APPENDIX – PART 1

Condition No. 9 - Sustainable Drainage System Components

Sustainable Drainage System Design Statement
Bury St. Edmunds Depot

Planning application reference: DC/20/00779

Goldstar Transport Ltd.

21078-TURN-SDS-0 October 2023







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Appendix:-

- Drawing 21078 TURN 1006 5 As Built Drainage plan
- Goldstar Woolpit Extension Updated Asset Collection Form (9.10.23)
- Hydrovalve Certificate PT 482 (JFC)
- Picture of installed hydrovalve name plate
- Naylor Smart Filter Product Sheet
- Naylor Smart Filter Assembly Drawing



1.0 Introduction

This document is submitted to discharge Condition 9 of planning permission Ref. DC/20/00779. It provides details of all Sustainable Drainage System (SuDS) components and associated piped networks for the approved development.

The drainage design aligns with the findings and recommendations of the Flood Risk Assessment and Drainage Strategy Document (Ref. 064/2016/FRADS – Revision P2, March 2020) by GHBullard & Associates LLP.

The development comprises a 1.05ha concrete slab hardstanding for container storage with access roads. Predevelopment site characteristics were:

Total area: 1.05ha

• Impermeable area: 0.894ha

Greenfield runoff rate: Qbar = 2.5 l/s

Infiltration drainage was found unviable based on site infiltration testing. The FRA recommended limiting discharge from the site by providing attenuation storage.

The SuDS drainage system design follows these recommendations to manage surface water runoff and mitigate flood risk. Details are provided below of the components to be implemented, in accordance with the approved strategy.



2.0 Applied SuDS Design Description

The as-built sustainable drainage system components are detailed below, in accordance with the approved Flood Risk Assessment and Drainage Strategy:-

Attenuation Sub-Base:-

956m³ attenuation volume provided under concrete slab by 3,186m³ granular sub-base with 30% void ratio. Complies with FRA storage volume calculations.

Drainage Channels:-

Two drainage channels installed across concrete slab to collect surface water and discharge into sub-base.

Flow Control System:-

Perforated drain pipe collects water from attenuation sub-base into control chamber fitted with hydrobrake flow control. Restricts discharge to 2.5 l/s as specified.

Connections:-

Controlled discharge at 2.5 l/s flows via Naylor Smart Filter Chamber and Althon H3C Headwall into existing ditch.

Maintenance:-

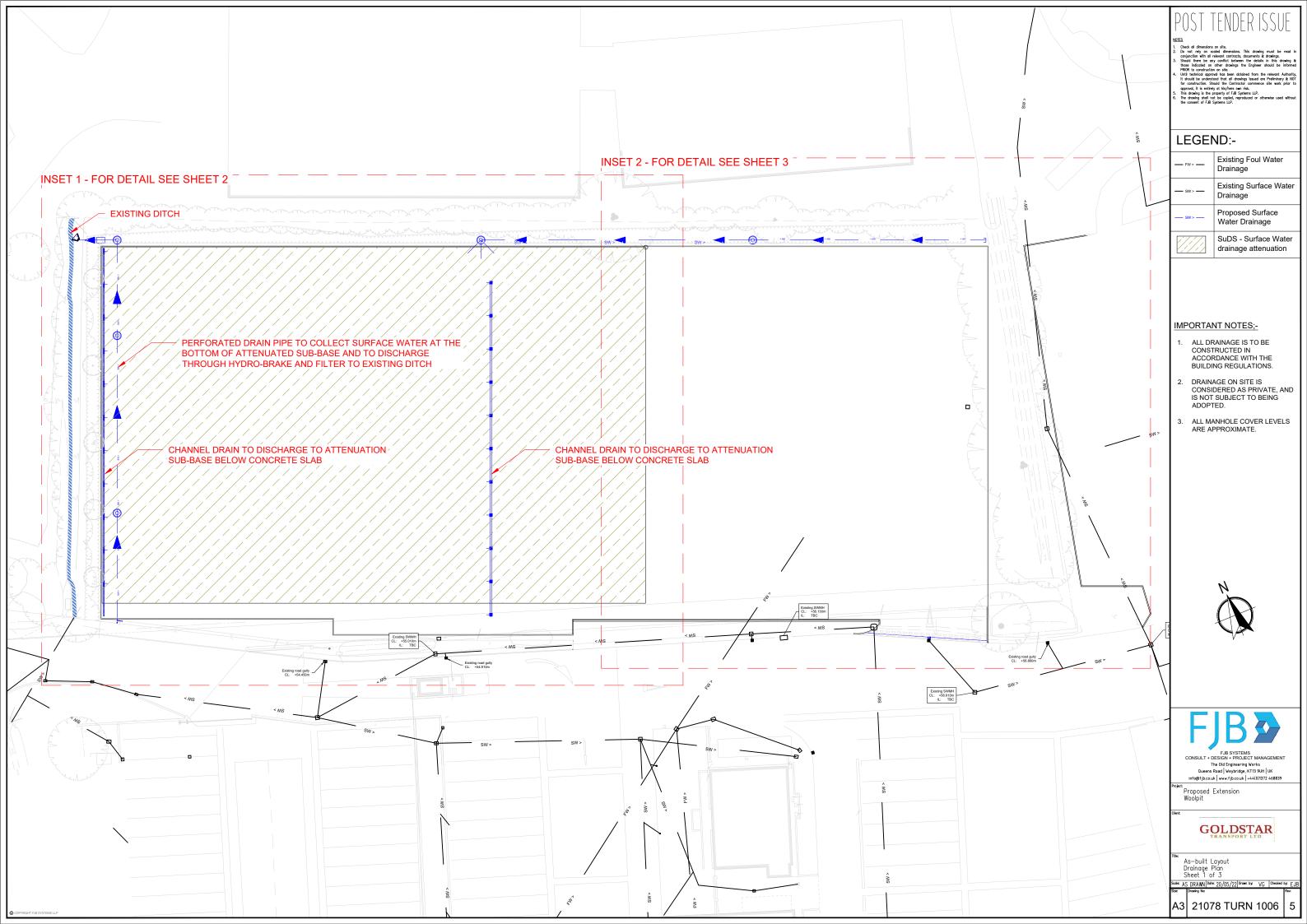
Drainage system integrated into overall maintenance regime. Routine inspections and clearing of drainage components carried out by maintenance team, with standard logs and reporting. Repairs undertaken as needed.

