

13319 – Bartons Road, Havant

Technical Note: Surface Water Drainage Maintenance & Management Strategy

06 August 2026

Document Status

Rev	Issue Status	Prepared / Date	Checked / Date	Approved / Date
0	For Comment	RMe 06.08.2026	LP 06.08.2026	RMe 07.08.2026

Introduction

1.1 Background

1.1.1 Brookbanks have been appointed by Stonebond Properties to prepare a Technical Note to discharge Conditions 22 and 23 of planning permission reference APP/25/00639 related to Bartons Road, Havant. This application comprises the construction of 90 dwellings, access, onsite highways, associated parking and landscaping.

1.1.2 Conditions 22 and 23 wording is included below:

Condition 22 – Surface Water

- *Specify the responsibilities of each party for the implementation of the SuDS scheme.*
- *Specify a timetable for implementation.*
- *Provide a management and maintenance plan for the lifetime of the development.*

This shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime.

Condition 23 – Foul Water

The scheme shall include:

- *Details of how the scheme shall be maintained and managed after completion*
- *Details of the sewage pipe work layout and specifications*

2 Management Responsibilities

2.1 Surface Water Drainage Strategy

- 2.1.1 The surface water drainage strategy relies on SuDS features to attenuate runoff, before discharging to an existing surface water sewer, owned by Southern Water, to the south of the development. Attenuation is provided in the form of cellular attenuation crates and permeable paving. The discharge rate is restricted to 6.0 l/s by a Vortex Flow Control Device, located in the final manhole before the outfall connection. Refer to **Appendix A** for the Drainage Layouts.
- 2.1.2 The cellular attenuation crates are proposed to be Wavin Aqua Cell Core-R units. These are to be located beneath parking areas, open spaces and public amenity areas. The crates are located at a suitable depth to ensure adequate protection is provided from surface loadings. Wavin confirm that these crates have a 60-year design life, after which they may require replacement. The need for replacement will be monitored via the regular inspections outlined in Section 2.2. Refer to **Appendix B** for the data sheet.
- 2.1.3 The permeable paving is to be lined with an impermeable membrane. A perforated subdrain is proposed to collect runoff and direct it to the gravity network. The permeable paving primarily drains its own surface area, although additional roof runoff is drained into the subbase via diffuser units. The permeable paving is designed to cater for a vehicle loading of 12.5t. CIRIA C753 guidance states that the surface layers of permeable paving have a design life of 20-25 years, depending on maintenance. Sub-base layers typically exceed this, lasting for 40-60 years. The need for replacement will be mitigated by regular maintenance, and regular inspections will determine the need for any remediation or replacement of surface layers.
- 2.1.4 The Vortex Flow Control Device is a stainless-steel device, located within a manhole. The proposed unit is a Hydro International product, their documentation states its design life is more than 60 years for normal service conditions. Refer to **Appendix C** for the data sheet.
- 2.1.5 The onsite drainage network will be offered for adoption via a Section 104 to a NAV Company. Once the required maintenance period is completed, responsibility for the management and maintenance of the gravity sewer network will reside with that NAV company in perpetuity. Refer to the Section 104 Agreement Plan within **Appendix A** for the extent of network being offered for adoption.
- 2.1.6 Main highways within the development will be offered for adoption to the Highway Authority. Once transferred, the Highways Authority will be responsible for the management and maintenance of highway gullies within this extent. Refer to the Section 38 Agreement Plan within **Appendix A** for the extent of highways being offered for adoption.
- 2.1.7 Attenuation in the form of permeable paving and cellular attenuation crates will be managed and maintained by either the development Management Company or the private residents where the attenuation falls within their land ownership. Where attenuation features are shared between private residents, legal covenants will be included in the deeds in relation to the requirements of any future maintenance.
- 2.1.8 An existing 750mm diameter surface water sewer and 300mm foul sewer run through the development parcel, in a north to south direction. The sewers are owned by Southern Water and management, and maintenance responsibility will remain with them.

2.2 Management and Maintenance

- 2.2.1 All SuDS features require regular inspections and maintenance. CIRIA provides guidance on the frequency and type of inspection or maintenance required. **Table 1** below sets out the requirements for the SuDS features proposed as part of the site.
- 2.2.2 Manufacturer product maintenance guidance is to be followed where its requirements exceed the below national guidance.

