APPENDIX C
INSTALLATION EXAMPLES

APPENDIX A
INSTALLATION EXAMPLES

Retention of a wide vegetated buffer adjacent to a surface watercourse

Placement of stone to the front of plots to create clean forklift access

APPENDIX A
INSTALLATION EXAMPLES

Installation of silt fencing to control run-off from an unsurfaced area

Placement of silt matting to capture settled silt downgradient within a surface watercourse (image courtesy of Frog Environmental)

APPENDIX A
INSTALLATION EXAMPLES

Silt matting installed along the base of an unsurfaced swale to capture settled suspended solids prior to discharge into a surface watercourse

Dewatering bag used to treat water pumped from excavations. Dewatering bag is placed upon a pallet for ease of movement, onto clean gravel to dissipate the flow and prevent scouring, in a vegetated area for infiltration.

APPENDIX A
INSTALLATION EXAMPLES

Utilisation of flocculant treated silt matting (Floc Mat) to treat water pumped from excavations (image courtesy of Frog Environmental)

Silt Wattles utilised to separate clean and silty water within a watercourse (image courtesy of Frog Environmental)

APPENDIX A
INSTALLATION EXAMPLES

Silt Wattles utilised to intercept silt laden run-off on a road
(image courtesy of Frog Environmental)

Silt matting and Silt Wattles deployed within a surface watercourse. Silt Wattles create a check dam promoting settlement of suspended solids, which is captured by the silt matting.
(image courtesy of Frog Environmental)

APPENDIX A
INSTALLATION EXAMPLES

Coarse stone used to create periodic check dams (in conjunction with a geotextile) to reduce scouring within a swale until vegetation establishes.

Silt Wattles utilised to intercept silt laden run-off from an unsurfaced slope
(image courtesy of Frog Environmental)

APPENDIX A
INSTALLATION EXAMPLES

Silt fencing and straw bales installed across an inlet headwall within an attenuation basin, to promote settlement of silt within the concrete apron (where it can more easily be removed) prior to discharge into the attenuation basin. Coarse stone installed to dissipate flow and prevent scouring, and further promote settlement at the headwall.

APPENDIX A
INSTALLATION EXAMPLES

Silt fencing and straw bales installed across an outlet headwall within an attenuation basin, to promote settlement of silt within the basin prior to discharge into the surface watercourse

Silt fencing installed across an outfall headwall, to promote settlement of silt within the concrete apron prior to discharge into the surface watercourse (in the event of breach of other control measures)

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Product:	Application	Manufacturer and product
Gulley Protection	Prevent silt and construction debris entering the drainage system and blocking gully pots. Proprietary products often yield superior results to straw and terram and require less maintenance.	• Forest Group – Gully Guard • Hy-Tex – Ultra drain guards
Silt Fencing	Attenuate water on site to promote settlement of silt within overland run-off.	• Frog Environmental – Silt Fence • Hy-Tex – Terrastop Silt Fence • Siltbuster – Silt Fence
Silt Matting	Capture settled silt as it naturally falls from suspension within watercourses, swales, attenuation basins to prevent its resuspension.	• Frog Environmental – Silt Mat • Hy-Tex – SediMat
Flocculant Treated Silt Matting	Capture settled silt within watercourses, swales, attenuation basins to prevent its resuspension. The addition of flocculant treatment encourages silt to settle out of suspension more readily. The Environment Agency must be consulted prior to utilisation of flocculants, and an environmental permit gained where required.	• Frog Environmental – Floc Mat
Silt Wattle	Used as check dams within watercourses / swales providing filtration and also slowing the flow of water to promote settlement of silt. Typically used in conjunction with silt matting (or flocculant coated silt matting) to capture sediment that was caused to settle. Can also be used to separate silty and clear water (i.e. within attenuation basins, or watercourses), on slopes to reduce erosion from overland run-off or to divert silty water to collection areas (i.e. on roads to divert silty run-off away from gullies).	• Frog Environmental – Silt Wattle • Hy-Tex – Ultra Erosion Guard (suitable for use as a check dam to control erosion only, due to its different construction to the Frog Environmental Silt Wattle).
Filter socks	Fitted to hose end during dewatering of excavations to collect sediment. Capable of dealing with smaller volumes and lower flow rates.	• Hy-Tex – Pro-Tex Pipe Socks • Murlac – Silt Sock • Dirtbags UK – Utility Bag
Filter bags	Fitted to hose end during dewatering of excavations to collect sediment. Capable of dealing with larger volumes and larger flow rate, typically up to a 6" pump. Note – * denotes those bags which are sized to be used within a roll on roll off skip for ease of disposal of capture silt.	• Hy-Tex – Ultra Dewatering Bag • Siltbuster – Siltstoppa Dewatering Bag* • Murlac – Silt Bag • Dirtbags UK – Dirtbag / Titan Dirtbag*
Settlement Tanks	Settlement and capture of suspended solids during dewatering / over pumping works of a larger volume than suitable for a dewatering bag, or during extended periods of dewatering / over pumping. The unit required is dependent on the grain size of suspended particles, how quickly these settle from suspension, and the required flow rate. Liaison with the supplier is best undertaken to ensure a suitable product is selected. Can be used in conjunction with flocculants and coagulants to promote settlement, however the Environment Agency must be consulted prior to their utilisation, and an environmental permit gained where required.	• Siltbuster – wide range of settlement units available • Andrew Sykes Group – settlement tanks / Silt Away. • Dirtbags UK – Dirtbox