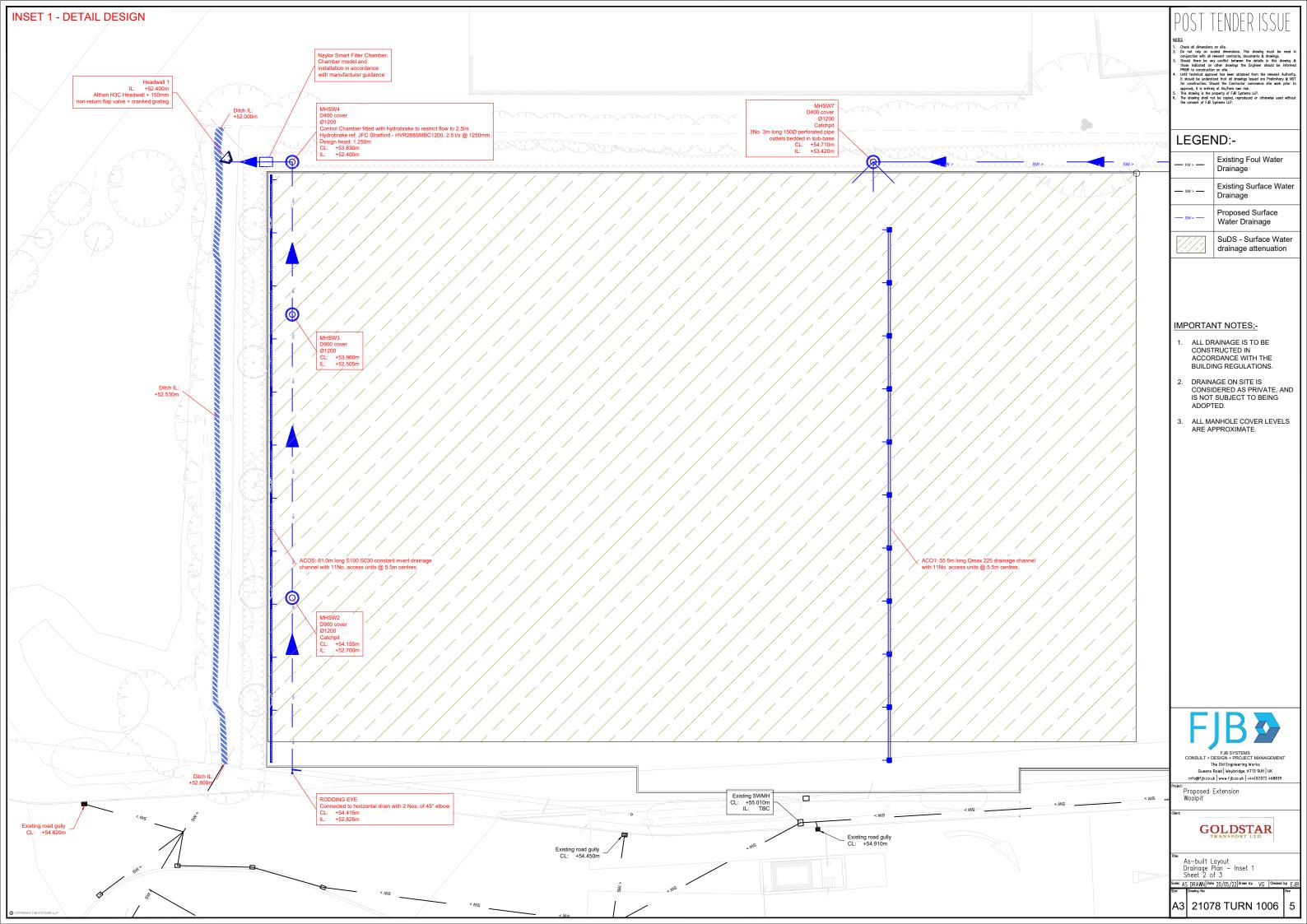
Conclusion:-

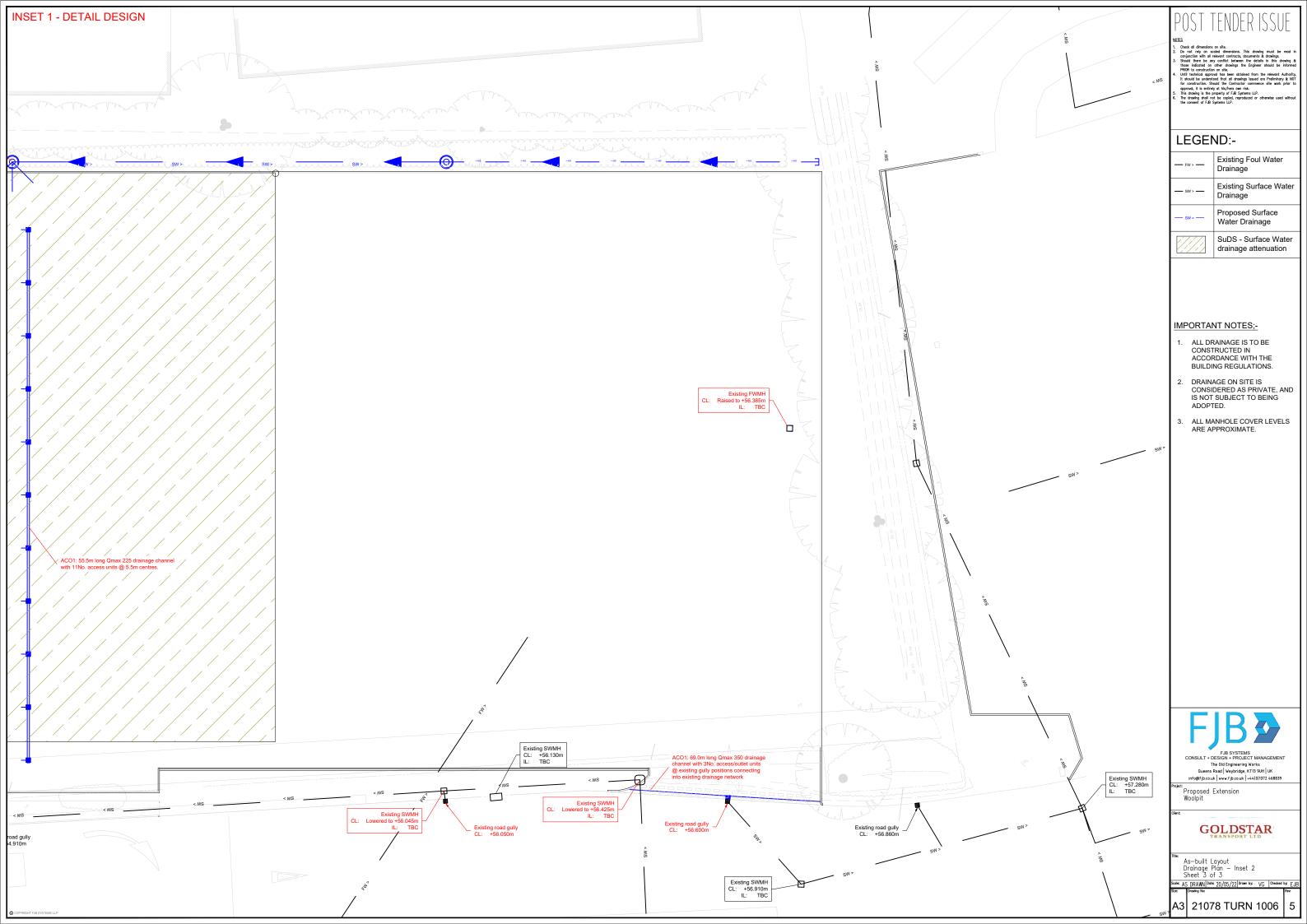
The as-built sustainable drainage system has been implemented in line with the approved strategy. Ongoing maintenance will ensure its continued effective operation to manage surface water flood risk.



3.0 Appendix







	Site Name	Goldstar Container Deport Extension - Woolpit									
Docui	Document Reference No & Revision		21078-TURN-SDS-0 SDS Design Statement			Issued Dated 09/10/2023				FOR INTERNAL USE	
Site full address					Elmswell Road, Bury St.Edmunds, IP30 9RH						ONLY
Number	Number Drainage Asset Type Subtype		coordinates of th	ets give the start ne asset. For "area" entre coordinates.	Asset Owner	Asset Maintained by	Date of Installation (MM/YYYY)	State of repair	Has a <u>Design Statement</u> and <u>Detailed Plan</u> been sent to Flood and Water Management? (floods@suffolk.gov.uk RE:	Any other notes or comments?	Is the asset information stored in the appropriate
			Eastings (6 fig.)	Northings (6 fig.)			(IVIIVI) TTTT)		Asset Collection Documents)		location?
