



Foul & Storm Design Report

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1.0 INTRODUCTION

1.1 General Introduction

Halston has commissioned Lally Chartered Engineers to provide foul, storm and firewater design solutions for the project Admiral located at Castlelost, Rochfortbridge, Co. Westmeath.

This report outlines the project-specific foul, storm and firewater design solutions proposed for the development.

2.0 BACKGROUND

2.1 Site Location

The site is in the townlands of Kiltotan, Collinstown and Oldtown, Rochfortbridge, Co. Westmeath.

Figure 1 shows the Project location.

Figure 2 shows the site boundary of the proposed development.



Figure 1. Location of the proposed development at Rochfortbridge, Co. Westmeath.



Figure 2. Boundary outline of the proposed development to which the foul, storm and firewater design applies at Rochfortbridge, Co. Westmeath.

2.2 Site Description

The site is currently agricultural lands, it is bound to the South by the M6 motorway and to the North by the R446, the site's topography generally falls from North to South & West to East.

2.3 Existing Sewers and Drains

The existing site is a greenfield site; therefore, there is no existing infrastructure on the site.

There is no existing public surface water drainage system near the site, but some existing land drains are on the site. The drainage intent is to divert all associated stormwater through Firewater/Attenuation ponds, Habitat ponds, attenuation systems and bypass separators, with overflows discharging to existing land drains identified on site.

Surface water and wastewater shall be catered for separately.

2.4 Existing Subsoils

Ground Investigations Ireland were tasked with carrying out ground investigations within the site. These were carried out in March 2025. Six soakaway tests were carried out at potential locations across the development site as part of these extensive investigations. Five soakaway tests failed, with only one (SA01) providing an infiltration rate for consideration in the design.

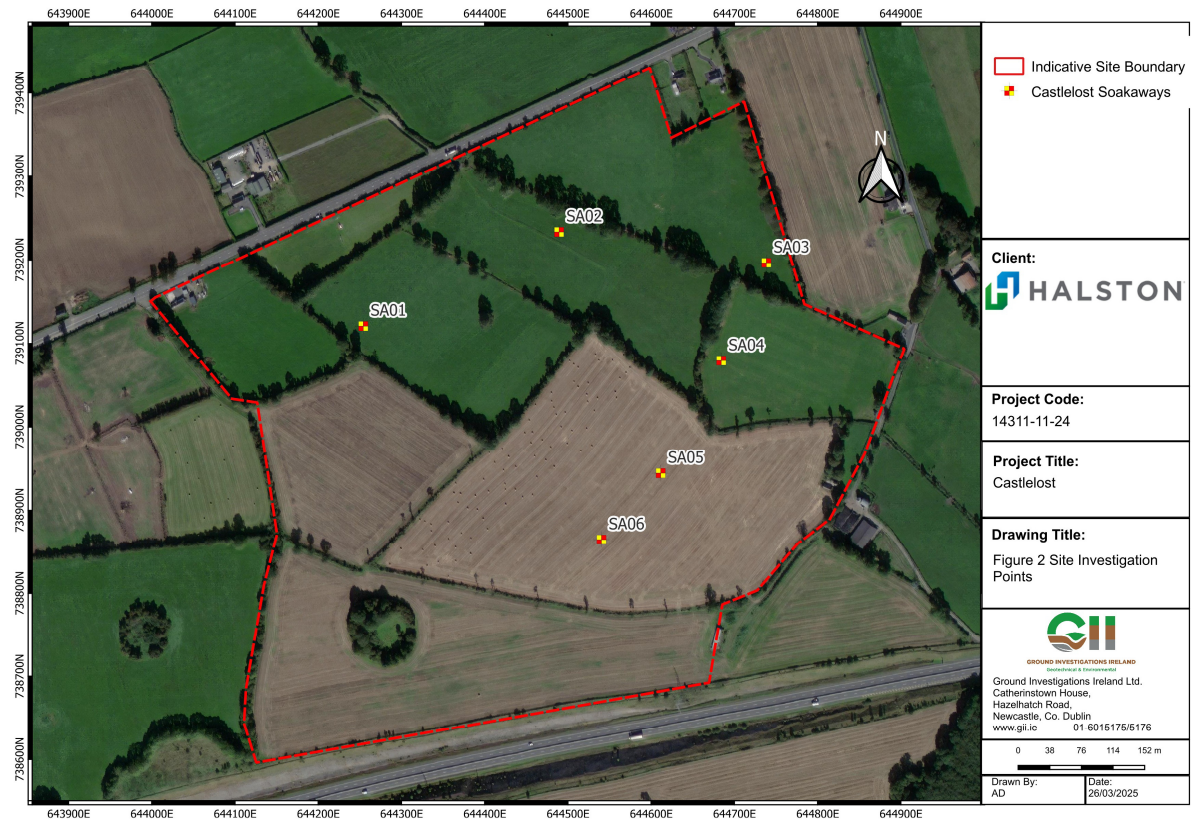


Figure 3. Location of soakaway tests carried out by Ground Investigations Ireland.

3.0 PROPOSED DEVELOPMENT

The proposed development catered for within this report consists of:

- D1 – D6 (Data Centres)
- D7 A-D (Ancillary Equipment Area)
- D8 (AIS Compound)
- D9 (IPP Building)
- D10 A-F (Fuel Cells)
- D11 A-B (Storage Tank & Process Building)
- D12 A-C (Fuel Cells, Chilled water tanks, & Pump house)
- D13 (Security Control Building)
- D14 (AGI)
- D15 (Fuel Cell IPP Building & AIS Compound)
- D16 (IPP 220kV GIS Compound)
- D17 (Solar farm IPP Building and AIS Compound)
- D18 (Battery & MVPS Compound, IPP Building & AIS Compound)
- All necessary ancillary development to serve the project, including Internal roads, paved areas, Emergency Access, ponds and associated greenfield run-off.

4.0 FOUL WATER DRAINAGE

4.1 Existing and Proposed Foul Water Drainage

The existing site is a greenfield site; therefore, there is no existing infrastructure.

The proposed developments, which will require foul drainage, are:

- D1-D6 (Data Centres)
- D13 (Security Control Building)
- D9 (IPP Building)
- D15 (Fuel Cell IPP Building & AIS Compound)
- D16 (IPP 220kV GIS Compound)
- D17 (Solar farm IPP Building and AIS Compound)
- D18 (Battery & MVPS Compound, IPP Building & AIS Compound)

D1 – D6 and D13 are catered for through a gravity-fed network to a foul pumping station located East of the Security Control Building. The pumping station has two pumps, one duty and one on standby in case of any issues. No overflow tanks are included, as it is assumed it will not be without power for a long period of time and will have multiple backup supplies.

A 90 mm diameter foul rising main will take the wastewater approximately 570m to a discharge manhole (FMH 100) on the highest point of the public road (231m NE of the entrance). From there, the wastewater will be gravity fed 1310 meters to FMH 118 and Uisce Eireann infrastructure.

Gravity sewers shall be either: Concrete socket & Spigot, uPVC, or Thermoplastic structured wall pipes.

Plastic pipes must be SN8. Sewer rising mains shall be either Ductile Iron (DI) or Polyethylene (PE).

D9, D15, D16, D17, and D18, are each individually catered for through 32,000-litre foul holding tanks with a High-Level Alarm, This is so that the system can be emptied to prevent the risk of it overflowing. A vent pipe is proposed to serve the tanks to reduce the risk of odour nuisance on the site due to the tanks.

With low occupancy in these buildings, the holding tanks pose no risk to groundwater and are intentionally oversized to each fill a lorry by a licensed waste carrier, making it a more efficient option by reducing multiple visits to each holding tank.

Grease traps shall be installed where kitchen facilities are provided.

4.2 Foul Water Calculations

Foul Holding tanks storage calculations

- D9 (IPP Building) – 4 ppl@60l day = 240l/day = 116 days storage.
- D15 (Fuel Cell IPP Building & AIS Compound) – 2 ppl@60l day = 120l/day = 233 days storage.
- D16 (IPP 220kV GIS Compound) – 4 ppl@60l day = 240l/day = 116 days storage.
- D17 (Solar farm IPP Building and AIS Compound) – 2 ppl@60l day = 120l/day = 233 days storage.
- D18 (Battery & MVPS Compound, IPP Building & AIS Compound) – 2 ppl@60l day = 120l/day = 233 days storage.

Foul Network Flow design

- D1-D6 (Data Centres) @ 27,000 L/day each
- D13 (Security Control Building) @ 900 L/day

Total 162,900 L/day = 1.88 L/s

Pump Station design capacity

- 13.3 L/s
- 13m Head

Pipe capacities and velocities have been calculated using the Colebrook-White equation

- Roughness (mm) 0.15
- Velocities (m/s) Min 0.75 – Max 2.5

5.0 STORMWATER DRAINAGE

The existing site is a greenfield site; therefore, there is no existing infrastructure.

Ground Investigations Ireland conducted Soakaway tests in March 2025, which revealed poor drainage characteristics and showed that the ground is unsuitable for infiltration.

Due to poor infiltration results, all systems have been designed without infiltration.

Some existing land drains are present on the site. We propose to divert all associated stormwater through bypass separators, Habitat ponds, Firewater/Attenuation ponds with hydrobrake overflows or cellular storage discharging to existing land drains.

A portion of roof runoff from each Data centre building shall be intercepted at the source and fed into 20,000-litre rainwater harvesting tanks, with overflows to the main storm network.

All roads and hardstand areas will be managed through gulleys and drainage channels, which are also fed into the main storm network.

All carpark areas are catered for separately and individually diverted to bypass separators before tying into the main storm network.

Firewater runoff within the site will be collected and discharged utilising the stormwater gravity drainage system.

5.1 Stormwater designs

Design D1 caters to Data centre buildings D3, D4, D5, and D6, as well as the surrounding road network and paved areas

A total catchment area of 9.651 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the combined firewater retention/ attenuation pond.

The pond size required to accommodate this design is 8513m³. At the outlet, a Hydrobrake manhole with a limiting discharge rate of 26.7 l/s = 2.77l/s/ha will discharge to an existing open drain with a rip-rap apron. The drain continues through a 450mm diameter culvert pipe and into an existing open drain that runs along the southern boundary of the development.

A Shallow habitat pond with a volume of 1025m³ has also been designed to take a portion of the stormwater from the D6 data building and road network, with overflow into the pond. The pond will be lined, gently sloped, and have a maximum depth in the centre of 0.45m.

In the event of a fire, MH 1.73's actuated penstock valve will activate, diverting water from the habitat pond into the firewater retention/attenuation pond.

As per the reports, the firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method.

Design D2 caters to Data centre buildings D1 and D2, as well as the surrounding road network and paved areas.

A total catchment area of 4.333 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the combined firewater retention/ attenuation pond.

The pond size required to accommodate this design is 3117m³. At the outlet, a Hydrobrake manhole with a limiting discharge rate of $\underline{12.0 \text{ l/s} = 2.77 \text{ l/s/ha}}$ will discharge to an existing open drain with a rip-rap apron. The drain continues through a 450mm diameter culvert pipe and into an existing open drain that runs along the southern boundary of the development.

The firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method, as per the reports.

A Shallow habitat pond with a volume of 843m³ has also been designed to take a portion of the stormwater from the D2 data building and road network, with overflow into the pond. The pond will be lined, gently sloped, and have a maximum depth in the centre of 0.45m.

In the event of a fire, MH 2.44's actuated penstock valve will activate, diverting water from the habitat pond into the firewater retention/attenuation pond.

As per the reports, the firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method.

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Design D3 caters to D6a-b, D7a-d, D8, D9, D10a-d, D11, D15, as well as the surrounding road network and paved areas

A total catchment area of 2.526 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the combined firewater retention/ attenuation pond.

Transformer bunds at D8 and D15 will flow into bypass separators. The bunds are fitted with oil-sensitive sump pumps, ensuring only clean water is pumped from the sump. The Bypass separators shall be installed in proximity to all transformer bunds.

The pond size required to accommodate this design is 1450m³. At the outlet, a Hydrobrake at manhole MH3.42 with a limiting discharge rate of $\frac{7 \text{ l/s}}{2.76 \text{ l/s/ha}}$ will discharge to an existing open drain with a rip-rap apron. The drain continues through a 450mm diameter culvert pipe and into an existing open drain that runs along the southern boundary of the development.

The firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method, as per the reports.

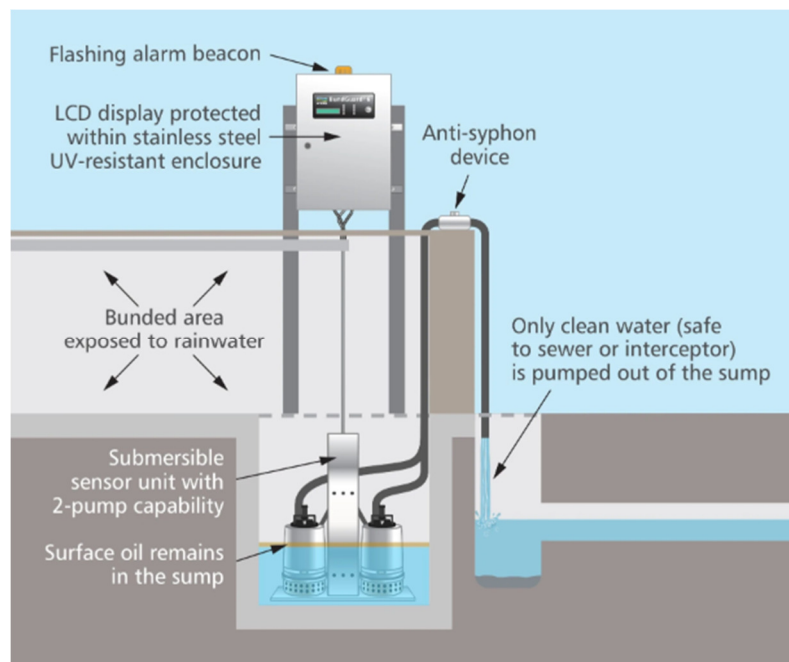


Figure 4. Typical schematic of a sump pump system. (andel.com)

Design D4 caters to D10e-f, D14, as well as the surrounding road network and paved areas.

A total catchment area of 0.876 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the combined firewater retention/ attenuation pond.

The pond size required to accommodate this design is 1000m³. At the outlet, a Hydrobrake at manhole MH4.15 with a limiting discharge rate of 2.4 l/s = 2.74 l/s/ha will discharge to an existing open drain with a rip-rap apron. The drain continues through a 450mm diameter culvert pipe and into an existing open drain that runs along the southern boundary of the development.

The firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method, as per the reports.

Design D16 caters for D16 IPP 220kV GIS Building compound, as well as the internal road network and paved areas.

A total catchment area of 0.260 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the cellular storage attenuation. The cellular storage is 12 crates long x 13 crates wide x 1.5 crates high. Crates are sized at 0.8m x 0.8m x 0.66m high.

The storage volume required to accommodate this design is 96m³. At the outlet, a Hydrobrake at manhole MH7.16 with a limiting discharge rate of 0.7 l/s will discharge to a drain within the site with a rip-rap apron. The drain continues into an existing open drain that runs along the southern boundary of the development.

Design D17 caters for D17 Solar Farm IPP Building and AIS Compound, as well as the internal road network and paved areas.

The transformer bund at D17 will flow into a bypass separator. The bund is fitted with an oil-sensitive sump pump, ensuring only clean water is pumped from the sump. The bypass separators shall be installed in proximity to the transformer bund.

A total catchment area of 0.134 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the cellular storage attenuation. The cellular storage is 15 crates long x 10 crates wide x 1 crate high. Crates are sized at 0.8m x 0.8m x 0.66m high.

The storage volume required to accommodate this design is 61m³. At the outlet, a Hydrobrake at manhole MH6.5 with a limiting discharge rate of 0.4 l/s will discharge to a drain within the site with a rip-rap apron. The drain continues into an existing open drain to the east, which connects with the larger existing drain along the southern boundary of the development.

Design D18 caters for D18 Battery & MVPS Compound, IPP Building & AIS Compound, as well as the surrounding road network and paved areas.

The transformer bund at D18 will flow into a bypass separator. The bund is fitted with an oil-sensitive sump pump, ensuring only clean water is pumped from the sump. The Bypass separators shall be installed in proximity to the transformer bund.

A total catchment area of 0.266 Hectares has been calculated for this design. All stormwater is carried through the gravity storm network to the cellular storage attenuation. The cellular storage is 19 crates long x 10 crates wide x 1.5 crates high. Crates are sized at 0.8m x 0.8m x 0.66m high.

D18 requires a 750m³ inline firewater retention tank. the tank shall be 25m long x 12m wide x 2.45m deep. It will have a manhole at the outlet with an actuated penstock valve and will pass through a bypass separator before joining the remainder of the associated storm network.

The storage volume required to accommodate this design is 117m³. At the outlet, a Hydrobrake at manhole MH5.13 with a limiting discharge rate of 0.7 l/s will discharge to a drain within the site with a rip-rap apron. The drain continues into an existing open drain to the east, which connects with the larger existing drain along the southern boundary of the development.

The firewater retention volume is designed for a 1 in 10 years 24-hour rainfall event using the EPA general method, as per the reports.

Stormwater sewers shall be laid strictly in accordance with the Uisce Eireann Code of Practice for Wastewater Infrastructure and Westmeath County Council requirements.

5.2 Existing Culvert

The stormwater from the ponds in Designs D1,D2,D3 and D4 as outlined above discharge to an open drain with a rip-rap apron and then continues through an existing 450mm culvert that runs through the Castlelost development next door and then enters into the existing open drain that runs along the southern boundary of the development.

This 450mm culvert was designed well in excess of what is required to take all the storm water discharging from the ponds. A maximum total volume of 48.1 l/s will be discharged from the four ponds (D1 = 26.7l/s, D2 = 12l/s, D3 = 7l/s and D4 = 2.4l/s) whereas a pipe of this size has a flow capacity of approx. 300l/s with a 1% slope which would equate to draining 100ha with a rural run-off rate of 3l/s/ha

5.3 V-shaped drainage ditch

A V-shaped drainage ditch is proposed along the Western and Southern boundaries to capture additional greenfield runoff from elevated undeveloped land and areas outside the subject site, diverting it into the existing drain along the development's southern boundary.



