

***Submission to the Senate Standing
Committee on Rural Affairs and Transport
Inquiry***

July 2011

***Management of the Murray-Darling Basin:
Impact of Mining Coal Seam Gas***

Queensland Farmers' Federation (QFF) is the peak body representing and uniting 16 of Queensland's rural industry organisations who work on behalf of primary producers across the state. QFF's mission is to secure a sustainable future for Queensland primary producers within a favourable social, economic and political environment by representing the common interests of its member organisations'. QFF's core business centres on resource security; water resources; environment and natural resources; industry development; economics; quarantine and trade.

Our goal is to secure a sustainable and profitable future for our members, as a core growth sector of the economy. Our members include:

- Australian Prawn Farmers' Association,
- CANEGROWERS,
- Cotton Australia,
- Growcom,
- Nursery and Garden Industry Queensland,
- Queensland Chicken Growers Association,
- Queensland Dairyfarmer's Organisation,
- Queensland Chicken Meat Council,
- Flower Association of Queensland Inc.,
- Pork Queensland Inc.,
- Biological Farmers of Australia
- Fitzroy Food and Fibre Association,
- Pioneer Valley Water Co-operative Limited,
- Central Downs Irrigators Limited, and
- Burdekin River Irrigators Association

Overview

The production of CSG in Queensland is expected to increase rapidly with a significant escalation as markets for the product expand with the establishment of the liquefied natural gas (LNG) industry. CSG resources are located in the extensive Surat and Bowen Basins and the gas is produced by dewatering of the coal seams to reduce the pressure that keeps the gas trapped in the seams. Dewatering will bring significant quantities of saline water to the surface. The impacts of coal seam gas projects (positive and negative) will be felt over extensive areas in southern and central Queensland as well as the broader implications for the Queensland economy. The scale of this development is unprecedented, involving the drilling of a massive grid of wells to tap coal seams to extract large quantities of water thereby reducing the water pressure and releasing gas from the coal.

Farmers are justifiably concerned not only about the dislocation to farming by gas extraction facilities on the surface but also about the potential long term loss of ground water needed to sustain highly productive grazing and agriculture businesses. There are also concerns about the volumes, quality and reliability of CSG water supply and the implications for the use of this water over the coming decades. Local Governments share these concerns.

The Queensland Government is committed to see these massive projects proceed to reap the gains for the state economy in terms of exports, jobs and taxes. To address community concerns, the Government is applying stringent environmental impact requirements on surface construction and operational activities. However the Government and project companies do not have a full understanding of how significant water extraction will impact on groundwater particularly the extensive resources of the Great Artesian Basin and the overlying sub-artesian aquifers. Legislation introduced in late 2010 provides for a 'learn by doing' approach to deal with the complex issue of the management of groundwater impacts and particularly the predicted impacts arising as a result of

the cumulative impact of multiple projects across the landscape. This is backed up by requirements on project companies to 'make good' on any impacts on farm or other bores.

Landowners want see how this adaptive management process will ensure that companies will make-good for bores being unable to supply water in the quantities and quality required for farming. The legislation provides for baseline assessments to be conducted on all bores within a defined area of a CSG tenure to benchmark the condition and capacity of the bores for the purposes of conducting assessments of the impacts of CSG dewatering of coal seams.

Project companies are also required to produce underground water impact reports regularly to predict impacts above defined trigger levels over the short and the long term. They must also conduct a rigorous monitoring program of water quality, quantity and water levels within their tenures to improve the understanding of groundwater and impacts of water extraction. There is a danger that these measures will not address the cumulative impact that the three major coal seam gas projects could have. For this reason the legislation has provided for the Qld Water Commission (QWC) to conduct monitoring and prepare impact reports over defined wider cumulative impact areas. In other words the QWC will play an important role of monitoring for adverse impacts across all coal seam gas areas.