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

GULLEY PROTECTION

The Gully Guard

Installation guide

1. Lever open gully grid. Gully Guard is designed to fit all size gullies.

2. Hold handles at top of the Gully Guard, work beads to top and insert base into water filled gully pot.

3. Lower the Gully Guard into the pot. The beads will fall freely into the void within the pot.

4. Tuck the holding handles to the side of the Gully Guard.

5. Close gully grid.

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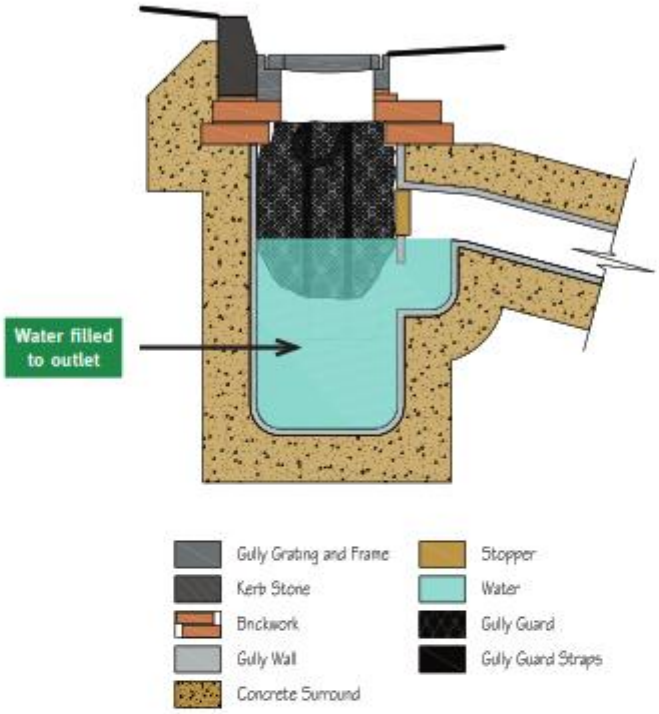
Patent no. 2472690

The Forest Group
High performance, versatile solutions

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

The Gully Guard

Installation diagram



Maintenance

The Company (Forest Drainage Products) would recommend that an inspection procedure be put in place for the product by the organisation on a 3–4 months basis depending on site conditions.

Maintenance would simply involve the removal of the Product and power hose off in a bund to contain and manage silt and any contaminants prior to reinsertion back into the gully pot.

Without prior knowledge of the type and concentration of the contaminants that each Gully Guard has been subjected to, the Company cannot advise on appropriate disposal. The Company advises that an environmental risk assessment is conducted on an individual case-by-case basis to fully evaluate the nature of contaminants. In order to determine the appropriate method of disposal the Company would recommend that you follow your organisation's environmental waste disposal policy.

Forest Drainage Products Limited (the "Company")

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APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

wildlife | specialist | biodegradables | **geotextiles** | agrotextiles | accessories

Hy-Tex **Ultra Drain Guard** for Drainage Gully Sediment Control

Ultra Drain Guards are designed to remove oil and sediment pollution from surface water running into gully drains from surrounding construction sites, farms, industrial estates, or other areas prone to storm water pollution or cleaning operations.

Ultra Drain Guards are made from a high permeability non-woven polypropylene geotextile that trap solids and oils but allow water to drain through and also incorporate bypass ports to further maintain flow into the drain.

They are designed to be easily placed directly into the drain gully pot to filter out materials as they flow into the drain without compromising drainage, and the Oil and Sediment model absorbs up to 3.29 litres of hydrocarbons as well as up to 18 kg of sediment, sand or debris.

Installation:

1. Remove catch basin grating
2. Clean dirt and debris from grating ledge
3. Insert Drain Guard.
4. Reinstall grate. To insure maximum effectiveness, Drain Guard skirt should be secured (pinched) between grating and ledge.
5. Cut the excess fabric off with a blade or knife if desired.

Maintenance and disposal:

6. The Ultra-Drain Guard filters are designed to be used for 3 to 6 months under normal conditions.
7. Where heavy contamination is present the unit will have a reduced life expectancy. When the unit has collected about 6 inches of sediment it is recommended that it be replaced. The unit should also be replaced if free oil can be seen floating and is not being absorbed. The Ultra-Drain Guards should be inspected on a regular basis.
8. Dispose of unit in accordance with applicable environmental laws and regulations. The user is solely responsible for compliance with maintenance and disposal laws and regulations. The manufacturer or seller assumes no responsibility for proper or improper maintenance or disposal.

Model	Code	Oil Capture	Sediment Capture	Collection Area	Flow Rate	Size
Oil & Sediment	9217	3.29 l (.87 gal)	18 kg (40 lbs)	25.4 x 45.7cm (10" x 18")	1893 l/min (500 gpm)	121.9 x 91.4 x 45.7cm (48" x 36" x 18")

All of this was removed from 50 Ultra Drain Guards after just two weeks in storm drains

Property	ASTM Test	Value
Material		Non-woven polypropylene geotextile
Grab Tensile Strength	D 4632	979 N (220 lb)
Elongation	D 4632	50%
Trapezoid Tear	D 4533	423 N (95 lb)
Puncture Resistance	D 4833	600 N (135 lbs)
Mullen Burst	D 3786	2,896 kpa (420 psi)
Permittivity	D 4491	1.4 sec^{-1}
Pore Size	D 4751	180 micron (80 US sieve no)
UV Stability	D 4355	70% strength retained after 500hr
Weight	D 5261	272 g/m^2 (8 oz/yd^2)
Flow Rate - Fabric	D 4491	3,660 $l/min/m^2$ (90 $gal/min/ft^2$)
Flow Rate - Bypass Ports	D 4491	2,914 l/min

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Hy-Tex (UK) Limited
Committed to Quality, Value & Service

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

SILT FENCING

frog environmental

product information sheet

Silt Fence

temporary silt control barrier

frog environmental supply Silt Fence and quarter cut 1.2 metre posts, ideal for providing support

Silt Fence is inexpensive to buy and install, but it must be correctly positioned and maintained for it to be an effective pollution control measure.

Each line of Silt Fence should be inspected on a regular basis, especially after rainfall.

