Glanville
Survey > Plan > Engineer

Issue 3 02 July 2025

DRAINAGE MAINTENANCE PLAN

McDonald's Wrexham, Crescent Road (ST2543)



Prepared for: McDonald's Restaurants Limited

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Document History

Issue	Date	Description	Prepared By	Checked By
1	18 Sept 2024	Issue 1	H George	K Jackson
2	04 Oct 2024	Issue 2	C Rees	J Cross
3	02 July 2025	Site Layout Updated	H Gell	M Lewis

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1.0 Introduction

1.1 This Sustainable Drainage Maintenance Plan has been prepared by Glanville Consultants Ltd on behalf of McDonald's Restaurants Limited.

1.2 The site is located on adjacent to Tesco extra Wrexham. The Tesco Extra postcode is LL13 8HF.

2.0 Drainage Maintenance Responsibility & Training

2.1 The McDonald's site and all of its drainage is privately owned and maintained by McDonald's. It is the store manager's responsibility to ensure that the drainage system is regularly inspected and maintained, in accordance with this plan. Figure 1 shows the layout of the drainage system including the location of each of the items requiring maintenance, listed in this plan and a summary of the maintenance requirements.

2.2 The majority of tasks can be completed by McDonald's staff trained for each specific task. Training should include manual handling, for lifting manhole covers. Manholes & chambers can be dangerous due to trapped harmful gases and should not be entered unless staff are confined space trained and issued with appropriate equipment. Entering confined spaces should not normally be required and should be controlled by a permit to enter system administered by the store manager. It may be appropriate to rely on non-store based, specialist staff, on Fithe rare occasions when confined space entry is required.

3.0 Drainage Inspection and Maintenance Requirements and Frequency

Catchpit Manholes and Gullies (Figure 1 - Ref A & C)

3.1 Catchpit manholes and gullies are designed to trap silt, leaves and other debris before it reaches more sensitive parts of the drainage system where it could reduce drainage efficiency. Catchpit manholes are located prior to the cellular storage tank and adjacent to surface drainage channels. Gullies are located throughout the car park and drive through lane, adjacent to kerb-lines.

3.2 Catchpit manholes and gullies need to be inspected on a monthly basis except during the autumn leaf fall when they may require inspections to be increased to fortnightly.

3.3 Equipment required for inspection includes moveable barriers and cones to guard openings, manhole keys, gloves, and a torch. A minimum of two people is required.

3.4 Catchpit manholes and gullies need to be emptied once the sump becomes half full. Emptying should be performed using a gulley emptying vacuum truck or similar device which does not require man entry.

Foul Water Manholes and Inspection Chambers (Figure 1 - Ref B)

3.5 Foul water manholes and inspection chambers need to be inspected on a monthly basis or immediately if foul odours are present or there is a suspected blockage.

3.6 Equipment required for inspection includes moveable barriers and cones to guard openings, manhole keys, gloves, and a torch. A minimum of two people is required.

3.7 If manholes show any signs of blockage, specialist contractors should be called for clearance work, without delay.

Drainage Channel Outlets (Figure 1 - Ref D)

3.8 Drainage channel outlets need to be inspected on a monthly basis except during the autumn when leaf fall, may require inspections to be increased to fortnightly.

3.9 Equipment required for inspection includes moveable barriers and cones to guard openings, lifting tools, gloves, and a torch. A minimum of two people is required.

3.10 Silt, leaves and debris should be cleared from the channel outlets during each inspection.

Surface Water Treatment (Figure 1- Ref E)

3.11 Catchpit manholes and gullies are located upstream of the treatment units to prolong their life and effectiveness. The treatment chambers should be inspected on a 3 monthly basis or immediately after a known pollution spillage within the car park.

3.12 Equipment required for inspection includes moveable barriers and cones to guard openings, manhole keys, gloves, wire ties and cutters and a torch. A minimum of two people is required.

3.13 Inspection and maintenance of the SPEL ESR unit will be in accordance with manufacturer's guidelines and is to be by the manufacturer or their preferred service provider. Replace Coalescer to Manufacturers requirements.

3.14 Staff should have appropriate training for these inspections as they involve specialist products. It is recommended that initial training is provided by manufacturers of this equipment.

Cellular Attenuation Tank (Figure 1 - F)

3.15 The cellular crates are protected by the upstream catchpit manholes. The catchpit manhole adjacent to the crates will allow inspection of the perforated pipe within the attenuation tank. The perforated pipe should be examined when the catchpits are inspected, on a monthly basis. The perforated pipe should also be inspected after every major storm. If there is any evidence of silt within the perforated pipe, jetting can be performed and any silt should be washed into the catchpit manhole, where it can be emptied. See Table 3 for maintenance requirements and frequencies.

Table 3 - Operation and Maintenance Requirements for Attenuation Tanks

Maintenance Schedule	Required action	Typical Frequency
Regular maintenance	Inspect & identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months then annually
	Remove debris from the catchment surface.	Weekly or as required
	Remove sediment from pre-treatment structures (catchpits) and. or internal forebays.	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlets, overflows and vents.	As required
Monitoring	Inspect all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build up and remove if necessary.	Every 5 years or as required.

Grease Trap (Figure 1 - J)

3.16 The Grease Trap should be inspected on a monthly basis, by lifting the inspection cover. Any signs of a malfunction or blockage should be reported immediately to the external specialist maintenance company.

3.17 The Grease Trap has an alarm hard wired into the Store Manager's office with a visual and audible warning system. If the alarm is triggered the external specialist maintenance company should be called out immediately. See also the manufacturer's guidelines in Appendix C.

Filter Drains (Figure 1 - H)

3.18 The filter drain behind the drive-thru drainage kerb should be inspected and maintained regularly to ensure that it works efficiently during its lifetime. The operation and maintenance requirements for the proposed filter drain can be seen in Table 2.

Table 4 - Operation and Maintenance Requirements for Filter Drains

Maintenance Schedule	Required action	Typical Frequency
Regular maintenance	Remove litter (inc. leaves) & debris from filter drain surface, access chamber & pre-treatment devices.	Weekly or as required.
	Inspect filter drain surface, inlet & outlet pipework & control systems for blockages, clogging, standing water & 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 encroaching filter drain.	As required
	At locations with high pollutant loads, remove surface geotextile and replace. Wash or replace overlaying filter medium.	Every 5 years or as required
	Clear perforated pipework.	As required

Detention Basin (Figure 1 - J)

3.19 Inspect and maintain in accordance with Table 5.

Table 5- Operation and Maintenance Requirements for Detention Basin

Maintenance Schedule	Required action	Typical Frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility to determine if maintenance is necessary	Quarterly
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Daily / weekly
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

Permeable Paving (Figure 1 - K)

3.16 The permeable paving Aquaflow ML is a low maintenance block with good interlock. A visual inspection is required monthly to check for any excess loss of jointing grit. If excess lost top up with 3mm grit.