There is little option for the Government but to take this adaptive approach given the limited knowledge of the groundwater resources and the impacts that the massive extraction of water could have over such a wide area. But it is these uncertainties and the scale of the projects that has heightened community and industry concerns and promoted significant opposition to the projects. While the Government has ramped up consultation over the past 9 months, the lack of effective engagement in the early stages of developments only made the process all that more difficult.

Rural water users have particular difficulty with the approach taken by the Queensland Government when such a 'precautionary' approach has been adopted to the Murray-Darling Basin water reforms being implemented by the Australian Government. These reforms give priority to achieving environmental outcomes at the expense of substantially reduced irrigation entitlements and consequent adverse impact on irrigation communities. This planning and policy inconsistency is not lost on industry at the State or local level.

The legislative framework for these massive projects to proceed is substantially in place. Communities likely to be impacted by these developments still have difficulty understanding how the Queensland Government's regulatory frameworks will protect them and their businesses. The State Government must increasingly engage communities likely to be impacted by these massive projects if they are to build confidence in the adaptive process and build the needed community support for the projects. Failure to do this will increasingly undermine the medium to long term viability of these projects and the benefits they can provide to Queensland.

Approach adopted by QFF

The pace of CSG development and the State Government's adaptive approach has meant that QFF has had to work on a number of fronts to engage in discussions and where possible negotiate better outcomes for the farming sector when dealing with the expansion and development of mining and coal seam gas extractive industries. Industry and communities would have liked a moratorium until substantive issues and uncertainties were properly addressed. Leaving aside the practicalities of such a response, the call for a moratorium clearly demonstrates the lack of confidence many people have in the existing planning regulatory controls. Equally, the inability of the Government to essentially "slow" down development to a pace that the community could accept and that their own planning and regulatory development processes could handle demonstrates that bureaucratic

systems have not been put in place to deal with project approval systems. QFF has found it necessary to push the Government to put in place more robust, considered and fair policies that if implemented would provide more power for farmers caught up in the development to negotiate suitable outcomes, greater surety for the mitigation of environmental risks and greater equity in sharing of resource access. Providing for any respectivity in these systems remains a conundrum.

Our significant activities have focused on the following issues:

Land access - QFF was a member of the land access working group. The process delivered a revised and consistent land access code of conduct and a number of revisions to the legislation underpinning the manner, content and process for developing mandatory land access conduct and compensation agreements. The process improved on land access arrangements but we did not achieve all outcomes we had sought.

Strategic cropping land - QFF is a member of a stakeholder consultative committee and continues to lobby for a strategic cropping land planning framework (SCL) to include CSG. This was not accepted as CSG activity was not considered to alienate good agricultural land as would an open cut coal mining project.

Implementation of legislation - QFF has been working with AgForce and the Basin Sustainability Alliance representatives to monitor implementation of aspects of legislation to manage groundwater. Key issues include:

- Gaining an understanding of the program for implementation of the new legislative requirements along with implementation of existing legislation e.g. Environmental Protection Act.
- Providing comment on the development of Baseline Assessment Guidelines for water bores that are at any risk of impact from all CSG developments.
- Ongoing contact with Qld Water Commission regarding the implementation of Cumulative Management Area (CMA) which is to identify likely future impacts on underground water from the water extraction associated with the petroleum tenures, and to provide appropriate strategies for managing these impacts.
- Working with the Department of Environment and Resource Management (DERM) to communicate key facets of the implementation of legislation.

Engagement and communication – QFF is represented on the Surat Basin CSG Engagement Group which has responsibility to advise all aspects of the implementation of CSG developments in this basin. QFF discusses CSG and related agriculture issues in its weekly Qld Country Life column and its weekly bulletin which has a wide distribution. We have also participated with landholder and industry representatives and numerous land access – gas industry forums and conferences. Further, we have held numerous bi-lateral discussions with peak industry bodies such as the Australian Petroleum Producers and Exploration Association (APPEA) and the Queensland Resources Council (QRC) as well as individual company representatives.

