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PRELIMINARY SUBJECT TO DETAILED DESIGN

This drawing illustrates a sketch proposal only and as such is subject to detailed site investigation including ground conditions/contaminants, drainage, design and planning/density negotiations. The layout maybe based upon an enlargement of an OS sheet or other small scale plans and its accuracy will need to be verified by Survey. Full risk analysis under the CDM Regulations has not been undertaken.

Total Site Area = 0.200 ha
Total Impermeable Area = 0.062 ha
Q1 Greenfield Runoff Rate = 0.16 l/s
Restriction Rate = 2.0 l/s
Storage volume for the 1 in 100 year +20% Climate Change storm event = 26m³

KEY

- Surface Water Manhole
- Flow Control Manhole / Interceptor
- Surface Water Pipe Line
- Geocellular Crates

P01	First Issue.	JH	JM	23.06.25
Rev	Description	By	Ckd	Date



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Client **SSE**

Project **Imperial Park
Newport**

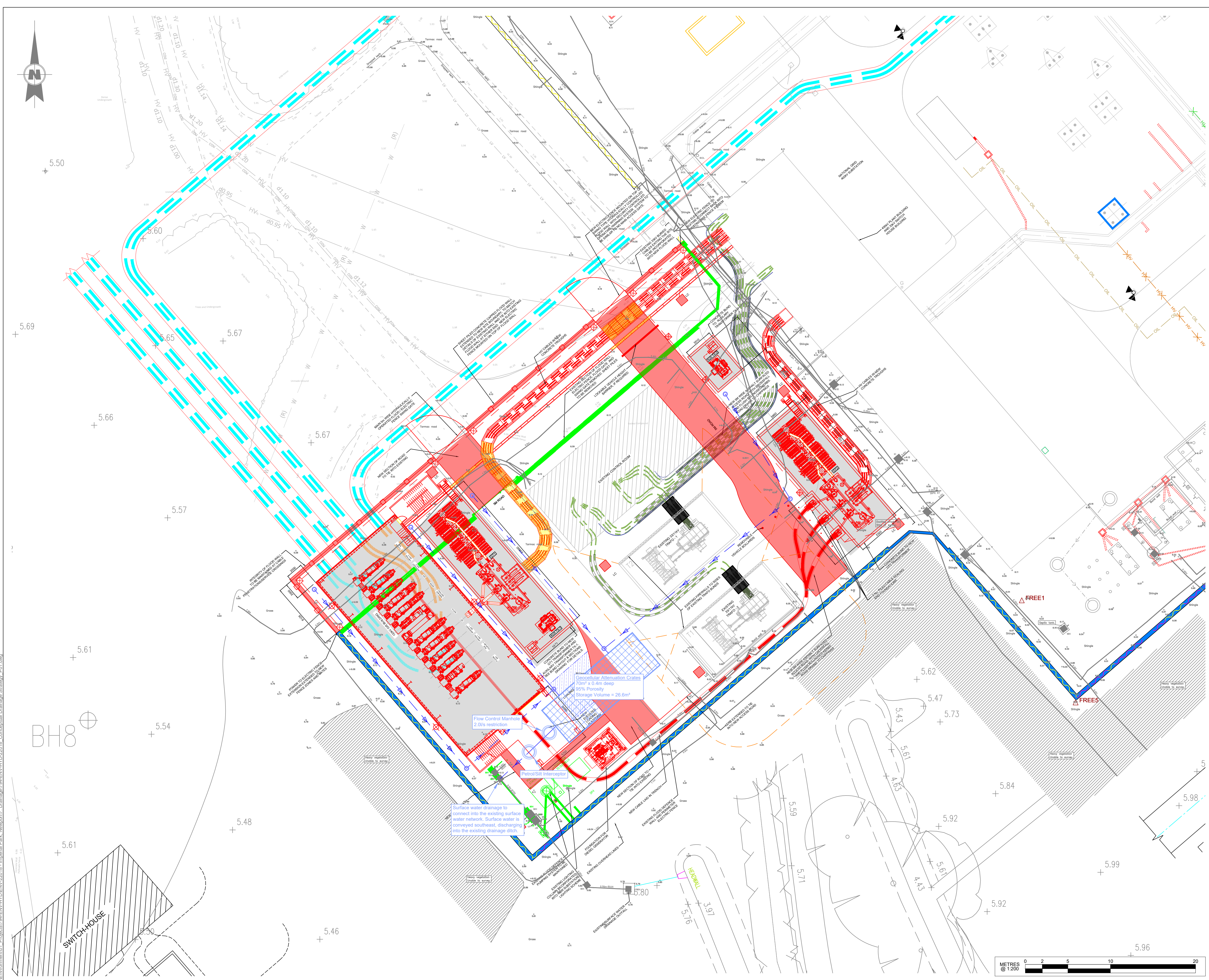
Title **Conceptual Drainage Strategy**

Status **Preliminary** Scale **1:200 @A1** Date Created **23.06.25**
Task Team Manager **JM** Information Author **JH** Task Information Manager **JM**
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794-ENV-HYD-22018