4.0 Drainage Inspection and Maintenance Records

4.1 Appendix E includes the annual drainage maintenance record log sheet. Copies should be taken of the log sheet for use for each year's records. Each inspection should be recorded on the log sheet for that year by the store manager. The log sheet shall be kept with this manual..

Figures

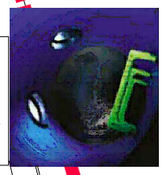
MAINTENANCE TABLE

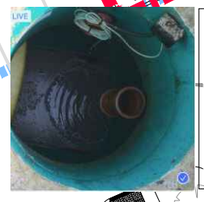
	ITEM	REQUIREMENT	FREQUENCY	MAINTAINED BY
A	A- SURFACE WATER CATCHPIT	INSPECT SW MH / CATCHPIT AND REMOVE SILT IF FULL.	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
B	B- FOUL WATER CHAMBER	VISUALLY ACCESS TO LOOK FOR BLOCKAGES.	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
C	C- GULLY	INSPECT GULLY, REMOVE DEBRIS.	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
D	D- CHANNEL OUTLETS	INSPECT DRAINAGE OUTLETS, REMOVE DEBRIS.	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
E	E- PETROL INTERCEPTOR WITH TREATMENT COALESCER FILTER	INSPECT MONTHLY CLEAN OUT IF ALARM IS TRIGGERED AND REPLACE / CLEAN COALESCER AS CNN PER MANUFACTURERS RECOMMENDATIONS	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
F	F- ATTENUATION	INSPECT INLET AT ADJACENT CATCHPIT MANHOLE	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
G	G- GREASE TRAP	INSPECT AND IF FULL MAINTENANCE BY MANUFACTURER REQUIREMENTS.	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
H	H- FILTER DRAIN	VISUAL INSPECTION OF INSPECTION PIPE INLETS	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
J	J- DETENTION BASIN	DEBRIS REMOVAL & INSPECTION OF INSPECTION PIPE INLETS	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS
K	K- PERMEABLE BLOCK PAVING	VISUAL INSPECTION OF BLOCK PAVING	MONTHLY	SPECIALIST CONTRACTOR APPOINTED BY MCDONALDS



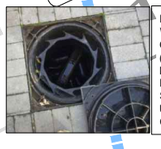
ITEM E PETROL INTERCEPTOR TRAP VISUAL INSPECTION LIFTED BY GENERAL MAINTENANCE (1 PERSON). ONCE A MONTH. PHYSICAL CLEAN OUT SHOULD BE ONCE EVERY 6 MONTHS

ITEM A, ACCESS COVER IS LIGHT WEIGHT, CAN BE LIFTED BY GENERAL MAINTENANCE (1PERSON). THE TASK IS ONCE A MONTH AND IS A VISUAL INSPECTION TO SEE IF EXCESSIVE SILT, LEAVES OR LITTER HAS BUILT UP. GENERALLY SPEAKING A SPOT CHECK ON A FEW WILL SUFFICE.





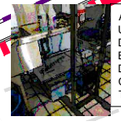
ITEM H GREASE TRAP VISUAL INSPECTION LIFTED BY GENERAL MAINTENANCE (1 PERSON). ONCE A MONTH. PHYSICAL CLEAN OUT SHOULD BE ONCE EVERY 6 MONTHS OR WHEN THE ALARM IS ACTIVATED IN THE MANAGERS OFFICE. 6 MONTHS IS VIABLE WHEN THE FATSTRIPPA IS WORKING OPTIMALLY WITHIN THE KITCHEN. CLEAN OUT AND RESET BY A MAINTENANCE COMPANY AND APPROVED TO RESET THE ALARM.



ITEM B, ACCESS COVER IS LIGHT WEIGHT, CAN BE LIFTED BY GENERAL MAINTENANCE (1PERSON). THE TASK IS ONCE A MONTH AND IS A VISUAL INSPECTION TO SEE IF EXCESSIVE SILT, LEAVES OR LITTER HAS BUILT UP. GENERALLY SPEAKING A SPOT CHECK ON A FEW WILL SUFFICE.

ITEM D OUTLET. ACCESS COVER IS HINGED, CAN BE LIFTED BY GENERAL MAINTENANCE (1PERSON). THE TASK IS ONCE A MONTH AND IS A VISUAL INSPECTION TO SEE IF EXCESSIVE SILT, LEAVES OR LITTER HAS BUILT UP.





ABOVE GROUND GREASE REMOVAL UNIT (CONNECTED TO THE DISHWASHER AND THREE SINK), TO BE CLEANED OUT MULTIPLE TIMES DAILY. DISHWASHER DISCHARGE TO COOL PRIOR TO WATER RELEASE TO THE GRU

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS, DOCUMENTS AND SPECIFICATIONS. ANY DISCREPANCIES BETWEEN INFORMATION SHOWN ON THIS AND ANY OTHER DRAWING SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
2. DO NOT SCALE FROM THIS DRAWING. WORK TO FIGURED DIMENSIONS ONLY.
3. THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS SPECIFICALLY STATED AS 'FOR CONSTRUCTION' IN THE DRAWING STATUS.
4. ALL DRAWING INFORMATION MUST BE READ FROM HARD COPY / PDF FILES ONLY, MARKED CHECKED. BEFORE PROCEEDING PLEASE ENSURE THE ISSUE STATUS IS APPROPRIATE FOR THE INTENDED USE. ALL INFORMATION EXTRACTED DIRECTLY FROM DRAWING FILES (E.G. DWG'S) IS DONE SO ENTIRELY AT THE USERS RISK.