Table 1 – Management and Maintenance Requirements				
Drainage Element	Inspection / Maintenance	Frequency	Remedial Action	Responsible Party
Roof Drainage	Clean gutters and downpipes	Annually	Repair as necessary	Residents / Owners
Below ground gravity drainage runs and chambers	CCTV drain runs and jet wash.	Every 5 years	Repair as necessary	Management Company or NAV Company (Refer to S104 Plan)
	Inspect chambers for debris	Annually	Remove debris and sediment as required	
Road Gullies	Desilt by vacuum	Twice annually, end of Autumn, end of Spring	Repair as necessary.	Management Company or Highway Authority (Refer to S38 Plan)
Permeable Paving	Inspect for buildup of debris/leaf litter etc	End of Winter, mid Summer and end of Autumn	Permeable paving to be swept twice annually and joints refilled if required, may be necessary to take up and relay bedding layer after 15 years use due to siltation.	Management Company or Private Residents
Cellular Attenuation Crates	CCTV and jet wash internal crate system.	Every 5 years	Repair as necessary	Management Company or Private Residents
	Inspect upstream and downstream chambers for debris	Annually	Remove debris and sediment as required	
Vortex Flow Control Device	Inspect for build up of debris/leaf litter etc Ensure bypass door functional.	Twice annually, end of Autumn, end of Spring	Remove debris and sediment as required. Repair as necessary	NAV Company

3 Foul Drainage Strategy

3.1 Foul Drainage Strategy

- 3.1.1 Foul drainage for the development drains via a gravity sewer network to the southern boundary. The system discharges to an existing foul sewer owned by Southern Water. Refer to **Appendix A** for the Drainage Layout.
- 3.1.2 The foul drainage system will be inspected following completion and passed to the NAV Company for future management and maintenance in perpetuity.

4 Conclusion

4.1 Conclusion

- 4.1.1 This Technical Note has demonstrated the ongoing management and maintenance requirements for the proposed drainage system. Design life and future replacement considerations are outlined and are to be reviewed by the Asset Owners regularly.

5 Disclaimer

- 5.1.1 The conclusions and recommendations contained herein are limited to those given the general availability of background information and the planned usage of the site.
- 5.1.2 Third party information has been used in the preparation of this report, which Brookbanks, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks accepts no liability for same.
- 5.1.3 The benefits of this report are provided solely to Stonebond Properties for the proposed development Bartons Road, Havant.
- 5.1.4 Brookbanks excludes third party rights for the information contained in the report.

Appendix A – Drainage Layouts, Section 104 Layout and Section 38 Layout

DRAINAGE NOTES

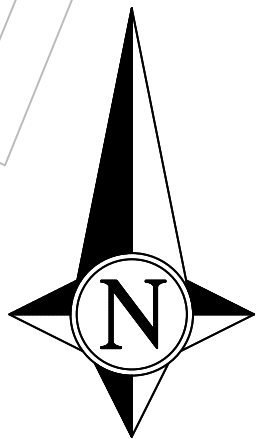
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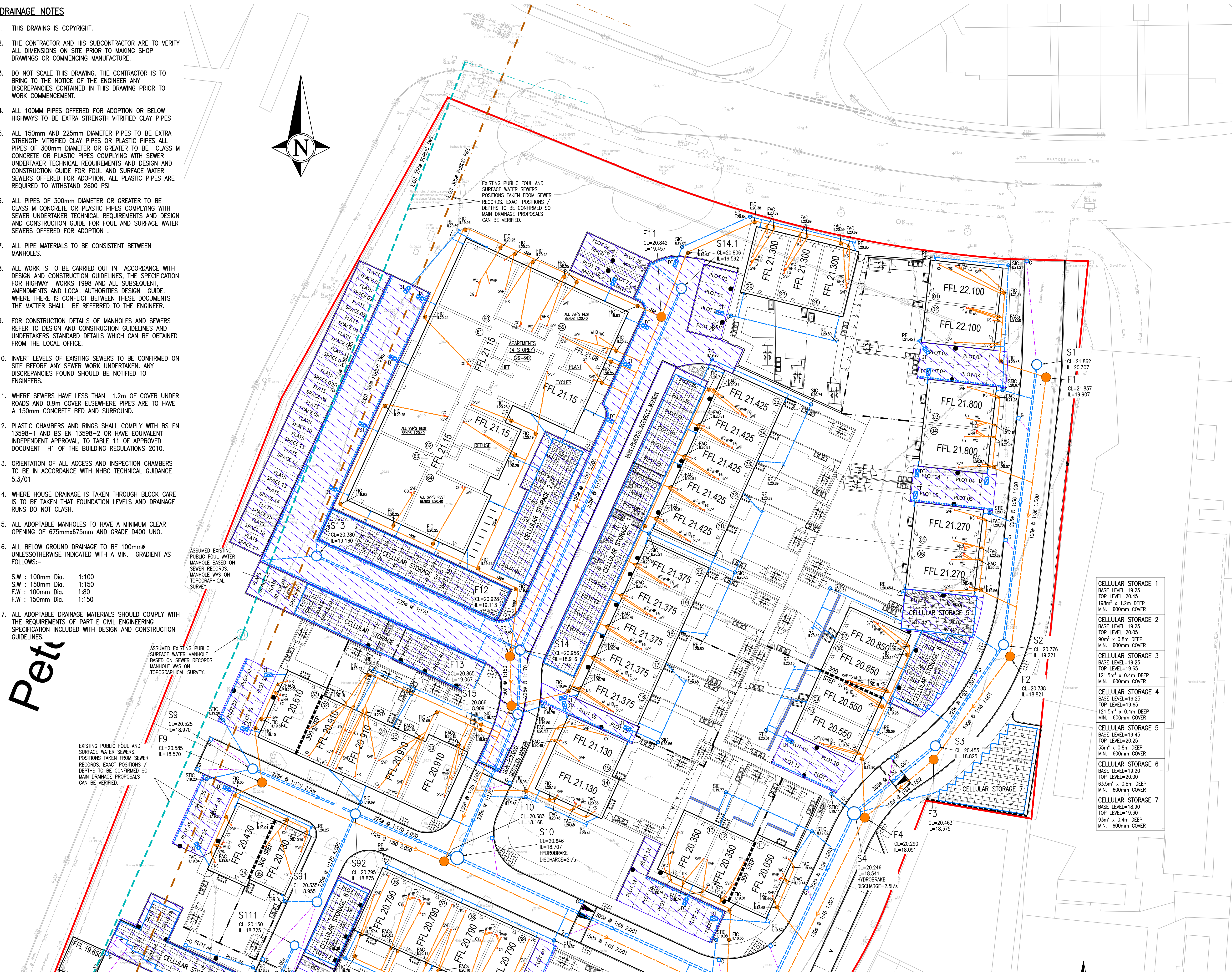
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Pet



