Temporary Surface Water Management Plan: Pollution Control Measures

INTERCHANGE 26, BRADFORD
P21-025

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1.0 Surface Water Discharge Consents

Guidance provided in the Environment Agency regulatory position statement (RPS) for temporary dewatering from excavations to surface water states that only uncontaminated water consisting of clean and clear rainwater or infiltrated groundwater may be released from a site for up to three consecutive months under exemption.

https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits

In order to qualify for the exemption a series of conditions aimed to prevent pollution in the receiving water body must be met. Consequently, the discharge must not:

- result in muddy water
- contain any chemical agent such as a coagulant or flocculant
- contain any contaminant such as oil
- contain concrete wash water even if it has been treated
- contain site drainage from surfaces such as haul roads, storage areas
- spread invasive plants animals or diseases
- be within or close to a sensitive ecological site

Providing the site can meet with the requirements of the RPS, dewatering of open excavations will be undertaken in accordance with its requirements.

Sub-contractors RAMS (risk assessment & method statements) will document the appropriate control measures to minimise the risk of pollution including how to:

- minimise the level of contaminants being generated such as silt
- minimise water entering an excavation such as from rainfall or runoff
- prevent contaminated water moving to a river or stream
- dispose of water that enters the excavation including any silt control interventions
- maintain silt control interventions and monitor water quality leaving site

2.0 Monitoring of Discharge

Before any discharge can occur a Risk Assessment & Method Statement assessing the risks of the associated activity must be completed (see Dewatering RAMS **EMS-FM-006**). Prior to the discharge of any water to site a visual inspection will be undertaken of standing water. If further testing is required water samples will be taken and turbidity assessed (NTU). Dependant on

previous use for the site contamination may also be present; this could be in the form of hydrocarbons, metals etc.

An assessment will be undertaken of the ground investigation report to determine if the water meets the required EQS (Environmental Quality Standards) prior to discharge. If it is determined that contamination is present, no water can be discharged directly to surface waters.

3.0 Contamination

In the event of water being unsuitable to discharge to surface waters there are two options:

- Discharge to foul (under trade effluent consent) authorised by sewerage undertaker
- Contain water and remove from site by a licenced waste carrier

4.0 Bespoke Permit Considerations

In the event of dewatering activities exceeding a period of 3 months, or treatment being required (i.e., attenuation and settlement, flocculation to remove colloidal clays) a bespoke environmental permit will be required.

Permits can take several months to be determined, so early engagement with the local environment officer is advised.

5.0 Environmental Management System

Winvic will develop a full water management plan which forms part of the Winvic Environmental Management System (EMS), certified to ISO 14001:2015.

The plan will follow the impact and aspect register and is designed to identify environmental risk and outline the methods and philosophy behind avoiding and reducing pollution risk, as well as mitigating effect; collecting, treating, and discharging water from site in a suitable manner so as not to impact surface and ground waters during construction.

The surface water management plan is a live, dynamic document and will be a standing agenda item on the weekly site progress meeting.

6.0 Communication

Environmental issues will be reviewed internally at weekly site progress meetings, in accordance with the Winvic ISO14001 EMS. The agenda will include:

- Identify change or variation in the working method and whether this alters the environmental risk profile

- Environmental incidents, complaints, and non-conformance; assignment of corrective actions and sign off on previous actions
- Provide specific instruction to subcontractors and site staff
- Environmental information will be delivered to contract personnel in the following way:
    - Including environmental issues as an agenda item on project progress meetings
    - Inductions, topic-specific training, toolbox talks
    - Posting information on notice boards
    - Parent company communications, such as cascade briefings, magazine, intranet. Additionally, within the contract, information will be communicated through:
    - Weekly SHEQ meetings
    - Supply chain meetings
    - Weekly Project review meeting
    - Other meetings e.g., design team meeting
- Keep copies of the consent or written agreement including any conditions on site and confirm those conditions have been transposed into the method of work.

7.0 Training and Awareness

All key persons must be identified alongside their role and responsibility and contract details. A nominated person shall have responsibilities that include but are not limited to:

- All project operatives and supervisory staff will receive a site-specific induction that covers environmental issues associated with their roles and responsibilities
- More detailed training, such as that required for pollution control measures and waste management plans, will be given to staff as required.
- Training on specific environmental topics will be given by suitably qualified personnel where required.
- Site supervisors, engineers or Environmental Advisor will give toolbox talks to operatives on key issues such as silt control, water pollution prevention, spill response, protected species, and waste management, drawing upon the full suite of Toolbox Talk's (TBT's) as
- relevant to the project. Keep a record of all operatives that undertake the induction and toolbox talks.
- Details of task specific Environmental Operational Controls including any permit conditions and detailed methodologies shall be included in RAMS
- Display posters such as silt control, spill response
- Ensure permits to pump are in place

8.0 Pollution Control Measures

Winvic will consider pollution control measures throughout the planning and implementation of the project. actions will be drawn from pre-construction information and provide additional recommendations for pollution control measures, compiling the salient points in a single action table.

