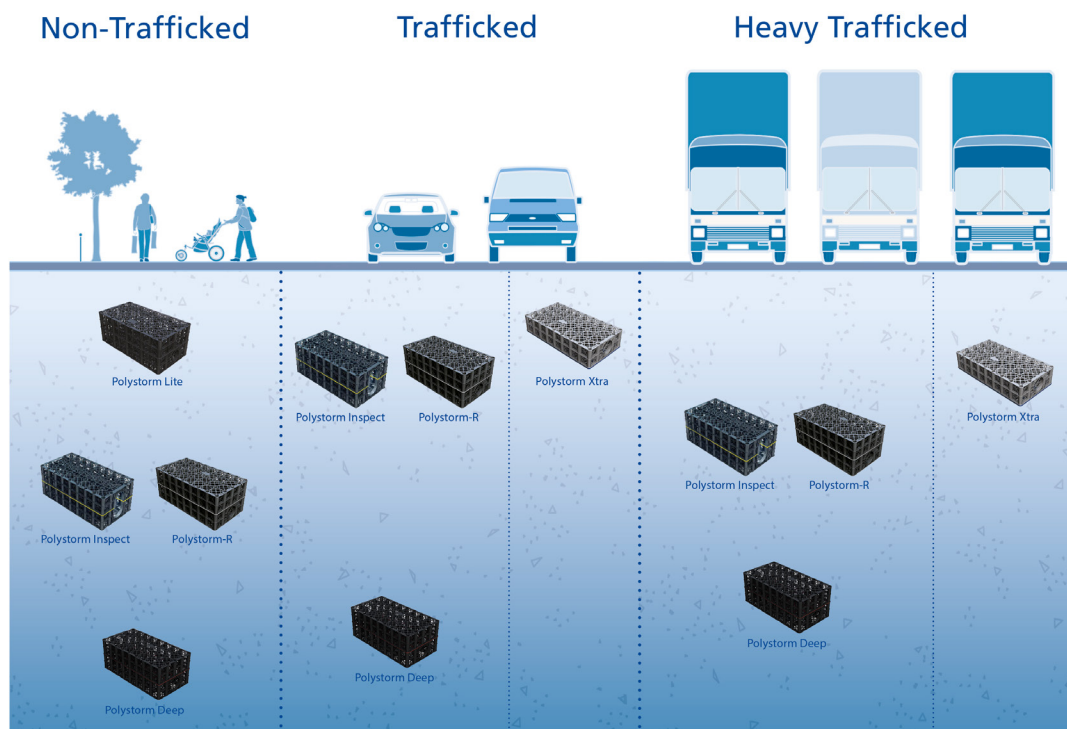
PRODUCT INFORMATION

ISSUE 7 - FEB 19

The tried and tested Polystorm range for the management of surface water is designed to provide retention, attenuation or infiltration at a variety of depths. The Polystorm range can accommodate a wide range of loadings, from pedestrianised areas to large HGV parks. The current range comprises of five modular cells and two access options for both horizontal and vertical inspection.

Key Features and Benefits:

- High void ratio providing greater water storage capacity and reduced excavation and disposal costs
- Suitable for retention, attenuation and infiltration systems
- Light weight yet robust, affording excellent Health and Safety and installation benefits
- Modular units allow flexibility of shape, making them ideal for shallow excavation systems, narrow strips or for restricted areas
- Units available from 20 tonnes per square metre vertical load bearing capacity, up to a maximum of 83 tonnes per square metre vertical load bearing capacity
- Can be utilised in non-trafficked, trafficked or heavily trafficked applications
- Unique rounded corners for ease of handling and reduces likelihood of punctures to membranes
- BBA Approved *Polystorm, Polystorm-R & Polystorm Lite (Polystorm Xtra and Polystorm Deep pending)
- Up to 60 year design life
- Polystorm modular cells are manufactured from polypropylene
- Polystorm Access is manufactured from HDPE
- 100% recyclable at the end of useful life



- Polystorm Xtra is for use in shallow non-sub-base replacement applications
- Our Polystorm (PSM1) modular cell can also be used in place of Polystorm-R (PSM1A)

Polystorm Range

PRODUCT INFORMATION

ISSUE 7 - FEB 19

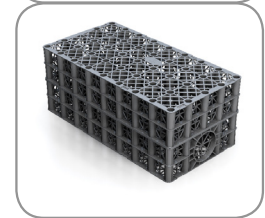
Polystorm Lite (PSM2)

Specifically designed for non-trafficked applications within landscaped areas, pedestrianised areas or public open spaces such as playgrounds. With 20 tonne per square metre vertical compressive strength, it can take the load of general maintenance vehicles such as grass cutters.



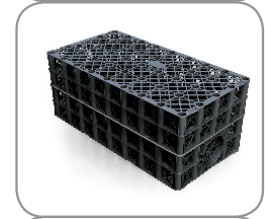
Polystorm (PSM1)

With 44 tonne per square metre vertical compressive strength, made from virgin material, Polystorm is ideally suited for trafficked and loaded areas. It is used frequently for housing developments, car parks and commercial developments.



