

# SENATE REFERENCES COMMITTEE ON RURAL AFFAIRS & TRANSPORT

## INDEX OF TABLED DOCUMENTS

### Inquiry into the management of the Murray Darling Basin

#### Impacts of mining Coal Seam Gas

**DALBY, QLD – TUESDAY, 19 JULY 2011**

#### **PART 1 of 2**

LODGED BY	TITLE/SUBJECT	PAGES
Mr Ian Hayllor, Chairman & Mr David Hamilton, Committee Member, Basin Sustainability Alliance (BSA)	Opening Statement;	2
	BSA, <i>Not at any cost – Blueprint for Sustainable CSG operations</i> report;	8
	<i>Surat Basin Groundwater Management Plan – Preliminary Concept</i> Chart;	1
	<i>Issues of Concern</i> document;	1
	<i>Example of a well designed and managed floodplain farming system</i> photo;	1
	Overview of CSG activity in grazing country (Kogan/Grassdale);	2
Ms Ruth Armstrong, Yanco Farms	<i>Additional Documents</i> list, 4 photos & 3 maps;	7
	Copy of the Queensland Government Department of Natural Resources and Water, <i>Great Artesian Basin - resource operations plan</i> Report. (See attached link) <a href="http://www.derm.qld.gov.au/wrp/pdf/gab/gab_rop.pdf">www.derm.qld.gov.au/wrp/pdf/gab/gab_rop.pdf</a>	71
Mr Graham Clapham, Central Downs Irrigators	3 maps;	3
	Copy of the Queensland Government Department of Environment and Resource Management (DERM), <i>Central Condamine Alluvium</i> <i>Groundwater Managerment Area</i> Report, 23 June 2010;	11
	<i>Schedule of Fixed Charge Component Yearly payment options and costs</i> table;	1
	QLD Government DERM Public Notice, Water Regulation 2002 (Section 66);	1
	Letter to Mr Clapham from QLD Government DERM, regarding Application for Review of original decisions relation environmental authority PEN100449509;	4
	Letter from QLD Government Department of Infrastructure and Planning to the Hon. Tony Burke MP, Minister for Sustainability, Environment, Water, Population and Communities, 18 October 2010, regarding Coal Seam Gas extraction near Gladstone.	4
AgForce Queensland	<i>Coal Seam Gas Policy</i> document;	1



## **Presentation Murray-Darling Basin – Impacts of Mining Coal Seam Gas**

Thank you for inviting Basin Sustainability Alliance (BSA) to present. As we said in our submission the developing Coal Seam Gas (CSG) industry is going to be the biggest energy industry development to ever take place in Australia. Great Artesian Basin (GAB) water extraction could almost double from an already fully allocated resource. More tonnes of salt brought to the surface; more kilometres of pipelines buried; more gas wells drilled; and more new access roads built across the agricultural landscape than ever before.

The CSG development is taking place at “break neck speed” and the State and Federal Governments are playing catch up.

Living in the middle of a rapidly developing gas field is not a great place for agriculture to be especially when you take into account the need to double world food supply in the next 20 to 30 years.

It would be wrong of me to say that the State Government and the Gas companies are not trying to address many of the concerns being raised by the community and rural industry groups.

Ground water impacts, land access, and compensation are being actively discussed and some improvements have been made. However BSA is concerned that there are many issues that continue to go unanswered.

With me today is Solicitor Peter Shannon who will touch on landholder rights and access and compensations issues, Committee Member and Consultant David Hamilton who will speak on protecting agricultural resources and Committee Member and Landholder Katie Lloyd who will provide a first hand account of living in a gas field.

Firstly I will quickly touch on the groundwater issue.

I am convinced the Queensland Water Commission (QWC) is going to be vital in identifying the groundwater impacts and I have a lot of respect for Randall Cox and his team but I have concerns with the Government’s commitment to implementing the necessary management options to minimize adverse groundwater impacts.

BSA is calling on Government for a Surat Basin Ground Water Management Plan (in your notes). This concept is very much at the preliminary stage but we must maintain the GW system for future generations. The CSG industry can operate in our space but must not leave a ground water deficit. The industry must be proactive and if possible over compensate in advance of the modelled impacts.

We must develop a beneficial water use plan, whether it is re-injection into associated aquifers or groundwater substitution in areas like the Condamine alluvium. Groundwater users could have treated CSG water put into the water storages and leave their bore

allocations in the ground. Concepts like this must be modelled and researched first and would need to be done in a way that the local water balance is appropriately managed and maintained.

The mitigation of likely impacts must start at the beginning of the project not once impacts are observed.

At present, Government is promoting the 'make-good' provisions to protect the community's access to water but we see this as a "suck it and see" approach. I am concerned Government is placing royalties and jobs above water security.

One last point on Fracking. The unknown effect of well stimulation on the interconnectivity between coal seams and other aquifers is a major concern. Well stimulation techniques must be audited and regulated and the risks of fracking must be balanced with the need to achieve maximum well spacing.

Ian Hayllor

Chairman

Basin Sustainability Alliance Inc.

19<sup>th</sup> July 2011



# Not at any cost.

Blueprint for Sustainable CSG Operations



BSA is committed to working with government and industry to achieve a coal seam gas industry that has minimal adverse environmental, economic and social impacts and preserves groundwater resources for future generations.



Photo courtesy of:  
Lyndon Mechielsen, The Australian

## A message for the people of Queensland

The rapid escalation of the coal seam gas (CSG) industry is having a massive impact on regional Queensland. Landholders who were busily working on their own businesses producing food and fibre for the benefit of all Australians, have been thrown into a CSG whirlwind. Out of frustration with the lack of information and support for landholders, and extreme concerns for the impacts of this industry on water resources and the environment, the Basin Sustainability Alliance (BSA) was formed in early 2010. BSA recognises the potential for the coal seam gas industry to deliver jobs and royalties to the people of Queensland. BSA is not against progress. In fact many of the landholders involved in BSA are known for their ability to embrace new industry and new technologies. But when you start talking about extracting vast quantities of underground water, drilling tens of thousands of wells and burying many thousands of kilometres of pipelines, you simply cannot ignore the potential long term impacts and significant environmental risk. We must not be blinded by the promise of jobs and riches. As we have heard many high profile politicians say over the past year, this industry should not be allowed to expand at any cost. There has to be a real balance and it can't be just lip service.

The State Government says it is committed to ensuring that each proposed project undergoes comprehensive assessment to identify and

mitigate any likely environmental impacts but BSA questions this commitment. Many major CSG projects are being approved, and yet there is still a serious lack of understanding of the long term impacts because the necessary research to understand these impacts in many cases has not taken place.

The Government's baseline assessment of existing water levels and quality has not taken place, the Queensland Water Commission ground water model which is supposed to predict groundwater impacts is still being developed and there is also a lot of uncertainty about how the millions of megalitres of groundwater being extracted and millions of tonnes of salt being produced are going to be managed to ensure minimal environmental harm.

Queensland must retain the ability to increase food and fibre production from its farmland in order to meet ever-increasing world demand. The protection of groundwater and the fertile farmlands of Queensland is critical for future generations.

BSA has had good access to government departments over the last twelve months and has had opportunities to have input into policy. While we are disappointed that we have not seen all of our recommendations adopted, we have seen some improvements. We will continue to work hard on behalf of our members and communities. We hope this blueprint clearly identifies the key issues that BSA is taking to government

and the CSG companies. We firmly believe these issues must be addressed NOW in order to ensure minimal environmental, social and economic harm to landholders and communities impacted by CSG development.

I'd like to take this opportunity to thank the members of BSA who have given both moral and financial support and particularly those dedicated individuals who have donated countless hours of their time to help effect change by meeting with government and industry, reading and responding to never-ending pages of research, policy, legislation, environmental impact statements and more, all while trying to manage their own businesses and family lives. Without their commitment we would have little chance of getting these vital issues on the agenda.

BSA is committed to ensuring Government policy and legislation protects the environment and agricultural production, and allows for the development of a sustainable CSG industry.

If you'd like to find out more go to [www.basinsustainabilityalliance.org](http://www.basinsustainabilityalliance.org).

A handwritten signature in black ink, appearing to read 'Ian Haylor'.

Ian Haylor,  
BSA Chairman





achieve a sustainable future for all Queenslanders

## Why the need for this “blueprint”?

The Basin Sustainability Alliance (BSA) is a community organisation representing rural landholders, regional communities and agribusiness. BSA is committed to ensuring the sustainability of water resources, agricultural land and regional communities for future generations.

BSA acknowledges that the Queensland Government is actively supporting the resources industries and has granted various CSG and other mining companies legal tenure over mineral and gas resources which lie beneath the productive farmlands of the Surat Basin. The Queensland Government has also identified the significant long-term benefit of CSG developments to the State but has failed to deliver on the necessary science required to ensure environmental concerns are adequately addressed prior to the rapid expansion.

BSA has called for a moratorium on any escalation in the CSG industry on numerous occasions but our requests have not resulted in any change to the pace of the CSG development. We have serious reservations that the risks of this massive and rapid development will not be properly managed resulting in environmental harm and a serious reduction in agriculture's ability to produce food and fibre. A moratorium on development would provide the time necessary to develop the science and capacity to safely develop the CSG industry. This once-in-a-generation opportunity could then be taken with certainty and confidence so that the benefits can flow to current and future generations of Queenslanders and Australians.

Because our call for a moratorium has not been accepted, we have prepared this blueprint to clearly articulate the concerns and expectations of rural landholders and regional communities.

The rapid and unprecedented expansion of the CSG industry demands urgent action on the issues raised in this document to enable the possibility of any co-existence between the CSG industry, agriculture and regional communities. We expect that this blueprint will help provide the foundation for a workable co-existence.

The State and Federal Governments, and the Resource

Companies must commit to ensuring the ongoing viability of agricultural production for the broader community and satisfy the ever-increasing world demand for food and fibre.

In the past, the Government and agricultural industries may have made mistakes in managing the environment. Many of these mistakes have resulted from Government Legislation aimed at quickly developing the resource. But we have learnt from these mistakes by investing in the necessary science and adopting substantially better management practices. Agriculture is now much more sustainable and ready to meet the challenge of the growing demand for food and fibre.

We know there are problems with the CSG industry. We also have the benefit of overseas experience where problems have already arisen. We must use this information together with new local knowledge to ensure the CSG industry operates at best practice for everyone's benefit.

We expect the resources companies to invest in gaining the necessary knowledge to minimise any risk to the environment. This requires investment in independent, credible science and a willingness to adopt sustainable practices which will flow from this scientific work.

### Main concerns

BSA's main concerns are as follows:

1. Over exploitation of water in the Great Artesian Basin (GAB) and impacts on the sub artesian aquifers – water depletion and contamination.
2. Land impacts – contamination, loss of productivity, loss of amenity and reduction in land value.
3. Land access and compensation – unfair rights of entry and compensation, inadequate make good arrangements for groundwater impacts and uncertainty about the extent of future CSG developments.
4. Social impacts – uncertainty, increased costs of living to sections of the community and increased demand on community resources such as roads and health services.



## Once-in-a-lifetime opportunity

We have a once-in-a-lifetime opportunity to cooperatively develop a major new, world-class energy sector by ensuring all environmental and social impacts are identified and addressed. We must preserve Queensland's agricultural land and groundwater reserves for future food and fibre demand. Only by investing in relevant science and continually improving our understanding of new and emergent risks, can we develop adaptive management strategies that ensure minimal environmental and social impact. A better understanding of the risks and sufficient legislated make-good arrangements will also remove uncertainty for agriculture and reduce community anxiety about the escalation of the CSG industry.

### Principles

1. Environmental sustainability of water and land resources is to be of the highest priority. Scientific studies must precede any development.
2. More certainty and transparency is required (by all parties).
3. Fair compensation must be offered to any and all affected landholders. CSG companies must be able to pay full compensation and have the capacity to fund make-good arrangements.
4. Make-good arrangements must be enforceable, provide for future generations and for all affected parties. They must be transparent and fair for the benefit of the wider community as well as current individual landholders.
5. A substantial bond (or some other form of environmental insurance) must be held by Government to ensure the capacity to pay for serious environmental impacts that may occur at any time and for as long as the impacts may endure.
6. Landholders also want protection against unforeseen on-farm impacts. CSG Companies must carry insurance or have some other surety to be able to meet any such contingencies in future. We also demand public disclosure of bonds and insurance policies.
7. Recognition of and a commitment by CSG companies to respect the landholder's tenure rights associated with the land. Whilst petroleum and gas tenures in Queensland give CSG companies the right to extract CSG, current landholders enjoy the right to utilise the surface resources of their land. CSG companies must avoid unreasonably interfering with a landholder carrying out their lawful business.



Photo courtesy of:  
Russell Shakespeare, Q-Weekend





## Water

Landholders and the many communities that rely on groundwater must not have their access to water compromised.

Cumulative impacts on groundwater aquifers must be understood on a local, regional and catchment basis to minimise the risk of over-exploitation of current water reserves. This must apply to both GAB and Sub-artesian aquifers. Farmers and communities are already facing severe cutbacks in water allocations because of previous Government reluctance to manage water resources sustainably. Current groundwater utilisation has exceeded recharge and as a result has been unsustainable. All groundwater systems are in deficit and therefore all CSG water extraction must be regulated and accounted for in the same way as it is for existing users.

Baseline monitoring of water quality and quantity is an absolute priority and must be implemented by the State Government immediately. Monitoring should be carried out by an independent accredited body and detailed reports provided to individual landholders. The development of groundwater models by the Queensland Water Commission is essential. Landholders must be regularly informed of the results of this modelling.

