



Bellway Homes Limited (East Midlands)

Construction Surface Water Management Plan: Desford Lane, Ratby, Leicestershire, LE6 0LE.

302762 R01(00) – DRAFT FOR COMMENT

RSK GENERAL NOTES

Project No.: 302762 R01 (00)

Title: Desford Lane, Ratby, Leicestershire, LE6 0LE.

Client: Bellway Homes Limited, East Midlands

Date: February 2025

Office: RSK Environment Limited, 12 Royal Scot Rd, Derby, DE24 8AJ.

Status: R01 (00)

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Revision control sheet

Revision ref.	Date	Reason for revision	Amended by:	Approved by:
Rev 00	28/02/2025	First issue	n/a	see above

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work

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PREFACE

RSK Environment Limited were engaged by Bellway Homes Limited, East Midlands, Leicester, Leicestershire, LE19 1YG, to provide a Construction Surface Water Management Plan (CSWMP) at their Desford Lane development, Ratby, LE6 0LE, by means of our fee proposal dated 7th February 2025 including RSK Standard Terms and Conditions No.12, July 2023 which forms the appointment between ourselves and the Client. Service Constraints are included as Appendix A.

This document presents a strategy to manage construction surface water and run-off occurring during the construction phases of development. The strategy is designed to mitigate silt-laden construction surface water entering the on-site construction surface water drainage system (when constructed), and silt laden run-off impacting down gradient sensitive receptors such as watercourses and neighbouring properties.

This Construction Surface Water Management Plan (CSWMP) for the proposed residential development by Bellway Homes Limited (East Midlands) includes a detailed assessment of potential risk to the identified sensitive surface water receptors. It makes recommendations for appropriate silt mitigation measures to be undertaken by the developer and associated contractors.

The recommendations made within this report have been made for the construction phase of this residential project. The drainage strategy for the development when it is completed has been designed by the infrastructure design engineer, and the final construction surface water drainage strategy is referenced in this CSWMP.

The recommendations for mitigation measures are shown schematically on Figure 01. This report is to be read in conjunction with the following:

- Figure 01: Construction Surface Water Management Plan Schematic (drawing no. 302762-DE-276-XX-D-G-27601-C01)
- Appendix A: Service Constraints
- Appendix B: Inspection and Monitoring Proformas
- Appendix C: Installation Examples
- Appendix D: Example Manufacturers and Product Sheets

This plan has been produced by RSK with reference to available online information (MAGIC Maps, Google earth, www.gov.uk), a site walkover undertaken on 11 February 2025, and the following documents supplied by the client:

- CSA Environmental; Ecological Impact Assessment; Ref: CSA/5249/05, Dated: September 2021.
- dha architecture Ltd; drawing reference: 082404-BEL-EM-02; dated 19/11/2024.
- GRM Development Solutions Limited; Phase II Site Appraisal; Ref: P10567/PIISAR.2; Dated: May 2024
- Residential Engineering Design Ltd; General Arrangements; drawing No. 150; Dated January 2025.
- Residential Engineering Design Ltd; Concept Cut & Fill Isopachytes (To Formation); drawing No. 930; Rev: A; Dated: 14/10/2024.

- RSK; Flood Risk Assessment & Outline Surface Water Drainage Strategy; Ref: 680116-R1(01)-FRA; Dated: Rev: 01; September 2021.

As a result of global warming it is generally accepted that extreme weather events, including increased intensity and frequency of heavy rainfall events is likely to be more common during the proposed construction period of this development. Therefore, it is considered that a consistent implementation of a coherent CSWMP will help reduce the risk of silt pollution to controlled waters from the construction of the proposed development and thus lessen the environmental impact and increase the sustainability of the construction project as a whole.

1. SITE PERSONNEL AND DOCUMENTATION

The following measures should be implemented to increase awareness and bring existing site documentation up to date:

1. Undertake site-based awareness training (Site Safety briefing / Toolbox Talks) on silt management and protection for all site staff including the ground workers;
2. Include a detailed section within the site induction folder relating to silt protection; and
3. Undertake a daily site inspection of key areas and a weekly site audit; maintain a written and photographic record of the audits and obtain support from the appointed environmental consultant if or when required.

Note: This document is intended as a live document, to be continually reviewed and updated as the development progresses. RSK may provide support with supplementary site visit audits or attendance at meetings ahead of key stages of the development in relation to silt management.

2. SITE DESCRIPTION

Site Location, Setting and Description

The site is located to the west of Ratby, Leicestershire, LE6 0LE and is centred on National Grid Reference SK 51061 05299. The site is approximately 12 hectares in size. Prior to development comprised a large arable field.

The following description is based on RSK's observations during a site walkover undertaken on the 11 February 2025. At the time of RSKs site walkover, construction work had commenced with topsoil being stripped. None of the construction or surface water infrastructure had yet been developed.

Current development boundary demarcation and adjacent land uses are described below:

- **North:** Bound by hedgerow and sports and recreational fields (Ratsby Sports Club) beyond.
- **East:** Bound by hedgerow with a unnamed watercourse further beyond and areas of development and industry to the east of the unnamed watercourse.
- **South:** The southern boundary is defined by a ditch, immediately south of the ditch is a disused rail track on a densely vegetated embankment. Land to the south is divided into several smaller fields which are intersected by Rothley Brook (Main river) watercourse.
- **West:** Industrial site (Alexandra Stone Works) to the southwest and undeveloped open agricultural land to the northwest.

The site generally falls toward the southeast, from elevations of 94.50 m AOD at the northwestern boundary to 76.20 m AOD beyond the south/southeastern boundaries.

Vehicular access can be gained to the site from the north west along Desford Lane. It is understood that pedestrian access can be gained from the southern boundary via a public right of way (PROW).

Hydrology

A drainage ditch located along the southern perimeter of the site bounded by hedgerow and trees lining a dismantled railway track, was noted running in a south westerly direction. The ditch starts mid-way along the sites southern boundary as a shallow ditch. The ditch deepens and

widens as it continues in an eastern direction.

A unnamed watercourse flows near to the sites north eastern generally in a southern direction through the adjacent land to the east of the site. It flows around 30.00 m from the sites eastern boundary at its closest point.

The two drainage ditches join off the south eastern corner of the site. It then flows into a culvert (beneath the former railway line) that is thought to eventually discharge into the Rothley Brook (EA designated Main River) located approximately 60.00 m south of the site.

Environment Agency (EA) catchment data shows the site to be in Rothley Brook catchment (Trib of Soar) that generally flows south-westward past the southern end of the site. The RSK Flood Risk Assessment Report confirms that the vast majority of the site is located within Flood Zone 1, with the inclusion of Flood Zone 2 and 3 within the south eastern corner of the site.

