Great Artesian Basin Sustainability Initiative Phase 3

MID-TERM REVIEW

GABSI3 Future Options Assessment Report | February 2013

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SKM

Great Artesian Basin Sustainability Initiative Phase 3 Mid-Term Review

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Executive Summary

The Great Artesian Basin Sustainability Initiative (GABSI) is a $450 million 15 year program seeking to address declining pressure in the Great Artesian Basin (GAB). It is delivered through state agencies over three phases and is now in its third phase. The program is jointly funded by the federal government, participating state governments (SA, NSW, Queensland) and landholders.

This report evaluates the performance of the GABSI3 program to date, using information gained from a literature review and analysis of responses from a stakeholder engagement task. The requirements of the mid-term review are to assess:

- The efficiency and effectiveness of the Commonwealth and State management/delivery arrangements in place to meet GABSI3 objectives and outcomes.
- The efficiency and effectiveness of the reporting requirements of the Commonwealth and the contract arrangements/protocols between the Commonwealth and the States.
- Key achievements of GABSI3, progress towards objectives, and identification of any deficiencies to date.

The performance of GABSI3 has been evaluated using the following assessment criteria as listed in the mid-term review brief (RFQ, PRN112-0683):

1. Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems (Outcome A, NPA).
2. Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20 (adapted from the GAB SMP).
3. Maintenance or improvement in the flow of water to GAB-dependent springs (Outcome B, NPA).
4. Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders (Outcome E, NPA).
5. Assisting implementation of NWI commitments (adapted from Outcome 14, NPA).
6. Completion of projects and activities, as specified in the States' annual Implementation Plans (Output 15, NPA).
7. At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes (Output 16, NPA).

The conclusions of the stakeholder analysis are that the GABSI3 program is considered a success, with its objectives and outcomes recognised as being important. Analysis of stakeholder responses identified some options for improving the effectiveness and efficiency of the program. Many of these recommendations may already be occurring, but may not be currently reported against.

In terms of the continuing delivery of an effective and efficient program, the following issues garnered strong responses from stakeholders:

- The program has been highly successful and is appreciated by stakeholders.
- Rehabilitating the remaining high-flowing bores is a high priority.
- Financial contributions have encouraged involvement so far, but arrangements need to be revised to complete the remaining high priority works. Cost is the largest disincentive for landholders who are yet to participate.

- Perceptions of declining value for money being realised from the program: projects with the greatest benefit have been done and the remaining projects involved declining returns on investments in terms of $/ML water saved.
- Perceptions that efforts for the GABSI program are being undermined by CSG extraction in other areas of the GAB.

Based on the literature review and stakeholder consultation, the performance evaluation of GABSI3 was completed. The evaluation indicated that progress was being made against all assessment criteria, however the degree of progress could not be well defined for two reasons:

- Assessment criteria are generally not measurable.
- Assessment criteria are mostly not reported against at a program level.

While the program is considered to be achieving its objectives, there is no guidance on how much progress towards the objectives is required, and hence, no clear way to assess when the objectives have been fulfilled to an acceptable standard. Only assessment criteria 2 and 7 provide measurable outcomes, and they are not consistently reported against. Performance is summarised below in terms of progress against assessment criteria and whether reporting allows this progress to be assessed.

Assessment criteria	Measurable?	Has objective been achieved?	Reported under GABSI3?
Assessment criterion 1 – improve GAB pressure through bore and drain replacement works	Y	Yes (probably) Anecdotal evidence of increasing pressure from stakeholders.	Partially measured
Assessment criterion 2 – rehabilitation of GAB bores identified in the SMP	Y	Partially – SMP originally identified 880 bores. 484 rehabilitated under GABSI1 & 2, and 116 under GABSI3. So approx 280 bores remain.[A]	Numbers of bores rehabilitated measured, but reporting does not reference SMP
Assessment criterion 3 – maintain/improve flow to GAB dependent springs	Y	Yes (probably) Anecdotal evidence of increasing flow from stakeholders.	N Partially measured in other GAB programs
Assessment criterion 4 – improve partnerships	Partially	Yes (probably) Anecdotal evidence of from stakeholders.	N
Assessment criterion 5 – assist NWI commitments	Partial	Yes (probably) Anecdotal evidence of from stakeholders.	N
Assessment criterion 6 – completion of projects as specified in IPs	Y	Yes (partially) Obstacles to completing some IPs push projects into following years.	Y
Assessment criterion 7 – 50% of water saved directed back into the GAB	Y	Yes	Some (not all) annual performance reports show any new allocations of water

A – note that an additional 200 bores may have been added to the original list, leaving up to 480 bores that potentially still require rehabilitation.

The three options analysed for the completion of the GABSI3 program were:

Option 1: Extend the timeframe for delivery of GABSI3, to allow continued progress towards planned works program, sustainability objectives, and spending profiles.

Option 2: Continue with GABSI3 as planned, resulting in no change to the program timeframes.

Option 3: Terminate GABSI3, to allow cost savings to government, and cease works and additional progress towards sustainability objectives.

The review of these options relied largely on stakeholder feedback, as well as the key documents relevant to the GABSI3 program (the Sustainable Management Plan (SMP), National Partnership Agreement (NPA) and program annual implementation plans and progress reports). Stakeholder responses were collated, summarised and used to assess progress towards each assessment criteria made under the current GABSI3, and how this was likely to alter under a program extension or termination. The options analysis considered the expected progress against each assessment criteria, the risks and benefits, and the financial impact of each option. Assessment of the financial impact incorporated consideration of value for money of each option, which is a key criteria for government spending (FMA Act, 1997; ANAO, 2006).

Recognising limitations associated with lack of reliable data against which to assess value for money of the program, a change to current arrangements cannot be recommended. For this reason, Option 2 is recommended on the basis that:

- Progress has already been made towards objectives and outcomes in GABSI3. While extending the program would align with most stakeholder feedback and may enable further progress towards objectives and outcomes which would be beneficial from a sustainability perspective, value for money must be demonstrated to support an extended period of investment.
- Clear guidance and objective criteria on when to stop the program (in the form of termination criteria) is unclear and needs to be built into the program.
- Stakeholder feedback that suggests the value for money of the program has been disputed. This uncertainty needs to be resolved before a recommendation to extend the program can be made.

With completion of GABSI3 as a starting point, SKM recommends an approach consisting of three elements which are:

Element 1: Anticipate completion of GABSI3 in 2014 as planned, with concurrent work to retrofit program logic, and evaluate trends in value for money as a basis for recommending an extension to GABSI timeframe.

The program should:

- Renew focus on addressing the remaining high flowing bores, and the remaining bores near springs
- Finalise existing projects with participating landholders.
- Review of trends in value for money over the lifetime of GABSI, and assess whether any decline is considered to be unacceptable return on investment. The recommendation to cease GABSI3 in 2014 may change once element 1 has been completed, if continuing value for money can be demonstrated. In that case, it would be recommended that GABSI3 is extended until government funding has been exhausted.
- Revise the program logic to establish terminal criteria for GABSI3. These criteria may be:
    - Completion of all SMP bores
    - Full expenditure of Commonwealth funding
    - A timeframe to be agreed by all parties
    - A certain value for money threshold

  - o Completion of a reprioritised list of works (eg highest flowing bores, infrastructure near springs, best value for money)
  - o A combination of the above

- Effectively communicate the program end date to stakeholders to encourage participation.
- Revise program logic so that a definitive 'end of program review' can be undertaken, including development of definitive assessment criteria where possible, and collection of data to measure against the criteria. Since it is difficult to measure progress such as pressure recovery, improvement in spring flow, or improvement in partnerships on a basin-wide scale, criteria should be revised so that they enable a relative assessment of progress.

Element 2: Establish future priorities for the sustainable management of groundwater in the GAB.

Many priorities for future investment in groundwater management warrant further consideration for potential inclusion into a future program. Many of these issues relate to ongoing management of bores in the GAB over time, the need for ongoing oversight of GAB related issues and the need for targeted activities not currently addressed under the GABSI program. Some of the issues becoming an increasingly high priority in the GAB are:

- Completion of high priority activities that have not been completed under GABSI (eg high flowing bores, and remaining bores near springs)
- Reflowing bores as GAB pressure increases
- Bore integrity/failure
- Interaquifer leakage

Several priorities and strategies for future groundwater management in the GAB have been identified during this review, and should be considered for future programs:

- A focus on remaining higher flowing bores, and bores near springs that were not captured under GABSI3. From consultation, it is unlikely that all high priority bores will be completed within GABSI3, and that flows may increase as pressure in the GAB increases. These bores should remain a priority under future programs.
- Engaging with financing avenues (eg rural assistance authorities) to establish/enable access to finance for landholders who had trouble accessing finance for rehabilitation works during GABSI3.
- Mobilising additional resources to deliver the program of works. This may include considering alternative contracting resources, working with existing contractors to prioritise GABSI3 outcomes and working with the other States to share resources/knowledge to ensure implementation occurs.
- Designing measures to acquire relevant data to track progress, success and value for money of the program. Agreed reporting metrics should be incorporated into reporting templates. A revised program should also incorporate an improved monitoring and evaluation framework for effective evaluation and communication of program outputs to stakeholders.
- Incorporating broader economic values into the cost benefit proposition of future options. Many of the gains through the GABSI program are peripheral to the reported $/ML metrics, yet anecdotally represent significant socio-economic gains. In addition to informing future program development and review, a proper economic analysis may uncover the comparative benefits of investment into GABSI-

type programs not previously recognised under the existing arrangements. Importantly, the outputs of the economic review may serve to attract more funding for future programs.

- Development of a *bore assurance scheme* that assigns government funding as seed funding for bore failure/maintenance insurance. This could target landholders willing to provide a premium, related to the relative risk of bore failure, to a broad insurance scheme cross the GAB. In effect, risk would be transferred to the landholder, but would provide a financial bucket to GAB bore maintenance issues beyond GABSI3.

- Developing a different scheme that targets reflowing bores. Depending on the cost benefit of this type of program, it may range from offering expertise to landholders, improving access to finance or providing grants for “problem” bores.

- Supporting research into groundwater science to understand the impact of GAB activities, to inform the delivery of sustainability measures that provide the most benefit to sustainable GAB management. This may already be occurring through other research programs such the GAB Water Resource Assessment. Conclusions should be incorporated into assessment of future priorities for the GAB.

- Improving/supporting additional extension activities with GAB bore owners for sustainable land and water management outcomes.

