

Surface Water Management Plan

1. Site	Date (& review)
Park Road, Swadlincote	23-11-21

2. Purpose

To ensure that any surface water leaving site is sufficiently treated as to be acceptable for disposal into controlled waters. This will be achieved by: -

- identifying potential entry points of surface water onto or within the site,
- the implementation of specific measures for capture (lagoons) and
- final treatment within our boundaries, prior to being discharged off site.
- Implementation of Emergency Measures/Arrangements

Additionally, the plan will identify the requirements to ensure that any implemented measures are adequate and effective, through monitoring, sample collection or other means.

3. Site Description

The site is located off Park Road, Swadlincote, South Derbyshire. The development consists of 68 residential dwellings with associated infrastructure.

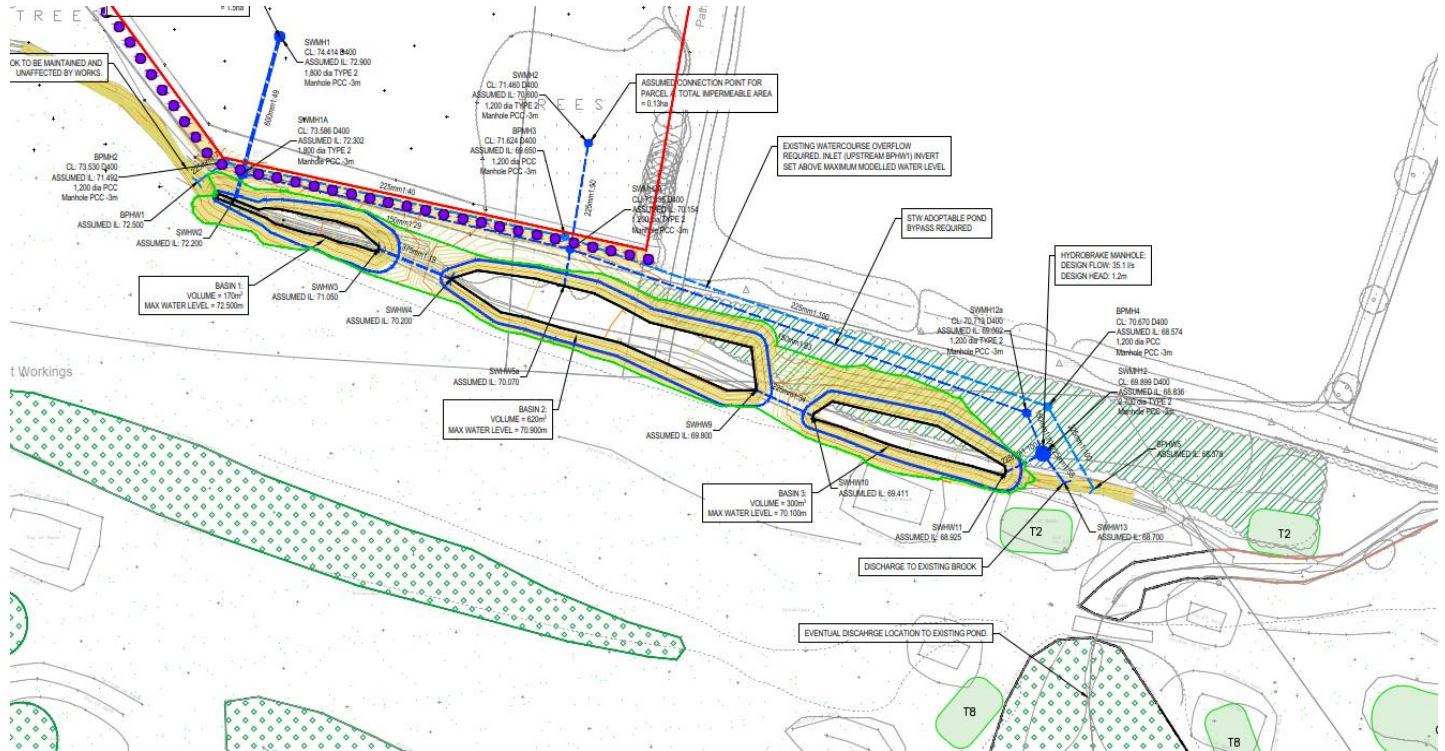
Prior to development the site comprised of scrub land. A golf course forms the South and West side of the site residential property to the East and Park Road to the North.

It is known that overland surface water flood routes cross the site in a north orientation.