Construction Design and Management (CDM) Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1. Overhead and underground services
2. Street lighting cables
3. Working adjacent to water courses and flood plain
4. Soft ground conditions
5. Working adjacent to live highways
6. Uncharted services

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DRAINAGE LEGEND

- EXISTING SURFACE WATER MANHOLE
- EXISTING FOUL WATER MANHOLE
- EXISTING BELOW GROUND SURFACE WATER DRAINAGE
- EXISTING BELOW GROUND FOUL WATER DRAINAGE
- PROPOSED SURFACE WATER SILT TRAP
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- DENOTES BELOW GROUND SURFACE WATER DRAINAGE
- DENOTES BELOW GROUND FOUL DRAINAGE
- PROPOSED POROUS PAVING. FORMATION TO BE 600mm DEEP MIN.
- PROPOSED DISTRIBUTION TANK
- PROPOSED POROUS PAVING SUB-BASE DRAIN
- PROPOSED GULLY & CONNECTION CONNECTED TO SURFACE WATER SYSTEM
- PROPOSED SURFACE WATER INSPECTION CHAMBER (450mm DIA)
- PROPOSED SURFACE WATER SILT TRAP INSPECTION CHAMBER (460mm DIA)
- PROPOSED FOUL WATER INSPECTION CHAMBER (450mm DIA)
- PROPOSED SURFACE WATER ACCESS CHAMBER (250mm DIA)
- PROPOSED FOUL WATER ACCESS CHAMBER (250mm DIA)
- PROPOSED RODDING EYE
- PROPOSED LAND DRAIN
- PROPOSED RAIN WATER PIPE TO GROUND
- PROPOSED VERTICAL FOUL STACK TO GROUND

- CELLULAR STORAGE 1

BASE LEVEL=19.25

TOP LEVEL=20.45

198m² x 1.2m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 2

BASE LEVEL=19.25

TOP LEVEL=20.05

90m² x 0.8m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 3

BASE LEVEL=19.25

TOP LEVEL=19.65

121.5m² x 0.4m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 4

BASE LEVEL=19.25

TOP LEVEL=19.65

121.5m² x 0.4m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 5

BASE LEVEL=19.45

TOP LEVEL=20.25

55m² x 0.8m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 6

BASE LEVEL=19.20

TOP LEVEL=20.00

63.5m² x 0.8m DEEP

MIN. 600mm COVER
- CELLULAR STORAGE 7

BASE LEVEL=18.90

TOP LEVEL=19.30

93m² x 0.4m DEEP

MIN. 600mm COVER

P04	04.08.2026	Plot drainage levels added.	AJV
P03	31.07.2026	Existing public sewers passing through site added from sewer records. Main drainage expanded. Plot drainage added.	AJV
P02	24.07.2026	Drawing number updated	PJ
P01	22.07.2026	Initial work in progress issue	PJ

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Project Title:
Bartons Road, Havant
Project Number:
GUI005
Drawing Title:
Drainage Layout
Sheet 1 of 2

Scale:
1:250
Date:
July 2026

Revision Notes:
Initial issue

Drawing Number:
GUI005-BBK-XX-XX-DR-C-91-250

Rev:
P04

FOR CONTINUATION REFER TO DWG
GUI005-BBK-XX-XX-DR-C-91-251

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GUI005-BBK-XX-XX-DR-C-91-250