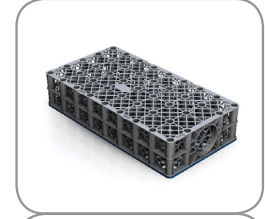
Polystorm-R (PSM1A)

Similar to the Polystorm cell, Polystorm-R is used for trafficked and loaded applications and has a vertical compressive strength of 61 tonne per square metre. Polystorm-R has the added benefit of having up to 100% recycled material content. It is ideally suited for housing, commercial and infrastructure projects.



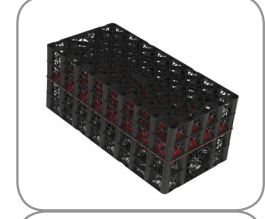
Polystorm Xtra (PSM3)

Designed for use in heavily trafficked areas for shallow, non sub-base applications where a reduced cover is required. It has an impressive vertical compressive strength of 83 tonnes per square metre.



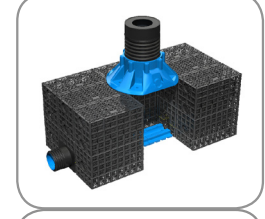
Polystorm Deep (PSM5)

Polystorm Deep has been designed for use in trafficked applications such as lorry parks and industrial access roads. It can be buried deeper than any other Polystorm cell and can be value engineered as part of a hybrid system with Polystorm, Polystorm-R and Polystorm Lite.



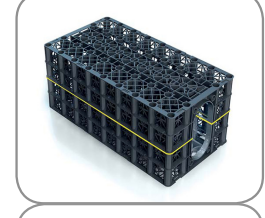
Polystorm Access (please see datasheet for codes)

Polystorm Access provides a 1m x 0.5m shaft within a Polystorm structure to enable surface access for remote camera inspection and maintenance activities such as flushing and rodding. The system consists of a 500mm diameter shaft which extends from surface level to the top of a Polystorm structure, at which point a turret provides an interface between the shaft and the inspection chamber within the system.



Polystorm Inspect (PSM4)

Polystorm Inspect provides a tunnel along the length of a fully installed Polystorm structure to enable access for inspection and maintenance. Polystorm Inspect can be combined with Polystorm Access for full inspection and maintenance activities such as flushing and rodding.



Geomembranes and Geotextiles

Polystorm Geotextiles are UV-stabilized, polypropylene, continuous filament needle-punched non-woven geotextiles, designed to complement the range of Polystorm modular cells. They are suitable for infiltration applications and can also be incorporated into drainage trenches.