These issues will be further examined in the following part of the submission which addresses each of the additional terms of reference for the Senate Inquiry.

Sustainability of water aquifers and future water licensing arrangements

The Queensland Government's approach to the management of the CSG/LNG industry is to encourage companies 'to voluntarily comply with their obligations' thereby encouraging adaptive

management to achieve progressive improvement in understanding the impacts of CSG operations on underground water resources. The Program involves the regulatory framework using a range of existing and amended legislation. For example, the Environmental Protection Act 1994 (EP Act) regulates the environmental impacts of the industry through the licensing framework. Under this legislation CSG operators have to conduct environmental assessment processes and require an environmental authority before they can commence operations. The impact of the CSG industry on water and use of CSG produced water is also covered by various Acts. However, the recent amendments to the Water Act address the impacts of CSG water extraction on groundwater and surface water resources dealing with issues such as discharge to streams, injection of aquifers, impacts of groundwater extraction, underground water impact reports, baseline bore assessments and specific directions of the Chief Executive. The amendments to the Water Supply Act deal with the treatment and management of the supply of CSG recycled water. The Petroleum & Gas (Production & Safety) Act gives tenure holders the right to take CSG water as part of their production process but this right is fettered by the conditions of the abovementioned legislation.

In regard to the critical issue of managing groundwater impacts, the amendment to the Water Act provides systems to protect existing water users, to predict future impacts and to manage the cumulative impacts. In particular, the legislation required CSG tenure holders to negotiate agreements with bore owners about issues such as making good for CSG impacts on bore supply, managing impacts on natural springs, producing underground water impact reports, undertaking baseline bore assessments and responding to directions by the CEO such as investigating a bore and negotiating a make good agreement. The legislation also required the DERM CEO to declare cumulative management areas to address the cumulative impacts of petroleum operations. Such an area has been declared for the Surat Basin and under these provisions the Queensland Water Commission has to prepare underground water impact reports for the area, assign areas of responsibility to CSG tenure holders to be responsible for implementing the report and to maintain a data information system to store data from baseline assessments and the underground water impact reports. Costs of this work are to be recovered by tenure holders via a levy.

The baseline bore assessments are particularly important to industry as they are to benchmark the condition and capacity of all authorised bores within a CSG tenure. Industry representatives had the opportunity for input to the development of the guideline for these assessments to check that bore assessments would be comprehensive and of a high quality and would be conducted by appropriately skilled staff. The coverage of the assessments within tenures and in areas outside current tenures likely to be impacted in the long term was also considered.

As a result of the declaration of the Surat Cumulative Management Area, the Queensland Water Commission (QWC) must now prepare the Surat Underground Water Impact Report supported by a regional groundwater flow model. The report is to assess future water level impacts identifying areas where impacts on water levels are projected within the three year life of the plan and longer term impacted areas. The trigger thresholds to assess impacts are 5m for consolidated aquifers and 2m for unconsolidated aquifers. QWC must also put in place and maintain a regional monitoring strategy, a spring management strategy and specify responsibilities of different tenure holders to monitor 'off tenure' areas. As outlined above these reports are required every 3 years.

During consultations, industry representatives made it clear that farmers required a simple and clear outline of the requirements for bore assessment and monitoring programs and progress with implementation of these requirements. A request was also made for an explanation of how the requirements of the Water Act and the Environmental Protection Act dovetail to ensure that water quality conditions pre CSG development will be adequately defined for the purposes of impact assessment.

DERM have recently released their CSG/LNG Compliance Plan 2011 to outline the regulatory and legislative framework now in place to manage the environmental and natural resource impacts of CSG/LNG developments. The Compliance Program involves an overarching compliance strategy and the publishing of compliance plans annually which outline the activities to be undertaken each year. This year's plan focuses on key areas such as details of audits and inspections of CSG/LNG operations, impacts of groundwater extraction, discharging of CSG water to groundwater and surface water, hydraulic fracturing (fracking) activities, particularly chemical use, beneficial use approvals for the use of CSG water, monitoring program for bores and regular reviews of the management regimes and strengthening of the compliance framework.