During RSK site visit, there is an also a series of interlinked square shaped ponds outside of the south-western boundary.

Geology

The British Geological survey (BGS) online GeoIndex mapping indicates that the site is underlain by Cotgrave Sandstone Member to the northern central most point of the site, with Gunthorpe Member Mudstone (Clay) making up the majority of the bedrock geology throughout the rest of the site. Superficial deposits at the site are shown to comprise River Terrace Deposits of sand and gravel along the southern portion of the site.

Previous ground investigation undertaken by others recorded topsoil (generally thickness of 0.35 m), a variable thickness of River Terrace Deposit soils of between 0.13 m to 2.70 m in thickness which in turn is underlain by clay associated with the underlying Gunthrope Member as not proven.

Hydrogeology

The Environment Agency has classified the River Terrace Deposits as a Secondary A Aquifer. The underlying bedrock (Gunthorpe Member) is classed as a Secondary B Aquifer, whilst the Cotgrave Sandstone Member (if present) is classed as a Secondary A Aquifer. The site is not recorded to be within a Groundwater Source Protection Zone.

During return monitoring visits undertaken by others, standing water within monitoring well installations recorded a varying depth of between 0.50 m to 3.50 m below existing ground level. It is anticipated that any groundwater will generally be shallower in the southern part of the site.

The provided ground investigation report for the site confirmed that a significant source of contamination has not been identified at the site, and therefore it was considered to be no risk to controlled waters.

Sewer records

Available sewer records appended within the provided Flood Risk Assessment (FRA) for the site show that there are no sewers located within the site boundary. The closest sewer is located approximately 10.00 m outside of the southern boundary. The records show this is designated as a 525 mm combined sewer which flows eastwards on the south side of the railway

embankment.

Sensitive land uses

The defra MAGIC online database was reviewed to identify the presence of statutory designated sites of relevance to the proposed development. There are no statutory designations covering any part of the Site or downgradient of the site, and no international statutory designations were identified within 10.00 km.

The provided ecological assessment for the site confirms that in the majority of ditches at the Site are predominantly dry and have low ecological value. However, towards the south-east, the ditches become higher quality where they support permanent open water with associated plant species.

3. SITE DEVELOPMENT

The Bellway Homes Limited East Midlands, Desford Lane residential development comprises the construction of 225 plots with private gardens and associated infrastructure along with areas of public open space. To facilitate the sites development it is understood that a phase of earthworks will be undertaken to create the necessary development platforms and infrastructure. A provided concept cut & fill isopachytes for the proposed development show the formation across much of the site can be achieved with a <0.50 m cut and fill exercise, with some localised area of deeper cut and fill.

The proposed construction surface water drainage strategy for the site has water falling under gravity through drains set into the highways that will inflow into two attenuation basins. The attenuated water will then outfall via headwalls into the surrounding drainage ditch network along the sites eastern and southern boundary.

The provided general arrangement drawing indicate that the basins will discharge water at a maximum controlled rate of 16.3 l/s from the southwestern attenuation basin and at a maximum controlled rate of 10.0 l/s from the southeastern attenuation basin.

4. SENSITIVE RECEPTORS TO CONSTRUCTION SURFACE WATER RUN OFF

The following sources, pathways and sensitive receptors on site and off site have been identified. Consideration of these along with additional factors can be used to determine a potential pollution risk rating.

Sources of silt pollution:

The principal sources of potential soil pollution to the construction surface water receptors will be from the on-site earthworks, infrastructure and housing plot activities. Particular point sources will occur when any works are undertaken in the immediate vicinity of the external southern watercourse (e.g. construction of surface water drainage headwalls) or dewatering of any excavations.

Pathways:

Plausible pathways for silt pollution to impact the identified receptors include direct construction surface run-off, and run-off via historical land drains and the newly constructed construction

surface water drainage network (road gulleys, road sewer network and attenuation basins)

Sensitive Receptors:

On-site:

- The existing and retained ditches.
- Attenuation basins and swales.
- The proposed road gulleys and construction surface water sewers of the constructed drainage system.

Off-site:

- Rothley Brook.
- Existing unnamed watercourse and drainage ditches.
- Industrial area to the southwest of the site.

5. RISK RATING AND ASSESSMENT

A risk rating is provided as guidance to the level of risk associated with silt pollution to the surrounding water environment receptors from the identified sources of pollution occurring from the proposed development. The risk rating assesses a number of risk factors in line with the source-pathway- receptor model. It assesses the sensitivity of any identified receptor and combines that with hazard consequence and probability to classify the risk rating as high, medium or low.

High: Indicates the positive identification of a sensitive receptor and / or the likelihood of a potential risk to the surrounding environment.

Medium: Indicates the potential identification of a sensitive receptor or the likelihood of a potential risk to the surrounding environment.

Low: Indicates the negative identification of a sensitive receptor or the likelihood of a potential risk to the surrounding environment.

Based on the identified risk rating, plans will be developed and implemented to treat, control and minimise risk.