KEY

- SITE BOUNDARY
- EXISTING SITE PLAN
- PROPOSED SITE LAYOUT
- SW Ø1200 CL=106,57 IL=104.70 300mmCP — DRAINAGE LABEL CP=CATCHPIT
- PROPOSED GULLEY WITH 150Ø PIPE
- 9.3m-100Ø 1:80 — PROPOSED SURFACE WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED BUILDING SURFACE WATER PPIC CATCHPIT MANHOLE WITH 300mm SUMP
- RWP — PROPOSED RAINWATER DOWN PIPE INVERT 500mm BELOW PROPOSED EXTERNAL LEVEL (ALL OUTLETS 100Ø & TO HAVE RODDING ACCESS UNLESS OTHERWISE INDICATED)
- ACO MONO DRAIN PD100D U.N.O 0.0 DRAINAGE CHANNEL (BLACK)
- 9.3m-100Ø 1:80 — PROPOSED FOUL WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED BUILDING FOUL WATER DRAINAGE INSPECTION CHAMBER
- 9.3m-100Ø 1:80 — PROPOSED GREASE WATER DRAINAGE PIPEWORK SHOWING LENGTH, PIPE DIAMETER AND GRADE
- PROPOSED BUILDING GREASE WATER DRAINAGE INSPECTION CHAMBER
- ALARMED 2000l SPEL GREASE TRAP WITH HARD WIRE TO MANAGERS OFFICE
- CLEARFLOW GT150 GREASE TRAP
- 110Ø DUCTS FOR GREASE TRAP/ CABLES TO INCOMING ELECTRICS CUPBOARD (MUST BE INSTALLED, CONNECTED AND COMMISSIONED BY THE GROUNDWORK CONTRACTOR PRIOR TO PRACTICAL HANDOVER)
- KERBDRAIN 305 TO ALLOW SURFACE WATER TO DRAIN INTO FILTER DRAIN — FILTER DRAIN
- SOAKAWAY INFILTRATING HEAVY DUTY CELLULAR STORAGE
- CONTROL CHAMBER - Q-BRAKE FLOW CONTROL
- SPEL TREATMENT PETROL INTERCEPTOR ESR
- PERMEABLE BLOCK PAVING AQUA FLOW ML
- PERMAVOID RAINWATER DIFFUSER UNIT
- PROPOSED ADOPTED WELSH WATER FOUL SEWER
- EXISTING ADOPTED WELSH WATER FWS

Rev.	Description	Date	By	Chkd
I3	SITE LAYOUT UPDATED	03/07/25	ML	HG
I2	SITE LAYOUT UPDATED	13/02/25	LF	HBG
I1	ISSUE FOR INFORMATION	16/09/24	LF	HBG

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Hertfordshire | Oxfordshire | Cambridgeshire | Bristol

Client : McDonald's RESTAURANT

Project : McDONALD'S RESTAURANT
CRESCENT ROAD, WREXHAM
CLWYD, WALES, LL13 8HF

Title : DRAINAGE MAINTENANCE PLAN

Engineer : HBG | Date : SEPT '24

Director : HBG | Scale : 1:400 @ A3

Status : INFORMATION

Drawing No. 4240121-SK14 | Rev I3

McDonald's ™

FOR INFORMATION ONLY

FIGURE 1

Appendices

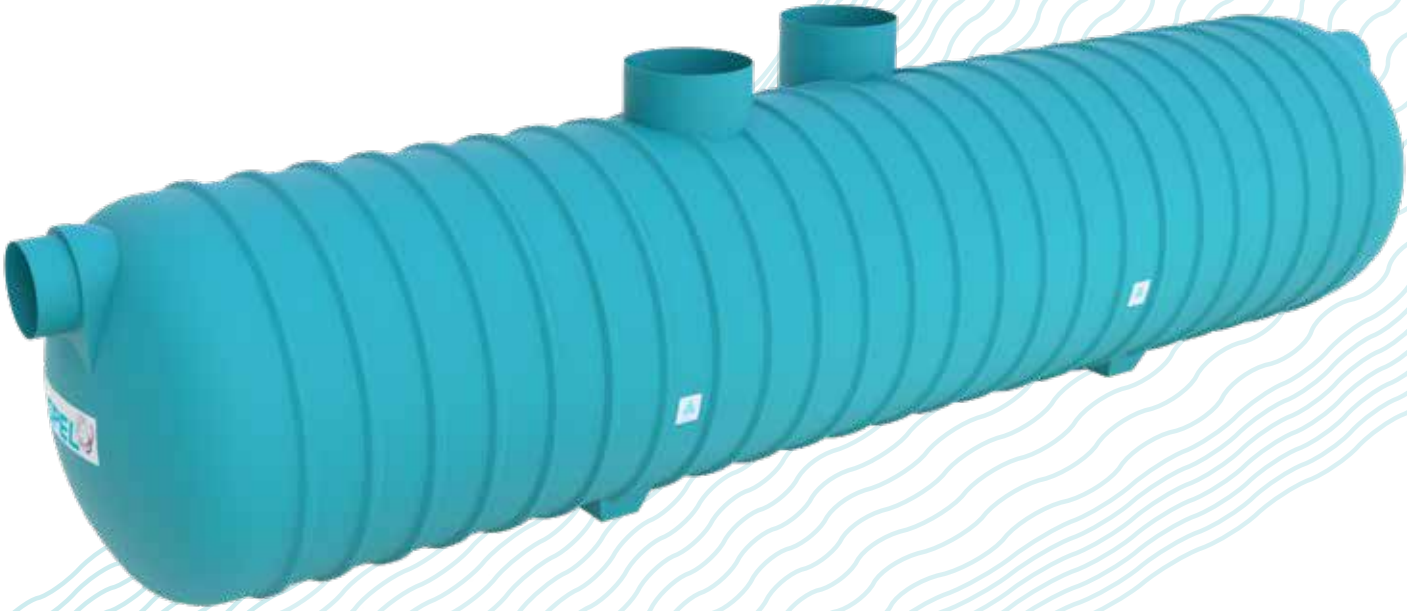
Appendix A:

Surface Water Treatment Manufactures Guidelines

SPEL

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

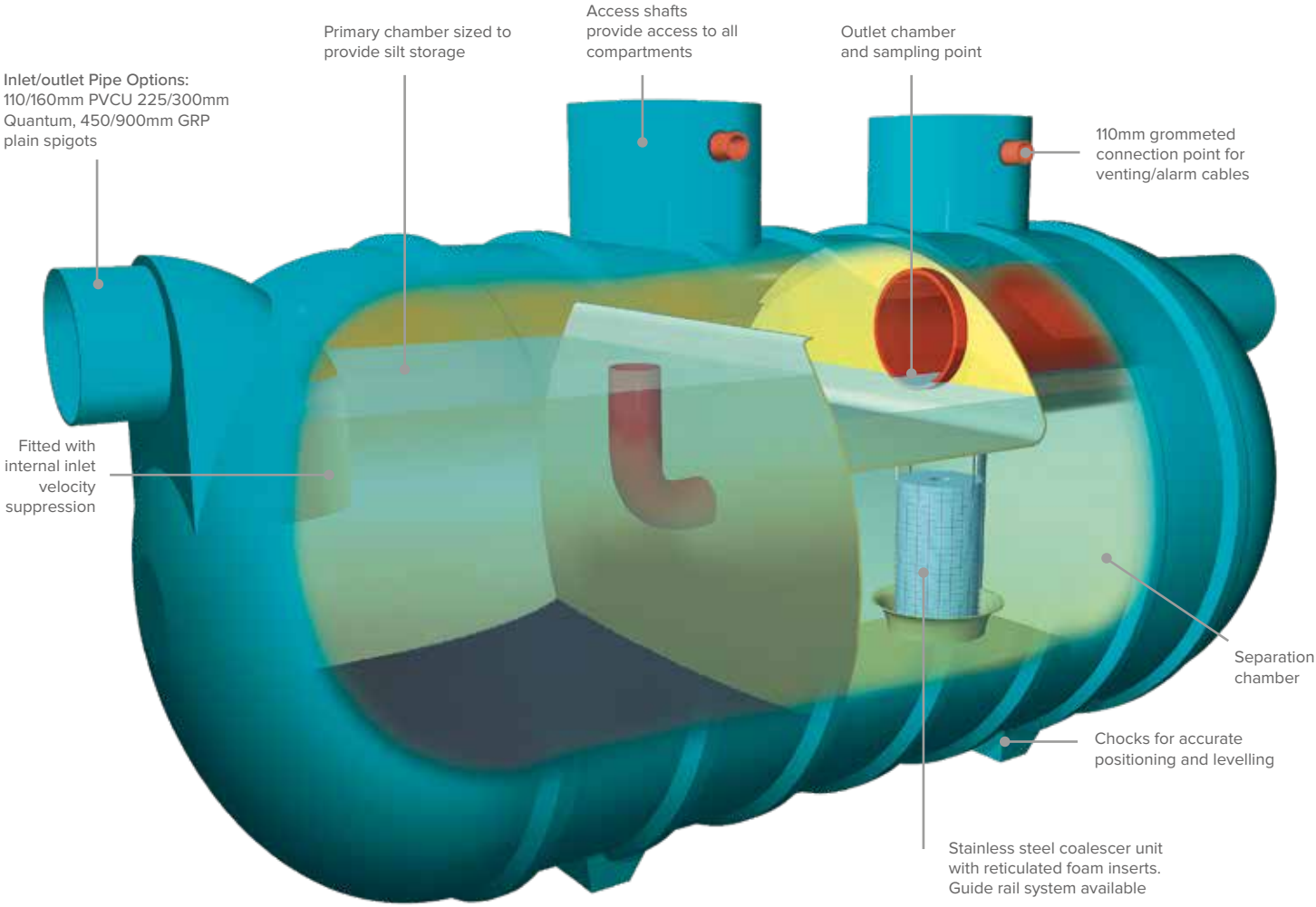
The new SPEL ESR System is fully certified to meet the CIRIA SuDS Mitigation Index. It has been tested by WRc (for TSS and Metals) to the British Water Code of Practice for Manufactured Treatment Devices. This unit is also compliant to the British and European Standard BS EN 858.

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*



SPEL Stormceptor ESR Range
By-Pass System



Surface Water Treatment Device Performance Declaration

Testing carried out according to British Water Code of Practice

Product Details	Description
Manufacturer	SPEL Products
Treatment Device Name/Model	Stormceptor Type 210 C1/SC
General description	Class 1 By-pass Separator with Silt Capacity
Envisaged application	Treatment of Surface Water Run-off
Pollutant(s) captured	Suspended Solids

Test	Value	Unit
Treatment device capacity	3200	litres
Sediment Storage capacity	1000	litres
Treatment Flow rate	10	l/s
Connected Area	1,333	m²
Pollution retention flow rate	10	l/s

Parameter	Value	Unit
Maximum capacity flow rate	100	l/s
Device head loss (at treatment flowrate)	0.15	m
Device head loss (at maximum capacity treatment flowrate)	-	m
TSS capture and retention efficiency (Milisil W4 test sediment)	**82**	**%**
Zinc capture efficiency (if tested)	Not tested for dissolved metals	%
Zinc retention efficiency (if tested)	Not tested for dissolved metals	%
Copper capture efficiency (if tested)	Not tested for dissolved metals	%
Copper retention efficiency (if tested)	Not tested for dissolved metals	%
Dissolved Metals reduction	0.0	%
Particulate metals reduction*	61.5*	%
Total Metals reduction*	61.5*	%
Total Metals Mitigation Index	0.615*	-

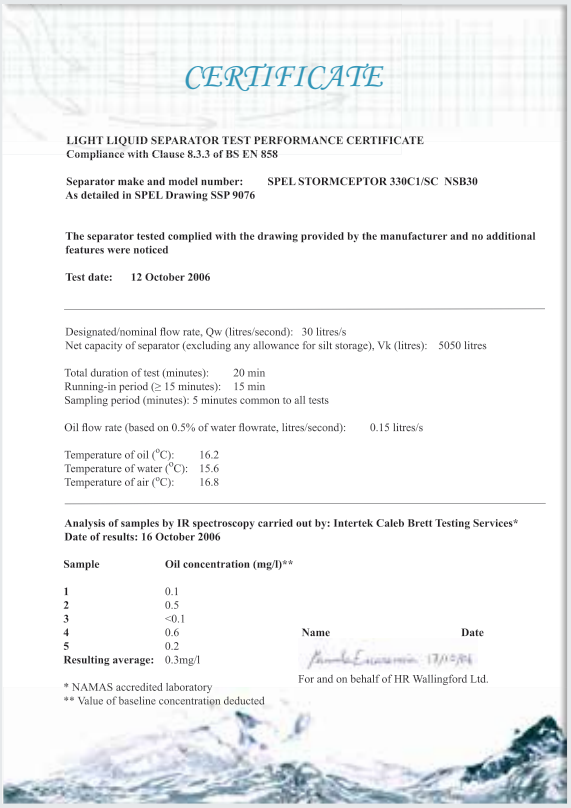
* Extrapolated value in accordance with British Water How to Guide: Applying the CIRIA The SuDS Manual (C753) Simple Index Approach to Proprietary / Manufactured Stormwater Treatment Devices. Version 7, Section 4.3, (2021- under pre-publication review).

Research and Development

Research and development is at the heart of what we do at SPEL, our passion as Zero Pollution Ambassadors is to be at the cutting edge of clean surface water technology.

Months of rigorous testing has resulted in the new SPEL Stormceptor ESR Range.

Certificates of compliance from WRc and HR Wallingford for the SPEL Stormceptor ESR Range



CERTIFICATE

LIGHT LIQUID SEPARATOR TEST PERFORMANCE CERTIFICATE
Compliance with Clause 8.3.3 of BS EN 858

Separator make and model number: SPEL STORMCEPTOR 330C1/SC NSB30
As detailed in SPEL Drawing SSP 9076

The separator tested complied with the drawing provided by the manufacturer and no additional features were noticed

Test date: 12 October 2006

Designated/nominal flow rate, Qw (litres/second): 30 litres/s
Net capacity of separator (excluding any allowance for silt storage), Vk (litres): 5050 litres

Total duration of test (minutes): 20 min
Running-in period (≥ 15 minutes): 15 min
Sampling period (minutes): 5 minutes common to all tests

Oil flow rate (based on 0.5% of water flowrate, litres/second): 0.15 litres/s

Temperature of oil (°C): 16.2
Temperature of water (°C): 15.6
Temperature of air (°C): 16.8

Analysis of samples by IR spectroscopy carried out by: Intertek Caleb Brett Testing Services*
Date of results: 16 October 2006

Sample	Oil concentration (mg/l)**
1	0.1
2	0.5
3	<0.1
4	0.6
5	0.2
Resulting average:	0.3mg/l

Name Date

For and on behalf of HR Wallingford Ltd.