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Bartons Road, Havant

Project Number:
GUI005

Drawing Title:
Drainage Layout
Sheet 2 of 2

Revision Notes:
Initial issue

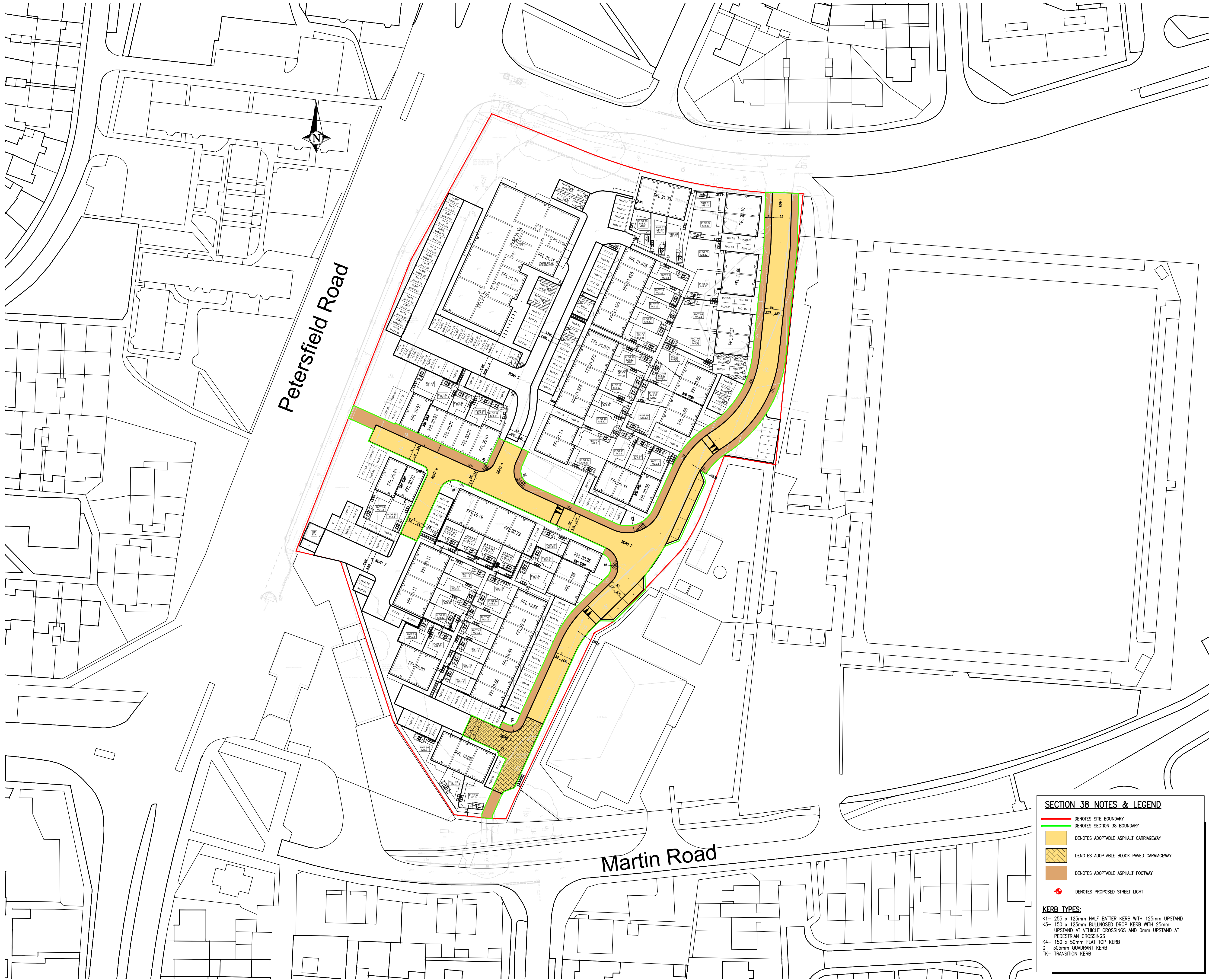
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Scale:
1:250
Date:
July 2026

Rev:
P04

Martin Road

INVERT LEVELS OF EXISTING
FOUL AND SURFACE WATER
SEWERS TO BE CONFIRMED
PRIOR TO WORKS
COMMENCING ON-SITE



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P01 27.07.2026 Initial issue

PJ

SECTION 38 NOTES & LEGEND

- DENOTES SITE BOUNDARY
- DENOTES SECTION 38 BOUNDARY
- DENOTES ADOPTABLE ASPHALT CARRIAGEWAY
- DENOTES ADOPTABLE BLOCK PAVED CARRIAGEWAY
- DENOTES ADOPTABLE ASPHALT FOOTWAY
- DENOTES PROPOSED STREET LIGHT

KERB TYPES:

- K1- 255 x 125mm HALF BATTER KERB WITH 125mm UPSTAND
- K3- 150 x 125mm BULLNOSED DROP KERB WITH 25mm UPSTAND AT VEHICLE CROSSINGS AND 0mm UPSTAND AT PEDESTRIAN CROSSINGS
- K4- 150 x 50mm FLAT TOP KERB
- Q - 305mm QUADRANT KERB
- TK- TRANSITION KERB

Stonebond.