By understanding the water balance we expect to understand all water inputs, outputs and movements and long-term impacts of any change. This is so that future water security can be achieved. Our current understanding is that many of the aquifers are inter-connected as are the surface water resources. Further research must quantify transmissivity between aquifers and between aquifers and surface water. Individual aquifer assessments and modelling should be a pre-requisite to any activity which might adversely impact on the aquifer and where risks are apparent they should be assessed and appropriately addressed before activity commences.

'Make good' provisions must include making good any adverse impacts on water quantity and water quality whether the "trigger thresholds" have been reached or not and must compensate all affected parties, not just the bore owner (i.e. sharefarmer, lessees, neighbours etc.).

- Make good obligations should apply to the water resources accessed by the wider community as well.

- Subject to appropriate scientific research, purified CSG water must be re-injected into associated aquifers or substituted for existing groundwater use wherever possible. Managing and maintaining the local water balance is important because current users will rely on this water into the future.
- Wherever possible, water must be beneficially used in the area of extraction and not piped kilometres away.
- CSG Companies must continue to co-contribute to the science enabling the understanding of impacts of CSG activities on the water balance. The community must be kept fully informed of the outcomes of these water balance studies.
- All CSG Companies must provide a Water Management Plan detailing the quantity and quality of water extracted and how it will be beneficially treated to prevent environmental harm. The industry should not progress until these plans are shown not to contain unacceptable risks.





## Land

CSG operations must not result in any permanent land contamination and they must not have any serious impact on productivity. The following points also need to be addressed:

- Any mining or CSG operation must not unreasonably interfere with normal farming and livestock operations.
- All CSG Companies must provide a Land Impact Statement which details the total area of land in the gas fields, the quality of this land and how much land will be temporarily disturbed and how much will be removed from productive agriculture for the life of the project. This information must be provided to all affected parties.
- CSG infrastructure must not be located closer than 500 metres from residences, schools, or intensive livestock operations without specific landholder agreement. Allowances should be made to enable landholders to negotiate greater separation distances where topography or particular circumstances warrant it.
- Well spacing and infrastructure must not be intensified without landholder agreement.
- No CSG operations to be conducted on the Condamine Alluvium flood plain or any like susceptible area or aquifer until scientific studies and CSG technologies (directional drilling etc), can assure all stakeholders that there will be no adverse impacts on the aquifer or overland flow of the flood plains.
- Developments must be planned area-wide and all stakeholders fully informed and allowed to have input.
- Landscape function must be understood in order to protect the land from erosion and to avoid adverse impacts on native flora and fauna.
- Subsidence risks must be clearly understood.
- No land should be accessed while ever issues remain unresolved in the Land Court.
- After CSG operations cease, land must be fully rehabilitated to a pre-CSG development standard to ensure full productivity.

## Salinity

Any salt derived from CSG activities must not have any detrimental impact on the environment.

Brine should be removed from the surface environment and preferably used for industrial purposes.

## Drilling Standards

Robust well construction standards must be developed, legislated and rigorously enforced. These standards need to clearly demonstrate the Government's determination that wells must not become a source of unintended inter-aquifer leakage or contamination. The development of these standards must have landholder input. The current standards for water bores can be used as a guide to developing the standards for drilling CSG bores.

## Social Impacts

CSG companies must commit to minimising adverse social impacts. Some of the issues of concern include the high costs of living in mining towns, competition for skilled labour, stretched government services (e.g. health and local councils) and increased demand on infrastructure (e.g. Warrego Highway). Social impacts must be properly assessed (at both the personal and community level) and any adverse social impacts must be adequately addressed and/or compensated. Gas field development in rural residential areas such as Tara must be managed with care and consideration and the residents treated with respect. Some areas should be "off limits" to CSG operations.





## Compensation

Compensation should be attractive to landholders. Landholders must be fully compensated for their time (including time taken to do the necessary research to be informed), for any loss in productivity, for any loss of amenity, for any reduction in land or business value and for any costs of legal representation. CSG companies must commit to adopting best management practices in all aspects of exploration and production activities as and when they become available or understood. The following points must also be taken into account:

- Compensation should be for a term and be subject to review to allow for unforeseen impacts that may arise;
- Compensation must make allowance to reflect the compulsory nature of the imposition ( i.e. allow a premium to reflect the compulsory nature of the acquisition and the social dislocation and upheaval it causes) ;
- Compensation must account for interference;

CSG companies must compensate for their infrastructure's impact on preventing landholders adopting innovation (new and more efficient agricultural practices).

### ***Review of existing agreements***

Where current compensation agreements are considered by the landholder to be unfair, the Government must appoint an independent commissioner to allow review of these agreements. The following circumstances warrant such review:

- Landholders didn't have independent legal advice;
- Age, language, lack of understanding etc. can be shown to have been a factor warranting review;
- Older agreements, regardless of whether legal advice was obtained;
- Where older highly objectionable clauses were inserted (e.g. where these agreements have compromised all make-good obligations, all future rights, all material change rights etc);
- Where misleading or deceptive conduct led a landowner to error or mistaken impression without which they would not have entered into the agreement;

- Where reasonably unforeseeable consequences/ interference to the landowner have manifested after the agreement; or
- Any other circumstances where justice reasonably requires.

This review process should be enacted in the legislation and the right for review guaranteed.

## Well Stimulation

### ***such as hydraulic fracturing (fracking)***

All chemicals used in CSG operations must be safe, must be registered and must be disclosed to landholders and State Government. The unknown effect of well stimulation on the interconnectivity between coal seams and other aquifers is a major concern. More research in each particular gasfield must be undertaken before fracking or other techniques are used to stimulate gas flows.

- CSG companies must provide detailed information on proposed well stimulation including the chemicals to be used, quantities injected, and the fate of these chemicals throughout the stimulation process. Landholders require this information to meet their Quality Assurance obligations.
- Companies must inform landholders at least 10 days prior to any scheduled well stimulation activity and must provide a full report on completion.
- The results of any ground water quality monitoring program must be promptly provided to landholders. Any water contamination must be immediately advised to landholders and emergency water supplies implemented immediately if necessary.
- Ten percent of all CSG gas wells must be fully and independently audited each year, by suitably trained personnel, to ensure compliance with all obligations. Results of these audits must be publicly available.



## Conclusion

BSA acknowledges the commitment the Government has recently given to developing policies on Strategic Cropping Land, Land access and Compensation, management options for produced water and the management of salt. We also acknowledge the potential role the Queensland Water Commission can play in effectively monitoring and managing ground water impacts of the CSG industry. To achieve this, the Commission must be adequately funded and resourced with qualified staff.

BSA also acknowledges the renewed efforts by some CSG companies in community consultation and we acknowledge that some CSG companies have already met a number of the demands we are making. Affected communities require more information on the technical workings of the CSG industry, on groundwater modelling and water management, on drilling operations and fracking and on any other likely impacts of CSG operations on the environment.

Landholders will not subsidise the CSG industry. The CSG industry must meet the full costs of their operations and they must not cause long-term environmental harm. Co-existence of agriculture and CSG activities is possible but CSG companies must be prepared to understand and address issues of community concern, many of which are raised in this document.

### Disclaimer

This "Blueprint" is intended to provide a basis for discussion as to how co-existence may be progressed only. It will in no way bind BSA to or its constituents from time to time to a particular position or to particular policies and we reserve at all times the right to change our position on any issue or raise new issues as information becomes available.

*For further information contact*

Ian Hayllor, Chairman

[Basin Sustainability Alliance](#)

Mob: 0428 795 548

Eml: [chairman@basinsustainabilityalliance.org](mailto:chairman@basinsustainabilityalliance.org)

or visit [www.basinsustainabilityalliance.org](http://www.basinsustainabilityalliance.org) or [www.notatanycost.com.au](http://www.notatanycost.com.au)



### Committee members

Ian Hayllor *Chairman*

Dave Armstrong

Ruth Armstrong

Jeff Bidstrup

Anne Bridle

Bernie Caffery

Ashley Geldard

David Hamilton

Geoff Hewitt

Katie Lloyd

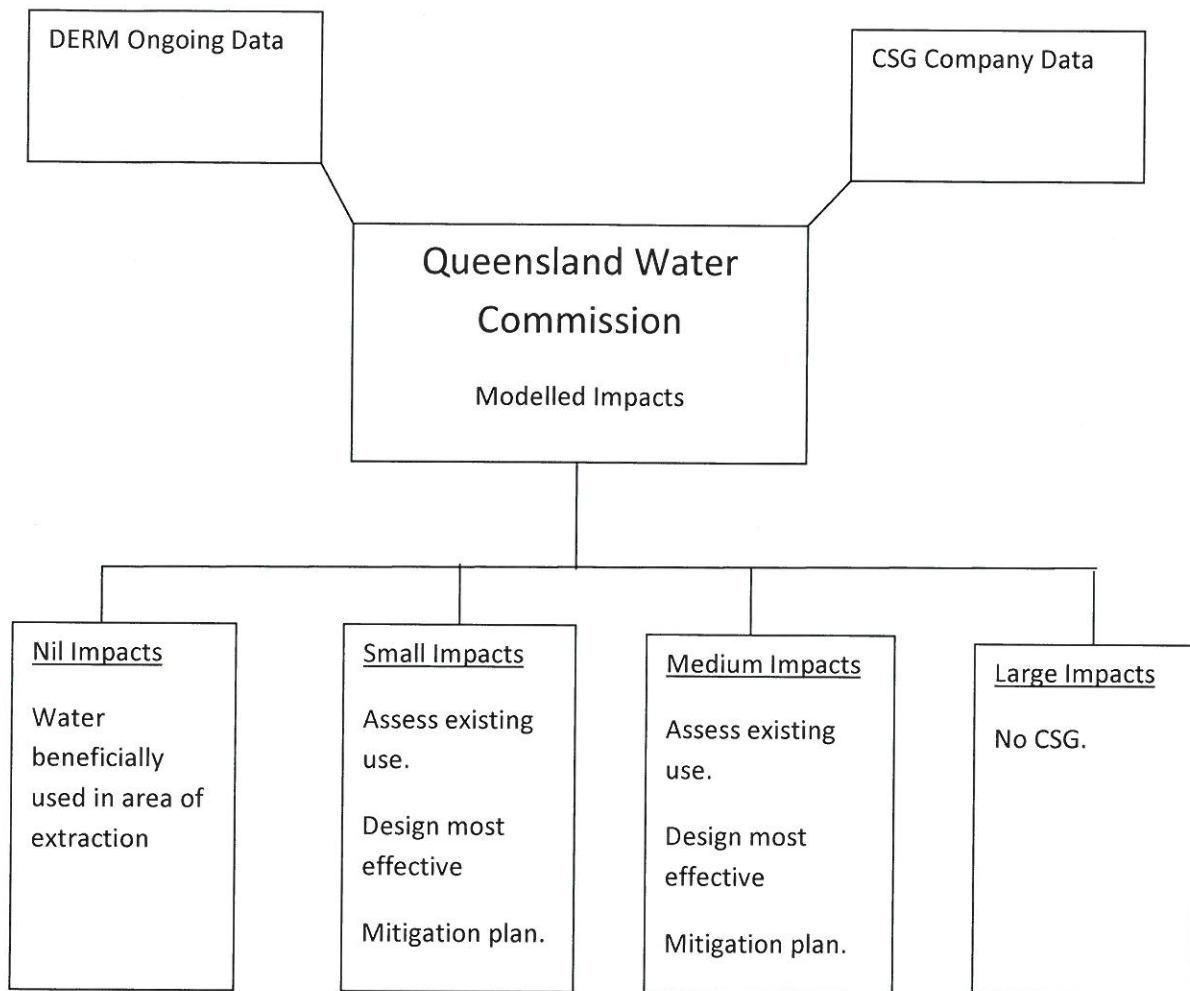
Wayne Newton

Scott Seis

Thanks also to Andrew Rushford who has retired from the committee and to Solicitor Peter Shannon for his advice and support.

# Surat Basin Groundwater Management Plan

## Preliminary Concept







Example of a well designed and managed floodplain farming system.