* NAMAS accredited laboratory
** Value of baseline concentration deducted



SPEL's Head of Technical Development alongside the WRc testing officer.

Protecting our Environment for Over 45 Years

The SuDS Manual is leading good practise in drainage design, SPEL are endorsing this with the release of the new SPEL Stormceptor ESR range.

Total Suspended Solids (TSS)	Metals	Hydrocarbons
0.8	0.6	0.9*

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

Added to these class-leading Mitigation Indices, the ESR range benefits from:

- British/European Standard BS EN 858-1 2002 certification.
- The SPEL 25 year shell Warranty.
- 50 year+ life expectancy.
- ISO9001 quality assurance.
- ISO14001 committed to environmental improvement

26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation Indices		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Tables from The SuDS Manual (C753), p568-569
For reference notes, please see the full manual: https://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx

SPEL Stormceptor ESR Range By-Pass System

ESR Specification Chart

Model	Series	Treated Flow Rate - l/s	Maximum Flow	Catchment area (m^2)*	Oil storage (litres)	Silt capacity (litres)	Overall length* (mm) L	Overall diameter (mm)	Inlet Invert (mm) A	Base to Inlet (mm) B	Base to outlet (mm) C	Max in/ out pipe diameter** (mm)	Number of access shafts (dia. mm) 600	750	900	1200
210C1/ESR	200	10	100	1,333	150	1,000	2,920	1,225	560	1,350	1,300	300	-	1	-	-
212C1/ESR	200	12	120	1,600	180	1200	3,570	1,225	560	1,350	1,300	300	-	1	-	-
215C1/ESR	200	15	150	2,000	225	1,500	4,237	1,225	560	1,350	1,300	300	-	1	-	-
320C1/ESR	300	20	200	2,665	300	2,000	3,200	1,875	700	1,450	1,350	450	2	-	-	-
325C1/ESR	300	25	250	3,333	375	2,500	3,540	1,875	700	1,450	1,350	450	2	-	-	-
330C1/ESR	300	30	300	4,000	450	3,000	4,420	1,875	700	1,450	1,350	450	-	1	1	-
340C1/ESR	300	40	400	5,333	600	4,000	5,760	1,875	740	1,410	1,310	450	1	1	-	-
345C1/ESR	300	45	450	6,000	675	4,500	6,570	1,875	740	1,410	1,310	450	1	1	-	-
350/C1/ESR	300	50	500	6,665	750	5,000	7,060	1,875	740	1,410	1,310	450	1	1	-	-
460C1/ESR	400	60	600	8,000	900	6,000	4,400	2,700	950	2,100	2,000	600	1	-	1	-
470C1/ESR	400	70	700	9,333	1,050	7,000	5,250	2,700	950	2,100	2,000	600	1	-	1	-
480C1/ESR	400	80	800	10,665	1,200	8,000	6,170	2,700	950	2,100	2,000	600	1	-	1	-
4100C1/ESR	400	100	1000	13,333	1,500	10,000	7,400	2,700	1,100	1,950	1,850	750	1	-	1	-
4125C1/ESR	400	125	1250	16,665	1,875	12,500	9,050	2,700	1,100	1,950	1,850	750	1	-	1	-
4150C1/ESR	400	150	1500	20,000	2,250	15,000	9,950	2,700	1,100	1,950	1,850	750	-	-	2	-
4160C1/ESR	400	160	1600	21,333	2,400	16,000	11,830	2,700	1,250	1,800	1,700	750	1	1	1	-
5180C1/ESR	500	180	1800	24,000	2,700	18,000	7,470	3,650	1,185	2,690	2,550	900				
5200C1/ESR	500	200	2000	26,665	3,000	20,000	8,530	3,650	1,185	2,690	2,355	1,200				
5250C1/ESR	500	250	2500	33,333	3,750	25,000	10,040	3,650	1,185	2,690	2,355	1,200				
6300C1/ESR	600	300	3000	40,000	4,500	30,000	10,310	4,150	1,325	2,850	2,675	1,200				
6350C1/ESR	600	350	3500	46,665	5,250	35,000	11,470	4,150	1,325	2,850	2,675	1,200				
6400C1/ESR	600	400	4000	53,333	6,000	40,000	12,690	4,150	1,325	2,850	2,675	1,200				
6500C1/ESR	600	500	5000	66,665	7,500	50,000	15,870	4,150	1,325	2,850	2,675	1,200				
6600C1/ESR	600	600	6000	80,000	9,000	60,000	18,260	4,150	1,325	2,850	2,675	1,200				
6700C1/ESR	600	700	7000	93,333	10,500	70,000	22,250	4,150	2,850	2,850	2,675	1,200				

Access shafts dependent on orientation of pipework (see page 7 for orientation options).

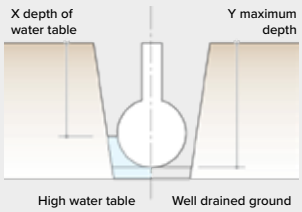
**These catchment areas are based on the SuDS Manual requirement for By-Pass devices to treat the 1 in 1 year storm event (27mm).*
***This dimension is for A-C inlet/outlet options, larger pipe sizes are available for D-I inlet/outlet options.*

Tank Shell Specifications

The 'standard' specification is normally adequate for most installations but Heavy, Extra Heavy and Special specifications are available depending upon the burial depth and water table level, in winter. The concern is when the system is emptied completely and remains empty for a period of time.