If stakes are broken or gaps appear between the fence and the ground, then the fence should be re-trenched. Accumulated silt must be removed regularly from Silt Fence, typically when it reaches a third of the way up the fence.

Multiple smaller runs of silt fence are usually more effective at controlling pollution than longer lines.

Applications

- Silt Fence is deployed on construction sites to help prevent silt pollution in water bodies or from impacting public highways.
- Silt Fence provides a 'ponding' function; it allows silt laden water to collect behind it and for silt to drop out of suspension while the water slowly drains away or evaporates.
- Silt Fence is usually deployed in conjunction with other silt pollution control measures, especially on sites with clayey soils.

frog environmental Silt Fence is made from high specification geo-textile material and has medium porosity, making it suitable for use on most construction sites.

Poorly installed Silt Fence can cause erosion underneath or around the edges of fencing. This can lead to an increased silt pollution risk.

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Technical information — Silt Fence

Dimensions: 100 metres x 0.9 metres (single roll)

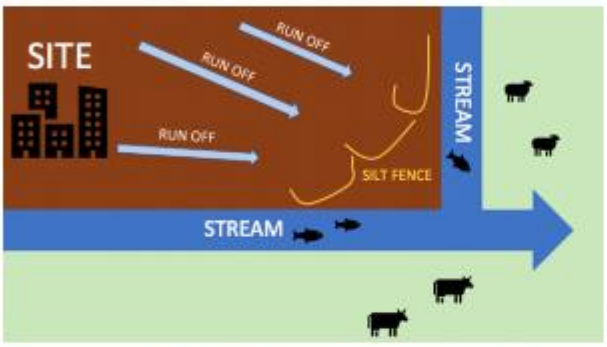
Dry Weight p/m: 110 g/m2 (9.9 kg single roll)

Permeability: 7 (l/m2 /sec)

Material used: tear resistant polypropylene geotextile, PFSC timber stakes (cable ties or staples/ nails to fix)

Function: creates a temporary fence to provide a pooling function that allows silt to drop from suspension

Disposal: all materials fully reusable or recyclable



Shorter J shaped runs of silt fence typically provide more effective pollution control than longer runs

Silt Fence can be used as a temporary measure to prevent muddy water escaping from construction sites

10 TIPS for successful Silt Fence deployments:

- Fence posts should be spaced a maximum of 1.5m apart
- Silt Fence should be trenched a minimum of 20cm into the ground and compacted
- Shorter 'J shaped' installations of Silt Fence act like mini-retention areas and are typically more effective than longer runs (as shown in the diagram above)
- Longer runs of silt fence will concentrate water in the lowest point, where the fence can become weakened and water can undercut or overflow the fence avoid these where possible
- Water flowing around the edges of silt fence can cause erosion and add to the pollution loading from site
- The lower part of the end of each run of silt fence should ideally be above the top of the middle section of the run
- Removal of accumulated silt and regular inspection are key maintenance activity for silt fence. A named individual should be responsible for this action on site
- Silt fences are not designed to handle continuous high volume flows and will not be an effective stand-alone control in these circumstances
- Factors such as soil type, slope angle and slope length are key factors in determining how much silt fence is needed on site
- If ground conditions are clayey Silt Fence alone is unlikely to be an effective pollution control

for technical support and sales of Silt Fence contact frog environmental

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APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

SILT MATTING

frog environmental

product information sheet
SiltMat
silt capture mat

SiltMat is a fully biodegradable mat that captures and prevents sediment resuspension.

The mats can be placed in natural or artificial channels, ditches or directly on land to trap suspended sediments.

SiltMat can be orientated sideways or lengthways and fits into all channel types.

SiltMats are used to manage sediment release to watercourses from construction sites and for capturing silts suspended by in channel or works on river banks.

Applications

- Silt control from construction sites
- Silt control from river or bank works
- Deployed in rivers, streams and ditches
- Deployed in Silt Capture Channels
- Used in forestry and agricultural applications

SiltMat is proven in the field to reduce downstream levels of suspended solids

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Technical information — SiltMat

Dimensions: 2 x 1 x 0.12 metres

Dry Weight: 12kg per mat

Material used: coir (80%) jute (20%)

Function: Captures and prevents resuspension of silt

Performance: Single mat captures up to 40kg of silt

Disposal: Fully biodegradable, with correct permissions used mats can be disposed ofland.

four step guide to using SiltMats

Use our reference table (below) to judge optimal placement. As a rule of thumb, SiltMat is best placed in areas where stream energy is reduced and natural deposition takes place.

SiltMat is unfolded and orientated to cover the width of the channel. The edges of silt mat can be overlaid without gaps. Mats are staked in place or weighted with local material.

SiltMat will trap large amounts of sediment. Stakes or weights are removed and the mats rolled up ready for disposal.

With correct permission SiltMat can be seeded and left on site, creating an environmental enhancement and avoiding disposal costs.

Reference table showing the distance that different particle sizes travel at differing water velocities

Particle Size	Water Speed (m/s)				
	0.2	0.4	0.6	0.8	1
Fine Gravel	20 cm	40 cm	60 cm	80 cm	1 m
Sand	70 cm	1.4 m	2.1 m	2.8 m	3.5 m
Fine Sand	8 m	17 m	25 m	33 m	40 m
Silt	228 m	456 m	683 m	911 m	1139 m

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APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

FLOCCULANT TREATED SILT MATTING

frog environmental

product information sheet
Floc Mat™
water treatment mat

Floc Mat™ is a versatile silt control device

A mat created to treat and capture fine silts and suspended particles in construction site run off.

The main function of the mat is to flocculate very fine particles, making them easier to separate from water.

Floc Mats can be laid flat out in dispersion fields, used with Silt Wattles or silt fence and deployed in the frog environmental Silt Capture Channel as part of a versatile water treatment process to remove silt from construction site run off.

