

The Basin Sustainability Alliance’s Submission on the review of the Great Artesian Basin Water Resource Plan.

1. What is the Basin Sustainability Alliance :

The Basin Sustainability Alliance (BSA) was established in 2010, to represent the interests and concerns of landholders and rural communities who were being subjected to the unprecedented scale and pace of Coal Seam Gas development in South-West Queensland.

BSA’s charter is to advocate for the sustainable use and management of land and water resources in the Condamine Basin for future generations – in particular highlighting the risk that the Coal Seam Gas development poses to the Great Artesian Basin.

The BSA which has over 100 members, is comprised of farmers, graziers, business people and townspeople in south- western Queensland's Condamine Basin, as well as scientists who have a strong interest in supporting the BSA’s “key focus”.

The BSA is grateful for the opportunity to comment on this review of the Great Artesian Basin (GAB) Water Resource Plan (WRP).

Our Submission addresses:

- General statements on issues of concern to the BSA on the management of the GAB.
- Comments on the specific matters raised in the Minister’s Statement of Reasons.
- Comments on matters to be considered in the development of the new WRP, and
- The context in which the WRP review is being undertaken.

2.General Statements on Issues that Concern the BSA on the Management of the GAB:

The farming and grazing properties, the commercial businesses and the rural townspeople who live in the Condamine Basin greatly depend on water from the GAB as their lifblood. Many of the Basin’s primary production stakeholders are totally dependent on their ability to access GAB water for their livestock, domestic and farm water supplies. Without access to GAB water, these communities and enterprises would no longer exist or be commercially viable. Hence it is vital that appropriate regulatory mechanisms are put in place and maintained to protect the health of the GAB and ensure its sustainability.

The GAB has never been under greater pressure that it is currently experiencing. The Queensland Government has authorised the Resources Sector to access both sub-artesian water connected to the GAB and GAB artesian water in its quest for coal seam gas extraction and the development of new mining projects.

The current regulatory regime of allowing petroleum tenure holders to extract unlimited volumes of associated and non-associated water as a consequence of their operations is a major concern to

the BSA's stakeholders. This is in direct conflict with the "new and evolving issues" identified on page 5 of the Minister's SOP which states:- "A new plan is needed to identify the best way to meet these new demands and to allow this future demand to be managed without impacting on existing users or the environment".

The BSA asserts that the Queensland Government has failed and continues to fail to appropriately regulate CSG, unconventional gas mining and conventional mining operations in Queensland. Instead, blinded by the expectations of capital investment, jobs creation and royalties for the Treasury coffers, successive Queensland Governments have amended legislation to facilitate development opportunities for the Resources sector at the expense of landholder's basic rights and long term cost to rural and regional communities as well as the environment.

3. BSA's Response to Specific Issues Raised in the Minister's Statement of Reasons:

3.1 The Plan Area and Aquifers for the New Plan:

The BSA notes that the current GAB – WRP has been based on 25 Management Areas and 95 Management Units within these Management Areas. The BSA is of the view that these Management Areas and Management Units have been effective in managing the water resources of the GAB and hence they should be retained in any new WRP.

In regard to the inclusion on additional aquifers in the new WRP, the BSA notes that the current plan manages 235 aquifers within the GAB, however it does not manage all aquifers that are hydrologically connected to the GAB. The SOP acknowledges that the current WRP manages the Clematis Sandstone beds in the upper aquifers of the Galilee Basin, but it does not manage the lower aquifers which contain the Colinlea or Betts Creek beds. It also acknowledges that the Winton Mackunda Aquifer and the Normanton Formation are also not managed by the current plan. While these aquifers are not within the geographical area of BSA's interest, the BSA takes the position that all aquifers that have a demonstrated connectivity to the GAB, must be included in the new Plan. The BSA also takes the view that the prospect of the lower Galilee Basin aquifers being managed through 4 different WRPs, as being overly complex and highly likely to be totally ineffective.

The BSA acknowledges that the Office of Groundwater Impact Assessment (OGIA) has made some significant progress in the development of a groundwater hydrology model for the Surat Basin CMA, however it also notes with some concern the lack of regional cumulative groundwater models for many of the significant groundwater areas across Queensland and urges that a "precautionary approach" must be taken to ensure the GAB is not compromised. In this regard, the BSA cites the substantial list of knowledge gaps and future work priorities that were identified in the IESC (June 2014) in its *Aquifer Connectivity within the Great Artesian Basin, and the Surat, Bowen and Galilee Basins* Report and urges the Queensland Government to give due consideration to these matters in the development of the new GAB WRP..

The BSA notes with some bemusement the reference to "whether changes to the Plan area or aquifers" would result in a reduction of "red tape" for water users and/or government. The prime focus of the GAB WRP review should be the transparent and effective long term sustainable management of the Basin's water resources and implementing a statutory framework that achieves this outcome – not the removal of provisions that "opens the gate" to the uncontrolled and unquantified take of water from the Basin.

3.2 Maintaining Flows to Valuable Cultural & Environmental Assets:

The BSA notes that in the current GAB WRP, **the granting of a water licence to take water in the plan area must be consistent with the provisions to protect the flow of water to springs and baseflows to watercourses**. The BSA strongly supports this provision being continued in the new Plan.

