DRAINAGE MAINTENANCE AND MANAGEMENT REPORT For:

‘CASCADE’ Westgate, Cleckheaton

Date: November 2025

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Document History

Revision & Amendment Record			
Rev	**Date**	**Revision Details**	**Revised by**
A	04/09/24	Note added to Section 1.2 for discharge rate. Note added to Section 2.3 to confirm process if YW do not adopt. Headwall section removed and Appendix A and C updated to suit latest design.	NE
B	11/09/2024	Comment added to Section 2.3 for design life of cellular attenuation tank	NE
C	13/11/2025	Section 104 plan within Appendix A updated to latest with updated outfall location	NE

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INTRODUCTION

1.1 General

This report has been provided to support a planning application for the development comprising of 180 No. new residential dwellings at Westgate, Cleckheaton, BD19 5DR. A discharge of conditions planning application has been submitted (ref: 2023/93077) from which a consultation response from the Lead Local Flood Authority at Kirklees Council has been provided. The consultation response for Condition 15 states "a *maintenance and management plan including any certification, (eg. British Standard or BSE Certificate) should be included in this pack. A management company is expected to pick this up until such a time that it is adopted by a statutory undertaker.*"

Sustainable Urban Drainage Systems (SuDS) are a sequence of water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practice. SuDS are designed to mimic natural drainage flows and typically manage rainfall close to where it falls. Benefits include the effective management of runoff from hard standing surfaces, such as pavements and driveways, by reducing the volume, frequency and flow rate of surface water runoff during extreme storm events. They provide protection and/or enhancement of water quality (reducing pollution from runoff), are sympathetic to the environment and the needs of the local community.

The purpose of this management plan is to demonstrate how SuDS, which have been implemented at this particular residential development will be maintained in compliance with various requirements and best practice guidance, including but not limited to, the National Planning Policy Framework (NPPF) and SuDS Manual (CIRIA, 2015).

The management plan aims to:

- Summarise the various SuDS features used within the site;
- Establish who is responsible for the maintenance of the SuDS components;
- Set out how to maintain the incorporated SuDS components following construction;
- Ensure that all those involved in the maintenance and operation of the SuDS understand their functionality and maintenance requirements in terms of supporting long-term performance.

Maintenance inspections should be recorded in Section 3.2 of this report to ensure that the document stays up to date.

1.2 Site Description

The proposed development consists of 180 No. new dwellings accessed by a proposed adoptable road from A643 Westgate, within the town of Cleckheaton.

The site is brownfield with three existing buildings that are due to be demolished to make way for the development. There is an existing private road (Stone Street) that is used to access the site, which will be stopped up to construct the adoptable access road.

There are a series of public foul sewers crossing the site, which will be diverted under a Section 185 agreement with Yorkshire Water. Where crossing within open spaces, an easement in accordance with Yorkshire Water's guidance is to be provided. Blacup Beck borders the site to the south, and it is culverted via a 900mm dia. pipe when crossing the site. The culvert is to remain as part of the development.

The surface water drainage system for the development comprises of a cellular attenuation tank to store the 1 in 100 year storm event plus a 30% allowance for climate change. A flow control chamber is to be installed to restrict the development to greenfield rates. A greenfield runoff rate of 26.5 l/s was originally agreed with Kirklees Council, however following further discussion, the Lead Local Flood Authority commented that "*We estimate to avoid double counting of preserved landscaped areas, that a greenfield discharge restriction of 25l/s is appropriate for this site*" within a consultation response dated 28th November 2021. Runoff generated from the adoptable highways, new dwellings and associated parking will utilise the tank for attenuation at 25.0 l/s.

The main sewers within the network are to be maintained by Yorkshire Water under a Section 104

agreement.

A plan showing the proposed drainage to be maintained is shown in Appendix A.

1.3 Background to Surface Water Strategy

The surface water drainage scheme for the development has been based on the Flood Risk Assessment and Drainage Strategy produced by Queensberry Design Limited dated February 2023, ref: QD1776 FRA.