- Establishing compliance measures to ensure high quality of works, cost effectiveness and consistent works specifications.

- Introducing regulatory measures that compel landholders to rehabilitate and maintain their bores, such as introducing licensing and charges for water used. This would require closer monitoring of flow in uncapped bores.

- Broadening the eligibility criteria for bore rehabilitation, so that other bore failure, maintenance or integrity issues can be addressed within a revised program.

Element 3: Implement a future program with revised priorities, eligibility criteria and funding arrangements.

Once future priorities are established, the costs and benefits of these options should be evaluated and used to inform program design for future groundwater management in the GAB, for consideration by relevant stakeholders.

1. Introduction

The Great Artesian Basin Sustainability Initiative (GABSI) is a $450 million 15 year program seeking to address declining pressure in the Great Artesian Basin (GAB). It was designed to be delivered through state agencies over three phases and is now in its third and final phase. The program is jointly funded by the federal government, participating state governments (SA, NSW, Queensland) and landholders.

GABSI Phase 3 (GABSI3) has run since 2009 and is the proposed last phase of the GABSI program under current funding arrangements. This mid-term review considers the effectiveness and efficiency of GABSI3, and aims to inform program arrangements for the final two years of GABSI3. The specific aims of this mid-term review are to:

- Assess progress made towards each of the GABSI3 program assessment criteria, in terms of water savings and pressure increases achieved through the rehabilitation of bores.
- Review the management, delivery and reporting arrangements and assess their effectiveness and efficiency.
- Identify key achievements and deficiencies of GABSI3.

Consultation was undertaken with a range of stakeholders involved in the GABSI3 program and the feedback was used as an input to evaluate the performance of GABSI3 to date. This assessment provided a basis for developing recommended options for the final two years of GABSI3.

This report presents the performance evaluation of the GABSI3 program, and assesses future options for the program.

1.1 Scope of the GABSI3 Mid-Term Review

The requirements of the mid-term review are to assess:

- The efficiency and effectiveness of the Commonwealth and State management/delivery arrangements in place to meet GABSI3 objectives and outcomes.
- The efficiency and effectiveness of the reporting requirements of the Commonwealth and the contract arrangements/protocols between the Commonwealth and the States.
- Key achievements of GABSI3, progress towards objectives, and identification of any deficiencies to date.

The specific tasks involved in the mid-term review are:

- Literature review of the following sources (completed 27 July 2012):
  - GABSI National Partnership Agreement (NPA)
  - Great Artesian Basin Strategic Management Plan (SMP)
  - GABCC Annual reports
  - Annual Implementation Plans agreed under the GABSI NPA
  - Annual Performance Reports from participating states
- Stakeholder engagement which included GABCC members, Commonwealth and State implementation representatives, and landholders (completed 5 October 2012).

- GABSI3 performance evaluation, taking into account the information gained on progress towards assessment criteria from the literature, and the responses of stakeholders (completed 13 December 2012).
- Future options assessment, considering three potential options for completing GABSI3.

This report collates the information gained from the literature review and the stakeholder consultation, and presents the analysis of stakeholder consultation results. These data are used to assess the performance of GABSI3 against the stated program objectives and outcomes.

The performance of GABSI3 has been evaluated using the following assessment criteria as listed in the mid-term review brief (RFQ, PRN112-0683):

1. Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems (Outcome A, NPA).
2. Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20 (adapted from the GAB SMP).
3. Maintenance or improvement in the flow of water to GAB-dependent springs (Outcome B, NPA).
4. Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders (Outcome E, NPA).
5. Assisting implementation of NWI commitments (adapted from Outcome 14, NPA).
6. Completion of projects and activities, as specified in the States' annual Implementation Plans (Output 15, NPA).
7. At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes (Output 16, NPA).

From the performance evaluation and the analysis of stakeholder responses, a range of recommendations for the completion of the GABSI3 program were identified. These form the future options assessment, which is based on the three following three broad options:

- Extend the timeframe of GABSI3 to allow current funding to be spent and planned works to be completed.
- End the GABSI3 program in 2014 as planned, without fulfilling planned spend or completing planned works.
- Cease the program now, without fulfilling planned spending targets or completing planned works, and review cost effectiveness and funding priorities.

This final report details the results of the analysis, providing commentary on the performance of GABSI3 and recommending options for the remainder of the program.

2. GABSI3 Program Background

The GABSI program began in 1999 with the aim of restoring pressure in GAB aquifers by rehabilitating uncontrolled flowing bores and replacing open drains with piped systems. The Commonwealth committed funding to the program which was to be matched by the participating GAB States (Queensland, NSW, and South Australia), and landholders.

The first phase of GABSI (GABSI1) rehabilitated 270 uncontrolled bores and deleted 8,000km of open bore drains. The Commonwealth and State governments each committed $32 million to the program, which ran between 1999 and 2004 (SKM, 2008). The second phase of the program (GABSI2) ran from 2004 to 2009 and continued the bore rehabilitation and piping work, completing works on 214 bores. Funding from each of the Commonwealth and state government partners was increased to $42.7 million over the 5 years of the GABSI2 program. Under the third phase of the GABSI program funding from the Commonwealth and State government partners was increased to $74.5 million over the five year program. At the time of this review, 116 bores had been rehabilitated under GABSI3.

GABSI3 began in 2009 under a new contractual arrangement (a National Partnership Agreement) between the Commonwealth and the States. This phase has continued bore rehabilitation and drain piping work and is due to end in 2014. It is estimated that of the 3,358 flowing bores identified in the GAB prior to the GABSI program (GABCC, 2000), at least 880 (and potentially up to 1,080) required rehabilitation. Given the works completed under the 3 phases of GABSI thus far, up to 480 bores are therefore yet to be rehabilitated.

There is a possibility that the greatest value for money in the GABSI program has already been realised, as the highest flowing bores have been rehabilitated in earlier stages of GABSI. Remaining bores may have lower flows, making the cost of the water savings and pressure recovery through rehabilitation higher. A key question is at what point will Return On Investment become negative (e.g. benefit to cost drop below unity) or less attractive than other options, and whether any further extension of the GABSI program is warranted. In addition, the issue of bore capping may no longer be the most effective area for investment, as other issues like inter-aquifer leakage and bore failure may now be causing greater losses from the GAB aquifers.

This review focuses on the performance of GABSI3 to date, and uses literature and perceptions of stakeholders to identify the successes and opportunities for improvement. This knowledge was used to assess options for the future of GABSI3.

3. Stakeholder Consultation

3.1 Approach

A list of questions seeking to fill knowledge gaps and gain the opinions of stakeholders on the success, efficiency and effectiveness of the GABSI3 program was developed and informed by the literature review. Questions were reviewed and approved by the steering committee prior to release. Five groups of stakeholders were approached during the consultation:

- GABCC members
- Commonwealth and State implementation representatives
- Landholders who have participated in the GABSI3 program
- Landholders who are planning to participate in the GABSI3 program
- Landholders who have declined to participate in the GABSI3 program.

Contact details for individual stakeholders were provided by the project steering committee.

A targeted set of questions was developed for each stakeholder group. Interviewees were also given the opportunity to provide broad comments and issues surrounding GABSI3 up front, to enable their key concerns to be captured.

Initial contact was made by telephone, in order to explain the purpose of the consultation and organise a time for the interview. As part of the consultation scheduling process, all stakeholders nominated by the Steering Committee were contacted. Some landholders could not be contacted as they did not have voicemail or email, but several attempts were made to contact these stakeholders.

The consultation briefing paper and letter of introduction was sent out (by post where stakeholders did not have email), with a request for the stakeholder to confirm the interview time. Interviews were conducted by one-on-one telephone conversations with each stakeholder and key points were recorded. Verbatim records or voice recordings were not kept and comments made by stakeholders have not been attributed to individuals.

3.2 Coverage of Stakeholder Engagement

Stakeholders were initially contacted by phone to introduce the purpose of the project and to schedule an interview time. In a few cases this initial contact could not be made since the stakeholders did not have voicemail or email. SKM attempted to make contact in the evenings and on weekends to include these stakeholders and was successful in most cases. Where this initial contact was successful, the one hour interview was usually conducted at the agreed time. Some stakeholders did not answer the phone at the scheduled time and SKM was unable to contact them to reschedule the interview.

Despite these minor issues, the stakeholder consultation process successfully obtained responses from most stakeholders. A diversity of views was received through the consultation process, ranging across the current arrangements of the GABSI3, the value of the program, and potential future options for completion of GABSI3. Some stakeholders claimed not to have detailed knowledge on several of the question topics.

Table 1 represents the breakdown of consulted stakeholders across the stakeholder types and jurisdictions. The coverage achieved for the stakeholder engagement was:

- 36 stakeholders in all were consulted through the process (84% of the 43 provided)

- Representation across the stakeholder groups was reasonably well distributed, with a slight deficiency in responses from landholders who declined to be involved. This was in part due to difficulties in establishing contact, but more so because this stakeholder group was small.
- SKM was unable to schedule interviews with three GABCC members as part of the review.

Table 1 Stakeholders by stakeholder group and jurisdiction (blue represents interviewed stakeholders, orange represents stakeholders that could not be contacted)

Stakeholder Group				Totals
GABCC members				16/19
Commonwealth implementation representatives				1/1
	QUEENSLAND	NSW	SA	
State implementation representatives				5/6
Landholders who have already participated				6/7
Landholders who are planning to participate				5/6
Landholders who have declined to participate				3/4
TOTAL				36/43

A list of targeted stakeholders is provided in Appendix A of this report.

4. Stakeholder Analysis Methodology

The performance evaluation of GABSI3 uses the results of the literature review and consultation responses to assess GABSI3 performance against the assessment criteria. This understanding of performance, progress to date, and deficiencies, is then used to compare future options for the completion of GABSI3.

The analysis has been divided into four key themes that assess different aspects of the performance of the GABSI3 program. These themes are:

1. *Progress against assessment criteria* – the literature review and responses from stakeholders were used to measure progress. Discrepancies between planned and actual progress may indicate issues with delivery of the project that could be more effective or efficient and are explored further in Theme 3.
2. *Perceptions of success* – a high level stakeholder perspective on the overall success of the program, to indicate general perceptions and broad issues. This theme assessed the relevance of the project, and the level of desire to continue the delivery of GABSI3.
3. *Effectiveness and efficiency of current arrangements* – this theme looked at the delivery of the program and assessed what obstacles and successes existed. If progress was lagging but the program was considered successful, the areas where delivery could be improved were teased out.
4. *Future Options* – based on progress, success and desire to continue with the program, and identification of obstacles and successes, three future options were assessed for completing GABSI3.