However, the BSA does not believe that the current spring protection rules adequately protect GAB fed springs. The BSA notes the predicted impacts of petroleum operations on the GAB springs vents and springs complexes in the Surat CMA – reference Surat UWIR 2012. The UWIR outlines that 71 springs complexes comprising of 330 individual springs vents have been identified in the Surat CMA. There are also 43 “watercourse springs” contributing to the baseflows of watercourses in the CMA. The predicted maximum impacts in the source aquifers of these springs is 1.3m with 5 spring sites predicted to be impacted > 0.2m in the long term. The BSA notes that petroleum tenure holders are required to assess mitigation options at these 5 sites and report these outcomes to the Queensland Government.

However, the BSA notes that the Surat UWIR is silent on the potential impacts of mining operations on GAB fed springs. In this regard, the BSA notes the recently approved Adani Mine in the Galilee Basin is predicted to have significant impacts on the local GAB springs and the baseflow of the Carmichael River.

The Doongmabulla and Mellaluka Springs complexes are predicted to experience significant drawdowns with the entire complexes, ceasing to flow and drying up. These springs support a large range of flora and fauna, some listed as threatened and vulnerable under EPBC & Nature Conservation Acts. They also have the highest conservation ranking under the GAB Springs National Recovery Plan. Another predicted outcome of the Adani Mine is the GAB fed baseflows in the Carmichael River are expected to reduce by 1000 cumecs/day – a 33% reduction of predevelopment flows.

The BSA have not been able to ascertain what potential impacts the Wandoan, Cameby Downs, Wilkie Creek or Kogan Creek coal mines might have on the GAB springs complexes in the Surat CMA. The EISs/SEISs for these mines are silent on these potential impacts and the BSA contends that they need to be established and considered in the development of the new GAB WRP.

BSA’s Comment: The predicted GAB spring impacts of the Adani Mine are quite alarming and will have a significant effect on the local ecology and ecological health of that part of the Galilee Basin. While it is understood that Adani will be required to do more work to identify all of the water sources for these springs and will also be required to implement a monitoring and reporting program on the Carmichael River riparian impacts, the issue still remains that the mine has received approval to proceed without full knowledge of or strategies in place to manage these impacts.

While the Queensland Government has stated in the GAB WRP it intends to protect the flows to GAB springs complexes – all indications are that this will not be enforced if the springs get in the way of a State Treasury royalty cheque.

The Adani Mine is just one example of the current policy settings of the Queensland Government and its lack of real “political will” for the protection of environmental and cultural assets. The New Hope Acland Stage III mine is another example of the impacts of mining operations on landholder’s

water supplies and ecological assets. The BSA contends that protection of GAB-fed springs means exactly that and if any springs are compromised by mining or petroleum & gas projects, then the proponent MUST be required to provide for offset arrangements, such as a significant financial contribution to the GABSI Program.

Where listed threatened species are concerned, it is the BSA's view that "offsets fail to protect those species identified under threat from the activity because *like cannot be replaced by like*". Extinction is not a reversible process; activities that lead to it are not only unacceptable but also completely undermine the State's and Australia's environmental protection laws and Australia's commitments under the Convention on Biological Diversity.

Given the changes to the *Water Act 2000* by the *WROLA Act 2014*, the BSA looks forward to engaging with DNR&M to better understand how the Department proposes to progress the "possibility of simplifying management rules while maintaining protection of existing users and the environment".

Futhermore, the Queensland Government undertook to update the UWIR every 3 years. The BSA understands that the next UWIR which is due in 2015 has been prepared and is awaiting release by the Queensland Government – current indications are that this will not occur until early 2016 and after the closing timeline for Submissions on the new GAB WRP. The BSA reserves the right to lodge a supplementary Submission on the new GAB WRP, if there is information presented or issues identified in the next UWIR that reflect on the requirement of additional strategies for the sustainable management of the GAB.

3.3 Matters to be considered in the development of the new WRP:

The BSA notes the SOP's reference to "*Possible further pressure decline due to uncontrolled bores and bore drains and the corresponding impact on water availability*" and recommends that consideration also be given to pressure increases and corresponding increases in flows from those remaining uncontrolled bores. For this reason of localised pressure increases, the WRA recommends that extinct GAB springs – and old GAB bores that have ceased to flow – should remain "in scope" in the new WRP.

The BSA believes water quality is also an important issue and relevant information should inform the development of the new WRP. We note the recent release of GAB unallocated water and urge extreme caution in advocating the use of GAB water for irrigation due to water quality issues. It is our understanding there are few areas within the GAB footprint that are blessed with soils suitable for irrigation and the application of poor quality GAB water on these soils is likely to degrade them. If the Queensland Government still intends to proceed with a policy setting of allowing GAB water to be used for irrigation purposes, it should be contingent on the water quality of the GAB water to be used, being suitable for irrigation use.

3.4 Water users' security of access to water:

The BSA notes two of **the desired outcomes of the current GAB WRP** are to:- a)" provide for the continued use of all water entitlements and other authorisations to take or interfere with water" and b) "to ensure a reliable supply of water from the plan area". The current GAB WRP utilises Section 10 **which prohibits a decision from being made about the allocation or management of water which increases the amount of water that can be taken from within the Plan area** as one strategy to deliver these desired outcomes.

The SOP refers to a number of exemptions to this Section 10 provision. The current list of exemptions includes; water permits, stock & domestic use, stock intensive use (for feedlots up to 49 adult cattle), associated water taken for Petroleum & Gas production, the grant of 2,000ML of water to the Toowoomba Regional Council and the grant of unallocated water from Reserves set aside in the plan. The BSA assumes that should the “statutory right for miners to take or interfere with underground water” become law, the mining sector will also be given an exemption for the Chief Executive of DNR&M not making a decision “that would increase the average volume of water that may be taken in the Plan area”.

