



QMDC Submission on DRAFT CSG Water Management Policy

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Submission

QMDC asserts that DERM’s CSG Water Management Policy (the Policy) should demonstrate a leading role in sustainable natural resource management processes by providing a high level of stewardship for both natural resources and those communities dependent on them. QMDC believes if the Policy is to contribute to the overarching legislative framework to control and manage CSG development within the Queensland Murray-Darling Basin it must be implemented so as to prevent avoidable adverse impacts to the region’s natural resources, community, and economy in the short and long term. Overall the Policy should articulate a relationship with the *Water Act 2000* and its amendments. The ideal is that CSG water becomes a part of water resource planning and is in accordance with all of the criteria in the *Water Act 2000* and its amendments.

1.0 Specific comments

1.1 Purpose

The CSG Water Management Policy has been updated to provide stronger protection for natural resources and the environment. This policy is designed to maximise the opportunities that CSG water presents for the environment and the community.

QMDC recommends rewriting the purpose of the policy to focus on optimising opportunities.

In assessing how to ‘optimise’, not simply “**maximise**” opportunities, any CSG water related legislation and/or policies should identify risks that may impact on the natural resources of a region, its communities and other industry and in response to those risks implement risk management strategies. QMDC recommends that the objective of the Policy should represent a whole life cycle analysis of CSG associated water and its by-products. Objectives need to “**optimise**” gas and water production striving for a balance between a range of key factors such as water quality and availability, soil health and land capability, biodiversity and vegetation management. The Policy if it supports the **maximisation** of economic growth, for example, as its primary *beneficial use* objective risks promoting investment which may support perverse outcomes. This may mean for example during periods of wet weather where storage and disposal options may be limited, caps on water production may be necessary in order to avoid any discharge of untreated CSG water and to optimise beneficial uses of treated CSG water.

1.2 Application of Policy

However, CSG EM Plans, including revised plans, must at least assess injection feasibility as a water management option. In addition, the EP Act requires annual reviews and evaluations of CSG water management practices against management criteria. This review process may necessitate changes to CSG water management options if it is shown that CSG water is not being managed effectively in line with the criteria. Any such changes must consider the preferred hierarchy of CSG water management options contained within this policy.

QMDC recommends, that CSG EM Plans must include in their assessment of water management options and their effectiveness, the cumulative upper and lower limits for changes to natural resource asset condition and function. These limits must be assessed in accordance with defined zones and timeframes in order to protect the integrity, health and value of the asset, and productive capacity, of those zones. CSG water management



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options that exceed such limits should not be permitted under any circumstance, and it should be deemed an offence to do so.

1.3 Coal Seam Gas Production

*CSG production involves extracting methane from coal seams by reducing groundwater pressure that keeps the methane trapped in the coal. A primary by-product of this process is CSG water, which is often rich in salts and other minerals that render it unsuitable for many direct **beneficial uses**. The predicted large volume and variable quality of this water makes water management a key issue associated with CSG production.*

QMDC believes this description of coal seam gas production sanitizes the risks and potential harm associated with coal seam gas extraction. QMDC recommends it be rewritten to highlight some of the known risks relative to the potential contaminants contained not only in CSG water such as radioisotopes but also in the drilling fluids. The Policy needs to acknowledge more definitely that CSG water consists of contaminants that are potentially harmful to human and environmental health and that these contaminants need to be effectively dealt with to inform beneficial options.

1.4 Legislation

When CSG operators apply for an environmental authority, they are obliged to provide detailed information regarding their water management. This information forms part of an EM Plan and must also include specific information about management of CSG water.

QMDC asserts cumulative impacts are not being adequately addressed as part of the detailed information being rendered by CSG companies under current legislation and would therefore recommend the Policy provides direction for such detail. The Policy should provide a procedure for collecting water quality data that CSG companies should be obligated to publically disclose monitoring data in real time to inform the best options for beneficial use.

*Where **raw CSG water** or treated CSG water is supplied to a municipal drinking water source, including surface water or an aquifer, a RWMP will be required to be prepared and approved under the Water Supply Act, unless the release is proven not to have a material impact on town drinking water supplies and an exclusion decision is made.*

QMDC in its submission in June 2011 on the *Coal Seam Gas Recycled Water Management Plan and Validation Guideline Including Exclusion Decision Application Guideline Consultation Draft* (the CSG RWMP Guidelines) did not support the exception made available as part of an exclusion decision process.