Research being funded under the Australian Government's Water for the Future initiative is examining the use of CSG water in addressing water sustainability and adjustment issues in the Queensland section of the Murray-Darling Basin. The investigations are covering the risks to surface streams and landscapes from the use and disposal of CSG water including the impacts on groundwater. The opportunities for using CSG water is also being addressed including consideration of the likely volumes and reliability of this supply and the forecast demand for this water.

A recent briefing provided on progress with these investigations highlighted the following issues:

- a. There is limited data available to define the relationship of groundwater levels in the Walloon Coal Measures and the overlying Central Condamine River Alluvium
- b. First-ever investigations have been conducted to integrate and assess physical and chemical groundwater data of the Surat and Bowen Basins to provide data on baseline groundwater flow and quality prior to major developments. This is allowing identification of areas with characteristic hydro-chemical conditions and areas of potential hydraulic connection which may be at risk from large groundwater pumping.
- c. Development and testing of a 'tool' to predict CSG water production volumes over the entire CSG region and for specified subregions including an indication of the salinity of CSG water from each area. The tool does not predict impacts on groundwater.
- d. Significant further investigations are required to assess the feasibility of injecting CSG water into aquifers where there is a need for top-up due to the impact of dewatering. Field trials are required to test how much water can be potentially injected (shallow and deep and variations based on locations and conditions), potential for biological, chemical and sediment fouling that may result and the need to match water quality between the injectate and the aquifer water.
- e. Development of a process to assess the risk to surface streams ecosystems by the release of CSG water and define management strategies to reduce risk. Salinity guidelines for the management of the release of treated CSG water in sub-basins are to be developed accompanied by direct toxicity testing procedures.

This work shows the extent of investigations, monitoring and other activities required to provide some certainty that CSG/LNG developments can be adequately managed and any impacts can be handled. However, as understanding of the State Government's regulatory and compliance framework develops there is growing recognition that these conditions are stringent and implement a cautious approach to an industry that still has insufficient information about its impact on groundwater systems. This is evidenced by the reaction of the Basin Sustainability Alliance (BSA) at an attempt by QGC to weaken conditions in approvals granted for CSG development. BSA considered if the changes proposed by QGC were accepted by DERM it would have the potential to adversely impact on landholders in the Western Downs, and set a precedent for gas projects throughout the state.

However, irrigation communities on the Condamine Plain are concerned deeply at the potential impact CSG developments could have on the Condamine alluviums and the uncertainty regarding

whether these can be mitigated. Further comments on this matter are addressed in the following section.

Recommendations

1. The Queensland Government continue to implement the regulatory and compliance framework that has been put in place.
2. The Queensland Government ensure that industries and communities are adequately informed about the implementation of all components of each annual compliance plan. There should also be direct engagement with industries and communities on the results of modelling and ongoing impact assessment and mitigation proposals.
3. The implementation of the framework be subject to review every three years in coordination with Underground Water Impact Reports by QWC

The property rights and values of landholders

Farmers remain very concerned about the overall uncertainty regarding the management of CSG impacts on aquifers. This is particularly the case for the farmers that depend upon the groundwater resources supporting irrigation on the Condamine Plain. The Central Downs Irrigators commissioned an independent hydro-geologist in 2010 to assess the risk of the impact of CSG water extraction on the Central Condamine Alluviums and their entitlements. The report indicated that Queensland's largest freshwater aquifer is at serious risk of being drained as a direct result of coal seam gas production in the Great Artesian Basin. Analysis conducted confirmed that the Condamine Alluvium is hydraulically connected to the Walloon Coal Measures. The Condamine Alluvium is incised into the Walloon Coal Measures and any reduction in water levels in these coal measures due to CSG production will create a reverse gradient draining the reserves in the Condamine Alluvium into the Walloon Coal Measures. The consultant recommended that further studies be undertaken to determine impacts and that future decisions on CSG developments in the Condamine Alluvium area be dependent on the results of such studies.

