Persimmon | Health, Safety & Environment Department

Water and Silt Management Standards

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Contents

1. Introduction

The purpose of the water and silt management standards is to set out the requirements for effectively managing our work activities to prevent pollution of water (including streams, rivers, aquifers, groundwater, and surface water drainage systems). This standard also includes preventing pollution to foul water drainage systems.

During the pre-construction stage, it is imperative to plan how we will manage surface water during the construction stage.

It is the responsibility of the Technical Department to assess whether there is a requirement for a site-specific surface water management plan (SWMP). This should be assessed via the environmental aspect and impact assessment.

Where it is identified that a SWMP is required, this must be developed in conjunction with the construction team and the controls be in place **prior** to Principal Contractor starting on site. Irrespective of whether there is a SWMP, we must ensure that adequate provision is made in respect of preventing pollution, e.g. temporary attenuation basins, silt fencing, silt buster type systems etc.

This must all be recorded through the pre-start meeting process. All relevant information / licences etc. must be filed in the Project Environmental Plan (green folder).

Construction teams must carry out regular inspections to ensure activities do not cause pollution. The Group Health, Safety and Environment Advisors will support construction teams throughout the build process, through regular site visits.

2. Definitions and Acronyms

Watercourse	Includes all rivers and streams and all ditches, drains, cuts, culverts, dykes, sluices, sewers (other than public sewers) and passages through which water flows.
Controlled waters	Includes territorial waters, coastal waters, inland freshwaters (i.e. lake, pond, river, and reservoir) and ground waters.
Main river	Watercourse shown as such on main river maps held by Defra and Welsh Government.
Ordinary watercourse	A watercourse that does not form part of a main river
Public sewer	A sewer owned / managed by a sewage undertaker (local water authority). May be a foul sewer or a combined sewer (sewage and surface water).
Culvert	A covered channel or pipe designed to prevent the obstruction of a watercourse or drainage path by an artificial construction.
Local Lead Flood Authority (LLFA)	Responsible for consenting activities on ordinary watercourses except where there is an Internal Drainage Board. Usually, the local authority acts as the LLFA.
Internal Drainage Board (IDB)	IDBs are local public authorities established in areas of special drainage need in England and Wales. They have permissive powers to manage water levels within their respective drainage districts. IDBs undertake works to reduce flood risk to people and property and manage water levels to meet local needs.

2. Definitions and Acronyms

Groundwater Source Protection Zone	Defined zones around large public drinking water abstraction sites.
Secondary Containment System (SCS)	A containment system or bund used to prevent the leakage of hazardous liquids, particularly oil and fuel.
Trade Effluent Consent	Consent given from a statutory water company allowing the discharge of substances other than sewage to be discharged to the foul drainage system. Conditions apply.
Environmental Permit (to discharge)	Consent given from the relevant environmental regulator (e.g. Environment Agency, SEPA, NRW) to discharge to surface water systems, e.g. rivers, streams etc. Conditions apply.
TSS	Total Suspended Solids - TSS refers to any particles suspended in the water column, including silt, algae, sediment, and other substances (both organic and inorganic)
Turbidity	Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye, similar to smoke in air. The measurement of turbidity is a key test of both water clarity and water quality.
NTU	The unit for measuring turbidity is a Nephelometric Turbidity Unit (NTU). Usually, a larger NTU score indicates more suspended solids, organic debris, algae, and other minute particles that cause the liquid to become hazy or murky are present.

3. Requirements for preventing pollution

Consideration must be given to the time taken to obtain any relevant environmental permits to discharge (or consents), trade effluent consents and environmental permits for flood risk activities.

The cost of operational controls such as equipment, including monitoring equipment must also be assessed

Prior to any works commencing, the potential pollution impacts from our work activities must be assessed and the environmental aspect and impact assessment form completed. This initial assessment must identify any control measures required to reduce the impact of our activities.

Sites considered high risk i.e. those near to a watercourse, in areas of heavy rainfall, with sloping topography etc. will require a site-specific surface water management plan to be developed during the pre-construction stage (this can be produced internally or via an external consultant).

Refer to:
EMS form 002 – Environmental Aspect and Impact Assessment
EMS form 004 – Surface Water Management Plan Template

Potential impacts and control measures must be communicated to all relevant staff and contractors. Contractors must include relevant control measures in method statements and risk assessments. All control measures identified for any works need to be in place and operational prior to starting those works.

Control measures must be monitored to ensure that they are in place when required, effective and maintained throughout the works.

Details of control measures must be included in site specific inductions. Relevant Toolbox Talks should be undertaken to communicate requirements on an on-going basis.

3. Requirements for preventing pollution

3.1 Emissions to water and land

There are a number of UK laws and regulations that exist to protect the water environment including rivers, streams, lakes, reservoirs and groundwater. The regulations apply to pollution, abstraction and the integrity of watercourses and flood defences. The assessment of environmental impacts from the works and the implementation of this standard will demonstrate compliance with relevant legislation and codes of practice.

