Stormwater Management

GEOCEPTOR®

Bypass Separator

Product Brochure - August 24

INTRODUCTION

The protection of our watercourses from surface water contamination like hydrocarbons and silts forms a key part of Turtle's integrated approach to storm water management and Sustainable Drainage Systems (SuDS). Contamination from hydrocarbons (petrol, diesel and engine oil) carried by surface water runoff is a serious threat to our watercourses and the environment.

Designing your drainage systems to SuDS, requires "source control" of surface water runoff and hydrocarbon separators form a key part of this approach, by treating surface water runoff before discharge into a watercourse or sewer system.

Where are Hydrocarbon/Oil Separators required?

Any site where there is a risk of surface water being contaminated by hydrocarbons including oils need to have measures in place to prevent pollution of the environment. Hydrocarbon/Oil separators are installed on sites where there is a risk of accidental spillages or leaks of oil from vehicles or plant and machinery.

Under current legislation it is mandatory throughout the UK to prevent pollution and each site will need to consider the most appropriate measures required.

There are typically 2 types of Hydrocarbon/Oil Separator

- Full Retention
- **Bypass**

Applications where Bypass Separators are installed:

- Car parks with 50 or more car parking spaces or larger than 800m²
- Smaller car parks discharging to environmentally sensitive areas
- Highways and roads
- Light industrial yards

EN 858 Tested

Class 1 filtration

Integrated silt storage

30+ YEAR Design Life

PPG3 & GPP3 Conformity

Made in the UK

Bypass separators are installed and used when it is considered an acceptable risk to not provide full treatment for very high flows, such as where the risk of a large spillage and heavy rainfall occurring at the same time is small.

The Geoceptor's unique bypass design is tested and proven to remove hydrocarbons, oils, silts and solids from low flow surface runoffs, preventing contamination of the surrounding environment.

There are three models in the range, designed to treat the run off from drainage areas of up to 11,110 m².

Each model features a robust HDPE body with a patented vertical separation system, designed for rainfall intensities of up to 6.5mm per hour.

