



Water Discharge and Reuse Guideline

DMS-SD-024

Supporting Document – Applicable to Infrastructure & Place
Divisional Management System

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1. Purpose and scope

The purpose of this document is to provide guidance to site personnel for managing, discharging and reusing excess water on Infrastructure and Place (IP) Infrastructure & Services construction sites. It applies to the discharge of water from all sources on site, including sediment basins, temporary and informal basins and ponds, excavations, pits, boreholes, low points, storage bins, and any other areas on a construction site that may receive and store water.

This guideline includes references to some of the relevant legislative and regulatory requirements but is not intended to replace them. It is not intended to replace any requirements for vegetation management identified as part of the environmental impact assessment process.

2. Definitions and acronyms

All terminology in this guideline is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

Blue Book	<i>Managing Urban Stormwater: Soils & Construction 2004, Landcom</i>
CEMP	Construction environmental management plan
Environment manager	The alliance or contractor environment manager
EPA	NSW Environment Protection Authority
EPL	Environment protection licence issued in accordance with the POEO Act by the EPA
pH	The measure of the acidity or alkalinity of a solution
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
NATA	National Association of Testing Authorities, Australia.
NTUs	Nephelometric turbidity units
TfNSW	Transport for New South Wales
TSR	TfNSW Standard Requirement
TSS	Total suspended solids
Waters	(as defined in the POEO Act) means the whole or any part of: <ul style="list-style-type: none"> (a) any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including the sea), or (b) any water stored in artificial works, any water in water mains, water pipes or water channels, or any underground or artesian water.

3. Accountabilities

The Director Planning, Environment & Sustainability is accountable for this guideline. Accountability includes authorising the document, monitoring its effectiveness and performing a formal document review.

Project directors are accountable for ensuring the requirements of this guideline are implemented within their area of responsibility.

Project directors who are accountable for specific projects/programs are accountable for ensuring associated contractors follow this guideline to the extent they are required under

TfNSW Standard Requirements (TSR). Contractors are accountable for following this guideline, where this guideline forms a part of their contract.

4. Legislative requirements and due diligence

The POEO Act is the key piece of environment protection legislation in NSW, administered by the EPA. Offences under the POEO Act are classified into three tiers, with Tier 1 offences being the most serious – attracting up to \$5 million and 7 years imprisonment for wilful or negligent harm to the environment. Under section 120 of this Act, any unlicensed water pollution event, no matter how minor, is illegal.

120 Prohibition of pollution of waters

(1) A person who pollutes any waters is guilty of an offence.

(2) In this section:

pollute waters includes cause or permit any waters to be polluted.

Note: for the definition of water pollution or pollution of waters refer to the POEO Act.

Under section 122 of the POEO Act it is a defence against prosecution under section 120 if the pollution was regulated by an Environment Protection Licence (EPL) and the conditions of that EPL relating to pollution of waters were not contravened. In the absence of any specific EPL provision, however, to avoid causing pollution and breaches of section 120, any water discharged from site must be of the same quality, or better, than the quality of the receiving waters (at the time of discharge).

It is essential that the quality of the receiving waters is established through background monitoring and sampling, prior to any discharge from site, so that the potential impact of discharge water can be determined. Monitoring of the receiving waters must be undertaken prior to any land disturbance works (to establish a baseline) as well as during construction.

It is also essential that water management standards, and particularly erosion and sediment controls, are implemented to control and treat water. Landcom's Blue Book publication is considered a best practice guideline for erosion and sediment control on construction sites in NSW. If implemented, the Blue Book guidelines will help mitigate the impacts of land disturbance activities on soils, landforms and receiving waters and minimise the potential for water pollution events to occur.

Water quality criteria given in this guideline, such as that for TSS, 50mg/L, as well as testing and treatment techniques, are based on the Blue Book. However, compliance with the Blue Book does not, of itself, provide any defence to an alleged breach of section 120 of the POEO Act. Examples of situations where compliance with the Blue Book could still lead to a breach of section 120 are as follows:

- water discharged with TSS below 50mg/L may still cause pollution and breach section 120, if the receiving waters have a TSS less than 50mg/L at the time the discharge occurs
- appropriate erosion and sediment controls are in place, but a rainfall event occurs beyond the design capacity of those controls.