In England and Wales, the Environment Agency (EA) and Natural Resources Wales (NRW) respectively are responsible for consenting and enforcement relating to main rivers, while Lead Local Flood Authorities (LLFAs) (often this is the Local Authority) are responsible for consenting and enforcement for ordinary watercourses (see definitions), except where there is an Internal Drainage Board.

In Scotland, the Scottish Environment Protection Agency (SEPA) are the regulatory authority.

The environmental aspect and impact assessment should include reference to any watercourses within or in close vicinity to the site, and the existing drainage system. Potential pollutants to be considered include oil, silt, cement, plaster, building chemicals, cleaning products and washout from concrete activities.

The escape of waste can cause pollution of water and land, including litter. Waste must be properly contained and managed in accordance with our waste management standard to prevent pollution.

Refer to EMS standards – Waste Management

4. Surface water management plans

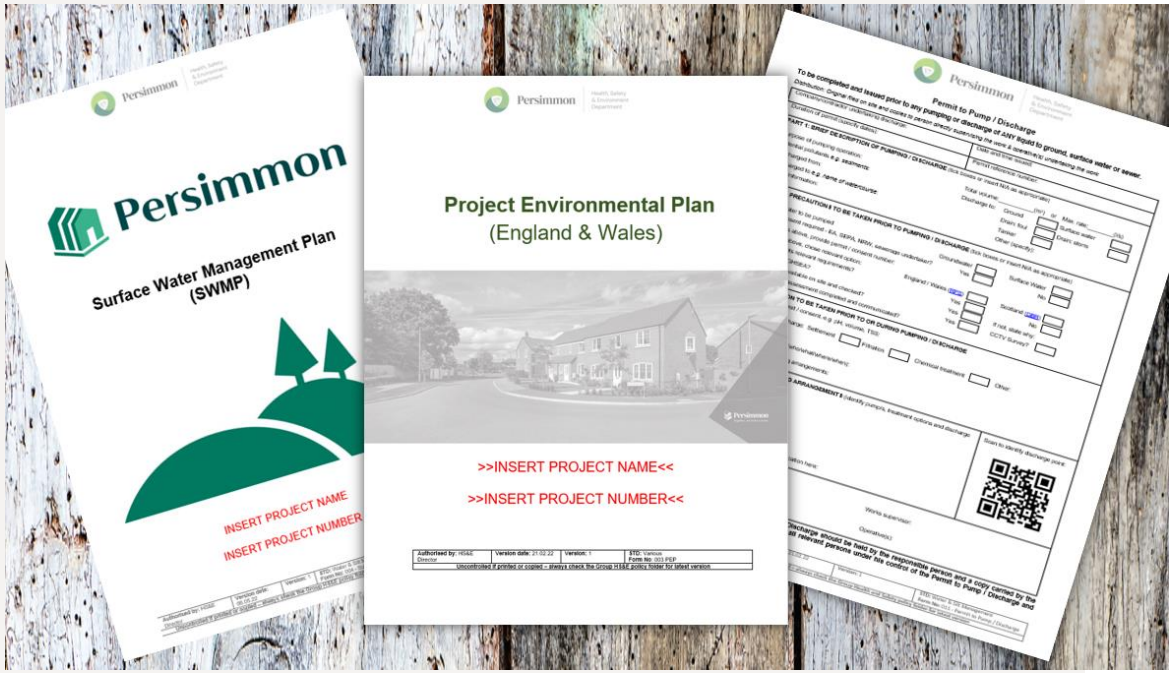
Where it is identified that activities pose a medium and or high risk to surface/ groundwater, a site-specific Surface Water Management Plan ('the plan') must be developed during the pre-construction stage, either by the Technical Department in conjunction with the Construction team or via an externally appointed consultant.

The template below should only be used by a competent person. It is intended as a guide only and must be made site-specific, detailing the relevant controls and techniques to be implemented on site.

Refer to EMS form 004 – Surface Water Management Plan Template

The plan must be regularly reviewed and updated as the project progresses. Updates must be recorded as 'revisions' when works progress and controls change e.g. installation of a new attenuation pond or silt trap etc.

The plan must be communicated to all relevant parties on site.



5. Site drainage

For all our sites, a site drainage plan must be displayed on the site environmental noticeboard showing locations of drainage (surface water drains, soakaways, land drains, foul water and combined sewers). Watercourses and potential sources of pollution e.g. fuel / oil storage, soil stockpiles, contamination, COSHH storage etc. must also be identified on the site layout plan.

The location of drain runs should be established, including whether they discharge to foul sewers, combined sewers or surface water systems (including ditches, streams, culverts etc.). The integrity of existing drains should be checked if they are to remain in use, particularly where foul and surface water drains cross over or are located close by to each other and surface water drains discharge to watercourses of any description.

Where possible, it must also be established where any land drains discharge to. If discharging directly to a watercourse they must be removed or blocked as a priority. Any previously undiscovered / unknown drains which become apparent must also be traced to determine where they discharge to.