Figures 5&6. Typical examples of a V-shaped drainage ditch

5.4 Filter drains

Filter drains are proposed for road edges at the base of steeper banks. The drains shall have a 225mm diameter perforated pipe at the base laid to fall and be surrounded by clean stone/gravel, capturing surface water runoff. Filter drain depths shall generally be between 1 and 2 meters lined with a geotextile membrane and will tie in with the associated storm network in their area.

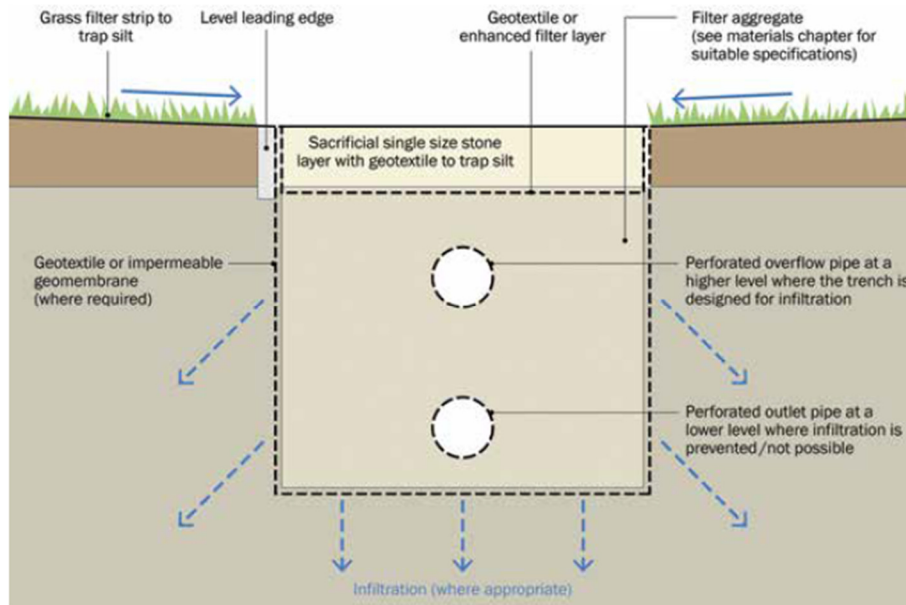
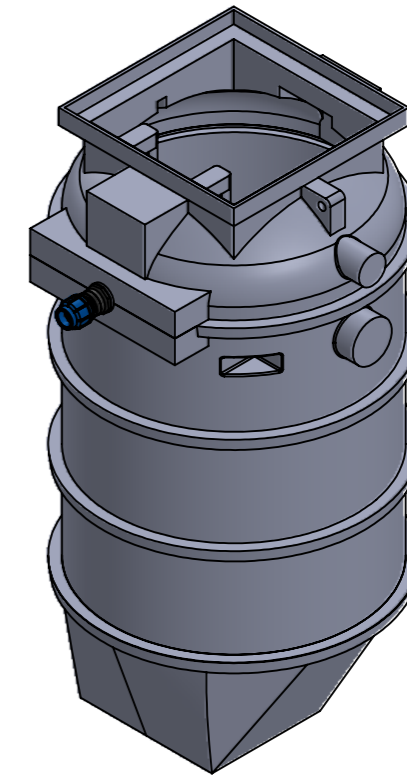
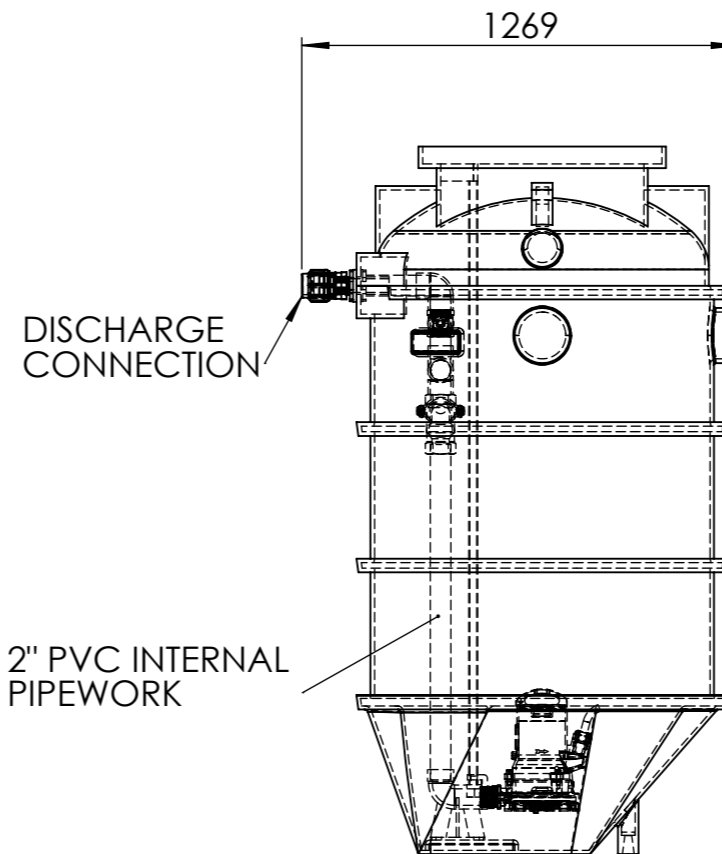
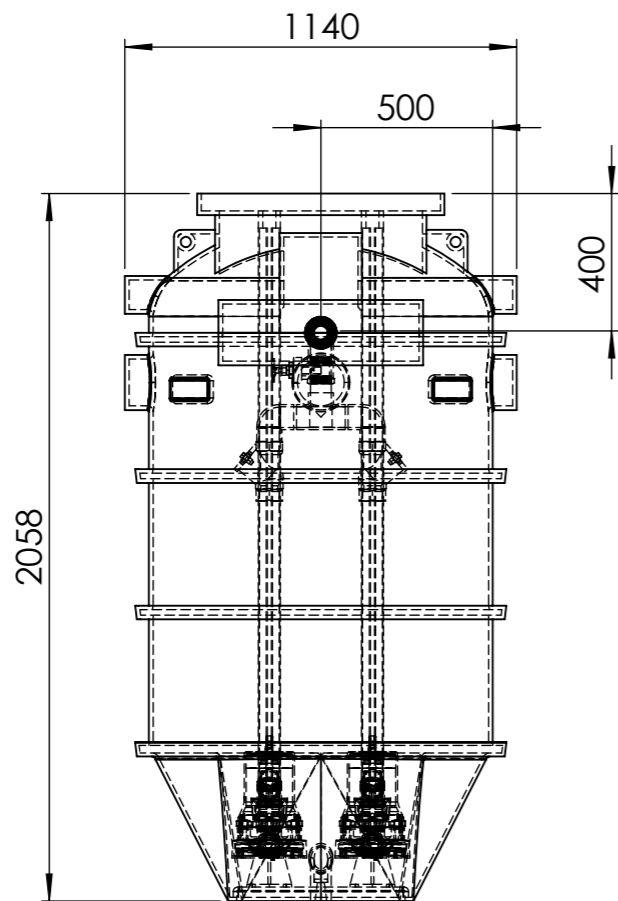
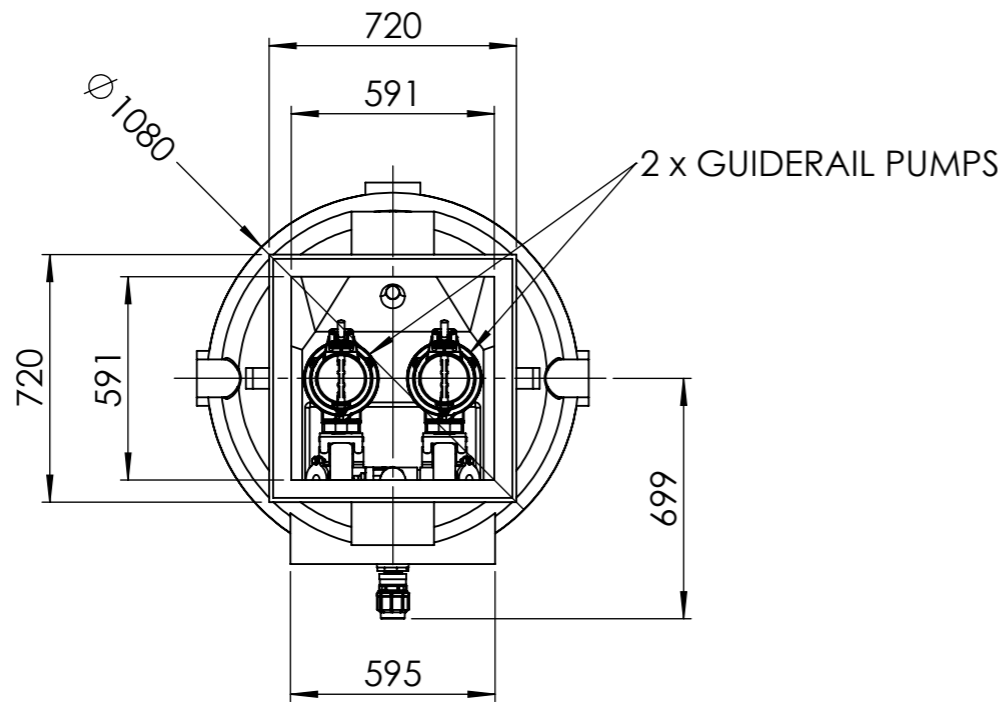


Figure 7. Filter drain schematic, CIRIA SuDS manual

TABLE 16.1 Operation and maintenance requirements for filter drains			
Maintenance schedule	Required action	Typical frequency	
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)	
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly	
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly	
	Remove sediment from pre-treatment devices	Six monthly, or as required	
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required	
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required	
	Clear perforated pipework of blockages	As required	

Figure 8. Filter drain operation & maintenance requirements, CIRIA SuDS manual

Appendix 1.0 –
Foul tank & Pumping station specifications



- **IMPORTANT:** The tank must be surrounded in concrete as per installation procedures. Refer to installation manual available from Dutypoint Ltd.
- Inlets and cable entry points to be formed in the correct positions to suit site requirements. Further detail is available in the installation manual
- Dimensions are approximate due to manufacturing tolerances. If critical, check physically prior to installation.

CUSTOMER:	
PRINT NAME:	
DATE:	
SIGNATURE:	

DUTYPOINT SETTING THE BAR

SHEPHERD ROAD, GLOUCESTER GL2 5EL
(T): 01452 300 110

PROPRIETARY & CONFIDENTIAL
DO NOT SCALE THIS DRAWING
IF IN DOUBT

THIRD ANGLE

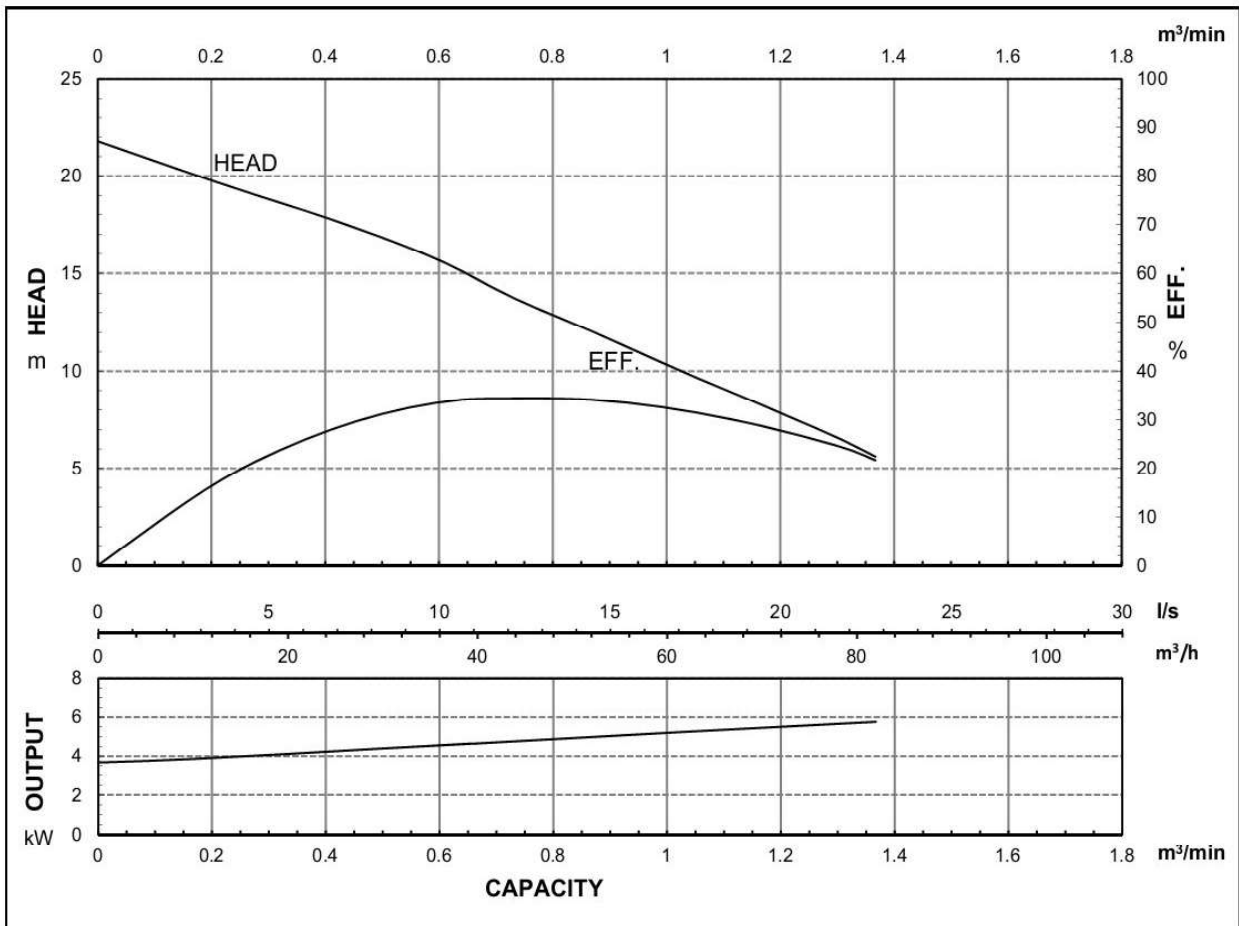
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BIM NO:	XXX-XXX-XX-XX-XX-X-XX_XX_XX-XXXX-XX-XXX		
DESCRIPTION:	T10.200.2P.50.GR		
PROJECT NAME:			
MODEL NO.			
SERIAL NO.			
PROJECT NO.			
DRAWN BY:	DARREN LUSTY	28/04/2022	SHEET NO. 1 OF 1
APPROVED BY:	-	-	SCALE: 1:22
			SHEET SIZE: A3
			WEIGHT KG:



HCP PUMP

FILE NO. PC-M-E5-80AFU25.5L3

PUMP PERFORMANCE CURVES									
MODEL	80AFU25.5L					DATE:			
	STANDARD SPECIFICATION					REFERENCE SPECIFICATION			
FREQUENCY	50 Hz								
DISCHARGE	3	inch /		80	mm				
OUTPUT	7.5	HP /		5.5	kW		HP	kW	
HEAD	13 m								
CAPACITY	0.8 m ³ /min								
PHASE/VOLTAGE	3 Ø	230 V	380 V	400 V	415 V	525 V	Ø	V	
RATED CURRENT		20.2 A	11.7 A	11.3 A	11.2 A	8.8 A	A		
POLE / rpm	2	P /		2890	rpm				
START METHOD	DIRECT								
INSULATION CLASS	F								
REMARK									



HCP PUMP MANUFACTURER CO.,LTD.