## **Additional Documents**

- Photograph 1 –** Taken during the December 2010 / January 2011 floods looking south-east along the North Branch of the Condamine River. The location of the proposed 6 well pilot is in the top left hand corner of the photo.
- Photograph 2 –** Taken during the December 2010 / January 2011 floods looking north-east across the central Darling Downs floodplain at Nangwee. The location of the proposed 6 well pilot is the centre left of the photograph.
- Photograph 3 –** An aerial view of the Arrow Energy Meenawarra 5 well pilot on the Dunmore Forest Road west of Cecil Plains.
- Photograph 4 –** An aerial view (looking north) of the proposed location for Arrow Energy's 6 well pilot at David and Ruth Armstrong's property 'Waverley'. The North Branch of the Condamine River is at the bottom and left of the photograph.
- Map 1 –** Cadastral map of the central Darling Downs region with areas of Good Quality Agricultural Land shaded in brown and showing Arrow Energy's Authority To Prospect 683.
- Map 2 –** Groundwater availability as a salinity/yield matrix for the central Darling Downs region and showing Arrow Energy's Authority To Prospect 683. Note the "best" water measured by yield and salinity are in the areas shaded as dark blue. Central Darling Downs Land Management Manual Resource Information Book, Queensland Government Department of Natural Resources 1999.
- Map 3 –** Central Condamine Alluvium Groundwater Management Area. Queensland Government Department of Environment and Resource Management 2010.
- Document 1 –** Great Artesian Basin resource operations plan incorporating Water Resource (Great Artesian Basin) Plan 2006

See DERM web site link:

[http://www.derm.qld.gov.au/wrp/pdf/gab/gab\\_rop.pdf](http://www.derm.qld.gov.au/wrp/pdf/gab/gab_rop.pdf)

Photograph 1





Photograph 2





Photograph 3



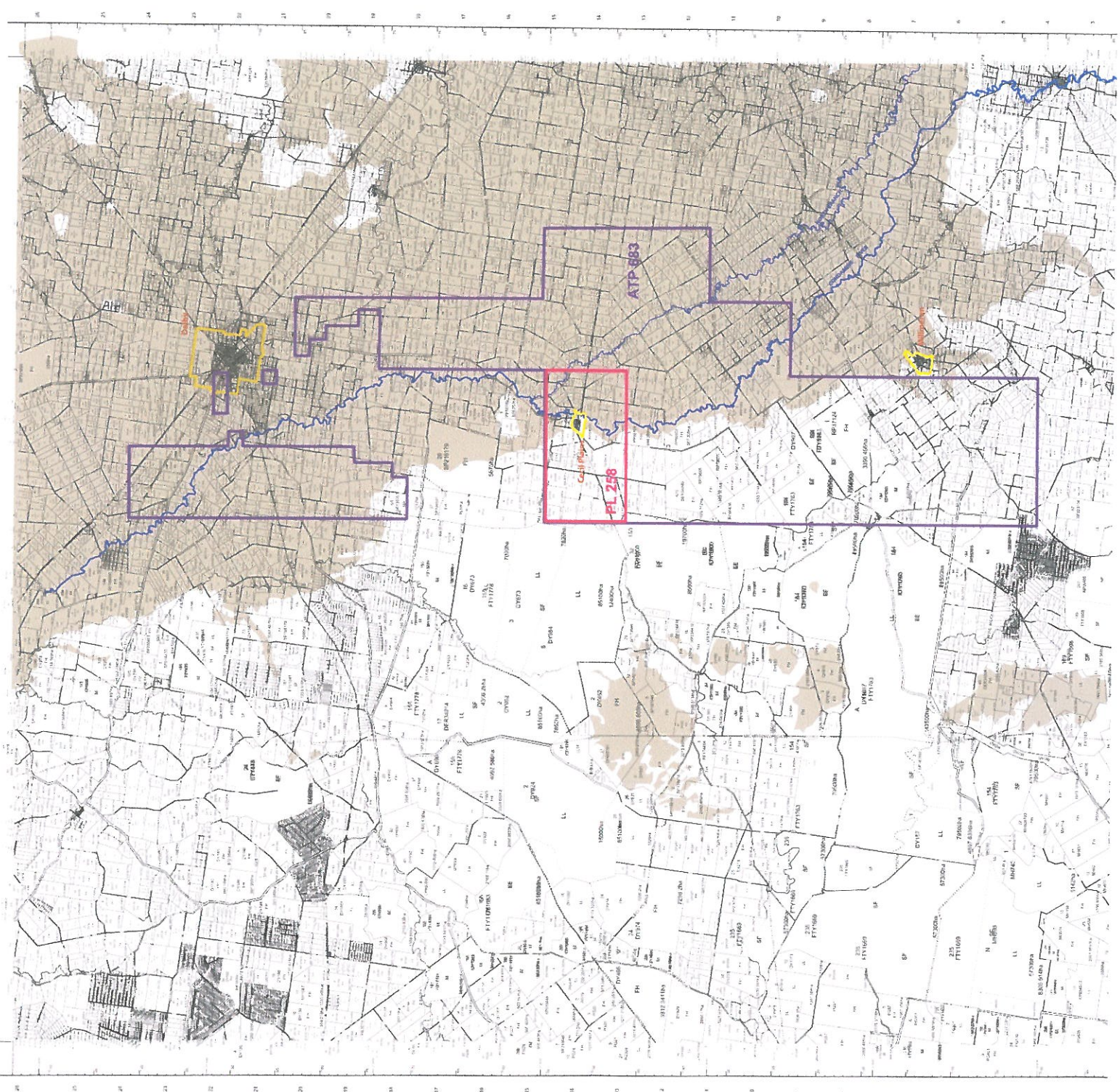


Photograph 4





map 1





150°30'

151°

151°30'

152°

26°30'

27°

27°30'

28°

150°30'

151°

151°30'

152°

26°30'

27°

27°30'

28°

28°30'



Central Darling Downs

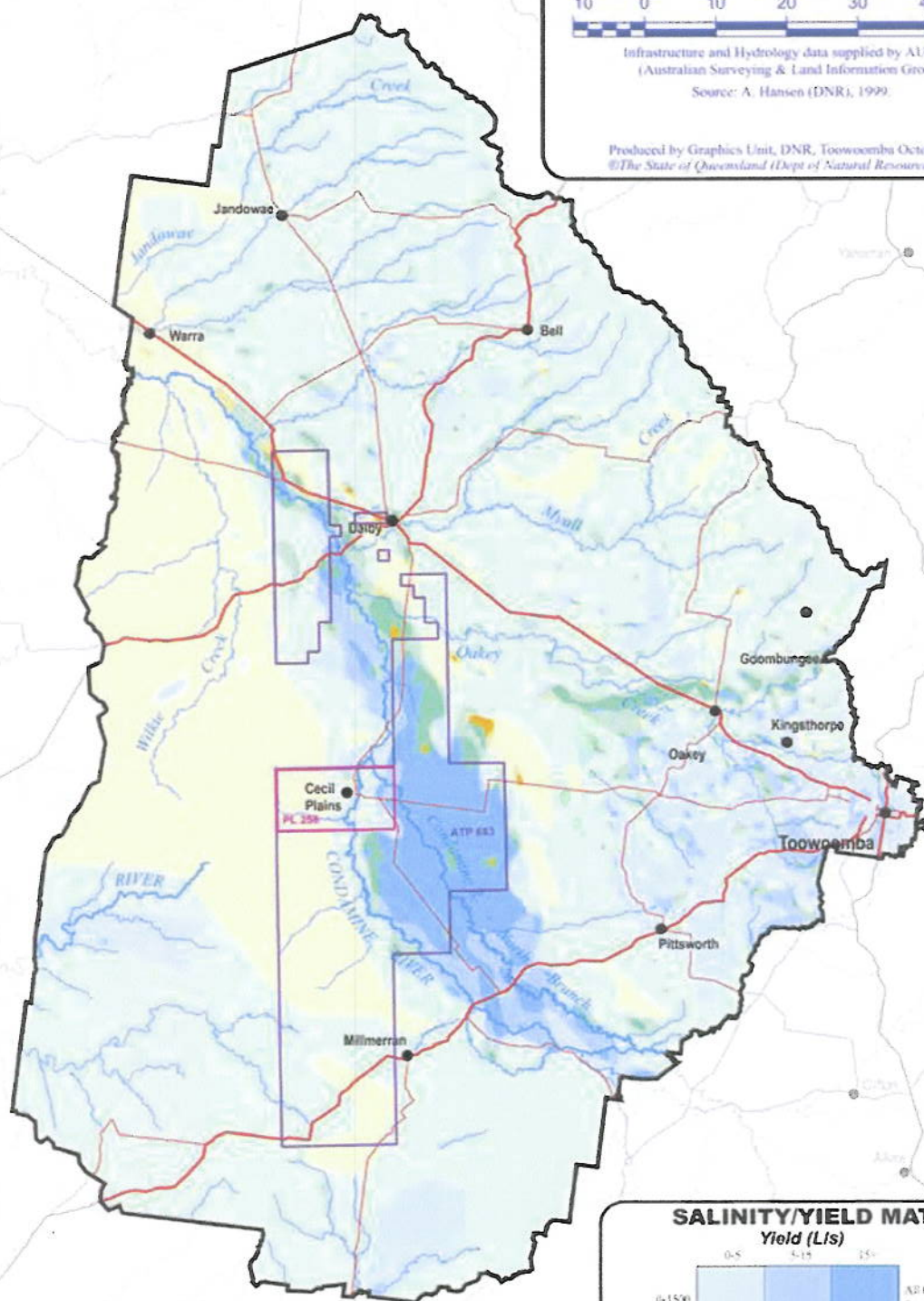
## Map 6 - Groundwater Availability

kilometres  
10 0 10 20 30 40 50

Infrastructure and Hydrology data supplied by AUSLIG  
(Australian Surveying & Land Information Group)

Source: A. Hansen (DNR), 1999.

Produced by Graphics Unit, DNR, Toowoomba October 1999  
©The State of Queensland (Dept of Natural Resources) 1999



### SALINITY/YIELD MATRIX

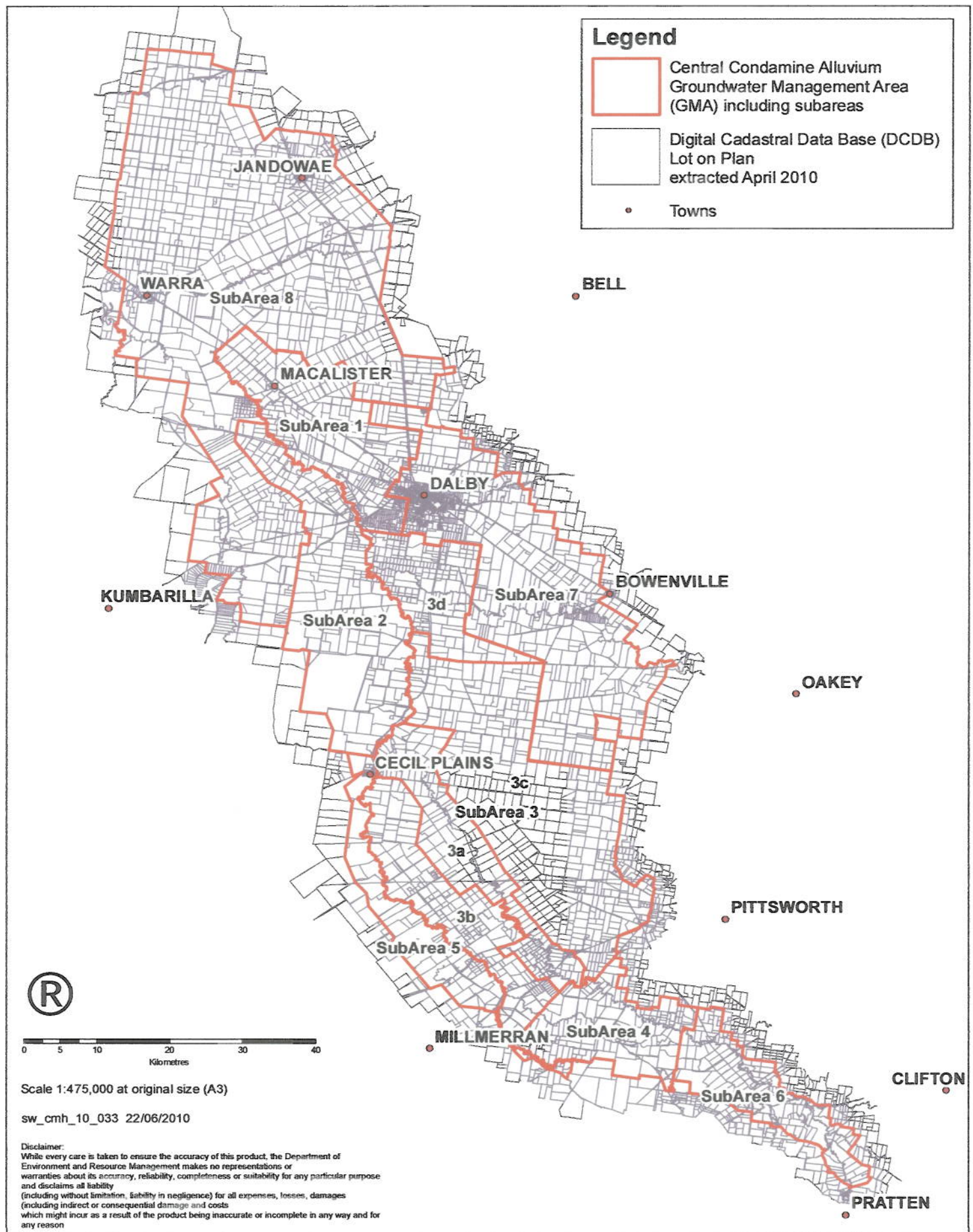
Yield (L/s)

	0-5	5-15	15+	
0-1500	All Purposes, Domestic, Stock & Irrigation			All Purposes, Domestic, Stock & Irrigation Irrigation of Medium-High Salt Tolerant Crops, Limited Domestic, Stock Limited Uses, Most Stock
1500-5000				
5000+				