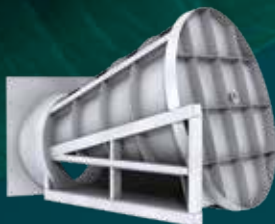


Appendix A

HYDROBRAKE DETAILS

The Hydro-Brake® Flow Control Series

Hydro-Brake®
Flood



Hydro-Brake®
Optimum



Hydro-Brake®
Agile

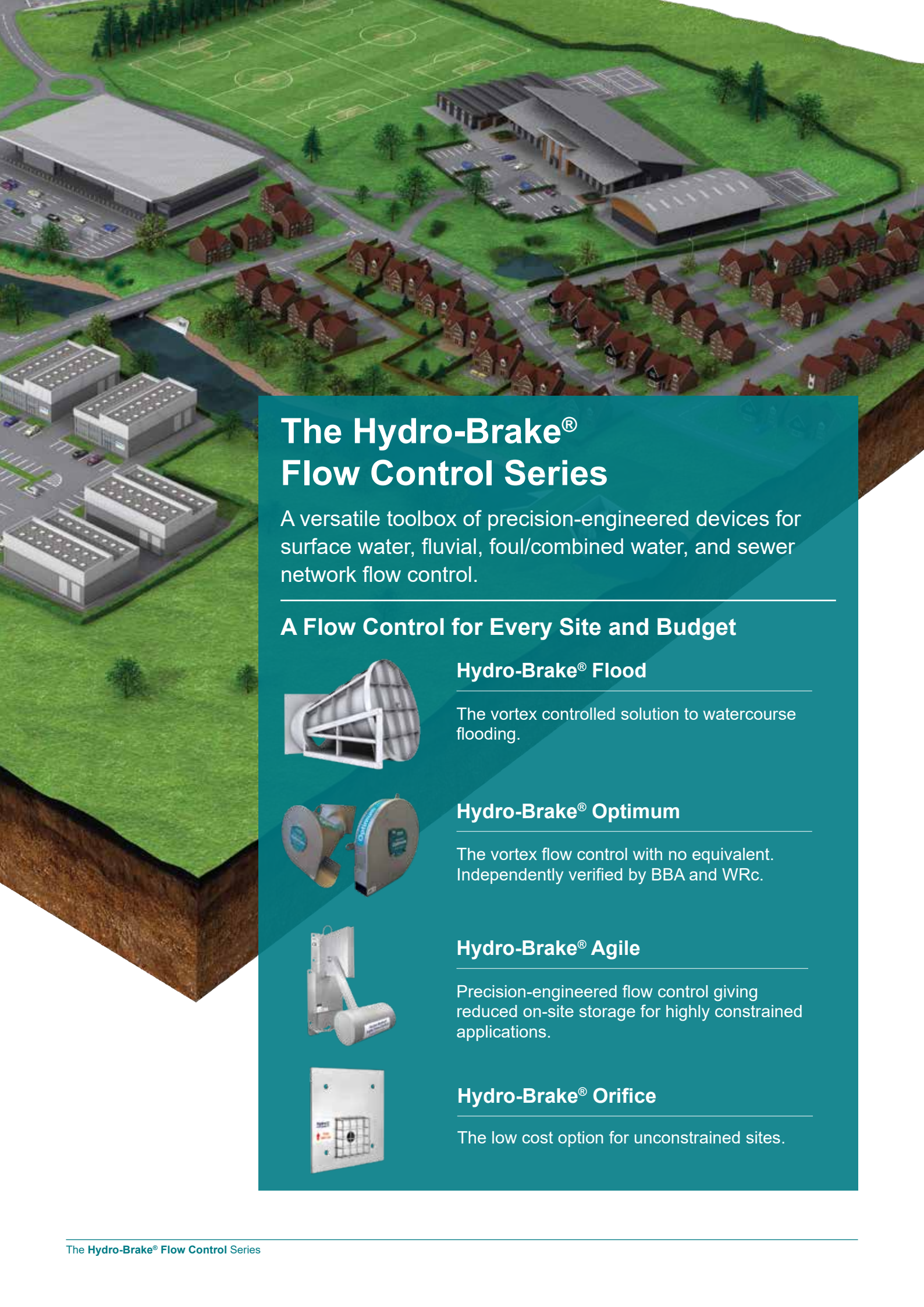


Hydro-Brake®
Orifice



The element of control

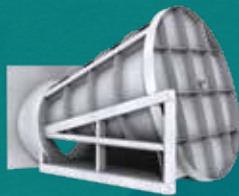
Turning Water Around®



The Hydro-Brake® Flow Control Series

A versatile toolbox of precision-engineered devices for surface water, fluvial, foul/combined water, and sewer network flow control.

A Flow Control for Every Site and Budget



Hydro-Brake® Flood

The vortex controlled solution to watercourse flooding.



Hydro-Brake® Optimum

The vortex flow control with no equivalent. Independently verified by BBA and WRc.



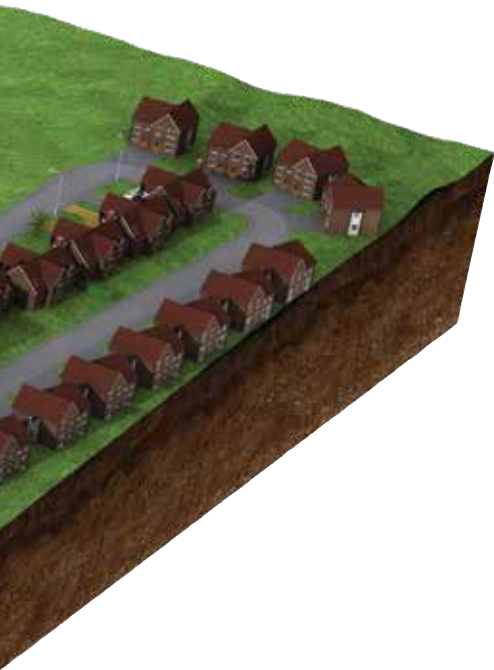
Hydro-Brake® Agile

Precision-engineered flow control giving reduced on-site storage for highly constrained applications.



Hydro-Brake® Orifice

The low cost option for unconstrained sites.



The Element of Control

Hydro International has set the highest standards in flow control technology during more than 40 years of specialist water engineering. When it comes to understanding, predicting and controlling the flow of water, Hydro works with scientific rigour.

Our customers are constantly challenged to deliver imaginative solutions, despite tough commercial and physical constraints. Committed to precision in product development and manufacture, we partner with you to engineer the best-possible water management solutions.

Hydro International's unrivalled knowledge and outstanding technical design support give our customers complete reassurance of system performance and value.

We give you the element of control.

Precision-Engineered for Reliable, Repeatable Performance

The Hydro-Brake® Flow Control Series offers a comprehensive choice for sustainable, performance-optimised attenuation and control whatever the project. Fully scalable and adaptable to your site conditions, there is no need to compromise on your project requirements.

All Hydro International flow controls are manufactured to the same exacting standards of quality. Tested, proven and independently accredited by regulatory bodies across the world, they offer the reassurance of reliable, repeatable performance.