Oil interceptors, separators and silt traps should be identified on site drainage plans. Any watercourses including rivers, streams, ditches on or adjacent to site should also be marked.

This information should be referenced in the Project Environment Plan.

Refer to
EMS form 003 – Project Environmental Plan (England and Wales)
EMS form 003 – Project Environmental Plan (Scotland)

5. Site drainage

5.1 Drain protection requirements

Surface water run-off contaminated by sediment, heavy metals or oils has the potential to cause pollution which could lead to enforcement action. Therefore, steps must be taken to prevent pollutants entering the surface water system, which ultimately lead to a watercourse. This can be either directly or via a SuDS.

Protection must be provided for all surface water drains, manholes and or gullies (whether existing or newly installed). The protection must maintain flow of water to allow surface water to leave site, as to avoid flooding, whilst also capturing sediment, as to avoid pollution.

Blocking drains is an option, but consideration must be given to where the water will flow, as it will ultimately enter a surface water system. Any water leaving our developments must be 'clean and uncontaminated'.

Occupied areas

Once areas are occupied drain protection may not be required; however, in some instances it is recommended to retain drain protection e.g. if being used for construction traffic.

Irrespective of whether drain protection is installed, drains should still be inspected to ensure they are free from any construction debris.

5. Site drainage

5.1 Drain protection requirements

There are two options for the protection of surface water drains on site. The minimum requirement for drain protection is as per below :

Option 1

- Install gulley guard bag with geotextile terram on top (see pictures to right)
- The terram must be held in place so that it cannot fall into the gulley pot – it can be layered into the sub-base or held in place by the gulley crate

Maintenance

- A formal inspection and maintenance schedule must be in place prior to start on site (to be agreed with relevant subcontractors).
- Protection measures must be regularly inspected and maintained to ensure ongoing performance – weekly minimum checks are required.
- Dependant on the location of the gully and the types of materials in the run-off from the surface areas on site, more frequent check may be required – **even daily in some instances**.

5. Site drainage

5.1 Drain protection requirements

Option 2

The GulliBlok must be installed when groundworkers are installing roads and sewers, as it requires a location plate to be installed over the gulley.

Installation

- The Gulliblok location plate has been designed to be installed under the gully grates frame.
- In the centre of the location plate is the seat where the filter basket is located the recessed seat allows the filter basket to fit flush with the top of the location plate, ensuring an unobstructed flow.
- Once the location plate is in the correct position over the gully, simply bed it in with concrete. Then sit the grate and frame onto the concrete bed and position the frame such that you ensure the filter basket can be removed without restriction.
- If installed correctly the filter basket should be able to be removed easily for emptying when the grating is open.

As outlined above, these also require regular inspection and cleaning to maintain performance. Protecting drains in this way will significantly reduce the potential risks of a pollution incident and the requirement for jetting / vac'ing to clear blockages / debris.

GulliBlok installed during roads & sewer works

Blocking drains is an option, but consideration must be given to where the water will flow, as it will ultimately enter a surface water system. Any water leaving our developments must be 'clean and uncontaminated'.

Refer to EMS guidance - Water Management (protecting drainage & watercourses)

5. Site drainage

5.1 Drain protection requirements

Operation & maintenance

The Gulliblok is designed to block silts and debris. It is imperative that you regularly check the levels in the basket and it needs to be cleaned out as soon as the basket reaches its optimum level, which is to the bottom of the handle. The bright yellow handle can be clearly seen through the gully grating (see picture to right).

After emptying the basket, lightly clean the filter, removing any surface dirt using a standard hose. Once the basket and filter are cleaned then the filter basket can be reseated. Ensure that the basket's seat within the location plate is also cleaned off and free of debris and dirt before relocating.

Dependant on the location of the gully and the types of materials in the run-off from the surface areas on site, some Gulliblok's will need to be emptied more frequently, even daily in some instances. A formal maintenance schedule must be put in place during the construction phase.

Once the site roads are ready to be finished you can remove the Gulliblok when the gratings are taken off to adjust the road's height to the finished level. Once removed repeat the cleaning process above and then the Gulliblok can be installed on future sites. Protecting drains with the GulliBlok will significantly reduce the potential risks of a pollution incident and the requirement for jetting / vac'ing to clear blockages / debris.

5. Site drainage

5.2 Inspection and maintenance

Drain protection must be regularly inspected and well maintained to ensure ongoing performance. The frequency of such will be determined by activities being undertaken on site and by weather conditions e.g. expect to increase frequency of checks and cleaning during inclement weather.

Examples of frequency of checks

Occupied areas will require less frequent checks, unless these areas are being used by construction traffic e.g. when wagons are removing soil from site / dumper trucks are tracking through the area. If no construction traffic is using the roads, then reduced checks will be sufficient.

See table below for examples of how frequently drain protection checks should be undertaken.