Two methods of analysis were used to assess the stakeholder consultation responses. The first of these (the topographical perceptions analysis) applies to questions for which responses indicate a level of agreement. These questions relate largely to assessments of the stakeholder perceptions of success (Theme 2), and perceptions of the efficiency and effectiveness of the GABSI3 program (Theme 3). For the analysis, the stakeholder's level of agreement to each question was rated from low (1) to high (5). The numbers were then averaged for each group of stakeholders, to provide an overview of the opinions and perceptions of the GABSI3 according to each stakeholder group. The average scores were shown graphically in a matrix of questions versus the average responses for each stakeholder group. Any significant differences between stakeholder groups may indicate a lack of understanding, a lack of awareness, or a particular dissatisfaction that may need to be addressed.

The second type of analysis is more qualitative and applies to the questions for which answers are 'key reasons', or 'key ideas', as opposed to a level of agreement. Because the answers are more qualitative, a rating system is not applicable in this case. This type of analysis is based on a 'Thematic Content Analysis' (TCA)[1].

The reasons given as answers to the questions, or the key ideas suggested in response to the questions, were listed under key themes. The responses were assessed according to the number of times a particular reason or idea was tabled, and according to the perceived value or quality of the reason/idea. This interpretation allows the content richness in the interviews to be captured, rather than lost in an attempt to quantify results. A 'key reason/idea' was deemed to be an original or important thought that would add value to the review of existing arrangements and the way forward.

Interpretation of content richness in stakeholder responses is a subjective measure, and was scaled according to: i) the consistency of the idea across respondents; and ii) the conviction or strength with which stakeholders expressed the view.

The results for this type of analysis have been categorised into three levels:

[1] Anderson, R., (2007). Thematic Content Analysis (TCA). Descriptive presentation of qualitative data. Institute of Transpersonal Psychology.

High content richness – this is interpreted according to the frequency with which an idea was tabled, and the strength of conviction of that idea. These ideas are denoted with a dark orange colour.	
Ideas of moderate content richness can be interpreted as being suggested fewer times or with less conviction.	
Ideas of low content richness may only have been suggested once, but have been included in the summary of results since they are unique, interesting and possibly important considerations. Alternatively, they may be ideas that were suggested multiple times, but in passing rather than with strong emphasis.	

Both types of analysis were applied to many of the stakeholder questions, as responses were frequently both an indication of agreement, coupled with reasons or ideas on the topic.

Some of the issues in interpreting stakeholder responses are that there can be ‘assumed’ knowledge, where an answer is obvious and known to all, so that it is not specifically mentioned by stakeholders when responding to questions. It should also be recognised that the number of individual respondents to each question was limited, so that the perceptions, opinions and ideas of a small number of respondents may strongly influence the results of the stakeholder analysis. However, the selection of stakeholders from different States and backgrounds helped to mitigate against this bias. Nevertheless, it is important to use the stakeholder consultation responses in conjunction with other information sources, such as the literature review.

5. Analysis of stakeholder responses

Results and responses have been categorised into the four over-arching themes described above:

- Theme 1: Progress against assessment criteria (section 6)
- Theme 2: Perceptions of success (section 7)
- Theme 3: Effectiveness and efficiency of current arrangements (section 8)
- Theme 4: Future Options (section 9)

The following chapters discuss the stakeholder analysis results for each of these themes.

Theme 3 encompasses the majority of stakeholder responses. For this theme, feedback has been further categorised according to topic:

- Contractual arrangements
- Funding arrangements
- Delivery arrangements
- Selection process/participation
- Reporting arrangements
- Controls on quality of works

Analysis was undertaken within each of these themes and categories, to assess the effectiveness and efficiency of each component of the GABSI3 program. It should be noted that these sections present the feedback and perceptions of stakeholders and while this is a rich data source, not all viewpoints or comments may necessarily be accurate. The discussion (section 10) and assessment of future options (section 11) evaluate these ideas to make recommendations for the future of the GBASI3 program.

6. Theme 1: Progress against assessment criteria

6.1 Progress towards planned works

A broad understanding of the overall GABSI3 program progress was gained through information on the expenditure of agreed funding. Under the NPA, the Commonwealth has committed $74.5 million to the GABSI3 program, which is to be matched by the States (participating landholders are also required to contribute). Of the $74.5 million available, the Commonwealth agreed to provide up to $5.5 million to SA, $30 million to NSW and $46.5 million to Queensland. This total amount ($82 million) exceeds the Commonwealth program budget of $74.5 million, but it is understood that not all States will be able to expend these maximum amounts.

Progress against planned expenditure is described in Table 2.

Table 2 Planned and actual expenditure on works for the GABSI3 program by Commonwealth and State partners.

	2009/10 ($m)	2010/11 ($m)	2011/12 ($m)	2012/13 ($m) (est)	2013/14 ($m) (est)	TOTALS ($m)	% of available Commonwealth funds spent, or planned to be spent by 2014
Commonwealth							
Committed funds	$14.90	$14.90	$14.90	$14.90	$14.90	**$74.50**	**100%** (total amount of available funding committed by the C'wealth)
Actual expenditure	$4.70	$1.32	$14.01	$-	$-	**$20.04**	**27%** (have so far spent 27% of available C'wealth funding)
Queensland							
Planned expenditure	$4.93	$4.24	$3.91	$4.90	$6.30	**$24.28**	**52%** of C'wealth funding available to Qld is planned to be spent by 2014
Actual expenditure	$4.93	$4.24	$3.91	$-	$-	**$13.08**	**28%** of C'wealth funding available to Qld has been spent so far
NSW							
Planned expenditure	$2.90	$3.60	$4.50	$4.80	$5.10	**$20.90**	**70%** of C'wealth funding available to NSW is planned to be spent by 2014
Actual expenditure	$2.80	$2.90	$2.50	$-	$-	**$8.20**	**27%** of C'wealth funding available to NSW has been spent so far
SA							
Planned expenditure	$1.00	$0.25	$0.75	$0.25	$0.25	**$2.50**	**46%** of C'wealth funding available to SA is planned to be spent by 2014
Actual expenditure	$0	$1.25	$0.75	$-	$-	**$2.00**	**36%** of C'wealth funding available to SA has been spent so far

Apparent discrepancies between actual State and Commonwealth spending ($23.28m to $20.04m respectively) may be due to States expending their own funds before claiming Commonwealth funds for the program.

The results show that in terms of expenditure, States are expecting to have spent between 46% and 70% of their available Commonwealth funding by the planned end of the program in June 2014. This equates to $47.68 million of the total $74.5 million in Commonwealth funding available, or 64% overall. As such, the current

estimates result in an underspend of available Commonwealth funds by $26.82 million at the end of the program.

NSW and Queensland are projecting to spend approximately half of their available Commonwealth funding for the GABSI3 program in the final 20 months (or one third) of the overall timeframe. NSW and Queensland are therefore lagging in progress towards their planned expenditure (which is also less than the available Commonwealth funds). SA is on track or ahead of the expenditure schedule, with only 10% of planned expenditure to complete in the remaining 20 months of the program. Advice from Queensland implementation representatives was that annual expenditure under GABSI3 has been maintained at the same rate sustained under GABSI2 and that an extension of the program for an additional three years would enable expenditure of all available Commonwealth funds subject to agreement by relevant stakeholders. NSW implementation representatives also indicated that the agreed Commonwealth funding could be spent if the GABSI3 program was extended.

In summary, overall progress towards the planned expenditure profile established in the NPA is behind schedule and the total available funding is unlikely to be spent by the end of the GABSI3 program in June 2014. The following questions were asked during stakeholder engagement to understand why progress was lagging behind the targeted expenditure. Questions were directed primarily at State and Commonwealth implementation representatives, since they have the greatest knowledge of the overall program progress within each jurisdiction. This means the maximum number of individual responses for each question was three. The summaries of the responses and the interpretation of the strength of each idea, is therefore based on limited data points, so it should be recognised that the details and perceptions below are those of a small number of respondents.

Table 3 Questions directed to each stakeholder group to understand program progress and reasons for delays are indicated with a "✓".

	Stakeholder Group					
Questions	G	C	S	LP	LnyP	LdP
If progress towards expenditure is lagging, what are the main causes of this?		✓				
What is the ability of the States to match the $14.9m in annual funding available from the Commonwealth? What is the cause of lower expenditure than planned? (Note: availability of State funds may not be the primary issue – e.g. the inability to match the funds may be related to the difficulties in finding eligible projects).			✓			
If progress towards expenditure is limited by difficulties in finding projects, how could more projects be selected? (Issues to consider: broadening eligibility criteria, impact of more projects on administration costs, limitations caused by lack of resources, decline in volunteers)			✓			
Is one of the reasons difficulty in finding projects? If yes, could the eligibility criteria be broadened? Could the funding arrangements be altered? Could additional resources (administrative, field) be contributed?		✓				
Where projected water savings (and works proposed in Implementation Plans) have not been met, what are the reasons? What are the possible solutions/options for addressing the discrepancies?			✓			
There are still bores identified in Table 3, page 20 of the SMP needing to be rehabilitated. Is this work planned? What are the obstacles to completing rehabilitation of these bores? What would it take to get them done?			✓			

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Since these questions explored reasons for the lag in progress towards targeted expenditure, the stakeholder responses are assessed using the TCA method of analysis. There were no questions requiring a level of agreement, and therefore, there is no topographic perception analysis for Theme 1. The key reasons given by Commonwealth and State implementation representatives for the current lag in progress of GABSI3 are listed below.

It is increasingly difficult to get landholders to participate due to a range of circumstances

NSW and Queensland reported that it is taking an increasingly long time to get remaining landholders to participate in the program, with Queensland anecdotally citing that they are spending four times more effort than under GABSI2. Reasons given for this include that the reduced pool of eligible projects now consists of more landholders that are reluctant to participate, as they do not necessarily see the benefits of the program, or they are not financially able to contribute. Feedback from State implementation representatives indicate that the 'low hanging fruit' (in terms of landholders who are keen to participate) have been addressed, and the benefits of the remaining projects are less clear and therefore more difficult to progress. One solution suggested in Queensland to involve more landholders was the use of regulatory measures rather than incentives.