4. Identifying Water Sources entering site (inlets)

Details of Existing streams, ditches, gullies land drainage, surface water drainage etc

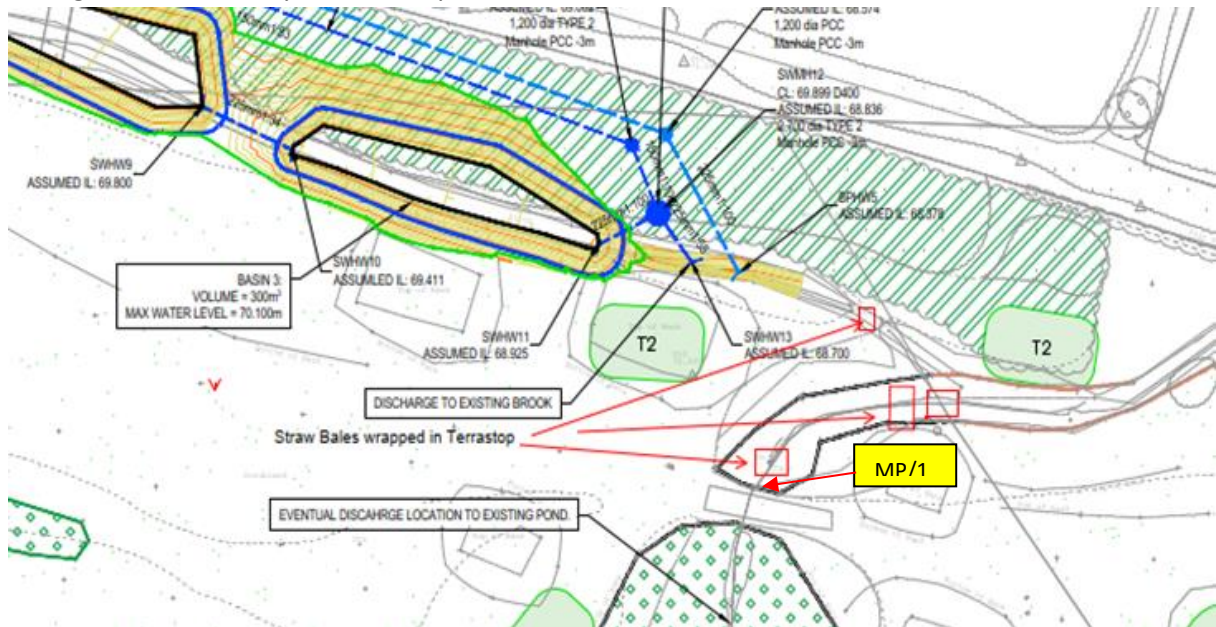
An existing ditch is located to the South of the site which outfalls into an existing pond within the golf course.



