

Advice to decision maker on coal seam gas project

Proposed action: Gloucester Gas Project (EPBC 2008/4432)

Requesting agency	Department of Sustainability, Environment, Water, Population and Communities
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Date of request	3 December 2012
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Date request accepted	4 December 2012
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Summary of request	<p>The Department of Sustainability, Environment, Water, Population and Communities (the department) is currently assessing the proposed project in accordance with the provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (the EPBC Act).</p> <p>The department advises the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (the committee) of an opportunity to comment on a draft approval conditions. Specifically, the department seeks the advice of the committee on whether the draft approval conditions:</p> <ol style="list-style-type: none">1. adequately protect the matters of national environmental significance, specifically the endangered Giant Barred Frog and the vulnerable Green and Golden Bell Frog; and2. address Minister Burke's eight hydrological concerns/requirements as explained in a letter sent to the proponent dated 21 September 2011. <p>The department requested for advice to be provided by 21 December 2012.</p>
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Advice	<p>Based on the committee's evaluation of available information presented by the proponent AGL and the New South Wales Department of Planning and Infrastructure and New South Wales Planning Assessment Commission, the committee offers the following scientific advice:</p> <ol style="list-style-type: none">1. The committee has concerns regarding the potential for changes in surface and shallow groundwater availability and surface and groundwater quality as a result of depressurisation of the coal seams, which could have an impact on the habitat of the Giant Barred Frog and the Green and Golden Bell Frog. Specific scientific questions relating to these issues which are not dealt with adequately by the available data and conceptual water balance include:<ol style="list-style-type: none">a. Surface water and shallow aquifer connectivity, particularly in the recharge areas;
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- b. The connectivity between the deep aquifers and shallow aquifers;
 - c. The general hydraulic connectivity to 1000 m depth; and
 - d. The presence of numerous faults that could result in movement of groundwater and/or gas.
2. The committee recommends that a thorough risk assessment of the impact of faulting is undertaken that is informed by:
 - a. A baseline investigation of gas occurrence in surface and groundwater ;
 - b. A field-based investigation of the spatial distribution of strata and structure within the project area and the role of faulting and its influence on migration of groundwater and/or gas into surface water systems;
 - c. A peer-reviewed, predictive numerical model that explores the pressure at which gas and water may be released and transmitted along faults; and
 - d. The potential impact of fugitive gas emissions on surface water and groundwater quality, which may affect matters of national environmental significance, such as the endangered Giant Barred Frog and the vulnerable Green and Golden Bell Frog.
 3. The conceptual water balance should be revised in light of the above concerns and utilising the additional information gathered from 2(a) to 2(d). In addition, the model should be extended to 1000 m depth below ground surface. It should be underpinned by:
 - a. Sufficiently detailed, scientifically robust data or analysis to adequately model water movement and rate of flow through the hydrogeological units;
 - b. Data on water fluxes which should, but currently does not, balance (e.g. total rainfall 193 GL/a, aquifer recharge 7.7 GL/a, evaporative transpiration 99.2 GL/a, and surface runoff 94.2 GL/a); and
 - c. Modelling of the faults or fracturing and the potential effects of coal seam depressurisation. Indications of confidence, accuracy and precision in populating the water balance should be included.

The draft department approval conditions are consistent with these requirements. The committee considers that the results of the faulting risk assessment, ongoing monitoring and a robust and accurate water balance, populated by real data and numerical modelling, are needed prior to considering stages 2-5 of the development.

4. The committee supports the draft department approval conditions to protect the matters of national environmental significance, specifically the Giant Barred Frog and the Green and Golden Bell Frog. The committee agrees pre-development surveys need to be completed before the project commences and be conducted in accordance with the department's survey guidelines for threatened frogs.

The committee notes that although these frog species were not recorded at the site in a desktop study, in July 2010, Duralie Coal (EPBC 2010/5396 *Request for Reconsideration: Supporting Documentation July 2010*: ES-1) reported the presence of Giant Barred Frog in 13 locations along a 15 kilometre stretch of the Mammy Johnson River. The closest of these known habitats is nine kilometres from the Stage One project area.

The committee has concerns about the potential impacts of gas and/or groundwater flow from the faults on water quality and the ecology of the Giant Barred Frog and the Green and Golden Bell Frog. To protect ongoing surface water quality and the ecology of the Giant Barred Frog and the Green and Golden Bell Frog populations, the committee recommends that management plans for the matters of national environmental significance include ongoing gas monitoring.

5. The committee has concerns around the potential impact of acid sulphate soils during the construction of the pipeline, particularly on the downstream Ramsar listed Hunter estuary

wetland. The draft approval condition 25 relating to the acid sulphate soils management plan should require the proponent to survey and map the location of potential exposure of acid sulphate soils along the pipeline route. Where the survey indicates the high likelihood of disturbing acid sulphate soils during construction, the management plan should include a risk assessment, including consideration of downstream surface water quality and run-off impacts on the Ramsar wetland site, as well as mitigation and management measures.

6. The committee suggests that the draft approval conditions could be strengthened by the following requirements:
 - a. Regular reporting on the actual use of hydraulic fracturing and accurately specifying well locations, to be incorporated into the groundwater model; and
 - b. Instigating protection measures to prevent migratory bird access to storage ponds.
7. In relation to Minister Burke's eight hydrological concerns/requirements in the letter dated 21 September 2011, the committee notes that the draft approval conditions incorporate the specified requirements as outlined below (using the numbering as contained in the Minister's letter):
 1. *'data for the Planning Assessment Commission's requirements 3.5 to 3.13 and 4.1 to 4.2'*;

Condition 14 specifies this requirement. In addition, conditions 22, 25 and 26 require the Minister's approval to an extracted water management strategy, an acid sulphates soils management plan and a water course crossing management strategy.
 2. *'data from pilot testing at Waukivory and Stratford'*;

Condition 16 specifies this requirement.
 3. *'baseline data associated with Phase 1 and Phase 2 studies'*;

Condition 17 specifies this requirement.
 4. *'the numerical groundwater model'*;

Condition 20 specifies this requirement.
 5. *'data on the location, depth and age of groundwater samples including proximity to known faults and fractures'*;

Condition 15.b specifies this requirement.
 6. *'the Produced Water Management Strategy'*;

Condition 22 specifies an 'Extracted Water Management Strategy as required under state approval conditions'. This would meet the Minister's condition if an 'Extracted Water Management Strategy' is the same as a '*Produced Water Management Strategy*'. This should be clarified.
 7. *'details on when the Extracted Water Management Strategy will be available'*; and

Condition 22 specifies this requirement.
 8. *'information and data about the assessment of a representative site for fault testing'*;

Condition 18 specifies this requirement.

**Date of
advice**

20 December 2012