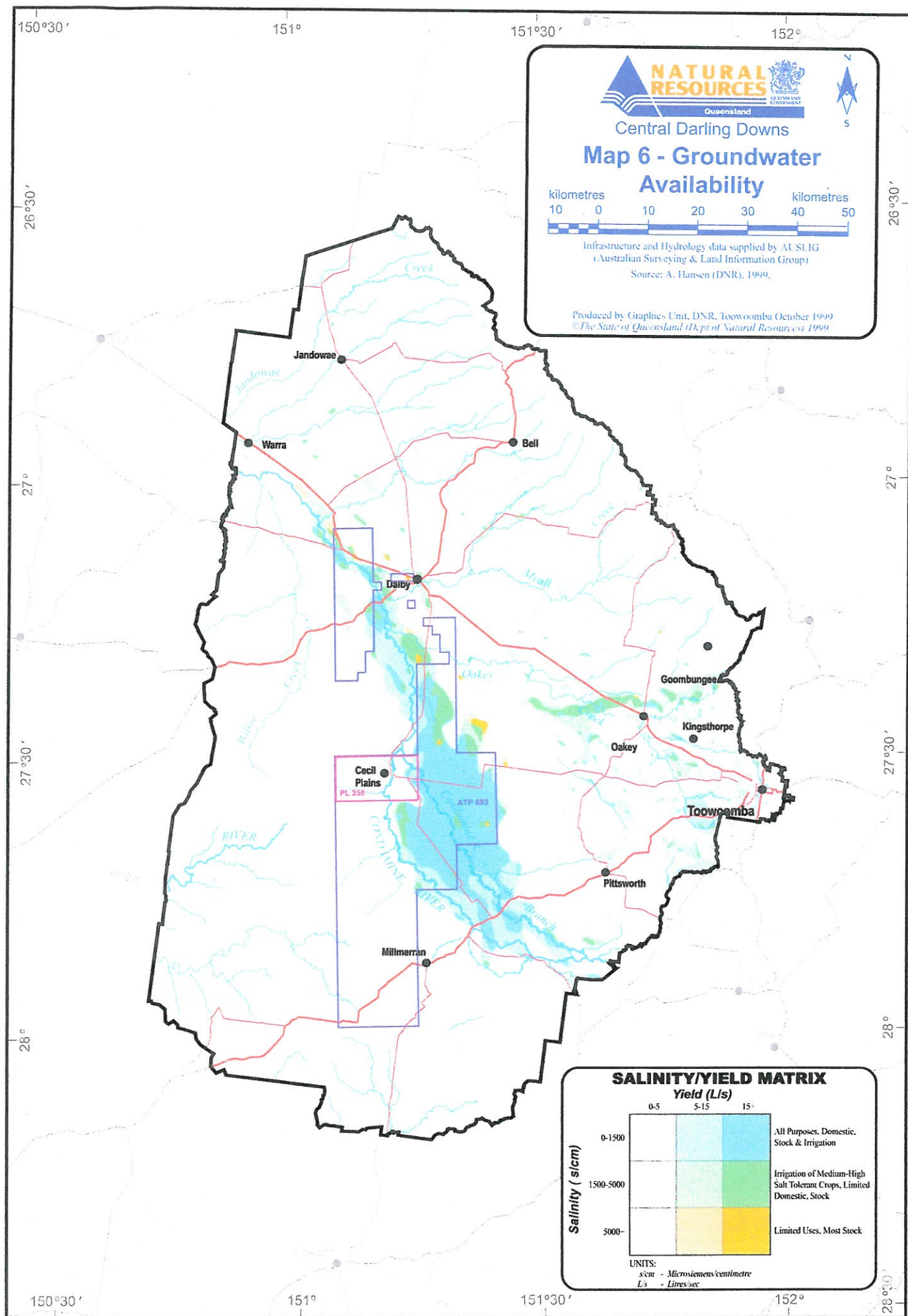
UNITS:

µm = Micrometres/centimetre  
L/s = Litres/second

# Central Condamine Alluvium Groundwater Management Area



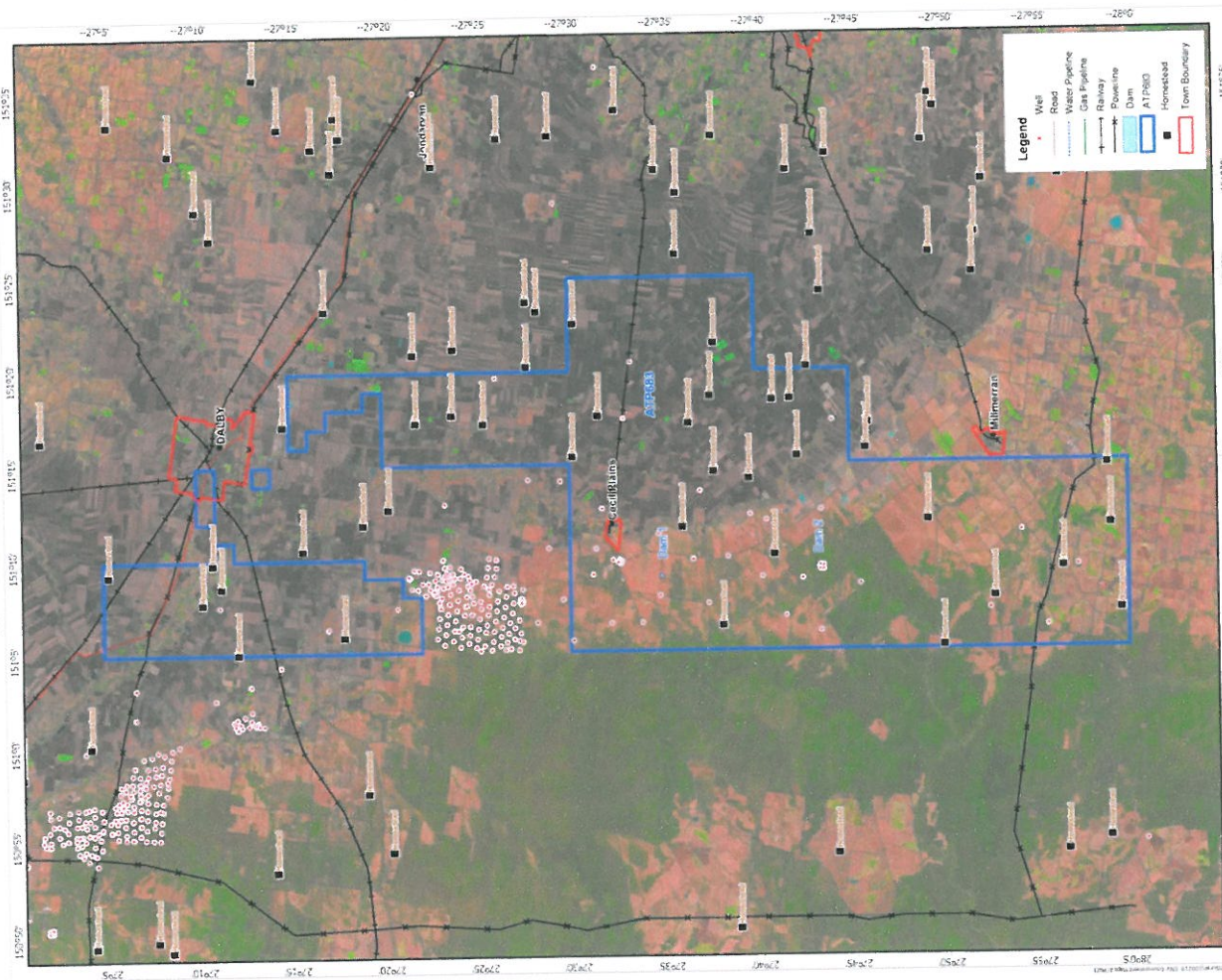








# ARROW ENERGY - SURAT BASIN



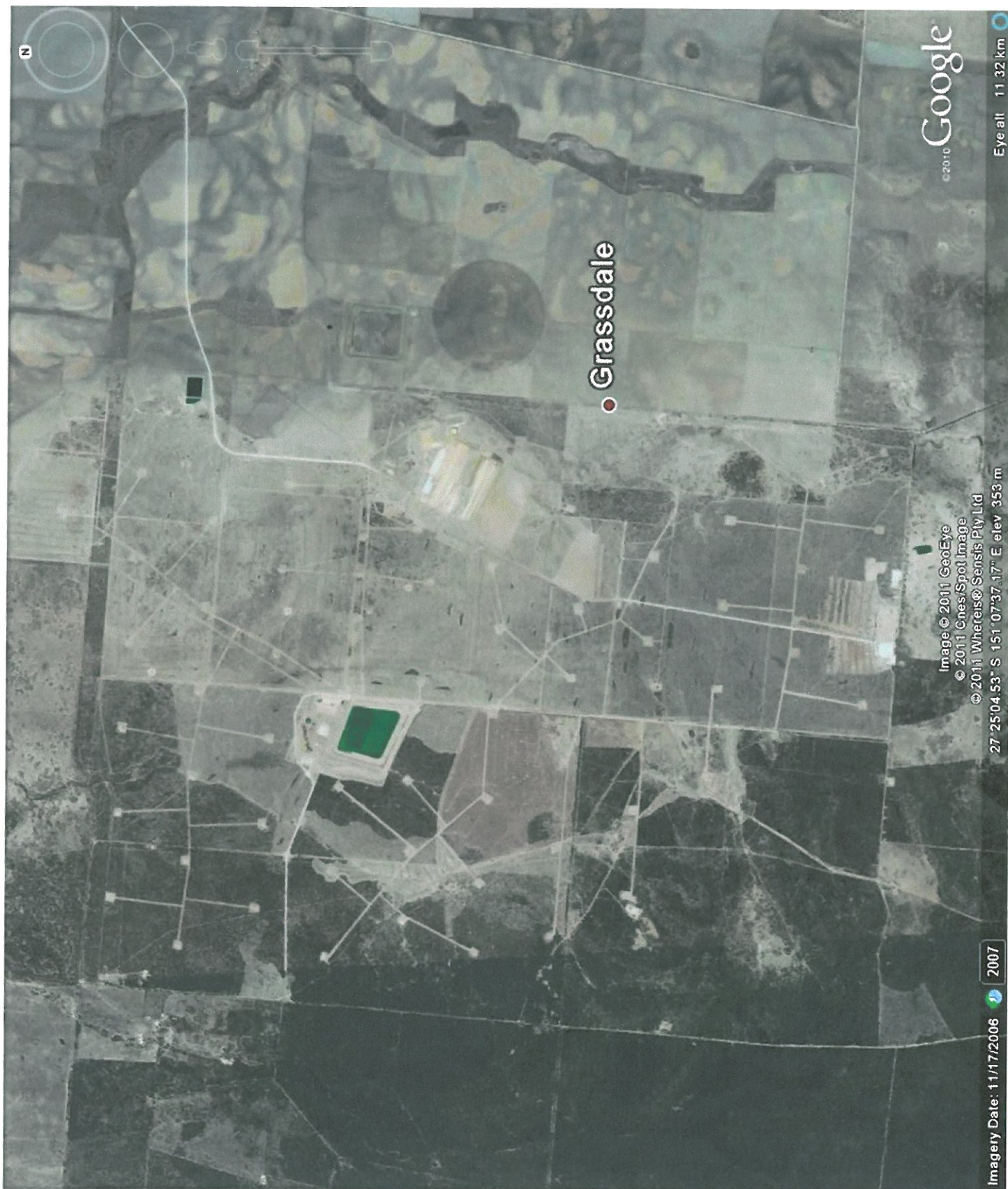
## AUTHORITY TO PROSPECT 683 - ORTHOGRAPHIC V2

<b>Project Name:</b>	ARROW ENERGY - SURAT BASIN
<b>Project ID:</b>	683
<b>Project Type:</b>	Prospect
<b>Project Status:</b>	Active
<b>Project Owner:</b>	Arrow Energy
<b>Project Manager:</b>	[Name]
<b>Project Engineer:</b>	[Name]
<b>Project Surveyor:</b>	[Name]
<b>Project Date:</b>	15/05/2018
<b>Project Location:</b>	Surat Basin, Western Australia
<b>Project Scale:</b>	1:50,000
<b>Project Accuracy:</b>	± 1m
<b>Project Notes:</b>	This map is for information only and does not constitute a guarantee of accuracy. It is the user's responsibility to verify the information on this map before using it for any purpose. The map is not to be used for any purpose other than the one for which it was prepared.

NOT FOR CONSTRUCTION







Google

Image © 2011 GeoEye

© 2011 Cnes/Spot Image

© 2011 Whereis/Sensis Pty Ltd

27° 25' 04.53" S 151° 07' 37.17" E elev 353 m

2007

Imagery Date: 11/17/2006



Eye alt 11.32 km





# Central Condamine Alluvium Groundwater Management Area

23<sup>rd</sup> June 2010

## Formation of the New GMA and Announced Entitlements for the 2010-11 water year

The new Central Condamine Alluvium Groundwater Management Area (CCAGMA) now encompasses the old CGMA and the recently metered 'Balance Area'. The new CCAGMA will have 8 **interim** subareas, parts of the old 5 CGMA subareas that overly alluvium plus 3 additional subareas (See attached map on Page 10).

The 2010 -11 water year announced entitlements (AE) for the Central Condamine Alluvium Groundwater Management Area (CCAGMA) are shown in the table on Page 2 and the attached public notice (published on 26th June 2010). The 2010-11 AE levels do not apply to stock, domestic or town water supplies.

Changes to AE levels within the old CGMA were discussed at meetings with groundwater users at Cecil Plains in May 2007, Dalby in September 2008 and with the Central Downs Irrigators Ltd. This led to the adoption of a staged reduction plan to be implemented from 2008-09. Following the reductions in AE levels in 2008-09, the reductions planned for 2009-10 were deferred.

The department had proposed a 10 per cent reduction of AE across the old CGMA subareas as part of fu-

ture management arrangements for the 2009 -10 water year. This proposed reduction was contingent on metering being introduced in the broader Central Condamine Alluvium (commonly referred to as the 'Balance Area'). This metering is now complete and the identified 10 per cent reduction in AE is being implemented for the 2010 -11 water year.

The take of water in subareas 6, 7 and 8 of the CCAGMA was previously managed by s25 Limitations on Taking Water. The s25 limitation for 2009-10 was at 70% of nominal entitlement or a limitation on hours of pumping if unmetered. As these subareas are now part of a groundwater management area, the take of water is managed under announced entitlement and the s25 limitation will be withdrawn effective 1 July 2010. The AE for the 2010/11 water year will effectively remain at 70% for these subareas with no limitation on pumping hours.

This suite of management arrangements and the creation of a new management area have been proposed and progressively introduced in consultation with users to provide a more consistent and holistic management framework for this groundwater resource.