Project Title:
Bartons Road, Havant

Project Number:
GUI005

Drawing Title:
Section 38 Layout

Revision Notes:
Initial issue

Drawing Number:
GUI005-BBK-XX-XX-DR-C-91-325

Scale:
1:500
Date:
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Rev:
P01

DRAINAGE NOTES

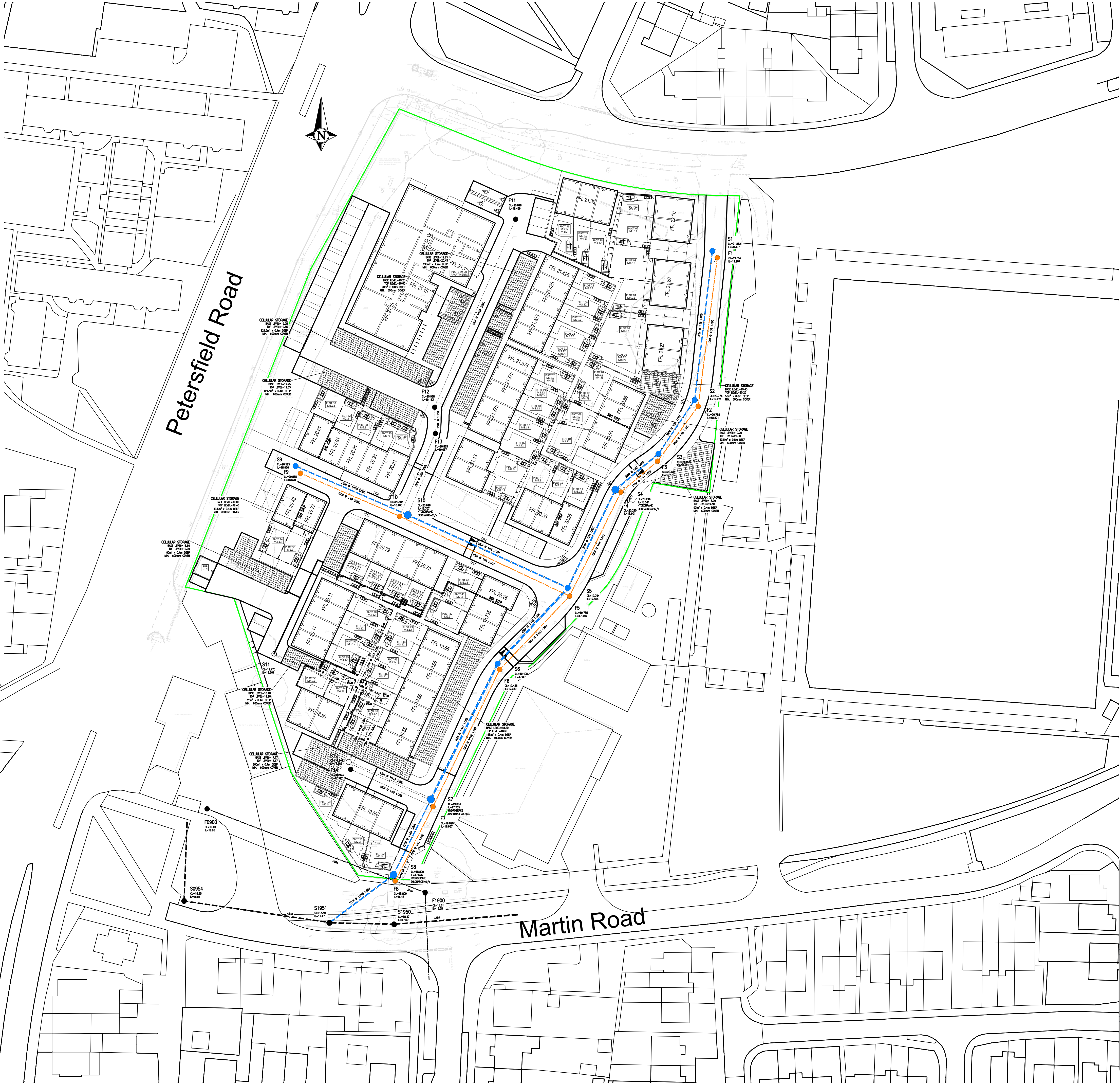
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6. Uncharted services

NOTES:

1. Do not scale from this drawing.
2. All dimensions are in millimetres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
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S104 AGREEMENT LEGEND

- F1

DENOTES FOUL WATER MANHOLE AND SEWER OFFERED FOR ADOPTION
- S1

DENOTES SURFACE WATER MANHOLE AND SEWER OFFERED FOR ADOPTION
- DENOTES SITE BOUNDARY

P01 27.07.2026 Initial issue

PJ

Stonebond.