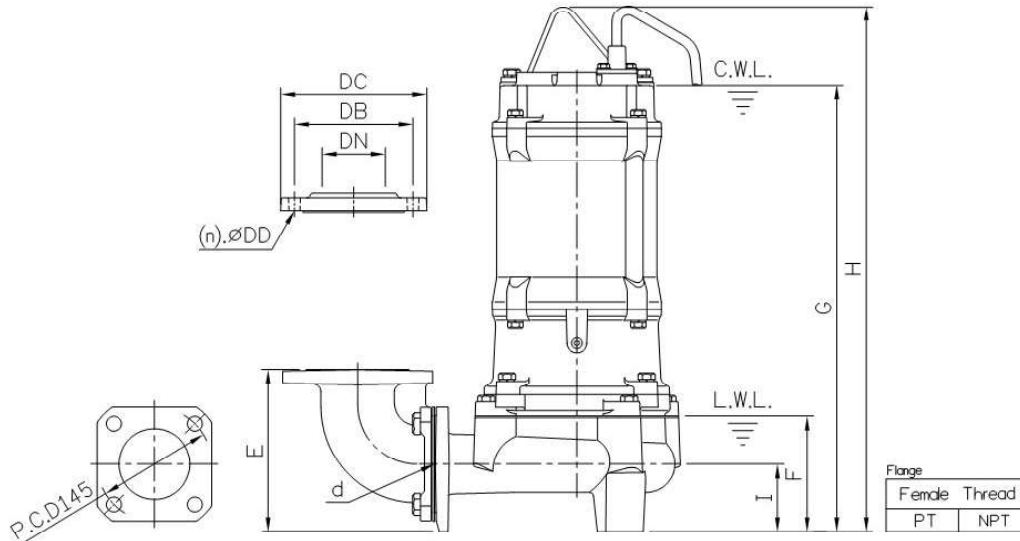
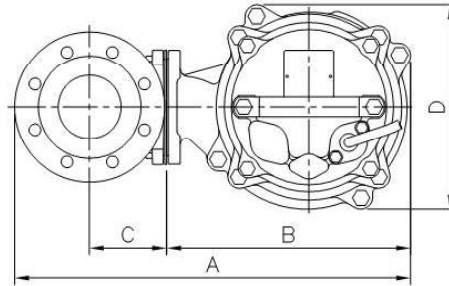
AF SERIES

DIMENSIONS

No: S3AFU275030-00

MODEL: 80AFU25.5/27.5 & 80AFU25.5/27.5L

3Ø



Dimensions-mm

Weight:Kg

Model	d	A	B	C	D	E	F	G	H	I	WT1 50Hz/60Hz	Elbow (+Flange) Set	DN	DB	DC	DD	(n)QTY	WT2
80AFU25.5	80	501	309	98	258	206	147	566	665	86	68/67	EB3-150A	80	150	185	15	8	12
80AFU27.5	80	501	309	98	258	206	147	566	665	86	74/73	EB3-150A	80	150	185	15	8	12
80AFU25.5L	80	506	314	98	273	242	199	618	717	122	70/69	EB3-150A	80	150	185	15	8	12
80AFU27.5L	80	506	314	98	273	242	199	618	717	122	76/75	EB3-150A	80	150	185	15	8	12

Dimensions-inch

Weight:Lbs

Model	d	A	B	C	D	E	F	G	H	I	WT1 50Hz/60Hz	Elbow (+Flange) Set	DN	DB	DC	DD	(n)QTY	WT2
80AFU25.5	3	19 3/4	12 3/16	3 7/8	10 1/8	8 1/8	5 1/2	22 1/4	26 3/16	3 3/8	150/148	EB3-150A	3	5 5/8	7 1/2	1 1/2	8	26
80AFU27.5	3	19 3/4	12 3/16	3 7/8	10 1/8	8 1/8	5 1/2	22 1/4	26 3/16	3 3/8	163/161	EB3-150A	3	5 5/8	7 1/2	1 1/2	8	26
80AFU25.5L	3	19 5/8	12 3/8	3 7/8	10 3/4	9 1/2	7 1/8	24 1/2	28 1/4	4 1/2	154/152	EB3-150A	3	5 5/8	7 1/2	1 1/2	8	26
80AFU27.5L	3	19 5/8	12 3/8	3 7/8	10 3/4	9 1/2	7 1/8	24 1/2	28 1/4	4 1/2	168/165	EB3-150A	3	5 5/8	7 1/2	1 1/2	8	26

C.W.L.:Continuous Running Water Level WT1:Pump Weight(Without Cable)
L.W.L.:Lowest Running Water Level WT2:Elbow Set Weight



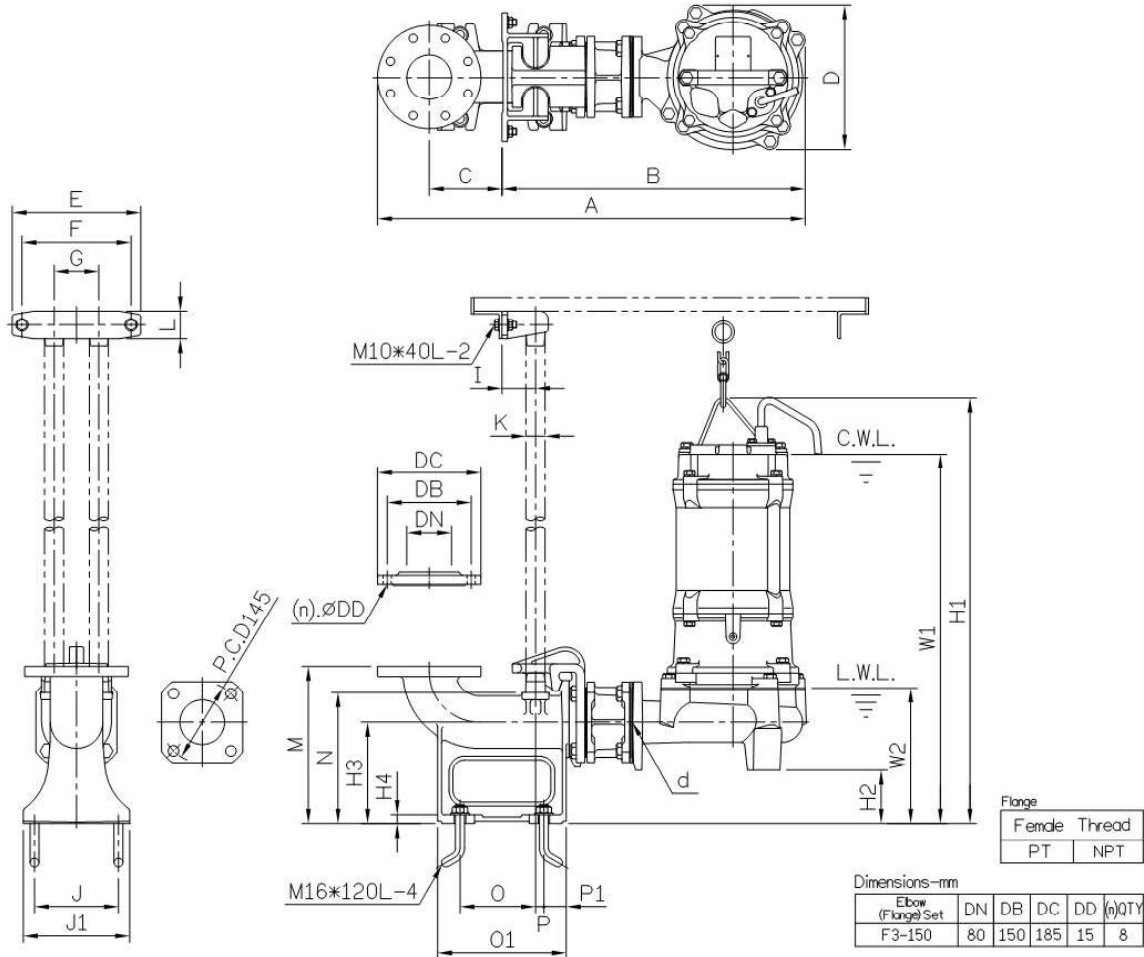
AF SERIES

DIMENSIONS

No: S3AFU27503T-00

MODEL: 80AFU25.5/27.5 & 80AFU25.5/27.5L

3Ø



Dimensions-mm

Elbow (Flange) Set	DN	DB	DC	DD	(n)QTY
F3-150	80	150	185	15	8

Dimensions-inch

Elbow (Flange) Set	DN	DB	DC	DD	(n)QTY
F3-150	3	5 7/8	7 3/8	3/8	8

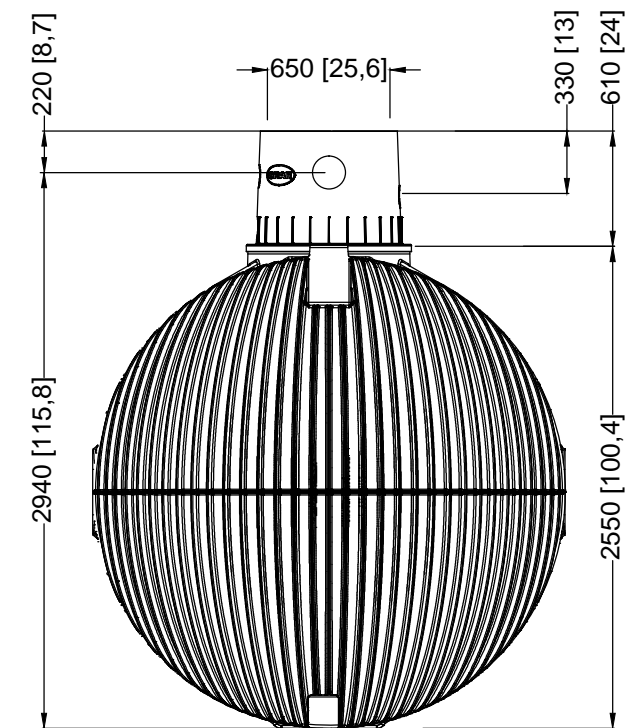
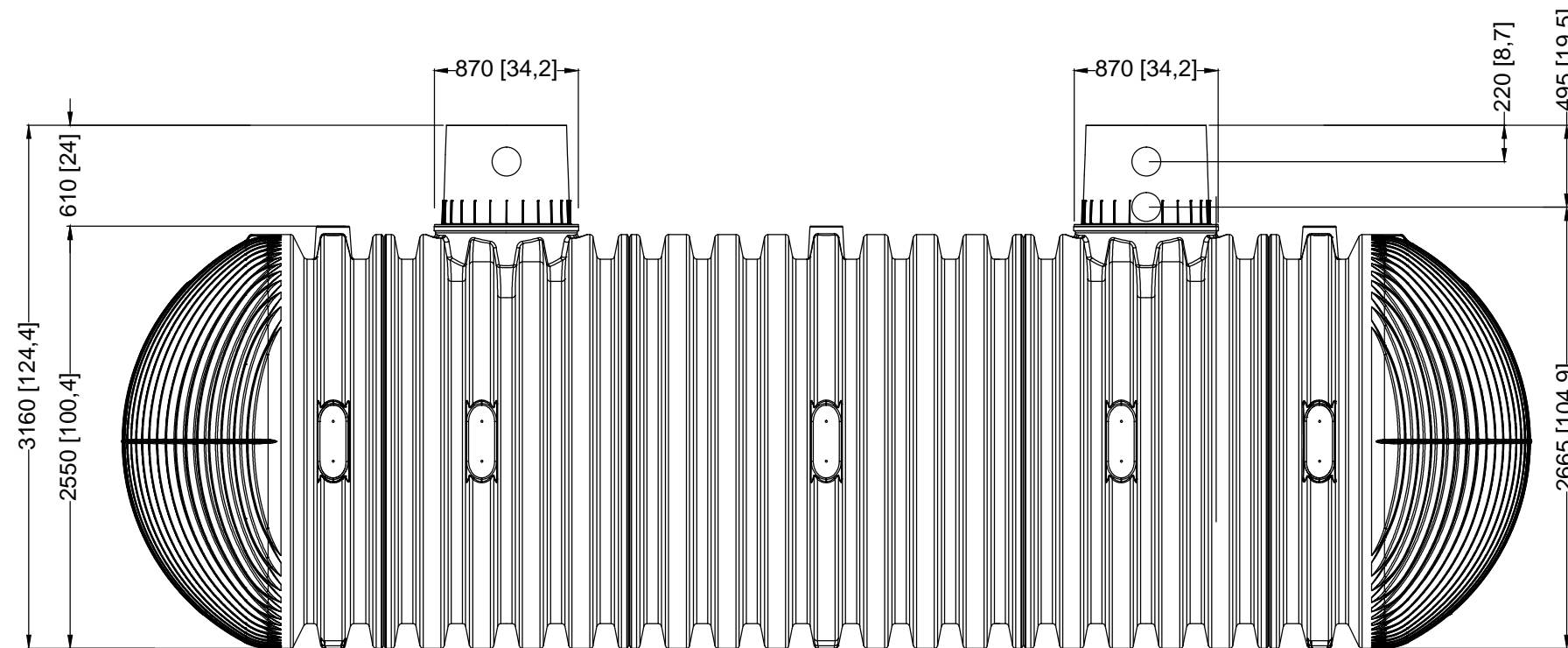
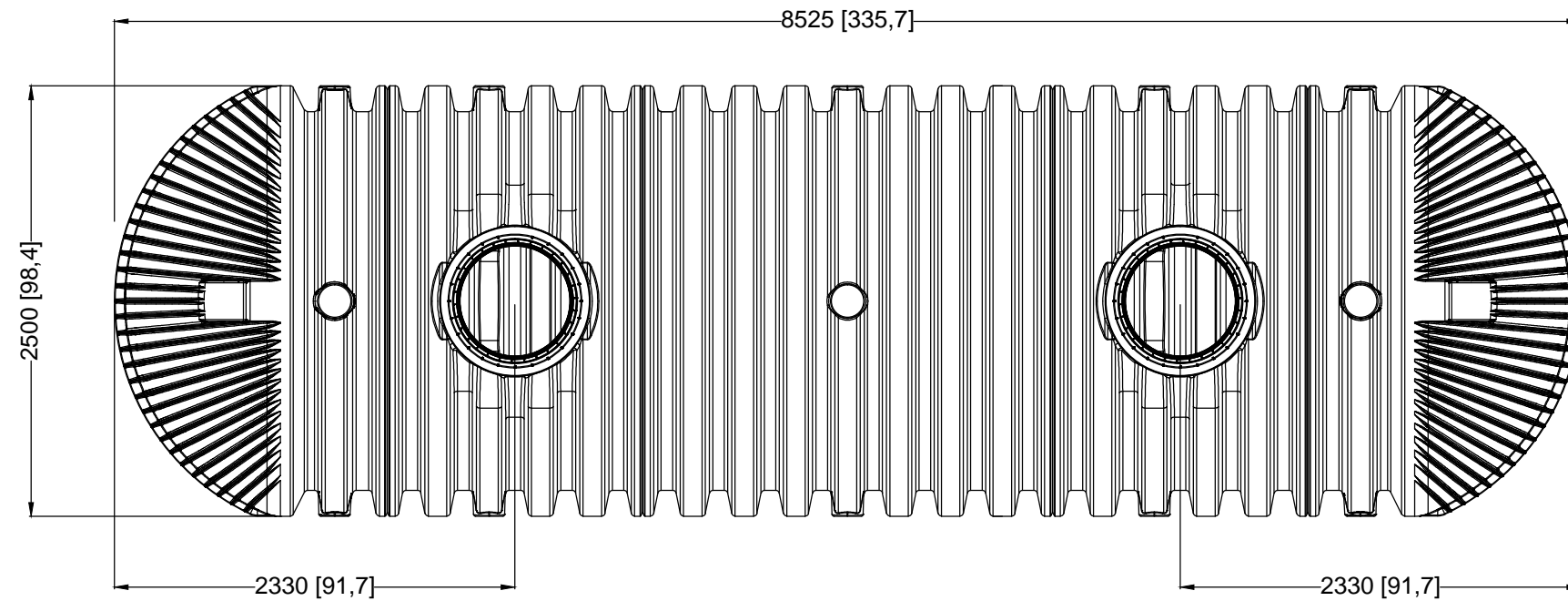
Dimensions-mm


Model	d	A	B	C	D	E	F	G	I	J	J1	K	L	M	N	O	O1	P	P1	W1	W2	H1	H2	H3	H4	WT1 50Hz/60Hz	GRS Set	WT2
80AFU25.5	80	764	542	130	258	230	195	80	60	150	190	1 1/4	50	280	233	135	230	15	40	660	241	759	94	180	15	68/67	T80DH	31
80AFU27.5	80	764	542	130	258	230	195	80	60	150	190	1 1/4	50	280	233	135	230	15	40	660	241	759	94	180	15	74/73	T80DH	31
80AFU25.5L	80	769	547	130	273	230	195	80	60	150	190	1 1/4	50	280	233	135	230	15	40	676	257	775	58	180	15	70/69	T80DH	31
80AFU27.5L	80	769	547	130	273	230	195	80	60	150	190	1 1/4	50	280	233	135	230	15	40	676	257	775	58	180	15	76/75	T80DH	31

Dimensions-inch

Model	d	A	B	C	D	E	F	G	I	J	J1	K	L	M	N	O	O1	P	P1	W1	W2	H1	H2	H3	H4	WT1 50Hz/60Hz	GRS Set	WT2
80AFU25.5	3	30 3/8	21 1/8	5 1/8	10 3/8	9 1/8	7 3/8	3 1/8	2 3/8	5 7/8	7 1/2	1 1/4	2	11	9 1/8	5 1/8	9 3/8	3/8	1 3/8	26	9 1/2	29 1/2	3 3/8	7 1/8	3/8	150/148	T80DH	68
80AFU27.5	3	30 3/8	21 1/8	5 1/8	10 3/8	9 1/8	7 3/8	3 1/8	2 3/8	5 7/8	7 1/2	1 1/4	2	11	9 1/8	5 1/8	9 3/8	3/8	1 3/8	26	9 1/2	29 1/2	3 3/8	7 1/8	3/8	163/161	T80DH	68
80AFU25.5L	3	30 3/4	21 3/8	5 1/8	10 3/4	9 1/8	7 3/8	3 1/8	2 3/8	5 7/8	7 1/2	1 1/4	2	11	9 1/8	5 1/8	9 3/8	3/8	1 3/8	26 1/4	10 3/8	30 1/2	2 3/8	7 1/8	3/8	154/152	T80DH	68
80AFU27.5L	3	30 3/4	21 3/8	5 1/8	10 3/4	9 1/8	7 3/8	3 1/8	2 3/8	5 7/8	7 1/2	1 1/4	2	11	9 1/8	5 1/8	9 3/8	3/8	1 3/8	26 1/4	10 3/8	30 1/2	2 3/8	7 1/8	3/8	168/165	T80DH	68

C.W.L.:Continuous Running Water Level WT1:Pump Weight(Without Cable)
 L.W.L.:Lowest Running Water Level WT2:GRS Set Weight



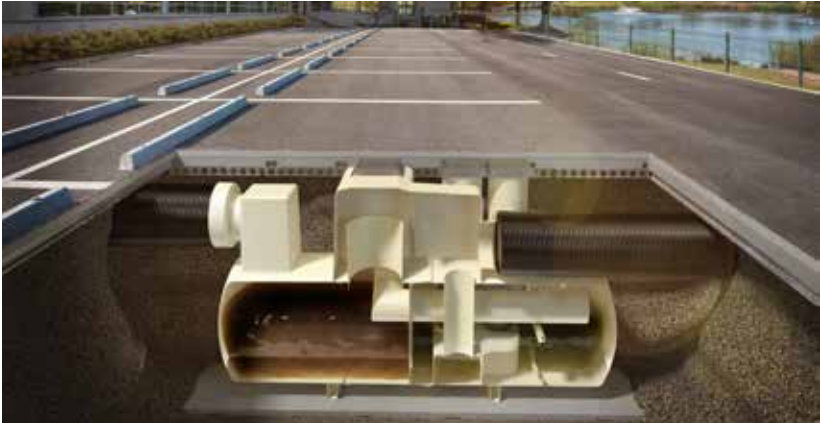
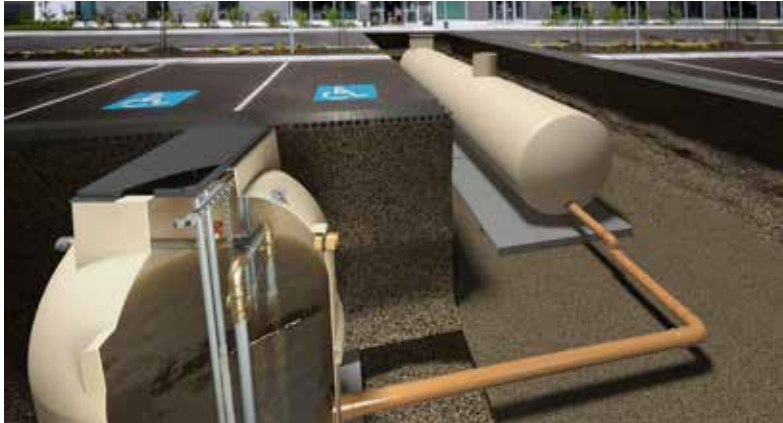
D			GRAF Regenwasser-Erdtank Carat XXL 32000 L / 8453,4 gal.		Artikel-Nr. product no. article no. artículo no.	380003
GB	GRAF underground tank Carat XXL 32000 L / 8453,4 gal.	ES	GRAF Depósito soterrado Carat XXL 32000 L / 8453,4 gal.	FR	GRAF Cuve à enterrer Carat XXL 32000 L / 8453,4 gal.	revision
gezeichnet drawn	ISC	Gewicht weight	1360 kg	Otto Graf GmbH Carl-Zeiss-Str. 2-6 DE-79331 Teningen mail@graf.info www.graf.info		
Datum date	2015.11.27	Toleranz tolerance	+/- 3%			
Maßstab scale	M 1:40	Einheiten units	mm [inch] gal. = US gal.			