The hierarchy of surface water disposal methods has been assessed within the above report by Queensberry Design Limited, with infiltration being discounted due to clay soils and contamination underlying the site.

Blacup Beck is located to the south of the development and is to be utilised as the outfall for the surface water runoff from the development. As explained within Section 1.2, a runoff rate of 25.0 l/s has been agreed with Kirklees Council.

The foul water created by the development will connect into the diverted combined public sewers crossing the site.

MAINTENANCE AND MANAGEMENT REGIME

2.1 General

Homeowners will be responsible for maintaining the private drainage serving their dwelling. They must fully understand their responsibilities outlined in this plan and be aware of any legally binding maintenance agreement.

Only trained personnel will be permitted to undertake maintenance of SuDS features where responsibility lies with Private Management Companies, Yorkshire Water or Kirklees Council. This work must be carried out in accordance with the Confined Space Regulations. To facilitate this maintenance, the features outlined within this report have been located where reasonably accessible, where practical to do so.

Tables outlining the maintenance activities that should be undertaken for each SuDS feature, outlined in the following sections, in accordance with the SuDS Manual, CIRIA, 2015. These tables must be reviewed by the Homeowner, Yorkshire Water and Kirklees Council.

2.2 Inspections and Reporting

An initial pre-handover inspection will be required to ensure that the drainage elements have been constructed in accordance with the design.

All inspections and maintenance activities shall be carried out by staff with an appropriate level of experience in drainage maintenance. All inspections shall be recorded, and records kept for future reference.

During the first year of operation, inspections shall be carried out at least monthly and after significant storms, to ensure correct functioning of all components.

2.3 Cellular Attenuation Tank

Cellular attenuation tank is to be installed within the public open spaces within the southern section of the site. They are to store surface water runoff for storm events up to and including the 1 in 100 year plus a 30% allowance for climate change. The cellular attenuation tank will be under the responsibility of Yorkshire Water, subject to a Section 104 agreement.

Access turrets are to be provided at all inlet and outlet locations for maintenance.

The cellular attenuation tank proposed is the StormBrixx HD900 model by ACO. Refer to Appendix B for the StormBrixx HD900 and access unit data sheets.

Details of the maintenance regime for cellular storage systems prior to the adoption handover are provided in the table below:

Maintenance Regime	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas which are not operating properly, take remedial action if required.	Quarterly for first year, then annually
	Remove debris from the catchment surface where it might cause risk to performance.	6 Monthly
	Remove sediment from pre-treatment structures.	Annually or as required.
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows, vents etc.	As required.
Monitoring	Inspect inlets, outlets, overflows, vents etc. to ensure correct operation in accordance with design and in good condition.	Annually
	Survey inside for sediment build-up and remove if necessary.	Every 5 years or as required.

Yorkshire Water will be responsible for the maintenance of the attenuation tank subject to the completion of a Section 104 agreement, therefore the attenuation tank will be constructed in accordance with Code for Adoption 2020.

Should Yorkshire Water not wish to progress with the Section 104 agreement to adoption stage, Strata Homes will pursue other routes to obtain Section 104 adoption, via a NAV. This will be for all drainage being offered for adoption noted on the Section 104 Agreement Plan within Appendix A.

As noted within Appendix B ACO StormBrixx HD900 has a design life of 60 years. Should a Section 104 agreement not be completed with Yorkshire Water or a NAV, the tank is to be replaced before the end of the design life.

2.4 Flow Control

Flow control chambers are specified to restrict the flow of the surface water into Blacup Beck at the agreed discharge rate. The flow control chamber features 1no. Hydro-Brake.

The unit reference for the Hydro-Brake flow control is as follows:

- SHE-0196-2500-2560-2500

Refer to Appendix C for details of the Hydro-Brake.