Applications

- In a Silt Capture Channel
- With Silt Wattles and SiltMats
- In site ditches and low flow channels
- In combination with silt fence
- On natural dispersion fields
- In combination with dewatering bags and silt socks

- **Floc Mat™ is a fully biodegradable water treatment and silt capture mat that treats muddy water and helps prevent silt pollution**
- **They are a cost effective way of treating water in ditches and channels, without the need for pumps – saving energy and CO_2**

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Technical information — FlocMat™

Dimensions: 2x1 x 0.10m

Variants: FM1 (30g/m2), FM2 (100g/m2) FM0(untreated)

Active ingredient: Water Lynx™

Dry Weight: 12 kg per mat

Material used: coir fibres, coir netting, coir rope, anionic flocculant, water

Function: Water treatment – aids solid water separation. Can be used to segregate low flow channel to in bankside works.

Performance: Single mat captures up to 50kg of silt in live test

Disposal: Fully biodegradable, suitable for re-use on site (with correct permit).

Waste classification and disposal legislation must be followed at all times. Always liaise with the regulator before deploying a product containing flocculant. If in doubt contact frog environmental on 0345 0574040 for further information and advice.

Close up FlocMat showing accretion of silt

Deployed in Silt Capture Channels with Silt Wattles

100% sustainably sourced natural fibres are used to create Floc Mat, this ensures the mats are biodegradable and suitable for use as backfill material once used, reducing waste disposal costs. Floc Mat is available in treated and untreated forms.

The fibres of the treated version of Floc Mat are coated with Water Lynx™, a non-hazardous, non-toxic, synthetic anionic polymer which contains no coagulants, cations or metals such as Al and Fe that are ecotoxic.

When deployed in a Silt Capture Channel the Floc Mat provides a safe, low carbon and easy solution to support the removal of suspended solids and associated pollutants from construction site run off.

Deployed to treat muddy excavation water

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APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

SILT WATTLE

frog environmental

product information sheet
Silt Wattle
silt control sausage

Silt Wattles are a versatile silt control device.

They are deployed on building sites to control movement of suspended silt and in ditches, channels and streams to slow the flow and naturally capture silt.

Silt Wattles are often deployed with frog environmental SiltMats and FlocMats as part of a silt pollution prevention strategy.

Applications

- Silt Wattles can be used to reduce silt release into watercourses from construction sites and deployed directly in channel to reduce movement of suspended silts.
- The tough exterior netting means they can be left for months on site with out degradation, whilst the biodegradable treated wood fibre continues to slow the flow and trap silt particles.
- Silt Wattles mould to the shape of the river bed or ground and can be joined end on end or pyramided to help clean dirty water.
- Wattles are highly versatile and can be weighted or staked in position depending on bed/ground conditions and flows.
- Silt Wattles can be joined end of end to create temp low flow channel and protect rivers from pollution arising from bank works.

Silt Wattles are a versatile product suitable for use in a wide range of silt control applications on construction sites and in river works

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

FILTER SOCKS

wildlife | specialist | biodegradables | **geotextiles** | agrotextiles | accessories

Hy-Tex **Pro-Tex Dewatering Socks** for Pumped Sediment Control

☑ **Ideal for small dewatering jobs.**

☑ **Traps sediment and oil.**

OIL DETECTION INDICATOR

A light blue paper oil detection strip is attached to each bag

If strip turns **DARK BLUE**
OIL PRESENT
Stop pumping
Contact your Environmental Manager

Pro-Tex Dewatering Socks control pollution caused when pumping dirty water from excavations, and offers an economical alternative to traditional dewatering bags or filtration products.

These easy to use and popular sediment filters bags are ideal for projects with small budgets and minor pollution problems to control of sediment and oil sheen from pumped water.

Designed to attach directly to the discharge pipe, they quickly filter water to help prevent unwanted sediment, silt, debris or pollutants leaving the site in run-off.

The socks have been designed to control pollution caused by pumping dirty water from excavations, trenches, lift shafts, bunds and the like, by filtering out sediment from contaminated water down to 90 micron, while the fabric the socks are constructed from has an inherent ability to absorbs hydrocarbons too.

Advantages

The main advantage of using an Oil & Sediment filter is that it removes hydrocarbons and sediment from pumping activities.

It provides an alternative solution that delivers a considerable cost saving and is user friendly. Furthermore it reduces site time over existing methods such as hiring a vacuum tanker. If you wish to carry out street works with a minimal disruption to the public, this is the ideal solution.

Other benefits include:

- Simple set-up with built in tie
- Hydrocarbon detection strip to identify oil pollution
- Lightweight and compact
- Very easy to empty

Product: Pro-Tex Dewatering Sediment Bag. Premium Pipe Sock.
Application: Oil and Sediment Filter
Effective Pore Size: 90 micron
Sediment Capacity: Approx 18kg
Permeability: 72 litres/m²/sec
Tensile Strength: 19 kN/m
CBR Puncture Strength: 2,900N
Material: UV stabilised. continuous filament, non-woven, needle punched polypropylene fabric.
Bag Size: Approx 1.00 x 0.30m lay flat
Additional Features: Tying cord and hydrocarbon detection strip

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Committed to Quality, Value & Service

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

FILTER BAGS

wildlife | specialist | biodegradables | **geotextiles** | agrotextiles | accessories

Hy-Tex **Ultra Dewatering Bags** for Pumped Sediment Control

Hy-Tex Ultra Dewatering Bags provide an effective way to collect harmful sediments from dirty water pumped out of excavation works (such as foundations, pipe line construction, water, sewer and utility trenches, waterways and lakes) that would otherwise pollute the surrounding environment.