Appendix 2.0 –
Bypass separator brochure
Firewater retention calculations
BRE test results



AquaCore® Sustainable Drainage Systems

Reliable and trusted surface water management solutions





A fully supported SuDS treatment solution

Water is a precious resource. We must manage it responsibly. In order for your SuDS system to be eligible for adoption, you must align it to the Design and Construction Guidance*, from Sewerage Sector Guidance (appendix C) and CIRIA C753 The SuDS Manual.

Klargester have been pioneers in this field for decades, with 70 years' experience in manufacturing innovative ways to treat, store and manage the flow of water.

We can design and build a full SuDS solution tailored to your exact needs. Our AquaCore® solutions are reliable and trusted and come with Klargester's knowledge, maintenance and smart monitoring package for your complete peace of mind.

Our UK based factory fitted solutions may reduce on-site time and cost, compared with other SuDS offerings in the market. With carefully designed individual components for each part of the SuDS management train, we can help you with any scale of commercial project.

Talk to our team today at klargestinfo@kingspan.com

*This guidance is for England only. For Scotland refer to 'Sewers for Scotland'. For Wales refer to 'Statutory SuDS Standards Wales'.

AquaCore® trusted SuDS solutions

Our aim is to future-proof your SuDS solution in line with the Design and Construction Guidance, from Sewerage Sector Guidance (appendix C) and CIRIA C753 The SuDS Manual, whilst offering the following benefits:

- Trusted solution from manufacturers with 70 years' industry experience
- UK factory fitted solutions which reduce on site time and cost
- Easy access for maintenance across all SuDS elements
- A fully managed solution including service and monitoring via Smart Serv Pro remote software (optional extra)

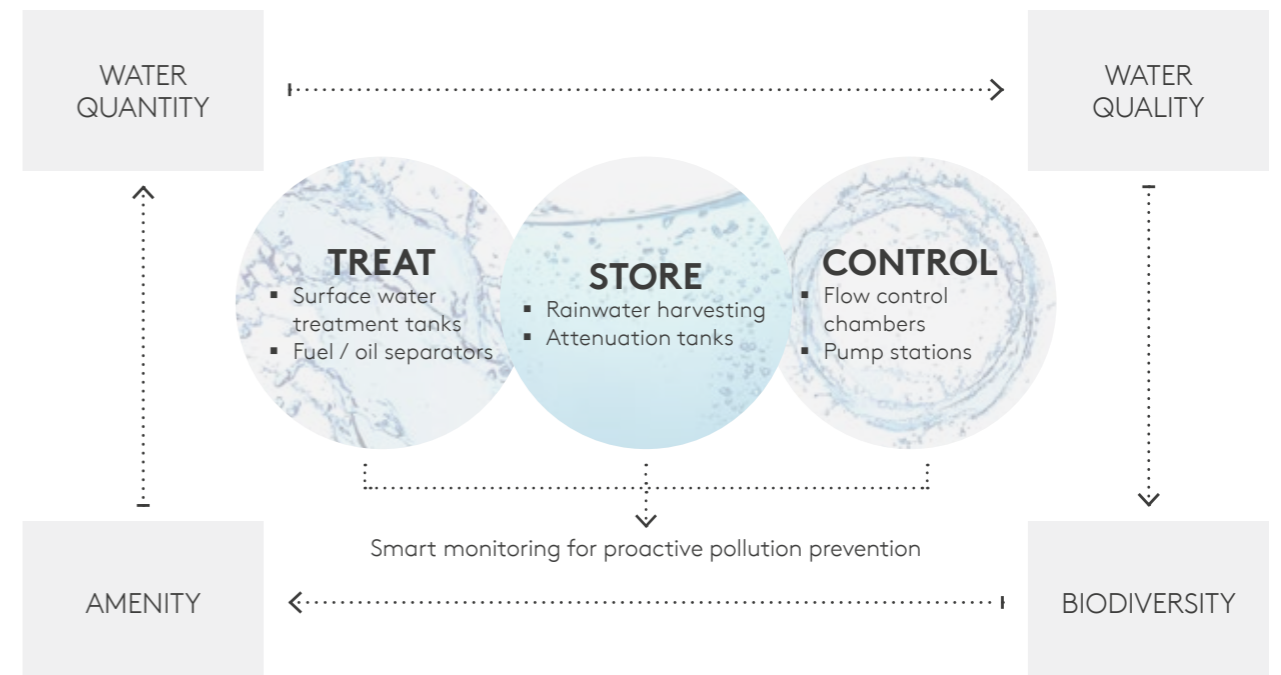


Find out more about our service and monitoring packages for SuDS, including our Smart Serv Pro remote monitoring solution

E: FMservices@kingspan.com
T: +44 (0)28 3026 6799



Contact your local Klargester team today to discuss your project
E: klargestinfo@kingspan.com | T: +44 (0)28 3026 6799

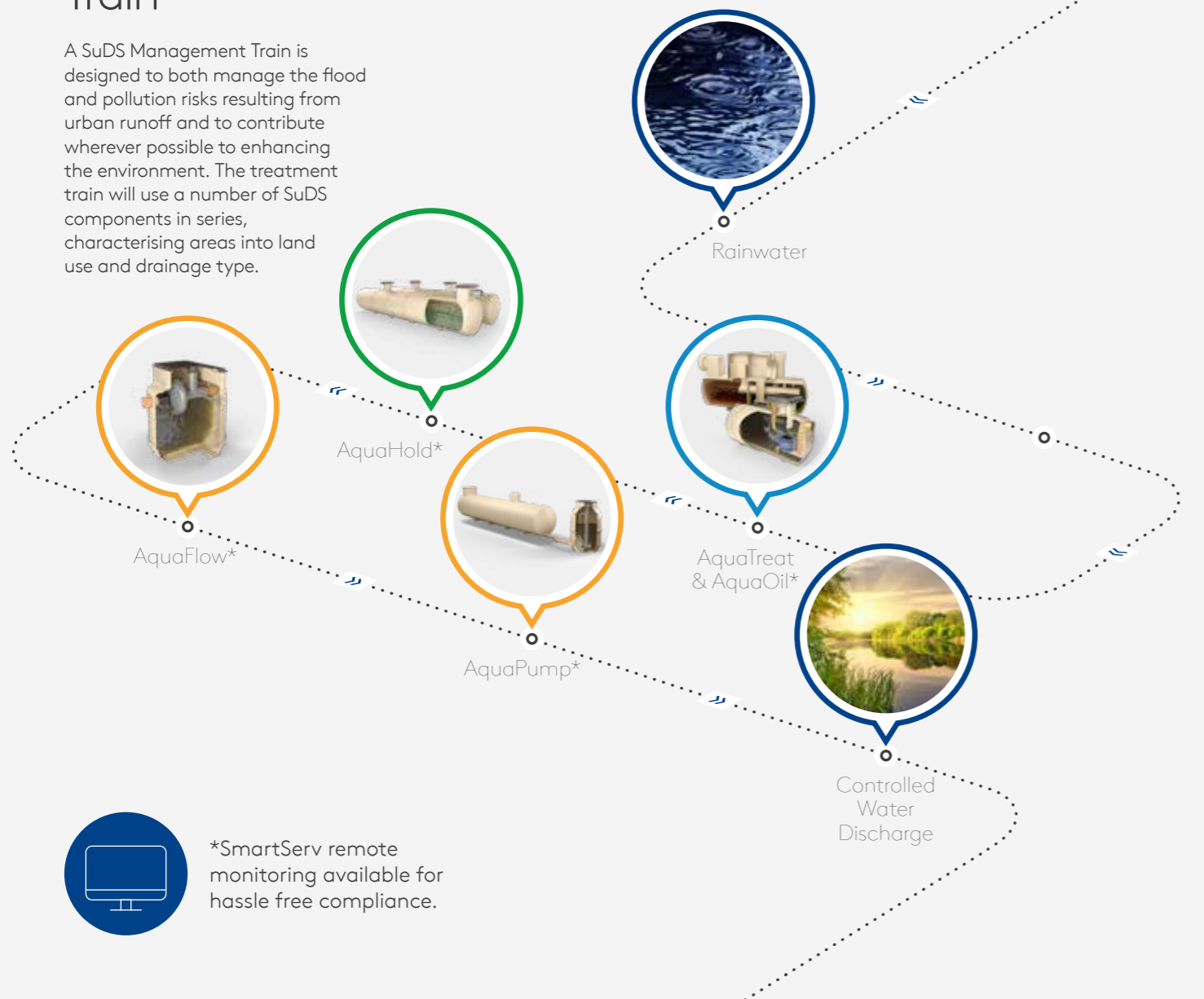


Supporting your SuDS Management Train

The twin forces of climate change and urbanisation have brought about a dramatic rethink in our approach to water management, including water quality, water quantity and biodiversity and amenities.

SuDS Management Train

A SuDS Management Train is designed to both manage the flood and pollution risks resulting from urban runoff and to contribute wherever possible to enhancing the environment. The treatment train will use a number of SuDS components in series, characterising areas into land use and drainage type.



Treat, Store and Control

Klargester's AquaCore® range is suitable for multiple applications, on and off-mains.



● TREAT		● STORE	● CONTROL	
AquaTreat Full Retention GRP Surface Water Treatment Separators	AquaOil AquaOil full retention MDPE and GRP separators/ bypass MDPE and GRP separators	AquaHold Master and Storage Tanks	AquaFlow SF Horizontal Flow Control and FC Vertical Flow Control solutions	AquaPump PU vertical and PC horizontal range

AquaTreat

For more information including technical specifications, scan here

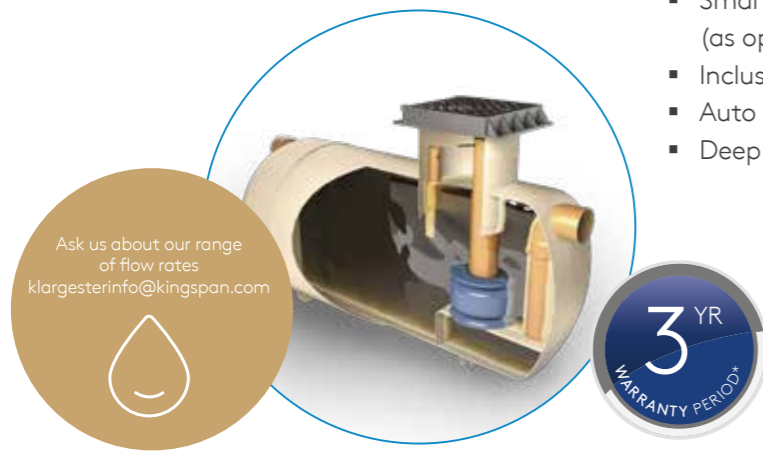


The Klargester AquaTreat Full Retention GRP Surface Water Treatment Separators range helps to reduce pollution in line with SuDS Mitigation Indices by removing metals, suspended solids and hydrocarbons from surface water.

Our surface water treatment range is suitable for a wide range of SuDS schemes such as industrial estates, permitted sites and roadways.

Benefits

- Light and easy to install
- Easier servicing, with maintenance from ground level
- Vent points within necks
- SmartServ Pro remote monitoring available (as optional extra)
- Inclusive of silt storage
- Auto closure device included
- Deep inverts available for 2.6 diameter units



AquaTreat
Full Retention GRP Surface Water Treatment Separators range

*View terms online at www.kingspan.com/gb/en/services/kingspan-klargest-guarantee-form/thank-you-for-registering-your-warranty/

AquaOil

For more information including technical specifications, scan here



3 year warranty when registered online and must be serviced by a Kingspan engineer or accredited service partner. Other terms and conditions apply*



Scan the QR code to register your warranty



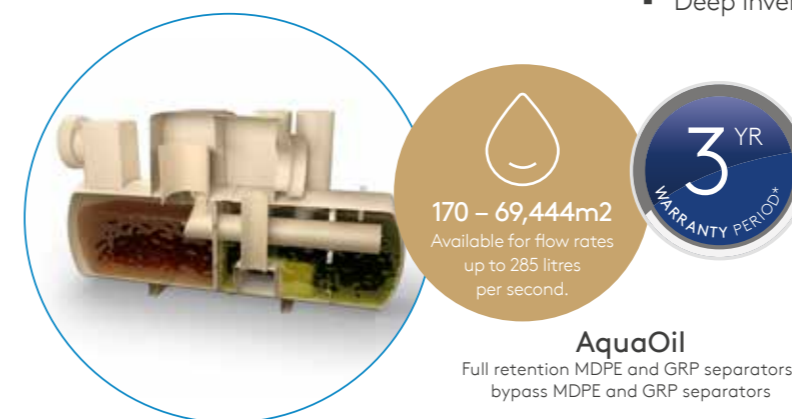
Ask us about our Smart Commissioning package - FMservices@kingspan.com

*View terms online at www.kingspan.com/gb/en/services/kingspan-klargest-guarantee-form/thank-you-for-registering-your-warranty/

AquaOil full retention MDPE and GRP separators/bypass MDPE and GRP separators are classified as effective spill containment systems that meets the EN 858-1 Class 1 effluent targets at low flow rates.

Benefits

- GRP and rotomoulded models available
- Easier to service, with maintenance from ground level
- Inclusive of silt storage volume
- Fitted inlet and outlet connectors
- SmartServ Pro remote monitoring solution available (as optional extra)
- Vent points within necks
- Deep inverts available for 2.6 diameter units



AquaOil
Full retention MDPE and GRP separators/
bypass MDPE and GRP separators

3 year warranty when registered online and must be serviced by a Kingspan engineer or accredited service partner. Other terms and conditions apply*



Scan the QR code to register your warranty



Ask us about our Smart Commissioning package - FMservices@kingspan.com

AquaHold

For more information including technical specifications, scan here



The AquaHold range of Master and Storage Tanks prevent a build up of silt and other debris, whilst allowing access for regular maintenance.

3 year warranty when registered online and must be serviced by a Kingspan engineer or accredited service partner. Other terms and conditions apply*



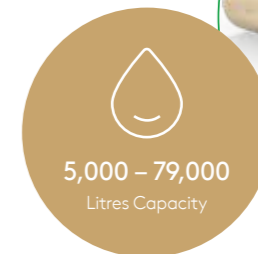
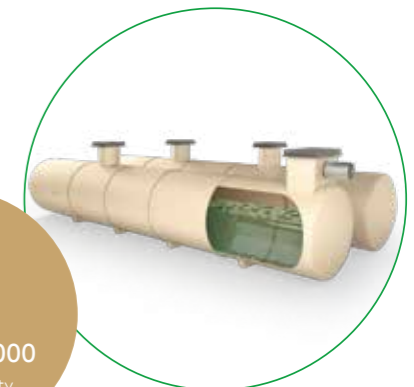
Scan the QR code to register your warranty



Ask us about our Smart Commissioning package - FMservices@kingspan.com

Klargester AquaHold tanks store increased runoff rates due to new developments and excess flows from storm events. Attenuation serves as a way to help mimic natural runoff rates that have been altered through developing sites.

The Klargester AquaHold range is available from 5,000–79,000 litres in a single tank installation, or larger modular solutions. Ask our team for details.



AquaHold
Master and Storage Tanks

Benefits

- Simple, robust solution
- Built from durable GRP material
- Suitable for small or large applications
- Easier to service
- Single or multiple tank installations available
- Full technical and servicing support available

AquaFlow

For more information including technical specifications, scan here



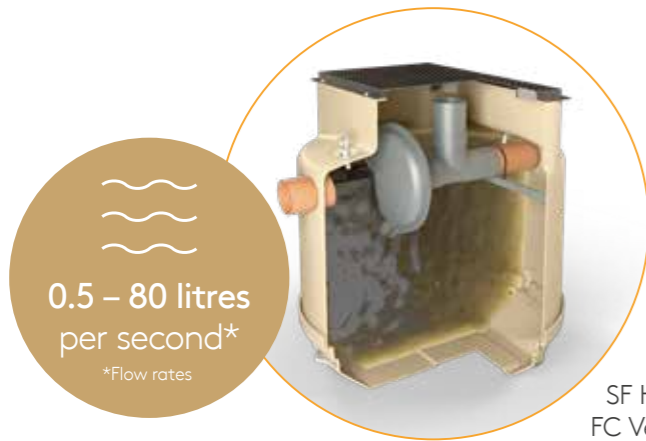
The Klargester AquaFlow SF Horizontal Flow Control and FC Vertical Flow Control solutions are offered in 3 different chamber model sizes, with a standard range of 0.5 l/s – 80 l/s available. Greater capacities available on request.