The surface water management for the temporary works will primarily use passive silt control options i.e., good working practices, drainage, and settlement. Only when this avenue has been exhausted will active controls such as the use of flocculants and, or coagulants be introduced as a water treatment recommendation. Any active measures implemented will be done so incrementally to ensure treatment using the least flocculant.

9.0 On-site Monitoring Regime

In order to ensure that the mitigation and treatment process is working correctly, self-monitoring will be undertaken by trained site personnel on a daily basis for the first month then weekly thereafter or following a heavy rainfall event.

The monitoring should include as a minimum; turbidity (NTU). Any discharge consent will require total suspended solids (TSS) measured in mg/l. NTU may be used to provide a correlation to TSS, this offers a feel for the relationship in various environmental conditions rather than build an absolute correlation graph.

Should the monitoring regime show a rise in any of the parameters the test will be repeated. Should the test return the same elevated result, discharge from site will be ceased, site water tested, and the underlying cause investigated. If this test is within normal limits and proven not to be the source of the elevated results, then discharge will recommence. If the site water is found to be the source of the issue the discharge will cease until appropriate measures have been put in place to remove the source of pollution. Any anomalies or elevated results must be discussed with all concerned parties on site.

If a pollution event is deemed to have occurred, then the Regulator will be notified of the event, as required, and remediation measures undertaken.

Managing silt is an iterative process and any system will need to be checked regularly when it is first set up to ensure that it is operating at its optimum. Monitor the effectiveness of the interventions on a weekly basis or immediately following a storm event and scale back or up as

required. All silt control measures require regular review with the aim of safeguarding against pollution events as construction progresses

There will be a programme of audits as part of the project's Environmental Management System carried out by both independent parties and the internal environmental team. The audit will address all environmental measures including the pollution control measures (drainage management) to ensure their function and maintenance.

Whilst proactive silt management will be encouraged it is acknowledged that an element of reactive work will be necessary, making the plan dynamic. Change or variation in the working method and new site activities will be assessed for their potential to impact on the water environment as well as reviewing working documentation, the implementation of that documentation and an evaluation of the site condition. Should the audit raise any issues or non-conformance with the projects EMS or best practice they will be addressed immediately during the audit. Where this is not possible or a problem with documentation and/or the EMS is identified a corrective action will be raised to the project's Environmental Co-ordinator with a timeframe for completion.

10.0 Environmental Incident and Emergency Preparedness

Control measures to prevent and control environmental incidents and emergencies on sites are referenced in the register of environmental effects and detailed in site emergency plans.

Generally, pollution prevention will be achieved by adequate training, by the provision of containment measures such as plant nappies, absorbent mats or materials, drain covers for preventing impact on sewers or watercourses and by complying with safe working methods.

Adequate and appropriately placed spill kits will be provided for rapid incident response when and where prevention fails.

Regular drills (either practical or desktop) shall be conducted and recorded to maintain competency levels of site personnel and adequacy of response plans.

11.0 Incidents and Emergency Response

Actions in response to environmental incidents and emergencies will be communicated at inductions and task briefings. Site plans showing the locations of spill kits and waste facilities, in addition to the locations of health and safety facilities, will be available on-site office and welfare cabin notice boards.

Plans will include the names of personnel with specific environmental responsibilities, and actions to be taken. Cross reference will be made to contingency planning requirements.

Provision of spill kits and drainage protection (drain covers and absorbent pads) will be available on site to be used in the event of a fuel spill to protect sewer and surface water drains. Pollution Prevention and Control measures are detailed in full in the Winvic EMS.

12.0 Incident Reporting and Investigation

Incidents are to be reported through the management hierarchy as soon as practically possible after they have been identified. Site management will assess the significance of the incident and determine the level of investigation.

Incidents and emergencies will be reported in accordance with Winvic site emergency requirements.

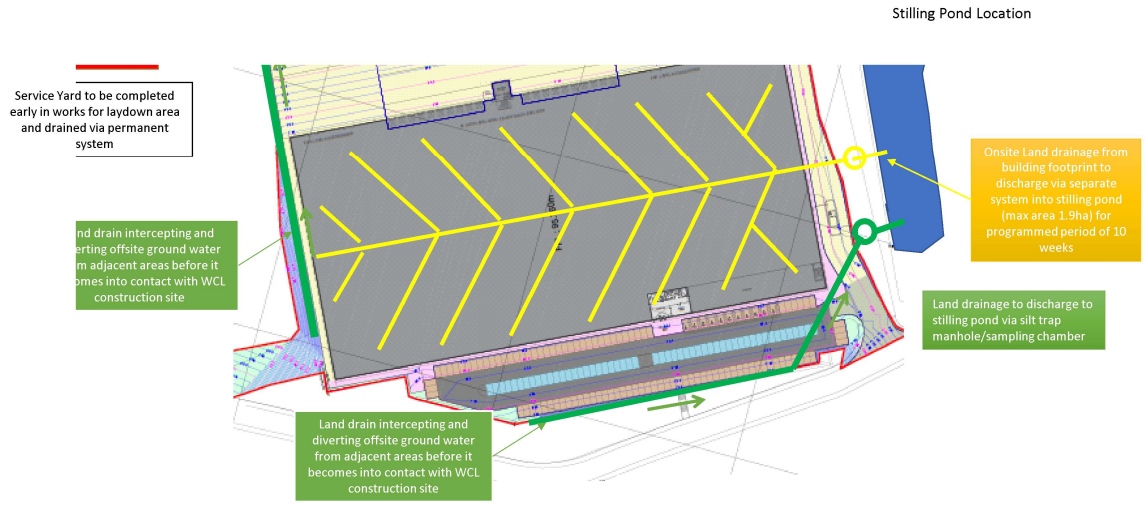
All incidents must be reported to the HSEQ Manager / Environmental Manager and entered onto the appropriate reporting system.