Revision
P01

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Appendix H

Causeway Flow Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	9.000
CV	1.000	Preferred Cover Depth (m)	1.000
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-STORAGE	0.062	5.00	100.000	1200	1010.000	1000.000	0.400
2-FC			100.000	1200	1020.000	1000.000	0.500
3-OF			100.000	1200	1030.000	1000.000	0.600

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	1-STORAGE	2-FC	10.000	0.600	99.600	99.500	0.100	100.0	225	5.13	50.0
1.002	2-FC	3-OF	10.000	0.600	99.500	99.400	0.100	100.0	225	5.26	50.0

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	2880	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	20	0	0

Node 2-FC Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	99.500	Product Number	CTL-SHE-0076-2000-0400-2000
Design Depth (m)	0.400	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 1-STORAGE Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	99.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	200

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	80.0	0.0	0.400	80.0	0.0

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1-STORAGE	116	99.917	0.317	13.5	25.7437	0.0000	FLOOD RISK
120 minute winter	2-FC	110	99.926	0.426	7.0	0.4815	0.0000	FLOOD RISK
15 minute summer	3-OF	1	99.400	0.000	2.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1-STORAGE	1.001	2-FC	7.0	0.339	0.135	0.3977	
120 minute winter	2-FC	Hydro-Brake®	3-OF	2.1				38.0

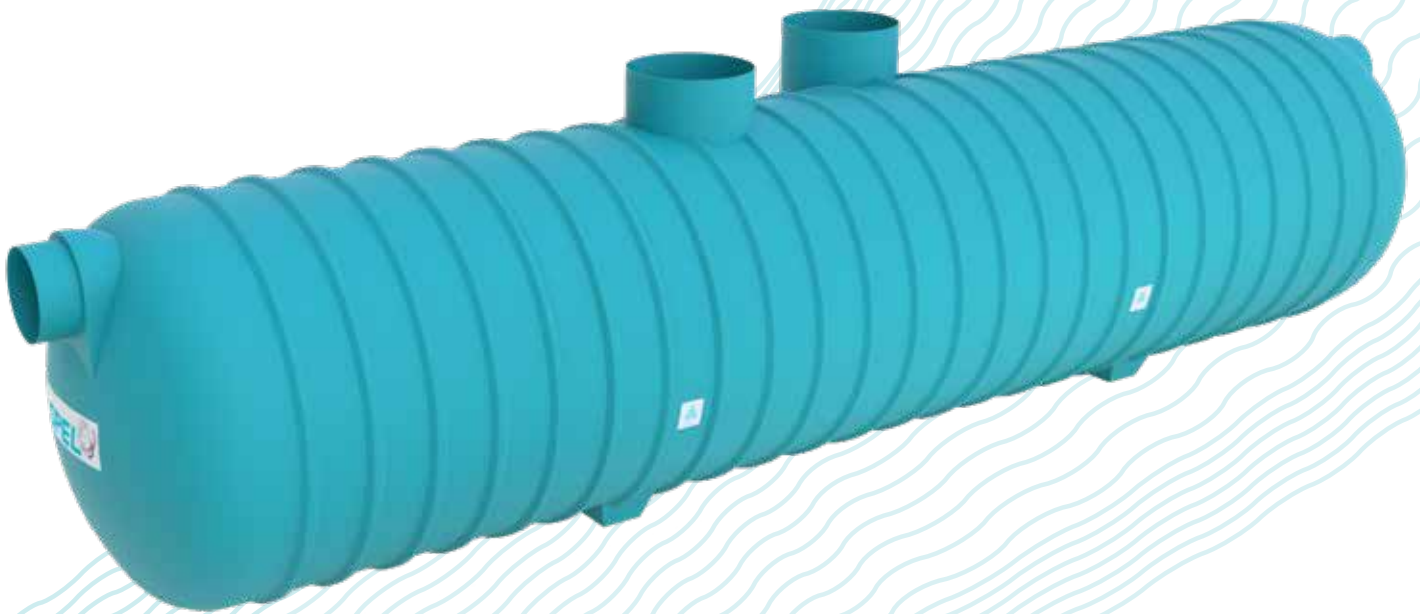
Appendix I

SPEL Management Data Sheet



Quality solutions protecting our global environment

*The **safest answer** for **pollution control** and our **environment***



SPEL Stormceptor

ESR (Enhanced Silt Retention)