Technical Design Support

Faced with increasingly varied environmental and planning stipulations, engineers need to adapt their solutions accordingly and balance flow rates with storage requirements and optimise the drainage system performance over the duration of a storm. In these circumstances, Hydro International's expert design support can advise on the correct flow control selection and design.

A full range of technical services, including detailed hydraulic modelling, easy-to-use design tools and integration into industry-standard software, all help engineers to achieve optimum hydraulic performance.

Buildable, Maintainable, Adoptable

Hydro International flow controls are designed and manufactured for ease of installation and reliable through-life performance with minimum intervention. Simple, predictable, low-maintenance regimes make them straightforward for management organisations to take on, and remove any concerns for adopting authorities.

For peace of mind and to make maintenance easier and more cost effective Hydro-Logic® Smart Maintenance can be added to any of our flow control chambers. This sophisticated sensor and telemetry package enables remote, monitoring of water levels and alerts will be triggered when abnormal water level activity is detected.

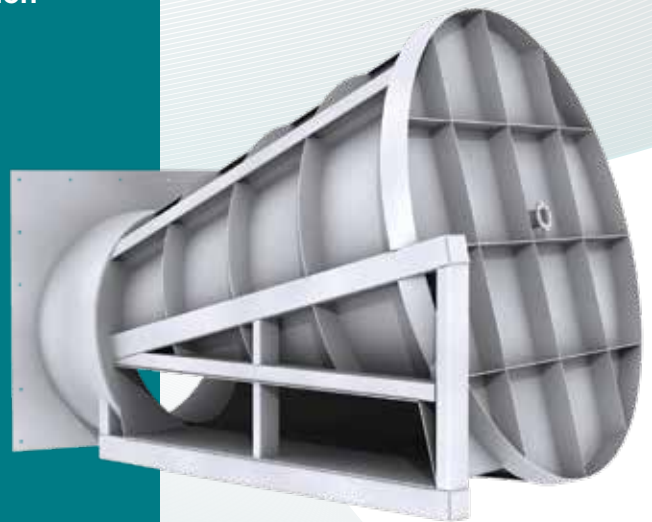
Hydro-Brake® Flood

Hydro-Brake® Flood is a highly sustainable, precision-engineered vortex technology for preventing watercourse flooding.

Hydro-Brake® Flood flow controls have been installed at the heart of low-maintenance, self-activating flood defences since the 1990s, and now protect more than 6,000 properties from an estimated £200m of flood damage in pioneering schemes across the UK.



Watercourse
flood prevention



- ✓ No external power.
- ✓ No moving parts.
- ✓ Upstream flood storage minimised.
- ✓ Minimal maintenance.

Bespoke, Precision Engineering

Each Hydro-Brake® Flood is a bespoke solution that precisely manages watercourse flows, right up to major dams with pass forward flow rates of 30 m³/s. The same technology is used just as successfully in smaller, dispersed schemes.

Each Hydro-Brake® Flood scheme is purpose-designed to optimise flow control performance characteristics and precisely calculate the amount of upstream storage required. Using Hydro-Brake® Flood vortex technology can reduce the volume of floodwater to be stored by up to 30% compared to fixed orifice controls.

A Simple, Elegant Solution

The internal geometry of Hydro-Brake® Flood is designed so that water can flow through it without restriction for as long as possible, minimising the upstream storage required. A self-activating vortex is created when the water reaches the pre-determined hydraulic head, holding back excess water, and releasing it at a controlled rate.

Expert Design and Manufacture

Designing fluvial interventions, whether on a large or small scale, requires expert engineering and hydraulic modelling in line with the flood risk management strategy. Hydro International can support with detailed design using Computational Fluid Dynamics and structural design using Finite Element Analysis, scale testing and production of detailed design drawings and specifications.

Hydro-Brake® Flood vortex flow controls are manufactured in high-grade stainless steel to be structurally fit-for-purpose, using modern production and control methods to ensure the design and performance objectives are delivered.

Low Impact, Minimal Maintenance

The Hydro-Brake® Flood has a large open area at all flow rates, resulting in a low risk of blockages. With no power or moving parts, the flow controls require minimal operational attention and maintenance.

Future-Proofed

Hydro-Brake® Flood schemes can be designed to allow for future variances in fluvial flows. A facility for future adjustment to allow for climate change can be incorporated without necessitating new engineering or construction works.

Monitoring

Flood alleviation at the fluvial level can be demonstrated to deliver a level of protection that is worth far more than the project costs. We can offer support and advice on post-installation monitoring of the value of the intervention.

Case Studies



Flood Prevention Scheme Protects 1,750 Properties in Glasgow

Glasgow City Council's £53 m White Cart Water Flood Prevention scheme protects 1,750 properties in the south of the city. Normally a shallow river, White Cart Water is prone to flash flooding. As little as twelve hours of rain can cause water levels to rise by six metres.