5. Site drainage

5.2 Inspection and maintenance

Trapped sediment from the drain protection can be reused on site, unless contaminated with hazardous materials such as oils etc. In this instance it must be disposed of as hazardous waste.

Activity	Weather	Daily	Weekly	Monthly	Quarterly	Where?
Muck shifting	Wet	☒	☐	☐	☐	Build area / haul routes
Groundworks/ earthworks	Wet	☐	☒	☐	☐	Build area
General construction activities	Wet	☐	☒	☐	☐	Build area
Muck shifting	Dry	☐	☒	☐	☐	Build area / haul routes
Groundworks/ earthworks	Dry	☐	☐	☒	☐	Build area
General construction activities	Dry	☐	☐	☒	☐	Build area
Occupied areas	All	☐	☐	☒	☐	Occupied areas

Monitoring of drain protection measures should be undertaken using the relevant form.

Refer to EMS form – Drain Protection Monitoring
Refer to EMS guidance - Water Management (protecting drainage & watercourses)

6. Water and silt management

6.1 Surface water run-off

Discharge of clean surface water run-off (for example from a roof, road, pathway or clean standing area) to surface water drains, watercourses and soak-away does not require an Environmental Permit (or discharge consent).

Clean surface water must not be contaminated with silt, heavy metals, chemicals, sewage or oil. Any contaminants must be removed prior to discharge.

6.2 Understanding your site

A comprehensive understanding of site drainage is a key element in planning how to prevent clean water from entering site as well as how to manage silty water produced on site.

A full review of the Site Investigation Report must be carried out at the pre-construction stage to determine the types of soils on site. Establishing the type(s) of soils which will be exposed during works help when determining a suitable treatment methodology (to remove sediment prior to discharging from site).

It is best practice to retain vegetation cover, minimise soil stripping and establish new vegetation on bare ground at the earliest opportunity. Erosion of soils can be caused by wind but is normally attributed to rainfall.

Identifying key areas on site that require protection is another important aspect of planning, these include:

- Haul roads and site access points
- Drains / land drains
- Existing watercourses / ditches
- Drainage channels
- Slopes (consider general topography)

6. Water and silt management

6.3 Controlling surface water run-off (and silt)

As a first priority, sites should look to stop surface water from entering site from neighbouring land. Also, clean surface water should be kept clean, by intercepting it before it comes into contact with any exposed soils etc., and diverted off-site (via a v-ditch or similar).

Sites must make provision to protect any vulnerable areas which could lead to a water pollution. This can be in the form of bunds, v-ditches, silt fencing etc. Where a watercourse is present, a silt fence should be installed around the site boundary or to protect a vulnerable area from run-off. However, silt fencing cannot be relied upon entirely for effective water treatment.

Below outlines actions which must be taken to aid with the control, movement and treatment of surface water.

- Surface water from neighbouring land should be intercepted and prevented from entering site through the construction of ditches and or soil bunds.
- Create v-ditches, or similar, to capture clean surface water and divert directly off-site
- Create bunds (at low points) and / or install silt fencing to prevent water run-off into ditches or watercourse
- Create v-ditches and filter drains to intercept existing drainage to enable the controlled movement of surface water on site.
- V-ditches must be profiled with a flat bottom and sloping banks (30o being the steepest), they must be sufficiently deep to intercept any drains and have sufficient capacity to move water by gravity
- V-ditches capturing silt-laden run-off must be connected directly to an attenuation feature (further treatment may be required)
- Ditches should be cut as the project progresses to intercept surface water run-off from any areas with exposed soils and haul roads or to prevent uncontrolled run-off from site.
- Intercept all silt-laden run-off / water and divert into settlement / attenuation pond(s)
- Do not allow silt-laden run-off / water to leave site

6. Water and silt management

6.4 Treatment Options

Any discharge of water from site must be 'clean and uncontaminated'. If the water is visibly discoloured / cloudy, it must be treated prior to discharge.

Where clay or chalk type soil is likely to be exposed, it is highly likely that chemical treatment and settlement will be required, to clean water sufficiently for safely discharging off site. Note that the use of such treatment methods requires an environmental permit / licence from the appropriate regulator.

Treatment options include:

- Filtration (e.g. sediment socks, sediment mats)
- Settlement ponds / attenuation basins
- Settlement tanks (provided via Siltbuster, Kelly Tanks, RVT Group etc.)
- Flocculation (either using tanks with dosing units or placing floc-blocs in cages within ditches/manholes, and floc-mats (like sediment mat but impregnated with flocculants)

Refer to EMS guidance - Water Management (protecting drainage & watercourses)

6.5 Permit to pump

Discharging liquids to water, sewer or land is a key environmental risk, therefore, a Permit to Pump must be issued by the project team (to a sub-contractor) prior to any pumping activities.

This is in addition to any permits or licences required by Statutory Authorities. It should be used as an operational document, prepared by a responsible person who is familiar with the work procedures, the hazards involved and the precautions to be taken.