RISK RATING AND ASSESSMENT			
Risk Factor	Identified	Detail	Risk Rating
Sensitive Receptors			
Visible flowing water course within 100 metres of site boundary and category of watercourse.	Yes	A drainage ditch located along the southern perimeter of the site. A unnamed watercourse flows near to the sites eastern boundary. The two watercourses join off the south eastern corner. It is thought that the watercourse eventually flows into the Rothley Brook (EA designated Main River).	Red
Discharge from site flows directly into a water course	Yes	The proposed construction surface water drainage strategy for the site has water falling under gravity through drains set into the highways that will inflow into two attenuation basins. The attenuated water then outfalls via headwalls into the surrounding drainage ditch network / tributaries of Rothley Brook.	Red
Water course contains visible aquatic life (fish etc.) or has been assessed as environmentally sensitive	Yes	The Ecological appraisal report for the Site classifies the on-site watercourse as not environmentally sensitive but it is understood that the Rothley Brook, offers potential to support aquatic life.	Yellow
Local water course used as local amenity, fishing, canoeing, boating, swimming	No	Due to the size of the Rothley Brook tributary, it is not anticipated that the watercourse is used for fishing, canoeing, boating or swimming.	Green
Likely volumes of temporary discharge will exceed those designed for the final discharge consent	Yes	Temporary run-off to the proposed construction surface water drainage system may well exceed calculated final discharge rates during storm events during the construction phase due to unsurfaced areas increasing run-off rates.	Yellow
Treatment of water discharge is likely to be required to achieve the quality standard of acceptability	No	Treatment of site discharge construction surface water is not currently anticipated at this stage.	Green
SSSI and Sensitive Receptors located downstream from the development.	No	No downstream SSSIs have been identified. There are no statutory designations covering any part of the Site or downgradient of the site, and no international statutory designations were identified within 10km.	Green
Ground Conditions and Topography			
Soils investigation identifies clay / silt (impermeable materials)	Yes	British Geological Survey (BGS) mapping indicates that the site is underlain by Cotgrave Sandstone Member to the northern central most point of the site, with Gunthorpe Member Mudstone (Clay) making up the majority of the bedrock geology throughout the rest of the site. Superficial deposits at the site are shown to comprise River Terrace Deposits of sand and gravel along the southern portion of the site. The ground conditions underlying the site have the potential to generate silt in run-off that may remain in suspension for long periods of time and be slow to settle with gravity based settlement techniques.	Red
Site exposed, or at high altitude, or steep gradient.	No	The field gently falls southwards and eastwards towards the southern and eastern boundaries towards the nearby drainage ditches and watercourses.	Green
Soils investigation identifies on-site contamination that may pose as risk to controlled waters	No	The provided ground investigation report for the site confirmed that a significant source of contamination has not been identified at the site.	Green
Groundwater level detected at installed drainage pipework depths	Yes	During return monitoring visits completed by others, standing water within monitoring well installations recorded a varying depth of between 0.5m to 3.5 m below existing ground level. it is anticipated that any groundwater will generally be shallower in the southern part of the site where the more variable and granular deposits are present.	Yellow
Rainfall and Flooding			
Historical evidence indicates site suffers from seasonal flooding	No	The RSK Flood Risk Assessment Report confirms that the vast majority of the site is located within Flood Zone 1, with the inclusion of Flood Zone 2 and 3 within the south eastern corner of the site.	Green
Development Constraints			
Does the development require a programme of earthworks to change / modify site levels	Yes	To facilitate the sites development it is understood that a phase of earthworks will be undertaken to create the necessary development platforms and infrastructure. A provided concept cut & fill isopachytes for the proposed development show the formation across much of the site can be achieved with a <0.5m cut and fill exercise, with some localised area of deeper cut and fill.	Yellow
Construction of attenuation basins programmed for construction within 3 months of development commencement.	No	Detailed development plans are unknown at this stage, however due to the necessity for a programme of earthworks at the site, it is anticipated that attenuation basins will not be immediately constructed.	Red
Potential Pollution Risk Rating			
It is considered that Site should be classed as 'high / medium risk' prior to the construction of attenuation basins and temporary silt protection measures, given: 1. The nearby watercourses. 2. The requirement for a programme of earthworks prior to the construction phase of the development. The risk rating may be considered to be a 'medium risk' after the construction of the attenuation basins and silt protection measures upgradient of the outfall in to the watercourse.			

6. PREVENTATIVE MEASURES

The following specific protection measures should be implemented within the active development areas of the site to protect the construction surface water system. The protection measures are shown in Figure 1. Installation examples are shown within **Appendix B** and manufacturers product sheets are provided within **Appendix C**.

Site Set Up:

1. Specific monitoring points (shown schematically in Figure 1) should be established and monitored at regular intervals and during periods of heavy rain.
2. A minimum of 10.00 m should be retained as a vegetated buffer zone around the perimeter of the Site which is in turn protected by silt fencing.
3. Early construction of the drainage infrastructure is recommended, including attenuation ponds and outfall headwalls will enable their use to store and control run-off; and silt management.
4. Temporary compounds should be stoned up at the earliest opportunity with designated vehicle tracking routes lined with stone.
5. Consideration as to the placement of materials storage areas where they can be accessed directly from a surfaced road, and placement of hardstanding or stoning up of the storage areas, to prevent tracking on unsurfaced ground to access materials.
6. The installation of hard standing areas to the front of all plots to enable 'clean' forklift access.
7. Monitor the condition of the existing Public Right of way (PROW). It may be necessary to line sections of the footpath with matting or stone to prevent construction surface water run off making the route boggy and waterlogged.
8. General good housekeeping of the site.

Land Clearing:

9. Control of site surface strip: it is imperative that the wholesale stripping of surface vegetation and associated topsoil should be minimised. For the effective management of run-off it is critical that the site strip should be carefully managed in accordance with a site strip plan that phases the site strip to enable specific areas to be developed whilst maintaining surface vegetation to promote infiltration and minimising run-off. The site strip phasing plan should be incorporated into the CSWMP for each development phase.
10. A suitable standoff distance (at least 8m) should be established from the top of any ditch or watercourse which is in turn protected by silt fencing.
11. No land clearing shall be undertaken without suitable drainage and sediment control measures.
12. All reasonable and practicable measures must be taken to minimise the duration that soils are exposed by staging earthworks and stabilising the surface.
13. Buffer zones to be established to restrict plant and vehicular movements to protect areas from unnecessary disturbance. A physical barrier such as marker tape or light fencing to be erected around the buffer zone to define 'no go' areas.
14. Where possible, undertake bulk excavation and earthworks during periods of dry weather.
15. Ensure that heavy good vehicles (HGVs) being utilised to remove soils from site can gain clear access to the loading point(s) via hardstanding, to prevent driving over soft ground to prevent silt remobilisation and transfer.

Soil and stockpile management:

16. Consideration should be given to the location of stockpiled materials (topsoil / subsoil) within designated areas to be located as far as practicably possible from any identified construction surface water receptors (ditches) or any road gullies.
17. The placement of a silt fence at the base of any stockpile should be considered in order to control silty run-off.
18. Utilise soil stockpiling procedures to ensure that the number and condition of stockpiles maintained on site are closely maintained and monitored in accordance with DEFRA guidance on best practice for storage during the construction phase.
19. Consider drainage control upgradient of area of stockpiling to divert water around the stockpiling area.
20. All temporary earth banks must be sealed.

Silt fences:

21. Silt fencing may be used to attenuate run-off and temporarily pond water.
22. When erected along the contour lines, regular returns are required to allow water to pond at regular intervals along the length of the fence. It must remain vertical and be adequately keyed into the soil.
23. Install silt fence(s) along the low side of the site and in any active development area that is to be stripped before work begins.
24. Silt fencing should also be installed around the top of swales and basins adjacent to areas of bare soils / areas of earthworks and excavations, until vegetation and landscaping in the area has been completed.

Swales:

25. The base and sides of swales and basins should be covered, seeded / planted per the final design as soon as practicably possible to prevent erosion and remobilisation of sediment into the surface water features.
26. Regular check-dams should be installed along the swales that are to be completed. Silt mats (3) placed immediately upgradient and down-gradient of each check dam. The check-dams should fully cover the width of the swale and be spaced approximately 30.00 m distance apart.