PARTS LISTING

Optional: Invert risers
Effective height 235mm

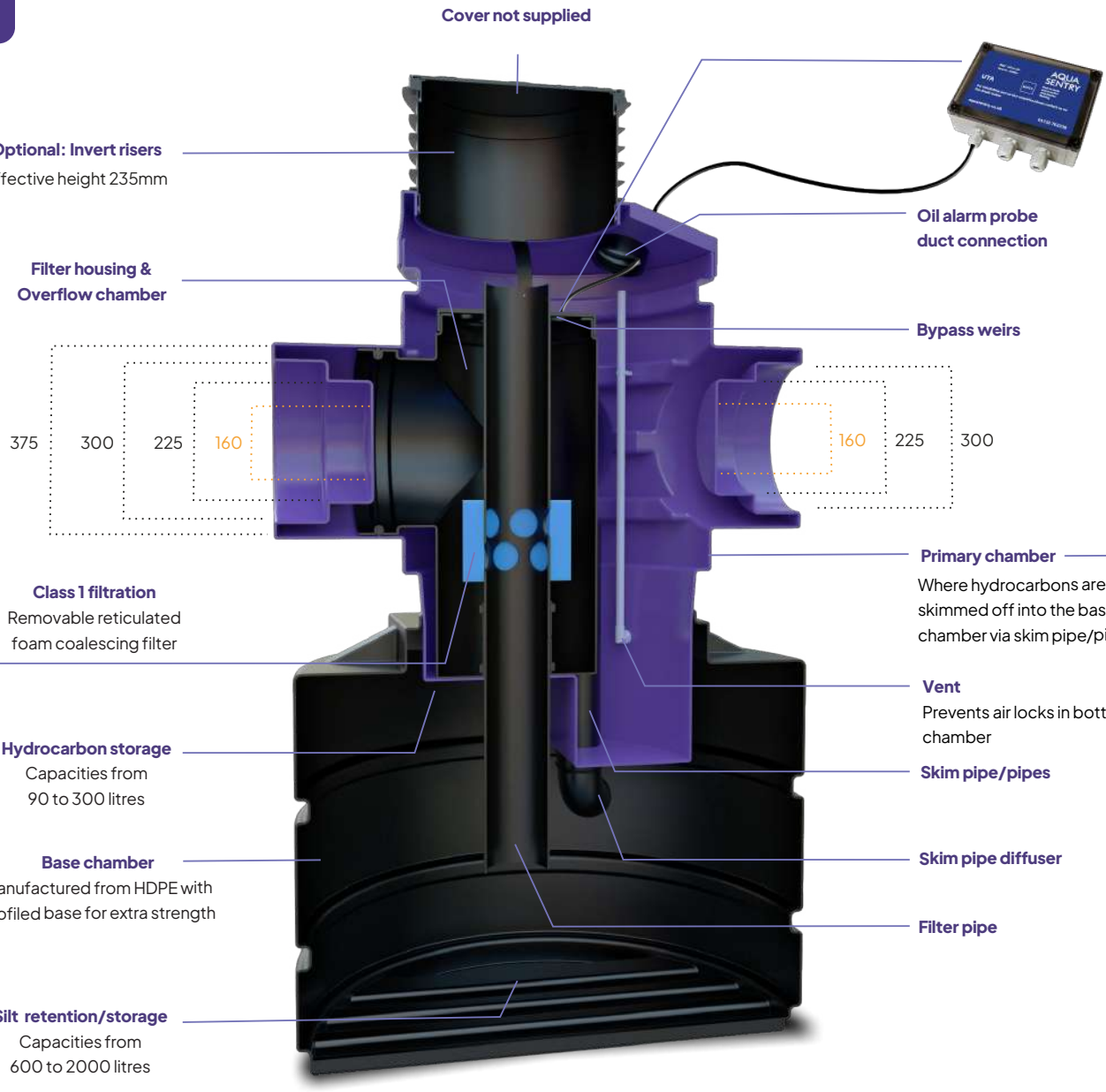
Filter housing & Overflow chamber

Class 1 filtration
Removable reticulated foam coalescing filter

Hydrocarbon storage
Capacities from 90 to 300 litres

Base chamber
Manufactured from HDPE with profiled base for extra strength

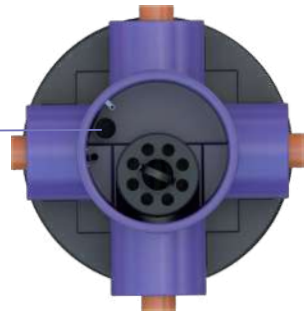
Silt retention/storage
Capacities from 600 to 2000 litres



Optional : High level hydrocarbon alarm

To meet PPG3 section 5b and GPP3 section 4.5.2 , separators must be provided with an alarm/warning system that provides both a visual and audible warning (if necessary to a remotely located supervisory point).

When the level of oil reaches 90% of the oil storage volume under static liquid level conditions, this automatic warning device indicates that the separator is in need of immediate emptying for it to continue to work effectively.