If raw CSG water is supplied to any user then that site should be deemed a contaminated site until proven otherwise. This is so that there is a serious disincentive for anyone to use raw CSG water.

QMDC is concerned that DERM has to this date not released relevant information or facilitated robust community and stakeholder consultation on indirect and direct augmentation of CSG recycled water into water sources. Without access to and discussion on scientific and social research both international and local the CSG RWMP Guidelines are unable to provide QMDC assurance that public health will be protected.

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It is not only the responsibility of coal seam gas producers to supply the coal seam gas recycled water in an environmentally acceptable manner but in the view of QMDC also the responsibility of legislators and regulators to implement legislation and policy that provide a high level of human and environmental protection regarding its reuse for both the communities and natural resources of the QMDB.

The term “water schemes supplying water to a water source as a source of drinking water” requires clearer definition. Water is taken from the Balonne River at St George for drinking water purposes. Does this mean that any recycled water discharged into the Condamine, Maranoa and Upper Balonne catchments (all upstream of St George) is deemed to be “supplying water to a water source as a source of drinking water”?

Options for disposal of coal seam gas recycled water into a water source (including to a watercourse, lake, dams, weirs or aquifers) or by directly supplying treated coal seam gas recycled water to a town as a source for drinking water supply are still contentious and fraught with scientific uncertainty and significant community/business anxiety.

QMDC asserts that recycled CSG water must be supplied in a manner whereby its reuse is defined against specific criteria and limitations that firstly avoids, then manages or mitigates the immediate risks associated with the chemistry, quantity, storage, transport, destination etc as well as the cumulative and long-term impacts of such water.

QMDC asserts the strength of the CSG RWMP Guidelines to protect public health are compromised by three key elements of the Water Supply Act and the proposed CSG RWMP Guidelines:

1. The “exclusion” decision making powers of the regulator that where the regulator reasonably believes there is no material impact on the town’s drinking water supply or where certain requirements specific to aquifers are met a CSG recycled water management plan (CSG RWMP) is not required;
2. The power a CSG company or responsible entity has through a commercial company leading the risk assessment process, which requires no public input nor recognition of local or indigenous knowledge to choose any risk management methodology, to identify hazards and hazard events, to rate a risk, to determine critical limits and alert levels for contaminants; and
3. The authority to validate the risk assessment process adopted by the CSG company being given to a recycled water provider, or owner of infrastructure which is likely to also be a commercial company or even the same CSG company.

QMDC submits that although the regulator plays the “last card” initial determinations on “*acceptable risk*” are not the prerogative of a private company with commercial interests in the outcome.

It is common practice that company based risk assessments, are frequently deemed confidential, do not incorporate regional NRM targets, do not respect local knowledge, depend too much on economic modeling which lacks peer review or environmental and social application and do not advocate a community participatory process or a precautionary approach.

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The CSG RWMP Guidelines weaken the intentions of the Water Supply Act by merely suggesting “possible options” for a responsible entity or recycled water provider or scheme manager such as providing technical and scientific reports and evidence, seeking peer reviews etc

If the primary objective of the Water Supply Act in relation to CSG water is to protect public health, the release of CSG recycled water to aquifers or waterways because it carries a risk of environmental or ecological impacts should be covered by the CSG RWMP Guidelines. Ecological impacts are however not adequately considered. The vast majority of contaminants associated with CSG recycled water have had no trigger values set for fresh or marine water by ANZECC due to ‘insufficient data’.

It is stated that “CSG water has a different public health risk profile compared to other recycled water sources. The principal public health concern is adequate management of the chemical and radiological quality of water including management of long term exposure.”

The CSG RWMP Guidelines also need to address the fact that CSG water has a different environmental health risk profile compared to other recycled water sources.

1.5 Water management options

QMDC is concerned that the Policy by offering aquifer reinjection as a management option before the trials have been concluded is misleading community and industry that this option is a safe and viable management option. The Policy’s listed water management options are limited. Allowing evaporation ponds as an option albeit if all else fails is not supported and weakens the Policy.