Should a water pollution incident occur, being able to demonstrate due diligence in the implementation of environmental controls, and particularly erosion and sediment controls, *may*

provide a defence against prosecution. Due diligence *may* be recognised if the proponent is able to demonstrate that erosion and sediment controls have been implemented in accordance with the requirements of the Blue Book. The alliance/contractor must satisfy itself that appropriate management controls have been developed, implemented, maintained and documented to establish a due diligence defence.

5. Discharging water

All water discharges undertaken in accordance with this guideline must be documented using IP's [Discharge or Reuse Water Approval DMS-FT-207](#) or project-specific equivalent. Discharge is not permitted until the alliance/contractor site supervisor and environmental manager or nominated representative have signed the discharge form.

Figure 1 illustrates the options for the treatment, testing, discharge and/or removal of water as detailed in the section below.

5.1. Requirements for discharge to waters

Water to be discharged must be tested and, if required, treated to ensure that it meets water quality criteria and that pollution of the receiving waters does not occur. Results of testing and details of any treatment undertaken must be noted on the [Discharge or Reuse Water Approval FT-207](#).

Note that an EPL may authorise discharge of water from specific locations or premises, and establish criteria that differ from those given in this guideline. In such circumstances the EPL, and any conditions and criteria of that EPL, take precedence over this guideline.

5.1.1. Criteria for discharge to waters

Before water can be discharged to any receiving waters (whether on or off site), it must as a minimum meet the following criteria:

Parameter	Criterion	Method	Time prior to discharge
Oil and grease	No visible	Visual inspection	< 1 hour
pH	6.5-8.5	Probe/meter ¹	< 1 hour
TSS	< 50mg/L ²	Meter/grab sample ³	< 1 hour/< 24 hours

¹ litmus paper and pool testing kits are not to be used

² as discussed in Section 4, a more stringent TSS criterion may need to be adopted in certain situations

³ samples must be analysed at a NATA accredited laboratory

If the criteria above are not met, the water will have to be treated and retested prior to discharge – go to **Section 5.1.2**.

If all criteria above are met then the water may be authorised for discharge by the environment manager – go to **Section 5.4**.

Salinity

Salinity is determined by measuring the electrical conductivity (EC) of the water, using a meter. Setting an acceptable criteria range for salinity of discharge water is dependent on the salinity of the receiving waters and must be determined and applied on a site-specific basis following background water quality monitoring. Measuring discharge waters for salinity shall only be undertaken if required by:

- the conditions of approval
- an environment protection licence (EPL)
- the particular conditions of the site (soil or geology) or the receiving waters.

Correlating TSS with Turbidity

Consideration may be given to establishing a site-specific relationship between TSS concentration and turbidity, measured in NTU's. This allows the TSS to be inferred from an NTU reading. The benefit of using NTU is that it can be quickly measured on site with a hand-held meter, whereas water quality meters that measure TSS are expensive and the results from samples sent for laboratory analysis will not be available immediately. However, NTU is affected by factors other than suspended solids, such as colour (e.g. tannins may alter the NTU reading).

As such, a correlation curve (i.e. across a range of readings) must be determined between TSS and NTU that is specific to the site. The correlation must be determined via laboratory analysis, by a NATA-accredited laboratory. Thorough records of the site-specific correlation must be kept, and any recommendations and/or limitations should be documented as part of the CEMP.

For further information and guidance on correlating TSS with NTU refer to Appendix E of the Blue Book.

5.1.2. Treating water prior to discharge

Prior to the use of any testing equipment on site, the appropriate calibrations must be conducted as per the manufacturer's recommendations and recorded for future referral if required.

(a) Oil and grease

- Examine surface of water immediately prior to discharge for evidence of oil and grease (e.g. sheen, discolouration).
- No action is required if there is no visual contamination.
- If there is contamination, the contaminated water must either be disposed of at a licenced disposal facility, or treated using appropriate absorbent materials, which must be spread on the surface.
- Any used absorbent materials are to be disposed of appropriately.

(b) pH levels

- If pH is outside the range 6.5–8.5 the water will need to be neutralised. This may be achieved via three methods which are dependent on site and time constraints –
 - natural – allowing the water to sit for a period of time and naturally neutralise.
 - mixing – by mixing with other site water of a higher or lower pH (i.e. other water has also been tested), to achieve pH 6.5-8.5.
 - acid/base addition – if the water is above 8.5, acid is used to lower the pH; if the water is below 6.5 a base is used to raise the pH. To treat water with acid or base, safety requirements must be followed as outlined in relevant material safety data sheet (MSDS).
- Re-test the water pH following treatment – repeat as necessary, until the acceptable pH 6.5 – 8.5 range is reached.