EN 858 Tested

Class 1 filtration

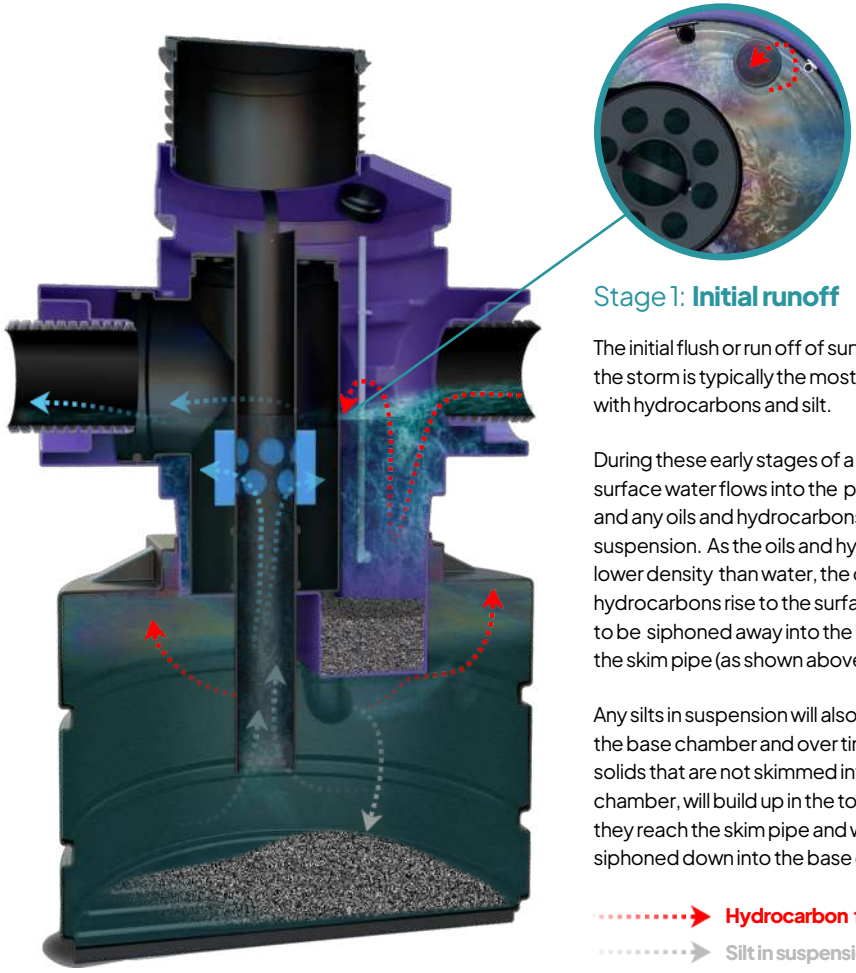
Integrated silt storage

30+ YEAR Design Life

PPG3 & GPP3 Conformity

Made in the UK

HOW THEY WORK



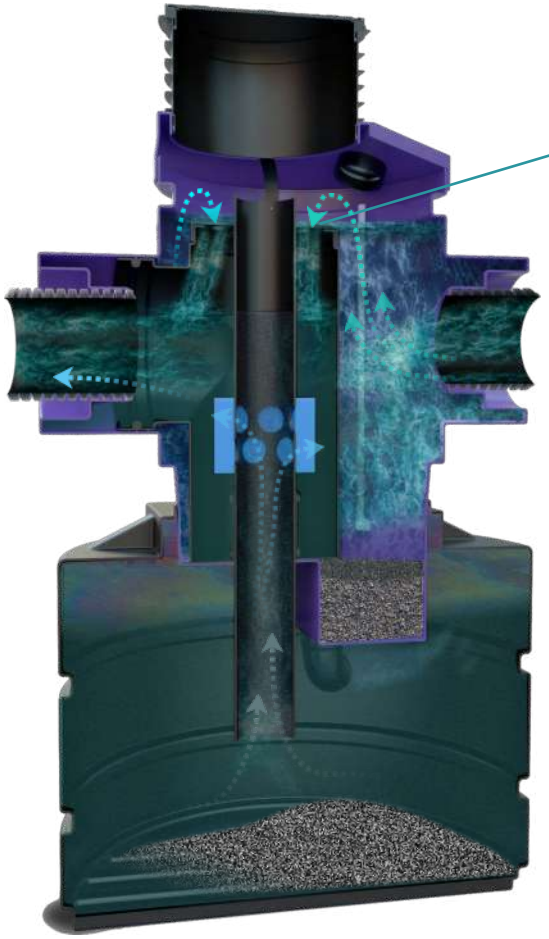
Stage 1: **Initial runoff**

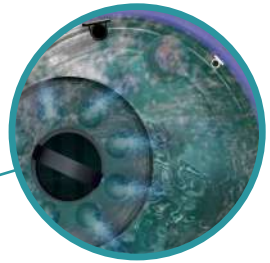
The initial flush or run off of surface water from the storm is typically the most contaminated with hydrocarbons and silt.

During these early stages of a runoff event, the surface water flows into the primary chamber and any oils and hydrocarbons will be in suspension. As the oils and hydrocarbons have a lower density than water, the oils and hydrocarbons rise to the surface, allowing them to be siphoned away into the base chamber via the skim pipe (as shown above).

Any silts in suspension will also be skimmed into the base chamber and over time, settled silt and solids that are not skimmed into the base chamber, will build up in the top chamber until they reach the skim pipe and will then also be siphoned down into the base chamber.