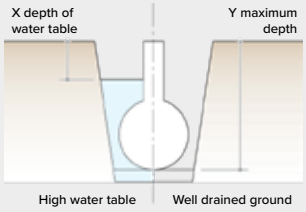
Standard tanks

Series	WT (m)	D (m)
200	1.0	4.0
300	0.9	4.0
400	1.3	5.0
500	1.9	5.7
600	2.4	6.2



Heavy tanks

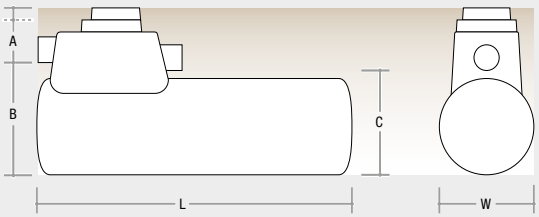
Series	WT (m)	D (m)
200	2.0	6.0
300	2.8	5.6
400	3.5	6.0
500	4.5	7.25
600	4.7	7.3



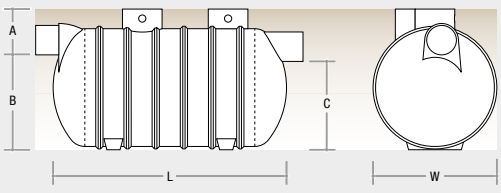
Based on installation in concrete with concrete surround.
For pea gravel surround, see SPEL Data Manual p13.5

200 Series ESR – Inside diameter 1200mm, outside diameter 1225mm.
300 series ESR – Inside diameter 1800mm, outside diameter 1875mm.
400 series ESR – Inside diameter 2600mm, outside diameter 2700mm.
500 series ESR – Inside diameter 3500mm, outside diameter 3650mm.
600 series ESR – Inside diameter 4000mm, outside diameter 4150mm.

200 series



300/400/500 & 600 series



Commissioning, Installation & Maintenance

Installation

SPEL Separators can be installed with a concrete or pea gravel surround, dependent upon ground conditions and water table level. Detailed installation instructions are provided with each unit, see Installation TSII or SPEL Data Manual Section 13.

Site access and conditions

It is the responsibility of the contractor to ensure suitable access to good hard ground that is safe and suitable for off-loading.

Off-loading/handling

The contractor is responsible for off-loading. The tank must be handled with care to prevent accidental damage from impact or contact with sharp objects.

Tanks should be lifted using slings, not chains or wire ropes. Do not drag tanks along the ground for any distance and avoid jarring or bumps. Do not lift with water in the tank.

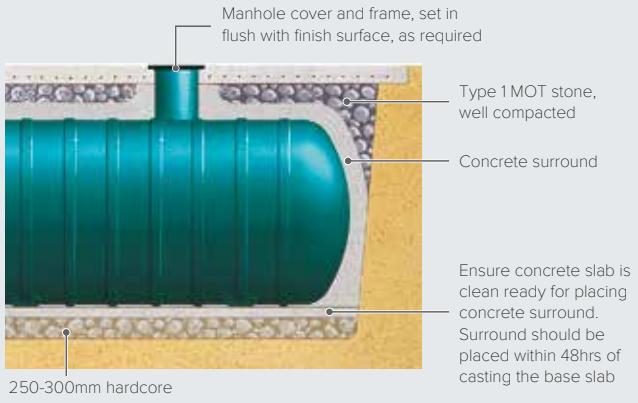
Health and safety

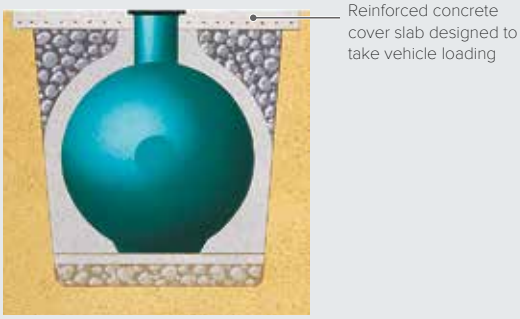
Installation should be carried out by a competent contractor in accordance with Health & Safety at Work legislation and good building practice.

A warning notice should be visible at the top of each access shaft – 'danger, harmful fumes' and 'respirators must be worn in this tank'. Before entering persons must be qualified in accordance with 'confined space' requirements.

Installation – Concrete

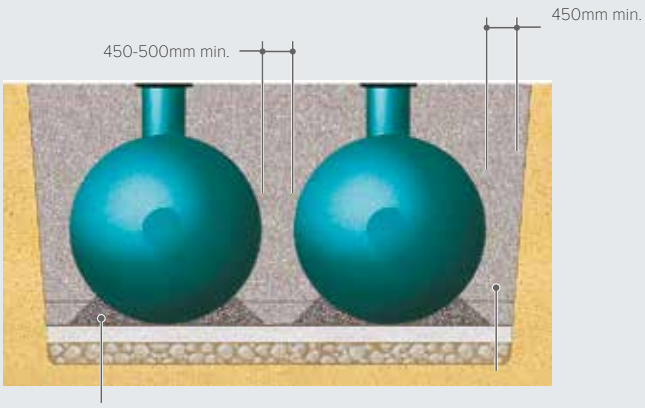
Installation of SPEL Separator tank with chocks and a load bearing cover slab.





Installation – Pea gravel

Installation of SPEL Separator tank where ground over installation is not required to be vehicle load bearing.



Tanks surrounded with pea gravel or similar

Where it is economical to do so, SPEL Separator tanks can be surrounded in pea gravel or with similar free flowing clean rounded aggregate. Details of the installation procedure, approved backfill materials and the need for mechanical anchoring in specific circumstances are contained in the SPEL Data Manual and SPEL Separator Installation Instructions.

Maintenance Requirements

We recommend the SPEL Separator is checked at 3, 6 or 12 monthly intervals to determine the depth of silt in the primary chamber.

The SPEL automatic alarm/monitoring system will automatically warn you when the SPEL Separator requires emptying of light liquids. See ref. 3.10 – 3.19. However, silt will accumulate and require removing at intervals depending on the site conditions.

SPELGuard contracts available.
For more information contact us:
info@spelproducts.co.uk | 01743 445 200



SPELGuard Commissioning & Maintenace

Optional extras

SPEL coalescer unit guide rail systems

To facilitate easy insertion of coalescer units, the SPEL guide rail system manufactured in stainless steel can be incorporated into SPEL Puraceptors and class 1 Stormceptors.

Brackets fixed to the top and bottom of the coalescer unit simply engage the stainless steel guide rail fixed to the top of the stub access shaft. The coalescer unit is then lowered in the normal way, being guided at the correct angle into the conical base.

Lifting chains are available for the larger coalescer units and where extension shafts are fitted.

Extension guide rails can be incorporated into SPEL extension shafts to suit.

SPEL coalescer unit lifting, locating and locking system

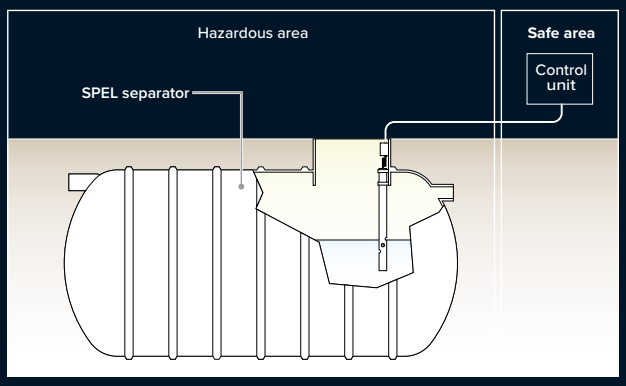
The SPEL lifting, locating and locking system is manufactured in stainless steel and replaces the standard coalescer unit handle.