### Inside This Issue:

Announced Entitlements and new Water Management	1
2010/11 Managed Area Announced Entitlement Arrangements	2
System Performance — Central Condamine Alluvium	3
Outcomes from 09/10 Announced Entitlements	3
Groundwater Levels	4
Changes to the Water Sharing Rules	8
Future Management Directions	9
New Central Condamine Alluvium Groundwater Man-	10
Future Announced Entitlements	11
Departmental Activities and Priorities (2010/11)	11
Further Information/Contacts	11



## 2010/11 Managed Area Announced Entitlement Arrangements

The following table summarises the 2010/11 Announced Entitlements for the Central Condamine Alluvium Groundwater Management Area. Please note the addition of 3 more subareas. The old CGMA subarea internal boundaries have not changed so users in the old Subareas 1 to 5 will remain in the same subarea for the 2010/11 water year.

Groundwater Management Area	Sub Area	2010-11 Announced Entitlement
Central Condamine Alluvium	1	70% of nominal entitlement
	2	70% of nominal entitlement
	3a	50% of nominal entitlement
	3b	50% of nominal entitlement
	3c	50% of nominal entitlement
	3d	50% of nominal entitlement
	4	70% of nominal entitlement
	5	70% of nominal entitlement
	6	70% of nominal entitlement
	7	70% of nominal entitlement
	8	70% of nominal entitlement

The above announced entitlements will be published in various newspapers closer to the start of the new water year.

## System Performance - Central Condamine Alluvium

The groundwater resources of the old CGMA and broader Central Condamine Alluvium continue to function in a "mined" condition with use significantly exceeding recharge and long term available supply. Use in excess of recharge has and will continue to result in a progressive depletion of system storage, the key strategic asset of the groundwater system.

A significant depression or depletion zone has developed within the Central Condamine Alluvium in subarea 3 of the CCAGMA. The depression zone has progressively expanded into subareas 4 and 5 in the upstream sections of the CCAGMA. A second smaller depression has also formed around Macalister.

Although management arrangements have slowed the rate of water level and storage decline in the main depression, the perimeter of the depression continues to expand. This indicates that continued high levels of use, particularly within the more heavily developed sections of the aquifer system, is impacting over extended areas including areas that were previously demonstrated as having relatively stable water level and storage conditions.

The only way this trend can be contained is through further water use reduction, not only within the old CGMA, but ultimately across the whole of the Central Condamine Alluvium. Hence the creation of the new management area, the CCAGMA. The table below provides an overview of the impact on water use from the 2009/10 AE arrangements in the old CGMA.

## Outcomes from the 2009-10 Announced Entitlements in the CGMA

Sub Area	2009-10 Nominal Entitlement (ML/a)	2009-10 Announced Entitlement (ML/a)	Total groundwater use 1/7/2008 to 31/3/2009 (9 month period)	Total groundwater use 1/7/2009 to 12/02/2010 (8 month period)
1	3372	(80%) 2698	1651	1071
2	8303	(80%) 6642	3595	2806
3	43659	(60%) 26195	23700	17014
4	4011	(80%) 3209	2170	1351
5	1342	(80%) 1074	186	310
<b>TOTAL</b>	<b>60687</b>	<b>39818</b>	<b>31302</b>	<b>22552</b>

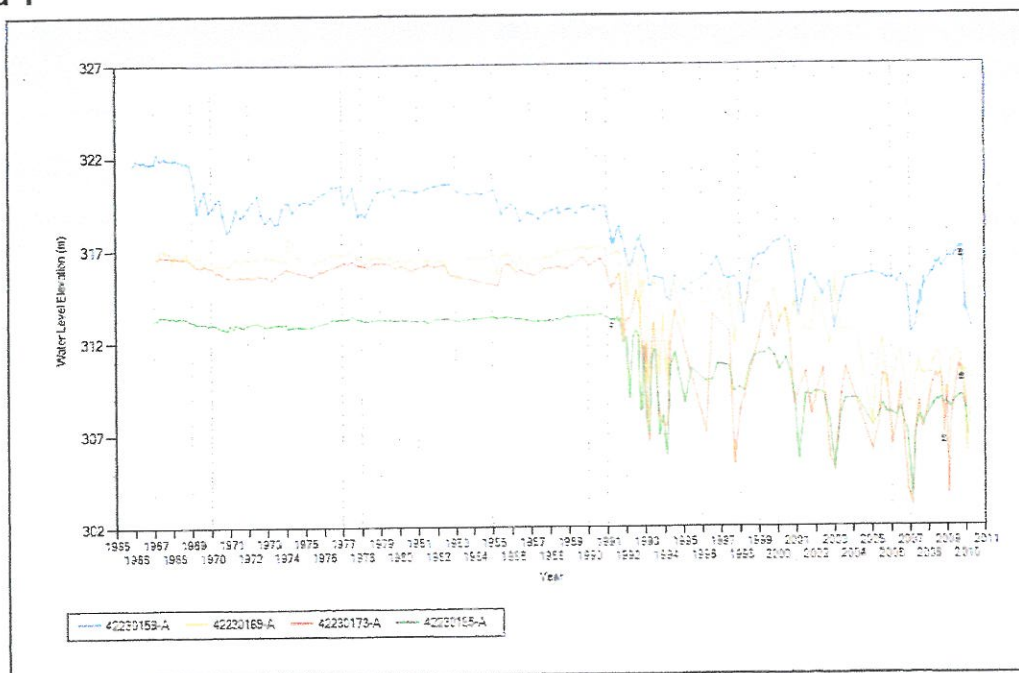
\*This information in the above table is subject to validation and these figures may change

The following pages show water level graphs for the CCAGMA in each of the eight subareas



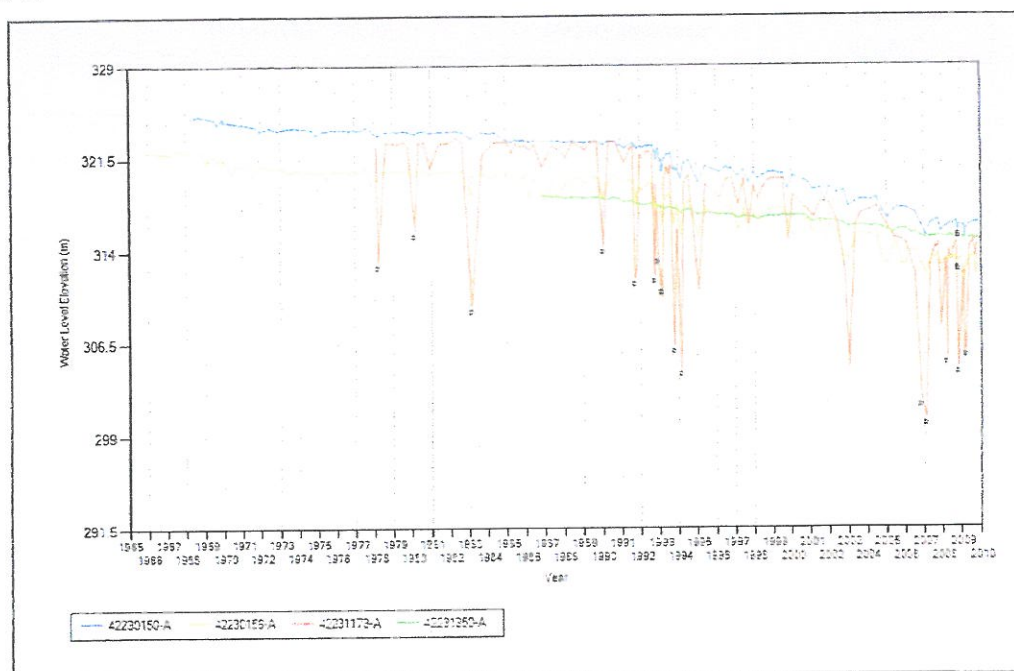
## Groundwater Levels

### Sub Area 1



- Actual use (1 July 09 – 12 Feb 10) is about 39.7 per cent of the announced entitlement for 09/10.
- Rises in groundwater levels would tend to be from regional recovery of pumping draw-down rather than recharge to the aquifer.

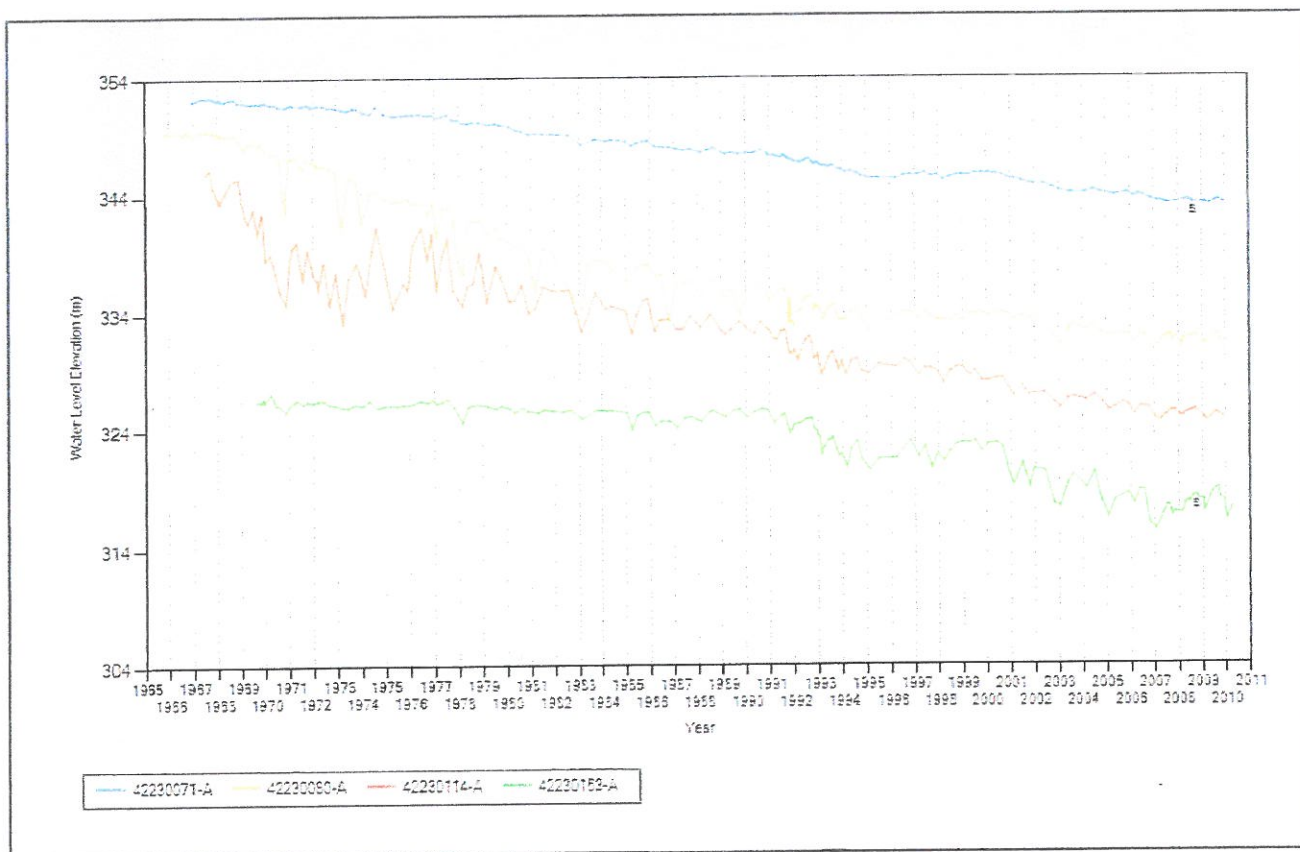
### Sub Area 2



- Actual use (1 July 09 – 12 Feb 10) is about 42.2 per cent of the announced entitlement for 09/10.

## Groundwater Levels

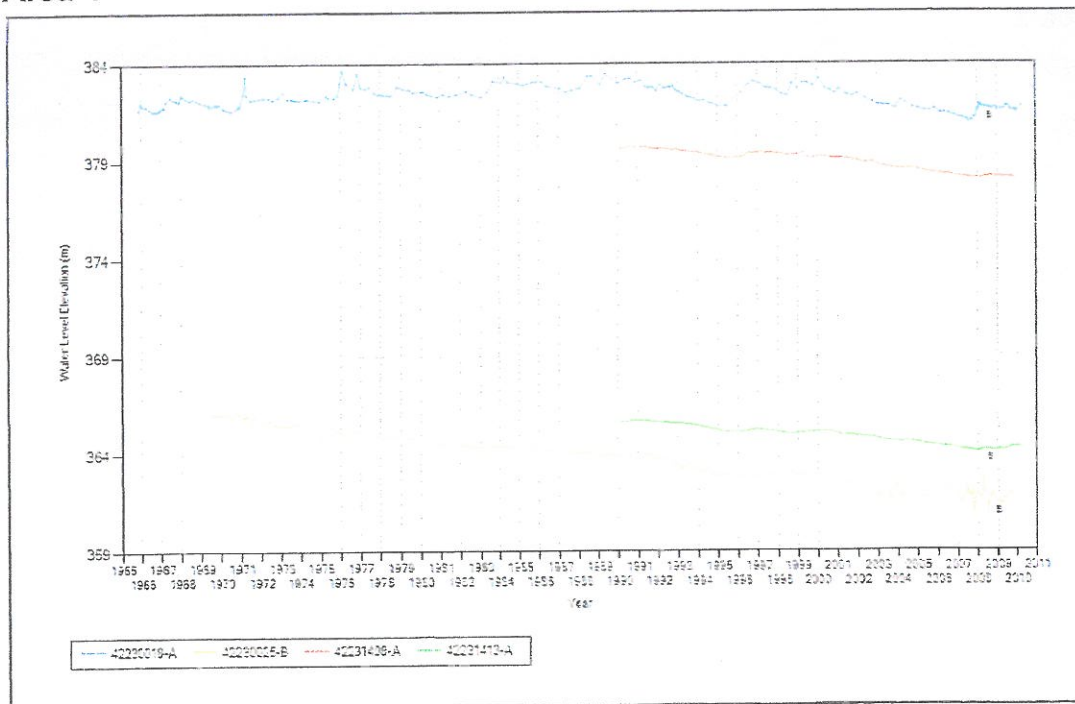
### Sub Area 3



- Actual use (1 July 09 – 12 Feb 10) is about 64.9 per cent of the announced entitlement for 09-10.
- 42230080A—Sub Area 3a
- 42230071A—Sub Area 3b
- 42230114A—Sub Area 3c
- 42230153A—Sub Area 3d