Specific obstacles to landholder participation are explored further in Theme 3.

The return on investment ($/ML) is perceived to be declining as easier projects are completed

The perceived declining return on investment was mentioned as an issue affecting their ability to complete outstanding projects. There was some concern that as most of the big schemes have been done, the criterion ($/ML) will be increasingly difficult to meet. There were comments that the big free-flowing bores that are seen to waste enormous amounts of water should be compulsorily capped and metered and the landholder charged for wasted water.

Reducing annual expenditure and changing state government priorities

Some stakeholders are concerned that the ability of all States to meet funding commitments is being reduced due to budgetary pressures and changing government priorities. Additionally, the perception of declining return on investment in the program (in terms of $/ML) may cause other programs to be prioritised above GABSI3. An opportunity suggested to counter this problem included extending the duration of the program to allow completion of planned works and expenditure of program funding.

Lack of resources due to mining boom

Access to suitably qualified technical expertise and construction resources is becoming difficult due to the mining boom in Queensland. This is having an effect across all states, where access to similar expertise is becoming increasingly difficult or expensive. This was mentioned as a reason for delays and for increases in the cost of projects, but was not considered the primary reason for lags in progress.

Weather Issues

Weather-related issues such as flooding were mentioned by the Commonwealth, NSW and SA implementation representatives as a reason for delayed implementation of the GABSI3 program.

GABSI3 is a large project involving increased funding but the same timeframe as previous GABSI phases

Funding under the GABSI3 program has increased significantly over the GABSI2 program, however the program is still run over 5 years. There are challenges expending the increased funding over the same timeframe as previous GABSI phases.

6.2 Progress towards GABSI3 assessment criteria

The assessment criteria adopted to assess progress in the GABSI3 mid-term review are a combination of the program outcomes and outputs defined in the NPA. The following questions were asked to review progress against the mid-term review assessment criteria. Questions were directed to GABCC members, and State and Commonwealth implementation representatives, since they have the greatest knowledge of the overall program outcomes and outputs, and progress against these. This means the maximum number of individual responses for most questions was three. The summaries of the responses and the interpretation of the strength of each idea, are therefore based on limited data points, so it should be recognised that the details and perceptions below are generally those of a small number of respondents.

Table 4 Questions directed to each stakeholder group to understand program progress and reasons for delays are indicated with a "✓".

	Stakeholder Group					
Questions	G	C	S	LP	LnyP	LdP
How is progress against assessment criteria 3, 4 and 5 measured[2]?	✓	✓	✓			
What measures are in place to monitor flow to springs? Or increase in aquifer pressure? How is this reported? (Note: Assessment of flow to springs is occurring through the GAB Water Resource Assessment project, run by CSIRO/GA and due for completion early 2013.).			✓			
What methods are used for calculating water savings in each jurisdiction?			✓			
What measures are in place to account for the volume of water saved being directed back into the GAB as required under the GABSI NPA (are there any)? How is this reported? Note: The GABSI NPA requires at least 50% of GABSI water savings to be retained within the environment and not relocated for consumptive purposes (Assessment criterion 7).			✓			

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

These questions explored reasons or ideas around progress towards GABSI3 objectives, and were analysed using the TCA method. There were no questions requiring a level of agreement, and therefore, there is no

[2] Assessment criteria 3: Maintenance or improvement in the flow of water to GAB-dependent springs (Outcome B, NPA); Assessment criteria 4: Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders (Outcome E, NPA); Assessment criteria 5: Assisting implementation of NWI commitments (adapted from Outcome 14, NPA)).

topographic perception analysis for Theme 1. The key reasons for the current progress of GABSI3 are listed below.

Progress against Assessment criterion 3: Maintain or improve the flow of water to GAB-dependent springs

Anecdotally spring flows are improving, but more work is required

Stakeholders felt that springs were re-emerging and are in better condition than in previous years due to widespread increases in GAB pressure. Stakeholders felt that some monitoring of GAB springs was being undertaken to assess both the size of the spring and the health of the springs.

While some scientific investigations have been undertaken, it was suggested that more work is required in this area to better understand the ecological significance of the springs and the benefits of returning flows to them.

Mixed feedback on measurement of improved flow to GAB springs

There were different responses on how the improvement of flow to GAB springs is measured under the GABSI3 program. A national GAB monitoring network exists and contains 202 monitoring wells spread across SA, Queensland and NSW. In SA, the network is complemented by data from BHP and Prominent Hill's monitoring networks, which increases coverage to about 62 wells in total.

Mining companies which have a direct impact on the spring zones in SA are required to monitor the effects of their impacts on the spring zone and includes regular spring monitoring programs. The monitoring programs measure spring flows, locations and viability.

Progress is captured in GABSI project approvals process (in IPs) but is not measured

Some stakeholders said that traditionally progress against this objective has not been measured. There is increasing anecdotal evidence, however, that water pressures are improving across the Basin. Projected benefit/improvement in GAB springs is being assessed during project selection with projects benefiting GAB springs are given priority.

Progress against Assessment criterion 4: Improve partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the basin, both within and across State borders.

There is anecdotal evidence that progress towards this objective has been made, but little attempt has been made to measure it

Responses strongly indicated that arrangements between the Commonwealth, States and landholders for GABSI3 have fundamentally improved partnerships. Responses indicated that good partnerships have been formed between:

- Landholders and government to complete projects
- Universities and government to study the GAB springs
- Landholders, governments and local NRM groups (examples of joint work and publications)

However, the objective is not specifically measured and there was a feeling that the progress of GABSI3 is more realistically measured against quantifiable outcomes, as is currently occurring through reporting between States and the Commonwealth. There was a suggestion that this type of objective is more appropriate for measurement at a GABCC level as part of reporting through the GAB Strategic Management Plan, rather than at the GABSI level.

There is a need for greater cross-border collaboration between the states

Respondents recognised the expertise and technical knowledge that exists between the states, and indicated a need for greater sharing of ideas and approaches across State borders.

Progress against Assessment criterion 5 – Assist implementation of NWI commitments

Mixed understanding of how NWI implementation is being assisted by GABSI

Stakeholders couldn't provide a clear picture as to how progress towards implementing the NWI was being measured, potentially because review of progress against this outcome of the NPA is the responsibility of the NWC (as stated in the NPA). Several stakeholders mentioned that they thought that some elements of the NWI were addressed by such things as:

- Achieving water savings
- Maintaining installed infrastructure
- NWC GAB springs project

Progress against Assessment criterion 7 – At least 50% of water saved reallocated back to the GAB

All water saved through the GABSI program in Queensland and SA is currently directed to restoring pressure in the Basin and not reallocated for consumptive purposes. NSW allocates a minimum of 70% of water saved back to the GAB.

Queensland has a *Water Resource (Great Artesian Basin) Plan* (GAB WRP) in place which establishes a framework to share water between human consumptive needs and environmental values. The GAB WRP specifies the availability of unallocated water in each management area. The water saved under the GABSI is reported at the end of the annual GABSI Implementation Plans. These volumes are not currently reallocated to other uses but, together with monitoring data, will be considered in the 10-year review of the WRP due in 2016. This could inform the review of the unallocated water volumes in the next generation GAB WRP.

NSW has a GAB *Water Sharing Plan*, where a maximum of 30% of water savings made through the GABSI program can be allocated to other uses. To date, no GABSI 3 savings in NSW have been allocated to other uses.

In SA, all water saved through rehabilitating bores goes back to the GAB and none is redirected.

States have different approaches to measurement of water savings

In Queensland and NSW water savings are measured as the difference between bore free flow prior to capping and estimated consumption after capping. Estimated consumption in NSW is conservative (ie high), based on 75% of the maximum summer design demand of the piped system. For drain deletion

works, water saved is calculated as the bore flow prior to piping minus modelled water usage in 24 hours (converted to a flow rate L/s) in the pipeline design.

SA determines water savings through a formula (developed through the pastoral board) that incorporates knowledge of the flows prior to works being undertaken and allows 0.3L/s per watering point. The formula takes account of stock (all pastoral leases have a maximum stocking rate) and includes seasonal changes in stock numbers. In addition, SA measures pressure to check for changes.

7. Theme 2: Perceptions of Success

Stakeholders were queried on their perceptions regarding the success of the GABSI3 program. Responses to these questions give a high level stakeholder perspective on the overall success of the program, to indicate the general value of the program and begin to tease out broad issues. These responses are used to assess the relevance of the project to both landholders and GAB managers, and as an indication of the level of desire to continue the delivery of GABSI3.

The questions for Theme 2 were asked to all stakeholder groups and elicited responses that can be ranked in terms of 'level of agreement', where 5 is strongly agree and 1 is strongly disagree. This allows a semi-quantitative comparison of responses to be presented in the form of a topographic perception map, as shown in Table 5.

Table 5 Topographic mapping of stakeholders perceptions of the success of the GABSI3 program

	G	C	S	LP	LnyP	LdP
Number of stakeholders	*16*	*1*	*4*	*6*	*5*	*3*
Has GABSI3 been a success to date in meeting its stated outcomes and objectives? If not, why not?	4.4	4				
Has GABSI3 been worthwhile to date? Why/ why not?			5	4.8	5	5

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Results show that the GABSI3 program is held in high regard, with the majority of stakeholders strongly agreeing that the program had been a success in meeting stated outcomes and objectives, and had been worthwhile. Stakeholders frequently commented on the success of the overall GABSI program rather than the Phase 3 specifically. However overall, the GABSI3 program is perceived as very successful and worthwhile.

Reasons given for the strong perception of the success were also analysed using the TCA method. Key ideas for the success of the program are described below.

Building on Phases 1 and 2, GABSI3 has been a success and results are beginning to be seen on the ground

Stakeholders felt the program has been running for a long time and the benefits of the scheme are now starting to be seen on the ground, particularly in areas where there has been good uptake rates and "blanket coverage". The key benefits of the program identified by stakeholders were: increasing bore pressures (perceived to be Basin-wide, with some exceptions), GAB springs flowing again, maintaining important water supplies and reduced wastage of water. It was mentioned that in some areas with very deep bores, no benefit has been seen to date from GABSI3, but this is not measured.

A number of stakeholders noted that the GABSI program is one of the "most successful initiatives [they] have been involved in".