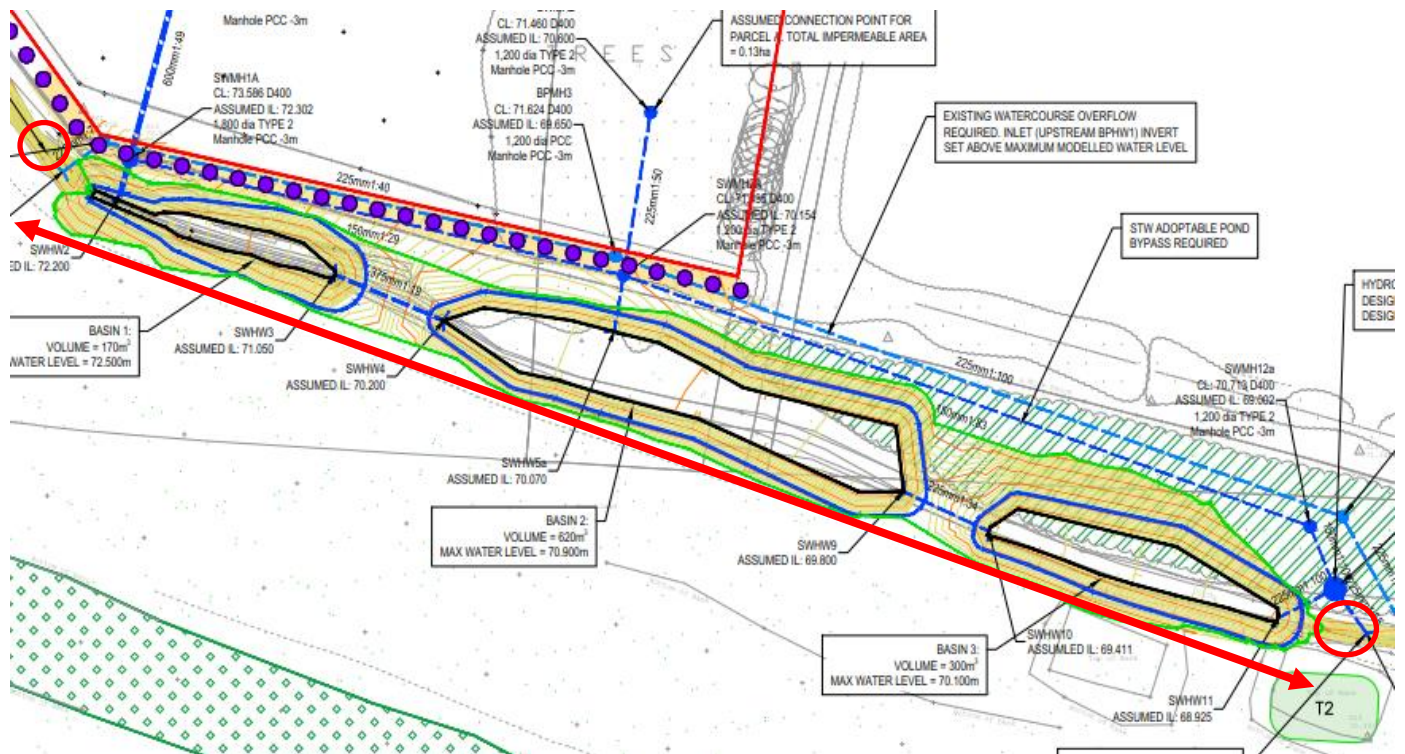
5. Control Measures

Construction of Swales

- Weather conditions will need to be assessed prior to constructing swales.
- Straw bales wrapped in terrastop are to be anchored at multiple locations shown below whilst the construction of the swales take place. Depending on the state of the ditch at the time of construction, gravel/gabion stones may need to be placed in the ditch to act as an extra silt barrier.

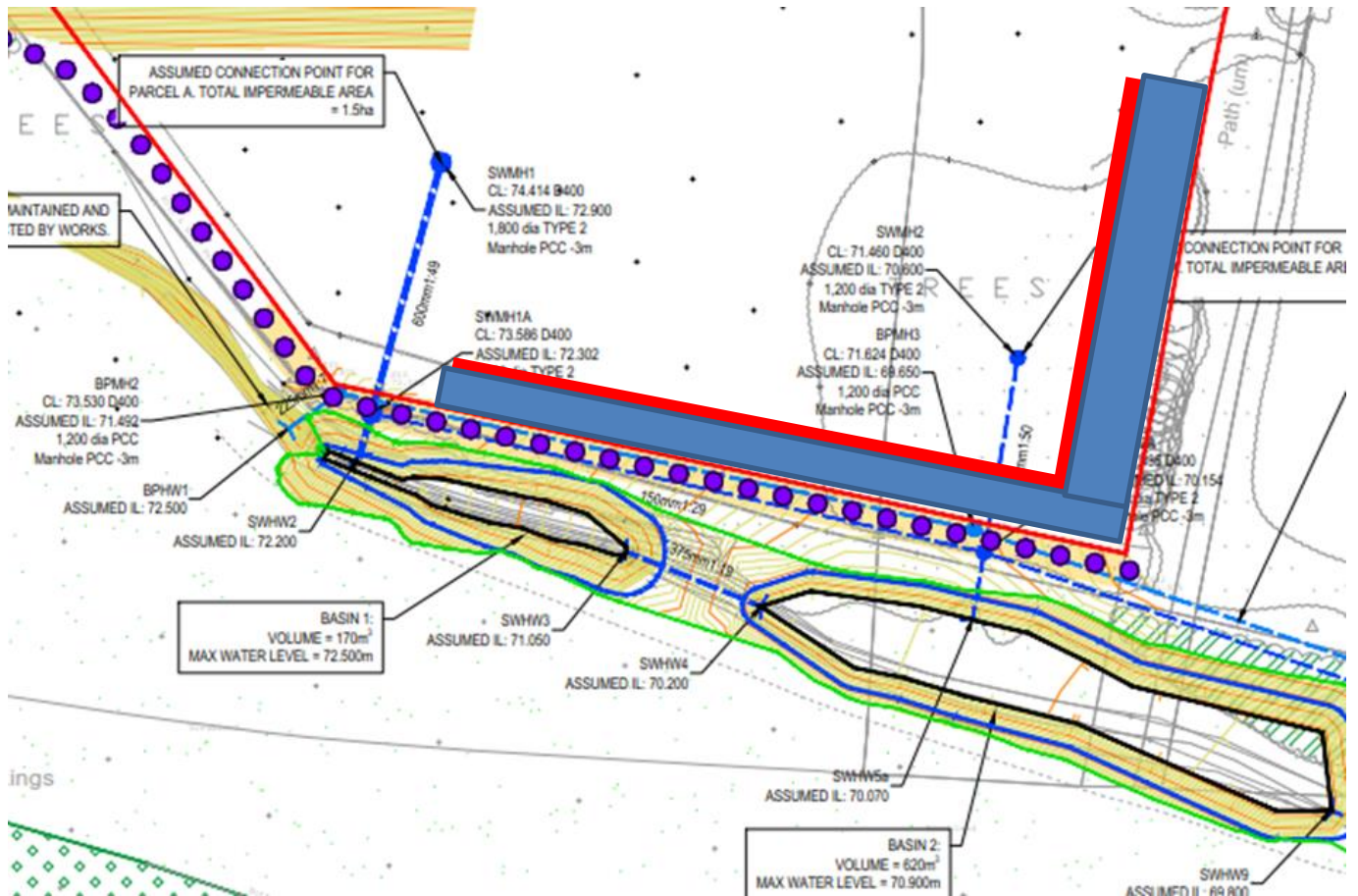


- Turbidity tests to be taken twice daily at MP/1. If NTU readings are higher than 60 NTU, then work is to be stopped immediately and CCE HSE Informed.
- Over pumping may need to be set up as per photo below, pumping into haybales wrapped in terrastop.



