

Information Sheet

CSG water management: Measurable criteria

Measurable criteria for coal seam gas (CSG) water are used to assess the effectiveness of strategies employed to manage CSG water and are required under s 126(1)(e) of the Environmental Protection Act 1994. This fact sheet assists an applicant for an environmental authority for coal seam gas (CSG) activities to define, address and report on measurable criteria.

What are the legislative requirements of the *Environmental Protection Act 1994*?

The *Environmental Protection Act 1994* (EP Act) provides that an environmental authority (EA) is required for petroleum activities (including coal seam gas (CSG) activities).

The EP Act requires that a site-specific application for a CSG activity must include measurable criteria (termed 'management criteria'), against which the applicant will monitor and assess the effectiveness of the management of all CSG water and saline waste associated with the activity.

These criteria must address the following:

- the quantity and quality of the water used, treated, stored or disposed of
- protection of the environmental values affected by each relevant CSG activity
- the disposal of waste—including, for example, salt—generated from the management of the water.

How are management criteria defined?

Management criteria are standards against which the effectiveness of CSG water management can be determined. Criteria typically consist of a management objective and a series of actions or tasks designed to achieve and maintain that objective.

Performance indicators are also required for each objective. Performance indicators are a quantitative means against which success can be measured, assessed and audited in a consistent, objective and repeatable manner.

What should the management criteria address?

Management criteria must be developed for the quantity and quality of CSG water at critical control points across the entire CSG water management system, such as:

- injection to aquifers
- storage of untreated and treated CSG water in sumps and regulated structures
- transmission via pipelines
- treatment of CSG water and water quality acceptance criteria □ beneficial use.

Management criteria must also be developed for the disposal of brine or salt and any other wastes produced from the management of CSG water.

The management criteria must identify and include environmental values that are relevant to the management objective.

In determining environmental values, all of the potential impacts of the proposal must be considered taking into account human uses and the required biological integrity to protect that value.

Environmental values must be identified in accordance with the Environmental Protection Regulation 2008 and the Environmental Protection (Water) Policy 2009 and associated departmental guidelines.

Where available, environmental quality objectives, such as those prescribed in the environmental protection policies, can be incorporated into the management criteria, most typically as performance indicators.

Examples of management criteria based on two different scenarios are outlined below.

Management criteria and environmental authority conditions

The management criteria provide a tool for identifying the effective management of CSG water and as a consequence should link to, and be consistent with the conditions of the EA, where appropriate.

Aspects of the management criteria will be incorporated into the EA but only in order to clearly identify what must be used in the annual audit of the CSG Water Management Plan.

As performance indicators are a tool to measure success, it is not intended that these be prescribed as conditions in the EA.

Reporting against management criteria

Performance indicators will be measured by CSG companies to identify any failures or poor performance of the CSG water management system at each site and across the whole project.

Performance indicators may also trigger investigations into the identified failures and/or poor performance and allow for continuous improvement in CSG water management over the life of the project.

The annual return for a CSG EA must include an evaluation of the effectiveness of the management of CSG water under the management criteria. The evaluation must state:

- whether or not the CSG water has been effectively managed having regard to the criteria
- if the water has not been effectively managed:
 - the action that will be taken to ensure the water will in the future be effectively managed having regard to the criteria
 - when the action will be taken.

The Department of Environment and Science as the administering authority of the EP Act will use this reporting to ensure that CSG water is being managed appropriately.

Example 1

Objective	Environmental value	Task	Performance indicator
<p>Storing CSG water in aggregation dams so as to prevent unauthorised releases into the environment.</p>	<p>Ground water for stock watering.</p> <p>Ground water for crop irrigation.</p> <p>Soils for growth of native revegetation.</p> <p>Soils for pasture growth.</p> <p>Adjacent surface waters for stock watering.</p> <p>Adjacent surface waters for aquatic ecosystem protection.</p> <p>Air quality surrounding dams for the protection of health and wellbeing.</p>	<p>Check dam level.</p> <p>Quarterly shallow ground water monitoring surrounding aggregation dams.</p> <p>Implement receiving environment monitoring program for (e.g. Wilsons Creek).</p> <p>Undertake dam annual integrity assessment in month of (e.g. October).</p> <p>Undertake ambient air quality monitoring surrounding aggregation dams for (e.g. Benzene).</p> <p>Fortnightly inspection of aggregation dams to assess for integrity and safety of operation.</p> <p>Undertake annual dam water quality monitoring to assess contamination levels.</p> <p>Monthly check of water backup pumps and failure alarms.</p>	<p>Where dam level is less than water balance predictions, additional dam integrity assessment carried out within five business days.</p> <p>Where a dam reaches mandatory operating level, dam level is restored within five business days.</p> <p>Groundwater monitoring indicates quality data is not significantly different than background data when tested using a test at a probability level of 0.05.</p> <p>Wilsons Creek meets water quality objectives as provided for (e.g. in the Environmental Protection (Water) Policy 2009).</p> <p>Recommendations of dam annual integrity assessment implemented within 14 business days.</p> <p>Ambient air quality monitoring surrounding aggregation dams in compliance with (e.g. the air quality objectives in the Environmental Protection (Air) Policy 2008).</p> <p>Back up water pumps and failure alarms repaired within 24 hours of detection with cause of failure and nature of repairs documented.</p>

Example 2

Objective	Environmental value	Task	Performance indicator
Maximise use of treated CSG water for dust suppression	Soils able to sustain pasture growth and native vegetation. Protection of adjacent (e.g. Wilsons Creek) for aquatic ecosystem protection. Ambient environment including built structures free from dust deposition or nuisance.	Apply CSG water on soils using spray irrigation methods. Undertake soil quality monitoring on a quarterly basis. Dust suppression to occur when wind speeds are ≤ 5 km/hr to avoid wind blown soils and surface water contamination.	Operator checklists completed after dust suppression activities are carried out and no surface run-off of irrigant documented. Less than 10% change in soils monitoring results for (e.g. SAR). No valid dust nuisance complaints received. Wilsons Creek meets the water quality objectives for turbidity and suspended solids as provided for (e.g. The receiving environment monitoring program titled 'XX' dated 'YY').

Version History

Version	Effective date	Description of changes
1.00	20 May 2013	First published version of the guideline.
1.01	9 July 2018	The document template, header and footer have been updated to reflect current Queensland Government corporate identity requirements and comply with the Policy Register.