Project Title:
Bartons Road, Havant

Project Number:
GUI005

Drawing Title:
Section 104 Layout

Scale:
1:500

Date:
July 2026

Revision Notes:
Initial issue

Drawing Number:
GUI005-BBK-XX-XX-DR-C-91-350

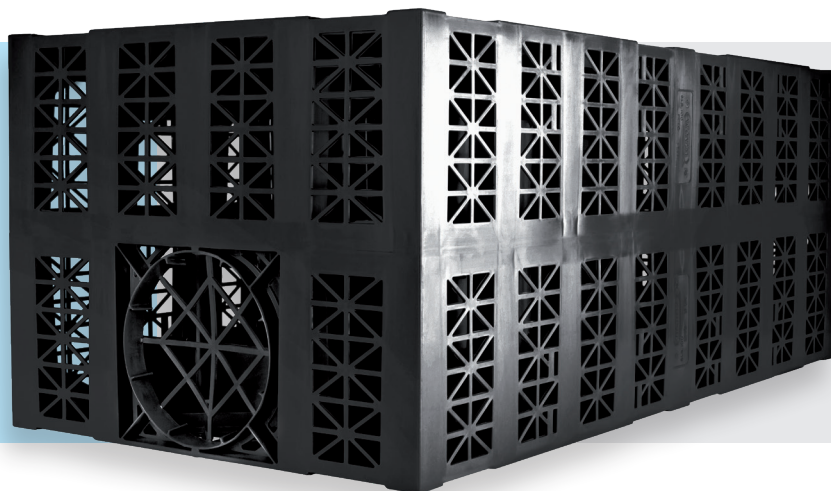
Rev:
P01

| Appendix B – Attenuation Tank Data Sheet

AquaCell Core-R

Product description

AquaCell Core-R has been designed for use in deep applications, subject to regular and heavy traffic loadings, e.g. cars and HGV's. AquaCell Core-R can also be used in both landscaped and deep soakaway applications.



Technical specification

Cat code	6LB150	Void ratio	95%
Colour	Black	Material	Recycled PP
Dimensions	1m x 0.5m x 0.4m	Vertical loading	66.9 tonnes/m ² (669 kN/m ²)
Weight	11.5kg	Lateral loading	12.3 tonnes/m ² (123 kN/m ²)
Storage volume	190 litres	BBA approval	Certificate 03/4018

Maximum installation depths

Typical soil type	Maximum depth of installation – to base of units (m) ¹				
	Soil weight kN/m ³	Angle of internal friction ϕ (degrees) ^{2,3}	Landscaped areas	Vehicle mass <9 tonnes ^{4,5}	Vehicle mass <44 tonnes
Over consolidated stiff clay	20	24	3.85	3.61	3.36
Silty sandy clay	19	26	4.35	4.09	3.83
Loose sand and gravel	18	30	5.34	5.06	4.78
Medium dense sand and gravel	19	34	5.94	5.68	5.41
Dense sand and gravel	20	38	6.68	6.43	6.18

Minimum cover depths

	Landscaped areas	Car parks with vehicle mass <3 tonnes ⁵	Car parks with vehicle mass <9 tonnes	Car parks with vehicle mass <12 tonnes	Low speed roads with vehicle mass <60 tonnes
Minimum cover depth (m)	0.30	0.50	0.60	0.70	1.11

- Without groundwater present below base of units – AquaCell Core-R may be used where groundwater is present, contact Wavin for technical advice.
- Loosening of dense sand or softening of clay by water can occur during installation. The designer should allow for any such likely effects when choosing an appropriate value of ϕ .
- The design is very sensitive to small changes in the assumed value of ϕ , therefore, it should be confirmed by a chartered geotechnical engineer. In clay soils, it may be possible to utilise cohesion in some cases.
- Applicable for car parks or other areas trafficked only by cars or occasional refuse collection trucks or similar vehicles (typically one per week).
- This category should be used when considering landscaped areas that may be trafficked by ride on mowers.

Assumptions made:

- Ground surface is horizontal
- Shear planes or other weaknesses are not present within the structure of the soil

Source: BBA

Appendix C – Vortex Flow Control Data Sheet

Hydro-Brake® Optimum

Vortex Flow Control

Inspired by nature and engineered to deliver the perfect curve, the Hydro-Brake® Optimum is the most advanced vortex flow control available. There is no equivalent to the Hydro-Brake® Optimum when it comes to delivering the best possible hydraulic performance with a passive flow control.

With a wide range of configurations and options available, the Hydro-Brake® Optimum is able to provide precision flow control to suit the vast majority of applications.



Figure 1 - The Hydro-Brake® Optimum is designed and manufactured to deliver precise, repeatable flow control.

Precision Engineered Vortex Flow Controls

Each Hydro-Brake® Optimum is custom configured to suit the application and is manufactured under strict quality assurance procedures to deliver precise flow control to exacting requirements.

Every unit is backed by significant R&D investment to fine-tune the performance, meaning that the Hydro-Brake® Optimum is the only vortex flow control to have been independently certified by the BBA and WRc.



Benefits

- Manufactured from high grade stainless steel.
- Future proof – adjustable or replaceable inlet plates available to alter flow rates post-installation.
- Configurations available to suit a wide variety of installations.
- Large cross sectional area at all heads.
- Simple installation.
- Self-activating.
- No moving parts or external power requirement.

Versatile and Flexible

At Hydro International, we pride ourselves on providing solutions that meet your requirements, rather than providing a standard solution and asking you to compromise on your project needs.

The Hydro-Brake® Optimum offers designers options to precision-engineer a vortex flow control to:

- Minimise upstream storage volumes.
- Maximise internal (inlet & outlet) cross sectional areas to prevent blockages.
- Build-in a climate change factor to allow for future changes in flow rate.