Improved community awareness of GAB management

The general intent of the program is broadly supported and has resulted in positive community awareness messages about the management of the GAB, although some stakeholders believe it could have been more high profile. The GABSI programs have provided good outcomes for country people

and have been successful in changing people's perceptions about water management.

The community representatives involved in the program are critical resources for encouraging landholder participation and these people should be supported with appropriate resources.

The structure of the program and level of engagement has been positive

The structure, objectives and outcomes of the GABSI3 program have contributed to its success. Originally landholders were quite apprehensive and sceptical. Generally good engagement by state government agencies with the community, however, has led to a positive outcome.

Stakeholder engagement and "buy-in" has increased and evolved over the life of the project and evidence of this is the subsequent funding that has been attracted, including significant landholder contributions. The level of landholder contribution to the scheme is considered generally appropriate (recognising that there are different arrangements in the different states).

Some stakeholders, while believing the overall program to be worthwhile, raised the following cautions relating to GABSI3.

Landholders are interested, but may be reluctant to be involved due to lack of perceived benefit or water user equity

There was a view that landholders were generally interested in participating in the program, but that there may be a lack of perceived benefit to the participating landholder, and that the benefit would be realised by those downstream.

A number of landholders and GABCC members held the perception that 'prolific use' of water by extractive industries and in particular, through the expansion of CSG, undermined water saving and use objectives. A perception was that landholders in these areas are hesitant to become involved in GABSI3 as they believe the water they save will be used directly by industry and work against their investment (to increase and maintain pressure in the GAB). One stakeholder was of the view that there was a role for the GABCC to educate landholders about the real impact of issues like CSG to improve landholder participation.

The GABSI has been running for a long time and as such the remaining bores are becoming increasingly difficult to complete

Some stakeholders felt that the first two phases were considered resounding successes but the remaining bores to be completed under GABSI3 is an issue increasingly difficult to resolve and that all of the "low-hanging fruit" has been addressed. Stakeholders considered there was a need to consider the cost-benefit of pursuing further bore rehabilitation and diminishing returns.

Several comments were received that emphasised the need for greater efforts to rehabilitate the remaining high flowing bores. It was suggested that greater landholder funding and assistance may be required – this was particularly the case for highly complex and costly bores and landholders involved in bore trust arrangements.

Issues associated with controlling flows from the GAB were recognised

Some new problems are arising in some areas due to increased aquifer pressure, such as previously 'cease-to-flow' artesian bores beginning to flow. Other issues such as interaquifer leakage and bore failure were identified as a growing problem for a GAB under greater resource pressure.

One stakeholder raised concerns that associated environmental issues need to be considered. For

example, considering the impact of removing flowing open bore drains on artificially created ecosystems.

8. Theme 3: Effectiveness and efficiency of current arrangements

The evaluation of the progress and success of the GABSI3 program has indicated that while progress has been limited by external factors, it is still considered an effective program. This theme of the evaluation considers different aspects of the program design and delivery and aims to identify aspects that hinder progress as well as aspects that contribute to the success of the program. The results of this will be important for determining options for the future of the GABSI3 program.

The program design components considered fall into five broad topics, which are:

1. Contracting arrangement
2. Project selection processes and participation
3. Funding arrangement
4. Reporting
5. Controls on quality of works

The stakeholder questions were partitioned into each of these topics. These questions were directed towards all stakeholders, although the questions were different for different stakeholder groups, as each stakeholder group is involved in slightly different aspects of the program, and therefore has insights on different program components.

8.1 Contracting arrangements

The questions asked in regard to the GABSI3 contracting arrangements are below.

Table 6 Questions directed to each stakeholder group to understand effectiveness and efficiency of contracting arrangements are indicated with a "✓".

	Stakeholders					
Questions	G	C	S	LP	LnyP	LdP
Who is responsible for implementation and management of the annual Implementation Plans (IP's) under the NPA, including assessing whether objectives are being met?		✓	✓			
How does the IP deal with failure to meet agreed timelines?		✓	✓			
How does the IP deal with budgets being exceeded? Does this carry implications for the budgeting of following programs?		✓	✓			
What are the administrative arrangements within States for delivery of GABSI3?			✓			
What are the contractual arrangements between landholders and states? What are the issues with these? Are they binding agreements?			✓	✓	✓	✓

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

These questions explored reasons or ideas around GABSI3 contracting arrangements, and were analysed using the TCA method. No ranking was applied, since the answers are statements of fact. There were no

questions requiring a level of agreement, and therefore, there is no topographic perception analysis for Theme 3 (contracting arrangements).

Details on the contracting arrangements gained during the stakeholder consultation are described below.

States are ultimately responsible for the annual implementation plans (IPs)

The IPs allow flexibility in the delivery of the program within each State. As a result, delivery arrangements vary between States.

South Australia has reported an ability to bring in works from earlier rounds into IPs and propose variations to the Commonwealth after an IP has been agreed. NSW identified that the timing of the IPs doesn't reflect the timing of projects, but that the IP has a mechanism to carry over funds for new projects and unspent funds. Queensland reported that only their 2011/12 IP created a slight issue of delayed payment from the Commonwealth due to its submission being late. Overall, the States perceived that the IPs can be flexible to the needs within each State, but the IP approvals and reporting process are often misaligned.

There is some flexibility around achieving implementation plan timeframes

IPs are outcome focussed rather than bound by strict timeframes. There is the ability to roll activities/projects over where IP timeframes are not met, There is not, however, a clear or consistent way of reporting this at present. There is flexibility within the NPA to allow the carry-over of funds and carrying projects forward. Commonwealth payments are milestone based, so if timeframes and works are not fulfilled, payment does not occur.

Roles and responsibilities

Each of the States maintains a government division committed to the GABSI program, but the structure and implementation responsibilities across the States vary. Within Queensland the following roles are defined:

- Project Owner (Director level) – High level official accountable for the management and implementation of the program across the state. Liaises with the Commonwealth on the roll out of the program and considers government priorities (State and Commonwealth).
- Project Manager (Manager level) – Responsible for the delivery of the annual works program.
- Project Management Team – Team leaders who report to the project manager and are responsible for different aspects of the works program.

South Australia has a small team who maintain a close relationship with landowners and Commonwealth officials with an organisational structure for roles and responsibilities similar to Queensland. NSW has a staff unit with engineers and planners who work with landholders to develop the work plans and then administer the contracts and funding.

Project delivery/management team

The project delivery team is generally a staff unit within the department dedicated to delivering GABSI3, made up of engineers and planners who do property planning and project design. They work with landholders to develop project plans and then:

- Put the works contracts out to competitive tender for private contractors (NSW),
- Are completed using state assets (or bore contractors for new bores) (Queensland), or
- Are completed through state selection of contractors (SA).

The delivery team administers the contracts and funding.

Commonwealth contribution is predetermined through the IPs, States carry the financial risk

Through the NPA arrangement, the Commonwealth commits their contribution at the start of an IP, based on the cost estimates and committed funds provided by the States. If the actual cost exceeds the estimated cost, this is borne by the State. If the actual cost is less than the estimated cost, the Commonwealth fulfils their original committed funds. It provides the Commonwealth with financial certainty and in reality they have "wins and losses". States adopt a risk management approach to costing, and there is some variation in how projects are costed.

The nature of the works is changing which may require different contracting and selection arrangements

Under GABSI1, all of the bores to be rehabilitated under the program were assessed and prioritised. At each phase of GABSI the list of remaining projects is re-prioritised. The nature of the remaining bores to be rehabilitated under GABSI3 has slightly altered the contracting and selection processes for works.

In SA, works are re-prioritised through each phase of GABSI, although, throughout the program there have been 'emergency' fixes that have needed to be slotted in. Through the formal agreements between the state and landowners in SA, most of the piping was delivered in GABSI2. Larger and more difficult schemes have required SA to develop "innovative ideas" to incorporate into GABSI3.

In NSW, remaining bores are typically more complex and the return on investment is perceived to be low by these landholders. NSW makes note of the fact that GABSI3 commenced during a long-term drought and as such, cash flow in pastoral areas are limited. In response, the GABSI team in NSW has had to undertake a "lot more personal work" to get projects up and running. NSW prioritises projects on a $/ML basis.

Queensland staff report that GABSI3 is "moving into higher hanging fruit" and due to the voluntary nature of the program, these bores are more difficult to progress due to a lack of landholder participation. This was due to an issue of landholder funding barriers. Queensland spends a significant amount of time engaging landholders to "sell the benefits" of the program, which is now very one-on-one. Queensland adopts a 'first in first served' basis, so is concurrently addressing lower and higher flowing bores.

Contractual arrangements between landholders and states

Contractual arrangements vary across the States, but in each case, the landholders are required to sign a contract to proceed with works, after the pre-feasibility design. The agreements typically outline conditions, contributions, timeframes and required works and funding (same as the IP). Government staff assist in the contractual arrangements and work closely with landholders. However, the contractual arrangements vary across the States:

- Queensland - project staff work closely with landholders to develop property plans and designs. This is formally agreed upon and completed using government assets or contractors (where the bores are newly installed). Contracts are signed between the landholder and the state and are legally binding.
- NSW – Australian Standard Construction contracts are established between landholders and private contractors for construction, including private sector contract management. Capping and piping Agreements are established between landholders and state government before works commence. These specify the works to be completed, the grants to be paid and the timeframes. Landholders can request changes, but are bound by the agreement.
- SA – due to the way the funding package was historically structured in SA which included corporate support, landholders can provide "in-kind" support to the delivery of GABSI programs on their properties by contributing time and machinery or providing subcontractor services to the program.

8.2 Project selection and participation

One of the reasons suggested as an obstacle to progress was the difficulty in finding projects. To determine whether there are any hindrances inherent in the program or whether aspects of the program could be altered to encourage more landholder participation, the questions below were asked.

Table 7 Questions directed to each stakeholder group to understand effectiveness and efficiency of project selection arrangements are indicated with a "✓".