Note - a permit to pump **does not** need to be issued where a subcontractor is moving water from one area of a site to an attenuation feature ready for treatment. Examples where a permit must be issued include: if a groundworker is dewatering an excavation, or pumping water from an attenuation feature directly to a watercourse etc.

A permit to pump must be renewed if the operation changes or the pumping is longer than 1 week in duration. Maintenance checks should be carried out on the pump(s), and back up pump(s) available if required.

Refer to EMS form 011 – Permit to Pump

6. Water and silt management

6.6 Permitting requirements (water discharges)

If it is identified that water will require treatment (e.g., settlement and/or flocculation) prior to discharge and / or will be required to be discharged for a period of greater than 3 months, an Environmental Permit (England and Wales) or CAR Authorisation (Scotland) and associated Surface Water Management Plan will be required.

The disposal of water and wastewaters should only commence when all relevant permits, consents, licences or approvals have been obtained. Thereafter, the project team should ensure that all conditions specified in the permit, consent, licence or approval are met in full.

Regulator monitoring of water discharge in line with permit requirements must be undertaken.

Refer to EMS form 010 – Water Quality Monitoring

6.7 Water from excavations

Water from excavations can be:

- Discharged over open ground (only where the water is uncontaminated and will not cause localised flooding)
- Discharged into a storm drain or surface waters (either under an environmental permit or in accordance with Environment Agency Regulatory Position Statement)
- Discharged to a foul sewer (under temporary Trade Effluent Consent from the relevant water company), or
- Tankered off site and disposed of at a permitted water treatment facility as a waste.

Temporary discharges of water from excavations to a watercourse (considered to be a trade effluent by the regulators) will not require a permit from the environmental regulator (Environment Agency, NRW etc.) if certain conditions are met.

6. Water and silt management

6.7 Water from excavations

In England and Wales temporary discharges of water from excavations to a watercourse must meet the following conditions if no Environmental Permit to discharge is in place (in accordance with the Environment Agency Position Statement):

The discharge must:

- be clean water, for example clear rainwater or infiltrated groundwater which has collected in the bottom of temporary excavations;
- not result in water containing fine or coarse suspended solids (silty water) entering surface water;
- not last more than 3 consecutive months (the activity may stop and restart but the clock does not restart) - if the activity is likely to go over 3 consecutive months then you need to apply for a permit;
- be made to surface water, such as a river, stream or the sea;
- have a method statement that minimises the risk of pollution.

6.7 Water from excavations

The discharge must not:

- pollute surface water;
- contain any chemical dosing agents, flocculants or coagulants;
- be from a site which is contaminated by oil, metals, hydrocarbons, solvents or pesticides or other polluting substances;
- result in the spread of non-native invasive species, parasites or disease
- cause flooding from surface water;
- cause erosion of the banks or bed of the receiving watercourse;
- contain concrete wash water even if it has been treated;
- contain site drainage from surface areas such as haul roads, storage or working areas;
- be from a site with naturally elevated concentrations of substances which exceed environmental quality standards.

6. Water and silt management

6.8 Water abstraction

In some circumstances, water abstraction may be considered an option for the purposes of dust suppression, vehicle washing etc., for example if mains water supply is restricted. A licence or registration to abstract water may be required from the relevant environmental regulator (e.g., Environment Agency, SEPA) for abstractions of more than 20 cubic metres per day (in England and Wales) or 10 cubic metres per day (in Scotland) from a:

- River or stream
- Reservoir, lake or pond
- Canal
- Spring
- Underground source

The licence will specify where the water can be taken from, quantities allowed and what the water can be used for.

Any water abstraction activities must be monitored to ensure that either a) the volume abstracted remains below the relevant limit where no licence is in place or b) that the conditions of any abstraction licence are adhered to. Records of this monitoring must be retained on site.

6. Water and silt management

6.9 Use of water standpipes

A water standpipe may be required for temporary water supply from mains network, where permanent mains connection is not practicable. The steps outlined below must be followed when connecting / using a water standpipe.

England & Wales

1. The connection of a water standpipe to the mains supply must be agreed with the local water company. Only approved standpipes can be used.

2. Any standpipe to be used on the network must be sourced from the water company or via contract partners such as Aquam Water Services.

3. Water standpipes must comply with water company standards and individuals connecting to the network must have completed CALM Network training, a free online 30 min course (see below) .

4. All standpipes must be fitted with a double check valve and an integrated water meter.

6. Water and silt management

6.9 Use of water standpipes

Scotland

All users of water standpipes must obtain a Scottish Water standpipe licence to access the networks and draw water using an approved standpipe. Approved standpipes are distinctly coloured in blue and purple, and tagged with an individual registration number. Scottish Water standpipes are not metered. Instead the user must pay a flat rate, dependant on the length of hire. Each standpipe licence can cover a 3, 6, 9 or 12 month period.

Training

To access the CALM Network Training use the following link and coupon code:

- ✓ Exam Application: https://www.aquamcorp.co.uk/exam-apply/calm-networks
- ✓ Coupon code: PH5891

Upon successful completion of the course, you will be presented with a certificate; this should be downloaded and kept on file (it is valid for one year from the date of completion). If you have any issues registering, please contact your Group Health, Safety & Environment Advisor.