As the volumes of water that may be extracted or interfered with by the mining and petroleum operators are potentially large, the BSA contend that neither miners nor petroleum producers should have this exemption in the new GAB WRP. It is an appalling policy decision and totally unsustainable to allow miners and petroleum & gas producers to have unlimited access GAB water when other water users are subjected to stringent regulatory controls in the interests of future sustainability of the Basin.

The grant of a “statutory water right” for petroleum producers to access/take “associated water” and the proposed grant of a similar right to miners, has resulted in other water user’s rights of objection and appeal to the Land Court on the potential impacts of the Resources sector on their water supplies, being severely curtailed. The only avenue of objection and appeal is during the assessment and grant of an Environmental Authority – the right of objection and appeal against a miner taking water under a Water Act authorisation has been removed. This is a denial of the principle of “natural justice” to water users who have depended on the GAB for decades, and were accessing water from the Basin well before the Resources sector arrived on the scene.

The SOP states “in order to clearly define the amount of water that each licence holder can take, water licences (except stock & domestic only licences) that don’t state a maximum volume of water that can be taken must be amended to do so. The BSA supports the application of a volumetric limit on all water users taking water from the GAB – including miners and petroleum & gas producers. Furthermore all users of large quantities of water from the GAB should be required to measure the volumes of water they extract and report this data to the Chief Executive of DNR&M. Since it is not possible to effectively manage what is not controlled or measured, the new GAB WRP should include volumetric limits and water measuring requirements for Councils, miners and petroleum producers and all other major users of GAB water – there should be no exemptions whatsoever. The inclusion of a volumetric limit on the take of GAB water for livestock and domestic purposes, is contingent on a pricing exemption for the take of this water.

The Minister’s SOP outlines that the only way to trade water in the GAB - is by the relocation of water licences which are attached to land parcels. There is no ability for water licence holders to trade their water separately from land, as can occur for surface water trades in other water resource plan areas. The BSA support the notion of GAB water licences being able to be relocated within the same targeted aquifer – for example from the Huttons to the Huttons and from the Precipice Sandstones to the Precipice Sandstones, provided that any potential impacts on water users in the new location are fully identified and are manageable.

The BSA supports the continued attachment of GAB water licences to land parcels – so if a GAB water licence is being relocated, it is able to be detached from one land parcel and attached to another land parcel. As the GAB is such a unique water source for the primary industry of Inland Queensland, it should not become a resource of “potential water banking” and “market power”, hence the BSA’s position of not supporting the separation of GAB water entitlements from land

parcels. Many of the land parcels accessing water from the GAB can only be utilised for primary production if they have a secure water supply assured through an attached GAB water entitlement.

The SOP highlights that “there is the potential for overall water extraction to increase in the future through, for example peri-urban development, the take up of unallocated water and growth in stock and domestic demand. Unless actively managed this growth may impact on the availability of water to existing entitlement holders, including supplies to stock and domestic bores, or may reduce bore pressures. Important environmental assets such as springs may also be impacted”. The BSA wishes to challenge a number of these assumptions. To suggest that peri-urban development and growth in stock and domestic demand will drive the overall increase in water demand is just a misleading hypothesis and pure political hubris. The BSA notes the SOP acknowledges that GAB stock & domestic water demand has been decreasing where it states (page 11) “the overall trend in stock and domestic use, which has been decreasing across the Queensland GAB region as a whole because of capping and piping and the effects of drought in recent decades on stock numbers”. The BSA contends that the potential for “real” livestock and domestic demand to increase is microscopic in the context of total water use from the GAB and this trend is likely to continue as land managers adopt lighter stocking rates and implement more efficient infrastructure for better managing livestock & domestic supplies.

The BSA is somewhat perplexed that the SOP made no mention of the potential impacts of the Resources sector on the security of access to water for existing water users – especially when the Queensland Government is allowing petroleum producers, and is potentially allowing miners, to have unlimited access to “associated water” from the GAB and furthermore is actively promoting an expansion of these activities into inland parts of Queensland. The Queensland Government needs to explicitly acknowledge the threat to the future sustainability of the GAB by the concessions granted to the petroleum operators and proposed to be granted to the mining industry.

The BSA notes the Coordinator-General’s Evaluation Report on the Environmental Impact Statement for New Acland Mine – Stage 3. This report outlines:

- The proponents hydrology investigations predicts that the project may impact on four (4) aquifers, these being the Tertiary Basalts, Walloon Coal Measures, Marburg Sandstones and the Helidon Sandstones. The Walloon, Marburg and Helidon aquifers are sub-artesian aquifers within the Eastern Downs Management Area of the Great Artesian Basin (GAB) Water Resource Plan. The Marburg and Helidon aquifers are considered to be major GAB aquifers.
- The Stage 3 mine water allocation from the four impacted aquifers is 1,412ML/year and its current water use is 41.2ML/year.
- The Stage 3 projected water use is estimated to be 8,925ML/year and 1,170ML/year is predicted to come from dewatering of groundwater inflows into mine pits as well as captured onsite runoff. The remaining water supply is recycled water sourced primarily from the Toowoomba Regional Council.
- Groundwater inflows into the mine pits are estimated to peak at 1,277ML/year.
- Projected aquifer drawdown effects are:
 - Up to 5 metres in the Tertiary Basalts with a 1 metre contour of approximately 9kms wide.
 - Up to 47 metres in the Walloons with a 1 metre contour estimated to be 21kms wide. Up to 10 metres drawdown up to 3kms west of the project site.
 - Up to 12 metres in the Marburgs for a 7kms wide area and a 1 metre contour of approximately 23kms wide.
- There are 857 registered bores within an 8kms radius of the project site and it is estimated that 357 of these bores may be impacted.