New manufacturing and installation techniques were developed as part of the project that saw the world's five largest-ever Hydro-Brake® Flood vortex flow controls installed in 3 dams in the highlands above the city. The final scheme controls flow rates and velocities up to a 1 in 200 year flood event, with a 45% maximum reduction in peak flows, holding back more than 2.5 billion litres of floodwater in upstream storage areas that make best use of the natural environment.



Vortex Technology Protects Northallerton Homes and Businesses

In the North Yorkshire town of Northallerton, a £3.1 million flood alleviation scheme is using Hydro-Brake® Flood technology to protect 170 homes and businesses. Two large Hydro-Brake® Flood vortex flow controls were installed in refurbished culverts on town's outskirts.

They enable excess water to be held back in specially-built flood storage basins. Before the scheme was built, excess floodwaters could overtop the watercourse in the agricultural land on its approach to the culverts sending flows to cause flooding in the east of the town. Hydro International carefully-sized the flow controls to minimise upstream storage requirements.

Hydro-Brake® Flood Selection Criteria

Suitability:	For rivers & watercourses; Flood storage reservoirs		
Flow Range (l/s)	Head Range (m)	Ability to match greenfield discharge rate	On-site water storage requirement
550 – 12,000 *	1.5 – 10 *	n/a	Low
Moving Parts?	External Power?	Risk of blockage?	
No	No	Very low	

* higher flows and heads may be possible (contact Hydro International to discuss)

Hydro-Brake® Optimum

The Hydro-Brake® Optimum is Hydro International's flagship passive flow control device and the most advanced vortex flow control available.

Hydro-Brake® Optimum is the only vortex flow control for which the head and discharge relationship can be fine-tuned to optimise your design. Designers can size a Hydro-Brake® Optimum to achieve the perfect hydraulic performance curve and engineer the best possible passive flow control performance.



Surface water management and SuDS



Combined drainage systems and CSOs



Watercourse flood prevention



Sewer network optimisation



Wastewater treatment plants



- ✓ No external energy source.
- ✓ No moving parts.
- ✓ Future-proof.
- ✓ Large outlet clearances prevent blockages.

There is No Equivalent

Hydro-Brake® Optimum dispenses with the need to choose from a range of sizes and types and instead offers built-in flexibility to size each unit for absolute fit. Each Hydro-Brake® Optimum is individually-sized, so you achieve performance without compromise for every project.

Maximise Storage Savings

The increased hydraulic efficiency of the Hydro-Brake® Optimum means you can reduce on-site storage by up to 15% than if an alternative vortex control is used. With reduced storage, you can lower construction and excavation costs as well as saving project time and overall land-use.

Best Value for Every Project

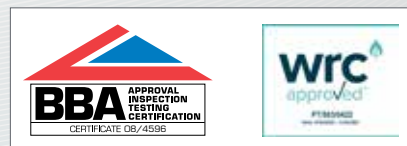
Selecting the superior performance of Hydro-Brake® Optimum does not mean a higher cost for your project. On the contrary, because your upstream storage can be fine-tuned to achieve the smallest volumes, construction, excavation and material costs are reduced.

Easy to Install

Hydro-Brake® Optimum comes with a range of installation options and accessories to make construction and installation as simple as possible.

Setting the Standard

The Hydro-Brake® Optimum is the culmination of more than 40 years of research and development by Hydro International, and the company continues to take an international lead in vortex technology and expertise. Hydro-Brake® Optimum is the only vortex flow control to be independently certified by BBA and WRc for the control of stormwater or combined flows.



Minimal Maintenance

With up to 20% larger outlet clearances compared to other vortex devices, there is significantly less risk of blockage with a Hydro-Brake® Optimum. With no power source or moving parts, it offers minimal, predictable maintenance.

Future-Proofed

Standard, Hydraulically Efficient, Hydro-Brake® Optimum units are supplied with an adjustable inlet, allowing post-installation flow adjustments without the need to replace the whole device.

Flow Control Chamber

A Hydro-Brake® Optimum flow control can be supplied prefitted in a precast reinforced concrete chamber. Custom options including high level emergency bypass, rodding pipe and removable units are also available.

Case Studies



Tight Fit for New Homes

Engineers challenged to solve a “tight fit” surface water management challenge on a West Yorkshire housing development used the Hydro-Brake® Optimum Design Tool to calculate a solution that optimised the limited pipe storage area. Using conventional flow control devices would have required more back up storage than would fit in the space available, but by using Hydro-Brake® Optimum flood protection measures, challenging discharge limits were met for a 1 in 100 year storm.



