Senate Inquiry
Into the Management of the Murray-Darling Basin - Impact of Mining Coal Seam Gas

Submission by the

Department of Sustainability, Environment, Water, Population and Communities

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INQUIRY INTO MANAGEMENT OF THE MURRAY DARLING BASIN – IMPACT OF MINING CSG

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(DSEWPaC)

Overview

On 28 October 2010, the Senate agreed the Standing Committee on Rural Affairs and Transport would hold an inquiry into the management of the Murray Darling Basin (MDB). The Rural Affairs and Transport References Committee, as part of its inquiry into management of the MDB, is examining the impacts of mining coal seam gas (CSG). This submission is intended to provide information which may assist the Committee in its deliberations and addresses the Terms of Reference regarding the economic, social and environmental impacts of mining coal seam gas on the sustainability of water aquifers and future water licensing arrangements and other related matters including health impacts.

The Department of Sustainability, Environment, Water, Population and Communities (the department) administers two pieces of legislation pertinent to the inquiry - the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Water Act 2007* (Water Act). In Australia onshore mining operations are primarily regulated under state government legislation. The relevant state government is responsible for making decisions in relation to the licensing of mining and extractive industries.

The role of the Commonwealth

The Environmental Protection and Biodiversity Conservation Act 1999

Commonwealth responsibilities in relation to the approval of CSG projects and other development proposals are primarily concerned with the protection of matters of national environmental significance (MNES) defined under the EPBC Act. The EPBC Act codifies the role of the Australian Government in protecting MNES and regulating actions involving the Commonwealth or on or affecting Commonwealth land.

The department is responsible for administering the EPBC Act and for development and implementation of policies underpinning the EPBC Act. Relevantly, the department administers Chapter 4 of the EPBC Act in relation to the environmental impact assessment and approvals process. This involves assessment and decisions on approval of:

- activities by the Commonwealth or Commonwealth agencies, or activities on or affecting Commonwealth land; and

- activities that have, will have or are likely to have, a significant impact on MNES. MNES include listed threatened species and ecological communities, migratory species, wetlands of international importance ('Ramsar wetlands'), the values of declared World Heritage properties, and the values of National Heritage places. The MNES are identified under Chapter 2 of the EPBC Act.

If a CSG activity is likely to have a significant impact on a matter protected under the EPBC Act it must be assessed and approved by the Minister for Sustainability, Environment, Water, Population and Communities (the Minister) before it is allowed to proceed. Proposals are only approved under the EPBC Act if the Minister considers that there will be no unacceptable impacts on matters protected under the EPBC Act. When deciding whether to approve CSG projects under the EPBC Act the Minister must also take into account certain other matters including economic and social matters and the principles of ecologically sustainable development. Approval is often given subject to conditions, in which case the Minister must consider any relevant conditions imposed (or likely to be imposed) on the action by the relevant state government.

Three proposals (Santos-Petronas, British Gas/Queensland Gas Company and Australia Pacific LNG) which are within the MDB have been approved by the Minister to conduct CSG activities under the EPBC Act. Approvals for each of these projects include infrastructure limit conditions that restrict approved CSG extraction to approved tenements. Limits are also set on the maximum number of production wells allowed for each company. There are currently two CSG proposals (Arrow Energy and Eastern Star Gas Limited) in the MDB being assessed by the department. One is proposed in New South Wales and one in southern Queensland. Further information on these projects is provided later in this submission.

The Commonwealth Water Act 2007- Independent studies under s255AA

Each state approves and regulates CSG projects under relevant state water, environmental protection, mining and petroleum legislation. In addition section 255AA (s255AA) of the Water Act requires that, *prior to licences being granted for subsidence mining operations on floodplains that have underlying groundwater systems forming part of the Murray-Darling Basin system inflows, an independent expert study must be undertaken to determine the impacts of the proposed mining operations on the connectivity of groundwater systems, surface water and ground water flows and water quality.*

Pursuant to s255AA an independent study was undertaken - the *Assessment of impacts of the proposed CSG operations on surface and groundwater systems in the Murray-Darling Basin* (s255AA study) published by the University of Queensland. The scope of this report was to undertake a study to determine the impacts of the CSG operations by Santos-Petronas, British Gas/Queensland Gas Company and Australia Pacific LNG on the connectivity of groundwater systems, surface water and groundwater flows and water quality in the MDB.