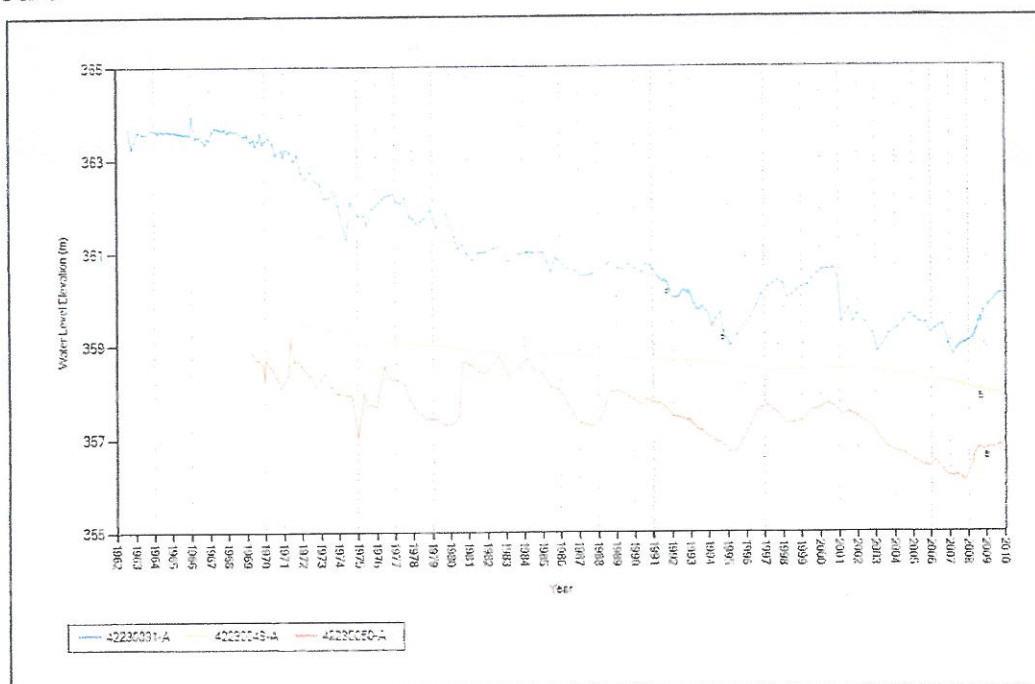


## Groundwater Levels — Sub Area 4

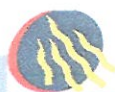


- Actual use (1 July 09 – 12 Feb 10) is about 42.1 per cent of the announced entitlement for 09/10.

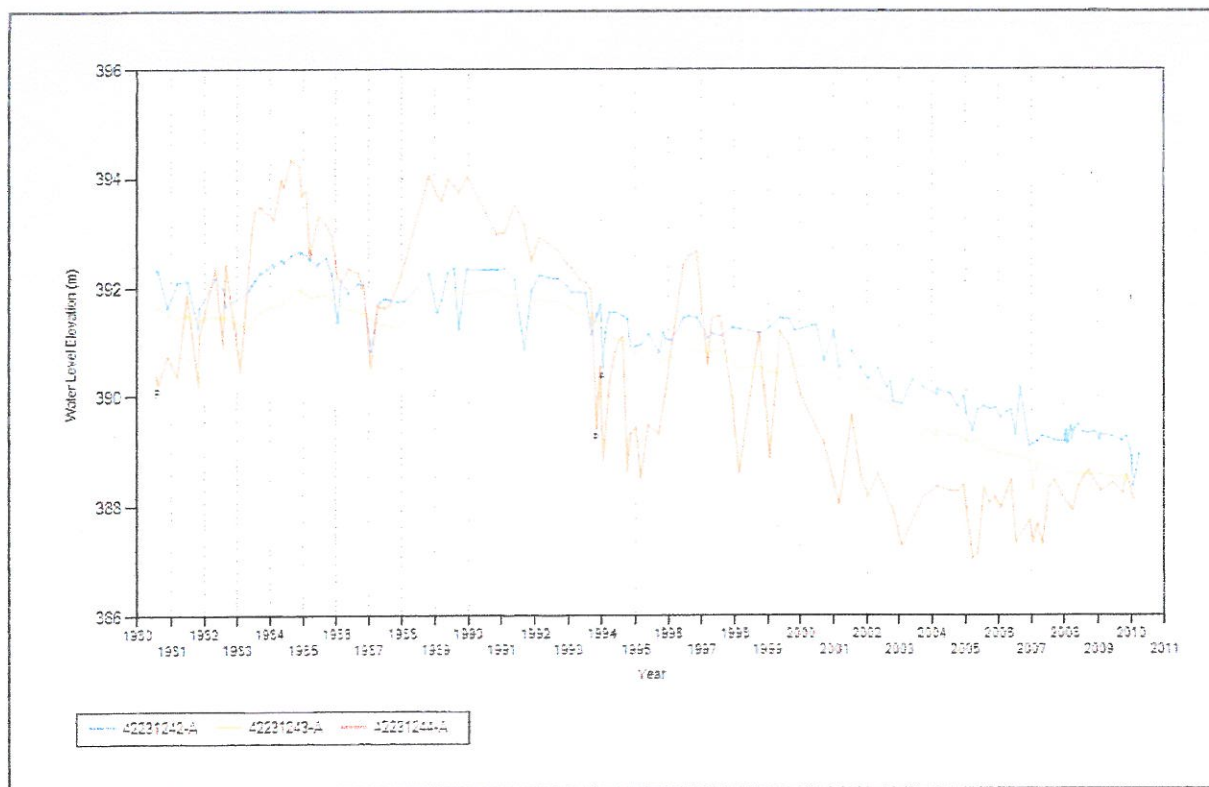
## Sub Area 5



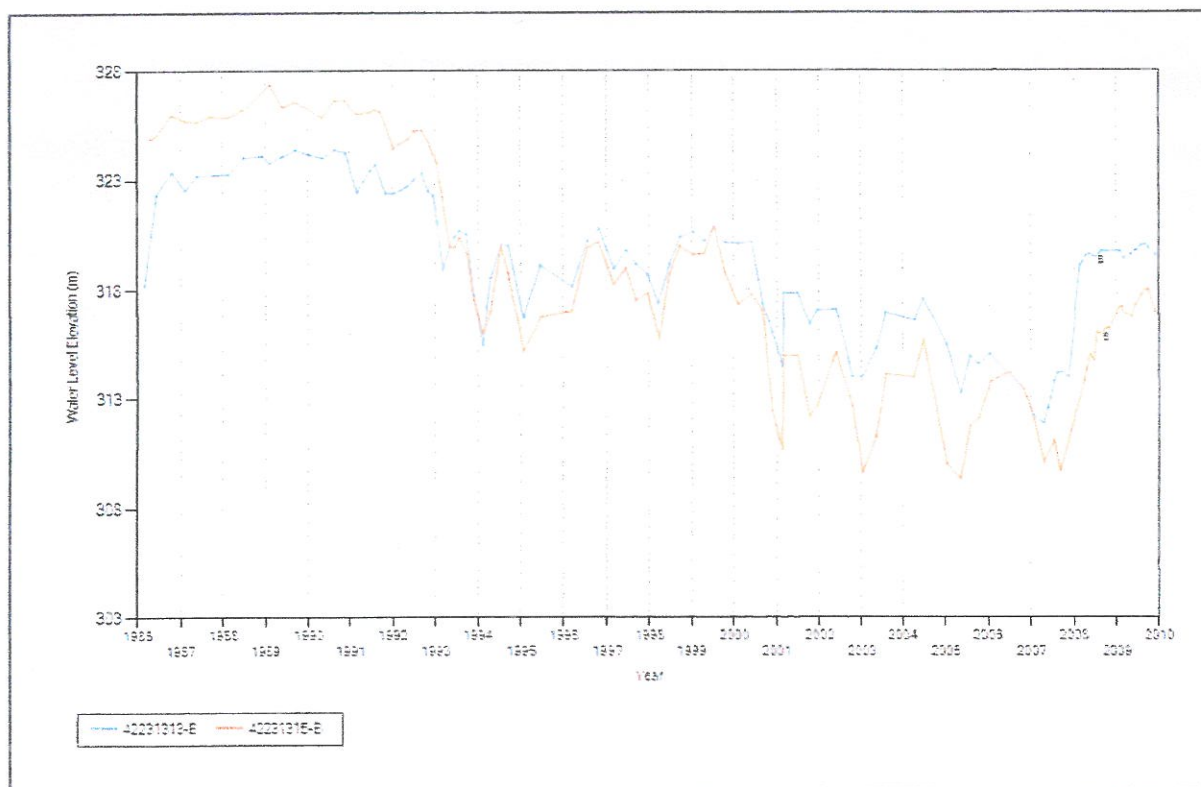
- Actual use (1 July 09 – 12 Feb 10) is about 28.9 per cent of the announced entitlement for 09/10.



## Groundwater Levels — Sub Area 6 (New)



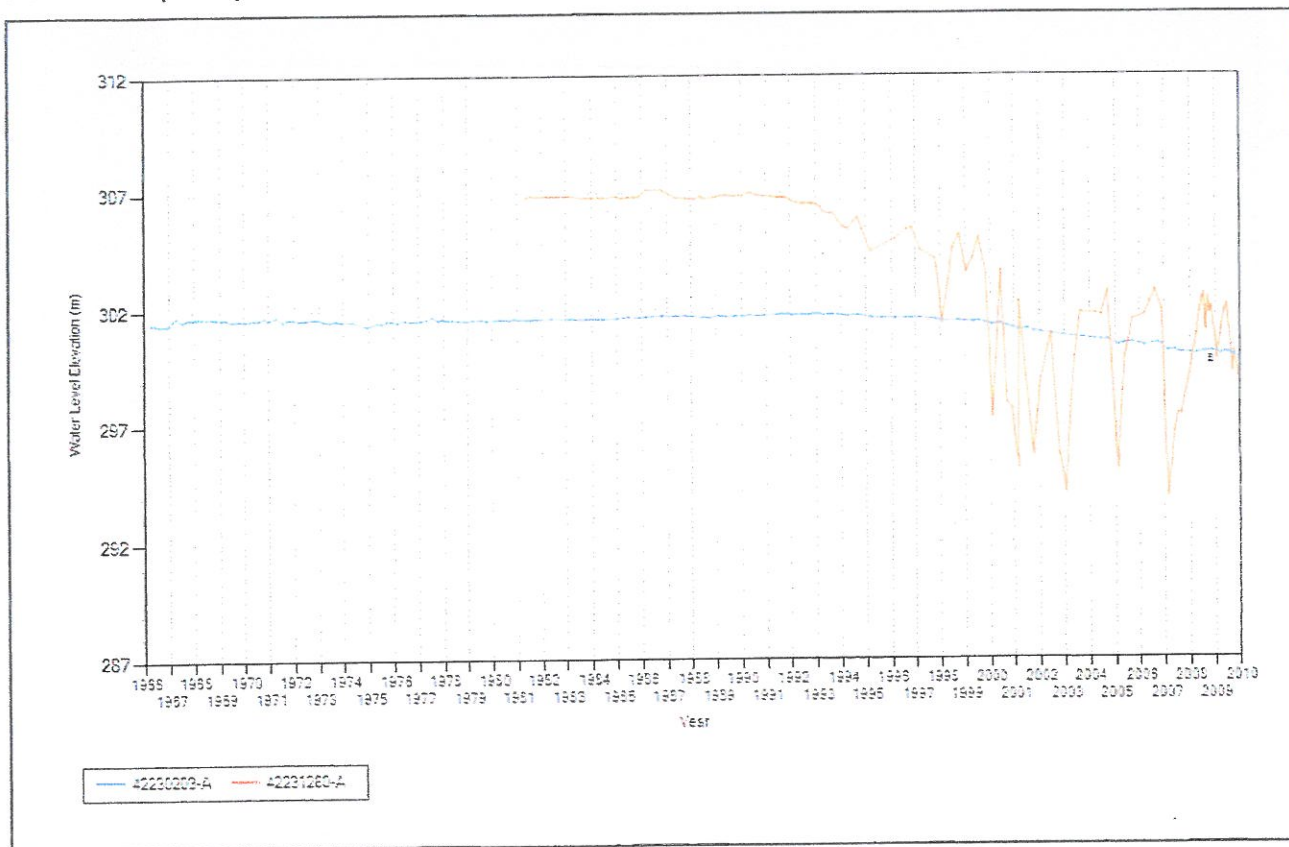
## Sub Area 7 (New)





## Groundwater Levels —

### Sub Area 8 (New)



## Changes to Water Sharing Rules for 2010-2011 water year

As part of the suite of management arrangements proposed in 2008, changes are occurring to the Water Sharing Rules. The following will apply for the 2010-2011 water year:

- Forward Draw will no longer be available
- Seasonal Water Assignments (SWA) will be restricted to a maximum of 100ML across all subareas

These rules will apply to all subareas within the new CCAGMA. Further clarification on these and other water sharing rules can be found in the water sharing rules document.

## Future Management Directions and Planning

The CCAGMA is part of a larger, continuous and connected alluvial groundwater system underlying the trunk floodplain from near Pratten downstream to Warra and extending north to Jandowae. Following an announcement by the Minister in September 2009 and the release of the Notice of Intent to prepare a water resource plan, the planning process to amend the *Water Resource (Condamine Balonne) Plan 2004* to include the alluvial resources of the Central Condamine Alluvium area is well underway. A draft WRP is anticipated in the latter part of this year. The current WRP covers surface water resources at this time, this amendment will mean the inclusion of groundwater from the Central Condamine Alluvium into the existing plan.