1	Flow_Control_Device	Hydrobrake	597701	262934	Goldstar Transport Ltd	Goldstar Transport Ltd	08/2022	Excellent	Yes		
2	SuDS	Underground	597752	262883	Goldstar Transport Ltd	Goldstar Transport Ltd	08/2022	Excellent	Yes		
3	Trash_Screen	Trash Screen	597699	262936	Goldstar Transport Ltd	Goldstar Transport Ltd	08/2022	Excellent	Yes		
4	Valves	Non-return Valve	597699	262936	Goldstar Transport Ltd	Goldstar Transport Ltd	08/2022	Excellent	Yes		
5	Inlets_and_Outlets	Outlet	597696	262936	Goldstar Transport Ltd	Goldstar Transport Ltd	08/2022	Excellent	Yes	Ī	
6	Watercourses	Ditch	597697	262928			i i	Fair	Yes	i	



Product Certificate

This is to certify that the following product has met the requirements detailed below

Hydro-Valve Vortex Flow Control Device (up to 35 l/s)

For assessment of the performance of the hydro-valve vortex flow control device as manufactured by:

JFC Manufacturing Co. Ltd

Weir Road Tuam Co. Galway Ireland

This product meets the requirements set out in WRc Assessment Schedule PT/482/0420-AS.