The s255AA study found that:

- "although large volumes of water will be extracted from the Walloon Coal Measures during extraction of CSG across the entire spatial extent of CSG, the changes to regional groundwater fluxes and balances of MDB aquifers due solely to CSG activities on the floodplain may be relatively minor." Note that this refers to where the tenements overlie the Condamine Alluvium not the whole of the alluvium.
- "Localised drawdown effects are likely to be significantly different to the predicted regional average drawdown owing to the spatial variability in hydraulic connectivity between the coal measures and aquifers, rates of water movement, depth of the coal seam and the thickness confining layers" and "the APLNG EIS modelling and subsequent information provided to GA [Geoscience Australia] suggests that in some areas large local decreases in potentiometric head could occur (APLNG, 2010, Vol 5 att 21; QGC, 2010; Santos, 2010)."
- There are a range of risks and uncertainties, including: local flows to the MDB due to the discharge of associated water; re-injection of the associated water into the Condamine Alluvium; water quality changes in the Condamine Alluvium and (though not part of the MDB inflows) redistribution of water from other Great Artesian Basin aquifers into the Walloon Coal Measures.
- there may be some risk of loss of water from the Condamine Alluvium (in the MDB) to the Walloon Coal Measures (not in the MDB) though this 'is likely to be considerably smaller than the drawdown that has occurred over recent decades due to water extraction for agricultural purposes'. Note that this refers to where the tenements overlie the Condamine Alluvium not the whole of the alluvium.

In addition, on 2 December 2008, the Minister (then Minister for Climate Change and Water) announced funding of up to $1.5 million as a one-third contribution towards a joint study into the surface and groundwater resources of the Namoi Catchment in New South Wales (NSW). The Namoi Water Study is intended to provide high quality information to help identify the risks associated with mining on water resources in the region, and to inform the NSW and Commonwealth governments' decision-making processes. The completed report and its findings are due mid 2012.

The department is involved in other work that may contribute to better understanding impacts of the CSG industry on water resources and related issues, for example, findings from the Great Artesian Basin Water Resource Assessment and the work conducted under the Healthy HeadWaters Program 'Coal Seam Gas Water Feasibility Study' with the Queensland Government.

Commonwealth Water Act 2007 – Basin Plan requirements

The Water Act requires the development of a Basin Plan for the management of MDB water resources by the Murray-Darling Basin Authority. The Basin Plan will require amongst other

things that state water resource plans, when accredited, regulate interception activities that have a significant impact on water resources.

Under the Water Act the Basin Plan must include a Water Quality and Salinity Management Plan which must identify the key causes of water quality degradation in the MDB and include water quality and salinity objectives and targets for the MDB's water resources. State water resource plans, when accredited, are required to include water quality and salinity objectives for the water resource plan area.

It is anticipated that water for mining within the MDB will be subject to long-term average sustainable diversion limits regulated by the Basin Plan. A sustainable diversion limit will be set for all water resources within a water resource plan area, and this limit will include interception activities including mineral, petroleum and gas extraction. Water entitlements will be required to be held to cover the volume of water estimated to be intercepted by that activity. Compliance with the sustainable diversion limit of a water resource plan area will be enforced through MDB state water resource plans.

National Water Initiative

The 2004 National Water Initiative (NWI) signed by the Council of Australian Governments commits the governments to developing water plans for all significant water resources, or resources where there is a potential for conflicting demands on the resource.

Management of interception is an outcome under the Water Access Entitlements and Planning Framework of the NWI. The NWI recognises that a number of land use change activities have potential to intercept significant volumes of surface and/or ground water now and in the future. The reduction in water availability as a result of interception activities is explicitly addressed in the NWI, under clauses 55, 56 and 57. The NWI also requires that by the end of 2011, interception activities will be identified for all water systems.

Additionally clause 34 of the NWI states: *The Parties agree that there may be special circumstances facing the minerals and petroleum sectors that will need to be addressed by policies and measures beyond the scope of this Agreement. In this context, the Parties note that specific project proposals will be assessed according to environmental, economic and social considerations, and that factors specific to resource development projects, such as isolation, relatively short project duration, water quality issues, and obligations to remediate and offset impacts, may require specific management arrangements outside the scope of this Agreement.*

The role of States

The States, and not the Commonwealth, are primarily responsible for land use and natural resource management issues, and therefore issues concerning land access by mining

operations and the loss of productive farmland are primarily for State and local governments to manage.