The locating/locking handle ensures the coalescer unit is seated and locked in its correct position after maintenance.



Above left:
Lifting, locating and locking system with guide rail system.

Above right:
The SPEL coalescer unit with lifting chain.



SPEL offer a range of alarms, f*or full details refer to the SPEL Data Manual Section 3*. Kiosks with beacons and provision for BMS and remote information via browser user interface.

SPEL Model Alarm-DY14400
Oil alarm only – not BMS compatible

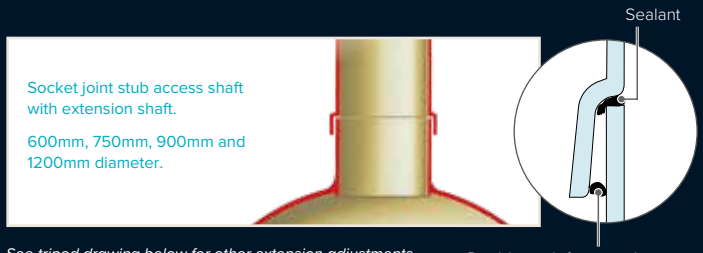
SPEL Model IdOil-20
Oil, silt and/or high level alarm with volt free terminal for beacon and BMS capability

SPEL Model IdOil-30
For oil, silt and/or high level as required. This alarm provides a range of options for BMS and remote information to on or off-site monitoring facilities.

SPEL Model IdOil Solar Oil Separator Alarm
for remote off-grid areas.

SPEL extension access shafts

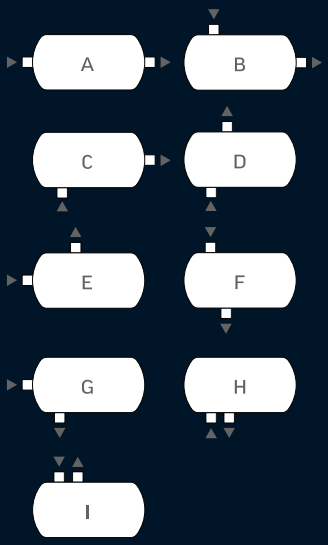
Extension access shafts are available for deep invert applications.



See tripod drawing below for other extension adjustments

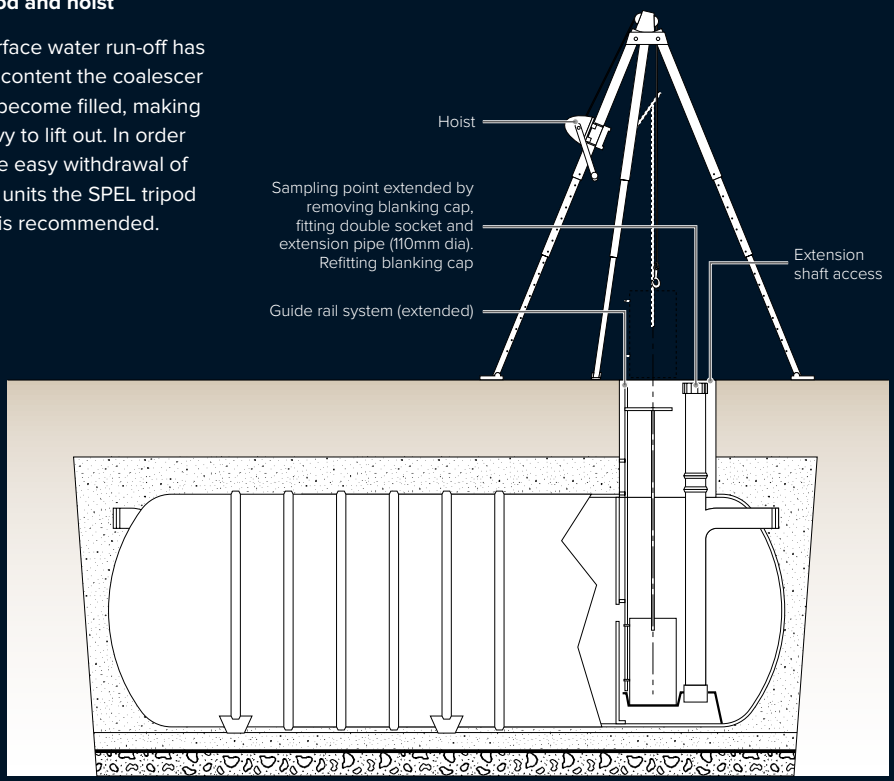
SPEL ESR Range – Inlet/outlet orientation

Dependent upon model and diameter of connections, these nine different orientations are available. However on the larger models it is important to check with our technical department.



SPEL tripod and hoist

Where surface water run-off has a high silt content the coalescer units can become filled, making them heavy to lift out. In order to facilitate easy withdrawal of coalescer units the SPEL tripod and hoist is recommended.



Stormceptor ESR

Enhanced Silt Retention

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.

Lancaster Road, Shrewsbury, Shropshire SY1 3NQ

Phone: +44 (0)1743 445200

Email: info@spelproducts.co.uk / sales@spelproducts.co.uk

spelproducts.co.uk

08/22

Appendix B:

Cellular Attenuation Tank Manufactures Guidelines

SDS
Water Infrastructure Systems

INNOVATORS IN
WATER TECHNOLOGY

SDS GEOlight®

Stormwater Management System



SDS GEOlight® is an ultra lightweight honeycombed modular structure, made from recycled PVC, that provides an underground storage facility for the application of stormwater attenuation or infiltration.

SDS
Water Infrastructure Systems

Stormwater Management

The Environment Agency is keen to promote the wider use of sustainable drainage systems, which reduce the impact of surface water runoff. There are two main ways of storing surface water for stormwater management:

- Stormwater attenuation tanks
- Soakaway infiltration systems

Stormwater Attenuation Systems

This consists of underground water storage facilities that hold excess water during periods of peak rainfall.

The stored water is gradually released in a controlled manner into the surface water drainage system or directly into watercourses, reducing the risk of upstream and downstream flooding.

Soakaway Infiltration Systems

Soakaways are designed to store surface water runoff until it can be gradually absorbed by the surrounding ground.