Assessor

Director

Issue Date

10 April 2020

Expiry Date

10 April 2025

Certificate Number

PT/482/0420





The Smart Sponge® Family

Smart Filter®, Smart Brake® & Smart Stop® Range

The Smart Filter®:

Specifically designed for end of pipe applications and installations through which contaminated or polluted water flows. The unique design allows the Smart Filter® to either sit inside or outside the pipe connection and will absorb hydrocarbons that pass through the system during normal conditions. The Smart Filter® is available in 2 different standard sizes and will accommodate standard pipe sizes.

Flow rates are catered for through the design of the Smart Filter*, sized to take the first flush effect plus a safety factor of 2x with any excess passing through the bypass facilty.





Smart Filter

Orifice Plate

The Smart Brake®:

Is a collaboration of design from the Smart Filter and houses the Smart Paks within a more confined area which allows normal flow through the system. The Smart Brake's unique design works during an event and slows the flow rate whilst absorbing any hydrocarbons present, allowing the final outfall flow to disperse reducing flooding, resulting in the contaminated flow from travelling further along a water course. The Smart Brake will also absorb any hydrocarbons present within a normal flow, effectively acting as a Smart Filter.



Unit showing overflow connection

The Smart Stop®:

Uses the basic principles of the Smart Filter[®] but houses the Smart Paks within a more confined area which allows normal flow through the system. The Smart Stop's⁴ unique design works during an event where more hydrocarbons are present within the resulting flow and the volume of hydrocarbons are quickly absorbed within the Smart Paks which swell into the defined cage and seal the outfall pipe providing the contaminated flow from travelling further along a water course. The contaminated water is then stopped at source enabling the hydrocarbon clean up to be targeted in one area reducing the impact to the environment. The Smart Brake[®] will also absorb any hydrocarbons present within a normal flow, effectively acting as a Smart Filter[®].

N.B. A suitable silt trap device is recommended prior to the Smart Filter* chamber to prolonge the life of the Smart Sponge*. If this is impractical a silt sump is recommended within the Smart Filter* chamber.

Smart Filter® Standard Range

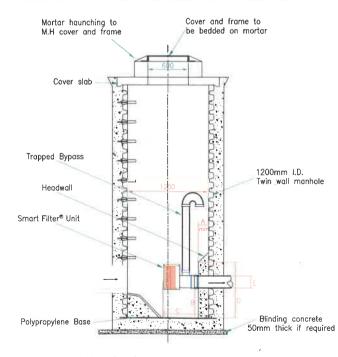
Prox No.	Description	Dims (mm)	Qty
SF01-30302	Smart Filter** c/w 2 No. 305 x 305 Std Smart Paks. 150 dia outlet for flow up to 14 l/s	360 x 330 x 330	³⁰ 1
SF02-38382	Smart Filter* c/w 2 No. 380 x 380 Std Smart Paks. 150 dia outlet for flow up to 22 l/s	400 × 400 × 400	1
SF01-30302P	Smart Filter [®] c/w 2 No. 305 x 305 Plus Smart Paks. 150 dia outlet for flow up to 14 l/s	360 x 330 x 330	1
SF02-38382P	Smart Filter c/w 2 No. 380 x 380 Plus Smart Paks. 150 dia outlet for flow up to 22 l/s	400 × 400 × 400	1