- The Coordinator-General has approved the Environmental Authority for Stage 3 with conditions requiring New Hope Mine to enter into Make Good Agreements with affected landholders. There is also a requirement for New Hope to provide offsets for water lost – groundwater of sufficient quality is to be used for the environment and communities.

New Hope's Acland Mine is required to secure an Environmental Authority under the *Environmental Protection Act 2004* for this Stage 3 expansion – it has chosen to seek an amendment to its existing Environmental Authority. This Authority deals with, amongst other matters, the management of impacts of the mine's operations on the surface and groundwater resources of the area. The mine is required to secure *Water Act 2000* authorisations (Water Licences) to take and interfere with water inflows into the mine pits (dewatering operations). The mine is permitted to use this water to support any of its on-site its mining operations.

If any of this water is being sourced from the Marburg or Helidon aquifers (which are recognised GAB aquifers), then New Hope should be securing an allocation of water from the State Reserve of Unallocated Water in the Great Artesian Basin (GAB) Water Resources Plan 2006. However, as the GAB water resources of the Eastern Downs, Clarence Moreton and Mulgildie Management Areas, are already fully committed, any State Reserve Unallocated Water provided for in the GAB Water Plan is not available in these three Management Areas, hence access by the New Hope Acland Mine to this Reserve Water is not permitted under the present plan.

Limits of take of water were set in these three Management Areas, because of threats to the security of access to water by existing GAB water users as well as the sustainability of the resource, and those limits were designed to protect the GAB from over-extraction. Amending those limits to allow the New Hope mine to further dewater the GAB, represents a special arrangement for the miner which will impact on the future security of the water resource for existing water users in the Eastern Downs. With the GAB - WRP currently under review, the BSA are extremely concerned that the new WRP may increase the State Reserve of Unallocated Water at the expense of the security and sustainability of the resource for existing GAB water users!!!

The Coordinator-General in approving the amendment of New Hope's Environmental Authority has set a condition requiring New Hope to enter into Make Good Agreements with the bore owners of the 357 bores that may be impacted by their mining operations. The Coordinator-General also set "offsets" for water lost and New Hope are required to provide water of sufficient quality to be used for the environment and communities. The BSA looks forward to engaging with DNR&M to better understand how the Department proposes to make water available to the New Hope Stage 3 mine to meet any of its future "offset" obligations.

The BSA also looks forward to engaging with DNR&M to better understand the potential impacts of the Wilkie Creek, Kogan Creek, Cameby Downs and Wandoan coal mines on GAB aquifers – given the huge volumes of water that may be extracted from these existing and potential mines through mine de-watering operations.

The BSA's position is that the new GAB WRP must apply a volumetric limit to extraction of GAB water for each of the 25 GAB Management Areas and the volumetric limit must include water extracted for mining and petroleum & gas activities, as well as other uses. To determine the volumetric limit for each Management Area, the BSA contends that the Queensland Government must consider the cumulative impacts of existing water extraction (including water taken by petroleum & gas producers and miners) as well as the potential impacts of any additional projected water extraction through the provision of Unallocated Water Reserves for Strategic or State or General purposes.

The BSA's responses to specific guiding questions in the SOP:

Question: How should a) the flow of water to the environment be protected and b) the impact of extractions on environmental assets (springs) be monitored and managed?

BSA's Response to a): The placing of a volumetric limit on total GAB water extraction for each of the 25 GAB Management Areas and not allowing the mining and petroleum & gas industries to have unlimited access to "associated water" from the GAB, will go a long way towards protecting water for the environment as well as existing water users. Furthermore, the BSA supports the imposition of set-back distances which prohibit the new take of water in the vicinity of springs and urge eco-hydrogeological expertise be sought for determining the appropriate buffer distances.

BSA's Response to b): The Queensland Government needs to demonstrate its commitment to sustainably managing groundwater dependent ecosystems (GDEs) that rely on water from the GAB. In the life of the current GAB WRP, by its own admissions in the SOP, it is clearly evident that the Queensland Government has lacked the "political will" to invest in appropriate monitoring programs to assess the effectiveness of the current plan in protecting environmental assets. Consideration should be given by the Queensland Government to investing in Satellite technology for remote monitoring of environmental assets at key sites.

Question: Given the uncertainty of GABSI Program funding, how could uncontrolled flows from bores into bore drains be best managed?

BSA's Response: The BSA holds the view that uncontrolled flows from bores still need to be addressed and an ongoing program to cap the flow of these bores needs to continue – the key question is how is this ongoing program funded?

The BSA believes that non GABSI participants need to be encouraged to participate in an ongoing bore capping program- but how that is done shouldn't overly penalise those who have already invested in protecting the resource.