The Condamine irrigators report that the findings of their study has been acknowledged by Arrow Energy pointing to a significant impact on the alluvium peaking early in the second half of this century on current programming for CSG development. The irrigators are paying a high price to correct for an over allocation of the aquifer with proposed uncompensated reductions to their entitlements of between 30 to 50%. The draft Murray-Darling Plan may recommend further reductions and it is still not clear whether voluntary water recovery programs will apply for groundwater. The prospect that the effort and cost to restore the aquifers could mean little in the longer term as a result of expanding CSG operations is particularly concerning to these irrigators. They are particularly seeking some commitment from the Commonwealth Government to take action under the Water Act 2007 to rectify what irrigators see is as the potential for CSG operations to be in breach of the provisions of the Act.

Irrigation communities on the Condamine Plain want to ensure that no CSG activities that may impact on these alluviums are approved until agreement is reached with these communities on modelling of impacts and plans for mitigation. This work must be backed by further modelling and investigations to quantify the impact of dewatering the Walloon Coal Measures on the Condamine Alluviums. The irrigation communities that depend on this groundwater must have confidence that impacts from CSG operations can be mitigated at least over the longer term. It is understood that there is time to deliver on this request as planned CSG developments that could impact significantly impact on the Condamine Alluviums will not proceed for some time.

Recommendations

4. Australian Government clarify what measures can be taken under the Water Act 2007 or other Commonwealth legislation to rectify the potential for CSG operations to adversely affect aquifers.
5. CSG developments that are likely to impact on the Condamine Alluviums not proceed until agreement is reached with communities on modelling of impacts and plans for mitigation including specific investigations have been conducted to quantify the impact of dewatering the Walloon coal measures on the Condamine alluviums.

Sustainability of prime agricultural land and Australia's food task

The Queensland Government has just announced the implementation of its policy for the protection of strategic cropping land. The policy seeks to implement Strategic Cropping Protection Areas which QFF understands will protect (to the fullest extent) no more than 1% of the area of the State and will be identified by development proponents based on criteria yet to be finalised. It is our understanding also that CSG developments are unlikely to be effected by this policy as these developments are not considered to permanently alienate cropping land.

The Queensland Government has in effect set out a blueprint for the development of the CSG/LNG industry but do not have a similar plan for the agricultural industry. QFF has raised concerns for some time that there is no food policy which would address positive outcomes for the myriad of challenges that confront farmers. The development of the SCL policy and the speed of gas development in the Surat Basin are case examples. Unless there is a food policy that has the backing of legislation, then farmers would quite rightly view the food policy process as a political distraction.

Both the Queensland and Australian Governments are doing very little to put in place a visionary statement and policy framework that reflects the significant importance of a viable and expanding agricultural production industry and associated food processing sector in this State and the nation. The State Government has just announced a framework to develop a food policy for Queensland with the overarching objectives to “focus our efforts” and “maximise economic growth”. This is a policy direction that we at QFF have been advocating for years, both at a State and a national level. But in reality so far this is just plan to make a policy. The Federal Government has also started down the track of investigating a National Food Plan but at this stage it is stalled within talkfests and committees. The two processes, State and National appear completed un-coordinated.

Despite cyclones, droughts, financial meltdowns and competition for resources, the agricultural sector continues to be a mainstay of the Queensland economy. Securing this and providing a plan for growth in our ability to grow food, fibre, foliage and to process these products ready for consumption is not only sensible, it is critical for our future society. The focus should also be on food, fibre, and foliage because Queensland is also a major producer of cotton, wool, tree and nursery crops, and fodder for animals.