Smart Brake® Range

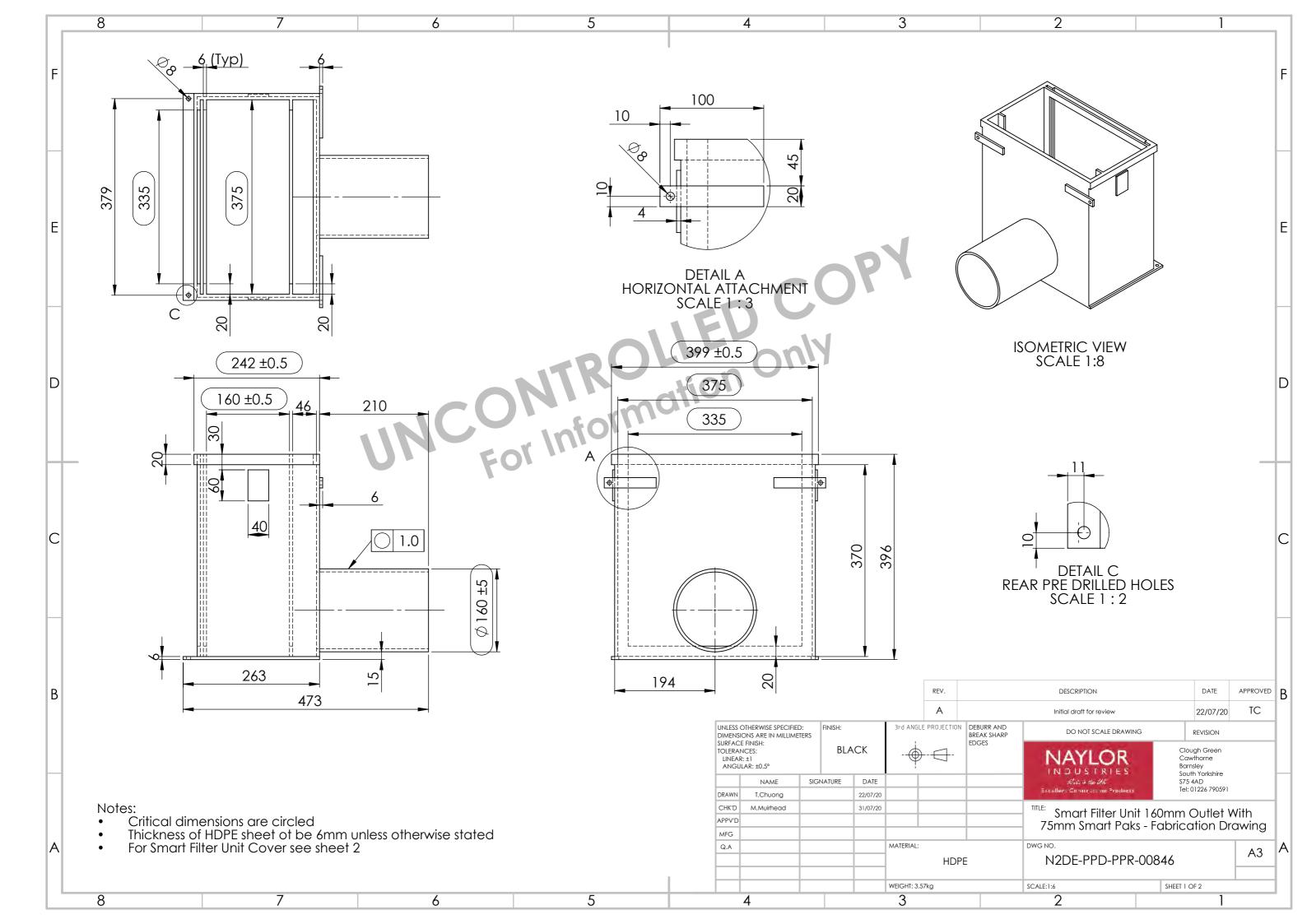
Prod No.	Description	Dims (mm)	Qty
SB01-30302	Smart Brake* c/w 2 No. 305 x 305 Std Smart Paks. Specify orifice size for desired flow	360 x 330 x 330	1
SB02-38382	Smart Brake [®] c/w 2 No. 380 x 380 Std Smart Paks, Specify orifice size for desired flow	400 x 400 x 400	1

