



Dewatering Guidelines

This guideline is intended as a general guide on issues of environmental concern, and to offer potential solutions. It does not override any statutory obligation or Government policy requirement.

The guideline recommendations should be used in conjunction with site-specific assessment of a project's environmental risks. Consideration must be given to environmental values, implemented safeguards and the precautionary principle. This document does not constitute Council's policy position in relation to dewatering activities, unless confirmed in writing by an authorised officer. This guideline may also be subject to changes at Council's discretion, as new information becomes available.

Scope

These guidelines apply to dewatering operations that draw water from groundwater seepage or excavations that intersect aquifers. The aim of this document is to provide environmental management guidance for dewatering operations associated with construction sites.

Recommendations

Planning

1. *A comprehensive assessment* of the potential environmental impacts of dewatering should be conducted or commissioned as part of the project feasibility stage, to identify issues and develop management strategies to address such issues.
2. *The Assessment must include but not be limited to:*
 - Define the commencement date, duration, anticipated quantity and frequency of dewater discharge;
 - Determine via scientific modeling the radius of influence and profile of any water table draw down cone (including threat to vegetation or existing structures from land settling);
 - Determine the quality of water to be discharged, including probable contaminant concentrations based on natural groundwater contaminants and the local land use history;
 - Determine whether the soil contains iron pyrites or other characteristics likely to result in acid sulfate release during excavation or dewatering. These conditions may be caused when peat swamps are exposed to air after the water table is lowered. Dewatering should not take place unless effective measures are taken to prevent acidic water (low pH) causing the release of arsenic or toxic metals to the environment;
 - Assess the need and viability of dewater treatment e.g. settling, biological stabilisation, pH adjustment, chemical flocculation or filtration;
 - Include baseline assessment of the receiving environment (before dewatering), including seasonal changes of water flow, water table levels and water quantities;

- Verify that the discharge water quality will consistently comply with Commonwealth, State and Local government statutory requirements, where dewatering could effect local resource values. Alternative criteria may be proposed to regulatory bodies for assessment based on-site detailed scientific studies;
- Notify Council of the results of consultation with any local residents or businesses likely to be effected during dewatering. A contact person must be available during dewatering operations to manage any issues; and
- Seek approval from other agencies with jurisdiction i.e. DPI for the removal of marine plants.

3. *Discharge of treated water to the environment should not cause any of the following effects:*

- Detrimental impact upon environmental values of receiving waters or significant threat to those values;
- Harm to native vegetation, or erosion of structures or services;
- Soil erosion or local flooding;
- Sediment build-up in drain, waterways or wetlands;
- Nuisance to the local community e.g. noise, odours, impacts on plants or property, or hazards; and
- Loss or reduced flows in public or private water sources.

4. The proponent must prepare and submit to Douglas Shire Council, prior to the commencement of the activities an appropriate environmental management plan that addresses and provides contingencies for any environmental issues that may occur over the life of the project. This must include design measures to minimise the impact of the release of treated water from the dewatering operation.

5. Dewatering activities near coastal or estuarine environments must ensure that there is no potential to draw salt water into a less saline aquifer or discharge saline waters to any receiving environment.

Discharge Disposal Options

6. *Douglas Shire Council will oppose treated water discharge that:*

- a. Enters a recognised site - Conservation Area, an area identified as a resource entitlement, a wetland described in the Directory of important Wetlands, a wetland described as a RAMSAR site or a site described as Registered of National Estate;
- b. Enters poorly defined waterways, as water may leave the channel, flooding adjoining land and vegetation;
- c. Compromises the values (beneficial uses) of any surface water or groundwater; or
- d. Enters watercourses, causing or adding to soil erosion or sediment accumulation problems.
- e. Conflicts with the Environmental Protection Act 1994 and subordinate legislation.
- f. Conflicts with any other State Government policy or guideline.