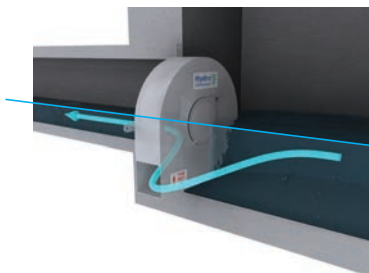
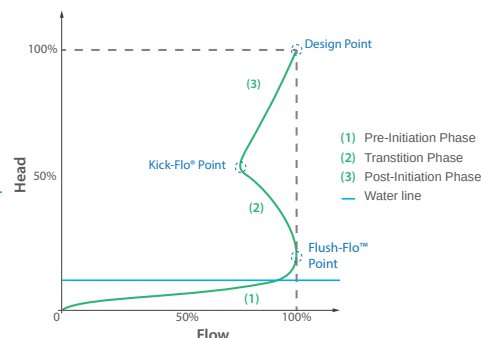
Furthermore, if you need to retrofit a flow control, our dedicated team of engineers can assist with providing a customised Hydro-Brake® Optimum suitable for installation into existing drainage infrastructure.

Operating Principles

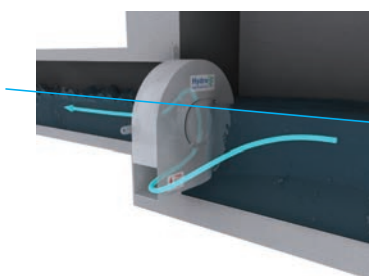
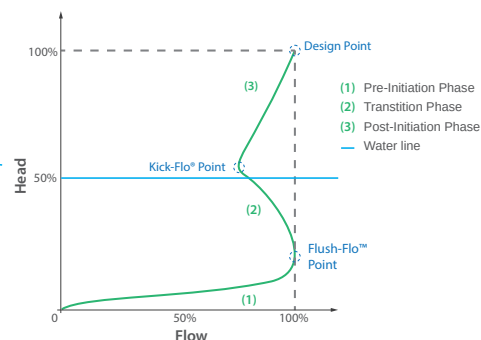
The hydraulic behaviour of the Hydro-Brake® Optimum is described by its hydraulic characteristic curve, which relates the discharge flow from the unit to the hydraulic head acting upon that unit.

The hydraulic characteristic curve consists of three distinct sections, each corresponding to a different governing flow control regime:

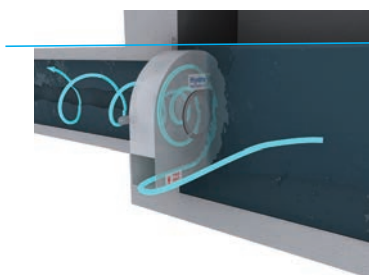
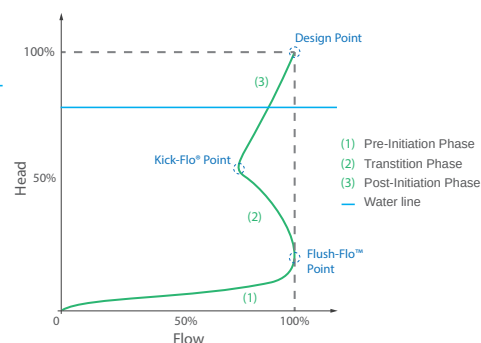
1. The pre-initiation phase – governed by orifice flow and defined on the characteristic curve as the region between the origin and the point at which the vortex begins to have a throttling effect (Flush-Flo™ point). In this region, the depth of water is below the soffit of the outlet orifice of the Hydro-Brake® Optimum.



2. The transition phase – governed by vortex formation and defined on the characteristic curve as the region between the Flush-Flo™ and the point at which the vortex has fully initiated (Kick-Flo® point). In this region the vortex will continually form and collapse. A trapped volume of air inside the Hydro-Brake® Optimum will exert a backpressure and cause the discharge rate to reduce even though the hydraulic head continues to increase.



3. The post-initiation phase – governed by stable vortex flow and defined on the characteristic curve as the region above the Kick-Flo® point. A stable vortex is formed and sustained. An air filled core at the centre of the vortex acts as a pseudo-physical flow restriction by reducing the cross sectional area available for the passage of water.



Design Flexibility

It is possible for the Design Point to be achieved using a number of different flow control configurations, each with a different hydraulic response or characteristic curve.

An in-depth understanding of the flow regimes and interactions at each stage of the hydraulic characteristic curve allows custom configuration of the Hydro-Brake® Optimum to achieve the hydraulic profile best suited to the site requirements.