‘Optimum’ Savings for Developer with 21st Century Drainage

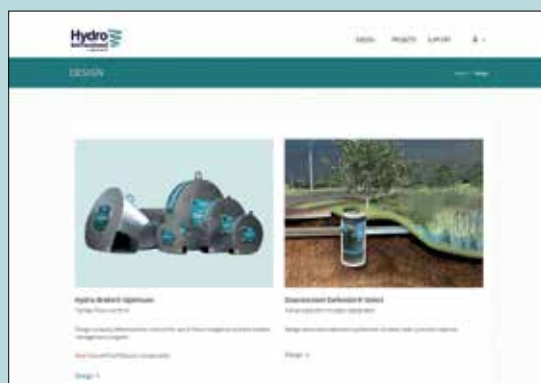
The first phase of Edinburgh City Council's 21st Century Homes project, the Gracemount development showcases sustainable construction. A major feature of the drainage solution is Hydro International's high performance Hydro-Brake Optimum® to control surface water which saved the developers over 30% in storage construction costs.

Photo courtesy of Edinburgh City Council

Hydro-Brake® Optimum Selection Criteria

Suitability:	Most sites, from very low to very high flow rates		
Flow Range (l/s)	Head Range (m)	Ability to match greenfield discharge rate	On-site water storage requirement
0.7 – 550 *	0.4 – 4.0	Very good	Low
Moving Parts?	External Power?	Risk of blockage?	
No	No	Very low	

* lower flows may be possible (contact Hydro International to discuss)



Explore the Options with our Online Design Tool

Our online design tool is a sizing engine that gives you the flexibility to compare flow control design options, output detailed design drawings and hydraulic data and import the results into commercially-available hydraulic modelling software.

The tool also has the option to design and customise our latest stormwater treatment separator, the Downstream Defender® Select.

hydro-int.design

Hydro-Brake® Agile

The Hydro-Brake® Agile flow control delivers precision engineering with best value for even the most constrained sites.

The Hydro-Brake® Agile flow control is a float-activated flow control that maintains a constant discharge to deliver precise performance over a wide range of heads. It is ideally suited to applications with constrained discharge requirements or where the flood storage area available through attenuation is very limited.



Surface water
management
and SuDS



Watercourse
flood
prevention



- ✓ No external energy source.
- ✓ Rapid drain-down provides resilience to subsequent rainfall events.
- ✓ Future-proof – simple adjustments possible for future changes in operating conditions.
- ✓ Repeatable, predictable maintenance regime.

Meet Stringent Discharge Consents

Designing flood storage, whether above or below ground, is dependent on the rate at which excess water can be controlled and discharged. The Hydro-Brake® Agile flow control is the only flow control design that achieves a constant rate of discharge and therefore the minimum possible upstream storage.

Whether controlling surface water on a housing development, or regulating flows in a wastewater treatment works, investment in a precision-engineered device can result in considerable savings in total project costs.

Sustainable Solution

The Hydro-Brake® Agile flow control provides sustainable control of flood storage without the need for external power sources or control circuits. Simple adjustments can be made to future-proof the device to allow for climate change.

Quality Manufacture

The Hydro-Brake® Agile flow control is precision-engineered using high-grade stainless steel with long-life, durable components and CE marked in accordance with the EU Machinery Directive (2006/42/EC). Manufactured in the UK, the flow control can be transported quickly to site to meet project timescales.

Easy to Install and Maintain

During dry weather periods, and especially during the first flush of a storm, the outlet area is at its largest, reducing the risk of blockages.

In the event of a blockage, an integrated release mechanism can be operated from surface level, enabling the gate to be fully opened and returned to its operating position.

Hydro-Brake® Agile Flow Control Chamber

The Hydro-Brake® Agile flow control can be supplied pre-fitted in a precast reinforced concrete chamber for quick and easy installation on site.

A range of outlet pipe sizes is also available to suit site requirements. Once lifted into position, the connecting pipework can be connected and a cover slab installed. To suit the location and invert required, the chamber depth can be easily varied with concrete rings.

Example Solutions

Constrained Space

For an urban in-fill housing project in a heavily-developed inner city area, the design team were keen to deliver an effective drainage strategy. However, there was limited space available, conflicting demands from new and existing services, and an existing drainage infrastructure with very limited capacity to accept additional flows.

Using a flow control that provided a near-constant discharge rate within the parameters of the available downstream capacity, the surface water was moved off-site as quickly and effectively as possible, enabling the on-site storage to be reduced to a level that could be accommodated in the heavily constrained space available.

Constant Discharge

Providing temporary flood storage through attenuation was the solution to a known surface water flooding problem. A flow control was needed to limit flow to the existing drainage network, with the excess rainwater overflowing into an off-line attenuation tank. Implementation costs had to be kept to an absolute minimum or the project may not have been feasible. In addition, any surcharge to the upstream drainage network would have moved flooding to a different part of the catchment.

A constant discharge flow control was therefore used to pass forward an appropriate amount of flow at all times, minimising pressure on the upstream network and only putting floodwater into the attenuation structure when absolutely necessary.