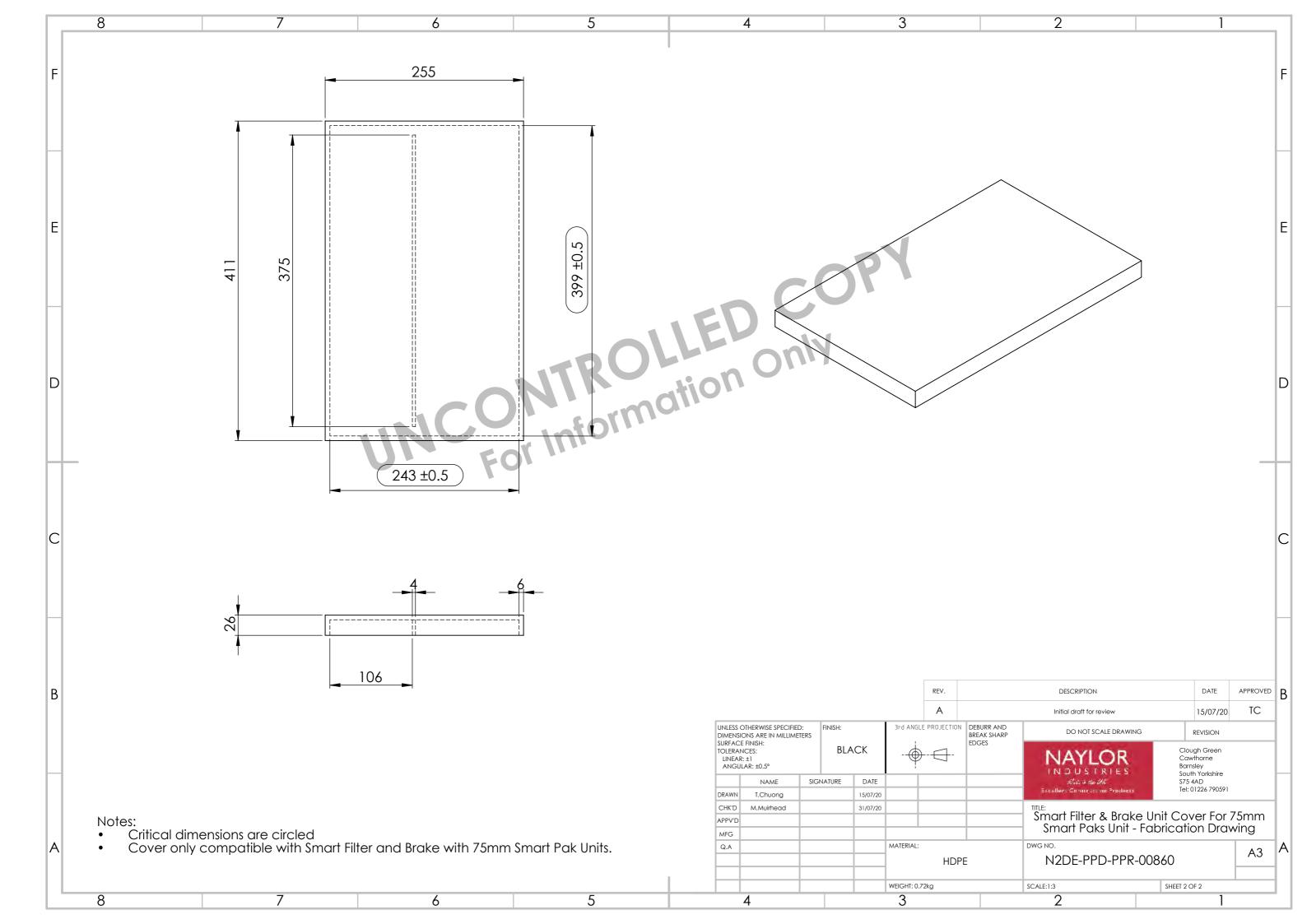
Smart Stop® Range

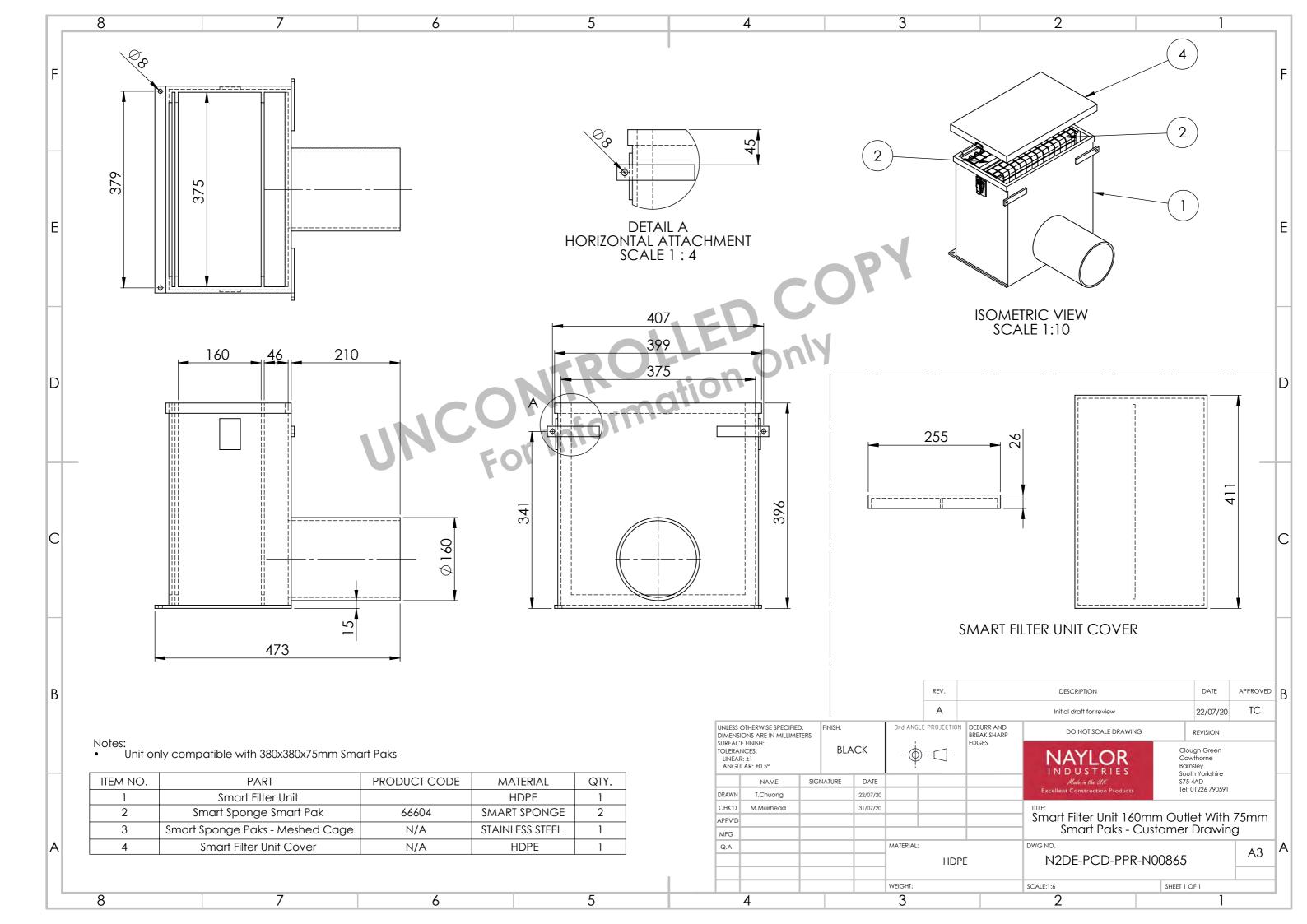
Prod No.	Description	Dims (mm)	Qty
\$\$01-303 0 2	Smart Stop ¹ c/w 2 No. 305 x 305 Std Smart Paks. 150 dia outlet for flow up to 14 l/s	360 x 330 x 330	1
\$\$02-38382	Smart Stop ^f : c/w 2 No. 380 x 380 Std Smart Paks, 150 dia outlet for flow up to 22 l/s	400 x 400 x 400	1