Post Swale Construction – Construction of the roundabout and proposed development.

- Haybales wrapped in terrastop to remain anchored into the ditch as per pre swale construction.
- 3m vegetation strip to remain around the bottom South Eastern corner of the site.
- Bund to be constructed around the South Eastern corner of the site to help retain water/runoff when the site is being stripped.
- Terrastop to be erected around the boundary fencing behind the bund and 3m vegetation strip.



- Monitoring points to be established and NTU readings taken and recorded daily. Any reading over 60 NTU will require further investigation as to how silt has entered the ditch.

6. Treatment

Dirt Bags

Dirt bags (100-micron filter) designed to separate solids are fitted to all discharge pipes entering the water retention basins. Monitoring, cleaning, maintaining and replacement of these is identified in section 7 of this document as well as reviews noted in section 8.

Dirt bags (100-micron filter) designed to separate solids are fitted to the basin connecting pipes. Monitoring, cleaning, maintaining and replacement of these is identified in section 7 of this document as well as reviews noted in section 8.

Gulley Bags

Every road gulley on the development to be fitted with a gulley bag installed and designed to capture solids prior entering the surface water drainage system. Monitoring, cleaning, maintaining and replacement of these is identified in section 7 of this document as well as reviews noted in section 8

Silt Fences

Silt fences (Terrastop premium) designed to separate solids are securely fixed in swales Monitoring, cleaning, maintaining and replacement of these is identified in section 7 of this document as well as reviews noted in section 8

Settlement tanks

No situations to date have occurred whereby the need for settlement tanks be Introduced to filter surface water. Should conditions change and tanks are required they should meet the standard of the Silt buster FB50.

Other – Road cleaning, assessments, contact with neighbours

An open contract is in place for mechanical road sweeping as and when required – site management are authorised to arrange this. Roads in the construction area of the development are also scraped regularly and at the end of daily operations.

7. Emergency Measures/Arrangements

Excessive Rainfall/Water Flow

Site management will review weather condition/predictions on a regular basis to identify potential issues of high rainfall that could impact on site arrangements and take the necessary precautions to control against surface water run off or any potential risk of flooding be it on or off site.

Emergency Measures

The site team are responsible for ensuring emergency measures are in place and all those concerned are aware of the emergency procedure and actions they are to take in an unforeseen event.
The site team should further contact the client making them aware of any emergency situation as it arises.

8. Monitoring Arrangements (locations – marked on plan)

What	How	When	By Whom
Swales and outfall ditch	Visual inspection of water flow, clarity of water and control measures (silt fences, dirt bags etc.). Photographic record and log.	Weekly High water Daily	Site Manager
Offsite Headwall into Existing ditch	Visual inspection of water flow, clarity of water and control	Weekly High water Daily	Site Manager

	measures (silt fences, dirt bags etc.). Photographic record and log.		
On site pumping- nuisance water	Visual inspection of water flow, clarity of water and control measures (Settlement tanks, silt fences, dirt bags etc.).	Daily Visual record as required.	Site Manager

9. Reporting (what, to whom & when?)

What	To Whom	When
Breaches of measures to control flows (e.g., damage to filter mediums, gaps in bunds etc.)	Chasetown Senior Management	Immediate
Inadequacy of implemented measures to control flows (localised flooding, new sources of water flow etc.)	Chasetown Senior Management	Immediate
Changes to visual water quality through the outfalls	Chasetown Senior Management	Immediate
Changes to suspended solids in sampled water analysis	Chasetown Senior Management	Immediate

10. Standards

Item	Equipment	Supplier/Provider	Installer
Filter bag medium	Dirt Bag – 100 microns,	Chasetown	Chasetown
Silt Fence	Terrastop Premium – 250 microns	Chasetown	Chasetown
Pumping requirements	Pumping water should be avoided direct to surface water drains or swales. Use of pump sock.	Chasetown	Chasetown

11. Plan completed by

Name	Aaron Richardson	Date	11 th November 2021
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**Dirtbag, Terrastop silt fence and Siltbuster
information/guidance attached.**



Sediment control the easy way

0113 253 3150

info@dirtbagsuk.com

Dirtbags

» HOME

» DIRTBAGS

» DIRTBAGS IN SETTLEMENT TANKS

» DIRTBOX

» COMING UP...