13.0 Site Specific Controls

Intercept silty water

- Remove field ditches or divert into settlement pond. Create bunds to prevent water run-off into site where possible and protect watercourse.
- Install land / filter drains where necessary to intercept surface water to enable the controlled movement of surface water on site. This system will be connected directly to an attenuation feature.
- Additional ditches should be cut as the project progresses to intercept surface water runoff from any areas with exposed soils and haul roads or to prevent uncontrolled runoff from site. They must be positioned so that they can remain undisturbed for as long as the work programme requires.
- Minimise ground disturbance when cutting ditches. Always work uphill of the v-ditches.
- Move all excavated material away from the ditch for reuse on the scheme. Do not place it on the edge of the ditch unless it is specifically being used as a bund or within the flow path of water.
- 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.

Tungsten, Interchange 26, Water Management Plan



Example v-ditch profile

- V-ditches should not have a greater fall than 3 degrees to minimise erosion of the bed and banks. Where the slope is greater than 30 degrees either install a series of rock checks or line ditch to prevent erosion.

- If additional flocculant is required to improve the quality of the water leaving site, consider treating the water with floc blocks as the water enters the primary attenuation pond in the bounding v-ditches.



Settlement Pond

- Create a temporary silt settlement / water treatment pond.
- Prevent uncontrolled release of water from the attenuation feature to surface water.
- Install a method to enable the controlled release of water.

- Ensure that the attenuation feature is sufficient to hold water in a storm event.
- Create attenuation feature early in the project to allow them to vegetate
- In construction use topsoil over clay, create slope roughness by tracking machines up/down the banks to trap the water on the slope reducing its erosive power and vegetate banks at the earliest opportunity.
- Form a stone bund around the outfall or pump head to prevent soft sediments from being drawn through.


V-ditch to attenuation pond


Attenuation pond to aid settlement

Should the pond not be performing adequately:

- Improve the design of the attenuation pond to promote settlement. Introduce water into the settlement feature at the furthest point from the outfall or pump head.
- Ensure the discharge points into the attenuation pond are protected with stone or other material to prevent erosion of the banks.
- Consider introducing bunds within the attenuation pond to prevent shortcutting and to promote settlement
- The bunds may be constructed from clean aggregate or silt curtain
- Consider whether the pond needs to be resized or supplemented

Secondary Treatment

Work to maximise the impact of the pond in terms of silt settlement prior to release for secondary treatment.

- Where possible a gravity outfall will be used to release water from the pond into the field drain.
- Otherwise use a floating pump head or create a stone bund around the pump to reduce the transfer of silt when pumping. Do not allow the pump head to settle on or draw silts from the bed.
- Provide silt capture channel / lamella tank for secondary treatment to remove colloidal clay if necessary.







A hierarchical process of treatment will be followed. This is as follows:

- Settlement within lagoon

Note: permit required if carrying out the below:

- Use of flocculant blocks upstream of the Pond to provide pre-treatment (blocks to be deployed upstream of the pond within a lined inlet channel and / or blocks within a Pipe Reactor or similar)
- Supplement with Flocculant Mats. Geotextile mats chemically treated with flocculant with some coagulant function - to be lain within the land drain, accompanied by Silt Mats if needed. This will provide supplementary filtration post settlement.
- Use of a Pipe Reactor (or similar) or lamella tank and silt capture channel downstream of pond if necessary. This will polish water exiting the pond.
- Ensure that a minimum of 30 metres of lay-flat hose is used on the exit of the reactor, along with the use of clean stone at the exit of the lay-flat hosing to act as a diffuser / baffle to spread the water and reduce scour.
- Where possible water exiting the Pipe Reactor (or similar) hosing will be directed into the vegetated field drain.
- Should filtration not reach the desired water quality then the option exists to throttle back the discharge.
- Additionally, where added treatment is needed then flocculant mats, followed by silt mats will be laid within the field drain.

Trade Effluent Consent

Trade effluent consent from Yorkshire Water will be obtained to allow for the discharge of surface waters, concrete wash waters and road sweeper waste. Parameters are yet to be determined but once understood will be monitored to ensure compliance within consent parameters.

Monitoring

- Obtain relevant Trade Effluent Consent / Environmental Permit to allow discharge.
- Monitor the water quality being released from the pond – this will determine the need for interventions to be upscaled accordingly,

- Monitor the surface water being released from site at the point of discharge for turbidity (NTU), pH and visible oils.