Water Abstraction Points

To find out where your hired standpipe can be used, refer to either https://hydrantfinder.aquamcorp.co.uk or download the '*Hydrant Finder*' on your relevant App store (available on Android & Apple).

To use this service, you must have completed the CALM Network training.

7. Monitoring

Site management must monitor pollution prevention measures via daily site checks. All checks must be recorded. The Group HS&E Department will monitor compliance with the standard via regular site HS&E inspections.

7.1 Water Quality Monitoring

Monitoring is a critical part of mitigating silt pollution risks from construction sites.

Therefore, all sites must monitor the quality of water leaving site. This may include carrying out multiple checks e.g. if water is leaving via multiple headwalls from several SuDS ponds or if water is flowing overland or through a silt capture channel and into a watercourse.

Sites must also keep records of when they are **not** discharging water.

How to monitor

Sites have two options for monitoring water quality on site. Other techniques are available, such as installing fixed sensors, but have not been included below. If sites would like to monitor using a technique different to that specified below, it should be done so in agreement with your Group Health, Safety & Environment Advisor.

For sites where a permit or licence is in place, monitoring must be undertaken as outlined in the permit / licence and Surface Water Management Plan.

7. Monitoring

7.1 Water Quality Monitoring

Option 1 - Visual monitoring

This is the simplest form of monitoring, and it can be very useful for identifying an issue. What it may lack in objectivity it makes up for in accessibility – anyone working on a construction site can do it.

Visual checks are the minimum requirement, it is highly recommended sites are given access to portable measuring instruments, to give more accurate data – see option 2 below.

What should be included as part of the visual check is described below.

Refer to EMS form 010 – Water Discharge Monitoring

7. Monitoring

7.1 Water Quality Monitoring

Option 2 - Using portable instruments

Using handheld or portable instruments to measure water quality parameters is a more objective monitoring methodology than visual monitoring.

Unlike visual monitoring it also delivers a quantified result rather than a qualitative assessment (like a visual check). However, if portable instruments are not well maintained and calibrated frequently, they could end up giving incorrect readings.

Sites should be provided with either a turbidity tube and or an electronic turbidity meter. Water generally becomes visually turbid or cloudy around 50+ NTU. Any reading above this will likely be deemed unacceptable.

For advice on how to use each device, please speak with your Group Health, Safety & Environment Advisor.

Refer to EMS form 010 – Water Discharge Monitoring

Turbidity tube

Turbidity meter

7. Monitoring

7.1 Water Quality Monitoring

Frequency of checks
Sites must carry out daily checks for all water discharge points (if discharging water). Sites must also record when water is not being discharged (see below).

What to check for
Checks must be recorded using EMS-FOR-010 – Water Discharge Monitoring. The check will include looking for oil, water clarity (aka turbidity or how dirty the water is), pH and for signs of any distressed fish.

Daily photographs of the water discharge should also be taken. The photograph should clearly show the quality of the water being discharged / sampled.

How to monitor
Oil
This is a simple visual check. If there is an iridescent sheen or odour, then oil is likely to be present.

Water clarity / turbidity
Checks can be in the form of:
- A visual check with photograph(s) taken or
- A sample of water taken from the outfall, which is gathered into a clean, clear bottle and measured using either a turbidity tube or NTU meter

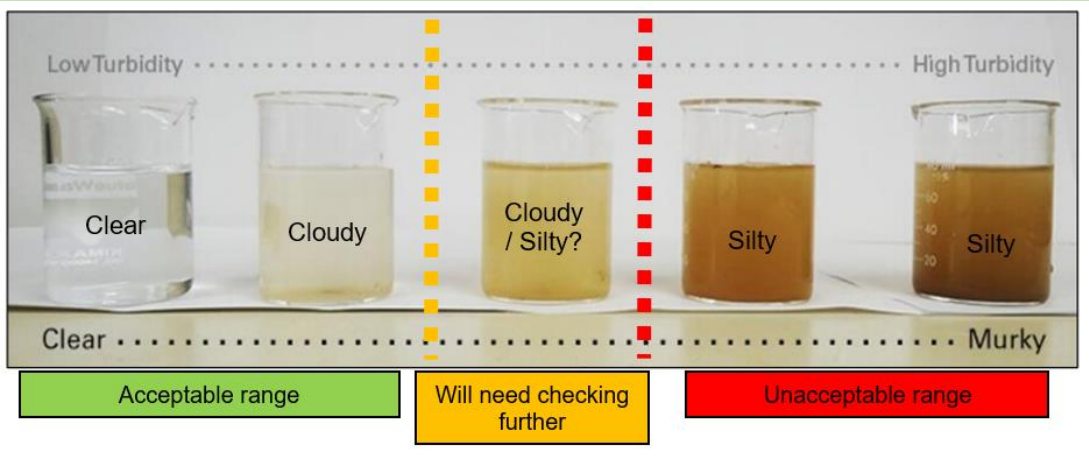
It is highly recommended that sites also have access to an NTU meter or turbidity tube for water sampling purposes.