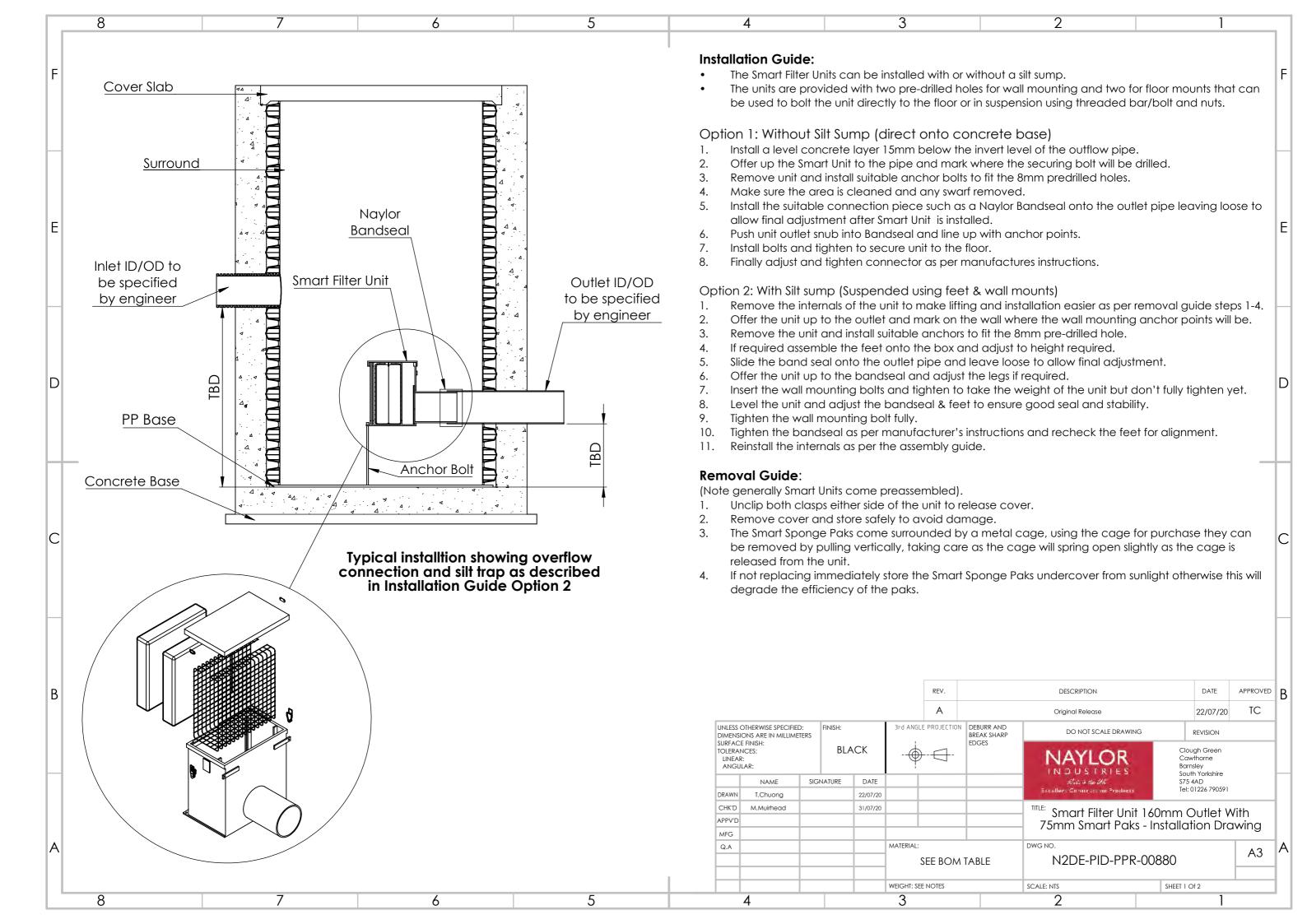


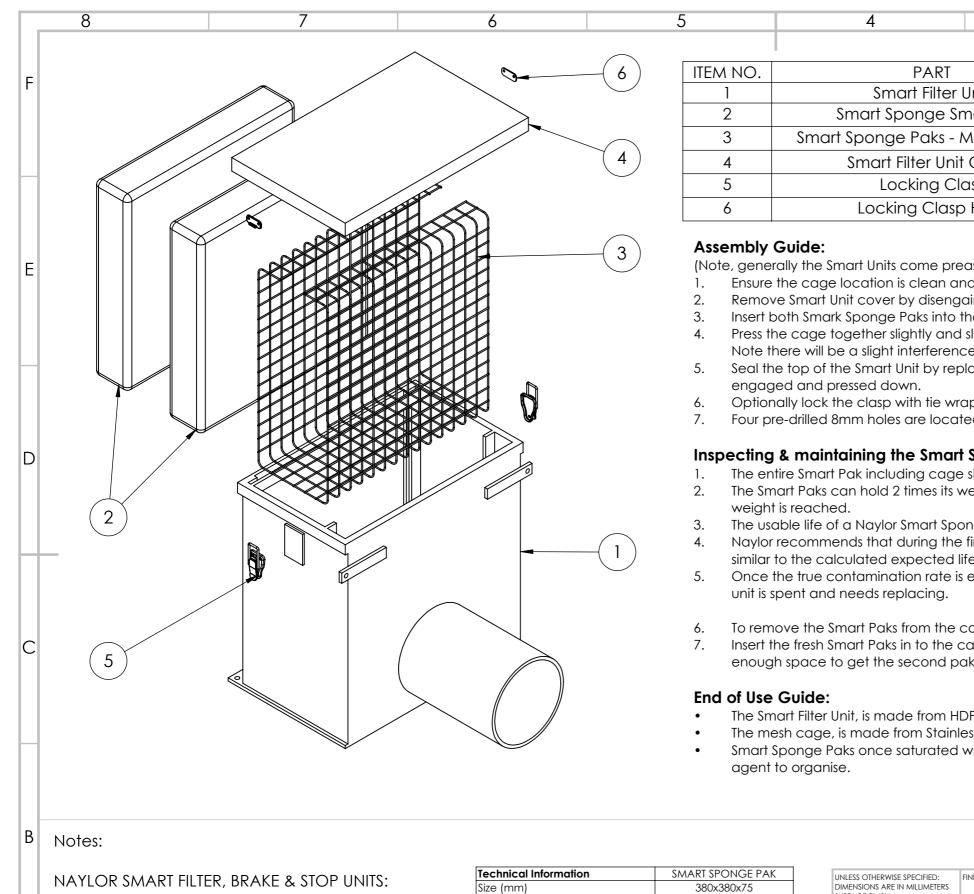
Typical Installation showing overflow connection and silt trap.