Where ever possible water transfer should via a pipeline and not use streams or rivers as a conduit. The reason for this is the impact on ecology e.g. constant wetting or altering chemical composition of water.

Should water be reinjected including virtual reinjection or sourced for any of the beneficial use options there should not develop a permanent reliance on it as a source of water and all water use should be considered within water resource planning mechanisms.

As a waste product this waste should be managed as close to the source as possible, QMDC does not support transporting or piping the waste out of the region.

1.6 Recommendations on *Principles for the Beneficial Use of CSG Water*

Attached below are QMDC’s recommendations on *Principles for the Beneficial Use of CSG Water* submitted to the **Surat Basin CSG Engagement Group** on 19 December 2011. More detail is offered in the attached documentation to guide the Policy.



QMDC Recommendations on *Principles for the Beneficial Use of CSG Water*

1.0 List of Principles

- 1.1 Optimise beneficial use opportunities
- 1.2 Responsible business practice
- 1.3 Scientific certainty & precautionary principle
- 1.4 Maintain and improve riverine, aquatic, wetland, floodplain and riparian assets and function.
- 1.5 Water assets are sustainably managed in a conjunctive manner

2.0 Principle explanatory notes

2.1 Optimise beneficial use opportunities principle

In assessing how to 'optimise', not simply "**maximise**" beneficial use opportunities, any CSG water related legislation and/or policies should identify risks that may impact on the natural resources of a region, its communities and other industry and in response to those risks implement risk management strategies. QMDC recommends that the stated objective of beneficial use policy should represent a whole life cycle analysis of CSG associated water and its by-products. Principles need to "**optimise**" gas and water production striving for a balance between a range of key factors such as water quality and availability, soil health and land capability, biodiversity and vegetation management. Beneficial use policy if it has the **maximisation** of economic growth as its primary objective risks promoting investment which may support perverse outcomes.

2.2 Responsible business practice principle

Global investors and asset managers are increasingly integrating a broader assessment of risk into decision-making. Assessment of risk into decision-making integrates environmental, social and governance factors. Responsible business practice recognises and responds to the interconnectedness and interdependence of business within the global landscape including the consequences of financial crisis and climate change. The principles of a beneficial use policy therefore need to reflect the following core elements as part of responsible CSG mining business practice:

- 1 **Environmental** - the environmental impact, direct or indirect, of an organisation's operations, products or services including those of its suppliers.
- 2 **Community/Social** - the impact of an organisation's projects, products, services or investments on the community at a local or global level.
- 3 **Workplace Practices** - including respectful, treatment of employees in matters related to recruitment and selection, diversity and equal opportunity, work/life balance, professional development and progression, managing redundancies and full entitlement to employment rights.
- 4 **Marketplace & Business Conduct** – responsible behaviour in developing, purchasing, selling and marketing products and services.
- 5 **Ethical Governance** - from board level and throughout an organisation: transparency; risk management; due diligence; effective codes of conduct and ethics.

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Principles promoting a high-quality stewardship of the Great Artesian Basin (GAB) must promote practices relating to the exercise of water “rights” by CSG and petroleum projects which will ensure high-quality stewardship of GAB resources; minimise disturbances to GAB resources; and protect GAB resources for future human and environmental purposes.

2.3 Scientific certainty & precautionary principle

The *precautionary principle* must be formulated as a legislative obligation, linked to achieving the objects of water and other associated environmental legislation as well as specified beneficial use processes or outcome standards. The principle must be developed on a regional basis, with respect to, for instance, specific sites or landscapes, or protected areas.

The implementation of precaution within national and regional frameworks, objectives and priorities needs to carefully address and outline the specific purposes of precautionary management and the standards to be aimed for, and find ways to address the interaction of competing interest groups with different aims, values, and priorities. Application and implementation of the precautionary principle if context-specific will enable specific decisions and management or policy measures to support regional interests and natural resource assets. Applying the precautionary principle should be accompanied by efforts to gather more information and reduce uncertainty, and address uncertainty in management

2.4 Maintain and improve riverine, aquatic, wetland, floodplain and riparian assets and function principle.

Priority landscape scale regional ecosystems should be maintained or improved so that ecological processes and ecosystem linkages are increased in extent and abundance at priority catchment scales. Flow regimes for health of wetland organisms, for example, must be maintained or improved against baseline conditions. Balance must be ensured between ecosystem health and water use by achieving priority water quality objectives. The following key water quality indicators therefore must remain below baseline levels within specified conditions:

- salinity concentrations at end of valley locations
- total suspended sediment loads
- pesticide concentrations
- nutrient concentrations.