7. Monitoring

7.1 Water Quality Monitoring

Visual check

To carry out a visual check, you should record whether the water is clear, cloudy or silty. Advice is given below on what constitutes clear, cloudy and silty.



Clear – if you can clearly see through the water sample in the bottle, and there is no cloudiness, sediment etc present record this as 'clear' (this is acceptable).

Cloudy or silty – if the water is slightly cloudy or discoloured, hold up the sample, place the bottle in front of your hand. If you are able to identify the fingers on your hand, then record this as 'cloudy' on monitoring form (this is acceptable). If you cannot see your fingers this should be recorded as 'silty' (see below).

Silty – if you hold up the sample and cannot see through it, or cannot see the fingers on your hand, then record the water clarity as 'silty' (this is unacceptable).

7. Monitoring

7.1 Water Quality Monitoring

pH

Means of testing for pH must be provided. This can be in the form of litmus paper or a calibrated electronic device. The acceptable range is shown on the monitoring form.

Distressed fish

This is a simple visual check. If there are fish gasping for air or floating on the surface, this is an indication that there is too little oxygen present in the water.

If there is no sign of any distressed fish, then the monitoring form should be marked as 'no'. If there are fish gasping for air etc. then this should be recorded as a 'yes' and investigated appropriately.

All water quality monitoring results must be recorded using the relevant form below. A separate form should be used for each separate discharge point e.g. one for each SuDS pond or one for each silt capture channel that discharges into the watercourse.

If any issues are identified, the action/comment box within the monitoring form must be completed and steps taken to remedy the issue immediately.

Refer to EMS form 010 – Water Discharge Monitoring

7. Monitoring

7.1 Water Quality Monitoring

Where sites are not discharging water

Sites must record when they are not discharging water. This should be recorded on the Water Discharge Monitoring form – see example below.

Only the first three rows for each day should be completed (time, weather, releasing water). The rest of the form will not require completing (when not discharging water). See example below, taken from the Water Discharge Monitoring form.

Parameter	Monday	Tuesday	Wednesday	Thursday	Friday
Time of Check	09.07am	09.16am	08.47am	09.44am	10.10am
Weather	Dry, overcast	Dry, sunny	Overcast, light rain	Dry, overcast	Dry, overcast
Releasing Water	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒	Yes ☐ No ☒

Upstream monitoring

Where possible, water quality should be checked upstream of our construction site. If it is identified that silty and or polluted water is entering into our development, then photographs should be taken and your Group Health, Safety & Environment Advisor notified immediately.

7. Monitoring

7.1 Water Quality Monitoring

Having photographs as evidence will protect your site from potential regulatory intervention as you will be able to demonstrate that construction activities on your site were not the cause of the incident.

Any observations of silty and or polluted water should be reported to your Group Health, Safety & Environment Advisor notified immediately, and recorded as an environmental incident.

Sites with a permit / licence

Sites with permits or licences will have site specific monitoring requirements, such as Total Suspended Solids (TSS) i.e. how silty the water is, pH etc. It is a legal requirement to carry out monitoring as outlined in the permit or licence.

For sites with a permit or licence, appropriate monitoring equipment must be provided. As a minimum, a turbidity meter (also known as an NTU meter) or turbidity tube, must be held on site for undertaking sampling of water for monitoring purposes (allows instantaneous means of checking TSS). The NTU meter device must be well maintained and regularly calibrated.

Means of testing for pH must also be provided. This can be in the form of litmus paper or a calibrated electronic device.

All water quality monitoring results must be recorded.

Refer to EMS form 010 – Water Discharge Monitoring

8. Work in or near a watercourse

8.1 England and Wales

Works in or near watercourses are regulated differently in England, Wales and Scotland. England and Wales are very similar with English regulation referring to Environmental Permits for Flood Risk Activities, while Welsh regulation refers to Flood Risk Activity Permits.

Before undertaking works in or near watercourses in England and Wales, it must be established what permissions are in place or are required.

If works are planned in the following locations a Standard Rules or Bespoke Permit may be required, or an Exemption may need to be registered or the works may fall under the conditions and description for an exclusion (which does not need to be registered):

- On or near a main river (main rivers can be checked on the Main Rivers Map for England or on the Main Rivers Map for Wales
- On or near a flood defence structure
- In a flood plain or
- On or near a sea defence

8. Work in or near a watercourse

8.1 England and Wales

A permit from the EA (in England) or NRW (in Wales) is required for the following regulated flood risk activities:

- Erecting any temporary or permanent structure in, over or under a main river, such as a culvert, outfall, weir, dam, pipe crossing, erosion protection, scaffolding or bridge
- Altering, repairing, or maintaining any temporary or permanent structure in, over or under a main river, where the work could affect the flow of water in the river or affect any drainage work
- Building or altering any permanent or temporary structure designed to contain or divert flood waters from a main river
- Dredging, raising, or removing any material from a main river, including when you are intending to improve flow in the river or use the materials removed
- Diverting or impounding the flow of water or changing the level of water in a main river
- Quarrying or excavation within 16m of any main river, flood defence (including a remote defence) or culvert
- Any activity within 8m of the bank of a main river, or 16m if it is a tidal main river
- Any activity within 8m of any flood defence structure or culvert on a main river, or 16m on a tidal river
- Any activity within 16m of a sea defence structure
- Activities carried out on the floodplain of a main river, more than 8m from the river bank, culvert or flood defence structures (or 16m if it's a tidal main river), if no planning permission is in place.

8. Work in or near a watercourse

8.1 England and Wales

Various activities are exempt from the requirement for a full Environmental Permit but must meet the specific description and conditions for that exemption. These are listed on the .gov website. These activities must be registered with the EA or NRW.

The following activities do not require either an Environmental Permit or an Exemption to be registered, however activities must be operated within the description and conditions of the excluded activity:

- Work in an emergency
- If a Marine Management Organisation licence is in place
- Using ladders and scaffold towers
- Services crossing a river within an existing structure
- Flood protection devices attached to buildings
- Minor works for highways and rights of way on or near bridges and culverts
- Post and rail or post and wire fencing in a floodplain
- Temporary use of small fish traps
- Noticeboards more than 2m from the top of a river bank
- Clearing out a purpose-built sediment trap
- Site investigation boreholes and trial pits

The local Group Health, Safety & Environment Advisor should be contacted for advice in relation to obtaining Permits, registering Exemptions or undertaking excluded works and for facilitating discussions with the EA or NRW.

8. Work in or near a watercourse

8.1 England and Wales

Ordinary Watercourses

In England and Wales, works to ordinary watercourses (streams, ditches, drains, culverts, becks, ponds, sluices etc.) which are likely to alter or impact the flow or storage of water, or for the erection of a culvert within an ordinary watercourse, consent will be required from the Local Lead Flood Authority (usually the Local Authority) or from the relevant Internal Drainage Board where these are in place.

Activities must be managed to prevent silty / muddy water from entering watercourses. Consideration should be given to forming cut-off trenches, vegetation corridors and settlement lagoons / tanks where appropriate. Silt fences and silt traps can be used to prevent silt entering watercourses / drains.

8. Work in or near a watercourse

8.2 Scotland

In Scotland, the following works will require some form of authorisation from SEPA:

- The removal of sediment (gravel, sand, silt) from rivers, lochs and wetlands
- Construction of bank protection, embankments or floodwalls
- Construction of new bridges, fords and culverts
- Any new structures built on the bed of a river, burn or loch
- River diversions and realignments
- Restoration and enhancement works, including the removal of structures
- Any other activity likely to pose a risk of significant adverse impact

8.2 Scotland

The following works usually do not require authorisation:

- Maintenance of existing structures;
- The removal or management of vegetation;
- The removal or management of debris or trash – in particular the removal of debris from culverts and screens;
- All works in wetlands which are not directly associated with a river, loch or artificial water body;
- Works in artificial drainage channels, including the construction and maintenance of road and field drains;
- Engineering works in coastal and transitional waters – these are regulated by Marine Scotland

8. Work in or near a watercourse

8.2 Scotland

It must be established whether the activity is subject to regulation by reference to the Controlled Activities Regulations Practical Guide.

If the activity falls under a General Binding Rule, no application is required but the associated rules must be complied with:

- If the activity meets the criteria for registration as described in the Practical Guide you can apply by post or online.
- If the activity meets the criteria for a licence as described in our Practical Guide, this must be applied for by post. The Controlled Activities Regulations Licence Applicant Guidance provides information on the licence application process.

9. Further Reading

England - Main Rivers Map

Wales - Main Rivers Map

Excluded-flood-risk-activities-environmental-permits/excluded-flood-risk-activities/temporary-use-of-small-fish-traps

Turbidity Meter PCE-TUM 20 | PCE Instruments (pce-instruments.com)

Palintest Turbidity tube Camlab

Hire Standpipes | Aquam Water Services (aquamcorp.co.uk)

Scotland

SEPA-car_licence_applicant_guide.pdf

SEPA - regulations/water

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (sepa.org.uk)

Refer to:
EMS guidance – Water Management (protecting drainage and watercourses)
EMS guidance – Temporary Dewatering
EMS guidance – Use of Water Standpipe
EMS guidance – Emergency Planning & Spill Response
EMS guidance – Trade Effluent Consent
EMS guidance – Surrendering a Surface Water Discharge Permit
EMS guidance – Environment Guide Getting Your Site Right

10. Toolbox Talks

Refer to:
EMS TBT– Fuel Oil Storage and Refuelling
EMS TBT – Pumping Water
EMS TBT – Silt