State governments also have primary responsibility for licensing CSG extraction. Licensing applications are governed by relevant state water, environment, mining and petroleum legislation.

Under environmental protection legislation a state may require the development of an environmental management plan to demonstrate that all potential impacts of the mining activity have been considered. An environmental management plan may require a CSG water monitoring and management plan, for example, as required under Queensland's *Environmental Protection Act 1994*.

CSG is also considered under state water legislation if relevant. As noted above, all states and territories have committed to the 2004 NWI.

CSG projects

CSG projects (in the MDB) approved under the EPBC Act

In October 2010, the Minister approved, with conditions, two Queensland CSG LNG projects respectively proposed by Santos-Petronas (the Santos project) and British Gas/Queensland Gas Company (the QCLNG project). These were the first CSG projects approved under the EPBC Act. A similar proposal in Queensland from Australia Pacific LNG (the APLNG project) was approved, with conditions, in February 2011. All three projects involve the development of CSG fields in southern Queensland, gas pipelines to Gladstone, and LNG facilities located on Curtis Island immediately north of Gladstone.

All three gas fields straddle the Condamine and Border Rivers Valleys of the MDB and also extend outside the MDB to the north. A general map of the area showing the three gas fields is included as Attachment A of this submission.

The gas field components of the Santos and QCLNG projects were assessed and approved in relation to likely impacts of the projects on two MNES: threatened species and ecological communities (including "the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin") and migratory species. The APLNG project was also assessed and approved in relation to those matters, and in addition for likely impacts on wetlands of international importance (in particular, the Narran Lake Nature Reserve Ramsar site).

Each project was subject to detailed assessment under the EPBC Act, including assessment by the Queensland Coordinator-General. The Minister obtained expert advice from

Geoscience Australia (GA) and an independent hydrogeologist, and from the department, for his decisions to approve the Santos, QCLNG and APLNG projects. A summary of Geoscience Australia's advice is on the department's website at: www.environment.gov.au/epbc/notices/pubs/gladstone-ga-report.pdf. The assessment documentation and all advice provided to the Minister relating to the Santos and QCLNG projects were tabled in the Senate on 16 November 2010.

The CSG projects that have been approved under the EPBC Act are subject to detailed conditions to minimise or avoid impacts on matters protected under the EPBC Act. For example:

The QCLNG conditions can be viewed at: http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=4398.

The Santos conditions at http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=4059

The APLNG conditions: http://www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=4976.

In relation to hydrological matters, the proponents must take all reasonable measures to ensure that CSG water, including extracted groundwater, treated or amended CSG water, any associated waste water, brine crystals and/or solids generated have no significant impact on any matters of national environmental significance during or beyond the life of the projects. The conditions require the companies to develop detailed water management and monitoring plans for the Minister's approval and, once approved, to comply with those plans. The conditions also provide for groundwater drawdown limits and early warning monitoring thresholds for declines in groundwater pressure in relevant aquifers. The detailed water management and monitoring plans required for approval of the Minister must contain, among other matters, an exceedence response plan if threshold values for surface water or groundwater quality and aquifer drawdown are exceeded. The exceedence response plan must include a program for repressurisation using re-injection of CSG water and other groundwater repressurisation options to re-establish pressure levels and water qualities to the satisfaction of the Minister on the advice of an expert panel, if thresholds are reached.

The conditions require proponents to contribute to a regional groundwater model (which may comprise contributions to a regional model to be developed by the Queensland Water Commission).

The department has a continuing role in ensuring compliance of the companies with the conditions imposed.

CSG projects (in the MDB) currently being assessed under the EPBC Act

Two CSG proposals within the MDB are currently being assessed under the EPBC Act, in relation to impacts on matters of national environmental significance:

- A gas field (approximately 1500 wells) in the Condamine Valley of the MDB is proposed by Arrow Energy (associated downstream infrastructure is proposed by Shell). This proposal was determined to be a controlled action on 26 March 2010. It is being assessed by the Queensland Government under bilateral agreement with the Commonwealth. Details of the gas field assessment (EPBC 2010/5344) are at: www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=5344.