Prior to the adoption handover, the maintenance requirements for the Hydro-Brake are as follows:

- Normally little maintenance of the Hydro-Brake is required as there are no moving parts. Hydro-Brake flow controls are fitted with a pivoting bypass door which allows the chamber to be drained down should blockages occur.
- Following the installation of the Hydro-Brake, it is vitally important that any extraneous material, i.e. building materials, are removed from the unit and drainage system.
- After the system is made live, and assuming the Hydro-Brake is performing satisfactorily, it is recommended that each unit is inspected at 6 monthly intervals with a hose down if required.

Yorkshire Water will be responsible for the maintenance of the flow control chamber and Hydro-Brake subject to the completion of a Section 104 agreement, therefore the flow control chamber will be constructed in accordance with Code for Adoption 2020.

CONTACT DETAILS AND RECORD OF MAINTENANCE

3.1 Contact Details of Individual Responsible for this Plan

In the event of concern over any matter related to SuDS, please contact:

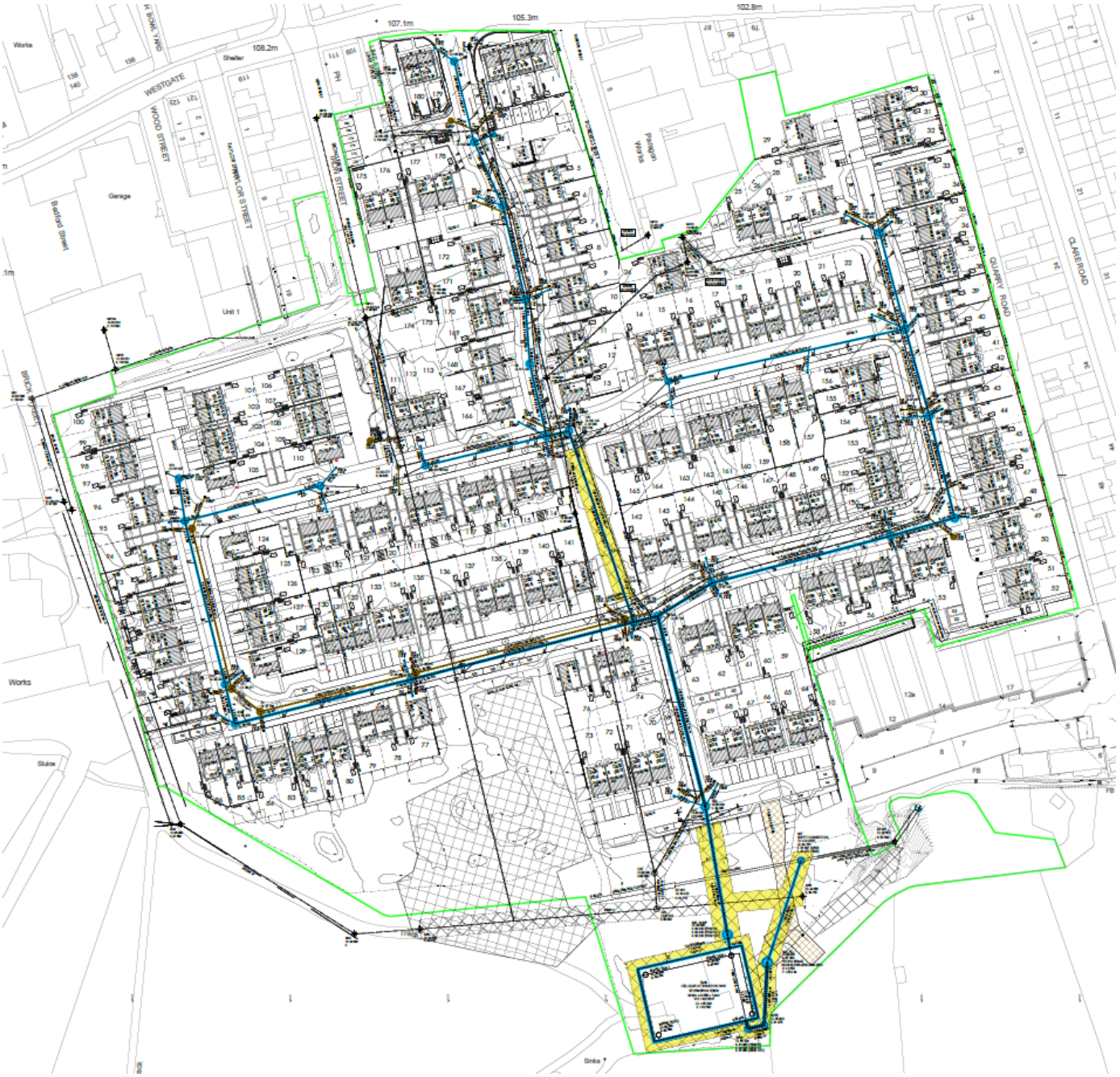
Name	
Address	
Phone	
Email	

3.2 Record of Maintenance and Photographic Evidence

Please provide a record of all inspections (including all photographic evidence) below.

APPENDIX A – MAINTENANCE AND MANAGEMENT PLAN

Section 104 Agreement Plan (Drawing Ref: QD1776-17-01)



Section 185 Agreement Plan (Drawing Ref: QD1776-18-01)

APPENDIX B – CELLULAR ATTENUATION TANK
STORMBRIXX HD900

ACO. we care for water

ACO StormBrixx SD, HD900 and HD

DATA SHEET

The ACO StormBrixx is a unique and patented plastic geocellular stormwater management system.

Its versatile design allows the system to be used in applications across all construction environments as a standalone solution or as part of an integrated Sustainable Drainage System (SuDS).

The range consists of StormBrixx SD (standard duty) and StormBrixx HD (heavy duty) stormwater management systems. StormBrixx SD is manufactured from recyclable polypropylene and has a design life of 50 years, whilst StormBrixx HD is manufactured from recycled polypropylene and has a design life of 60 years.