	Stakeholders					
Questions	G	C	S	LP	LnyP	LdP
What are the eligibility criteria for landholders participating in GABSI3?			✓			
What is the process of the States for selecting projects? Do the states have guidelines/assessment/selection methods? How are projects prioritised?			✓			
How is the program promoted to landholders? Does this encourage participation?			✓			
What are the reasons for withdrawal of projects? How could the withdrawal of projects by landholders be minimised?			✓	✓	✓	
How are projects selected and what role does volunteer landholders play in this selection? What are the consequences of the selection process for the design of the program of works (within the IP) and its efficiency and effectiveness in relation to achieving GABSI3 outcomes?			✓			
How did you position your project (or how do you plan to position your project) for funding? Did you consider the broader GABSI3 objectives?				✓	✓	
What are the eligibility criteria for participating in GABSI3? Do these criteria encourage or discourage involvement?				✓	✓	✓
Why have you declined to have bore rehabilitation or drain deletion works done?						✓
Has the selection process for projects discouraged your involvement?						✓
What are other reasons for landholder withdrawal of projects? How could the withdrawal of projects by landholders be minimised?						✓

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

The questions for Theme 3 (selection process) elicited responses that can be ranked in terms of 'level of agreement', where 5 is strongly agree and 1 is strongly disagree. This allows a semi-quantitative comparison of responses to be presented in the form of a topographic perception map, as shown in Table 8.

Table 8 Topographic mapping showing stakeholder perceptions of the effectiveness and efficiency of GABSI3 project selection arrangements

	G	C	S	LP	LnyP	LdP

	G	C	S	LP	LnyP	LdP
Number of stakeholders	*16*	*1*	*4*	*6*	*5*	*3*
Has the selection process for projects encouraged your involvement?				4	4.3	3.3

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Results show that the selection process for GABSI3 projects generally encourages landholder participation. Landholders who have participated, or who plan to participate found that the selection process encouraged their involvement, while landholders who have declined to participate were more ambivalent about the incentives to be involved.

Details of the program promotion, eligibility criteria, and project selection process were gained during the literature review and are discussed below.

Each state has different eligibility criteria which targets different bores

Queensland targets:

- Uncontrolled bores drilled in 1954 (or prior) are eligible for bore rehabilitation subsidy (up to an 80% subsidy).
- Uncontrolled bores drilled after 1954 and in Queensland Government designated corrosive areas (constructed of steel casing), are eligible for bore rehabilitation subsidy (up to an 80% subsidy).
- Legal and existing bore drains, are eligible for bore piping subsidy (up to a 60% subsidy).

NSW targets stock and domestic bores. Pre-1965 bores are considered legally flowing uncontrolled, but since 1965 licences have been required and bores were required to be controlled. NSW has removed minimum flow thresholds from eligibility criteria to improve landholder uptake and bore coverage.

In SA, works aren't voluntary but are completed on a priority basis (volume based). In some instances, SA has managed to include landowners not on the priority list through amended contribution agreements (landowner/Commonwealth contributions only).

Different states have different promotion practices

Given it is the final phase of funding, Queensland is approaching the final landholders on a one-on-one basis and completing pre-feasibility designs so the landholder has some idea of what their contribution (financial) will be and to sell the benefits. Queensland has a support team that works with landholders from the eligibility through to completion phases of GABSI.

During this process they discuss the landholder's property management plan and tailor the pre-feasibility design where possible to maximise the property management outcomes and "sell" the benefits of participating in the program. Officers have a clear idea of remaining bores to be done but are having to spend four times the amount of time to sign up the landholders.

NSW invites "Expressions of Interest" annually and has received good landholder responses. Landholders are approached by phone and letters. To date, more people have been interested than can be included in the annual works. NSW invests in extension services to engage with landholders throughout the planning stage. This approach enables NSW to bring landholders 'on board'.

SA developed a list of bores requiring rehabilitation at the beginning of GABSI1 and has been working

through this list in all GABSI phases. There are only 35 projects left on the list, and SA already has relationships with the remaining landholders eligible for GABSI3. Promotion of the program is therefore deemed unnecessary in SA.

Intending to complete all bores, but projects are prioritised in NSW and SA

Each state has a slightly different prioritisation and eligibility/subsidisation processes.

Queensland: Given that GABSI3 is the final phase of government financial assistance, Queensland is completing bores on a "first in, first served" basis, with some targeting of higher flowing bores. Once Landholders are formally signed up, works are grouped on the basis of their locality to improve delivery cost and efficiency by reducing travel and mobilisation/demobilisation costs between the jobs in a locality.

New South Wales: NSW prioritises projects by $/ML of water savings to be made. NSW puts out an expression of interest annually targeted towards landholders. For each respondent, an assessment is made by NSW to identify the $/ML opportunity of each project. NSW then offers money for design and planning to priority landholders to feed into a list of fully designed and costed projects 12 months later (NSW IP). The prioritised projects that are not completed in that year are carried over to the following year.

South Australia: Operates similarly to NSW and prioritises projects on the basis of water saved per dollar and bores within the SW springs area.

Reasons explaining the perceived effectiveness and efficiency of the program promotion, eligibility criteria, and project selection process were analysed using the TCA method. These reasons and key points are outlined below.

Landholders consider that the environmental benefits provide incentive for involvement

All landholders recognised the importance of water to their operations and considered the GABSI program to be extremely beneficial. Some benefits mentioned include:

- Old bore drains & fences were hard to use and maintain and raised OH&S concerns
- Old drains were creating a big salty swamp.
- Improved feral animal control with limited watering points
- Weed pests are not spread along the bore drains.
- Water is cleaner and more reliable.
- Saved water and improve pressure
- Improved reliability of water source
- More strategic watering points for stock management.

Landholders were generally aware of the GABSI program prior to being involved

Landholders have been made aware of the GABSI program through their involvement in water management and planning over the past decade. They have become aware of the program through activities such as rehabilitating bores, water preservation, campaigns to increase pressure in the GAB, and environmental awareness campaigns. Some landholders mentioned that they had been engaged in conversations with governments relating to recovering the GAB since the mid-90s.

Most landholders weren't aware of the specific objectives of the GABSI program but understood the

general intent.

Landholder perception of difficulties or delays in participating

One landholder commented “we qualified under GABSI2 and after we had already spent money on fences etc, we were told they had run out of money. We didn’t qualify under GABSI3 due to new conditions. After many letters & complaints we were pushed through. We had been trying since GABSI 1 and had been given incorrect information by our Trust Chairman which had meant we were never successful.” It is not clear what the change in GABSI3 was, as eligibility has not changed.

Some stakeholders said that project arrangements were worked out a long time ago (up to 15 years ago) and that implementation was only happening now.

Reasons that the selection process was perceived to discourage landholder involvement, or reasons that landholders withdrew projects from the program, were analysed using the TCA method. These reasons and key points are outlined below.

Financial reasons are the major factor in landholder withdrawal of projects

The primary reason for landholders not wishing to proceed after a pre-feasibility design is that they can’t afford their contribution *at the time* (i.e. they have higher financial priorities such as restocking, flood fencing, servicing other loans and difficulty borrowing money due to the global financial situation). In these situations, landholders prefer to delay the projects rather than withdraw them altogether, however the delays will push the project into the next IP period at least, and possibly even after the end of the GABSI phase.

Landholders reported that they were concerned about the level of funding required for some projects, particularly for deep, high-flowing bores. Even with government funding, the cost to landholders of rehabilitating these bores was considered to be too high.

Some other issues impacting landholders participation have been the requirement to make very large upfront contributions, bad timing due to poor seasonal conditions, local bore trust being against or indifferent to participating.

Need for increased funding to include remaining landholders in GABSI, and to maintain bores

Both government and landholders provided many suggestions as to how landholder participation could be improved. These focussed primarily on increased financial assistance for both the initial bore rehabilitation (especially for deep, high flowing bores) and for ongoing maintenance of bores (which was stated at up to $1 million for high pressure bores).

Queensland is currently investigating options to enhance landowner participation, Measures being considered by the States included various schemes to provide additional funding to landholders, through lending by government, CSG companies, mining companies, increasing the limit on Rural Adjustment Authority (RAA) loans, and greater consideration of landholders ability to pay. Landholders also viewed the need for assistance in maintaining bores into the future as a high priority, and some suggested the need for an insurance scheme to relieve this financial burden.

Reluctance to participate due to benefits of bore work being realised by other landholders

A few landholders have withdrawn due to a perceived inequity of the costs and benefits of rehabilitating

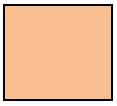
bores. This issue has been raised in bore trust arrangements where all stakeholders must commit their share of funding and may perceive benefits drawn inequitably, and in the public benefit drawn through restored water delivering enhanced ecological outcomes (e.g. mound springs). In these cases, the cost and benefits are seen to be unequally distributed between users of the water.

Perceived inequality between works within the GABSI program and CSG developments

Some stakeholders asked "why they should spend so much money to protect the GAB when the government lets miners take unlimited water?" The issue of inequity between CSG and other water users was raised several times.

Some landholders were frustrated because they held the perception that their efforts to improve pressure and save water were being undone by "unregulated abstraction" from CSG. Some comments included "they are extracting water and letting it evaporate" and "every town from Roma west depends on water from the GAB and without it, they will disappear".

Criterion of low $/ML water saved ratio may exclude some landholders from participation



As most big schemes have been done the availability of suitable projects is declining, and state government and landholder budgetary constraints are increasing. With scarcer funds, there is the perception that value for money is becoming a stronger driver for project selection. Some landholders with low-flowing bores voiced the concern that they may not be prioritised for involvement in the program as a result. There were also comments that the big free-flowing bores that are seen to waste enormous amounts of water should be compulsorily capped and metered and charged for wasted water.

Perception that limited resources was an obstacle to landholder participation

Some landholders mentioned the lack of suitably qualified personnel as the reason they were yet to be involved (e.g. there is only one driller in Australia able to drill to 1500m and it is not possible to get them to SA properties due to the high volume of work in the Queensland mining sector).

Perception that GABSI3 for small schemes is low value for money

Some stakeholders mentioned that it is cheaper to fund a small scheme without participating in GABSI, as it is thought that some contractors inflate the cost of bore works when they are aware that government funding has been made available.

8.3 Funding arrangements

Under the NPA, the Commonwealth and States invest equally in bore rehabilitation and drain deletion under the GABSI3 program. The availability of funds is one of the key criterion for involvement in the program, and one of the risks to continued progress. The questions asked to assess whether the funding arrangements are effective and efficient in progressing GABSI3 are listed below.

Table 9 Questions directed to each stakeholder group to understand effectiveness and efficiency of funding arrangements are indicated with a "✓".