- A gas field (approximately 550 well sets) in the Namoi Valley of the MDB is proposed by Eastern Star Gas Limited. This proposal, along with two associated pipelines and a LNG export facility at Newcastle, was determined to be a controlled action on 12 May 2011. The four referrals will undergo parallel assessment by environmental impact statement, under Part 8 of the EPBC Act. Details of the gas field assessment (EPBC 2011/5914) are at: www.environment.gov.au/cgi-bin/epbc/epbc_ap.pl?name=current_referral_detail&proposal_id=5914.

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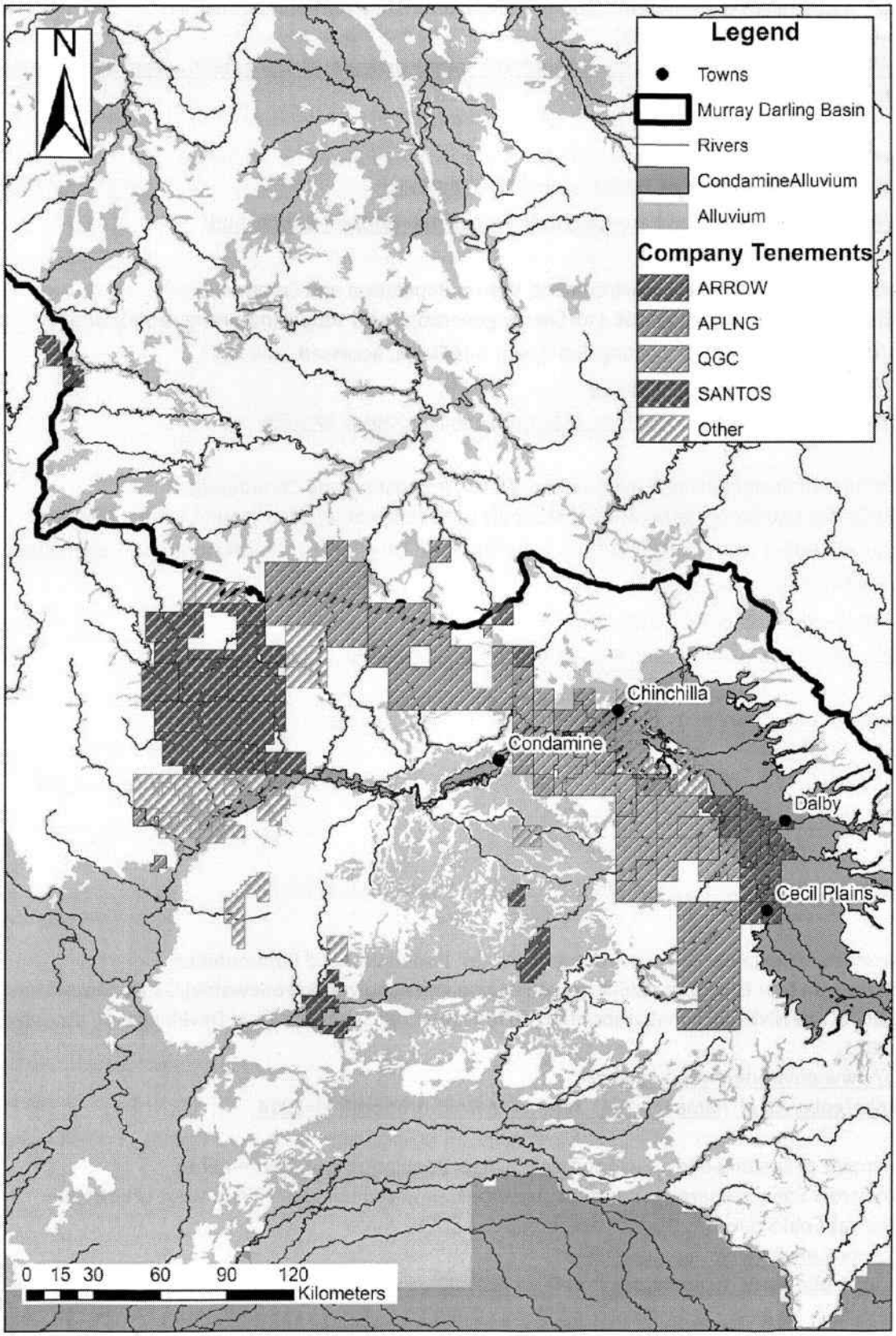
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