Attenuation Basins:

27. Drainage infrastructure, and outfall headwalls should be programmed to be completed as soon as possible. This will enable their use to store and control run-off.
28. At the upgradient margins of the existing attenuation basins, silt fencing may be placed around the upgradient margin to prevent uncontrolled run-off toward the pond and scouring of the pond banks.
29. Where possible, surface water should be directed into onsite attenuation basins or temporary sediment basins to allow passive, gravity-driven silt settlement to occur.
30. Rip Rap stone to be placed immediately downgradient of the inflow to prevent scouring during peak flow events.
31. Any temporary attenuation sediment basins should be appropriately designed for the required hydraulic (flow) conditions.
32. It is recommended that a silt fence material lined with wire gabion baskets is installed at each inlet headwall. The baskets should be placed across the headwall apron with tightly fitting silt mats (weighted with sandbags) packed between the headwall wingwalls. The protection measures should be suitably tight fitting within the headwall to ensure water

- cannot bypass the measures. This will dissipate flow energy and minimise soil erosion. Silt matting should be frequently checked to ensure it is sufficiently weighted to remain in place.
33. At the outlet headwall sand bags to be placed across the headwall apron, with tightly fitting silt mats packed between the headwall wingwalls. The sandbags should be suitably tight fitting within the headwall to ensure water cannot bypass the measures.
 34. Construction water should be retained within the attenuation pond for a suitable period to allow silt the opportunity to settle out under gravity before being discharged. It may be necessary to fit a suitably sized bung or flow reducing plate within the outlet headwall of the attenuation pond to prevent the discharge of water until the silt has settled out. Whereupon the bung/flow restrictor plate may be removed, and the clean silt free water is discharged.
 35. To increase the effective length to width ratio of a basin. The use of temporary internal baffles are required are suggested within the basin as shown in Figure 1.

Plant and machinery operation:

36. Avoid tracking or washing out next to any attenuation basin, ditch or any gully.
37. Avoid tracking in the vicinity of any attenuation basin or any area of standing water that may be present.
38. Use designated separate machine and dumper tracking routes that avoid surfaced roads (that may be used by road-going vehicles). Designate specific machine crossing points of surfaced roads.

Protection measures to install / maintain throughout construction:

39. Existing access tracks / haul roads: where run-off is channelled along existing haul roads run-off should be intercepted and diverted off the track way by means of suitable French drainage placed across the track way to a grip or ditch downgradient of the track way. Deposition of mud into constructed French drains may be minimised by capping the clean washed stone infill with track-matts.

Road and sewer maintenance:

40. Minimise the movement of plant on and off roads to prevent the tracking of excess soil onto surfaced roads (i.e. planning of the working day and work areas, utilising designated machine and dumper road crossing points).
41. Regular scraping of roads to remove significant silt build-up.
42. The placement of gully protection in all gullies during construction and for these to be inspected and replaced / cleaned on a regular basis.
43. Provision of a road sweeper on site and on the adjacent road network during periods of inclement weather (frequency to be continually assessed by site management), but particularly during bulk soil movements.

Management of dewatering – excavations:

44. Any temporary construction surface water discharge undertaken during the construction phase should comply with any discharge permit (gained from the Environment Agency EA) or discharge consent (gained from the lead local flood authority LLFA) and may be subject to be undertaken under a bespoke EA permit application. It is recommended that liaison is undertaken with the EA to ascertain the EA regional approach on this matter.
- The site may temporarily discharge dewatering waters under the appropriate EA Regulatory Positional Statement (RPS) for a period of 3 months subject to the strict

conditions of the EA positional statement. Any unconsented discharge or discharge not meeting the requirements of the EA RPS may be liable to enforcement action.

- Any proposed pumping to ditches or water courses will need to be conducted under an EA RPS – <https://www.gov.uk/government/publications/temporary-dewatering-from-excavations-to-surface-water>. Following commencement of pumping the RPS is applicable for a period of 3 months and careful treatment of the water **MUST** occur to ensure the requirements of the Positional Statement are met. Records should be maintained to demonstrate compliance. Non-compliance and/or discharge of silt water is likely to result in enforcement action being undertaken.

45. Should dewatering of excavations be required, the following options may be considered:

- a) Over-pumping into the constructed construction surface water drainage system i.e., any on-site temporary attenuation basin, permanent attenuation basin or construction surface water sewer (when constructed). Adequate protection measures should be implemented (potentially comprising, but not limited to; use of filter bags on any pump inlet and outlet and passing water through either a settlement tank or silt capture system) to prevent discharge of silt into the constructed construction surface water drainage system and subsequently off-site. The implemented measures should be frequently monitored and maintained to prevent discharge of silt into the drainage system.
- b) Over pumping over a large area of well vegetated surface. The vegetated surface must be large enough for the anticipated volume of water being discharged. Water must be pumped through a settlement tank and flow-through filter bag. The outlet should be positioned on top of a silt matt or a bed of gravel to dissipate the energy of the water flowing through the pipe. Water must be pumped at a steady flow rate so not to erode or mobilise any silt in the area of the discharge. The implemented measures must be frequently monitored and maintained to prevent discharge of silt into the drainage system. The action of pumping over a large area shall not pollute any off site water course.

46. All water discharged during the construction phase must be discharged at a legal point of discharge.

47. Allow silt to settle prior to pumping.

48. Dewatering activities will immediately cease in the event of significant sediment levels, which pose a risk to identified receptors are observed.

49. It may be possible to dewater to the local foul sewer network. Permission would be required from the foul network asset owner.

50. Heavily silt laden water, not suitable to be discharged onsite, may need to be disposed off-site via alternative means. i.e. tankered offsite.

51. To prevent pumping sediment and silt through the pump system, it is recommended that a sump is created with clean gravel and a perforated pipe placed vertically to allow a suitably sized pump to be inserted.

Re-instatement of completed areas:

52. The placement of topsoil and planting / seeding at the earliest opportunity to stabilise soils and control construction surface run-off from completed areas and areas which are not proposed for construction of plots within the current growing season (if possible).

53. Landscaping of completed areas of public open space (POS), basins and swales shall be undertaken as soon as practicable following their installation.

54. Unless otherwise agreed, the placement of topsoil and planting / seeding should be undertaken at the earliest opportunity to stabilise soils and control construction surface run-off.

Where re-vegetation is not programmed at the earliest opportunity, then alternative erosion control measures must be incorporated i.e. mulching, erosion blanket.

7. ON-GOING SITE MAINTENANCE

- On site storage / availability of silt fencing, silt matting and straw bales to enable deployment at short notice if required (i.e., during inclement weather) and to facilitate on-going maintenance of potential installations.
- Removal of residual silt held back by installed protection measures (i.e., at headwalls, behind silt fencing etc).
- Fuel storage: fuel stored on-site in above ground oil storage tanks should be handled and stored safely to minimise the risk of causing pollution in accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001. Best practices of on-site fuel storage may be gained from The Oil Storage Regulations for Businesses (on GOV.UK). Failure to adequately secure and store fuel in a manner to avoid pollution may be prosecutable under the 1990 Environmental Protection Act.