Our AquaFlow devices control the runoff rate entering a receiving watercourse/ network. Limiting flow rates help avoid flooding and damage to natural habitats downstream and receiving watercourse. We offer overflow or surface operated bypass options, with full technical support available for your project.

Benefits

- Full range available in 1.2, 1.8 and 2.6 model sizes
- Robust GRP constructed chambers
- Flexibility with variable inlet connection sizes available
- Large chamber to facilitate ladder access in emergency situations
- Standalone product, compatible with crate systems
- Full technical and servicing support available

AquaFlow
SF Horizontal Flow Control and FC Vertical Flow Control solutions



*View terms online at www.kingspan.com/gb/en/services/kingspan-klargester-guarantee-form/thank-you-for-registering-your-warranty/



3 year warranty when registered online and must be serviced by a Kingspan engineer or accredited service partner. Other terms and conditions apply*



Scan the QR code to register your warranty



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AquaPump

For more information including technical specifications, scan here



3 year warranty when registered online and must be serviced by a Kingspan engineer or accredited service partner. Other terms and conditions apply*



Scan the QR code to register your warranty



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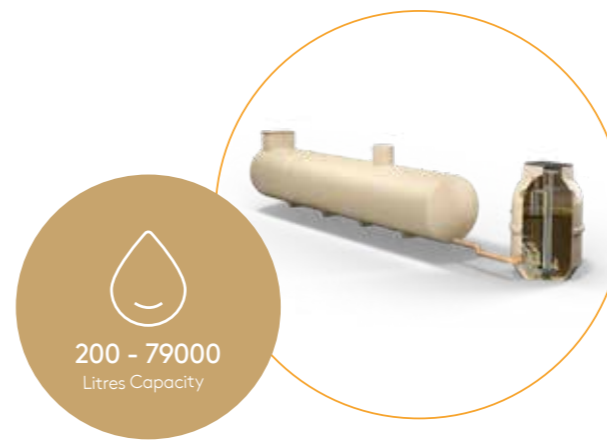
*View terms online at www.kingspan.com/gb/en/services/kingspan-klargester-guarantee-form/thank-you-for-registering-your-warranty/

AquaPump PU vertical and PC horizontal range is for use when more than gravity is needed to control the release of water on an application.

With full technical support offered to ensure a bespoke pumping solution, our pump discharge ranges up to 70 litres per second.

Benefits

- Full range available in 0.6, 0.9, 1.0, 1.2, 1.8 & 2.6 model sizes
- Robust GRP constructed chambers
- Bespoke designs to suit difficult site layouts
- Chambers up to 4.5m deep, available as standard
- Discharge rates of 1 – 70 l/s with a variety of pump types
- Variable inlet connection sizes and orientations available
- Full technical and servicing support available



AquaPump
PU vertical and PC horizontal range

Contact Details

UK

Kingspan Water & Energy Ltd.
College Road North
Aston Clinton | Aylesbury
Buckinghamshire | HP22 5EW

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F: +44 (0) 1296 633 001

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www.klargester.co.uk

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Unit 1a | Derryboy Road
Carnbane Business Park
Newry | BT35 6QH

T: +44 (0)28 3026 6799

E: klargestesterinfo@kingspan.com

www.klargester.ie



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Water Management Solutions

Klargester AquaOil Bypass MDPE and GRP / Full retention MDPE and GRP separator range

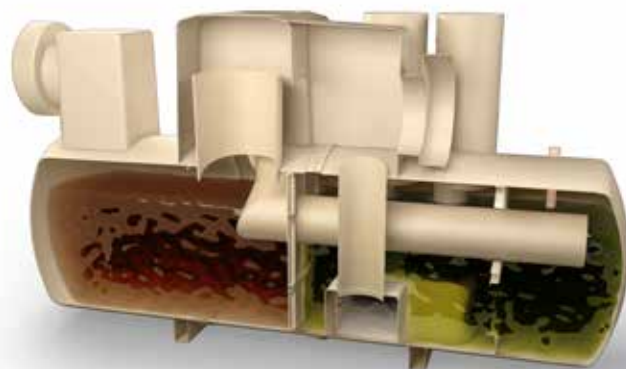
HVO ready**



170 – 69,444m²
Available to cover
flow rates up to
285 litres
per second

Why choose an AquaOil fuel and oil separator?

- Total peace of mind offered through SmartServ Pro remote monitoring system, for early fault detection and in line with Kingspan's Planet Passionate programme
- Total flexibility, with deep invert options available
- Range tested against full flow
- Easily utilised as part of SuDS Management Train
- Full range of bypass and full retention separators available



Our range has been tested against full flow - why is this important?

Our units have been tested at their maximum flow rate (10l/s), unlike some products which have been tested based on bypass and therefore only 10% of the flow. This ensures total accuracy of our silt retention results, by replicating the full effect of the silt wash through.

As part of our Planet Passionate programme, Kingspan are dedicated to delivering innovative surface water management technologies, developed on the back of 70 years' experience.

*Terms and conditions apply. View online at <https://www.kingspan.com/gb/en-gb/products/wastewater-management/warranty-terms>

**Also suitable for Midel Oil



WE ARE
PLANET
PASSIONATE

Product Code	Flow (l/s)	Drainage Area (m ²)	Silt Capacity (ltrs)	Oil Capacity (ltrs)	Length (mm)	Diameter (mm)	Manhole Cover Dimensions (mm)	Base to Inlet Invert (mm)	Base to Outlet Invert (mm)	Min. Inlet Invert (mm)	Std Pipework Diameter (mm)
Polyethylene Chamber Construction											
NSFP003	3	170	300	30	1700	1350	600	1410	1335	550	160
NSFP006	6	335	600	60	1700	1350	600	1410	1335	550	160
GRP Chamber Construction											
NSFA010	10	555	1000	100	2610	1225	600	1050	1000	500	200
NSFA015	15	835	1500	150	3910	1225	600	1050	1000	500	200
NSFA020	20	1115	2000	200	3230	2010	600	1810	1760	1000	315
NSFA030	30	1670	3000	300	3960	2010	600	1810	1760	1000	315
NSFA040	40	2225	4000	400	4750	2010	600	1810	1760	1000	315
NSFA050	50	2780	5000	500	5790	2010	600	1810	1760	1000	315
NSFA065	65	3610	6500	650	7360	2010	600	1810	1760	1000	315
NSFA080	80	4445	8000	800	5744	2820	600	2500	2450	1000	315
NSFA100	100	5560	10000	1000	6200	2820	600	2500	2450	1000	400
NSFA125	125	6945	12500	1250	7365	2820	600	2500	2450	1000	450
NSFA150	150	8335	15000	1500	8675	2820	600	2550	2450	1000	525
NSFA175	175	9725	17500	1750	9975	2820	600	2550	2450	1000	525
NSFA200	200	11110	20000	2000	11280	2820	600	2550	2450	1000	600
NSFA210	210	11667	21000	2100	11994	2820	600	2550	2450	1000	600
NSFA225	225	12500	22500	2250	12766	2820	600	2550	2450	1000	600
NSFA240	240	13333	24000	2400	13528	2820	600	2550	2450	1000	600
NSFA255	255	14167	25500	2550	14300	2820	600	2550	2450	1000	600
NSFA270	270	15000	27000	2700	15071	2820	600	2550	2450	1000	600
NSFA285	285	15833	28500	2850	15833	2820	600	2550	2450	1000	600

Forecourt Separator Range Technical Specifications

Sepactor Class	Backfill Type	Total Capacity (Ltrs)	Drainage Area (m ²)	Peak Flow Rate (l/s)	Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)
1	Concrete	10000	720	15	3915	2020	600	2180	2130	50
1	Concrete	10000	115	20	3915	2020	600	2180	2130	50

Bypass Separator Range Technical Specifications

Model Reference	Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area (m ²) Based on UK rainwater flow	Storage Capacity (Ltrs)		Length (mm)	Diameter (mm)	Access Shaft Diameter* (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)**
				Silt	Oil								
Polyethylene Chamber Construction													
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	160
NSBP004	4.5	45	2500	450	60	1700	1350	600	1420	1320	100	500	160
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	160
GRP Chamber Construction													
NSBE010	10	100	5560	1000	150	2069	1220	750	1450	1350	100	700	315
NSBE015	15	150	8335	1500	225	2947	1220	750	1450	1350	100	700	315
NSBE020	20	200	11111	2000	300	3893	1220	750	1450	1350	100	700	375
NSBE025	25	250	13890	2500	375	3575	1420	750	1680	1580	100	700	375
NSBE030	30	300	16670	3000	450	4265	1420	750	1680	1580	100	700	450
NSBE040	40	400	22222	4000	600	3230	1920	600	2185	2035	150	1000	500
NSBE050	50	500	27778	5000	750	3960	1920	600	2185	2035	150	1000	600
NSBE075	75	750	41667	7500	1125	5941	1920	600	2235	2035	200	950	675
NSBE100	100	1000	55556	10000	1500	7661	1920	600	2235	2035	200	950	750
NSBE125	125	1250	69444	12500	1875	9548	1920	600	2235	2035	200	950	750

*Some units have more than one access shaft - diameter of largest shown | **Large pipework available on request.

For more information on any of our products: T: +44 (0)28 3026 6799

E: klargestinfo@kingspan.com or visit klargest.ie

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NS PLASTIC BYPASS SEPARATORS - DECLARATION OF PERFORMANCE

kingspan-klargester-nsbp-003-006-dop-en-oct2021-v1

1. Unique identification code of the product-type:

**Separator Systems for Light Liquids, Plastic Construction
NSBP003, NSBP004 & NSBP006**

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4) of the CPR:

**Serial Number/Works Order Number printed on the Product Information Label
& affixed to product**

3. Intended use/es of the product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

To be used for Collection & Separation of Light Liquids from Wastewater by means of gravity and/or coalescence

4. Manufacturer name, registered trade name or registered trade mark and contact address as required under Article 11(5):

**Kingspan Water & Energy Ltd
College Rd North
Aston Clinton, Aylesbury, Buckinghamshire
HP22 5EW**

5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

N/A

6. System/s of assessment and verification of constancy of performance (AVCP) of the product as set out in CPR, Annex V:

4

7. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

EN:858-1:2002

Notified body/ bodies:

Notified Body No: 1739 + PIA Prüfinstitut für Abwassertechnik GmbH

Document date:	Document version no:	ECN no:
12/10/2021	V1.	1587



8. Declared performance/s:

Essential characteristics		Performance			Harmonised technical specification	
Crushing Resistance (vertical load test)		Pass (also wet conditions)			EN:858-1:2002	
Structural Behaviour		Pass				
Reaction to fire		Class E				
Water Tightness (water test)		Pass				
Material Durability		MFR (190/2,16) = 3.0± 1g/10 min (ISO 1133)				
		Density ≥ 930 kg/m ³ (ISO 1872)				
		Yield Stress ≥ 19 Mpa (ISO 527-2)				
		Pressure A1 = 1 (EN1778)				
Treatment Efficiency		Pressure A2K = 1 (EN1778)				
		Sample	Specified Maximum Light Liquid (mg/l)	Actual Light Liquid (mg/l)		
		1	≤10	0.37		Pass
		2	≤10	0.22	Pass	
		3	≤10	0.35	Pass	
		4	≤10	0.23	Pass	
5	≤10	0.35	Pass			
Average		≤5	0.30	Pass		
Electrical Consumption		n/a				

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:



David Anderson – Water Business Unit Director

At Portadown on 22 September 2021

Document date:	Document version no:	ECN no:
12/10/2021	V1.	1587



Project Admiral

Lally Chartered Engineers
Údarás Business Park,
Tourmakeady,
Co. Mayo

+353 (0)94 9544718
info@lallyeng.com
www.lallyeng.com

FIRE RETENTION VOLUME REQUIRED FOR POND 1

1. Fire hydrant supply during fire event
1500l/min (max flow of hydrants) x 2 hours (Fire duration) = 180,000l = **180m³**
2. Total fire water/foam to be provided by local fire brigade
Fire tenders 4 x 1.8m³ = 7.2m³
Water tankers 2 x 10m³ = 20m³
Total = **27.2m³**
3. Required water stored on site
60l/s for 2 hours (60l x 60sec x 60min x 2hr) = 432,000l = **432m³**

Therefore, the total volume of fire water retention required excluding the rainfall for a 1 in 10 year 24hr rainfall event is $180\text{m}^3 + 27.2\text{m}^3 + 432\text{m}^3 = \mathbf{639.2\text{m}^3}$

CIVIL | STRUCTURAL | GEOTECHNICAL | ENVIRONMENTAL ENGINEERING

4. Pond Storage



FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Residual Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 10 years: +0 %: 1440 mins: Summer	103.173	103.173	0.673	0.673	144.2	3521.017	0.000	0.000	26.6	2872.127	58.642	OK

The pond sized for this design has a total volume of 8513.5m³. The table above shows that the pond still has 58.6% available capacity during the worst 1 in 10 year 24hr rainfall event.

$$58.6\% \text{ of } 8513.5\text{m}^3 = 4988.9\text{m}^3$$

Conclusion:

This pond can easily accommodate the extra 639.2m³ of storage required.

Project Admiral

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Co. Mayo

+353 (0)94 9544718
info@lallyeng.com
www.lallyeng.com

FIRE RETENTION VOLUME REQUIRED FOR POND 2

1. Fire hydrant supply during fire event
1500l/min (max flow of hydrants) x 2 hours (Fire duration) = 180,000l = **180m³**
2. Total fire water/foam to be provided by local fire brigade
Fire tenders 4 x 1.8m³ = 7.2m³
Water tankers 2 x 10m³ = 20m³
Total = **27.2m³**
3. Required water stored on site
60l/s for 2 hours (60l x 60sec x 60min x 2hr) = 432,000l = **432m³**

Therefore, the total volume of fire water retention required excluding the rainfall for a 1 in 10 year 24hr rainfall event is $180\text{m}^3 + 27.2\text{m}^3 + 432\text{m}^3 = \mathbf{639.2\text{m}^3}$

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4. Pond Storage



FSR: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FSR: 10 years: +0 %: 960 mins: Summer	102.542	102.542	0.742	0.742	87.1	1488.254	0.000	0.000	12.0	851.445	52.258	OK

The pond sized for this design has a total volume of 3117.26m³. The table above shows that the pond still has 49.5% available capacity during the worst 1 in 10 year 24hr rainfall event.

$$52.2\% \text{ of } 3117.26\text{m}^3 = 1627.2\text{m}^3$$

Conclusion:

This pond can easily accommodate the extra 639.2m³ of storage required

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FIRE RETENTION VOLUME REQUIRED FOR POND 3

1. Fire hydrant supply during fire event
1500l/min (max flow of hydrants) x 2 hours (Fire duration) = 180,000l = **180m³**
2. Total fire water/foam to be provided by local fire brigade
Fire tenders 4 x 1.8m³ = 7.2m³
Water tankers 2 x 10m³ = 20m³
Total = **27.2m³**
3. Required water stored on site
60l/s for 2 hours (60l x 60sec x 60min x 2hr) = 432,000l = **432m³**

Therefore, the total volume of fire water retention required excluding the rainfall for a 1 in 10 year 24hr rainfall event is $180\text{m}^3 + 27.2\text{m}^3 + 432\text{m}^3 = \mathbf{639.2\text{m}^3}$

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4. Pond Storage



Rainfall TG: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	Rainfall TG: 10 years: +0 %: 960 mins: Winter	101.308	101.308	0.958	0.958	45.8	669.512	0.000	0.000	6.8	484.807	53.831	OK

The pond sized for this design has a total volume of 1450m³. The table above shows that the pond still has 53.831% available capacity during the worst 1 in 10 year 24hr rainfall event.

$$53.831\% \text{ of } 1450\text{m}^3 = 780.5\text{m}^3$$

Conclusion:

This pond can accommodate the extra 639.2m³ of storage required

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FIRE RETENTION VOLUME REQUIRED FOR POND 4

1. Fire hydrant supply during fire event
1500l/min (max flow of hydrants) x 2 hours (Fire duration) = 180,000l = **180m³**
2. Total fire water/foam to be provided by local fire brigade
Fire tenders 4 x 1.8m³ = 7.2m³
Water tankers 2 x 10m³ = 20m³
Total = **27.2m³**
3. Required water stored on site
60l/s for 2 hours (60l x 60sec x 60min x 2hr) = 432,000l = **432m³**

Therefore, the total volume of fire water retention required excluding the rainfall for a 1 in 10 year 24hr rainfall event is $180\text{m}^3 + 27.2\text{m}^3 + 432\text{m}^3 = \mathbf{639.2\text{m}^3}$

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4. Pond Storage



Rainfall TG: 10 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	Rainfall TG: 10 years: +0 %: 960 mins: Winter	100.971	100.971	0.631	0.631	11.2	322.038	0.000	0.000	9.9	179.138	67.798	OK

The pond sized for this design has a total volume of 1000m³. The table above shows that the pond still has 67.8% available capacity during the worst 1 in 10 year 24hr rainfall event.

$$67.8\% \text{ of } 1000\text{m}^3 = 678\text{m}^3$$

Conclusion:

This pond can accommodate the extra 639.2m³ of storage required

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Project Admiral

FIRE RETENTION VOLUME REQUIRED FOR D18

1. Fire hydrant supply during fire event
1500l/min (max flow of hydrants) x 2 hours (Fire duration) = 180,000l = **180m³**
2. Total fire water/foam to be provided by local fire brigade
Fire tenders 4 x 1.8m³ = 7.2m³
Water tankers 2 x 10m³ = 20m³
Total = **27.2m³**
3. Required water stored on site
60l/s for 2 hours (60l x 60sec x 60min x 2hr) = 432,000l = **432m³**