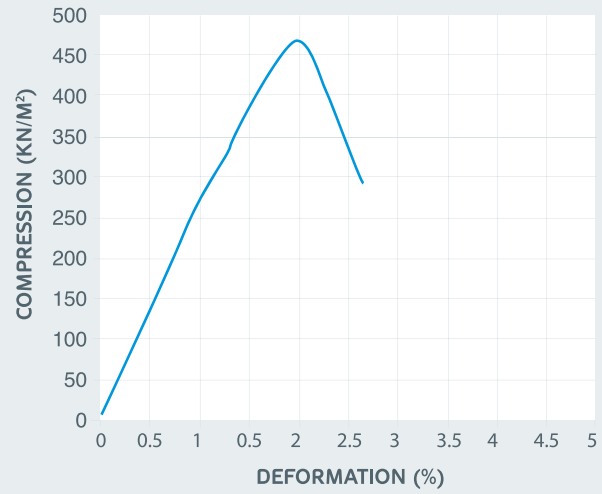
SDS GEOlight® – an efficient and economic solution for stormwater management.

SDS GEOlight® Attenuation

SDS GEOlight® has been specifically designed to form underground water storage reservoirs in stormwater management schemes. Its honeycombed structure gives it certain unique characteristics that make it ideal for this purpose:

- The high void rate (95%) of GEOlight® means that the maximum volume of water is stored in the minimum volume of storage unit.
- High compressive strength. GEOlight® is available in two strengths as standard: 200 and 400kN/m². Note: Higher compressive strengths available from 600 to 1000 kN/m². The graph on the right shows the results of a compression test, where samples of GEOlight® 400 were compressed at the rate of 1mm per minute. The deformation at 400kN/m² is about 1.6%.

RESULTS OF COMPRESSION TEST ON SDS GEOLIGHT® 400



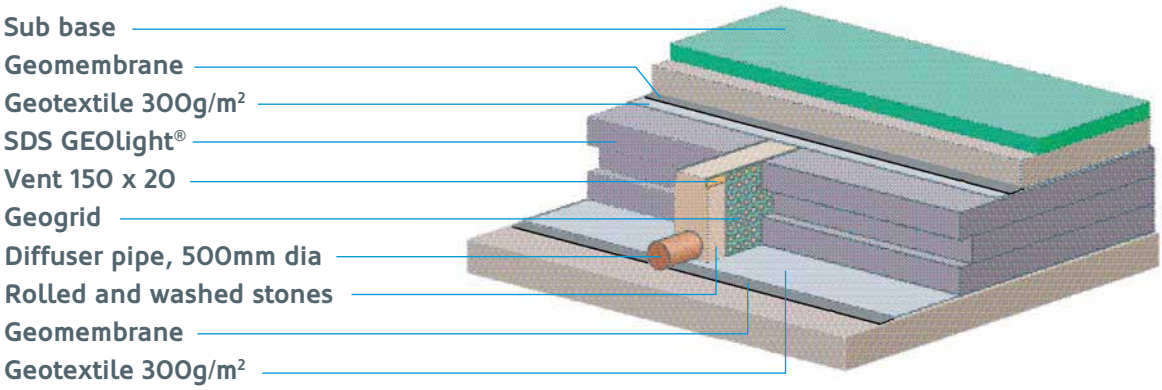
The GEOlight® Stormwater Attenuation System consists of two manholes (inspection chambers) connected by a length of perforated distribution pipe which feeds the stormwater storage reservoirs on either side formed from GEOlight®.

The distribution pipe is normally from 225mm up to 500mm diameter, generally covered in a trench that is filled with draining material such as 15/25 clean graded stone, free from fines.

The reservoirs and distribution pipe are wrapped in a waterproof membrane, such as butyl, to prevent seepage of water into the surrounding ground. The top of each GEOlight® reservoir has a vent which is connected back to the upstream manhole.

A geotextile or 10mm mesh geogrid is laid between the distribution pipe and GEOlight® to prevent the GEOlight® units being clogged by the draining materials.

SDS GEOlight® Attenuation



How does it work?

→ 1. In normal conditions, water enters a back drop manhole. This is the upstream manhole and any silt or sediment will collect in the bottom of the chamber. The water then flows along the distribution pipe into the downstream manhole. The upstream pipework is sized to cope with normal flow conditions. The distribution pipe and attenuation tank are sized to cope with storm conditions. The outflow pipe is sized to cope with the permissible discharge.

→ 2. In storm conditions the flow restrictor (vortex flow control or orifice plate) in the downstream manhole limits the amount of water flowing out of the manhole. This causes the water level in the distribution pipe to rise and water to spill into the GEOlight® reservoirs on either side. As the water level rises in the reservoirs, air is forced out of the high level vents into the upstream manhole.

→ 3. Once the storm has passed, the water level in the GEOlight®reservoirs gradually falls as water passes through the flow restrictor in the downstream manhole. The vents now allow air to return into the GEOlight® reservoirs. Gradually the reservoirs empty. The flow restrictor prevents excess surges of flood water to pass downstream and uses the storage reservoirs to store the water for the period of the storm.

Calculating the storage capacity

The storage capacity of the GEOlight® reservoirs is determined by the maximum outflow permitted, (set by the water company or Environment Agency), the impermeable area of the site and the rainfall return period – normally 1 in 30 years, but again can be dictated by the water company. A full design service, including calculations, can be supplied via a third party consultant.
Please contact SDS for details.

Other uses

The water storage ability of SDS GEOlight® lends itself to a number of other uses:

→ Water recycling combines with irrigation systems – this is increasingly popular: GEOlight® is used to retain stormwater which is then pumped as required to a network of standpipes for irrigation.

→ Drainage channels – the natural permeability of GEOlight® lends itself for use as an underground drainage channel that collects and drains away groundwater.

→ Pollution control – improved water runoff quality. When used in combination with oil / petrol separators, GEOlight® can replenish groundwater without the risk of contamination from oil, chemicals or suspended solids.

→ To form lightweight embankments (slope stabilisation) - GEOlight® can be used to quickly form the base of embankments that only weigh a fraction of earth embankments.

Stormwater Attenuation System

Design Details

The details on these two pages illustrate the construction of a typical SDS GEOlight® Stormwater Attenuation System. The length and height of the GEOlight® reservoirs is determined by the quantity of water to be stored.

The layout of each scheme is specifically designed to suit the characteristics and limitation of the site. Typically the distributor pipe would be arranged in the centre of the reservoir, but can alternatively be placed at the side where topographical constraints dictate.

The high performance waterproof membrane should be sealed continuously to encapsulate the GEOlight® reservoirs, distributor pipe and granular fill. It is protected by a heavyweight needle punched, non woven geotextile. To help with maintenance a high flow geotextile is placed between the granular fill and GEOlight® attenuation units to prevent silt and particles being washed into the reservoir. GEOlight® can be used under a range of surfaces e.g. grass, porous paving, standard paving block, tarmac and concrete.

Cross Section