7. *Subject to the constraints above, treated water disposal options in order or preference are listed as follows:*
- a. Direct groundwater recharge provided:
 - There is sufficient area and aquifer capacity to recharge, without risk to native vegetation, wetlands, structures or services;
 - Entrained silt or clay organic material will not clog the recharge area;
 - Recharge will not degrade soil or water resource quality; and
 - Recharge will not lead to local flooding or adverse land surface impacts.
 - b. Recycling:
Preferred option where the water quality is suitable for reuse. e.g. for dust control, process circuit water, cooling water systems, wash down water or maintenance of vegetation.
 - c. Dewater use off-site:
Only by written agreement approved by Council to provide water to a neighbouring site for a specific need. The water quality should consistently meet the criteria appropriate for intended use. This off-site use must be acceptable to the EPA etc.
 - d. Irrigation of vegetated land:
Acceptable provided the water quality meets the ANZECC / ARMCANZ 2000 guidelines for irrigation water quality, and the proponent demonstrates that it meets the ambient plant evapo-transpiration needs and has no adverse social or environmental impacts.
 - e. Discharge to nearby surface water:

Acceptable provided:
 - Prior written approval is received from the owner/operator of any drainage systems used to convey the dewater;
 - It is approved by other relevant state government agencies: EPA, NR&M in their areas of interest and meets LGAQ planning and environmental health requirements; and
 - Other options will be considered on a site-by-site basis and should be referred to Council for assessment and advice.

Operation and Management

8. The proponent must install and operate a settling basin/balance tank with a capacity to contain a minimum of 2 hours of dewater prior to release to the environment. Where this is not practical due to lack of space, other forms of treatment such as filtration or chemical coagulation may be used, subject to Council approval.
9. A secondary function of a settling basin is to remove floating matter, and to allow aeration and dissolved iron to precipitate and settle. It may be necessary to dose acidic discharge water with alkalis such as lime to raise pH, and to artificially aerate the water to enhance the removal of iron. Treatments such as chemical dosing with metal salts, followed by settling may be considered if appropriate. Disinfection may be required if the dewater contains significant levels of micro-organisms e.g. where dewater takes place near septic tank systems.

10. The operator must regulate dewatering operations to prevent harm caused from changes to:
 - a. the water table below neighbouring properties, and /or
 - b. the water quality or flow regime of surface water bodies (including wetlands).
11. Any incidental detrimental affects on people, property or water bodies should be immediately and effectively remedied by the dewater operator upon discovery or notification.

Monitoring and Reporting

12. *The dewater operator must monitor:*
 - a. Dewater discharge rate, continuously metered in a quantitative manor;
 - b. Physical parameters post treatment, at discharge point must be continuously monitored, in real time for the following parameters. pH, conductivity and turbidity.
 - c. Site specific chemical and biological parameters post treatment using a National Association of Testing Authorities accredited laboratory at daily intervals, as requested by Douglas Shire Council
 - d. Static water levels via piezometers in the surrounding water table to assess draw-down effects (and any possible impacts on structures) at a minimum of weekly intervals; and
 - e. Impacts on vegetation, wetlands and water resources by carrying out periodic investigations immediately pre-start, each 6 months after commissioning, and at completion.
13. Records and results of the monitoring program must be forwarded via fax or email to Douglas Shire Council for review and assessment, on the day the results are collected, or as conditioned for in the dewatering permit

More Information

These guidelines will be updated from time to time industry standards change. If you require more information, please contact Council's Environmental Health Unit on:

Phone: (07) 4099 9436 Fax: (07) 4098 2902; or
E-mail: Douglas Shire Council's corporate web page <http://www.douglas.qld.gov.au>

1. Australian and New Zealand Environment and Conservation Council (ANZECC) – Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2000
2. National Water Quality Management Strategy (NWQMS) - Australian Drinking Water Guidelines, 2001
3. Agriculture and Resource Management Council (ARMCANZ) - Australian Drinking Water Guidelines, 2001
4. Environmental Protection Agency (EPA) - Queensland Water Quality Guidelines 2006.