The BSA suggests the following options could be considered:-

- a) Imposing a charge for waste on those owners who are yet to participate in the bore capping program. If the bore owner refuses to pay the waste charge - then a lien could be taken over the title of their land for unpaid charges to be recovered on the death of the owner or transfer of the land title.
- b) One of the impediments to faster landholder uptake of the GABSI program is the incongruence between the public spin of "up to 80% subsidy for GABSI works" and the reality of what is eligible expenditure. In one case that has come to the BSA's attention, the maximum subsidy available to pipe and reticulation works was \$40,000 for a total project cost of \$250,000 to adequately replace the water access lost by closing the drain. There were also a number of technical difficulties associated with this project including; a lack of "head" for gravitational pressure, a lack of elevation for a storage as well as the cost of providing an adequate volume of storage to safeguard stock from problems in the bore. These technical difficulties can also present significant impediments to a landholder's uptake of the GABSI Program. Any future GABSI Program should retain a degree of flexibility to address these impediments.

- c) If the Queensland Government continues with its policy position of granting “statutory water rights” for the mining and petroleum & gas industries – then a material GABSI water charge MUST be applied for all “associated water use” and all monies collected utilised in a continuation and/or expansion of the GABSI Program.
- d) Installing water measuring devices on all GAB bores and imposing a water use charge for all water use (including a bulk water charge for residential water use and excluding a water charge for livestock and domestic use) with all monies collected being used to manage the GAB and to continue with the roll out of the GABSI Program.
- e) Continuing to apply pressure on the Commonwealth Government to provide matching funding for Queensland’s contributions by the Resources sector and other GAB water users to the continuation of the GABSI Program.

3.5 Maintaining groundwater resources for future generations:

The BSA are deeply concerned at the current Queensland Government’s policy settings where the Resources sector may (the petroleum industry already have this right) be given “statutory water rights” to access unlimited quantities of “associated water” from the GAB, while all other users of GAB water have to comply with the provisions of the current GAB WRP & ROP.

The BSA believes that this is a profoundly inequitable policy position and it makes it impossible to sustainably manage the GAB resource. The Queensland Government’s policy position is both contradictory and inconsistent – how can it maintain GAB water for future generations when it has provided an unlimited take of water from the Basin to the petroleum sector and is also considering the provision of the same “statutory rights” to the mining sector? This policy setting is one of the highest priority matters to be resolved for addressing the maintenance of GAB water supplies for future generations. Until this unsustainable policy is acknowledged and seriously addressed by the Queensland Government - then the future sustainability for the GAB is very uncertain.

Other threats to the sustainability of the GAB include:

- o The Queensland Government has projected that there could be up to 40,000 CSG wells constructed in the Surat Basin’s CSG footprint. The Surat CMA Underground Water Report (2012) indicates an average predicted water extraction by petroleum tenure holders in the order of 95 – 98,000ML/annum. The petroleum industry predictions are 75,000ML/annum. However, the BSA understands that with each CSG well having a “statutory right” to extract in the order of 12ML/annum from the Walloon and Hutton Sandstone aquifers (which are part of the GAB) – there is potentially up to 460,000ML/annum of water to be extracted. This huge difference in potential water extraction needs to be clarified.

While the OGIA have developed hydrological modelling capacity to assess the impacts of groundwater extraction in the Surat CMA - the BSA questions whether the long term impacts of the potential level of extraction on the GAB have been adequately considered by the Queensland Government. The BSA contends that this level of water extraction will have long term impacts on the future sustainability of the GAB and robust hydrological modelling of these impacts MUST be undertaken in the development of the new GAB WRP.

- o CSG tenure holders in the Surat Basin are applying to the Queensland Government to amend their existing Environmental Authorities to allow for the development of tight gas. The impacts of tight gas development have not been assessed or considered in the grant of the original CSG Environmental Authorities. While the BSA acknowledges that it is not within the

province of the GAB WRP to apply controls on a potential expansion of a tight gas industry in the Surat Basin, the BSA are concerned that the CSG companies will attempt to “do a deal” with the Queensland Government to have their Environmental Authorities expanded without due stakeholder or public oversight of the potential long term impacts on the Basin’s underground water resources. As an example – QGC has recently sought an internal review of an amendment to their Environmental Authority to increase the number of petroleum wells in the Wandoan area by 400 wells. QGC has contended that the DEHP has no proper authority under Queensland environmental legislation to distinguish between the type of petroleum wells to be drilled (including tight gas wells), or to even limit the number of such wells. Furthermore – while QGC are actively promoting its case – it should be noted that QCLNG’s EIS and SEIS made no mention of tight or shale gas development and the conditional approvals given by Queensland’s Coordinator-General and the Commonwealth Government were for CSG extraction only. The BSA is concerned that continued pressure on the Queensland Government by the CSG Industry, may result in its capitulation to the P&G Industry - this will result in some serious consequences for the GAB’s water resources and its water users.

- The Queensland Government is actively promoting the expansion of unconventional gas exploration (deep gas, tight gas and shale gas) in Inland Queensland – in particular in the Eromanga and Cooper Basins. The fracking process for unconventional gas utilises large volumes of water. Each shale gas well may have up to 16 shafts and each shaft may be fracked up to 20 times with 2 – 4 ML of water used for each fracking (Reference – Shine Lawyers – personal communication).

Each time an unconventional gas well is developed, it could potentially use between 640 and 1,280ML of GAB water. The scale of water required to develop the unconventional gas industry in the Eromanga and Cooper Basins will potentially be huge as thousands of wells will be needed to extract the gas of just one deposit.

The BSA submits that the high potential for over-use of water from the GAB by an expansion of the unconventional gas industry in Inland Queensland, is an issue that has to be addressed in the new GAB WRP.