WATCH THE VIDEO



IMAGE GALLERY



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• DIRTBAGS



The standard size of the Dirtbag is 1.5m² giving a filtration area of 4.5m² allowing a flow rate well in excess of 4600 l/min or the pumping capacity of a 6" pump.

The Dirtbag can be used in various applications in its raw form, as the shape & size of the bag can be determined by the end user and as Dirtbags are manufactured in the UK we can make them any shape or size to suit your exact site requirements.

Unlike other sediment control units the Dirtbags are NOT RELIANT on pumping speeds or settlement times and the bags will help retain solids from your pumped water.

The Dirtbag is fitted with a standard 10" elasticated collar which will fit around any size delivery hose or connector and you simply pump the water into the Dirtbag, the water runs through the bag which catches the solids in the water.

Dirtbag in its traditional 'envelope' form:

1) Dirtbag in its traditional 'envelope' form



2) Dirtbag in its traditional 'envelope' form with a 10" collar



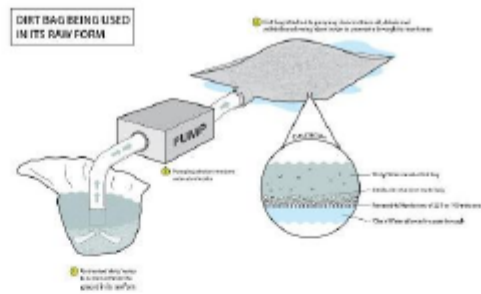
Click on image to enlarge

Dirtbags are available in 100, 200 & 500 micron filter sizes and will retain solids dependant on the filter size of Dirtbag used.

How It Works

The image below shows the Dirtbag laid on the ground whilst water is being pumped through it. This is an easy solution if your site conditions allow for site water to run away and find its own course.

The solids are retained in the Dirtbag which allows the water to flow away.



[Click on image to enlarge](#)

Once the Dirtbag has filled with solids and the Dirtbag no longer allows adequate water flow (i.e. blinded off), it is simply disposed of in accordance with your on site waste disposal guidelines and another Dirtbag is used.

"Simple"

Utility Bag

The utility bag was purpose made for small mobile street works and its simplicity has proved to be very popular with street works and utility contractors.

The Utility bag is simply laid at the kerb side, before the road gully and trench water is pumped through it which catches the solids before reaching the drainage system.

The bag can be turned inside out and re-used and is easily stored in the gang's vehicles or PPE kits until needed again.

The utility bag measures 1m x 300mm and its 10" elasticated collar means it will accept any size delivery hose.



"Dirtbags are manufactured and distributed in the UK so we can make any size bags to suit your exact requirements"

DIRTBAGS KEY ADVANTAGES:

Simple & Easy to use, light & compact for easy storage, bag can be made to any shape or size with 100, 200 or 500 micron filter sizes, 24 hour delivery if required, indefinite shelf life, no cleaning up required just dispose of the bag once it's full, simple order and delivery process, 50 micron Dirtbags are available for certain applications on request

"The Dirtbag does not rely on pumping speeds or settlement times"



Sediment control the easy way

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Dirtbox

HOME

DIRTBAGS

DIRTBAGS IN SETTLEMENT TANKS

DIRTBOX

COMING UP...



WATCH THE VIDEO



IMAGE GALLERY



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DIRTBOX

After various trials and feedback from our customers we have designed and built:

The 'Dirtbox'

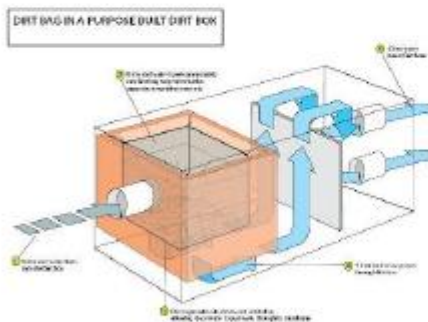
which is a purpose built tank that houses the Dirtbag and allows a much easier, safer and more controlled environment for collecting solids through the water transfer process.

For this application the Dirtbags are cube shaped and measure 1m³ giving an even bigger filtration surface area than the stand alone Dirtbag.

The Dirtbox comprises of:

- An outer tank with 1 No. 6" inlet and 2 No. 6" outlets with one blanking cap. The two outlets are situated at different heights to suit different applications and can both be used if pumping at high speeds.
- The tank measures only 1800L x 1200W X 1200H meaning it is smaller than a 1500 gallon settlement tank and takes up less room on your site.
- The inlet & outlet connectors are industry standard bauer fittings
- A removable permeable inner tank that holds the Dirtbag and is lifted out ensuring the safe & easy change and disposal of the Dirtbag
- A removable baffle plate which can be inserted to create a settlement area and catch any additional smaller silt particles if required, or removed to create an instant water flow to the outlets.

The image below shows the Dirtbag being used inside the custom built Dirtbox.