During the 2009-10 water year, the Department engaged with the Community Reference Panel (CRP), formed as a part of the WRP amendment process to represent the groundwater user community across the CCAGMA. This process has recently been finalised with the last CRP in Mid May. A number of key issues regarding the future management of the CCAGMA have been discussed, the draft WRP will now be developed and when released in the latter part of this year, users will have an opportunity to provide comment towards the draft WRP for the Central Condamine Alluvium. Aside from this process, the following key management and groundwater use issues were discussed:

### 1. New Groundwater Management Area Subareas

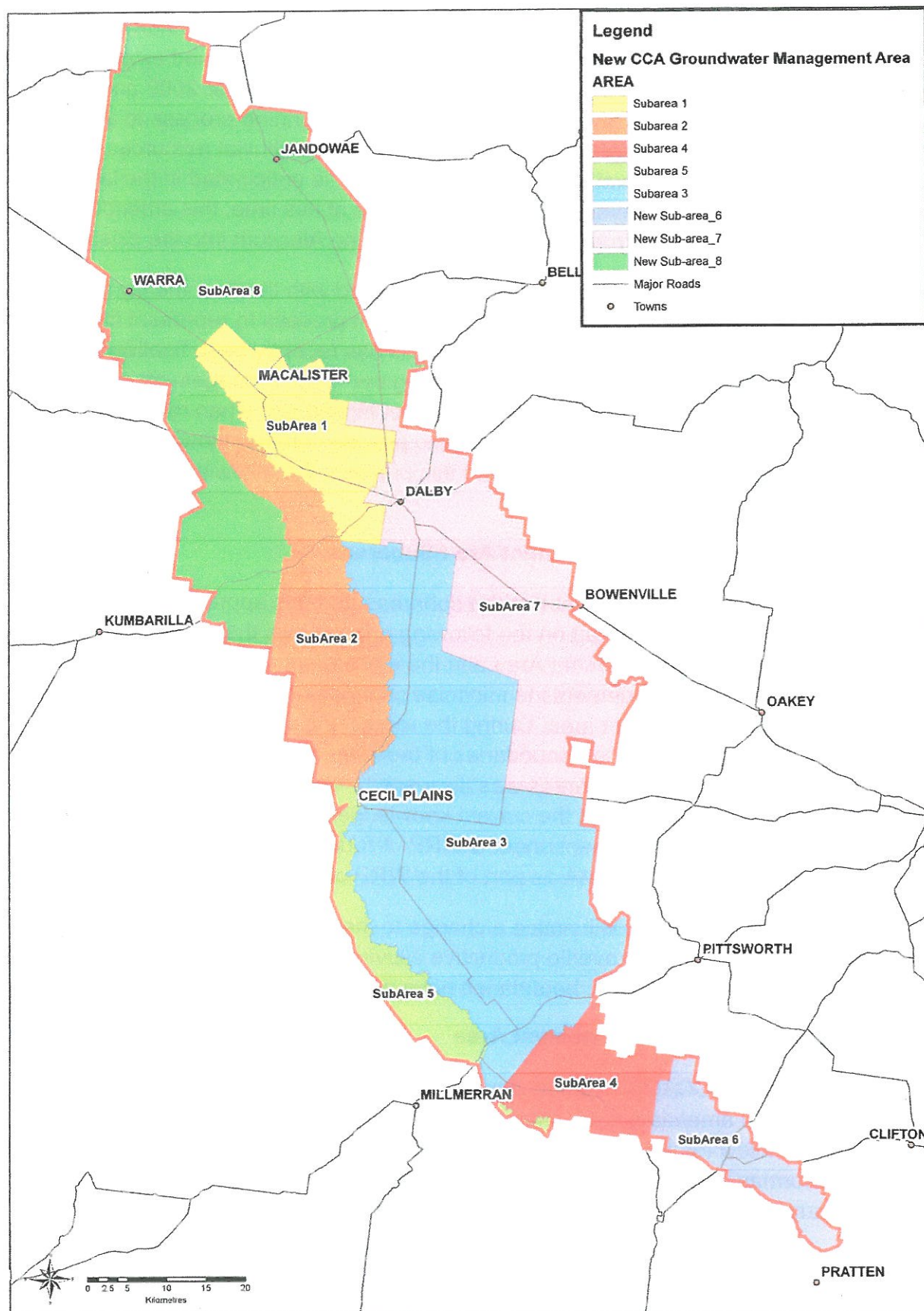
The new CCAGMA comprises eight **interim** subareas and this approach will be adopted for the 2010 -11 water year. The map on the following page shows the new Central Condamine Alluvium Groundwater Management Area and the eight interim subareas. These interim subareas are transitional arrangements to minimise changes during the implementation of the new groundwater management area. During the recent engagement process with the CRP, a proposal for the re-drawing of the boundaries of the interim subareas to provide simpler, more resource based approach to subareas was discussed. It was agreed that the interim subareas need amendment to better reflect the current knowledge of the performance of the groundwater system and future management under a WRP. A four subarea proposal will be further discussed with users in the CCAGMA as part of the WRP consultation process.

Users in subareas 2, 4 and 5 will notice a change to the western boundary. A large area has been excluded as it does not overlie productive alluvium and is not part of the Central Condamine Alluvium area. The internal boundaries have not changed.

### 2. New Groundwater Management Area

Metering across the CCAGMA has now been finalised, the new groundwater management area created, and amended water sharing rules approved. The creation of this new management area will allow for cohesive system wide decisions regarding entitlement, water use and system performance to inform the planning process. This is an important step for future management arrangements including trading under the proposed WRP planning process.



**New Central Condamine Alluvium Groundwater Management Area (CCAGMA)**

## Future Announced Entitlement arrangements

Future announced entitlements will be based on the new Central Condamine Alluvium Groundwater Management Area. Any future changes to AE will be an outcome of the planning process associated with the amendment to the *Water Resource (Condamine Balonne) Plan 2004*. The user community will be informed should any changes to these subareas occur.

## Departmental Activities And Priorities (2010/11)

The department recognises the challenges in managing one of the States largest and most heavily developed aquifer systems against a background of water use that is well in excess of sustainable levels. Departmental priorities during 2010/11 and over the near future are a range of core activities to support an improved understanding of the system to inform proposed management arrangements and decision making including:-

- Release of the draft WRP and proposed finalisation of the amendment to include the alluvium of the Central Condamine in the *Water Resource (Condamine Balonne) Plan 2004*
- Commencement of the Resource Operations Plan (ROP) for the Central Condamine Alluvium
- Continual assessment of system recharge, yield and water balance including the development of the system model;
- A water quality condition and trend assessment, and,
- Comprehensive community and user consultation.

## Further Information/Contacts

Should you require any further information please contact Senior Natural Resource Officer Orren Farrington or Senior Planning Officer (Groundwater) Adrian McKay at the Toowoomba office on 4688 1299.





**Schedule**  
**Fixed Charge Component Yearly payment options and costs**  
(excludes annual variable charge)

Repayment term:										
Works Number	Meter Size (mm)	Lump Sum Payment (\$)	Annual cost over 2 years (\$)	Annual cost over 3 years (\$)	Annual cost over 4 years (\$)	Annual cost over 5 years (\$)	Annual cost over 10 years (\$)	Annual cost over 15 years (\$)	Annual cost over 20 years (\$)	Annual cost over 25 years (\$)
37714R	100 mm	1748.30	964.80	662.90	512.30	422.10	243.50	185.90	158.40	142.90
Total Cost		1748.30	1929.60	1988.70	2049.20	2110.50	2435.00	2788.50	3168.00	3572.50
43598R	100 mm	1748.30	964.80	662.90	512.30	422.10	243.50	185.90	158.40	142.90
Total Cost		1748.30	1929.60	1988.70	2049.20	2110.50	2435.00	2788.50	3168.00	3572.50
107116R	150 mm	1928.55	1064.30	731.30	565.10	465.70	268.60	205.00	174.70	157.60
Total Cost		1928.55	2128.60	2193.90	2260.40	2328.50	2686.00	3075.00	3494.00	3940.00
87004R	150 mm	1928.55	1064.30	731.30	565.10	465.70	268.60	205.00	174.70	157.60
Total Cost		1928.55	2128.60	2193.90	2260.40	2328.50	2686.00	3075.00	3494.00	3940.00
52891R	150 mm	1928.55	1064.30	731.30	565.10	465.70	268.60	205.00	174.70	157.60
Total Cost		1928.55	2128.60	2193.90	2260.40	2328.50	2686.00	3075.00	3494.00	3940.00





## Public Notice

### *Water Regulation 2002 (Section 66)*

### **Announced Entitlement 2010/2011**

### **Central Condamine Alluvium Groundwater Water Management Area**

1. This notice is published by the chief executive pursuant to section 66 of the *Water Regulation 2002* ("the Regulation") for the Central Condamine Alluvium groundwater management area ("the area").
2. The chief executive has decided the announced entitlement for water licences taking subartesian water in the area for the water year 1 July 2010 to 30 June 2011 (the "water year") in accordance with the water sharing rules for the area mentioned in schedule 10 of the Regulation.
3. The **announced entitlement** for each part of the area for the water year is as follows:
  - a. sub-area 1 - 70% of the nominal entitlement on each water licence.
  - b. sub-area 2 - 70% of the nominal entitlement on each water licence.
  - c. sub-area 3 (divisions a, b, c & d) - 50% of the nominal entitlement on each water licence.
  - d. sub-area 4 - 70% of the nominal entitlement on each water licence.
  - e. sub-area 5 - 70% of the nominal entitlement on each water licence.
  - f. sub-area 6 - 70% of the nominal entitlement on each water licence.
  - g. sub-area 7 - 70% of the nominal entitlement on each water licence.
  - h. sub-area 8 - 70% of the nominal entitlement on each water licence.
4. The **annual entitlement** that may be taken for the water year under a water licence in the area is the nominal entitlement for the water licence multiplied by the announced entitlement mentioned in clause 3 and adjusted for any carry over or forward draw that applies to the licence.
5. The taking of water under a water licence in excess of the annual entitlement mentioned in clause 4 is an offence under section 808(1) of the Water Act 2000 and renders a person liable for a maximum penalty of 1665 penalty units (\$166,500).

Enquiries concerning this notice may be made to:

Steve Williams

PO Box 318, 203 Tor St Toowoomba QLD

(07) 46881299

Ross Krebs

Regional Manager, Water Services, South West Region

Delegate of the chief executive

Department of Environment and Resource Management







Ref PEN100449509

Mr Graham Clapham

Department of  
Environment and Resource  
Management

Dear Sir

**Re: Application for review of original decisions relating to environmental authority PEN100449509**

I refer to the applications lodged by Mr Graham Clapham and Mr Stuart Armitage on 13 April 2011 for review of the decisions to (1) grant the environmental authority PEN100449509 and (2) impose conditions on an environmental authority other than a condition that is the same as a condition agreed to or requested by the applicant of the environmental authority.

The holders of the above mentioned environmental authority are Arrow Energy Pty Ltd, Arrow CSG (Australia), Australian CBM Pt Ltd, Arrow (Tipton) Pty Ltd, Arrow (Tipton Two) Pty Ltd, Arrow (Daandine) Pty Ltd and CS Energy Limited. From this point on, the holders of the environmental authority will be collectively referred to as Arrow.

**Administrative Processes**

On 17 December 2010, the administering authority made a decision under section 310M to grant the application for environmental authority (chapter 5A activities) PEN100449509. This is an original decision listed in Schedule 2 of the *Environmental Protection Act 1994* (EP Act).

During the assessment of the application Arrow and the administering authority did not reach agreement on all of the conditions of the granted environmental authority.

The administering gave notice to both the applicant and all submitters on 17 December 2010 that a decision had been made to grant the environmental authority and that the environmental authority would be issued once Arrow had paid the required financial assurance.

On 15 March 2011, the administering authority issued the environmental authority PEN100449509 to Arrow following receipt of suitable financial assurance from Arrow and as provided for under s310P.

Both Arrow and all of the submitters were notified by separate letters dated 16 March 2011 that the environmental authority (with conditions) had been issued and a copy of the environmental authority was attached to the letter.



- The information contained in the Request for Statutory Approval that the decision to grant PEN100449509 was based upon; and
- The standard criteria as set out under the *Environmental Protection Act 1994*.

### **Part A – Internal Review of an Original Decision (s310M)**

**Decision:** Confirm the original decision to grant the application for an environmental authority and vary the conditions.

#### **Reasons:**

#### **Environmental Management Plan**

The application and EM Plan for the Dalby Expansion Project was publically notified by Arrow on 8 January 2010 as required under s310G of the EP Act. As part of the assessment process the administering authority requested additional information from Arrow mainly in relation to noise and the proposed release to Wilkie Creek. The Dalby Expansion Project has multiple resource authorities covering large spatial areas totalling approximately 1270 km<sup>2</sup> which comprises a range of landscapes, communities and environmental values. I believe that, overall, given the nature and size of the development area, there was sufficient information to make the assessment decision and that the environmental authority conditions provide the necessary constraints and desired performance outcomes to ensure the environmental values are protected for those matters that fall within the jurisdiction of, and in accordance with the object of the EP Act.

#### **Groundwater**

The rights for extraction of groundwater for petroleum activities are provided to petroleum tenure holders under s 185 of the *Petroleum and Gas (Production and Safety) Act 2004* (Petroleum and Gas Act) and under s 86 of the *Petroleum Act 1923*. The issue of the take of groundwater resources is not regulated under the conditions of an environmental authority, which is issued under the *Environmental Protection Act 1994* (EP Act). To impose a condition of this type would be inconsistent with legislation which is later in time and specifically allows the petroleum tenure holder to take or interfere with underground water.