2.5 Water assets are sustainably managed in a conjunctive manner principle.

Water assets are sustainably managed in a conjunctive manner to achieve:

- water use efficiency measures for high water use industries/sectors;
- the stabilisation of groundwater levels for high priority sub artesian groundwater systems and the prevention of lowered pressure in the Great Artesian Basin;
- trading rules that are in accordance with water allocation security objectives as defined by the final Condamine Balonne, Border Rivers, Warrego/Paroo and Moonie Water Resource Plans; and

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- ecological outcomes that are in accordance with Environmental Flow Objectives as specified in the Condamine Balonne, Border Rivers, Moonie and Warrego, Paroo, Bulloo and Nebine Water Resource Plans.

Adverse impacts are prevented on the surface and groundwater flow system assets and function by beneficial use activities recognising the complex nature of the floodplains, particularly the Condamine floodplains, including:

- alignment between Strategic Cropping Land and floodplains
- the location of key aquifers under the floodplains. and
- the impact any above ground infrastructure has on overland flows on floodplains.

3.0 Examples of practices that apply principles

3.1 Optimise beneficial use opportunities principle

- 3.1.1 If associated water production and water storage capacity is such that emergency discharges are required then first option should be to reduce production at the well head end in order to optimise gas and water production and not just maximise gas production.
- 3.1.2 If used for irrigation highest value for megalitre.
- 3.1.3 CSG associated water and byproducts treated as close as possible to source thereby implementing current waste management lifecycle policy objectives

3.2 Responsible business practice principle

- 3.2.1 CSG water “by-products” must be disposed of in a manner whereby ‘disposal’ is defined against specific criteria and limitations that mitigates the risks associated with the storage, transport, destination, and cumulative and long-term impacts of such volumes of water or “by product”. Specific disposal criteria needs to include but is not limited to the following:
- Does not result in a contaminated site
 - Does not allow the release of radioactive material into water sources
 - Does not create a “stockpile” of by-product to be dealt with once a future solution is found
 - Does not permit untreated CSG water emergency disposal
 - Is disposed of in manner to streams that allows natural drying and wetting cycles to be achieved
- 3.2.1 Risk Assessments are based on the immediate, future and cumulative impacts which may result from CSG water use, taking into account potential contaminants including salt, surface and ground water interaction, changes to overland flow, and new and existing infrastructure.
- 3.2.2 No beneficial use activity knowingly causes environmental harm

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- 3.2.3 No increase in deep drainage in high salinity risk areas is permitted by avoiding land based disposal (unless it is highly efficient irrigation) in areas that are deemed to have a high salinity risk (see DERM mapping)
- 3.2.4 In order to increase the beneficial use options any further contamination should be avoided e.g. adding chemicals, radioactive isotopes in fracking process
- 3.2.5 Avoiding permanent development or infrastructure that is reliant on future water supply when CSG water runs out so there is no permanent reliance on temporary supply of water by existing or new industry.
- 3.2.6 It should be a mandatory requirement that all CSG companies use a set monitoring and data collection methodology that is independently reviewed and regularly evaluated against community values and regional guidelines on, for example, water quality. Raw data and methodology should be made public per evolving water data transfer protocols as they progress under the Federal Government's Water Regulations Act. And regional Water Quality Guidelines This should assist in filling gaps in the identified need to have baseline data.
- 3.2.7 The continued release of an emergency release of CSG recycled water should not be permitted under any Act. An emergency release should have a very limited timeframe of no more than 7 days. If a CSG entity perceives the likelihood of emergency releases their operations should not be allowed to proceed and an environmental authority be declined or revoked. The cumulative impact of emergency CSG water releases by multiple CSG or other entities must be considered. An emergency release should be within the water quality limits set by any current or future Regional Water Quality Guidelines.
- 3.2.8 Robust community and stakeholder consultation is required so that communities have access to and be involved in discussion and decisions based on scientific and social research both international and local e.g. indirect and direct augmentation of CSG recycled water into water sources under the Water Supply (Safety and Reliability) Act does not put human health at risk.
- 3.2.9 Public consultation requires statutory timeframes that allow for real time disclosure and consultation.
- 3.2.10 Strategic and real time monitoring and public access occurs e.g. when CSG water is released into streams or weirs, those streams or weirs are subject to chemical and biological monitoring to assess impacts; and all monitoring data be made available to the public within one month of collection.