- Hydrocarbon flow path
- Silt in suspension
- Separated water
- Filtered water





Stage 2: **Bypass overflow**

As the runoff from the storm event increases to its maximum, the levels of incoming hydrocarbon and silt sharply decrease and the flow into the primary chamber starts to overwhelm the skim pipes maximum flow velocity and so the water level in the primary chamber starts to rise rapidly.

As the flow increases the level in the primary separation chamber will quickly reach the top level of the chamber and at this stage the flow will then bypass the main flow path via the overflow ports at the top of the unit (as shown above).

- Bypass flow
- Separated water
- Filtered water

EN 858 Tested

Class 1 filtration

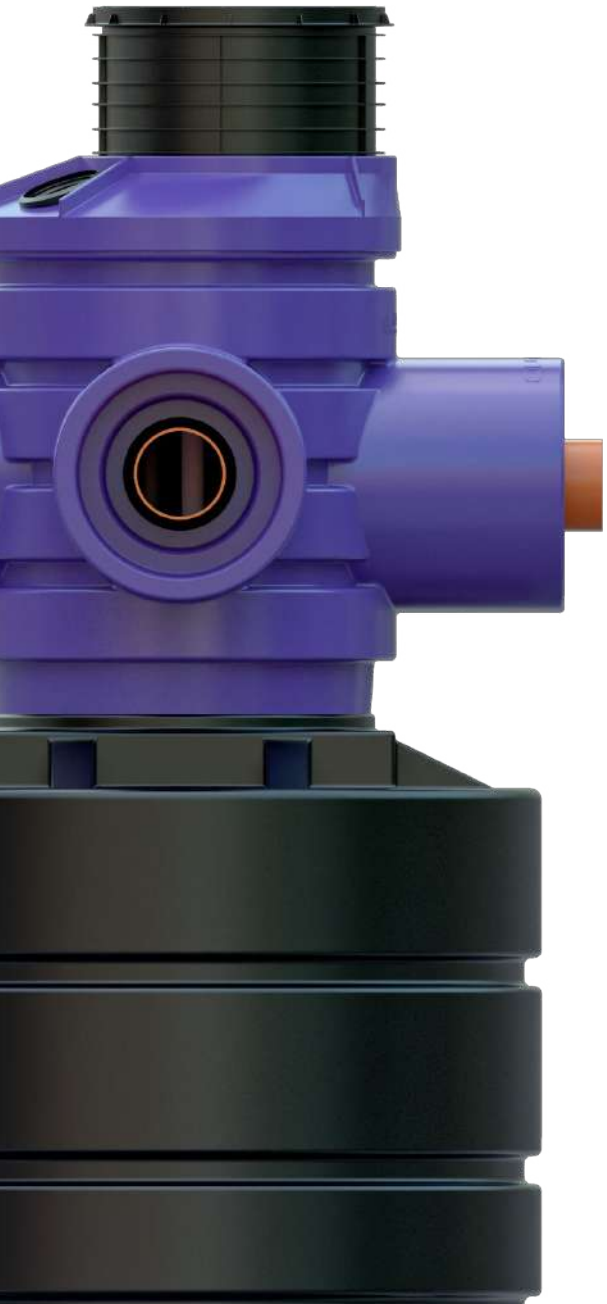
Integrated silt storage

30 YEAR Design Life

PPG3 & GPP3 Conformity

Made in the UK

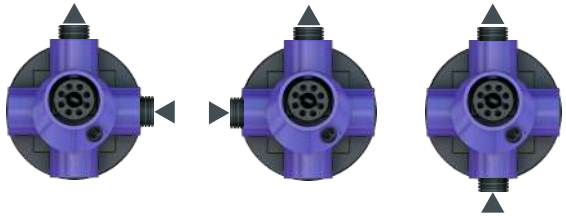
PIPEWORK OPTIONS



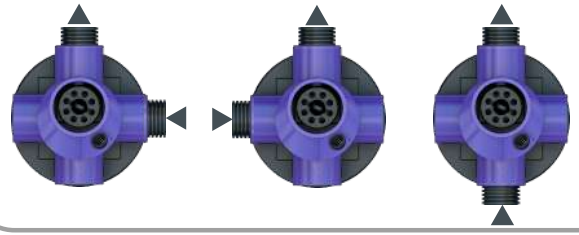
Ø160mm pipework

All 3 inlet connections can be utilised

Ø225mm twinwall



Ø300mm twinwall pipework



Ø375mm twinwall pipework

Outlet only

For optimum performance of the bypass separator the pipe diameter and configurations shown in diagrams above must be adhered too. Installing multiple inlet pipes above Ø150mm will effect the flow dynamics and the efficiency of the separator and the maximum number of inlet pipes must not be exceeded.