Click on image to enlarge

The Dirtbox will handle flow rates up to 280m³ per hour (1000 gallons per minute) which basically equates to a 6" pump working at full capacity.

Once the Dirtbag is full and not accepting water at the desired flow rate then simply lift out the inner tank, remove the Dirtbag and dispose as per site waste guidelines, insert a new Dirtbag and carry on pumping.

The Dirtbag contains all solids down to at least the size of the Dirtbag (100, 200 or 500 microns) and is easily disposed of leaving no mess and no cleaning up is required"

No manual lifting required as the inner tank and the Dirtbag have lifting eyes for mechanical lifting.

"The Dirtbox is available for sale or hire and really is the ideal site solution for using a Dirtbag"

[wildlife](#)
[specialist](#)
[biodegradables](#)
[geotextiles](#)
[agrotextiles](#)
[accessories](#)

Hy-Tex Terrastop™ Silt Fences for Stormwater Run-Off Control

Hy-Tex Terrastop silt fence in use on National Grid's Milford Haven to Aberdual gas pipeline project



Hy-Tex Terrastop silt fence in use on National Grid's Felindre to Brecon gas pipeline project



News: Terrastop HighFlow trapped approx. 5 tonnes of silt per 10m fence run over 1 month on potato field trials in Scotland

Terrastop™ Premium (W1380)



1137-CPR-0613/29

Sand bags in both grades also available for no-dig solutions. Call for further details

Many construction, forestry and farming activities result in disturbed or bare ground that is vulnerable to weather erosion. The silt laden run-off, plus site debris and other pollutants, often contaminates surrounding land, watercourses, lakes and drains - resulting in significant environmental diffuse pollution and potentially costly fines.

However, due to the on-going nature of such work, it is generally not possible to protect exposed surfaces until the project is complete. So stormwater from such sites represents a major non-point source of diffuse water pollution in the UK.

Solution: Hy-Tex Terrastop™ Premium, and HighFlow silt fences, offer a proven, practical, economic and effective method to reduce stormwater run-off pollution from such locations. They are special, high quality, permeable, technical filter fabrics, that can be installed as an entrenched vertical barrier fence, and are designed to intercept and detain run-off - trapping harmful silt through settlement and filtration before it leaves the site.

Performance: The benefits of silt fences are increasingly becoming recognised in Britain: The Environment Agency/SEPA Pollution Prevention Guidelines (PPG5) now recommend the use of silt fences to reduce silt transport from exposed ground and stock piles; and research at The James Hutton Institute, using Terrastop silt fencing, demonstrated that even after post-harvest contour grubbing of potato fields an estimated 80 tonnes of soil containing 60-70 kg phosphate-P contaminants was trapped from a 17ha field [Dr Andy Vinten].

While in other countries where silt fences have been used extensively for many years, their proven performance (intercepting up to 86% of suspended solids [Homer et al. 1990]) has made them a standard *Best Management Practice* on a diverse range of projects.

From this in-depth research, and practical experience, Hy-Tex Terrastop™ Premium and HighFlow were developed to exceed the highest standards, with many unique features for ease of use, reliability and effective results.

Key Features: General purpose non-woven and woven geotextiles are unsuitable for silt fence use as they clog, overtop and inadequately filter sediment due to poor hydraulic properties (typically less than 15 l/m²/sec) and often fail: tearing and fraying (as they are too weak to withstand the forces of stormwater/silt build-up without costly additional wire support fences) or becoming brittle quickly (due to lack of UV protection). Terrastop™ Premium and HighFlow are manufactured specifically as silt fences so have high tensile and burst strengths, premium UV stabilisation, woven structures with tear resistant non-fraying reinforced edges, that are durable and self supporting between fixing posts for reliability, as well as having a visually pleasing subtle green colour.

The CE Mark certified Terrastop Premium also has an special fibrous weft yarn, combined with a high quality weave, to enhance filtration, maintain flow and minimise clogging.

Installation Aids: Silt fences also often fail through poor installation or aftercare, therefore Terrastop™ Premium incorporates pre-marked lines for burial depth and maximum silt accumulation level to ensure correct set-up and maintenance; as well as a top ribbon strip to simplify post attachment and tensioning.

Kirsty Liddon's Edinburgh University Dissertation "Prevention of Diffuse Pollution from Active Forestry Harvesting Sites" concluded "the Hy-Tex (Terrastop Premium) material appears to be the most suitable material for use as sediment retention as it has the most consistent performance between differing soil types retaining the highest volumes of sediment for both clay and peat solutions."