(c) Total suspended solids

- If TSS are greater than 50mg/L, the sediments need to settle to the bottom or be removed. This can be achieved via the following methods:
 - natural settlement – this could take a long time or not occur at all (e.g. with dispersible clay soils). Dependent on soil type and other characteristics, (refer to Blue Book Chapter 3 for further information).
 - flocculation – chemical treatment with a flocculent (e.g. gypsum). If the flocculant is being applied manually, an even application over the surface of the water is essential. Only environmentally safe flocculants are to be used, based on the environment manager’s review of MSDS information.
 - filtration – pumping or gravity feeding the water through a filter medium (e.g. geofabric) to another storage area (e.g. container or sediment basin) to remove sediment.
- Re-testing of water is required once treatment has been undertaken to ensure criterion for TSS is met.

Following treatment, and retesting to ensure compliance with the criteria, the water may be authorised for discharge by the environmental manager and site supervisor – go to **Section 5.4**.

5.2. Requirements for discharge to land

The objective of discharging water to land (within the site boundary) is to allow the water to infiltrate into the ground, thus avoiding direct discharge to, or pollution of, waters. Any suspended solids in the water are deposited either on the surface or retained in underlying soil layers, so the TSS criterion does not apply. However, to avoid impacts to vegetation or soil contamination pH testing and a visual inspection for oil or grease must be undertaken (refer to 5.1.1 for criteria and testing methods).

5.2.1. Determining a suitable discharge location

Consideration should be given to the following factors when determining a suitable offsite location:

- (a) Direction of groundwater flow – recharging groundwater that will subsequently flow either back onto site, into excavations or low lying areas should be avoided.
- (b) Erosion – the receiving area should have complete groundcover (e.g. grass) and established vegetation to minimise the risk of erosion.
- (c) Flora and fauna – water must not be discharged to areas where there is potential to have an adverse effect on any flora or fauna species.
- (d) Flooding – the receiving area must have the infiltration capacity to receive the volume of water to be discharged, without causing flooding or significantly increasing the risk of flooding should subsequent rainfall occur.

5.2.2. Criteria for discharge to land

Discharge to land within the site boundary shall only occur if:

- (a) there is no visible oil or grease (otherwise treat in accordance with 5.1.2 (a) above)
- (b) the pH levels are between 6.5 – 8.5 (otherwise treat in accordance with 5.1.2 (b) above)

- (c) no surface runoff will be generated from the discharge and there is no potential for discharged water to reach any watercourse (within or outside the site)
- (d) no erosion is caused from the discharge and appropriate erosion and sediment control are installed in accordance with the Blue Book
- (e) all discharge water can be wholly contained within the site boundary.

If all criteria above are met then the water may be authorised for discharge to land by the environmental manager and site supervisor – go to **Section 5.4**.

5.3. Reuse on site

Water may be reused on site, for example, for dust suppression, to assist with compaction or for watering landscape/bush regeneration areas. As with discharges to land, the TSS criterion does not apply as water will not be discharged to any waters. However, pH testing and a visual inspection for oil or grease must be undertaken (refer to 5.1.1 for criteria and testing methods).

5.3.1. Criteria for reuse on site

Reuse on site shall only occur if:

- (f) there is no visible oil or grease (otherwise treat in accordance with 5.1.2 (a) above)
- (g) the pH levels are between 6.5 – 8.5 (otherwise treat in accordance with 5.1.2 (b) above)
- (h) no erosion is caused from the discharge
- (i) any runoff generated by the reuse is controlled entirely within the site boundary and appropriate sediment controls are installed and maintained in accordance with the Blue Book.

If all criteria above are met then the water may be authorised for reuse by the environmental manager and site supervisor – go to **Section 5.4**.

5.4. Discharging water

Once water has been tested and meets all the criteria for discharge to either waters or land, or for reuse on site, the site supervisor and environmental manager must authorise the discharge by signing the [Discharge or Reuse Water Approval DMS-FT-207](#).

Discharge can use a syphon system or a pump, with a priority on delivering low energy flows to downstream drainage lines, watercourses or land. The flow from the outlet must be directed onto a non-erodible surface or material and, for discharges to waters, sufficient energy must be dissipated before the flow enters the natural watercourse to ensure no erosion shall occur.