3.3 Scientific certainty & precautionary principle

- 3.3.1 Options for disposal of coal seam gas recycled water release into any water source (including to a watercourse, lake, dams, weirs or aquifers or town drinking water supply) must be based on scientific certainty addressing e.g. issues such as impacts resulting from bioaccumulation and contamination.
- 3.3.2 Streams or rivers to be used as a conduit for CSG water distribution; must be in a pipeline.

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3.4 Maintain and improve riverine, aquatic, wetland, floodplain and riparian assets and function principle

- 3.4.1 Appropriate planning and design of activities at the landscape and local level to identify and adequately protect all waterways, floodplain functioning and wetlands, considering values and function, taking into account:
- in-stream flow regimes
 - surface water flow systems (eg potential contaminants such as salt, erosion, groundwater interface, barriers to movement of flow and in-stream species risks)
 - groundwater flow systems
 - riparian function (eg groundcover, bank stability, habitat, connectivity)
 - wetland and floodplain function.
- 3.4.2 Restricting activities within water quality baseline indicators to be set appropriate to sub-catchment levels, and local and regional threshold limits (when determined).
- 3.4.3 Prevent direct and indirect adverse impacts from beneficial use activities by:
- Excluding activities from within a defined buffer zone for waterways appropriate to stream order and defined buffer zones upstream from and including wetland; specifically 500m for stream orders 5, 6 & 7; 100m for stream orders 2, 3 & 4.
 - Ensuring that legislative protection is afforded to Ramsar listed wetlands and feeder streams for 100 kilometres or a safe distance depending on activity upstream.
 - Not permitting diversions of number 4, 5, 6, and 7 stream order waterways.
 - Not permitting and actively preventing off-site movement of soil, salt, contaminants and weeds to riverine, aquatic, wetland, floodplain and riparian areas, either directly or through landscape processes.
 - No adverse impact to surface water flow systems within the floodplains including interaction with groundwater flow systems.
 - Requiring rehabilitation of the site at least to its pre-mining condition (including former value and function).

3.5 Water assets are sustainably managed in a conjunctive manner principle

- 3.5.1 The cumulative impact to surface and groundwater flow system assets from individual site activities is managed by:
- Appropriate planning and design at a local and landscape level to manage changed surface flow regimes under varying circumstances and reduce impact to local and downstream natural and built assets.
 - Not permitting activities on floodplains within established buffer zones.

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- Enforcing the Floodplain Management Guidelines.
- Restricting activities impacting on water quantity, quality and pressure, with baseline indicators to be set appropriate to local and regional threshold limits (when determined).
- Requiring rehabilitation of the aquifer or stream to at least to its pre-mining condition (including former value and function).
- Not causing interconnectivity between groundwater flow systems.
- Establishing and implementing minimum standards for safe drilling depths to ensure drilling stops at the coal seam and does not penetrate any adjoining (below) GAB sandstones.
- Requiring CSG companies to implement a long term management plan for wells (including exploration, production, monitoring wells). This should include a bond for long term maintenance.

3.5.2 Associated water (including by-products such as brine) must be aggregated only where risk and safety measures are appropriate for the volume of water and storage location within the landscape.

3.5.3 By-products from associated water treatment processes, including brine, must be:

- Preferably utilised for a tertiary industrial use that safely manages any contaminants or potential offsite impacts of waste accumulation.
- Removed from the landscape and managed within a controlled and safe environment, with disposal sites registered with the Environmental Protection Agency.
- Not permitted to be covered or buried insitu in the landscape from or within evaporation ponds or storage ponds, regardless of whether the pond has clay or impermeable lining.