ACO StormBrixx SD, HD900 and HD

Benefits

- Fully certified performance - DiBt, MFPA, compliance with BS EN 17152-1
- Brick bonding and cross bonding for optimum stability
- Remote and man access for ease of maintenance
- High void ratio which minimises excavation volume (97% for SD and HD900, 95% for HD)
- Reduced CO_2 emissions

Simplified handling and logistics

- Compact delivery method with stackable nestled design allowing up to four times fewer deliveries
- Unique stackable design that simplifies on site storage and handling during installation
- Time savings: movement on site and installation

strata

The ACO StormBrixx Range

Complies with BS EN 17152-1

NEW — ACO StormBrixx HD900

Void ratio:	97%
Short term vertical compressive strength:	605kN/m²
Short term lateral compressive strength:	120kN/m²
Accessibility:	Remote access
One layer height:	920mm

Product Code	Description	Length [mm]	Width [mm]	Height [mm]	Weight [kg/m²]
Components overview - dimensions and weights					
314154	Half Body	1208	604	460/496	12.3
314091	Side Panel	907	592	104	3.13
314092	Top Cover	550	550	45	0.76
314094	Half Layer Cover Plate	1200	600	94	3.66
314098	Half Layer Side Panel	450	592	104	1.5

ACO StormBrixx HD

Void ratio:	95%
Short term vertical compressive strength:	455kN/m²
Short term lateral compressive strength:	95kN/m²
Accessibility:	Man access & remote access
One layer height:	612mm

Product Code	Description	Length [mm]	Width [mm]	Height [mm]	Weight [kg/m²]
Components overview - dimensions and weights					
314061	Half Body GF	1205	602	306/343	10
314021	Side Panel	580	580	35	1.6
314022	Top Cover	550	550	43	0.8

strata

Access - HD

ACO StormBrixx man access specification and design process

Manufactured from reinforced concrete, each man access unit is 1200mm x 1200mm and is available in two heights; 610mm and 1210mm. Connections for 300mm through to 900mm pipes can be added along with inspection windows on 1, 2 or 3 sides of the chamber. Please specify when ordering the product.