CIVIL | STRUCTURAL | GEOTECHNICAL | ENVIRONMENTAL ENGINEERING

4. 1 in 10 year 24hr rainfall event

Catchment area = 0.162 ha = 1620m²

1 in 10 year 24hr rainfall event for local area = 0.0541m as per Met Eireann Return

Period Rainfall depths below

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 244569, Northing: 238992,

DURATION	Interval		Years											
	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	120,	
5 mins	2.5,	3.4,	3.9,	4.7,	5.2,	5.6,	6.9,	8.4,	9.4,	10.7,	11.9,	12.9,	13.5,	
10 mins	3.4,	4.8,	5.5,	6.6,	7.3,	7.8,	9.7,	11.7,	13.1,	14.9,	16.6,	17.9,	18.8,	
15 mins	4.0,	5.6,	6.4,	7.7,	8.6,	9.2,	11.4,	13.8,	15.4,	17.6,	19.5,	21.1,	22.1,	
30 mins	5.3,	7.3,	8.4,	9.9,	11.0,	11.8,	14.4,	17.3,	19.2,	21.9,	24.2,	26.1,	27.3,	
1 hours	7.0,	9.5,	10.8,	12.8,	14.1,	15.1,	18.2,	21.8,	24.1,	27.3,	30.1,	32.2,	33.6,	
2 hours	9.3,	12.4,	14.1,	16.4,	18.0,	19.2,	23.1,	27.4,	30.1,	34.0,	37.3,	39.8,	41.5,	
3 hours	10.9,	14.5,	16.4,	19.1,	20.9,	22.2,	26.6,	31.3,	34.4,	38.6,	42.3,	45.1,	46.9,	
4 hours	12.3,	16.2,	18.2,	21.2,	23.1,	24.6,	29.3,	34.5,	37.8,	42.3,	46.2,	49.2,	51.2,	
6 hours	14.4,	18.9,	21.2,	24.6,	26.7,	28.4,	33.7,	39.4,	43.1,	48.1,	52.4,	55.7,	57.9,	
9 hours	17.0,	22.1,	24.7,	28.5,	30.9,	32.8,	38.7,	45.1,	49.1,	54.7,	59.5,	63.1,	65.5,	
12 hours	19.1,	24.7,	27.5,	31.6,	34.3,	36.3,	42.7,	49.6,	53.9,	59.9,	65.0,	68.9,	71.5,	
18 hours	22.5,	28.8,	32.0,	36.6,	39.6,	41.9,	49.0,	56.7,	61.5,	68.1,	73.7,	78.0,	80.8,	
24 hours	25.2,	32.2,	35.7,	40.7,	43.9,	46.4,	54.1,	62.3,	67.5,	74.6,	80.6,	85.2,	88.2,	
2 days	31.2,	39.1,	42.9,	48.4,	51.9,	54.6,	62.9,	71.6,	77.0,	84.3,	90.6,	95.3,	98.4,	
3 days	36.5,	45.1,	49.3,	55.3,	59.1,	61.9,	70.7,	80.0,	85.7,	93.4,	100.0,	104.9,	108.1,	
4 days	41.3,	50.6,	55.2,	61.5,	65.6,	68.6,	78.0,	87.7,	93.8,	101.9,	108.7,	113.8,	117.1,	
6 days	50.2,	60.8,	65.9,	73.0,	77.5,	80.9,	91.2,	101.9,	108.5,	117.3,	124.7,	130.2,	133.8,	
8 days	58.4,	70.1,	75.7,	83.5,	88.5,	92.2,	103.4,	114.9,	122.0,	131.4,	139.3,	145.2,	149.0,	
10 days	66.2,	78.9,	85.0,	93.5,	98.8,	102.7,	114.8,	127.1,	134.7,	144.7,	153.0,	159.2,	163.3,	
12 days	73.7,	87.4,	94.0,	103.0,	108.7,	112.9,	125.7,	138.7,	146.7,	157.3,	166.1,	172.6,	176.9,	
16 days	88.2,	103.7,	111.0,	121.1,	127.5,	132.2,	146.3,	160.8,	169.5,	181.1,	190.7,	197.9,	202.5,	
20 days	102.1,	119.2,	127.3,	138.4,	145.4,	150.5,	166.0,	181.6,	191.1,	203.6,	214.0,	221.7,	226.7,	
25 days	119.0,	138.1,	147.0,	159.3,	167.0,	172.6,	189.5,	206.6,	217.0,	230.5,	241.8,	250.1,	255.4,	

NOTES:

These values are derived from a Depth Duration Frequency (DDF) Model update 2023

For details refer to:

'Mateus C., and Coonan, B. 2023. Estimation of point rainfall frequencies in Ireland. Technical Note No. 68. Met Eireann',

Available for download at:

<http://hdl.handle.net/2262/102417>

Therefore 1620m² x 0.0541m = **87.6m³**

Conclusion:

The total volume required for the firewater retention tank is 180m³ + 27.2m³ + 432m³ + 87.6m³ = **726.8m³**



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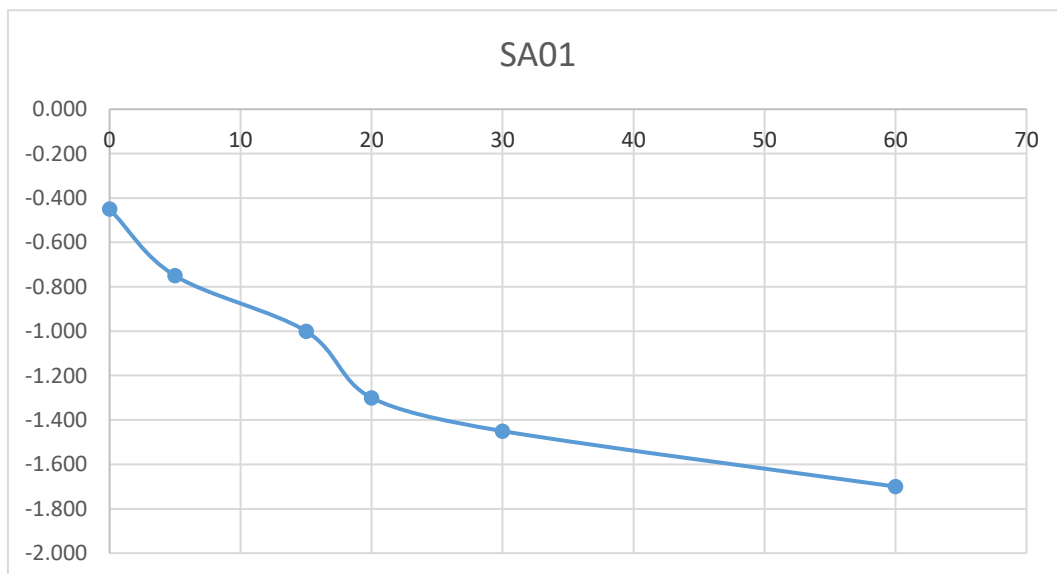
SA01

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.10m x 0.40m 1.80m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.450
18/03/2025	5	-0.750
18/03/2025	15	-1.000
18/03/2025	20	-1.300
18/03/2025	30	-1.450
18/03/2025	60	-1.700

Start depth 0.45	Depth of Pit 1.800	Diff 1.350	75% full 0.7875	25%full 1.4625
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
1.100	0.400		0.675	0.30
Tp75-25 (from graph) (s)	1080		50% Eff Depth	ap50 (m2)
			0.675	2.465
f =	1.116E-04	m/s		





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SA02

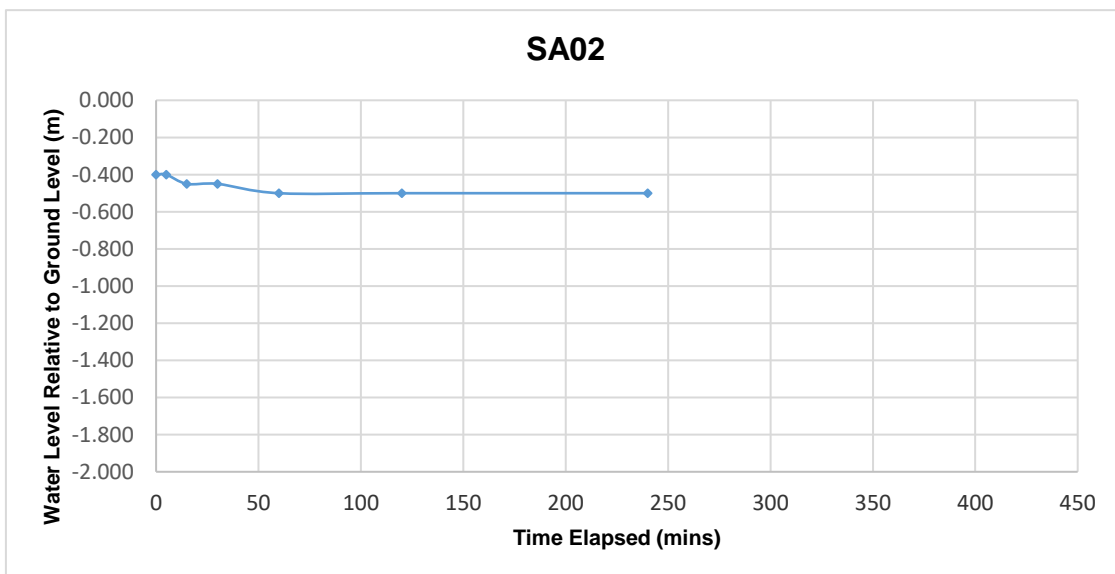
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 0.90m x 0.40m x 1.80m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.400
18/03/2025	5	-0.400
18/03/2025	15	-0.450
18/03/2025	30	-0.450
18/03/2025	60	-0.500
18/03/2025	120	-0.500
18/03/2025	240	-0.500

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.40	1.800	1.400	0.75	1.45





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SA03

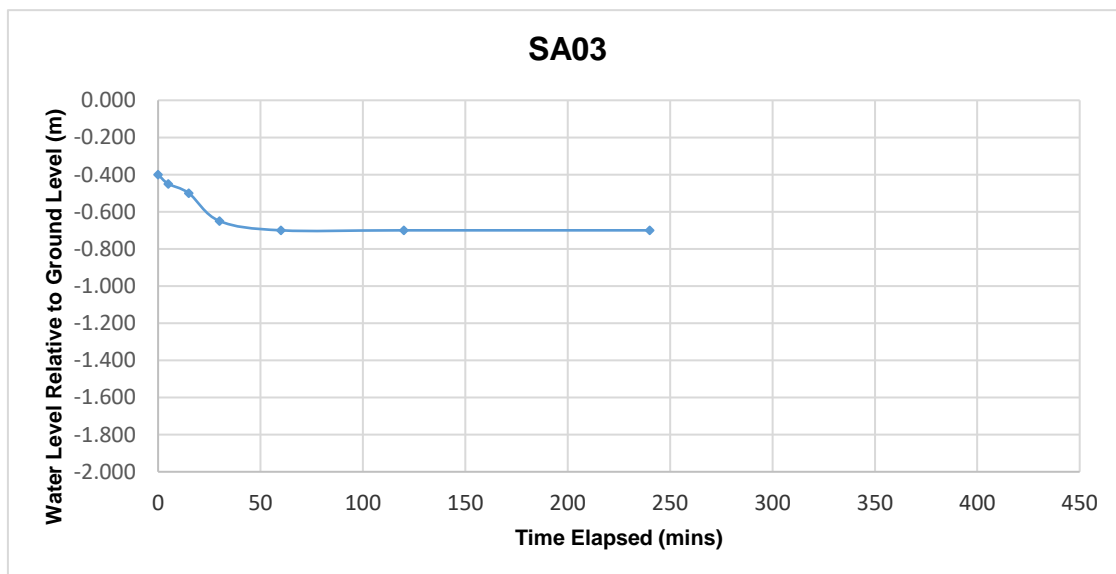
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.00m x 0.40m x 1.80m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.400
18/03/2025	5	-0.450
18/03/2025	15	-0.500
18/03/2025	30	-0.650
18/03/2025	60	-0.700
18/03/2025	120	-0.700
18/03/2025	240	-0.700

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.40	1.800	1.400	0.75	1.45





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SA04

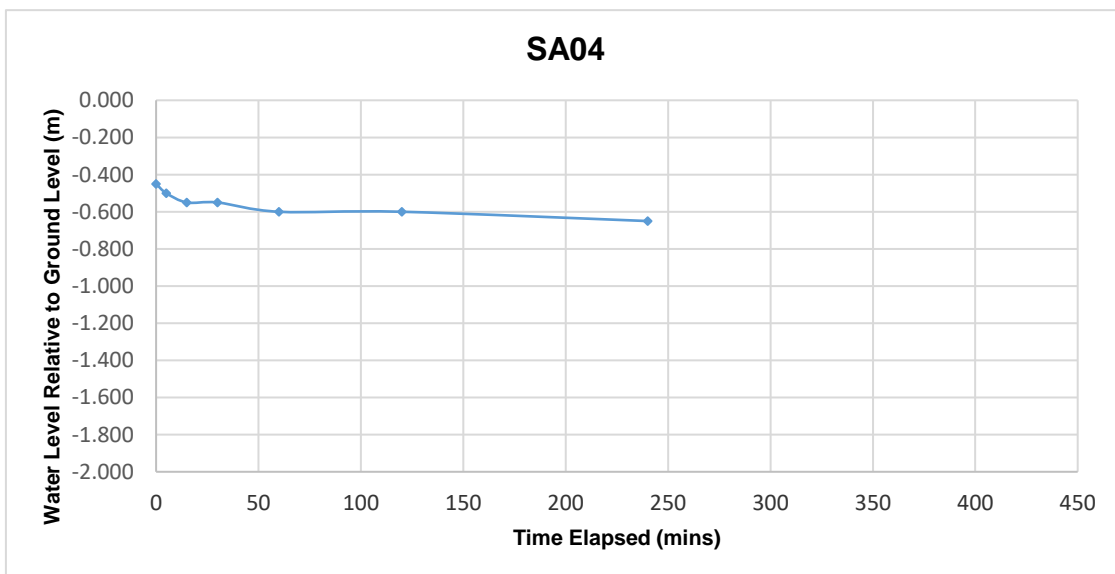
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.50m x 0.40m x 2.50m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.450
18/03/2025	5	-0.500
18/03/2025	15	-0.550
18/03/2025	30	-0.550
18/03/2025	60	-0.600
18/03/2025	120	-0.600
18/03/2025	240	-0.650

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.45	2.500	2.050	0.9625	1.9875





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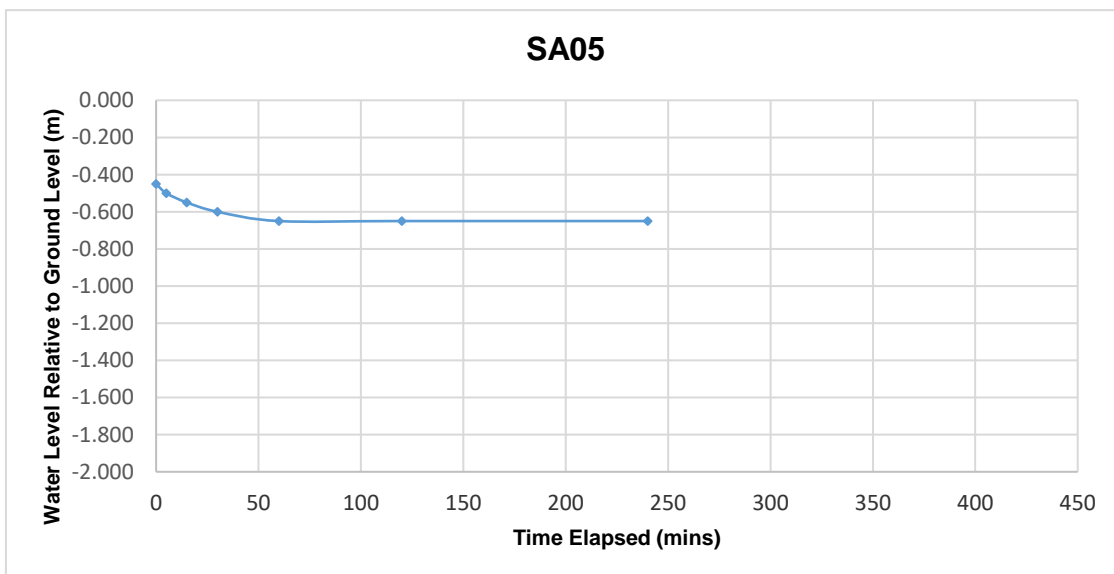
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.20m x 0.40m x 2.10m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.450
18/03/2025	5	-0.500
18/03/2025	15	-0.550
18/03/2025	30	-0.600
18/03/2025	60	-0.650
18/03/2025	120	-0.650
18/03/2025	240	-0.650

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.45	2.100	1.650	0.8625	1.6875





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SA06

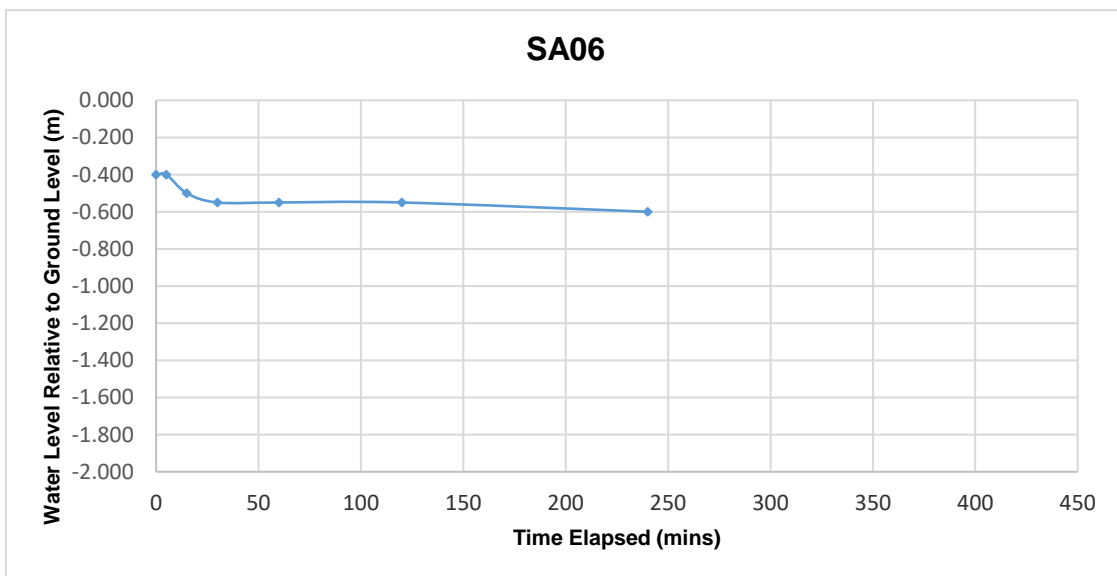
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.60m x 0.40m x 2.50m (L x W x D)