It is a legal requirement to prevent silty water from leaving site untreated, and a finable offence if you do not take appropriate pollution control measures. The Environment Agency Pollution Prevention Guidelines PPG6 (See side panel), in summary, require that the majority of suspended solids (gravel, sand, and silt) must be removed from site water before it is discharged into a drain, sewer or watercourse.

Traditionally settlement methods (such as straw bale structures or settlement ponds/tanks) are often ineffective, rely on slow water movement, long settlement times, expensive and time consuming tank maintenance and large works areas.

Ultra Dewatering Bags are an efficient, practical, quick, simple and cost effective alternative solution to manage this ongoing environmental problem of removing suspended solid pollutants from pumped water on construction sites.

Sediment-laden water is simply pumped into the high quality filter bags, which trap the solids inside and allow filtered water to flow freely out through the geotextile fabric to disperse into the surrounding ground or another collection point.

Ultra Dewatering Bags can also be used for gravity feed applications such as outfall pipes from site drainage or lagoons.

The silt filter bags provide a passive non-mechanical solution, without the use of excessive or specialist machinery (other than possible lifting equipment when full), and do not require a large work area.

The sediment bags are also light, compact and easy to store, with minimal cleaning up required - when full just dispose of the bag and replace with another bag.

The Ultra Dewatering Bags detain both oil and sediment, offering a combination of benefits not available in alternative products. They can also be used to contain contaminated sediment whilst treatments are applied (such as flocculants or absorbents).

The standard 1.80 x 1.80m Ultra Dewatering bags has the capacity to trap near 1 tonne of silt and cope with flow rates up to 2,730 l/min, while the larger 3.05 x 4.55m bags can trap over 4 tonnes of silt and cope with flow rates up to 6,818 l/min.

The Environment Agency

"Working at construction and demolition sites: PPG6 Pollution Prevention Guidelines"

"Poor management of silt and silty water is a major cause of serious pollution incidents from construction sites. Silt for these purposes is a fine inert sediment derived from soil and rocks.

Silt pollution can: damage and kill aquatic life by smothering and suffocating; reduce water quality; cause flooding by blocking culverts and channels…"

"You must not discharge any silty water to a drain or watercourse without prior treatment to settle or remove suspended solids. If you've identified that you will be generating silty water, identify suitable means to treat the water before discharge; examples include: lagoons, settlement tanks, silt traps grassy areas that slow water and allow solids to settle…"

"You must have prior permission from the local sewerage provider if you intend to discharge settled water to the foul sewer because this will be regarded as a trade effluent.

You must have prior permission from [the Environment Agency] if you need to discharge anything to a watercourse. In Scotland if you comply with certain conditions, a discharge will be covered by a General Binding Rule and you will not need to contact SEPA."

Property	ASTM Test	Value
Material		Non-woven polypropylene geotextile
Grab Tensile Strength	D 4632	912 N (205 lb)
Elongation	D 4632	50%
Trapezoid Tear	D 4533	378 N (85 lb)
Puncture Resistance	D 4833	578 N (130 lbs)
Mullen Burst	D 3786	2,758 kpa (400 psi)
Permittivity	D 4491	1.4 sec^{-1}
Pore Size	D 4751	180 micron (80 US sieve no)
UV Stability	D 4355	70% strength retained after 500hr
Weight	D 5261	272 g/m^2 (8 oz/yd^2)
Flow Rate	D 4491	3,660 $l/min/m^2$ (90 $gal/min/ft^2$)

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APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

wildlife | specialist | biodegradables | **geotextiles** | agrotextiles | accessories

Hy-Tex **Ultra Dewatering Bags** for Pumped Sediment Control

Usage Guidelines

Ideally position the Ultra Dewatering Bag on a slope, so incoming water flows downhill through the bag, and, as a precaution, install Terrastop Premium silt fence down slope of the bags to control any potential run-off pollution.

The bag is fitted with a collar which fits around delivery hoses or connectors. Strap the neck of the Ultra Dewatering Bag tightly to the discharge hose using the attached tying cord.

To increase filtration efficiency place the bag on an aggregate, or a layer of Hy-Pave tiles, to maximize water flow through the under surface of the bag.

Plan ahead for removal, if the filled bags are to be lifted for disposal then place suitable lifting straps under bag prior to pumping, alternatively you can roll the bags into a digger bucket.

Regularly check the bags. The Ultra Dewatering Bag is full when it no longer can efficiently filter sediment or pass water at a reasonable rate.

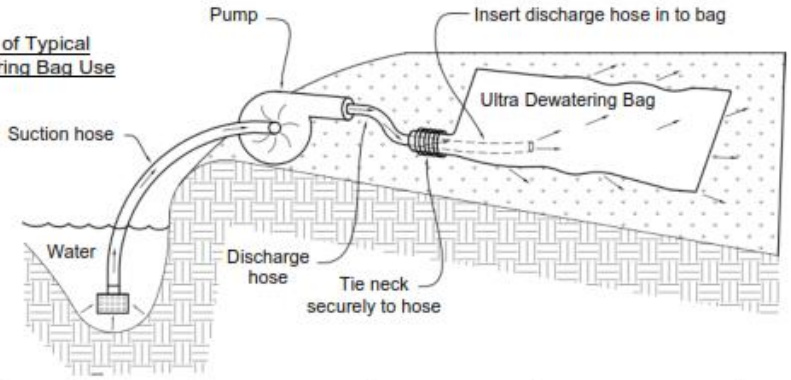
Flow rates will vary depending on the size of the Ultra Dewatering Bag, the type and amount of sediment discharged into the bag, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies.

Under most circumstances Ultra Dewatering Bags will accommodate flow rates of up to 2,730 l/min for the 1.80 x 1.80m bags and 6,816 l/min for the 3.05 x 4.55m bags.

Use of excessive flow rates, or overfilling Ultra Dewatering Bags with sediment, may cause ruptures of the bags or failure of the hose attachment straps.