The Queensland Government has adopted an adaptive management framework to manage the unknown and unintended impacts of the coal seam gas (CSG) industry on groundwater resources and the environment as a whole. The underground water rights provided to petroleum tenure holders are accompanied by obligations to manage their impacts on water supply bores and springs from the extraction of groundwater for authorised activities. The *Water Act 2000* (Water Act) sets out the following legislative framework:

- requires petroleum tenure holders to provide baseline assessment plans and conduct baseline and bore assessments
- requires petroleum tenure holders to proactively enter into 'make good' agreements with bore owners before impacts occur, ensuring extraction of underground water is appropriately managed
- provides a dispute resolution process for the negotiation of 'make good' agreements
- manages cumulative impacts on underground water, such as the declaration of cumulative management areas



## PROPOSED Approval

To develop, construct, operate and decommission the Coal Seam Gas Field component of the Queensland Curtis LNG Project, including expansion of the QGC operated coal seam gas fields in the Surat Basin as described in referral EPBC 2008/4398.

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

person to whom the approval is granted	Queensland Gas Company Ltd (QGC) and BG International Limited (BG)
proponent's ABN (if applicable)	ABN: 089 642 553 (QGC) ABN: 72 114 818 825 (BG)
proposed action	<p>To develop, construct, operate and decommission the coal seam gas field component of the Queensland Curtis LNG Project, including expansion of the QGC operated coal seam gas fields in the Surat Basin, to supply gas for the Queensland Curtis LNG Project to the proposed Queensland Curtis LNG Plant located on Curtis Island:</p> <ul style="list-style-type: none"><li>• as described in the proponent's referral received under the EPBC Act on 18 August 2008; and</li><li>• as described in the proponent's Environmental Impact Statement and Supplementary Environmental Impact Statement.</li></ul>
proposed decision	<p>To approve the proposed action for each of the following controlling provisions:</p> <ul style="list-style-type: none"><li>• Listed threatened species and communities (sections 18 and 18A, EPBC Act)</li><li>• Listed migratory species (sections 20 and 20A, EPBC Act)</li></ul>
conditions of approval	This approval is subject to the conditions specified below.
expiry date of approval	This approval has effect until 31 October 2060.
name and position	The Hon Tony Burke MP Minister for Sustainability, Environment, Water, Population and Communities
signature	Not for signature (draft only)
date of decision	No date (draft only)



## ***Coal Seam Gas Water Monitoring and Management Plan***

47. The proponent must, within 6 months from the date of the approval, or such other time as agreed in writing by the Minister, develop and submit for the approval of the Minister a Coal Seam Gas Water Monitoring and Management Plan that addresses and includes at least:

### *CSG water reinjection and use*

- a. to avoid or minimise risks of direct or indirect impacts on MNES, the proponent must provide a plan for re-injection of treated CSG water back into appropriate permeable aquifers to re-establish pre-development pressure levels and water qualities, in conjunction with appropriate measures to forecast and proactively manage any short-term impacts;

Note: The design of these reinjection activities must be informed by an approved regional-scale groundwater model and an approved hydrochemical model.

- b. to avoid or minimise risks of direct or indirect impacts on MNES, all CSG water to be re-injected must be treated to equal to, or better than, the water quality of the receiving groundwater system and be reinjected into Bowen or Surat aquifers to assist in restoring pressure and / or potentiometric heads within affected aquifers;
- c. where the proponent can demonstrate that a particular coal seam aquifer from which CSG water is being extracted is not hydraulically connected to other aquifers, then the plan must specify the details of that particular coal seam aquifer and be accompanied by the evidence in support of the proponent's conclusion that the aquifer is not hydraulically connected;
- d. if the Minister is satisfied that a coal seam aquifer from which CSG water is being extracted is hydraulically not connected to other aquifers, the Minister may approve a plan that provides for CSG water from that coal seam aquifer to be disposed of other than by re-injection;
- e. the proponent may only have, own, hold, take, or otherwise utilise sufficient CSG water as required to undertake the approved activities within the approved project area;
- f. the proponent may not conduct activities that result in a loss of surface water or groundwater from the Condamine Alluvium;

### *Groundwater monitoring and management*

- g. a water quality and quantity groundwater monitoring plan to monitor the aquifers underlying the project area using a statistically and hydrogeologically valid, best practice bore monitoring network across the project area and the cumulative projected area of hydraulic impact;
- h. the monitoring plan must address at least:
- i. the aquifers to be monitored and the rationale for selection;
  - ii. the number and locations of monitoring bores and their flow, pressure, head, and water quality characteristics;
  - iii. the frequency of the monitoring and rationale for the frequency;
  - iv. baseline data for each monitoring site for comparison of monitoring results over the life of the project;
  - v. the approach to be taken to analyse the results including the methods to determine trends to indicate potential impacts;

Our ref: 10/47529

18 OCT 2010

The Honourable Tony Burke MP  
Minister for Sustainability, Environment, Water,  
Population and Communities  
PO Box 6022  
House of Representatives  
Parliament House  
Canberra ACT 2600

**Confidential**

Dear Minister

I refer to your letter dated 1 October 2010 to the Honourable Stephen Robertson MP, Minister for Natural Resources, Mines and Energy and Minister for Trade, advising of your proposed decisions to approve coal seam gas (CSG) extraction, associated pipelines and liquefied natural gas (LNG) facilities on Curtis Island near Gladstone.

The Queensland Government appreciates the advance notice of your proposed decision. To support the finalisation of your decision, I wanted to provide supporting information in relation to two key matters in relation to my conditions under the *State Development and Public Works Organisation Act 1971*, being:

- restrictions on the management of coal seam water
- environmental offsets for World Heritage values on Curtis Island.

#### *Coal Seam Gas Water Management*

I note that the proposed EPBC approval conditions include requirements that:

- the primary mechanism for managing coal seam water must be re-injection to other aquifers in the region
- any disposal of the coal seam water other than by re-injection can only be allowed where the proponent demonstrates to the Minister's satisfaction that the coal seam gas aquifer is not hydraulically connected to other aquifers
- the proponent must not conduct any activities that result in a loss of surface or ground water from the Condamine alluvium.

Executive Building  
100 George Street  
PO Box 15009  
City East Queensland 4002  
Telephone +61 7 3227 8548  
Facsimile +61 7 3224 4683  
Website [www.dip.qld.gov.au](http://www.dip.qld.gov.au)



It is recognised there are several advantages in pursuing re-injection as the primary means of managing coal seam water. These advantages include: mitigating adverse impacts on aquifers and reducing potential 'make good' requirements for production bores and springs by re-establishing groundwater levels; reducing storage pond requirements and the associated surface impact; and contributing to a sustainable approach through storing water for future use.

The major issue, however, is that specifying re-injection of coal seam water as the primary management mechanism is overly restrictive and may not be technically feasible or appropriate in all situations. In certain locations, re-injection could lead to unintended consequences and a more flexible approach, as adopted by the Queensland Government, is recommended.

In October 2008, the Queensland Government released the *Queensland Coal Seam Gas Water Management Policy*. The policy included, among other policy principles, the intention for a CSG Water Management Plan (CWMP) to be incorporated into the Environmental Management Plan (EMP) required for a Level 1 environmental authority application.

The content requirements for a CWMP have been included in the Department of Environment and Resource Management (DERM) guideline: *Preparing an environmental management plan (EM Plan) for Coal Seam Gas (CSG) activities*. The guideline sets out preferred and non-preferred management options for CSG water. These are:

Category 1 – preferred management options include:

- injection where detrimental impact unlikely
- untreated use where detrimental impact unlikely
- treatment to an agreed standard for agricultural, industrial and potable uses.

Category 2 – non-preferred management options include:

- disposal via evaporation dams
- disposal via injection where detrimental impact is likely
- disposal to surface waters
- disposal to land.

The CSG water management options in each category are currently not in any preferred order; however, I note that the DERM guideline is to be amended to specify re-injection as a first priority, subject to technical and economic feasibility. Industry has been consulted on these amendments and your officers have been appraised of this approach.

Finally, I note the specific condition that "...the proponent must not conduct any activities that result in a loss of surface or ground water from the Condamine alluvium." While the importance of managing risk to the Condamine Alluvium is acknowledged, the condition as currently framed may be an unworkable requirement with measurement difficulty.

### *Ground water management*

Amendments to the Queensland Government's regulatory framework for managing groundwater impacts are currently being prepared. It is intended that the provisions of the *Water Act 2000* will be expanded to provide for the Queensland Water Commission (QWC) to manage groundwater monitoring and develop regional groundwater models for declared cumulative management areas (where water level impacts of CSG producers overlap). It is anticipated that QWC's regional groundwater models will incorporate all the gas fields located within the Surat Basin and will be used to predict collective impacts of CSG water extraction on water levels to assist in the design of the future water level monitoring network and management responses.

In the proposed regulatory framework under the *Water Act 2000* for managing groundwater impacts, CSG producers will have an obligation to undertake an assessment of all springs within an area likely to have a drawdown of 0.2 metres or more, and accordingly propose and implement a strategy to minimise or mitigate impacts on these springs. The new regulatory framework provides for a risk-based adaptive management approach to spring impact management.

The Queensland Government's proposed new arrangements to protect groundwater resources in CSG extraction areas are currently out for consultation with stakeholders and industry. It is noted a copy of the exposure draft has been provided to your Department.

### *Scientific panel of experts*

It is also worth noting that the Queensland Government is also currently preparing to establish a panel of experts to provide advice to both the QWC and DERM on a range of CSG issues including:

- supporting DERM in its role in assessing applications and conditioning environmental authorities in relation to the disposal of CSG water
- supporting QWC in its role associated with the management of cumulative impacts from CSG water extraction in cumulative management areas.

This panel is expected to be operational by December this year.

### *Environmental Offsets for World Heritage Values on Curtis Island*

I note the proposed condition and offset ratio associated with the LNG facility leases on Curtis Island consists of land that contains similar World Heritage values. This requirement generates significant complexities which would impact on its practical application and enforcement.

The LNG proponents are contractually obliged to contribute to rehabilitation and management of the (approximately) 4590 hectare Environmental Management Precinct of the Gladstone State Development Area on Curtis Island. This precinct has been established in a similar way to a national park in that it is approved by the Governor in Council of Queensland, and can only be amended or removed with approval from the Governor in Council.




The Queensland Government has also commenced consultation to change the boundaries of the Gladstone State Development Area, to, amongst other things, preserve more of the environment. This boundary adjustment proposes to protect an additional 274 hectares of environmentally sensitive land in two separate Environmental Management Precincts. Under the proposal, the 189 hectare Kangaroo Island would be wholly redesignated as an Environmental Management Precinct and an extra 85 hectares will be added to the existing Environmental Management Precinct on Curtis Island.

I am advised the Queensland Government is fully prepared to consider raising the conservation status of appropriate land within the Environmental Management Precinct on Curtis Island (or other land as secured by proponents). However, the Commonwealth Government's requirement for this land to be established as national park would appear to be a condition beyond the power of the proponent to control. Additionally, while a permanent form of conservation tenure can be established, you will appreciate that the Queensland Government must reflect the actual environmental values in a declaration under the *Nature Conservation Act 1992* (Qld). Additional flexibility could be provided by changing the required tenure to "permanent conservation status under the *Nature Conservation Act 1992* (Qld)", or similar.

I trust this information is of assistance. If you require any further information, please contact Dr Geoff Dickie, Deputy Coordinator-General, Department of Infrastructure and Planning, on (07) 3224 6944 who will be pleased to assist.

Yours sincerely



Graeme Newton  
Coordinator-General  
Director-General



## **AgForce Queensland Industrial Union of Employers**

ABN 21 241 679 171

First Floor, 183 North Quay, Brisbane, Qld, 4000  
PO Box 13186, George St Brisbane Qld 4003

Ph: (07) 3236 3100

Fax: (07) 3236 3077

Email: [agforce@agforceqld.org.au](mailto:agforce@agforceqld.org.au)

Web: [www.agforceqld.org.au](http://www.agforceqld.org.au)

### **COAL SEAM GAS POLICY**

AgForce does not oppose mining and resource development but our concerns are that it must be carried out in an environmentally sustainable fashion.

Accordingly, AgForce seeks from the Queensland Government a *moratorium* on mining and resource development and exploration until the ramifications to not just the agricultural production system on that land is taken into account, but also the environment in which it is situated.

More specifically, AgForce believes that the initial approval phase for any Coal Seam Gas (CSG) development should be contingent on meeting the following three criteria:

1. No damage should occur to underground water aquifers and the protection of existing water supply (quality and quantity);
2. The salt and waste products produced as part of CSG activities must be disposed of within an appropriate timeframe and with zero impacts on farms or the environment. A comprehensive plan to manage this waste should be a requirement of the initial project approval; and
3. Gas production on farm should generate value to that farm through producing income for the landholder sufficient to offset land devaluation and production impacts.

#### ***Recommendations:***

1. Greater Federal oversight role in relation to the long-term environmental protection of the Great Artesian Basin underground water resource.
2. Recognition of the GAB as a matter of national environmental significance.
3. Undertake cumulative studies at a Federal level to determine the sustainable development level for this industry in regards to the environments that they are operational within.

*Explanation: With over 80 percent of the state now under exploration permits, there is a continuing need for AgForce to be informed and involved at the interface between Queensland's two great primary industries of mining and agriculture.*

*There are many positives for regional communities when resource-rich deposits are discovered and developed, but it is AgForce's responsibility to balance that with policy discussions and decisions that are in the best interests of agriculture, environment and food production in future.*