Design Data

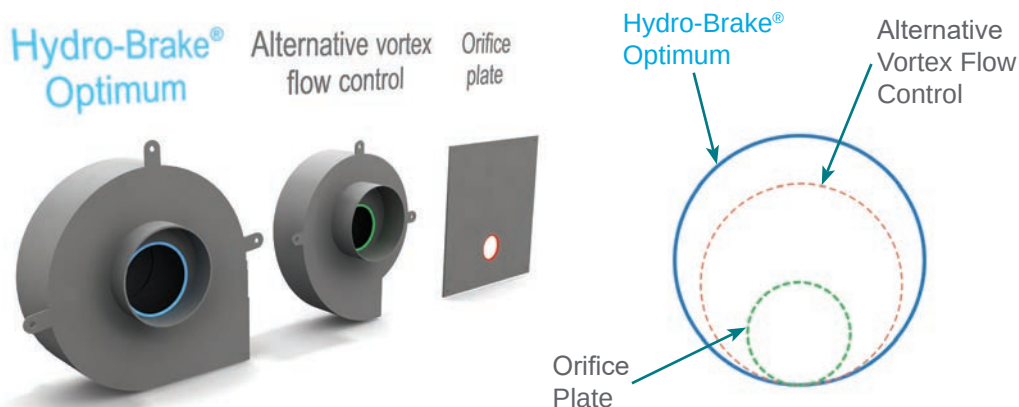
Hydro-Brake® Optimum

Vortex Flow Control

Resilience by Design

Hydro-Brake® Optimum has outlets (clearances) up to 20% larger than competitor products to minimise the risk of blockages. All units are fitted with a pivoting bypass door to enable full access to the internal chamber and the outlet structure in the event that a blockage does occur.

All Hydro-Brake® Optimum units can also be supplied with an adjustable or replaceable inlet to future-proof the device, allowing flows to be altered post-installation, to account for site expansion or climate change.



Expert Design Support Services

Hydro International's professional engineers work with you to provide expert technical and aftersales support to ensure your projects meet exacting design requirements and deliver the very best hydraulic controls for your site.

With over 35 years' experience of flow control knowledge and experience, Hydro International's design support team is available to advise on any aspect of water flow management, including detailed modelling of vortex flow controls and composite outlet structures.

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

Online Design Tool

Engineers have the flexibility to try out any number of flow control iterations and explore their impact on hydraulic performance.

Our Online Design Tool allows you to quickly and easily compare a number of different flow control options for your site to develop the most robust and sustainable drainage solution possible.

The new tool now also has the added options to size and design the First Defense® and Downstream Defender® stormwater treatment separators, alongside the existing functionality to size and design Hydro-Brake® Optimum flow controls.

hydro-int.design



Full MicroDrainage® Compatibility

Engineers can carry out sizing and flow rate calculations and conduct hydraulic modelling of drainage networks containing Hydro-Brake® Optimum units using the industry-standard drainage design software, MicroDrainage®.

XP solutions



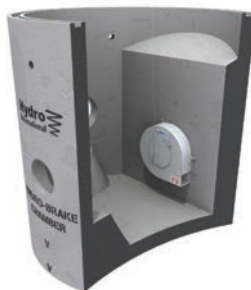
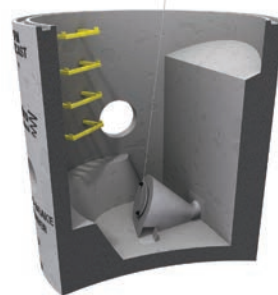
Design Data

Hydro-Brake® Optimum

Vortex Flow Control

Easy to Install

Hydro-Brake® Optimum has a range of mounting options for ease of installation or can be supplied ready fitted into a manhole chamber (with or without a weir wall) for simple plug-and-play installation. There are no set-up or commissioning requirements.



The Hydro-Brake® Flow Control Series

As a brand leader for vortex flow controls for more than 30 years, Hydro International continues to set the standard in flow control management technologies. The Hydro-Brake® Flow Control Series is a comprehensive and versatile toolbox of precision-engineered devices for flow attenuation and control that can help deliver compliant schemes with scalable, precision flow control performance.

Every device in the series is tested and manufactured to exacting standards and wherever possible, independently accredited to provide the reassurance of reliable, repeatable through-life operation.

Hydro-Brake® Orifice



The low-cost option for unconstrained sites (shown with optional screen).

Hydro-Brake® Optimum



The vortex flow control with no equivalent, delivering Nature's Perfect Cue with no moving parts and independently verified by the BBA and WRc.

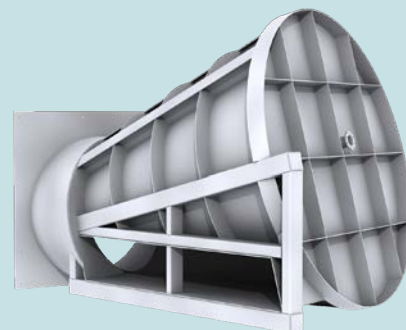
Hydro-Brake® Agile

Precision engineered flow control for highly constrained applications.



Hydro-Brake® Flood Alleviation

The vortex controlled solution to watercourse flooding.



Patent: www.hydro-int.com/patents

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Tel: +44 (0)1275 337 937 stormwater@hydro-int.com

Hydro International
Shearwater House, Clevedon Hall Estate, Victoria Road, Clevedon, BS21 7RD
Hydro-Brake® Optimum Flow Control Design Data Sheet D/0519

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