	Stakeholder Groups					
Questions	G	C	S	LP	LnyP	LdP

	Stakeholder Groups					
Questions	G	C	S	LP	LnyP	LdP
Is the requirement to have matching contributions between the Commonwealth and the States and (when required) the landholders realistic? Does it encourage/discourage participation by landholders?		✓	✓	✓	✓	✓
How does the landholder 'voluntary' contribution affect design and conduct of Implementation Plans?		✓	✓			
Is the return on Commonwealth/state investment monitored?		✓	✓			
What are the Landholder priorities for capital investment? Do they include bore rehabilitation or any other investment associated with saving artesian water?				✓	✓	✓

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Some of the questions for Theme 3 (funding arrangements) elicited responses that can be ranked in terms of 'level of agreement', where 5 is strongly agree and 1 is strongly disagree. This allows a semi-quantitative comparison of responses to be presented in the form of a topographic perception map, as shown in Table 10.

Table 10 Topographic mapping showing stakeholder perceptions of the effectiveness and efficiency of GABSI3 funding arrangements

	G	C	S	LP	LnyP	LdP
Number of stakeholders	*16*	*1*	*4*	*6*	*5*	*3*
Is the breakdown of contributions between Commonwealth, States and landholders realistic? Does it encourage/discourage participation by landholders? Are funding arrangements adequate?		4.00	4.25	4.20	3.80	3.67
Is the return on Commonwealth/state investment monitored?		5.00	4.50			

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Results of the topographic perception analysis show that the Commonwealth, State and landholders who have already participated in the GABSI3 program agree that the funding arrangements are adequate, and that they generally encourage participation by landholders. The perceptions of three landholders were neutral, as they viewed the contributions of the Commonwealth/State as generous, but considered that gaining access to sufficient funding may present a barrier to participation. Only one landholder considered that the funding arrangements were not adequate and discouraged participation in the program. Despite the general consensus on the adequacy of funding arrangements, there were still issues with the high cost of rehabilitating large, high-flowing bores. While government funding contributions are considered appropriate, the total cost to landholders is still very high for these bores.

Details on the funding arrangement in each State are outlined below.

Funding arrangements vary from state to state

In Queensland, bore rehabilitation attracts up to 40% State / up to 40% Commonwealth / minimum of 20%

Landholder, and piping attracts up to 30% State / up to 30% Commonwealth / minimum of 40% Landholder.

In NSW, bore rehabilitation attracts up to 40% State / up to 40% Commonwealth. NSW adopts a regional subsidy for all other works which increases from 40% in the east to 80% in the west. This approach has worked well to increase participation.

In SA, the present GABSI program is primarily about the rehabilitation of bores or decommissioning of bores that have been replaced in previous phases of GABSI. For the remaining bores on SA's priority list (ie. legally flowing bores which are those drilled before 1973), landowner contributions are determined on a case by case basis depending on the history of the bore, previous State government contributions to bore maintenance and value for money ($/ML saved) of the rehabilitation.

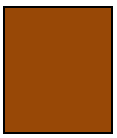
SA has been able to accommodate emergency works within the priority list by using landholder contributions to offset State contributions due to the State's inability to fund these additional works. The SA implementation representative noted that it was difficult to obtain State government funds to match Commonwealth funding for the GABSI program, which also necessitated a more flexible approach to the breakdown of funding between State, Commonwealth and landholders.

NSW and Queensland state governments assist landholders to complete pre-feasibility designs to give them an idea of what their financial and in-kind contribution will be. This work is treated as an 'extension' program expense (i.e. selling the benefits of participating in the program one-on-one with the landholder).

Although the states work with landholders to develop the project design, landholders have the ultimate say in the works carried out.

Reasons explaining the perceptions of the effectiveness and efficiency of the GABSI3 funding arrangements were analysed using the TCA method.

Current funding models encourage landholder participation (noting different funding arrangements in each state); however, funding models may need to change with changing conditions



Landholders felt that costs have increased since the start of the GABSI program, putting bore rehabilitation and piping out of the reach of many landholders.

Some landholders raised the point that "funding for some bore owners is insufficient. Landholders with big bores, big flows and are uncontrollable are expensive to rehabilitate. They can't afford the share they need to pay. These bores/owners should be helped more, because its a shame that some of these really need to be controlled but can't be afforded. It undermines the project outcomes to some extent".

The concept that participation needs to be enforced was raised by both landholders and state implementation representatives. One landholder said "if the government does not want to contribute more money, then it should make huge very low-interest loans available. At the same time, I believe the government could start charging people who still have free-flowing bores, for the wasted water. If the government went and capped all these free-flowers, and put a meter on them (at the government's cost), then these last reluctant landowners would very soon cap their bores. The payment for the wasted water would then help pay for the scheme".

Improving landholder subsidies would improve participation but raise inequality issues

Funding is the largest barrier to landholder involvement. Stakeholders thought that reducing landholder contribution would improve participation; however, state implementation representatives raised the issue of inequality between the willing landholders who have already participated and those landholders that have opted to not be involved, i.e. why should landholders that come late to the program receive a better

deal? Stakeholders thought that there would need to be a reassessment of the appropriateness of subsidies for outstanding landholders.

Water is a high priority, however, capital investment must make a return for landholders

Landholders considered water to be amongst their most important issues. One landholder said "interest and bank commitments come first, but after that its water". However, capital investments must provide some form of return. For example, a landholder compared the cost of rehabilitating their bore to a wool shed or preventing weeds alluding that the decision is a "one or the other" type proposition and would be a "nice thing to do". Another landholder said that if they were to commit to the program, they needed to do all watering points for property management reasons, which means prioritising it above other financial commitments e.g. fencing.

8.4 Reporting arrangements

Reporting occurs between States and the Commonwealth through the annual Implementation Plans (IPs) and Annual Performance Reports (APRs). The primary purpose of this reporting is to confirm progress on works and to trigger payments to the States. Several questions were asked to all stakeholder groups to determine what reporting was occurring and whether the reporting was suitable to keep each stakeholder group informed on progress.

The questions regarding reporting are listed below.

Table 11 Questions directed to each stakeholder group to understand effectiveness and efficiency of reporting arrangements are indicated with a "✓".

	Stakeholder Group					
Questions	G	C	S	LP	LnyP	LdP
Are current GABSI3 reporting arrangements sufficient to allow the GABCC to monitor progress of GABSI3?	✓					
How does interaction occur between the Commonwealth and State GABSI representatives? Is this effective? Do they meet? Or is communication primarily through reporting?		✓	✓			
Would a reporting template to be completed be useful (does one exist)? Could this be developed so that projects and indicators of progress are aligned with outcomes?			✓			
Are there any reporting requirements between landholders and states?			✓	✓	✓	

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Some of the questions for Theme 3 (Reporting arrangements) elicited responses that can be ranked in terms of 'level of agreement', where 5 is strongly agree and 1 is strongly disagree. This allows a semi-quantitative comparison of responses to be presented in the form of a topographic perception map, as shown in Table 12.

Table 12 Topographic mapping showing stakeholder perceptions of the effectiveness and efficiency of GABSI3 reporting arrangements

	G	C	S	LP	LnyP	LdP

	G	C	S	LP	LnyP	LdP
Number of stakeholders	*16*	*1*	*4*	*6*	*5*	*3*
Are current GABSI3 reporting arrangements sufficient to allow the GABCC to monitor progress of GABSI3?	4.06					
Would a reporting template to be completed be useful (does one exist)? Could this be developed so that projects and indicators of progress are aligned with outcomes?		N/A	5.00			
Are there any reporting requirements between landholders and states?			3.00	3.50	3.60	

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Results show that GABCC members are generally satisfied with the information made available to them on the GABSI3. State representatives strongly agree that a reporting template that aligns with program outcomes would be beneficial. In terms of reporting between the States implementation representatives and landholders, responses were variable. Written reporting between State implementation representatives and landholders does generally not occur, but contact is maintained through inspections, meetings, phone calls and contract management. The responses from landholders are variable, with landholders from Queensland, NSW and SA responding both that there were reporting requirements and also that there were not reporting requirements.

The key reasons or ideas given for these questions provides further context for the topographic perception mapping results and is analysed using the TCA method.

Reporting to GABCC occurs but more information is provided to state-level advisory committees

GABCC members reported receiving summary progress reports from the states and DSEWPaC, but some members felt they received more information through state level advisory councils. Most members mentioned they receive updates during GABCC meetings. Some GABCC members noted that GABSI is subject to a national partnership agreement (NPA) and that states are obligated to report back to the Commonwealth, rather than the GABCC, although some stakeholders saw the GABCC as the key to gauging the progress, physical outcomes and issues.

Others raised that the reporting to GABCC could be more formalised but that this would likely cost more money. One stakeholder made the point that GABSI3 is a mopping up exercise and as such reporting requirements to GABCC has tailed off due to this.

The GABCC has recently established a six-monthly GABSI practitioners workshop under the strategic focus sub-committee to get relevant staff to share lessons and issues. The first meeting has been useful for considering the capability and technical issues.

Some state statutory GAB bodies have linked into local NRM groups to inform the community of GABSI progress. This is used as a forum to seek guidance and advice to inform the program.

Communication takes many forms (phone, email, face to face) and increases nearer the lodgement of IPs

Responses indicated that there is generally good communication between the Commonwealth and state representatives. This takes many forms such as phone, email, and face to face. Some people noted that there are sometimes delays on feedback between Commonwealth and state representatives.

Key communication points are:

- the preliminary lodgement of the annual Implementation Plan (until a consensus is reached),
- formal lodgement by the State Minister to the Commonwealth Minister,
- Milestone 1 payment on Ministerial signoff,
- Milestone 2 reporting and payment on Ministerial signoff, and
- Milestone 3 reporting and payment on Ministerial signoff.

States generally undertake comprehensive stakeholder consultation with landholders

There is consultation between the landholder and state implementation staff at multiple stages throughout the project at tender meetings, pre-start meetings, on-going meetings and on project completion. Responses indicated that the use of regional staff to engage with landholders has worked very well, while the use of centralised offices has led to little engagement at times.

The level of reporting varies between states, but projects are controlled through contract compliance and milestone payments

Responses showed that there are no formal reporting requirements in contracts between states and landholders, but that project progress is monitored by State implementation staff. Each project is assigned a departmental project manager, with NSW adopting a superintendent approach (appointed to individual projects). The project manager establishes milestones for the completion of the project with the respective landholder. Milestone delivery, including compliance, payments and invoicing are controlled under the contracts in NSW and Queensland. In SA and Queensland, department staff members are responsible for monitoring progress. Appointed superintendents report back progress and milestones back to NSW directly.