- An area of concern is the ongoing wastage of water from the GAB through both the ongoing flows of uncapped bores into open bore drains and through the absence of appropriate water management strategies applied by Council’s to the management of water use by their urban residents.

In respect to the control of uncapped bores - the BSA has already outlined its position in Section 3.4 of this Submission.

In respect to water use and wastage by the residents of the towns and villages in Inland Queensland, it is noted by the BSA that very few Council’s (if any) are applying demand management strategies on their residents and their per capita water use is some of the highest in the State. The absence of water demand management strategies encourages residents to leave their garden taps running 24/7 and the continual wastage of GAB water. It is also encouraging an unhelpful attitude by the residents of these towns and villages, to use water efficiently. The BSA is aware that the water usage by the Maranoa Regional Council in Roma is impacting on surrounding water users. While the BSA acknowledges that the residents of these towns and villages have a strong desire for greenery around their homes, the BSA submits that Councils who are accessing GAB water for residential use must be required to implement water demand management policies and strategies (such as realistic pricing signals) to curb the excessive water use of their residents and encourage a culture of water use efficiency.

- Another high priority matter for maintaining the GAB resource for future generations is to secure a complete understanding of the volume of water that is extracted from the GAB in each water year. This will require the Queensland Government to adopt a program for measuring the take of all water users accessing water from the GAB – this includes Councils, stock & domestic users, miners and petroleum & gas operators and any other GAB water users. While CSG producers are now required to provide water production data to the Queensland Government, this presents an “incomplete picture” of water use from the GAB. The BSA holds the view that the Queensland Government must take this important step to ensure the maintenance of the GAB for future generations. As a minimum, the policy setting must mandate that any new GAB bore constructed after a specified date (say 1 July 2016) has to be fitted with a water measuring device at the time of construction – this must be non-negotiable and with no exclusions.
- The Minister’s SOP raised the possibility of peri-urban growth in the south-east part of the GAB driving water demand. The Queensland Government has an ideal opportunity to manage this demand and not let “the tail wag the dog”. This can be done through Local Government Planning Schemes and managing the expectations of those people who currently reside or wish to reside in these areas. Whilst the cost of constructing a GAB bore is likely to temper demand for new bores in these areas, the Council’s Planning Schemes could prohibit closer development unless an adequate surface water supply is provided. It is inappropriate to allow land developers to subdivide these areas and create an expectation that the new owners can access their water supplies from the GAB.

Another area of concern is the protection of the water quality in the GAB. Contamination of the GAB can occur through a number of causes. The construction of unlined bore-holes are a major threat, as is catastrophic well failure during oil and gas production, longer-term well failures linked to corrosion of lined bore-holes, migration of polluted material through faults, or through surface water pollution migrating into aquifers. An oil or gas well failure during critical points of production also has the potential to do permanent, possibly irreversible damage to aquifers in the GAB. The BSA has noted a recent report in Qld Country Life (29 October, 2015) on a failed GAB bore in the Quilpie District which had been capped as part of the GABSI Program. The BSA understands that this bore reconstruction was under the nominal supervision of DNR&M and it failed due to alleged substandard bore construction by the driller. The BSA is concerned that either; aging and poorly maintained infrastructure or poor construction of petroleum & gas and water infrastructure into the GAB - has the potential to compromise the water quality of the GAB. While the Qld Country Life article doesn’t canvas the question of whether the sealing of the failed GAB bore (Plugging & Abandonment – (P&A)) was heavily supervised, the BSA expects it probably was. However, this incident begs the question that if the original driller couldn't be trusted to comply with the GAB drilling standards, how easy would it be for a petroleum & gas contractor to "bury his own shortcuts" in the P&A of oil and gas wells. This failed GABSI bore and the subsequent P&A is just as much at risk of creating inter-aquifer connectivity, or worse still aquifer contamination, as are any of the gas wells drilled the CSG Industry or the P&A of their failures. The BSA holds the view that appropriate compliance audits and supervision of drillers needs to be an integral part of the future management of the GAB.

- The BSA also understands that the quality of water extracted from the fracking of unconventional gas wells, is very toxic and presents a significant risk to surface and groundwater resources if it is not appropriately constrained and managed. The BSA submits that the new GAB WRP must protect the water quality of the GAB by requiring that all wells - bores that interact with the GAB, are fully lined with approved casings, and that all wells at the end of their working life are properly rehabilitated by filling with concrete from the bottom up to avoid inter-bed leakage over time. The new plan must also stipulate

that the full disclosure of the chemical composition of all chemicals used in fracking and the composition of fracked waters extracted from Unconventional gas wells that could or will interact with the GAB, is provided to the government and is made available to the public.

It must also be recognised that pressure and temperature are both important water quality attributes in the GAB. Measures to protect these attributes must be reflected in the new GAB WRP.

3.6 How to make water available for new users and uses:

- The BSA notes with some considerable concern that the Minister's SOP contains a major omission in respect to the volumes of unallocated water in the current GAB plan. The SOP states there is 23,400ML of General Reserve Unallocated water and 10,000ML of State Reserve Unallocated water which may be granted. This is incorrect information as the current plan also has a 9,800ML reserve of unallocated water for the Cape Management Area. This error and omission needs to be publicly acknowledged and rectified.
- The BSA notes that the DNR&M undertook an "expressions of interest" process in 2014 to ascertain what "latent demand" there may be for more access to GAB water. The BSA contends this is a counter-productive exercise, because it assumes that there is water available in the GAB to meet this demand. It also raises the expectations of water users that there is plenty more water available from the GAB - which is not the case for those Management Areas that are already fully allocated – for example Flinders, Flinders East, Laura, Surat, Eastern Downs, Clarence-Moreton and Mulgildie Management Areas.