Entrance via the Remote Access Unit

This unit is only suitable for the ACO StormBrixx HD. Access can be gained to the ACO StormBrixx HD unit using the Remote Access Unit as well as the Access Plate. These units can be installed both within the structure and on the outer edges. They replace the ACO StormBrixx layers and when all four walls are removed, full access to the system can be achieved.

For multi-layer systems, the units simply stack on top of each other and as shown clip in with the ACO StormBrixx units.

Each access chamber can be cut out as required by local conditions to accommodate various sizes of pipe (Ø110, 160, 200, 315, 400). (Use a drill to get the saw blade inserted when creating the openings in the lower shaft section.)

The access chamber are extended to the surface using the ACO Combi-point shafts or by using a 450dia twinwall pipe cut to suit.

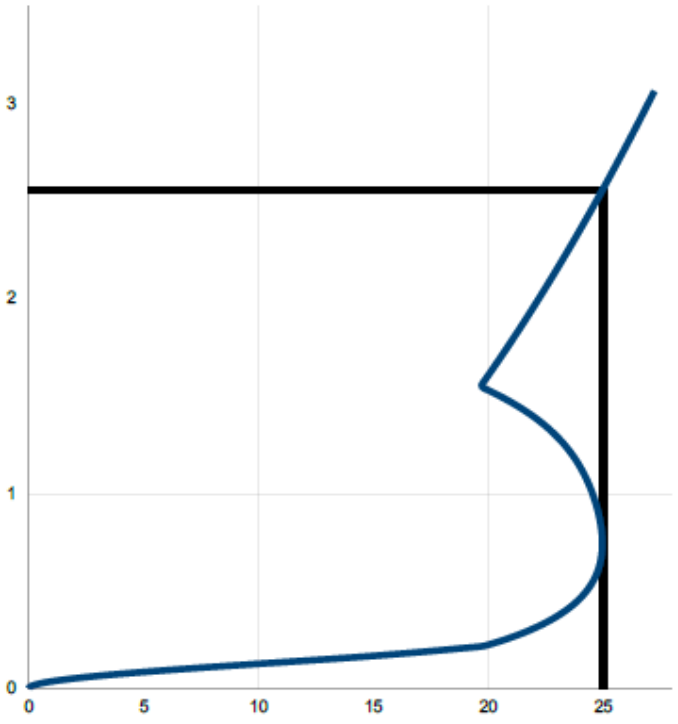
Only usable with ACO StormBrixx HD

APPENDIX C – FLOW CONTROL DETAILS

HYDRO-BRAKE: SHE-0190-2500-3000-2500

Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	2.560	25.000
Flush-Flo™	0.743	24.967
Kick-Flo®	1.548	19.650
Mean Flow		21.835

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.088	5.453
0.177	16.068
0.265	21.082
0.353	22.754
0.441	23.818
0.530	24.464
0.618	24.815
0.706	24.955
0.794	24.947
0.883	24.831
0.971	24.627
1.059	24.339
1.148	23.950
1.236	23.426
1.324	22.718
1.412	21.767
1.501	20.508
1.589	19.898
1.677	20.416
1.766	20.921
1.854	21.413
1.942	21.893
2.030	22.362
2.119	22.821
2.207	23.270
2.295	23.710
2.383	24.142
2.472	24.565
2.560	24.981

DESIGN ADVICE

The head/flow characteristics of this SHE-0196-2500-2560-2500 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

! **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

Hydro International

DATE	19/03/2024 15:03
Site	cleckheaton
DESIGNER	Nick Dunwoodie
Ref	s26

SHE-0196-2500-2560-2500

Hydro-Brake® Optimum

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	2.560	25.000
Flush-Flo™	0.743	24.967
Kick-Flo®	1.548	19.650
Mean Flow		21.835

Hydro-Brake® Optimum Flow Control including:

- 5 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 110 kg

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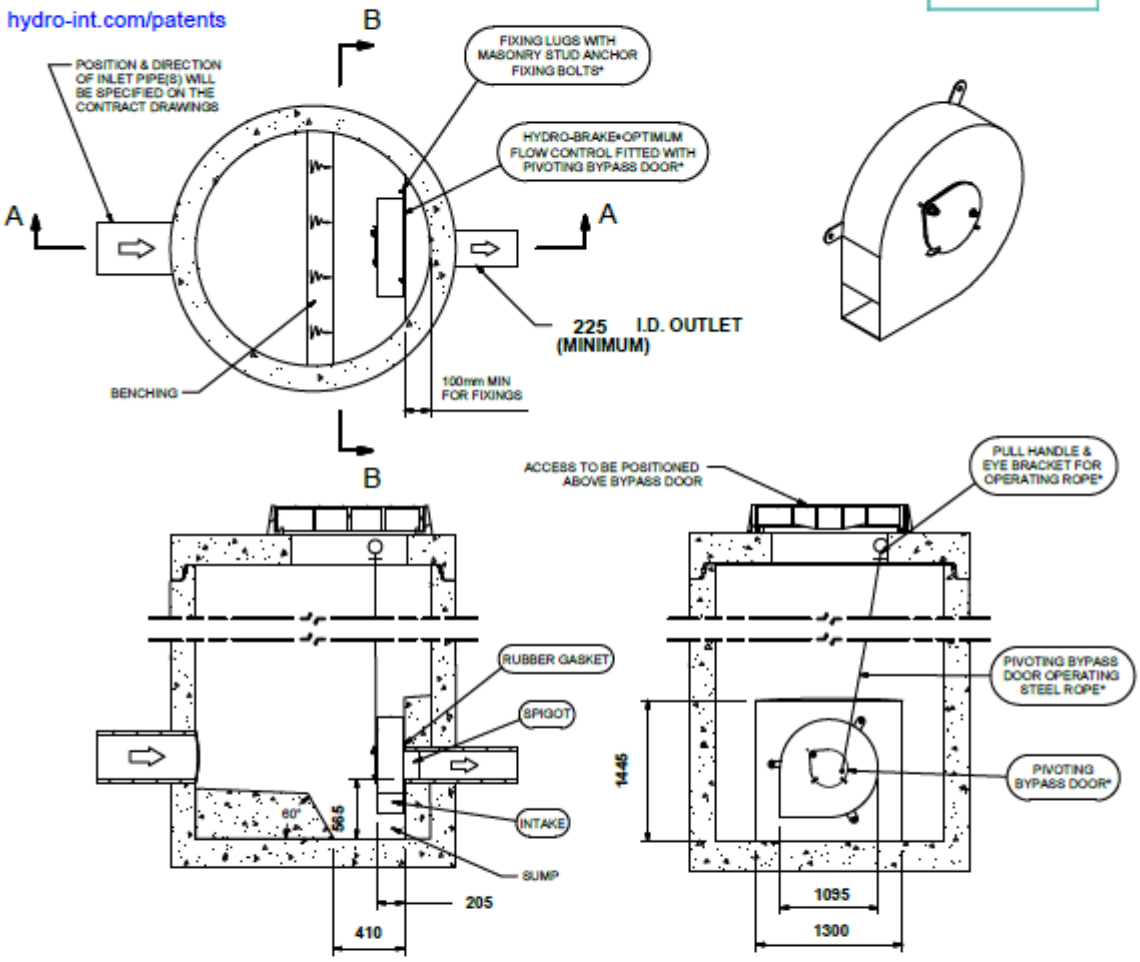

SECTION A-A SECTION B-B

IMPORTANT: LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE

The head/flow characteristics of this SHE-0196-2500-2560-2500 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International
A CRH COMPANY

DATE	19/03/2024 15:03
SITE	cleckheaton
DESIGNER	Nick Dunwoodie
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SHE-0196-2500-2560-2500
Hydro-Brake® Optimum

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