Date	Time	Water level (m bgl)
18/03/2025	0	-0.400
18/03/2025	5	-0.400
18/03/2025	15	-0.500
18/03/2025	30	-0.550
18/03/2025	60	-0.550
18/03/2025	120	-0.550
18/03/2025	240	-0.600

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.40	2.500	2.100	0.925	1.975



Appendix 3.0 –
Storm Bloc Crate Brochure
Rainwater harvesting brochure



A new dimension in rainwater management



Our new flagship: Platin XL/XXL

Welcome aboard

- Up to 65,000 litres
- Rotating tank dome to easily align the connecting surfaces
- Available with a second tank dome as an option
- Suitable for HGV loading up to a vehicle weight of 30 t (66138 lbs)*
- Flexible connection up to DN 300 (12")
- Connection surfaces with prefitted DN 150 (6") lip seals
- Tank height of just 125 cm (4' 1")



High-quality, integrated DN 150 (6") filter technology



Available with a second tank dome as an option



Dome opening with stainless steel profile for precision fit and secure mounting

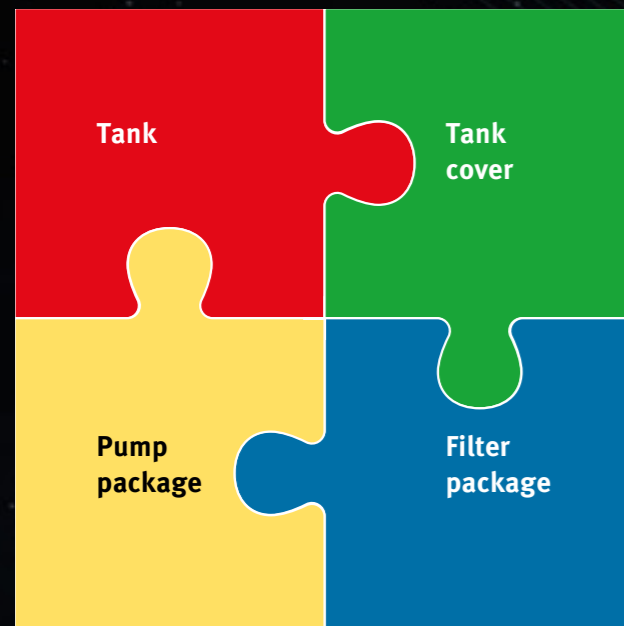


Connection fitting of up to DN 200 (8"), on tank dome of up to DN 300 (12")



*With cover suitable for lorry-bearing in combination with load distribution plate

The Platin XL/XXL modular system



Tank

The underground tank Platin is the basis for the modular system.

Tank cover

Would you like to install your tank in the garden or in a driveway? GRAF offers you wide range of telescopic tank covers from plastic to cast iron.

Filter package

Are you looking for the best value solution or high-quality, self-cleaning filter technology? The GRAF filter package contains all components needed in the tank.

Pump package

From the simple garden pump to the fully automatic drinking water intake technology. The pump package also includes the accessories needed for installation.

Tank

Platin XL 10,000 – 15,000 litres 

Platin XL 10,000 l (2,650 US gal.) Order no. 390822	Platin XL 15,000 l (3,975 US gal.) Order no. 390823
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Platin XXL 20,000 – 65,000 litres

Platin XXL 20,000 l (5,300 US gal.) Order no. 391810	Platin XXL 25,000 l (6,625 US gal.) Order no. 391811
Platin XXL 30,000 l (7,950 US gal.) Order no. 391002	Platin XXL 35,000 l (9,275 US gal.) Order no. 391003
Platin XXL 40,000 l (10,600 US gal.) Order no. 391004	Platin XXL 45,000 l (11,925 US gal.) Order no. 391005
Platin XXL 50,000 l (13,250 US gal.) Order no. 391006	Platin XXL 55,000 l (14,575 US gal.) Order no. 391007
Platin XXL 60,000 l (15,900 US gal.) Order no. 391008	Platin XXL 65,000 l (17,225 US gal.) Order no. 391009

Tank cover

 Mini telescopic dome shaft Order no. 371010	 Tank dome Mini ²⁾ DN100 Order no. 371064
 Maxi telescopic dome shaft Order no. 371011	 Tank dome Maxi DN100 Order no. 371063
 Telescopic dome shaft cast iron Order no. 371020	 Tank dome Maxi DN150 Order no. 371062
 Telescopic dome shaft lorry-bearing For standard cast concrete covers Order no. 371021	 Tank dome Micro Order no. 371009
 Extension Order no. 371003	 Tank dome Plug Order no. 371065

2) Only for use in connection with external filters

Filter package

Connection DN 100 (4")


Filter package 1
Basic filter package
Order no. 342001


Filter package 2²⁾
Recommended
for garden use
Order no. 342002


Filter package 3²⁾
Recommended
for household use
Order no. 342005

Connection DN 150 (6")



XL/XXL filter package 1
Basic filter package
Order no. 342040



XL/XXL filter package 2
Recommended
for garden use
Order no. 342041



XL/XXL filter package 3
Recommended
for household use
Order no. 342042


2) Only for use with Maxi dome shaft DN100 (4")


Pump package


Pump package garden Jet
Order no. 342010


Pump package garden
Comfort
Order no. 342011


Pump package house
Eco-Plus
Order no. 342014


Pump package house
Professional
Order no. 342016


Pump package house
Silentio Press
Order no. 342015

Platin XL/XXL flat rainwater tank
Suitable for vehicle / lorry-bearing¹⁾

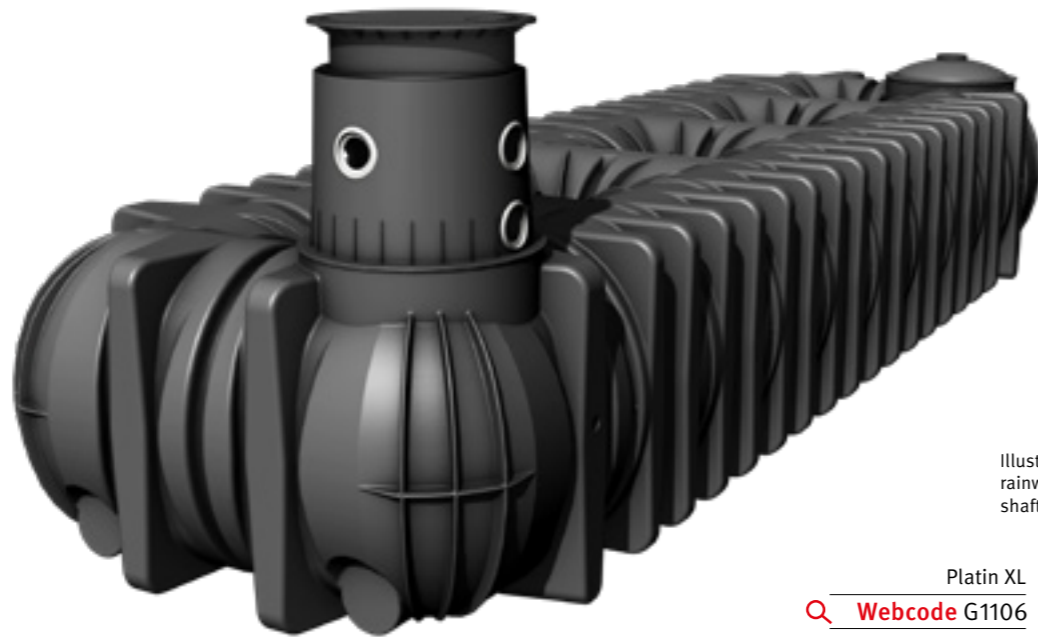
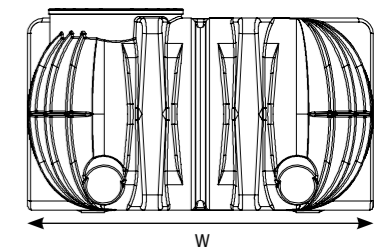
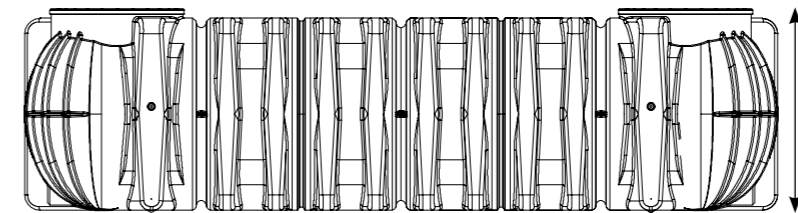
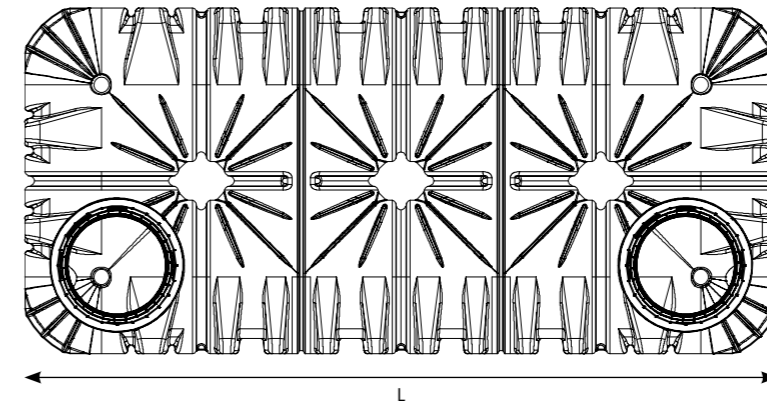


Illustration shows 15,000 l flat rainwater tank with telescopic dome shaft cast iron for vehicle (page 5)

Platin XL
Webcode G1106

Platin XXL
Webcode G1107



Dimensions

Volume	Width W	Length L	Height H	Weight	Order no.
10,000 l (2,650 US gal.)	2250 mm (7' 5")	4900 mm (16' 1")	1300 mm (4' 3")	460 kg (1014 lbs)	390822
15,000 l (3,975 US gal.)	2250 mm (7' 5")	7500 mm (24' 7")	1300 mm (4' 3")	710 kg (1565 lbs)	390823
20,000 l (5,300 US gal.)	2250 mm (7' 5")	9405 mm (30' 10")	1300 mm (4' 3")	890 kg (1962 lbs)	391810
25,000 l (6,625 US gal.)	2250 mm (7' 5")	11665 mm (38' 3")	1300 mm (4' 3")	1105 kg (2513 lbs)	391811
30,000 l (7,950 US gal.)	2250 mm (7' 5")	14265 mm (46' 10")	1300 mm (4' 3")	1355 kg (2987 lbs)	391812
35,000 l (9,275 US gal.)	2250 mm (7' 5")	16525 mm (54' 2")	1300 mm (4' 3")	1570 kg (3461 lbs)	391813
40,000 l (10,600 US gal.)	2250 mm (7' 5")	18430 mm (60' 6")	1300 mm (4' 3")	1750 kg (3858 lbs)	391814
45,000 l (11,925 US gal.)	2250 mm (7' 5")	21030 mm (69')	1300 mm (4' 3")	2000 kg (4409 lbs)	391815
50,000 l (13,250 US gal.)	2250 mm (7' 5")	22935 mm (75' 3")	1300 mm (4' 3")	2180 kg (4409 lbs)	391816
55,000 l (14,575 US gal.)	2250 mm (7' 5")	25195 mm (82' 8")	1300 mm (4' 3")	2395 kg (5280 lbs)	391817
60,000 l (15,900 US gal.)	2250 mm (7' 5")	27795 mm (82' 8")	1300 mm (4' 3")	2645 kg (5831 lbs)	391818
65,000 l (17,225 US gal.)	2250 mm (7' 5")	29700 mm (97' 5")	1300 mm (4' 3")	2825 kg (6228 lbs)	391819

Technical data

Max. earth covering (without groundwater, vehicle loading):	1500 mm (4' 11")
Vehicle loading:	Max. axle load: 2,2 t (4850 lbs) Max. vehicle weight: 3,5 t (7716 lbs) with cast iron cover Max. axle load: 11,5 t (25353 lbs)
Lorry-bearing:	Max. vehicle weight: 30 t (66138 lbs) with telescopic dome shaft, lorry-bearing in combination with load distribution plate
Earth covering required for vehicle loading:	750 – 1300 mm (29.5" – 4' 3")
Groundwater stability:	up to tank shoulder (up to 1250 mm (4' 1"))
Earth covering required for groundwater stability:	750 – 1500 mm (29.5" – 4' 11")
Connection:	per tank dome Mini DN 100 = 3 x DN 100 (4") per tank dome Maxi DN 100 = 5 x DN 100 (4") per tank dome Maxi DN 150 = 5 x DN 150 (6") Optionally up to DN 300 (12")

¹⁾ Suitable for vehicle loading with cover suitable for vehicle loading
Suitable for lorry-bearing with cover suitable for lorry-bearing in combination with load distribution plate



Platin garden Comfort package

- Very convenient to use – pump switches on and off automatically
- Integrated filter technology (100 % water yield)
- Easy installation and convenient water extraction with water hose connection (compatible with standard hose coupling)

Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")

[Q Webcode G1221](#)

Platin garden Jet package (not shown)

- Flexible complete solution with Garden Jet pump
- Integrated filter technology (100 % water yield)
- Easy installation and convenient water extraction with water hose connection (compatible with standard hose coupling)

Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")

[Q Webcode G1220](#)

Scope of supply: ① Platin XL flat tank, ② tank cover, ③ mini telescopic dome shaft suitable for pedestrian loading, smooth telescopic adjustment from 750 – 950 mm (29.5 – 3' 1.4") earth covering, with plastic cover or ④ cast telescopic dome shaft, suitable for vehicle loading, smooth telescopic adjustment from 750 – 1050 mm (29.5 – 3' 5.3") earth covering; ⑤ Platin XL/XXL filter package 2 consists of: filter basket including internal universal filter 3 XL, calmed inlet digester, overflow siphon, rodent guard, quick assembly sleeve Spannfix; ⑥ **Garden Comfort technical package consists of:** Integra INOX automatic submersible pump, internal and external water socket (prepared for standard hose coupling), floating suction fitting with fine filter and hose, 10 m (32' 9.4") pressure hose 25 mm 1"; ⑦ **Garden Jet technical package consists of:** Jet 700 garden pump, internal and external water socket (prepared for standard hose coupling), pump connection set with 1 m (3' 3.8") PVC hose, suction set with 12.5 m (41' 0.1") suction hose 25 mm 1"

Platin Eco-Plus package

- Low-cost complete solution
- Patented filter technology
- Switch to drinking water supply in the home when needed
- Float switch controlled
- Only one cover visible on the surface

Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")

[Q Webcode G1222](#)

Platin Professional package (not shown)

- Professional solution with patented filter technology
- Ultra-quiet operation thanks to encapsulated system control unit
- Switch to drinking water supply in the home when needed
- Microprocessor control
- Digital level gauge
- Automatic rinse intervals of feed tank and filter
- Only one cover visible on the surface

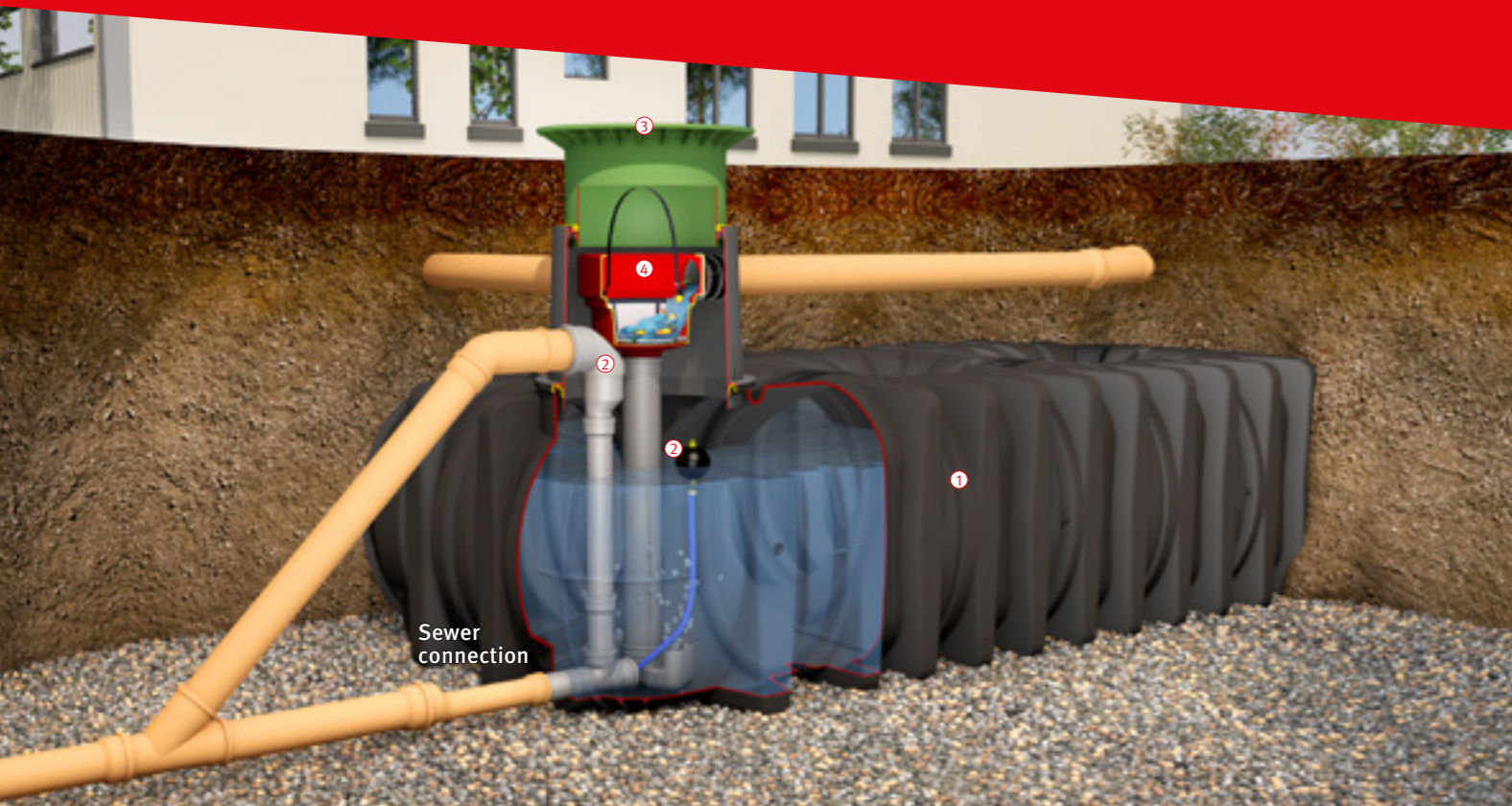
Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")

