

Advice to decision maker on coal seam gas project

Proposed action: Coal seam gas project

Requesting agency	Department of Sustainability, Environment, Water, Population and Communities
Date of request	26 June 2012
Project title	SANTOS FUTURE GAS SUPPLY AREA PROJECT, CENTRAL SOUTHERN QUEENSLAND (EPBC 2012/6357)
Summary of request	<p>The Department of Sustainability, Environment, Water, Population and Communities (the department) has assessed proposed projects in accordance with the provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p> <p>The department advises the Interim Independent Expert Scientific Committee on Coal Seam Gas and Coal Mining (the committee) of an opportunity to comment on Terms of Reference for the Environmental Impact Statement. The department is seeking the committee's advice on water-related impacts on matters of national environmental significance including the impact of the activity on water resources and the environmental values that this water supports. Specifically the department seeks advice on:</p> <ol style="list-style-type: none"> likely operational impacts to groundwater and surface water within the project area and downstream; water-related impacts to listed threatened species and communities and listed migratory species dependent on key surface and groundwater resources and to Ramsar Wetlands (in particular the Narran Lakes Ramsar site); and hydrological impacts on economic and social matters. <p>The department requests comments for incorporation by 1 August 2012.</p>

Advice

- Overall, the draft Terms of Reference addresses the assessment of potential water-related impacts to groundwater and surface water in a very broad manner. Specific issues are outlined below.
- The committee notes that this project has the potential to trigger the *Water Act 2007* and Murray-Darling Basin Plan 2008, due to such impacts as changes to base-flow to the Murray-Darling Basin. As such, an assessment under s255AA may be triggered. Information pertaining to the specific location of floodplains would assist this determination.
- The committee considers that the proponent should clearly specify whether or not hydraulic fracturing is necessary. If hydraulic fracturing is to be undertaken, then the Terms of Reference should include:
 - the estimated number and the spatial distribution of boreholes where hydraulic fracturing may be necessary; and
 - details (including load and concentration) of the constituent of any hydraulic fracturing agents and any other reinjection fluids(s), and their toxicity as individual substances and as total

effluent toxicity and ecotoxicity, based on methods outlined in the National Water Quality Management Strategy (ANZECC and ARMCANZ, 2000a).

4. The committee suggests that as the project area is located in the Queensland Surat Cumulative Management Area (Queensland Water Commission, 2012), the Terms of Reference should examine relevant cumulative impacts results from the Queensland Water Commission's underground water impact report for the Surat Cumulative Management Area. Furthermore, additional monitoring infrastructure is required to provide baseline data to strengthen the regional groundwater modelling in accordance with the Queensland Water Commission report. It is further recommended that the Terms of Reference assess cumulative impacts in accordance with the practices and procedures set out in the Mineral Council of Australia's Water Accounting Framework for the Minerals Industry (Minerals Council of Australia, 2012).
5. The committee recommends the Terms of Reference for the Environmental Impact Statement should provide additional information to articulate how water management strategies (including co-produced water) will evolve over the lifetime of the project, considering that the development will occur over a large project area which is comprised of several land parcels that are not geographically connected. Additional information required includes:
 - a) inclusion of the total amount of water extracted, per well, during the lifetime of a well
 - b) details of all dams and ponds are required
 - c) the definition of dams and ponds should include the hyper-saline storage ponds associated with reverse osmosis water treatment facilities
 - d) the standard of water quality surveys and on-going monitoring should be specified to a nationally accepted standard such as the National Water Quality Management Strategy (ANZECC and ARMCANZ, 2000b)
 - e) the standard of aquatic flora and fauna surveys and on-going monitoring should be required to a specified nationally accepted standard such as AUSRIVAS (www.ausrivas.canberra.edu.au);
 - f) water quality monitoring should also include the measurement of dissolved oxygen; and
 - g) on-going water quality management triggers and action plans should be specified to a nationally accepted standard such as the National Water Quality Management Strategy (ANZECC and ARMCANZ, 2000a).
6. The committee recommends that the draft Terms of Reference assess the potential impacts from other potential water related risks including:
 - a) infrastructure waterway crossings including consideration of aquatic fauna habitat disturbance and the risk of species fragmentation
 - b) characterisation of potential leachate from excavated wastes
 - c) assessment of potential negative impacts on soil quality, if coal seam gas produced water is directly discharged to the soil surface such as through accidental spillage or dust suppression.
 - d) the environmental values should be defined according the National Water Quality Management Strategy (ANZECC and ARMCANZ, 2000a), for all water bodies potentially impacted by the project; and
 - e) fugitive gas and potential impact to water resources such as dissolved methane toxicity to aquatic ecology.
7. The committee further recommends that the Terms of Reference should contain a requirement to undertake a comprehensive ecological risk assessment in addition to the already proposed risk assessments for impacts to ground and surface water, providing a link between the impacts to ground and surface water and the risks that this poses to water dependent ecological values.
8. The committee recommends that a risk-based assessment of impacts to water resources be undertaken at both the site and regional scale as a matter of priority. The risk-based assessment should include, but not be limited to:
 - a) details of the measured hydrogeological data, and model parameters, uncertainties, and confidence/ reliability;
 - b) a site and regional water balance which provides basin and catchment scale context for the proposed action;
 - c) surface water and groundwater quantity and quality fluxes, including impacts of the proposal on the water resource, water balance and solute balance;
 - d) regional cumulative impacts (covering surface water, groundwater, geomorphological, hydrological and ecological impacts); and
 - e) mitigation and management measures to appropriately address these identified risks.

Any proposed models should also be peer reviewed and publicly released.

**Date of
advice**

31 July 2012