Hydro-Brake® Agile Selection Criteria

Suitability:	Constrained sites with stringent discharge consents		
Flow Range (l/s)	Head Range (m)	Ability to match greenfield discharge rate	On-site water storage requirement
4.5 – 100	0.4 – 2.4	Good	Very low
Moving Parts?	External Power?	Risk of blockage?	
Yes	No	Not suited to all sites	

Hydro-Brake® Orifice

The Hydro-Brake® Orifice delivers cost-effective, precise, repeatable flow control and is suitable for unconstrained sites with generous discharge consents

The Hydro-Brake® Orifice is a precision-cut orifice plate flow control, available in a broad range of configurations. A low-cost, low-complexity flow control, it is the ideal choice where there is minimal limitation on space available for on-site flood storage and attenuation, or where there are generous discharge consents.



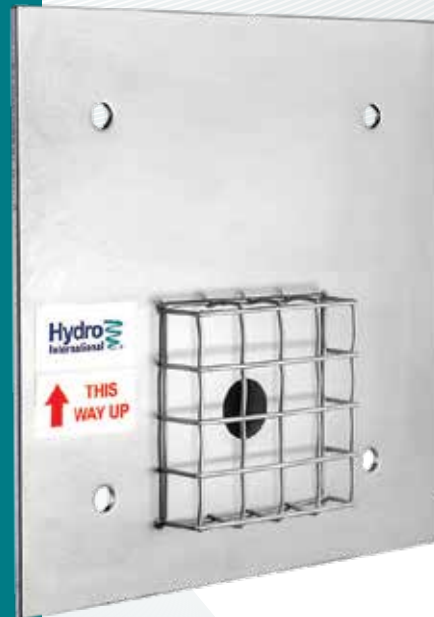
Surface water
management
and SuDS



Watercourse
flood
prevention



Sewer network
optimisation



Flexible and Versatile

Already trusted as part of Hydro International's family of precision-engineered flow control devices, the Hydro-Brake® Orifice can be designed and manufactured to meet a wide variety of configurations. With the Hydro-Brake® Orifice there is no need to compromise on your project needs.

Configured for Each Site

Each Hydro-Brake® Orifice is manufactured to suit the precise hydraulic requirements specified for the application. Our experienced professional engineering team will work with you to understand the needs of your site and recommend the best solution.

A wide variety of configurations and mounting options is available, for example integrated mesh guards, curve mount, pipe inserts and slide- or pivot-mounts. Hydro International can advise on sizing and flow rates and recommend the best solution for your site.

Quality Manufacture

The Hydro-Brake® Orifice is manufactured from high-grade stainless steel under strict Quality Assurance to the exacting methods and tolerances set out in the international standard BS EN ISO 5167-2: 2003.

Simple to Install

The Hydro-Brake® Orifice is simple to install. It can also be supplied pre-fitted in a precast reinforced concrete chamber for 'plug-and-play' installation on site.

Resilience by Design

The Hydro-Brake® Orifice can be supplied with integrated protection against the risk of blockages. Alternatively, the Hydro-Brake® Orifice can be mounted on moveable or removable structures to allow for manual intervention to drain the control chamber from surface level and clear any blockages that do occur.

Hydro-Brake® Orifice Selection Criteria

Suitability:	Unconstrained sites with generous discharge consents		
Flow Range (l/s)	Head Range (m)	Ability to match greenfield discharge rate	On-site water storage requirement
2.5 – 100 *	0.25 – 2.0 *	Not suited to all sites	Unconstrained
Moving Parts?	External Power?	Risk of blockage?	
No	No	Not suited to all sites	

* flows and heads may be possible outside of these ranges (contact Hydro International to discuss)

Hydro-Brake® Flow Control Series Selection Guide

The Hydro-Brake® Flow Control Series is a versatile toolbox for surface water, fluvial, foul water, and sewer network flow control. No matter what the site and budget, every flow control offers the same precision-engineered performance.

Features	Hydro-Brake® Flood	Hydro-Brake® Optimum	Hydro-Brake® Agile	Hydro-Brake® Orifice
Suitability	For watercourses; Flood storage reservoirs	Most sites, from very low to very high flow rates	Constrained sites with stringent discharge consents	Unconstrained sites with generous discharge consents
Flow Range (l/s) *	550 – 12,000	0.7 – 550	4.5 – 100	2.5 – 100
Head Range (m) *	1.5 – 10	0.4 – 4.0	0.4 – 2.4	0.25 – 2.0
Ability to Match Greenfield Discharge Rate	n/a	Very good	Good	Not suited to all sites
Moving Parts	No	No	Yes	No
Future Proof	Option that can be designed in	Adjustable inlet fitted as standard on Hydraulically Efficient units	No	No
External Power Requirement	No	No	No	No
Constant Discharge	No	No	Yes	No
On-site Storage	Low	Low	Very low	Unconstrained
Risk of Blockage	Very low	Very low	Not suited to all sites	Not suited to all sites

* flows and heads outside of these ranges may be possible (contact Hydro International to discuss)

Expert Design Support

No matter how big or small the project, Hydro International's professional engineers are on hand to provide free support to designers and specifiers to aid with the correct selection and configuration of Hydro flow controls for each project design.