Dispose of the Ultra Dewatering Bag as directed by the site engineer. Normally allow the bags to dry in place then either cut open, spread and landscape on site or remove and dispose of the filled bags (Heavy lifting machinery may be required).

Illustration of Typical Ultra Dewatering Bag Use



Size	Code	Surface Area	Max Flow Rate	Max Pump Size	Sediment Capacity	Oil Capacity
1.80 x 1.80 m (6 x 6 ft)	9724	6.68 m² (72 ft²)	2,730 l/min (500 gal/min)	10 cm (4 inch)	0.51 m³ / 980 kg (18 ft³ / 2,160 lbs)	14 l (3.7 gal)
3.05 x 4.55 m (10 x 15 ft)	9725	27.87 m² (300 ft²)	6,818 l/min (1,500 gal/min)	15 cm (6 inch)	4.20 m³ / 4,082 kg (150 ft³ / 9,000 lbs)	57 l (15.1 gal)

Notes:

Flow/Dewatering rates will vary according to soil type (Sand typically dewaters at the fastest rate, while clay dewaters at the slowest). Clay may also blind over the fabric in some instances, significantly reducing flow.

Max flow rate is a cautious figure based on a significantly de-rating of the clean fabric flow rate of approx 3,660 l/min/m² (90 gal/min/ft²) to allow for pump pressure build up due to silt accumulation.

Sediment capacity is calculated using wet sand weight of approx 1,920kg/m³ (120 lbs/ft³) and a bag fill height of approx 150mm

Oil capacity is estimated at low flow conditions with approx 2.09 l/m² (0.5 gal/yd²) absorption capacity

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Hy-Tex (UK) Limited
Committed to Quality, Value & Service

APPENDIX B
EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Siltbuster®

Siltbuster Siltstoppa Bags

Siltstoppa Bags provide a low cost solution for the dewatering of sludges and slurry.

Pre-conditioned (flocculated) slurry is pumped into the Siltstoppa Bag and allowed to dewater. The water released from the sludge bleeds through the geotextile fabric whilst the trapped solids remain in the bag.

Siltstoppa De-watering Bags are available individually, to sit on a suitable slab or drainage area or can be supplied as a complete treatment solution including as required sludge conditioning unit, and roll-on/roll-off (RORO) container.

When the bag is full and the trapped solids have dewatered, the Siltstoppa bag can either be split open on-site and the dewatered solids removed by means of an excavator (or similar equipment), or the full RORO container can be transported for off-site disposal.

Siltbuster Siltstoppa Bags Specs

Separation Method	Geotextile Membrane
Height	Expands until full
Length	5.5m
Width	2.1m
Dry Weight	Size Dependant
Materials	Sludges and Slurries
Material Colour	Black
Bag Capacity	6m³
Operating Range	Material Dependant

Siltbuster Siltstoppa Skip

Siltstoppa De-Watering Bags have been conviently sized to fit an industry standard roll on roll off (RORO) Siltstoppa skip. The RORO dewatering skip provides a secure and environmentally acceptable means of bunding a Siltbuster Siltstoppa Dewatering Bag.

When the skip is full with either single or multiple bags (stacked up on top of each other), the skip and its contents can be transported to a Waste Management Facility for disposal of the dewatered sludge/slurry contained within the Siltstoppa Bags.

The Siltstoppa Skip comes complete with an integral sump, allowing easy removal of the water which escapes from the dewatering sludge/slurry.

Siltbuster Siltstoppa Skip Specs

Separation Method	Geotextile Membrane
Height	1.2m
Length	6.1m
Width	2.6m
Dry Weight	2.0 tonne
Material	Flocculated Particles
Operating Capacity	1 Bag
Lifting Method	RORO Hooklift
Operating Range	Material Dependant

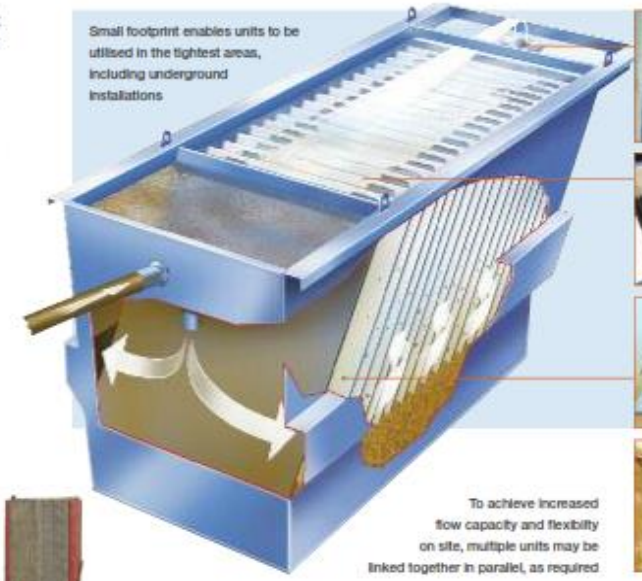
SETTLEMENT TANKS

Siltbuster®

Gravity Settlement ▸ Siltbuster Settlement Units & Water Clarifiers

Siltbuster is the UK's leading provider of mobile settlement units and Lamella Clarifiers. Each unit in the extensive range is specifically designed to remove suspended solids and settleable matter from silt and solids laden surface run-off and groundwater.

Effective gravity based solid/liquid separation requires the largest possible settlement area and optimum hydraulic flow. Siltbuster Clarifiers utilise lamella plate technology to maintain ideal settlement conditions within each unit, thereby, ensuring maximum particle settlement and minimum unit footprint.