Specification	Terrastop™ Premium (W1380)	Terrastop™ HighFlow
Tensile Strength	22kN/m	32kN/m
Puncture Resistance (CBR)	3,500N	3,700N
Permeability	45 l/m ² /sec	190 l/m ² /sec
Opening Size	250µm	320µm
Weight	200g/m ²	145g/m ²
Material	1000µ thick, green/black, 400kLy UV stabilised, polypropylene, tear resistant non-fraying edges.	500µ thick, green/black, 450kLy UV stabilised, polyethylene, tear resistant non-fraying edges.
Roll Size	0.75 x 100m	1.00 x 100m
Other Key Features:	Fibrillous weft yarn, burial depth and maximum silt accumulation marker lines, top tying-off and tensioning ribbon.	

Basic grade also available for less stringent applications

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Hy-Tex (UK) Limited

Committed to Quality, Value & Service

Hy-Tex Terrastop™ Silt Fences for Stormwater Run-Off Control

Installation Guidelines

SCOPE

1. This practice covers common installation requirements for temporary silt fence applications.
2. This practice is applicable to the use of silt fences as vertical permeable interceptors designed to remove suspended soil from overland, non-concentrated water flow. The function of a temporary silt fence is to trap and allow settlement of soil particles from sediment-laden water and to filter particles from water permeating through the fabric. The purpose is to greatly limit the transport of eroded soil from the construction site by water runoff.
3. The practices presented herein are intended to ensure good workmanship and quality and are not necessarily adequate for all purposes in view of the wide variety of possible sediments and performance objectives.
4. This standard does not purport to address all safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

CONDITIONS WHERE PRACTICE APPLIES

1. Below disturbed areas where erosion would occur in the form of sheet and rill erosion, and where ponded run-off will not cause damage.
2. Where the size of the drainage area is no more than 0.30 hectares per 100.00m of silt fence length; the maximum slope length behind the barrier is 30.00m; and the maximum gradient behind the barrier is 50 percent (2:1).
3. In minor swales or ditch lines where the maximum contributing drainage area is no greater than 0.80 hectares.
4. Under no circumstances should silt fences be constructed in live streams or in swales or ditch lines where flows are likely to exceed 0.03m³/s.

5. Silt fence should not be used in areas where rock or hard surfaces prevents the full and uniform depth anchoring of the barrier.

DESIGN CRITERIA

1. An effort should be made to locate silt fence at least 1.50 to 2.00m beyond the base of disturbed slopes with grades greater than 7%.
2. Properly supported silt fence which stands 0.60 metres above the existing grade tends to promote more effective sediment control (higher fences are vulnerable to excessive wind resistance or may impound volumes of water sufficient to cause failure of the structure).
3. A minimum 150mm of silt fence shall be embedded.
4. Maximum post spacing shall be 1.50m.

CONTROLLING MATERIAL SPECIFICATIONS

1. The material used for temporary silt fence shall be Hy-Tex Terrastop™ Premium, or similar approved, with CE Mark certification for EN13253: erosion control works and conforming to the following specification requirements:

Grab tensile strength (ASTM D4632): minimum 0.95kN warp, 0.95kN weft. Water permeability (BS EN ISO 11058): minimum 0.015 m/s. Opening size (EN ISO 12956): maximum 250µm. Composition: 400kly UV stabilised woven polypropylene with split tape warp and fibrillated fibre weft yarns, burial depth and maximum silt accumulation marker lines, top tying-off and tensioning ribbon, tear resistant non-fraying edges and 0.75m fabric width.

2. The contractor shall provide to the engineer all certifications required by the controlling material specification.

3. Silt fence materials shall be subject to sampling and testing in accordance with, and to verify conformance with, the controlling material specification.

4. All posts shall be a minimum length of 1.20m, have sufficient strength to resist damage during installation and to support the applied loads due to material build up behind the silt fence.

[Note 1]: Generally, for wooden posts the cross section must be minimum 30 x 30mm for hardwood and 50 x 50mm for softwood; while steel posts (standard "U", "T" or "L" section) must be a minimum weight of 2kg/m.

INSTALLATION

1. Silt fences sections should be continuous and transverse to the flow. The silt fence should follow the contours of the site as closely as possible. Place the fence such that the water cannot runoff around the end of the fence, extending ends upslope enough to allow water to pond behind the fence (See figure 2).

2. A trench shall be excavated approximately 100mm wide and 100mm deep on the upslope side of the proposed silt fence location.

3. Bury bottom 150mm of silt fence (To top of RED MARKER LINE on Terrastop™ Premium) in a "L" configuration in the trench so that no flow can pass under the silt fence. Backfill the trench and compact the soil over the geotextile so that the compacted soil completely fills the trench.

4. Compaction prior to installing posts is generally recommended. Compact the backfill soil immediately next to the silt fence geotextile. Compact the upslope side first, and then the downslope side. The soil adjacent to the buried silt fence geotextile shall be compacted to achieve no less than 50% of its original in situ strength, unless otherwise specified.

[Note 2]: Poor compaction is one of the main causes of silt fence failure. Installed posts may interfere with compaction by large equipment adjacent to the silt fence. Compaction is commonly accomplished with the front wheel of a tractor, skid steer, roller or other device, as well as with manual tamping or other manual means, taking care not to damage the silt fence.