The challenge will come with the implementation. That means not just developing a sound policy, but supporting it with adequate back-up in legislation that secures the fundamentals components to food, fibre, and foliage production, which includes access to appropriate land, soil and water as well as infrastructure to support sophisticated supply chains. Unless government policy recognise that agriculture must be an integral part of the future of this country then policy decisions will continue to erode the capacity to produce food, fibre and foliage.

Recommendation

6. Australian and Queensland Governments progress the development of a visionary policy framework that reflects the significant importance of a viable and expanding agricultural production and food processing industry in this state and the nation

Social and economic benefits or otherwise for regional towns and the effective management of relationships between mining and other interests

A major study just released by the Murray-Darling Basin Authority about how the proposals in last year's Basin Guide would have affected communities in the Basin gives an insight into this issue. The study confirms the findings of the 2010 investigation by Judith Stubbs and Associates for the cotton industry that communities that are both small in scale and highly dependent on agriculture are at risk from reduced water availability to achieve the cut backs of 3,000 to 4,000GL proposed by the Guide. Small Queensland towns at risk include Dirranbandi and St George compared with Dalby which is larger but is still assessed as being highly exposed to proposed reductions because of its dependence on irrigated agriculture. Toowoomba is expected to be insulated from reductions due to its size and breadth of activity.

The CSG/LNG projects will clearly benefit the State economy over at least the next 30 or more years. Regional and local benefits will depend significantly on the adequacy of planning for the development of the projects. It is also important for the future of these regional and local economies that significant planning effort address opportunities for the agricultural and mining sectors to develop so as to ensure the ongoing resilience of the communities once the CSG / LNG industry "moves on".

The focus to date with planning for CSG developments has been to put in place a stringent regulatory regime backed by compliance monitoring and reporting programs. There must now be a commitment to examine how the CSG projects can be developed to secure local and regional economies. A key issue for irrigated agriculture is access to CSG water of a quality suitable for irrigation at a cost that will encourage farming development. Irrigators favour reinjection as a means of mitigating the impacts that CSG is expected to have on aquifers provided it is feasible from a technical and practical viewpoint. They also see that the CSG industry should not leave aquifers depleted once the industry winds down. CSG companies are raising proposals that CSG water of a quality appropriate for agriculture be substituted for groundwater use to maintain agriculture production likely to be impacted by CSG projects. Irrigators are not opposed to such a proposal but they must be assured that such a program will result in a net gain for aquifers at the end of CSG mining. In other words irrigators are seeking to achieve and maintain a sustainable balance for the aquifers that communities and the agricultural industry will depend upon into the future. They are also concerned any arrangements maintain existing allocations used for farming after account is taken for losses due to evaporation and storage leakages and the lost opportunity of using their on farm dams to store substitute water. There are other costs that may need to be addressed such as the substantial capital and operating cost of delivering substitute water to farms. Other risks include delivery timing and access, water quality standards and application regulation on farm and concern about increased salt load with such a development.

However, balancing all these issues, as outlined previously in this submission, there will be little benefit for irrigation communities on the Condamine Plain if CSG developments impact on the Condamine alluviums and these impacts cannot be mitigated.

Other issues of concern for the future of local and regional communities relate to the orderly development and servicing of CSG projects and opportunities for CSG workforce to live in these communities instead of just work-commuting options. Further to this is the adequate investment in regional infrastructure to support the peak demand required by the industry. There is also continuing concern that the companies negotiate suitable arrangements with landholders to carry out CSG activities on their land. There is still an ongoing concern that a number of farms will have to be taken out of production to accommodate the scale of CSG activities on site. The impact of this outcome is uncertain but it is expected that the companies will adequately compensate if it is necessary to take such action.

Recommendation

7. The Queensland Government investigate with CSG companies and irrigation industry a policy framework for the use of CSG water to sustain farming and farming communities into the future.

Other related matters including health impacts

QFF does not wish to respond on this issue as we do not have an understanding of health impacts from CSG developments.