EN 858 Tested

Class 1 filtration

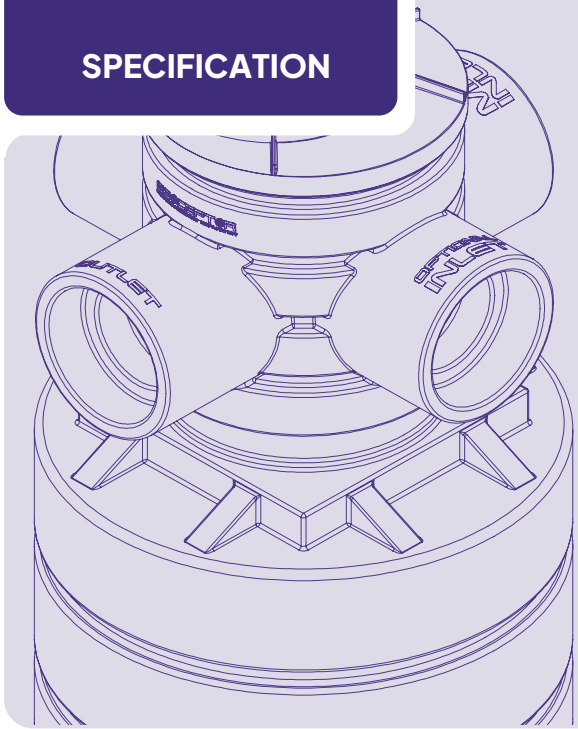
Integrated silt storage

30+ YEAR Design Life

PPG3 & GPP3 Conformity

Made in the UK

SPECIFICATION



How to choose the correct size separator

Geoceptor bypass separators should be sized in accordance with the guidance in PPG3. The size of separator is calculated by applying a standard formula to the surface area that you are treating.

The **Nominal Size (NS)** is the flow rate in litres per second which is treated by the unit to the specified standard. In the case of the Geoceptor the standard treatment is Class 1.

Bypass separators are referred to as NSB (Nominal Size Bypass).

The nominal size of a bypass separator for a catchment of area A (m^2) is obtained using the following formula:

NSB = 0.0018 x A

Example :

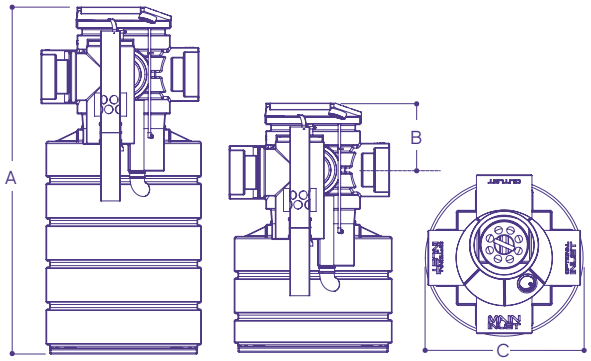
Assume you have a car park of 3000m^2. This area is A in the calculation.

Applying the given formula to the car park of 3000m^2

NSB = 0.0018 x 3000

Gives a result of 5.4

Therefore the bypass separator required for this application would require our **GNSB6.**



Model Ref.	Nominal Size	Treated flow (l/s)	Peak Flow (l/s)	Area Drained (m^2)	Hydrocarbon Retention (litres)	Silt Retention (litres)	A Height (mm)	B Inlet centre (mm)	C Ø Base (mm)	Pipework options (mm)	Weight (kg)
GNSB6	6	6	60	3333	90	645	**1966**	**550**	**1260**	160, 225 & 300	83
GNSB15	15	15	150	8333	225	1500	**2711**	**550**	**1260**	160, 225 & 300	102
GNSB20	20	20	200	11110	300	2000	**2805**	**550**	**1560**	160, 225 & 300	140

Please Note:

- 375mm pipework can be used on the outlet only
- Extension Risers are available separately to increase invert depth