8. MONITORING PROCEDURES AND RECORDS

Depending on site conditions as development progresses and as site levels change, other measures may be required to be implemented. These should be identified through regular monitoring and at key milestones during the development and the CSWMP for that particular phase updated accordingly.

For each phase the following monitoring procedures should be carried out by the site construction team to enable continuous review of the measures prescribed in the CSWMP and a regular written / photographic record kept. A comprehensive record of the effectiveness of the system will then be documented to enable review by any statutory authorities attending site:

1. Inspection of the primary monitoring locations (as described on Figure 1 – Construction Surface Water and Silt Management Plan Schematic) on a **daily basis during periods of heavy / prolonged rainfall**, and at a suitable (weekly) frequency during periods of dry weather.
2. Inspection of the secondary monitoring locations (as described on Figure 1 – Construction Surface Water and Silt Management Plan Schematic) on a **daily basis during periods of heavy / prolonged rainfall**, and at a suitable frequency during periods of dry weather.

Records of monitoring may be kept using the monitoring point inspection form within **Appendix B**.

3. Inspection of all gullies and manholes to monitor the discharge entering the constructed construction surface water system using the gully inspection form within **Appendix B**.

4. Maintenance, cleaning and replacement of gully protection and all silt entrapment materials

(whichever are utilised) as required.

5. Maintain a photographic log and written record of monitoring using the site inspection form within **Appendix B** on a weekly basis (as a minimum), which will assist in documenting changes on site and identifying any changes needed to the protection systems as the development progresses.
6. All records should be reviewed on a quarterly basis by the HSE team or appointed environmental consultant. Advice can be obtained by the site team at any time from the appointed environmental consultant.

9. EMERGENCY / ADDITIONAL MEASURES

In the event of heavy rainfall breaching protective measures, the appointed Bellway Homes Limited, East Midlands staff member should be contacted for advice. Further advice may be gained by the appointed environmental consultant. Contact details are provided below.

It may be necessary to fit a suitably sized bung or flow reducing plate within the outlet headwalls of the attenuation basins to prevent discharge of water with an unacceptably high level of suspended solids into the construction surface water system beyond. Retained silty water should be retained within the attenuation basins until silt settles out to an acceptable level, whereupon the bung / flow restrictor plate may be removed and the clean silt free water may be discharged.

To enable a prompt response to changing site conditions, it is advisable to ensure a supply of silt fencing / silt matting and suitably sized pipe bungs and flow reducing plates are readily available on-site to implement emergency measures.

10. CONTACT DETAILS

Bellway Homes Ltd. East Midlands	Gareth Miles	07977 644102
RSK Environment Ltd (appointed Environmental Consultants)	Tristan Trigell	07553 606863
	Kevin Holmes	07768 753024

FIGURES

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APPENDIX A

SERVICE CONSTRAINTS

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APPENDIX A

SERVICE CONSTRAINTS

1. Service Constraints for all Reports

1.1. This Report (the "Report") and any study, inspection, investigation, sampling, testing and or interpretation carried out in connection with the Report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) trading as Carbon Zero Consulting, Leap Environmental or RSK Geosciences, for the Client named in the first paragraph of the Report (the "Client") in accordance with the terms of an RSK Fee Proposal including RSK Environment Standard Terms and Conditions (the "Appointment") between RSK and the Client, unless otherwise stated in the first paragraph of the Report. The Services were performed by RSK with the reasonable skill and care ordinarily exercised by a geo-environmental consultant at the time the Services were performed. Nothing in this Report shall be construed as imposing any fitness for purpose obligation. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the Client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the Client.

1.2 Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services. RSK shall not be liable in respect of any action or proceedings arising out of or in connection with this Report whether in contract, in tort, for breach of statutory duty or otherwise after the expiry of six (6) years from either (i) the date of the Report or (ii) such earlier date as prescribed by law, unless varied in the terms of the Appointment.

1.3 Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent, or condone any party, other than the Client relying upon the Services. Should this Report or any part of this Report, or details of the Services or any part of the Services, be made known to any such party, and such party relies thereon, that party does so wholly at its own and sole risk, and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent geo-environmental consultant and/or lawyer.

1.4 The Client shall not, without the prior written consent of RSK, assign, transfer, charge, mortgage, subcontract, or deal in any other manner with all or any of the benefits provided in this Report. Unless specified in the Appointment, RSK shall not be obliged to assign the benefit of the Report whether by collateral warranty, third party rights pursuant to the Contracts (Rights of Third Parties) Act 1999, letter of reliance or otherwise. If RSK agrees to any assignment of the benefit of this Report, in whatever form, benefits to third parties through collateral warranties, third party rights or letters of reliance shall not be provided unless a fee for each right, warranty or letter is agreed. The form of wording used in the warranty or letter shall be provided by RSK for agreement by the Client. Any reasonable changes to the form of wording will be implemented by mutual agreement, however the terms in the warranty or letter cannot offer the third party any greater benefit than the Appointment offered to the Client.

1.5 It is the understanding of RSK that this Report is to be used for the purpose described in the introduction to the Report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the Report is used, or the proposed use of the site change, this Report may no longer be valid and any further use of or reliance upon the Report in those circumstances by the Client without the review and advice of RSK shall be at the Client's sole and own risk. RSK shall not be liable for any use of this Report for any purpose other than that for which it was provided.

1.6 The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions contained in this Report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the Report in the future shall be at the Client's own and sole risk.

1.7 The observations and conclusions described in this Report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out, or required by the Appointment between the Client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this Report, RSK did not seek to evaluate the presence on or off site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas, fuel storage, persistent bio-accumulative or toxic chemicals (including PFAS and related compounds) or other radioactive or hazardous materials, unless specifically identified in the Services.

1.8 The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of desk based publicly available information, including documentation, obtained from third parties and from the Client on the history and usage of the site, unless specifically identified in the Services and the limitations below:

- a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.
- b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.
- c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the Client or third parties, including laboratories and information services, during the performance of the Services.
- d. The Client has identified in writing to RSK, the information, reports, findings, surveys and preliminary works RSK may not rely upon when providing the Services.

RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK, and including the doing of any independent investigation of the information provided to RSK, save as otherwise provided in the terms of the Appointment between the Client and RSK.

1.9 Any site drawing(s) provided in this Report is (are) not meant to be an accurate base plan for scale measurement but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for accurate setting out and should be considered indicative only.