The pump inlet must be placed so that it will not disturb or take in any sediment or sediment laden water.

The person who discharges the water must sign the [Discharge or Reuse Water Approval DMS-FT-207 form](#) to confirm discharge was undertaken in accordance with details as specified.

Water must never be discharged or reused onsite in a manner that exceeds the capacity of sediment controls and/or generates runoff with the potential to discharge from site.

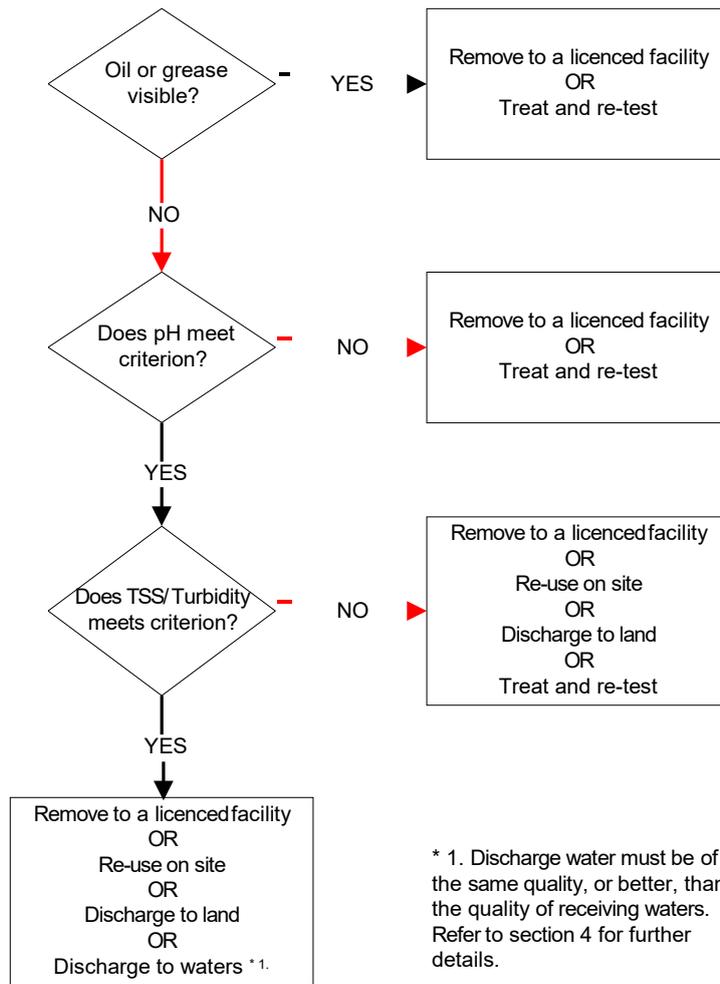


Figure 1 Flowchart for testing water to determine options for removal, reuse, treatment or discharge.

5.5. Monitoring and maintenance

During any offsite or onsite discharge, regular monitoring must occur to ensure compliance with the requirements specified in this guideline. The person who will undertake the monitoring must be stated on the [Discharge or Reuse Water Approval DMS-FT-207](#) form and shall complete and sign the monitoring section.

The discharge must be monitored to ensure that the water being syphoned or pumped:

- complies with the discharge criteria
- does not come into contact with any soil or exposed surfaces before discharging
- does not mix with any sediment laden/untested water at either the inlet or outlet.

All sediment controls or areas that store water must be inspected to assess their integrity and capacity, as a minimum at the following times:

- weekly during dry weather
- prior to forecast rainfall events
- during rainfall events (as often as possible), and as soon as possible following a rainfall event when the site is unattended (e.g. on weekends).

All rain event data shall be recorded for the site, including rainfall quantities from each rain event.

5.6. Record keeping

Records of all water discharges undertaken in accordance with this guideline must be documented using the IP form [Discharge or Reuse Water Approval DMS-FT-207](#) or project-specific equivalent.

Records of all monitoring and maintenance measures should also be kept, on the site-specific environmental inspection checklist and other relevant document(s) (e.g. site foreman's diary).

Copies of all relevant records shall be provided to the environmental representative and/or IP environment and planning manager upon request.

6. Related documents

Related documents

[Environmental Management System Manual DMS-ST-052](#)

[Discharge or Reuse Water Approval DMS-FT-207](#)