5. When joints are unavoidable, the fabric shall be spliced together only at a support post, with a min. 300mm overlap, and securely sealed so that there are

no gaps, voids, or other loss of integrity of the barrier, ideally by wrapping the overlap around the post.

6. Place the posts tight to the downslope side of the silt fence at 1.50m spacing. Drive posts a minimum of 500mm into the ground. Increase depth to 600mm if fence is placed on a slope of 3:1 or greater.

[Note 3]: Where 500mm depth is impossible to attain, posts should be adequately secured/traced to stop overturning of the fence due to sediment loading.

7. Fasten the filter fabric securely and taut to the upslope side of the posts using top ribbon (see figure 3), wire/cable ties threaded through the silt fence, or 30mm long extra wide head galvanised clout nails (The fabric shall not be stapled to existing trees). Where required, tighten top edge of fabric by looping top ribbon over posts, and strain/brace posts to maintain fence tension and stability (See figure 1).

[Note 4]: If a silt fence is to be constructed across a ditch line or swale, the fence length must be sufficient to eliminate endflow, the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope, and post spacing a maximum of 1.00m.

MAINTENANCE

1. The contractor shall inspect all temporary silt fences immediately after each rainfall, and at least daily during prolonged rainfall. The contractor shall immediately correct any deficiencies.

2. The contractor shall also make a daily review of the location of silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, as determined by the engineer, additional silt fence shall be installed as directed by the engineer.

3. Repair damaged or otherwise ineffective silt fences or replace promptly.

4. Either remove sediment deposits when the accumulation reaches one third the height of the exposed fence (Top of BROAD WHITE/BLACK MARKER BAND on Terrastop™ Premium), or install a second silt fence as directed by the engineer.

5. The silt fence shall remain in place until the engineer directs it be removed. Upon removal the contractor shall remove and dispose of any excess sediment accumulations, dress the area to give it a pleasing appearance, and vegetate all bare areas in accordance with contract requirements.

6. Removed silt fence may be used at other locations provided the geotextile and other material requirements continue to be met to the satisfaction of the engineer.

Figure 1: Hy-Tex Terrastop™ Premium

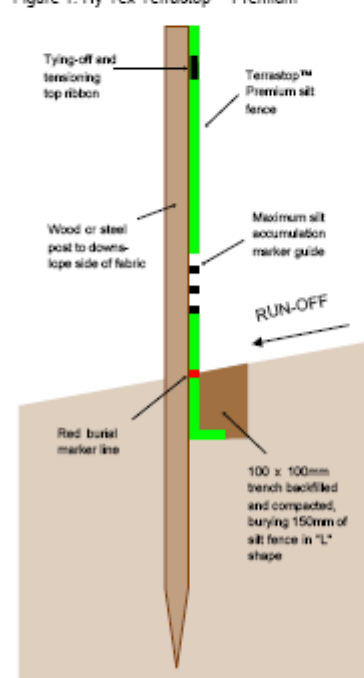


Figure 2: Silt Fence Placement

Alignments called "U" or "J" hooks ensure water & sediment pond behind each silt fence.



Figure 3: Ribbon attachment to post



Disclaimer: All information is provided in good faith, but without warranty. Nor does it form part of any contract, or intended contract, with the Buyer/User. Further conditions apply, details available on request.

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Committed to Quality, Value & Service

Siltbuster FB50

The Siltbuster FB50 Settlement Unit is the flat bottomed version of the every popular Siltbuster HB50 Settlement Unit. As the unit needs to be taken off-line for emptying this unit is most typically used for applications where water is intermittently pumped.

To provide effective recovery of suspended particles the Siltbuster FB50 Settlement Unit is normally operated at flow rates of upto 50m³/hr. However, when treating rapidly settling solids or when operated in conjunction with a [Siltbuster Chemical Dosing System](#) the flow rate can be increased up to the hydraulic capacity of the unit (100 m³/hr).

Typically this unit is used in conjunction with a 4" to 6" pump dependant on flow rate. However if greater volumes are required multiple units can be easily connected in parallel to increase operating capacity.



Typical Applications Include:

- General Construction Sites
- Ground Water
- Trenching
- Open Excavations

To find out more about our FB50 or other settlement units call us on 01600 772256 to discuss your requirements or simply [Contact Us](#)

Three FB50's in Parallel

Siltbuster FB50 on Site

Siltbuster FB50 Out Away



Siltbuster FB50 Settlement Unit

Seperation Method:	Lamella Plates (Gravity)
Height:	1.9 m
Length:	3.7 m
Width:	1.45 m
Dry Weight:	1,960 kg
Materials:	Suspended Particulates
Settlement Area:	50 m ²
Inlet / Outlet Size:	4" F Bauer / 6" F Bauer
Operating Range:	1 to 50 m ³ /hr