SuDS Compliant ESR Range

spelproducts.co.uk

SPEL Stormceptor ESR Range

By-Pass System

The **total** treatment solution for SuDS

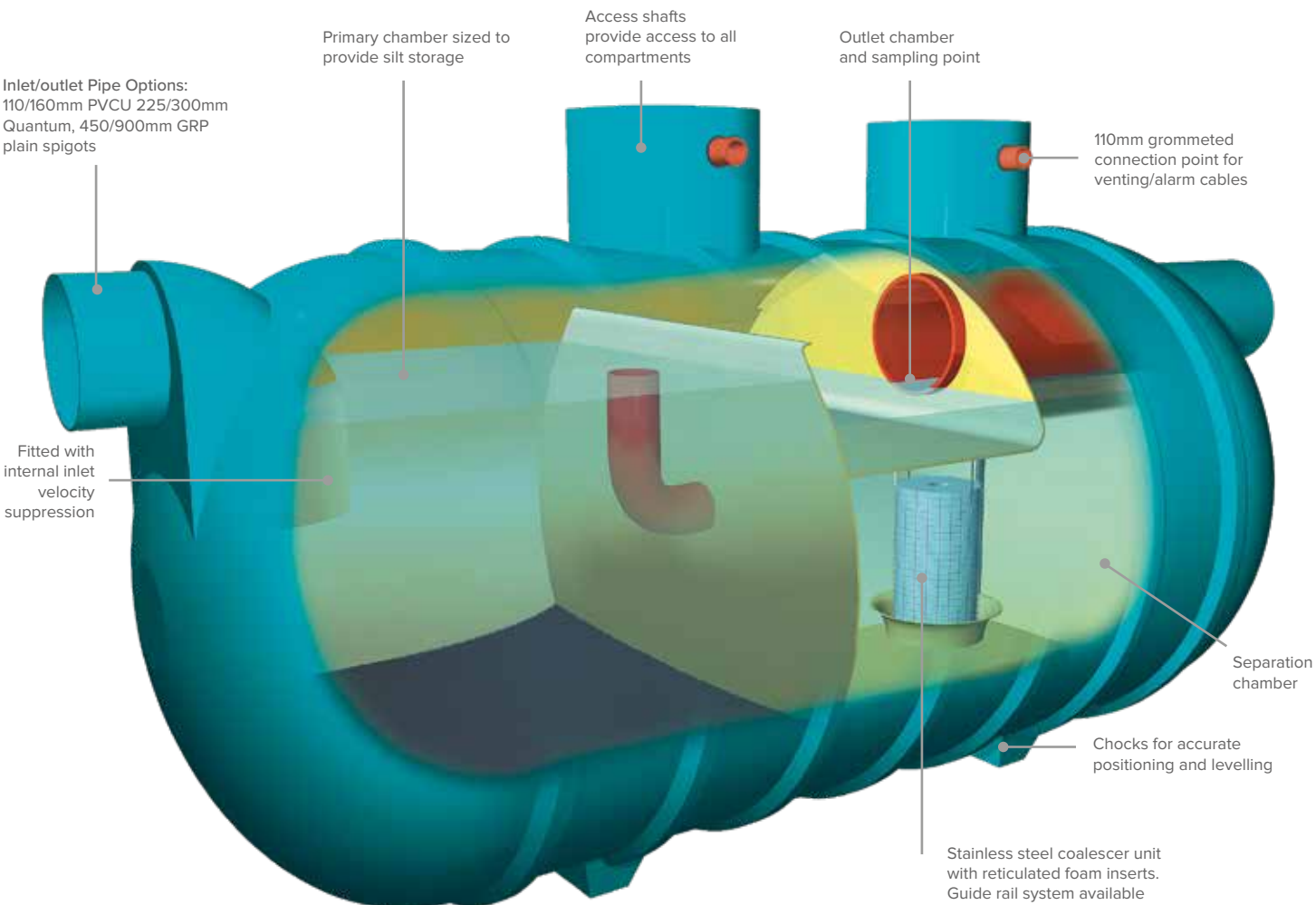
The new SPEL ESR System is fully certified to meet the CIRIA SuDS Mitigation Index. It has been tested by WRc (for TSS and Metals) to the British Water Code of Practice for Manufactured Treatment Devices. This unit is also compliant to the British and European Standard BS EN 858.

SPEL's ESR range is a total treatment system removing Hydrocarbons, Total Suspended Solids (TSS) and Metals (particulate). It's a highly efficient, single unit, water quality SuDS component.

SPEL ESR Stormceptor Certified Mitigation Index

TSS	0.8
Metals	0.6
Hydrocarbons	0.9*

**H R Wallingford test results to BS EN 858*



Appendix J

Maintenance Plan

Flow Control Manhole Suggested Maintenance Schedule

Maintenance schedule	Require Action	Typical Frequency
Regular Maintenance	Inspect vegetation above and around flow control chamber and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Remove sediment from flow control chambers	Annually
	Flow control devices: Check for and clear obstructions	Quarterly
Remedial Actions	Repair of Penstock and flow control device	As required
Monitoring	Inspect structures for evidence of poor operation	Monthly/after large storm
	Inspect structures, flow control and pipework etc. for evidence of physical damage	Monthly/after large storm
	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly

Petrol/Silt Interceptor Suggested Maintenance Schedule

Maintenance schedule	Require Action	Typical Frequency
Routine Maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial Actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months