Small footprint enables units to be utilised in the tightest areas, including underground installations

To achieve increased flow capacity and flexibility on site, multiple units may be linked together in parallel, as required

Innovative outlet design maintains flow even when the unit is not exactly level

Plate technology and configuration hugely increases settlement area. Plates are designed for easy handling

Flow distribution has been designed to meet the rigours of the modern construction site

Emptying can be achieved by a range of methods, e.g. via drain ports & valves, vacuum tanker or by manual or mechanical means

Siltbuster mobile clarifiers are robust; skid-mounted; compact and lightweight, making them simple to transport, install and operate. They are ideal for sites with limited access, restricted spaces and temporary projects.
Hopper bottomed units can be fitted (on request) with an automatic sludge removal system making their operation virtually maintenance-free.

Typical applications

Construction

- Pumping & de-watering
- Groundwater treatment
- Site run-off treatment
- Drilling, piling & coffer dams
- In-river & near-river works
- De-silting & dredging
- Roads, pipelines & other linear projects
- Plant, vehicle & wheel washing
- Site water management

Silt Management

www.siltbuster.com

The Siltbuster Mobile Range

Siltbuster offers a range of various sized units to provide customers with flexibility and the opportunity to hire or purchase a tailored, yet off the shelf, solution.

The Mobile Range, Size Comparison

FB50	HB10	HB20	HB40R	HB50
Flat-bottomed, skid-mounted unit. The Construction Industry's favourite	Hopper-bottomed, skid-mounted unit	Enlarged version of HB10. Increased flow rate and sludge storage. Batch or continuous sludge draw-off	Hopper-bottomed, skid-mounted unit	Performance of the FB50 but with twin hoppers for larger capacity, primary thickening applications and batch or continuous sludge draw-off
Height: 1.9m	Height: 2.1m	Height: 2.6m	Height: 3.1m	Height: 3.1m
Length: 3.7m	Length: 1.9m	Length: 2.5m	Length: 3m	Length: 3.7m
Width: 1.45m	Width: 0.9m	Width: 1.2m	Width: 2.2m	Width: 1.7m
Effective Settlement Area: 50m²	Effective Settlement Area: 10m²	Effective Settlement Area: 20m²	Effective Settlement Area: 40m²	Effective Settlement Area: 50m²
Dry Weight: 1,960kg	Dry Weight: 510kg	Dry Weight: 1,120kg	Dry Weight: 2,480kg	Dry Weight: 2,370kg
Inlet: 4" bauer	Inlet: 2" bauer	Inlet: 3" bauer	Inlet: 4" bauer	Inlet: 4" bauer
Outlet: 6" bauer	Outlet: 3" bauer	Outlet: 4" bauer	Outlet: 6" bauer	Outlet: 6" bauer
Typical Operating Capacity: 1-50m³/hr	Typical Operating Capacity: 1-10m³/hr	Typical Operating Capacity: 1-20m³/hr	Typical Operating Capacity: 1-40m³/hr	Typical Operating Capacity: 1-50m³/hr

The benefits

- Readily transportable, fast and simple to setup, easy to operate.
- Small footprint units with large settlement area
- Unique design enables rapid particle settlement and water clarification
- Up to 20 times more efficient than conventional settlement tanks and lagoons of the same plan area
- Choice of unit sizes and capabilities to suit most applications
- Units can be used individually or linked to accommodate a wide range of flows, pump sizes and particle charcteristics

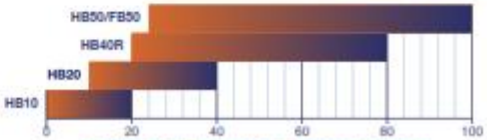
Options & Process Add-ons

Total Water Treatment Solutions

Siltbuster Clarifiers can be configured as single or mulitiple units for basic gravity separation and discharge-to-sewer applications. They can also be supplied as part of a complete, tailored, packaged treatment solution – including ancillary equipment, such as:

- Lids, covers, walkways & access platforms
- Flow splitter valves, flow meters & flanged ports
- Automatic, flow proportional, single or multi-stage chemical pre-treatment
- Fully containerised dosing systems
- Flash mixers
- Pipe flocculators or mixing/aging tanks
- Automatic desludging systems
- Sludge pumps & sludge storage tanks
- De-watering systems

Siltbuster Mobile Clarifier Operating Range



For hire, sales or more details call Siltbuster on 01600 772256

Process Add-ons

Chemical Dosing, Pre-treatment & Reaction Systems

Siltbuster believes that, wherever possible, the use of chemicals to treat excess site water should be avoided. However, there are some types of waste water, contaminants and effluent which still require the use of chemicals to increase the particle settlement rate, so as to enable their removal. This can be due to either the presence of very fine particles; clay; colloidal matter; colour or simply the soil's own interparticle electrical bonds which need to be interupted in order for settlement to occur.

In such cases, chemical dosing is unavoidable. Consequently, Siltbuster has developed an extensive range of chemical dosing systems to compliment it's award-winning settlement units.

Treatment Systems

Flocculant Blocks
Basically, a flocculant in a solid form. When immersed in water the solid dissolves, releasing the chemicals, causing a reaction.

Single-Stage & Multi-Stage Dosing Systems
Siltbuster's Single-Stage dosing systems range from a single dosing pump linked to a drum of coagulant or acid/alkali for pH adjustment, through to an IBC based flocculant batch makeup system and associated pumped dosing. The dosing rate is fully controllable and can be linked to flow rate and chemicals can be added to mixing/reaction tanks, in-line or via pipeflocculators. For more complex dosing regimes requiring similar levels of accuracy, Siltbuster offers Multi-stage dosing systems, including staged coagulant and flocculant dosing, often with an intermediate stage for pH adjustment.

Chemical Reaction Systems

The reaction rate of treatment chemicals, dictates the system required.

Mixing Tanks
Siltbuster can supply mixing tanks, ranging from 1m³ to 30m³ capacity.

Pipeflocculators
For faster reacting chemicals, various pipeflocculators are available.