The BSA submits that the GAB is a finite resource and it is not helpful for governments to fuel water users' and the community's expectations that more water will be made available in the next version of the GAB WRP. Any demand for additional water should be met from available reserves of unallocated water (if there is available reserve water in that particular Management Unit) or by the relocation of an existing water licence.

- Recently the Queensland Government made available up to 18,200ML of Unallocated water reserve "to support rural industries, communities and jobs in Queensland's Great Artesian Basin". Minister Lynham stated "the release of unallocated water will provide targeted support to rural and agricultural industries including irrigated stock feed, hay production and sorghum cropping". Furthermore, he stated - "There is demand for new water to be made available in the Basin and we will deliver on that demand through the *Great Artesian Basin Water Resource Plan 2006*".

The BSA submits that to encourage GAB water users to tender for additional water for irrigation stock feed, hay production and sorghum cropping, is an unwise policy decision as it is not based on a detailed understanding of the available resource in the context of sustainably managing the GAB. This Ministerial statement has also raised water user's expectations that there is a huge volume of water available from the GAB for irrigation purposes – this is not the case.

The use of GAB water for irrigation purposes is fraught with risk. Firstly - there is a huge diversity in the quality of GAB water and some of it is so high in salts and minerals that its application for irrigation is likely to result in poor plant growth and a deterioration of the soils used for cropping. Secondly - the high capital cost to tool up for the land preparation, growing and harvesting of irrigated stock feed, hay production and sorghum, demands a

large economy of scale - probably greater than 40 ha. With the evaporation rates experienced in Inland Queensland, a 40 ha irrigation block would require some 10 – 12ML/ha of GAB water or 400 – 500ML/year. The BSA submits that irrespective of the drought conditions being faced by primary producers in Inland Queensland, GAB water is far too valuable a resource to be utilised as a source of water for broad scale irrigation of fodder crops, hay production or the growing of sorghum.

Furthermore, the BSA contends that GAB water should only be made available for stock & domestic use for primary producers, for Council's to supply residential & industrial/commercial water supplies, for cultural purposes and for the resources sector under very strict licensing conditions. What amounts of water that are made available should be determined through a robust hydrological assessment (and subsequent verification) that determines the sustainable limit of take and then sets the upper limit of sustainable extraction for each of the 25 GAB Management Areas and 95 associated Management Units within those Management Areas. The hydrological model used in such an assessment must have the capability of assessing the cumulative impacts of water extraction at both the macro and micro scales. If the current level of extraction of GAB water has already hit the modelled ceiling of sustainable extraction for a particular Management Area, then further extraction should be capped at that limit. If there is still some capacity for extraction between the current extraction volume and the modelled ceiling volume of sustainable extraction, then this water could be held in a General or State Reserve for that particular Management Area.

The BSA contends that these rules must apply to all GAB water users including the resources sector. The relocation of existing water licences must also be constrained by these sustainable water management caps. The era of politically expedient compromises and promises of providing more water from the Basin must cease. The new GAB WRP has to be based on available science and objective rules that reflect the principles of *Ecologically Sustainable Development*.

- The BSA also contends that water for cultural purposes should be set aside in the new GAB WRP as a Cultural Water Reserve. It should only be granted to Indigenous organisations for clearly established cultural outcomes.
- The Minister's SOP raises the prospect of whether the new Plan should allow for small volumes of water to be taken without requiring a water licence. The BSA submits that all take of water from the GAB – whether small or large, must be licenced and measured. This would allow for a high level of integrity in the understanding of how much water is being extracted from the Basin each water year and also allow for appropriate management arrangements to sustainably manage the Basin's declining water resources.

3.7 Improving monitoring and reporting requirements:

The Minister's SOP outlines (page 13), that the Department's GAB Ambient Network and the Groundwater Level Network deliver a regional scale pressure monitoring network. However the SOP also states that "due to priority constraints, routine monitoring on a triennial basis as required by the GAB ROP has not been undertaken for all bores in these networks". This clearly indicates a lack of resources and a lack of commitment by the Queensland Government to effectively undertake the necessary monitoring to establish whether the first iteration of the GAB WRP was delivering on the sustainable management of the Basin.

The BSA acknowledges that the Queensland Government has indeed outlined a more intense monitoring and reporting regime for assessing and reporting on the impacts of CSG operations in the Surat Basin CMA. The 2012 UWIR outlined that 142 monitoring sites and 498 monitoring points would be established as a part of the monitoring network in the Surat CMA. It also outlined that 106 monitoring points existed in 2012 and a further 392 points were to be constructed. As the 2015 UWIR has not been released the BSA are unable to ascertain whether the Queensland Government has delivered on its commitments for this monitoring network. The BSA also contends, this monitoring and reporting framework needs to be applied across the entire GAB to give a more complete picture.

The BSA also understand that the Department is currently rolling out a landholder bore monitoring network within the Surat CMA , to provide landholders with the necessary skills to “self-monitor” their bores. It is also understood that the data from this landholder monitoring program is being recorded on the Department’s groundwater monitoring database. While this program should not provide an excuse for the Queensland Government to step back from its groundwater monitoring responsibilities, the BSA supports its expansion across all Region’s that are experiencing unprecedented pressures on their groundwater systems, and in particular to those GAB Management Areas who are under pressure.