Our dedicated design support team advises on best-practice sizing, flow and storage calculations for the Hydro-Brake® Flow Control Series within your surface water, fluvial, sewer or wastewater plant design.

Data, Insight and Analysis Services

Our Hydro-Logic® smart monitoring equipment provides a remote data collection capability that delivers real-world climate, water level, water flow and water quality data in near real time.

Documentation

Our dedicated design support team can assist with the output of hydraulic data to support your system design and dimensioned installation drawings, as well as advising on successful integration with other Hydro International water treatment and storage products.

Call the Hydro-Brake® Hotline 01275 337937
or email stormwater@hydro-int.com.

For Flow Control
Product and Design Advice:

Tel: 01275 337937

Email: stormwater@hydro-int.com

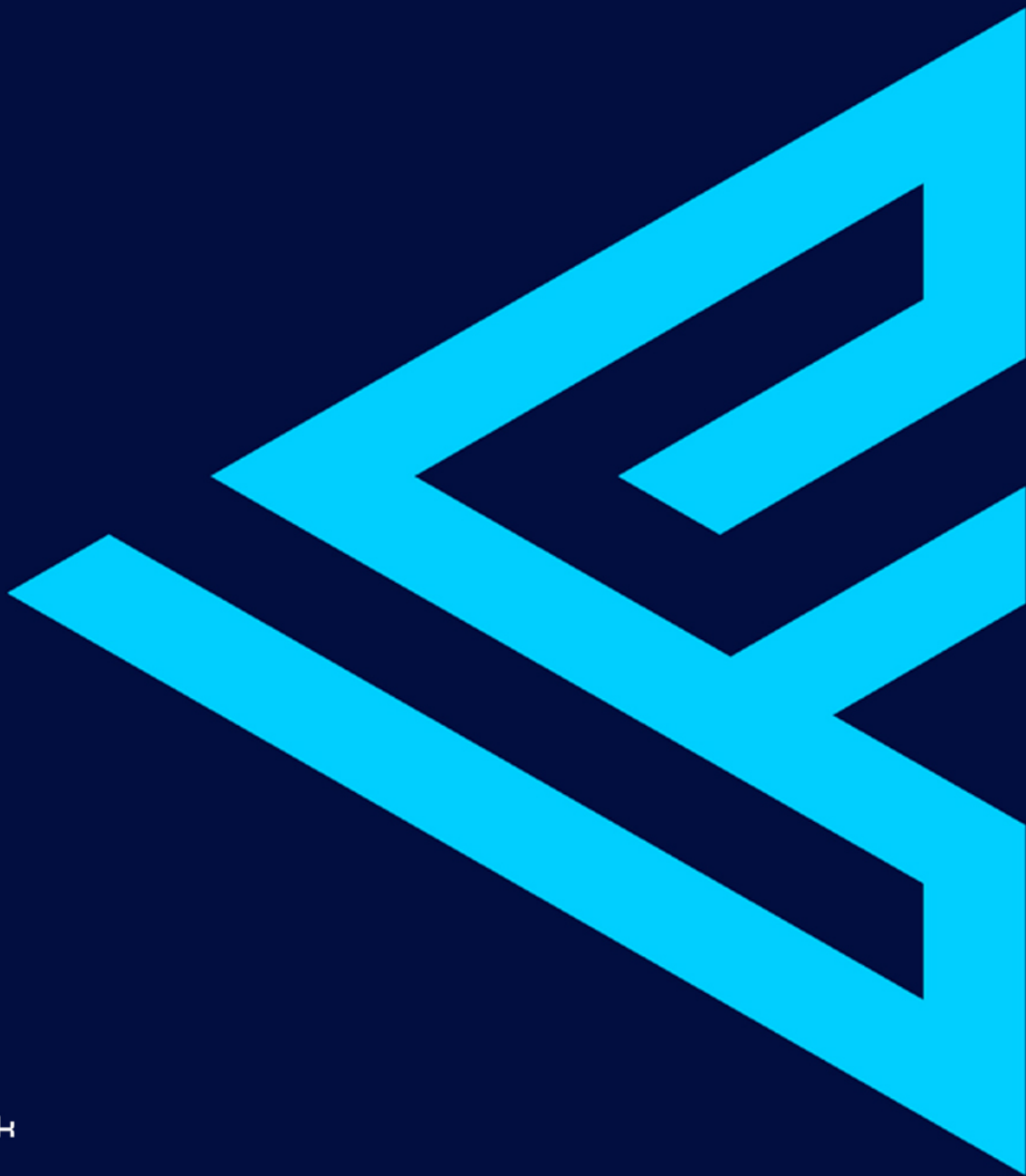
Hydro-Brake® Flow Control Series

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