1.10 Should RSK be requested to review the Report after the date of issue of this Report, RSK shall be entitled to additional payment at the existing rates, or such other terms as agreed between RSK and the Client.

2. Service Constraints where the Report provides an intrusive assessment of ground conditions:

2.1 The intrusive environmental ground investigation aspects of the Services are a limited sampling of soil from the site, at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this Report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together

with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters (as stipulated in the scope agreed between the Client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species (not tested) are not present.

2.2 The comments given in this Report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. The extent of the exploratory holes, laboratory testing and monitoring undertaken may have been restricted due to a number of factors including accessibility, the presence of buried or overhead services, current development, site usage, timescales or the Client's specification. The exploratory holes only assess a small proportion of the site area with respect to the site as a whole, and as such may only provide an indicative assessment of ground conditions on site. There may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised. The presence of hotspots of undisclosed contamination or exceptional and unforeseen ground conditions cannot be discounted.

2.3 Where the Services include Investigation of an exploratory nature or relating to physical ground works, any costings and prices provided in the Report are estimated and provided for guidance purposes only. The actual cost and time quantities shall be remeasured and shall be dependent upon the ground or other conditions, constraints present, and number and depth of the investigation locations, which shall influence the number of samples and tests required, and the quantities of soil being classified.

2.4 Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works. However, this Report does not constitute an asbestos survey. On this basis, the presence of asbestos on site cannot be discounted and a full asbestos survey should be undertaken.

2.5 Unless stated otherwise, only preliminary geotechnical recommendations are presented in this Report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed. Eurocode 7 gives guidance on the type of sampling, sample quality, number and spacing of intrusive investigations, and number of laboratory tests required. It is intended that the Geotechnical Information section of this Report will fulfil the general requirements of the Ground Investigation Report as set out in section 6 of Eurocode7, although this is subject to the restrictions imposed on the investigation, as listed above. For geotechnical design, Eurocode 7 requires the Geotechnical Design Report to address both the geotechnical and structural aspects of the geotechnical design for both the limit and serviceability states. The Geotechnical Appraisal section of this Report will not meet the requirements of a Geotechnical Design Report (GDR) and should therefore be used for preliminary guidance only.

3. Service Constraints where the Report relates to Surface Water Management:

3.1 The Surface Water Management Inspection (SWMI) Report, documents provided, observations, actions, and recommendations, with respect to the management of potential pollution issues to surface waters, made during the site Inspection visit, are those present at the time of the visit, and may not represent those recorded by others on the same day.

3.2 The comments given in this Report and the opinions expressed are based on the weather, ground and ground water conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not

been disclosed by the inspection and therefore could not be taken into account. In addition, groundwater levels and flows, may vary from those Reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.

3.3 RSK places a degree of dependence upon oral information provided by site representatives, which is not readily verifiable through visual inspection, or supported by any available written documentation. RSK shall not be held responsible for conditions or consequences arising from relevant facts that were not fully disclosed by facility or site representatives at the time this Report was prepared.

3.4 This Report is a live document, to be continually reviewed and updated as the development progresses or other changes occur on site. RSK can only maintain the currency of this Report through the Client requesting support with supplementary site visits or attendance at meetings ahead of key stages of the development in relation to surface water management. Our risk rating assesses a number of risk factors in line with the source-pathway- receptor model and is therefore subject to constant change.

3.5 Standard design drawings are indicative. Material types, dimensions and construction details will need to be adjusted by the Client to suit the specific conditions / flows on Site.

3.6 The full responsibility for implementing the site-specific protection and maintenance measures to protect the surface water system as stated in this Report, remains with the Client and their site management team. Additional control measures may be required to achieve the objectives set out in the Surface Water Management Plan to be implemented and financed by the Client.

4. Service Constraints where the Report relates to Waste Management:

4.1 In accordance with the definition provided in the Waste Framework Directive (WFD), materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded, by the holder'. Naturally occurring soils are not considered waste if re-used on the site of origin for the purposes of development. Soils such as made ground that are not of clean and natural origin (irrespective of whether they are contaminated or not) and other materials such as recycled aggregate, do not necessarily become waste until the criteria above are met. Excavation arisings from the development may therefore be classified as waste if surplus to requirements and/or unsuitable for re-use.

4.2 It is the duty of the waste producer, to ensure that all waste is accurately classified prior to waste disposal. Technical Guidance WM3 (EA, 2018) sets out in its Appendix D requirements for waste sampling. It is a legal requirement to correctly assess and classify waste. The level of sampling should be proportionate to the volume of waste and its heterogeneity. Unless otherwise stated, the waste assessment presented in this Report should be considered as preliminary and further testing and assessment of the waste under the provisions of a Waste Sampling Plan may be required to obtain the necessary level of data required for basic characterisation of the waste in support of disposal.

4.3 Unless stated otherwise in the Report, information relating to historical operations at the site was not reviewed as part of the assessment by RSK. In addition, unless otherwise stated in the Services, RSK was not present during the collection of the samples nor had any input on the chemical testing suite. Therefore, the waste assessment and classification detailed in this Report are based solely on any information that were provided to RSK (e.g., laboratory chemical data, exploratory hole records) and were completed without prejudice for our Client.

4.4 RSK assumes that any ground investigation data, chemical testing results etc., that were provided by the Client to inform the waste assessment and supporting review were carried out in accordance with current best practice and relevant guidance/ standards, where applicable. Thus, the comments given in this Report and the opinions expressed are based solely on the information provided by the Client. However, it is noted that there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account as part of the RSK assessment.

5. Service Constraints for Construction Environmental Management Plan Reports:

5.1 This Report should be considered in the light of any changes in legislation, statutory requirement or industry practices that may have occurred subsequent to the date of issue.

5.2 The measures and comments outlined in this Report and any opinions expressed are based on the plans provided at the time and discussions with relevant parties. However, there may be conditions pertaining to the site that have not been disclosed by investigations and therefore could not be taken into account.

5.3 This CEMP is a live document and is subject to change throughout the project, as and when necessary, to ensure management of environmental aspects remains relevant, and to ensure continued compliance with legislation and commitments as they may change. RSK understands that this CEMP will be reviewed by the Client every six months and updated as and when necessary.

5.4 It is the full responsibility of the Principal Contractor/ Client to ensure that their works do not contravene legal requirements, and adherence to this CEMP alone cannot be a full defence regarding legal action against the Principal Contractor.

6. Service Constraints where the Report relates to Ground Gas Membrane Verification:

6.1 This Report is limited to the verification of the gas resistant membrane/vapour membrane/radon barrier after installation and no inspections were undertaken of the substrate (i.e. prepared ground). The Report therefore does not constitute as a full verification of ground gas protection system.