The Minister’s SOP contains lots of statements about the issues that the new draft Plan will consider in the monitoring and reporting context. The BSA firmly believes that if the Queensland Government is not prepared to direct the necessary resources to effectively monitor the GAB’s Ambient Network and the Groundwater Level Network, then there is little sense in making further commentary on “Improved Monitoring and Reporting Requirements” for the new Plan. An effective and properly funded monitoring and reporting program is an essential cornerstone for securing the public’s confidence that the Queensland Government knows what it is doing and is applying effective strategies in its management of the GAB for future generations. Anything less is a total sham.

3.8 Improving the efficiency of management arrangements:

The BSA is concerned that when a Government starts promoting an “improvement of the efficiency of management arrangements” - then this is a “clear signal” for a significant reduction of regulatory controls. The Minister’s SOP refers to “simplifying the administration of the GAB’s water resources, encouraging economic growth, greater flexibility and more timely decision making”. While these are always desirable outcomes of a Government’s administrative processes – they should NEVER be at the expense of the protection of what is a finite and ever-diminishing resource.

The Ministers SOP suggests that the licensing of stock & domestic take from the GAB may be an unnecessary administrative requirement where there are no conflicting water uses. The BSA disagrees with this notion – especially if the Queensland Government does decide to provide GAB water to the peri-urban areas in the South-East of the Plan area. Cumulatively the take of water by stock & domestic users is a material take from the Basin and it should be accounted for – not ignored.

The Minister’s SOP mentions on several occasions, “why have very few GAB water licences been either relocated or seasonally assigned”. The BSA is not at all surprised at this outcome and suggests that the low demand for licence relocation is due to two factors; namely a) the high cost of GAB bore construction places a significant constraint on GAB water licence transportability and b) most properties who are dependent on GAB water for their production activities could not continue to operate if they sold their water licence and lost access to GAB water. The notion that GAB water can and should be easily traded and transferred is just a dream!!!

The BSA notes with some concern that the Minister's SOP has no reference to compliance monitoring or compliance action/penalties for those who decide they do not wish to comply with the GAB WRP's requirements. The BSA takes the position that due to what is at stake - the Basin's future sustainability - appropriate non-compliance monitoring must be undertaken and strong penalties must be applied to those who breach the Plan's requirements.

3.9 Planning process:

The BSA notes the planning process, the projected timelines and the technical reports that the DNR&M will consider in the development of the new "draft" GAB WRP and its ultimate finalisation. The BSA also noted that the planning process will be consistent with any changes to the *Water Act 2000* as a result of the *WROLA Act 2014*. Given the *2014 WROLA Act's* changes to Queensland's water planning framework are likely to become law before the release of the "draft" GAB WRP (scheduled for March 2016) for public consideration, the BSA are concerned at the potential for confusion and a limitation on stakeholder input – assuming that a Water Management Protocol (which excludes public consultation and submissions) will replace the GAB Resource Operations Plan.

The BSA also notes that the *WROLA Act 2014* made some significant changes to the current GAB WRP, including the provision of 9,800ML of reserve water for the Cape Management Area and the grant of a water licence to the Toowoomba Regional Council of up to 2,000ML for town water supply purposes.

The BSA noted that the grant to the Toowoomba Regional Council is within the GAB Eastern Downs Management Unit and if any of this water is being sourced from the Marburg or Helidon aquifers (which are GAB aquifers), then the Toowoomba Regional Council should have secured an allocation of water from the State Reserve of Unallocated Water in the Great Artesian Basin (GAB) Water Resources Plan (2006). However, as the available water resources of the Eastern Downs Management Area are already fully committed, any State Reserve Unallocated Water provided for in the GAB Water Plan is not available in this Management Area, hence access by the Toowoomba Regional Council to this Reserve Water was not permitted under the original GAB WRP (2006).

Limits to the take of water were set in the GAB WRP (2006) for this Management Area to protect the sustainability of the resource, and the limits were designed to protect the GAB from over-extraction. The Queensland Government's amending of the GAB WRP through the *WROLA Act 2014* has allowed the Toowoomba Regional Council to further dewater the GAB. This represents a special arrangement for the Council that will impact on the future of the GAB water resources in the Eastern Downs Management Area.

The BSA is extremely concerned that any new GAB WRP may be amended through the Parliament by the "government of the day" to increase the State Reserve of Unallocated Water, at the expense of the sustainability of the resource, and irrespective of all the best intentions of following the planning processes outlined in the Minister's SOP!

The amendment of the GAB WRP for politically expedient outcomes and without appropriate recourse to the stakeholders who are impacted most from such decisions, IS NOT SUPPORTED by the BSA.

4.0 Context of GAB WRP Review:

The Strategic Management Plan (SMP) for the GAB is currently under review. The BSA understands that the “draft” SMP is available to DNR&M. The BSA believes that the strategic issues identified in the new SMP need to be integrated into the new GAB WRP.

The BSA agrees that the new GAB WRP should be based on the best available science. Recent research into the GAB has identified emerging risks and issues that the new WRP should address, some of which are not covered in the Statement of Reasons. Of particular concern to the BSA, is that the GAB is not in a “steady state” as has been previously assumed, but is now considered to be a declining resource. This means the management emphasis of the new GAB WRP needs to be on the better protection of the storage of existing clean and unpolluted water in the GAB and protecting recharge, rather than protecting recharge, as is currently the case.

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