ITEM NO.	PART	PRODUCT CODE	MATERIAL	QTY.
1	Smart Filter Unit		HDPE	1
2	Smart Sponge Smart Pak	66604	SMART SPONGE	2
3	Smart Sponge Paks - Meshed Cage	N/A	STAINLESS STEEL	1
4	Smart Filter Unit Cover	N/A	HDPE	1
5	Locking Clasp	N/A	STAINLESS STEEL	2
6	Locking Clasp Hook	N/A	STAINLESS STEEL	2

(Note, generally the Smart Units come preassembled. See instructions below if assembly is required).

- Ensure the cage location is clean and free from obstruction.
- Remove Smart Unit cover by disengaing the locking clasps to gain access inside.
- Insert both Smark Sponge Paks into the meshed cage.
- Press the cage together slightly and slide into the larger slot area of the Smart Unit until it reaches the bottom. Note there will be a slight interference between the paks and the unit when inserting, this ensures a secure fit.
- Seal the top of the Smart Unit by replacing the cover, securing it on either side by ensuring the locking clasps are fully
- Optionally lock the clasp with tie wraps to ensure the cover remains on.
- Four pre-drilled 8mm holes are located on protruding sections of the unit for mounting depending on requirements.

Inspecting & maintaining the Smart Sponge Paks:

- The entire Smart Pak including cage should be weighed to find out how much hydrocarbon capture is available.
- The Smart Paks can hold 2 times its weight in hydrocarbon, the paks are spent and will need replacing once this
- The usable life of a Naylor Smart Sponge Paks is dependent on the local contamination levels.
- Naylor recommends that during the first 6 months the paks are removed and weighed to check if the extraction rate is similar to the calculated expected life.
- Once the true contamination rate is established the inspection rate can be reduced to once every 6 months until the
- To remove the Smart Paks from the cage, lightly pull apart the cage at the opening and slide the spent paks out.
- Insert the fresh Smart Paks in to the cage, push the first pak into the cage and then squeeze open the cage to give enough space to get the second pak in, taking care not to use too much force as this may bend the cage.
- The Smart Filter Unit, is made from HDPE which is widely recycled.
- The mesh cage, is made from Stainless Steel which can be easily recycled.
- Smart Sponge Paks once saturated will need to be appropriately disposed, contact an authorised waste disposal

Specifically designed for end of pipe applications and installations through which contaminated or polluted water flows. The unique design allows the Smart Filter Unit to sit ouside the pipe connection and will absorb hydrocarbons that pass through the system during normal conditions.

Technical Information	SMART SPONGE PAK
Size (mm)	380x380x75
Weight - Spent Weight (kg)	3.5 - 8.7
Max FLow Rate	22
Treated Flow - Flow Rate	
Contamination Revemol Level	71% Efficiency for Hydro Carbons Up to 500000µg/L
Water Quality (Leaching)	None Leaching

For further technical information see product brochure. For Smart Sponge treatment efficiency see document: ND-PF-016

						REV.		DESCRIPTION		DATE	APPROVED	В
						Α	Original Release			22/07/20	TC	
DIMENSION	UNLESS OTHERWISE SPECIFIED: FINISH: 3rd ANGLE DIMENSIONS ARE IN MILLIMETERS		DIMENSIONS ARE IN MILLIMETERS			E PROJECTION	BREAK SHARP	DO NOT SCALE DRAWIN	IG	REVISION		
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	NAME	SIGN	NATURE	DATE				Made in the UK	\$75	4AD		
DRAWN	T.Chuong			22/07/20				Excellent Construction Products Tel: 01226 79				
CHK'D	M.Muirhead			31/07/20				Smart Filter Unit 160mm Outlet With			Vith	1
APPV'D							75mm Smart Paks - Assembly Drawing					
MFG								7 311111 3111 411 1 41	(3 - 7 (33011)	DIY DIG	wiiig	
Q.A					MATERIAL: SEE BOM		TABLE	DWG NO. N2DE-PID-PPR	-00880		А3	Α
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