6.2 The comments given in this Report and the opinions expressed, are based on the condition of the ground gas membrane as encountered at the time of inspection by suitably qualified personnel. RSK cannot accept liability for any subsequent change to the status of the gas membrane by follow-on trades or other construction activity.

6.3 Where not designed by RSK, the verification of protection measures is carried out with reference to the gas protection design provided by the Client. RSK assume the scope of gas protection measures as determined by third parties to be correct and to have achieved any required approval from authorities.

6.4 The Ground Gas Design Report/Remediation Strategy and Verification Plan contains details of the procedures to be adopted for inspection and validation of the works. However, it should be noted that responsibility for the correct implementation of the strategy lies with the appointed contractor. RSK cannot be held responsible for any remedial works that are carried out without the agreed procedures involving either direct supervision by RSK, or inspection and validation of the works by a representative from RSK.

7. Service Constraints for Environmental Due Diligence (EDD) Reports:

7.1 The comments given in this Report and the opinions expressed are based on the information obtained and reviewed as part of the desk-based assessment. However, there may be conditions pertaining to the Site that have not been disclosed by the assessment and therefore could not be taken into account. Furthermore, no intrusive investigations, monitoring or sampling have been undertaken to confirm the environmental status of the site, therefore any comments relating to ground conditions and subsurface contamination are based solely on a review of desk-based information.

7.2 This Report describes the results of the EDD exercise. The scope of this EDD Report, where appropriate, covers legal or regulatory compliance with respect to UK or international regulations associated with environmental matters.

7.3 As with any EDD exercise, there is a certain degree of dependence upon information provided by the target company. The EDD does not include a site walkover / visit or liaison with site representatives unless identified in the Services. Therefore, the assessment is based on the available desk study information. Also, there is a certain degree of dependence upon oral information provided

by site representatives, which is not readily verifiable through visual inspection, or supported by any available written documentation. RSK shall not be held responsible for conditions or consequences arising from relevant facts that were not fully disclosed by facility or site representatives at the time this EDD exercise was performed.

7.4 This Report, including all supporting data and notes (collectively referred to hereinafter as "information"), was prepared or collected by RSK for the benefit of its Client.

7.5 The comments given in this Report and the opinions expressed are based on the information obtained and reviewed as part of the desk-based assessment and the site inspection visit. However, there may be conditions pertaining to the Site that have not been disclosed by the assessment and therefore could not be taken into account. Furthermore, no intrusive investigations, monitoring or sampling have been undertaken to confirm the environmental status of the Site therefore any comments relating to ground conditions and subsurface contamination are based solely on a review of desk-based information and observations collected during the site inspection visit.

8. Service Constraints for Ground source heat energy Reports:

8.1 It is understood that this is a desktop survey only and that there are no requirements for a site walkover, service utility survey, or provision of service plans. These services can be provided upon request if required.

8.2 At a later stage, it is possible that a thermal response test (TRT) will need to be completed, for which a test borehole will have to be drilled, and these would be costed at the time. RSK can provide all aspects of subsequent site work for a GSHP system if required.

9. Service Constraints for Water Abstraction Borehole Reports:

9.1 The Report aims principally to only identify and assess the suitability of the site for a water abstraction borehole. This Report should be considered in the light of any changes in legislation, statutory requirements, and industry practices, that have occurred subsequent to the date of the Report.

9.2 Unless stated in the Report, the opinions expressed in this Report including all comments and recommendations provided are on the basis of the information obtained from a desk-based assessment.

APPENDIX B

INSPECTION AND MONITORING PROFORMAS

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GULLEY INSPECTION CHECKLIST
SITE: DESFORD LANE, RATBY, LEICESTERSHIRE, LE6 0LE

Date	Road or Gully Ref.	Gulley clear and functional (yes/no)	If no - action required: e.g. (gulley clean / gulley bag replace)	Further comment	Sign off / Signature

SITE INSPECTION CHECKLIST

SITE: DESFORD LANE, RATBY, LEICESTERSHIRE, LE6 0LE

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? <i>Note any gullies requiring maintenance measures</i>			
2) Are site roads clean and relatively free of mud? Is the frequency of visits by the road sweeper adequate? <i>Consider whether additional visits should be scheduled.</i>			
3) Are there currently unsurfaced areas being trafficked which may be causing silt to enter the site drainage? <i>Note if additional measures are required to reduce the run-off from these unsurfaced areas.</i>			
5) Are control measures in place to prevent silt run-off from unsurfaced areas and soil stockpiles? <i>Note if the control measures are adequate and whether the increased runoff requires an increase in the frequency of inspection of any control measures.</i>			

6) What is the current condition of run-off? <i>Note any discolouration of the water or obvious sign of sediment within the water.</i>			
7) What is the current water condition at the at monitoring locations? <i>Note any discolouration of the water or obvious sign of sediment within the water.</i>			
8) Is any off-site run-off occurring? <i>Note whether any run-off is occurring – especially in the vicinity of any boundaries.</i> <i>Note any control measures in place.</i>			
9) Is there any dewatering of excavations taking place on site? <i>Note what activities are taking part and their location.</i> <i>Note any control measures in place.</i>			
Further notes and actions to be taken:			

Completed by	Name	Signature	Date
Site Manager			

APPENDIX C

INSTALLATION EXAMPLES

Retention of a wide vegetated buffer and step down in site levels due to reduced dig



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



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)



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.



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)



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)



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)



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.



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 D

EXAMPLE MANUFACTURERS AND PRODUCT SHEETS

Product:	Application	Manufacturer and product
Gully 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 • Silbuster – 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 – Flocc 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 • Silbuster – 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.	• Silbuster – wide range of settlement units available • Andrew Sykes Group – settlement tanks / Silt Away. • Dirtbags UK – Dirtbox

GULLY PROTECTION

Installation video: <https://www.forestgroupuk.co.uk/gully-guard-installation-video/>

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.