EN 858 Tested

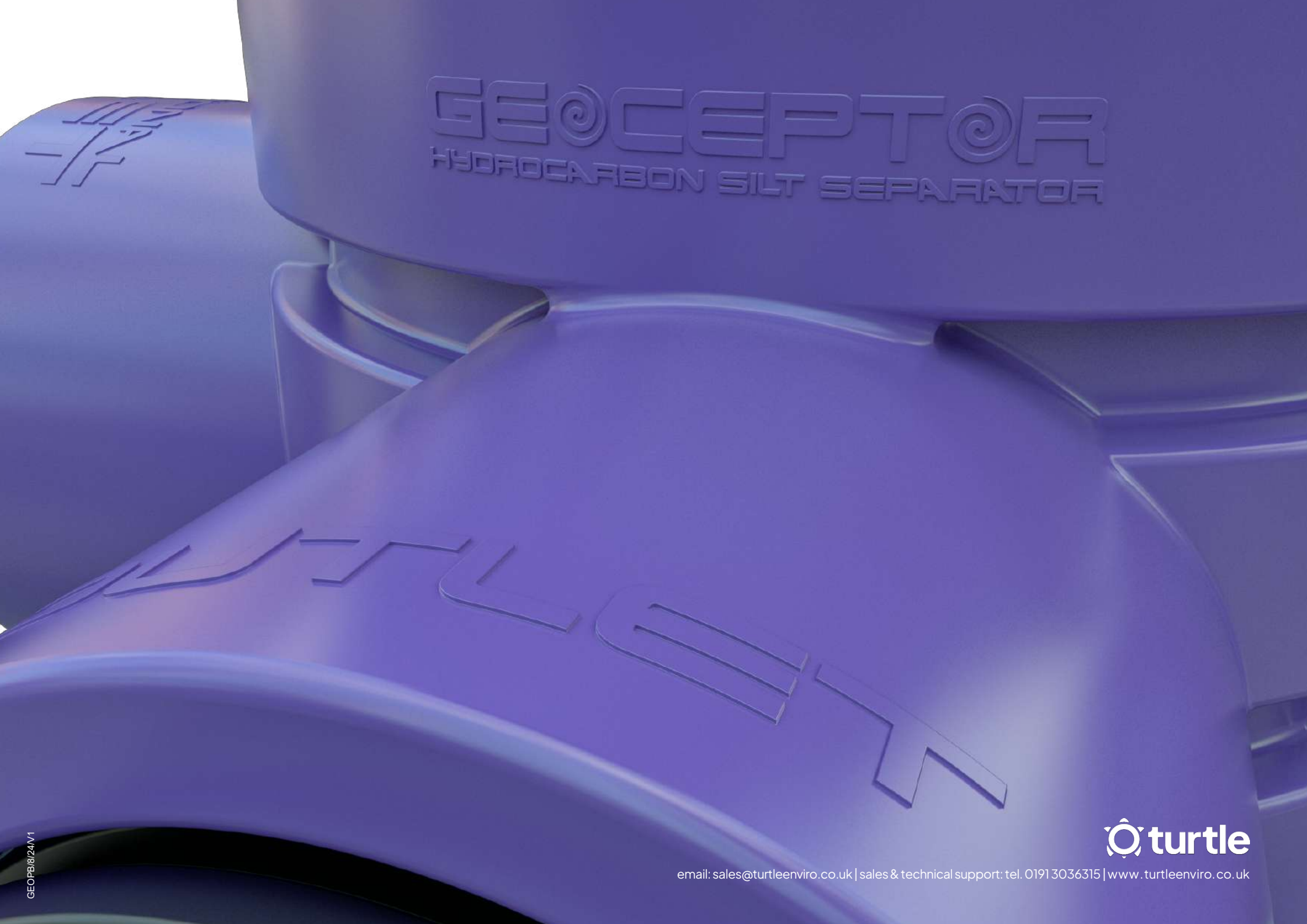
Class 1 filtration

Integrated silt storage

30+ YEAR Design Life

PPG3 & GPP3 Conformity

Made in the UK



turtle

email: sales@turtleenviro.co.uk | sales & technical support: tel. 0191 3036315 | www.turtleenviro.co.uk

GEOPB/8/24/V1