Containerised Integrated Dosing Units

Siltbuster can provide secure, self-contained, in-line dosing units which enable the controlled, flow-proportional, multi-stage addition of treatment chemicals. For flows up to 150 m³/hr, the 'plug & play' systems come pre-installed in a 10ft (3m), 20ft (6m) or 40ft (12m) shipping container, as required.

Options include:

- Bunded chemical storage
- Flow-proportional dosing systems
- Reaction/aging tanks and pipeflocculators
- Control panels and datalogging
- Insulation, lighting and heating
- Integrated Lamella or DAF Units (subject to model and size).
- Automatic monitoring of feed and discharge water

Full Treatment Packages

Siltbuster's in-house laboratory can test a wide range of chemicals to identify the treatment regime most suited to your needs. A sample of the untreated water, your flowrate and the required discharge limits are all that is needed.

Silt Management

www.siltbuster.com

APPENDIX C
INSPECTION AND MONITORING PROFORMAS

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GULLEY INSPECTION CHECKLIST
SITE:

Date	Gully no	Fit for purpose (yes/no)	(if no: action required, clean / replace?)	Comment	Signature

SITE INSPECTION CHECKLIST
SITE:

Name of person undertaking inspection: .....
Date: .....
Current weather conditions: .....

Description	Comments	Action	Initial
1) What is the current condition of the gully protection measures within the active areas of the site? *Note any gullies requiring maintenance measures*			
2) Are site roads clean and relatively free of mud? Is the frequency of visits by the road sweeper adequate? *Consider whether additional visits should be scheduled.*			
3) Are there currently unsurfaced areas being trafficked which may be causing silt to enter the site drainage? *Note if additional measures are required to reduce the run-off from these unsurfaced areas.*			
5) Are control measures in place to prevent silt run-off from unsurfaced areas and soil stockpiles? *Note if the control measures are adequate and whether the increased runoff requires an increase in the frequency of inspection of any control measures.*			

6) What is the current condition of water within the two on-site surface watercourses? *Note any discolouration of the water or obvious sign of sediment within the water.*			
7) What is the current water condition of the attenuation basin and swale? *Note any discolouration of the water or obvious sign of sediment within the water.*			
8) Is any off-site run-off occurring? *Note whether any run-off is occurring – considered most likely to occur at the southern and western boundaries.* *Note any control measures in place.*			
9) Is there any dewatering of excavations taking place on site? *Note what activities are taking part and their location.* *Note any control measures in place.*			

Notes and actions to be taken:

Completed by	Name	Signature	Date
Site Manager			

MONITORING POINT INSPECTION RECORD
SITE:

Name of person undertaking inspection: .....

Date: .....

Current weather conditions: .....

Monitoring Location	Monitoring Location Rationale	Inspection Record	Action required	Initial
Monitoring of the following primary monitoring locations (as shown on Figure 1.1 and 1.2 – depicted by red monitoring symbols) on a **daily basis during periods of rainfall**, and at a suitable frequency during periods of dry weather				
Monitoring Location M1	Monitor levels of silt in water discharging from ditch to Carr Brook and the condition of the silt protection measures at this discharge point. To consider requirements for further measures/ improvements/ maintenance required.			
Monitoring Location M2:	Monitor levels of silt in water entering the proposed SWALE and any improvements/ deterioration in water quality as it passes through the SWALE and the silt protection measures installed. Condition of water as it passes out of the SWALE at outlet headwall should also be noted. Checks to include the condition of silt protection measures installed and the requirement for any maintenance.			
Monitoring Location M3:	Monitor condition of water passing out of the water retention pond to discharge to Carr Brook. Checks to include the condition of the silt matting placed at the inlet/ outlet headwall, designed to entrap silt.			
Monitoring Location M4:	Monitor condition of water in boundary ditches flowing into Carr Brook. These should be unaffected by the site's development, however, there is the potential for rubbish from site to cause blockages which may result in flooding.			
Monitoring Location M5:	Monitor condition of gullies along main spine roads on site, particularly those in close proximity to construction works. Monitoring of gullies also to include general condition/ level of debris of roads, localised build-up of silt.			

Completed by	Name	Signature	Date
Site Manager			

APPENDIX D
INSPECTION CHECKLISTS

SILT INSPECTION CHECKLIST –
SITE:

Name of person undertaking inspection:.....

Date:.....

Current weather conditions:.....

Description	Comments	Action	Initial
1) What is the current condition of the gully protection measures within the completed/un-adopted areas of the site? *Note any gullies requiring maintenance measures*			
2) What is the current condition of the gully protection measures within the active areas of the site? *Note any gullies requiring maintenance measures*			
3) Are site roads clean and relatively free of mud? Is the frequency of visits by the road sweeper adequate? *Consider whether additional visits should be scheduled.*			
4) Are there currently unsurfaced areas being trafficked which may be causing silt to enter the site drainage or stream? *Note if additional measures are required to reduce the runoff from these unsurfaced areas.*			
5) Are control measures in place to prevent silt runoff from unsurfaced areas and soil stockpiles? *Note if the control measures are adequate and whether the increased runoff requires an increase in the frequency of inspection of any control measures.*			
6) What is the current water condition of the stream? *Note any discolouration of the water or obvious sign of sediment within the water.*			

Description	Comments	Action	Initial
7) Is there any dewatering of excavations taking place on site? *Note what activities are taking part and their location. Note any control measures in place.*			
8) Is the general cleanliness of the site satisfactory? Is it currently necessary to track from unsurfaced areas onto site roads? *Include storage areas and plot access. Are more stoned-up access tracks required?*			
Notes and actions to be taken:			

Completed by	Name	Signature	Date
Site Manager			

Contact: RSK

Gully Inspection Checklist

Site:

Date	Gully no.	Fit for purpose?		Comment	Signature
		(Yes / No)	If No - action required (e.g. clean / replace)		