Forest Drainage Products Ltd

Stardens Works, Tewkesbury Road,
Newent, Gloucestershire GL18 1LG

Tel: 01531 828960 Fax: 01531 828969

Email: info@forestgroupuk.co.uk

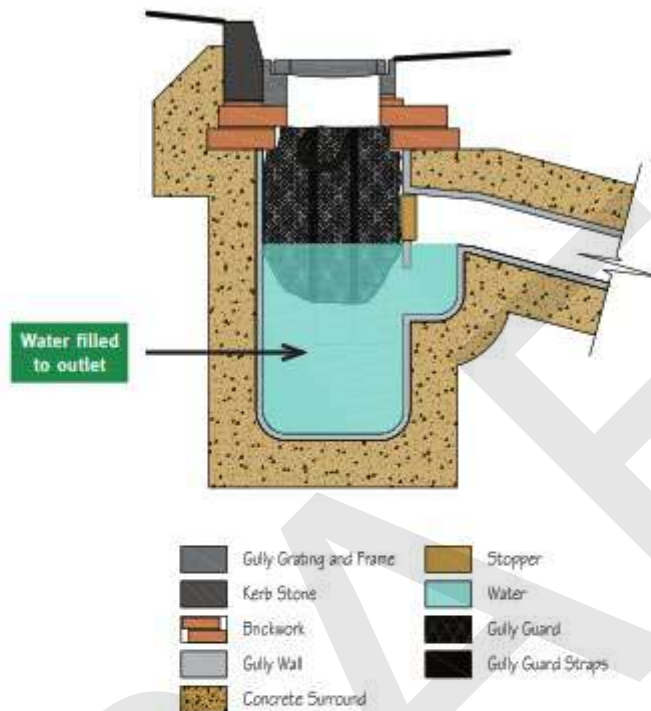
www.forestgroupuk.co.uk

Patent no. 2472690

 **The Forest Group**
High performance, versatile solutions

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")

Forest Drainage Products Ltd, Stardens Works,
Tewkesbury Road, Newent, Gloucestershire GL18 1LG
Tel: 01531 828960 Email: info@forestgroupuk.co.uk

www.forestgroupuk.co.uk



fg The Forest Group
High performance, versatile solutions

57616 / 6145

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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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.

Technical information

Silt Fence

Dimensions: 100 metres x 0.9 metres (single roll)

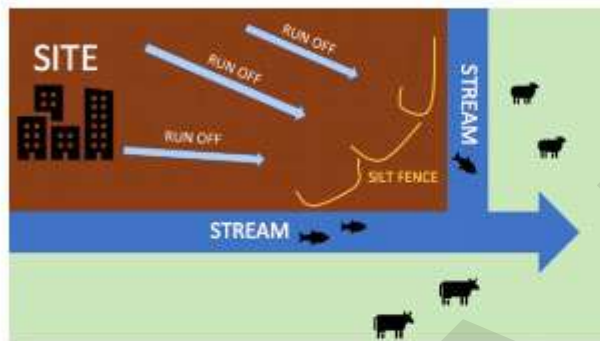
Dry Weight p/m: 110 g/m² (9.9 kg single roll)

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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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

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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FLOCCULANT TREATED SILT MATTING



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 CO₂**

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

for technical support and sales of
Silt Wattle contact frog environmental

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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

FILTER SOCKS

wildlife

specialist

biodegradables

geotextiles

agrotexiles

accessories

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

☒ Ideal for small dewatering jobs.

☒ Traps sediment and oil.



AVOID THIS

USE THIS



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 absorb 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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FILTER BAGS

wildlife	specialist	biodegradables	geotextiles	agrotexiles	accessories
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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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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.

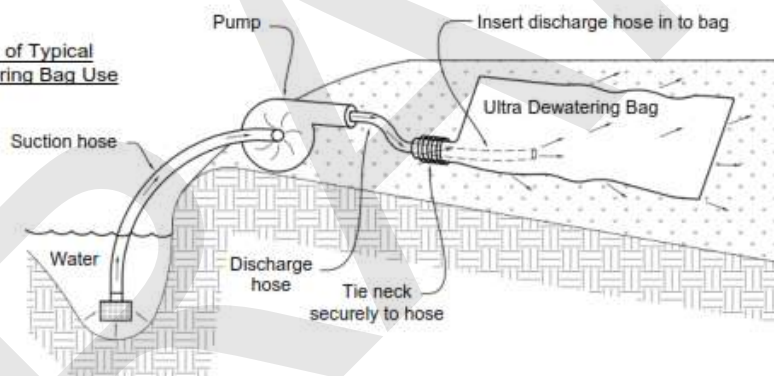
Flow rates will vary depending on the size of the Ultra Dewatering Bag, the type and amount of sediment discharged into the bag, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies.

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 m ² (72 ft ²)	2,730 l/min (500 gal/min)	10 cm (4 inch)	0.51 m ³ / 980 kg (18 ft ³ / 2,160 lbs)	14 l (3.7 gal)
3.05 x 4.55 m (10 x 15 ft)	9725	27.87 m ² (300 ft ²)	6,816 l/min (1,500 gal/min)	15 cm (6 inch)	4.20 m ³ / 4,082 kg (150 ft ³ / 9,000 lbs)	57 l (15.1 gal)

Notes:

Flow/Dewatering rates will vary according to soil type (Sand typically dewateres at the fastest rate, while clay dewateres 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/ft²) absorption capacity.

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Siltbuster Siltstoppa Bags

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

Pre-conditioned (floculated) 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	6.5m
Width	2.1m
Dry Weight	Site Dependent
Materials	Sludges and Slurries
Material Colour	Black
Bag Capacity	6m ³
Operating Range	Material Dependent

Siltbuster Siltstoppa Skip

Siltstoppa De-Watering Bags have been conveniently 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	1.7m
Length	6.1m
Width	2.0m
Dry Weight	2.0 tonnes
Material	Floculated Particles
Operating Capacity	1 Bag
Rolling Method	RORO Hooklift
Operating Range	Material Dependent



SETTLEMENT TANKS




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



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

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

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

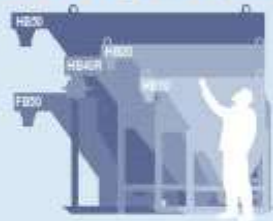
Silt Management

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: 1.3m	Width: 2.2m	Width: 1.7m
Effective Settlement Area: 50m ²	Effective Settlement Area: 10m ²	Effective Settlement Area: 20m ²	Effective Settlement Area: 40m ²	Effective Settlement Area: 50m ²
Dry Weight: 1,900kg	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: 1-50m ³ /hr	Typical Operating Capacity: 1-10m ³ /hr	Typical Operating Capacity: 1-20m ³ /hr	Typical Operating Capacity: 1-40m ³ /hr	Typical Operating Capacity: 1-50m ³ /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 characteristics



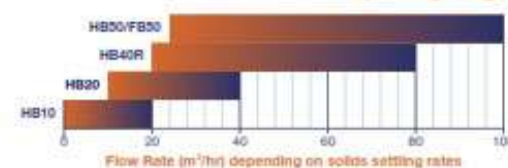
Options & Process Add-ons

Total Water Treatment Solutions

Siltbuster Clarifiers can be configured as single or multiple 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

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 interrupted 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 its award-winning settlement units.



Silt Management

www.siltbuster.com

Chemical Dosing, Pre-treatment & Reaction Systems

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 pipefloculators. 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.

Pipefloculators

For faster reacting chemicals, various pipefloculators 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 pipefloculators
- ▶ 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.