[Q Webcode G1223](#)

Scope of supply: ① Platin XL flat tank, ② tank cover, ③ maxi telescopic dome shaft suitable for pedestrian loading, smooth telescopic adjustment from 750 – 1050 mm (29.5 – 3' 5.3") earth covering, with plastic cover or ④ cast telescopic dome shaft, suitable for vehicle loading, smooth telescopic adjustment from 750 – 1050 mm (29.5 – 3' 5.3") earth covering; ⑤ Platin XL/XXL filter package 3 consists of: internal Optimax-Pro filter XL (patented, self-cleaning), calmed inlet digester, overflow siphon, rodent guard, quick assembly sleeve Spannfix; ⑥ **Eco-Plus technical package consists of:** Aqua-Center Basic, floating suction fitting with fine filter and hose, wall duct, labelling set, PE suction pipe 25 mm 1", length 12 m (39' 4.4"), V2A Switch Control; ⑦ **Professional technical package consists of:** Aqua-Center Silentio, floating suction fitting with fine filter and hose, wall duct, labelling set, internal XL filter cleaning unit, automatic filter cleaning system, reversible flow fine filter, PE suction pipe 25 mm 1", length 12 m (32' 9.4")

Platin XL/XXL detention cistern

Platin XL/XXL retention cistern



Platin XL/XXL detention cistern

Including detention set

Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")
20,000	5,280	150 (6")
25,000	6,605	150 (6")
30,000	7,925	150 (6")
35,000	9,245	150 (6")
40,000	10,560	150 (6")
45,000	11,885	150 (6")
50,000	13,205	150 (6")
55,000	14,530	150 (6")
60,000	15,850	150 (6")
65,000	17,170	150 (6")

Your GRAF contact will provide technical data for the detention tank needed, such as dimensional drawing with height offset between inlet and sewer connection.

Scope of supply: ① Platin XL/XXL flat tank ② Detention set: floating choke drain, outlet fittings with emergency overflow, DN 100 (4") connection
Not included in the scope of supply: ③ Matching cover (page 5) ④ Installation of optional Platin XL/XXL detention/retention filter package 2 (accessories below)

Platin XL/XXL retention cistern

Including retention set, split between retention/used volume as requested by customer

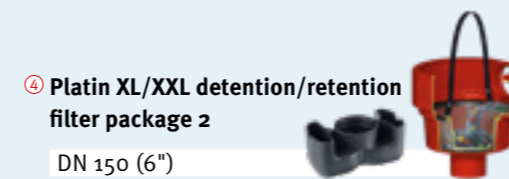
Volume [l]	Volume [US gal.]	Connections [DN]
10,000	2,640	150 (6")
15,000	3,960	150 (6")
20,000	5,280	150 (6")
25,000	6,605	150 (6")
30,000	7,925	150 (6")
35,000	9,245	150 (6")
40,000	10,560	150 (6")
45,000	11,885	150 (6")
50,000	13,205	150 (6")
55,000	14,530	150 (6")
60,000	15,850	150 (6")
65,000	17,170	150 (6")

Your GRAF contact will provide technical data for the retention tank needed, such as dimensional drawing with height offset between inlet and sewer connection.

Scope of supply: ① Platin XL/XXL flat tank ② Retention set: floating choke drain, outlet fittings with emergency overflow, DN 100 (4") connection
Not included in the scope of supply: ③ Matching cover (page 5) ④ Installation of optional Platin XL/XXL detention/retention filter package 2 (accessories below) ⑤ Garden Comfort technical package (page 5)

Platin XL
[Webcode G4312](#)

Platin XXL
[Webcode G4313](#)

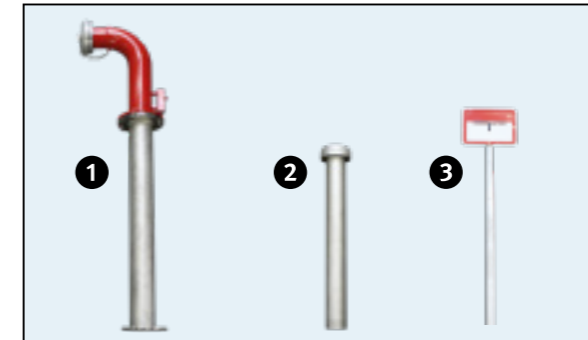


Platin XL
[Webcode G4314](#)

Platin XXL
[Webcode G4315](#)

Platin XXL firefighting water tank
 Suitable for HGV loading up to 30 t (66138 lbs)*

- Delivery includes all firefighting water accessory parts to DIN 14230
- Complete system fully factory-assembled if required – no on-site assembly
- Dome shaft allows easy access/rescue from tank
- Individual tanks can be enlarged/connected to create large volumes
- Fill with drinking water or rainwater
- Individual adjustment to ground level (earth covering/angle of slope)
- Low procurement costs
- Includes telescopic dome shaft suitable for lorry-bearing for customer to provide cover in accordance with DIN 3223



PLEASE CONSIDER LOCAL REGULATIONS

*With cover suitable for lorry-bearing in combination with load distribution plate

Platin XXL firefighting water tank

Volume	Useful firefighting volume	Order no.
20,000 l (5,280 US gal.)	14,000 l (3,698 US gal.)	391400
25,000 l (6,605 US gal.)	17,500 l (4,623 US gal.)	391401
30,000 l (7,925 US gal.)	21,000 l (5,547 US gal.)	391402
35,000 l (9,245 US gal.)	24,500 l (6,472 US gal.)	391403
40,000 l (10,560 US gal.)	28,000 l (7,396 US gal.)	391404
45,000 l (11,885 US gal.)	31,500 l (8,321 US gal.)	391405
50,000 l (13,205 US gal.)	35,000 l (9,246 US gal.)	391406
55,000 l (14,530 US gal.)	38,500 l (10,170 US gal.)	391407
60,000 l (15,850 US gal.)	42,000 l (11,095 US gal.)	391408
65,000 l (17,170 US gal.)	45,500 l (12,019 US gal.)	391409

Platin XXL firefighting water expansion tank

Including 2 DN 200 (8") connection fittings and telescopic dome shaft suitable for lorry-bearing

Volume	Useful firefighting volume	Order no.
20,000 l (5,280 US gal.)	14,000 l (3,698 US gal.)	391420
25,000 l (6,605 US gal.)	17,500 l (4,623 US gal.)	391421
30,000 l (7,925 US gal.)	21,000 l (5,547 US gal.)	391422
35,000 l (9,245 US gal.)	24,500 l (6,472 US gal.)	391423
40,000 l (10,560 US gal.)	28,000 l (7,396 US gal.)	391424
45,000 l (11,885 US gal.)	31,500 l (8,321 US gal.)	391425
50,000 l (13,205 US gal.)	35,000 l (9,246 US gal.)	391426
55,000 l (14,530 US gal.)	38,500 l (10,170 US gal.)	391427
60,000 l (15,850 US gal.)	42,000 l (11,095 US gal.)	391428
65,000 l (17,170 US gal.)	45,500 l (12,019 US gal.)	391429

Scope of supply: ❶ Welded-in plastic intake pipe DN 125 (5") with flange, stainless steel strainer and anti-vortex plate, including stainless steel intake pipe extension piece DN 125 (5") with flange, firefighting water intake connection with rod fitting and a fixed coupling in accordance with DIN 14244, ❷ stainless steel ventilation chimney DN 100 (4") with hood and insect-proof screen for vertical installation, ❸ holder for sign "Fire-fighting Water Extraction Point" with stainless steel post in accordance with DIN 4066 (B2), ❹ access ladder incl. appropriate mounting kit for mounting in tank dome, HGV telescopic dome shaft for coverage on site in accordance with DIN 3223

[Webcode G1317](#)



Headquarters at Teningen near Freiburg



GRAF – solutions for global challenges

Pure, clean water is one of our most important resources. GRAF develops, manufactures and markets an extensive range of products for water management. GRAF provides solutions to global challenges, such as protecting watercourses or preventing flooding, with typical German quality.

Active in over 70 countries, with roots in Germany

GRAF products are exported to more than 70 countries around the world. Despite being highly active abroad, GRAF is also continually investing in its headquarters at Teningen. By constructing its raw materials competence centre in Herbolzheim, GRAF is expanding its German roots yet further.

Sustainably manufactured environmental products

GRAF environmental products are 100 % recyclable and are designed for as long a life as possible. This ensures that fewer resources are used and the environmental impact is minimised. Right from the stage of developing its products, GRAF attaches great importance to sustainable product design. Through years of intensive research, GRAF has managed to replace 70 % of the raw materials used in production with recycled products – without compromising product quality. This also improves the environmental performance of the GRAF product range. Sustainability is also hugely important during the manufacturing process. For example, the waste heat from production is used to heat the production and logistics building.

From pioneer to market leader

GRAF has over 50 years of experience in the development and manufacturing of high-quality plastic products. The company launched its first rainwater barrels in 1974 with the slogan „Rainwater is free“ and soon started marketing other rainwater harvesting products too. GRAF’s innovative and user-friendly water management solutions have since made the company a leading system vendor in Europe.

Quality comes first

GRAF uses state-of-the-art production facilities. A high standard of quality in production is an essential starting point for unique products. End-to-end quality assurance and a high level of automation guarantee maximum reliability in production. Because of our high standard of quality, we offer a warranty of up to 15 years on GRAF products.

Partner to the specialist construction material trade

The GRAF brand represents the exclusive specialist trade range from Otto Graf GmbH.

It goes without saying that the company works in partnership with the trade to support various target groups, such as gardening/landscaping/construction companies and planners.

Support for the whole process – the GRAF project team

All the companies involved in a construction project need to work together directly and pragmatically - especially on large-scale undertakings. The GRAF project team provides such projects with valuable support, ranging from planning and assistance with official approvals to functional construction site logistics and on-site consultation.

99 % supply capacity even during the busy season

GRAF products are exported around the globe. Intelligent logistics and sufficient stock levels ensure first-class availability and fast responses even during the levels of high demand.

Benefits of working with GRAF

- Exclusive specialist trade range
- Clear sales strategy
- Training/support for sales staff in the trade
- Consistent brand management
- Comprehensive assistance with marketing



Teningen warehouse

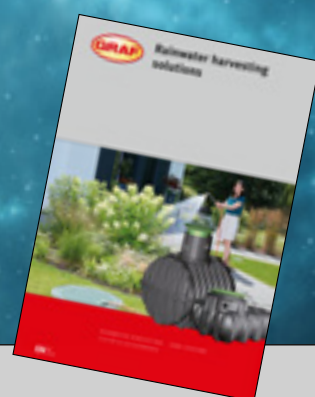


Teningen logistics centre





Rainwater management solutions



www.graf.info

RAINWATER HARVESTING



STORMWATER MANAGEMENT



WASTEWATER TREATMENT SOLUTIONS



SEPARATORS



GARDEN PRODUCTS & MULTI-PURPOSE CONTAINERS



Rainwater Harvesting Solutions

For more information about our Rainwater Harvesting Solutions, ask for our catalogue.

Prices:

A price list with our export conditions is available on request.

Warranty clause:

The warranty mentioned in this brochure only refers to the tank in question and not to the accessories. Within the warranty period we grant free replacement of the material. Further benefits are excluded. Pre-condition for warranty benefits are proper handling, assembly and installation according to the mounting guidelines.

Over and above the statutory regulation, GRAF is lengthening the warranty period for a number of underground tanks. This relates to proper handling, assembly and installation in accordance with the installation manual, as well as leakproofness, usability and static safety. The prerequisites of this are competent assembly and operation in accordance with the requirements, namely the currently valid installation and operating instructions and the prevailing standards.

N.B. Protect tanks from frost when installed aboveground! In case of groundwater installation, please contact us for further information previous to the purchase!

For all indications of measurements in this brochure we reserve a tolerance of +/- 3%. The useful volume of the tanks may be up to 10% lower than the tank capacity, according to the connecting option.

Technical modifications and further development of the different products are subject to change. Errors excepted.

For all our offers and conclusions of contract are only valid our General Terms and Conditions of Business dated 01/10/2012 which we will send to you on request.

Otto Graf GmbH
Kunststoffzeugnisse
Carl-Zeiss-Straße 2-6
DE-79331 Teningen

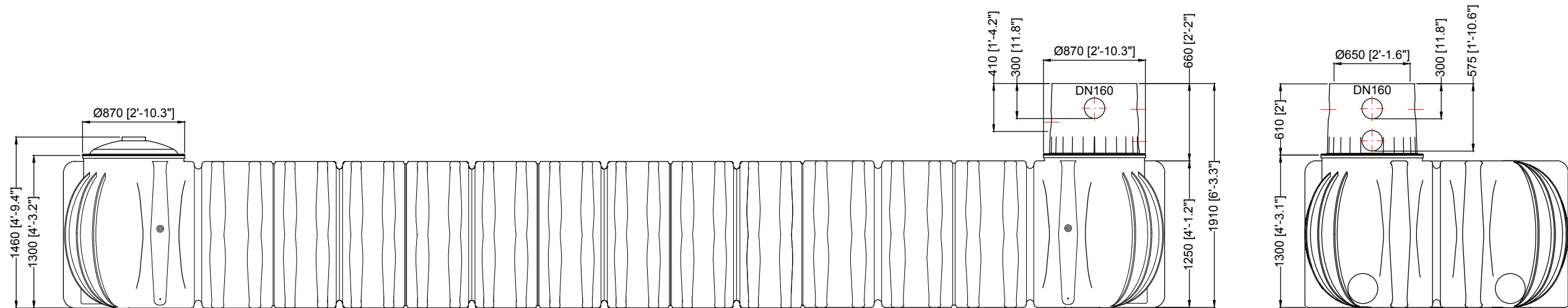
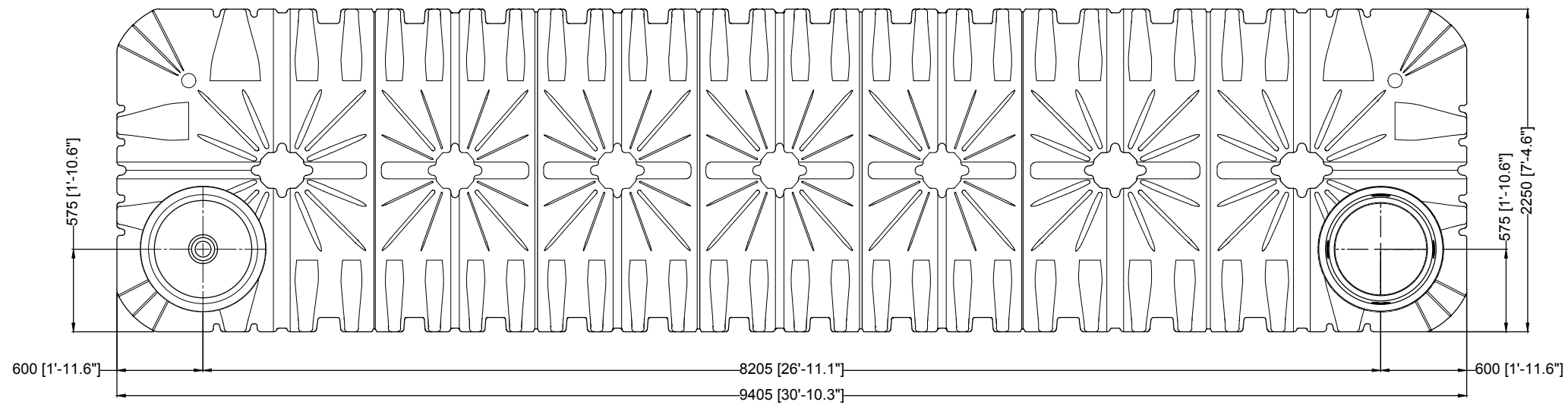
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D GRAF Platin XXL - Flachtank 20000 L / 5283,4 gal.			Artikel-Nr. product no. article no. articulo no. 391000 (391810 / 371018 / 371065)
GB GRAF Platin XXL flat tank 20000 L / 5283,4 gal.	ES GRAF Platin XXL Depósito de poco profundidad 20000 L / 5283,4 gal.	FR GRAF Platine XXL Cuve à enterrer 20000 L / 5283,4 gal.	revision
gezeichnet drawn EMU	Gewicht weight 890 kg	Otto Graf GmbH Carl-Zeiss-Str. 2-6 DE-79331 Teningen mail@graf.info www.graf.info	
Datum date 2019.04.05	Toleranz tolerance +/- 3%		
Maßstab scale M 1:40	Einheiten units mm [inch] gal. = US gal.		