In Queensland and SA, State implementation staff notify landholders when works are to be done and when they have been completed. Further, landholder compliance (for landholder components) is monitored and states can place an order on landholders to complete actions to ensure compliance. If these landholders fail to have issues rectified they do not receive the subsidy.

A reporting template is currently used; however, reviewing/tweaking it may be appropriate

A reporting template is used by the States when reporting progress to the Commonwealth; however, states thought that a streamlined reporting template would be useful. The current template was considered by some to be convoluted.

There is value in linking reporting arrangements to funding

Under the NPA arrangements, states are reimbursed by the Commonwealth as they meet agreed milestones.

NSW and Queensland report submitting costing under the IPs for approval by the Commonwealth and reporting on milestones as agreed under the IPs. Although States reported an issue with timing (lag in approval by the Commonwealth and long lead times on project arrangements), funding and reporting arrangements appear to be consistent and transparent to the needs of state and commonwealth parties. SA reported difficulties with IP timing, which resulted in works being completed in the following year and having difficulty claiming reimbursements from the Commonwealth under this scenario. However, the linked reporting and funding arrangements makes it much simpler to report value for money in terms of $/ML water savings.

Under the new IPs, new works and carried over projects are accounted for. This approach has required

an alternative approach to administration and reporting of projects, but recognises that some projects may take longer than the IP. NSW and SA reported difficulties with the alignment of projects and the 12 monthly reporting structure of GABSI3. Their point related to the fact that most projects run for much longer for a year and as such, has resulted in the need for NSW and SA to carry over projects.

There are issues with the current reporting

Some GABCC stakeholders raised that at times information about the progress of the GABSI program isn't made available. While stakeholders feel reasonably well informed overall, some reported difficulties in getting up-to-date figures, which makes it difficult to communicate the success of the program. However, these stakeholders reported that they felt they could pursue greater detail through direct consultation with the states.

A number of GABCC stakeholders reported that information is not necessarily aggregated appropriately (except at the annual report stage) and jurisdictions don't always report under the same criteria or report in a consistent way. Reporting is often limited to the number of bores rehabilitated and water saved although volumes saved is an estimate as there is very limited metering. No other indicators of success are available. These stakeholders reported a desire to better understand other successes of the program such as quantified pressure recovery.

Some landholders felt the language used in the reporting was bureaucratic and detracted from the content. This was raised as a barrier to people understanding the outcomes of the GABSI program.

The reporting requirements for landholders appears unclear

There was confusion amongst landholders about reporting requirements. Some assumed there would be reporting done by the bore trust or superintendent but not by individuals. Others thought there were no regular or formal reporting requirements.

8.5 Monitoring quality of works

A key factor in assessing the effectiveness and efficiency of the GABSI3 program is the quality of the works completed under the program. If high quality standards are maintained the need for future maintenance of bores or drains is minimised, making the program both more effective (as works are preventing leakage) and more efficient (as investment in maintenance is not required for a longer period of time). The questions asked to evaluate the quality standards of the works are below.

Table 13 Questions directed to each stakeholder group to understand effectiveness and efficiency of monitoring quality of GABSI works are indicated with a "✓".

	Stakeholder Groups					
Questions	G	C	S	LP	LnyP	LdP
Is there any monitoring of the quality of completed works? If yes, how is this done?	✓					
What controls exist on the quality of works completed under the Implementation Plans? How is the authorised official responsible for providing State certification of works selected? Are there any scoping documents, guidelines, or construction standards used for the works?		✓	✓			

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Some of the questions for Theme 3 (quality) elicited responses that can be ranked in terms of 'level of agreement', where 5 is strongly agree and 1 is strongly disagree. This allows a semi-quantitative comparison of responses to be presented in the form of a topographic perception map, as shown in Table 14.

Table 14 Topographic mapping showing stakeholder perceptions of the effectiveness and efficiency of GABSI3 reporting arrangements

	G	C	S	LP	LnyP	LdP
Number of stakeholders	*16*	*1*	*4*	*6*	*5*	*3*
Is there any monitoring of the quality of completed works? If yes, how is this done?	3.93					

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Responses of the GABCC members were varied, with some strongly agreeing that the quality of works was monitored, and some disagreeing. The key reasons or ideas given for this question clarifies the topographic perception mapping, and is analysed using the TCA method. Key ideas from the GABCC around the quality monitoring are outlined below.

There is a focus on ensuring appropriate specifications are provided to licensed providers

All works undertaken under GABSI3 in Queensland and NSW are completed using licensed contractors who are required to meet specific state-based construction standards. These are:

- Queensland: the 'Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland', in conjunction with the 'Minimum Construction Requirements for Water Bores in Australia'.
- NSW Bore Work: the 'Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland', in conjunction with the 'Minimum Construction Requirements for Water Bores in Australia'. For above ground works, standards are specified in the 'NSW Farm Water Supplies Manual' and/or relevant Aus. Standards.
- SA: as the present GABSI round is primarily concerned with either rehabilitation or decommissioning of legally flowing wells, all works are covered under specific state based legislation (*Natural Resources Management Act 2004*) which complies with the 'Minimum Construction Requirements for Water Bores in Australia'.

States report that works are regularly inspected after completion by qualified staff to ensure compliance.

In addition, a number of stakeholders pointed to the 2010 Commonwealth review of GABSI infrastructure, which considered the quality of works under the program. One stakeholder identified that through this review, some anecdotal evidence pointed to bores failing due to the materials use (technology failure) and reactive soils in SA. Concern for bore integrity and works standards were raised by a number of stakeholders as an emerging issue as the GAB gains pressure over time.

Limited resources are committed to monitoring quality of works

There is concern from the GABCC that some jurisdictions, particularly SA, have scaled back support for the GABSI program due to state-wide funding reviews.

In addition, there is some apprehension in the GABCC, that while jurisdictions hold drilling standards and issue contracts which require compliance against these standards (mainly in Queensland and NSW), they don't have the resources to monitor bore integrity. This perception follows from a concern that interaquifer leakage and well fatigue will become a future legacy issue of the GABSI program as pressure is returned to the GAB. These stakeholders identified that there is a need to better monitor the GAB to identify future issues such as these.

Emerging issues that need to be monitored

Many stakeholders raised the issue of cease-to-flow bores and legacy infrastructure within the GAB which may present problems as pressure is returned to the GAB. Among these issues were bore failure due to older technologies, interaquifer leakage, interaquifer contamination and the impacts of changed surface hydrology on ecosystems.

One stakeholder raised the need to consider water quality (salinity), which is becoming an issue in some parts of NSW.

There is on-going community concern about the need to manage/monitor CSG activity.

9. Theme 4: Future Options

Many stakeholders contributed ideas on the future of the GABSI program as a whole. Most of these related to the program after the end of the current timeframe of GABSI3 which is due to end in 2014. The information below is a summary of the feedback from stakeholders only, and does not constitute final recommendations for future options.

The questions asked to gain ideas on future options for the GABSI3 program are listed below.

Table 15 Questions directed to each stakeholder group to gain views on potential future options for GABSI3 are indicated with a "✓".

	G	C	S	LP	LnyP	LdP
What are the most important drivers for the final 2 years of GABSI3? To fulfil planned works? To meet GABSI 3 objectives? To spend allocated funds?	✓	✓	✓	✓	✓	✓
Of the three options described in Appendix B, do you have a preference? Why? Is there another option that has merit?	✓	✓	✓	✓	✓	✓
Do you see any conflicting priorities for State/Commonwealth governments that may diminish commitment to GABSI3 into the future?	✓	✓	✓	✓	✓	✓
How long would it take to complete all works in IPs? Would this cost more or less than originally budgeted?			✓			
How long would it take to complete enough works to fulfil the spending profile?			✓			
Is it feasible to continue works once budgets have been spent?			✓			

Note: G = GABCC members; C = Commonwealth implementation representatives; S = State implementation representatives; LP = landholders who have already participated in GABSI3; LnyP = landholders who have not yet participated in GABSI3 but are planning to; LdP = landholders who have declined to participate in GABSI3.

Respondents provided a range of views relating to the drivers in the final two years of GABSI3, future options for the program, conflicting priorities within government and feasibility of the continuation of the program. Their responses have been grouped under the following headings, as described in the following sections:

- Continuation of GABSI3
- The capacity of the states to continue GABSI3
- Addressing the uptake of GABSI3
- Future options for GABSI
- Emerging issues

9.1 Continuation of GABSI3

Stakeholders overwhelmingly support an extension to GABSI3 beyond 2014 to complete remaining bores

All stakeholders felt there was a need to extend the program timeframe to allow the remaining GABSI bores to be completed. Barriers to timely completion include weather restrictions and impacts (eg

flooding), skill and equipment shortages, state government funding shortages and landholder financial barriers (including competing priorities and inability to access finance).

State stakeholders acknowledged that an extension of the timeframe of GABSI3 would enable sufficient state funding and resources to be directed to the program to complete all outstanding works.

In Queensland, specific issues were raised relating to landholder participation. The driver for this appears to primarily be financial, where landholders have difficulty accessing finance or have competing priorities (such as servicing existing loans or investing in other property requirements). A number of stakeholders suggested that an extended timeframe would increase landholders "window of opportunity" to be involved. This was particularly pertinent for landholders adversely affected by recent drought conditions and are only beginning to recover the necessary cash flows to participate.

Other stakeholders suggested a review of the priorities of the program upon the completion of GABSI3, acknowledging that increasingly, the cost benefit of remaining bores is declining.

States and the Commonwealth are on the same page and need to continue efforts

The GABSI objectives should continue to be pursued and are still supported by state governments, even if the impetus is not what it was. States believe they are generally "on the same page" with the Commonwealth.

There is a perception among some stakeholders that the Commonwealth and States are increasingly diverting their attention from GAB issues, due to budgetary pressures and emerging priorities (such as extractive developments). These stakeholders held a fear that the GAB will "drop off the radar".

9.2 Capacity of states to continue GABSI

Fiscal constraints on state spending is impacting the ability to fund GABSI

Changing state government priorities and tightening of budgets is reducing the ability of state governments to fund GABSI. The capacity of the states to match Commonwealth funds under the NPA within the 2014 timeframe is severely constrained. State representatives identified that state funding is declining, rather than increasing over time. Further to the previous comments, states noted that an extended timeframe may better enable state capacity to fund all remaining projects.

Additional to this, some states mentioned that if the Commonwealth were to increase funding to the program, under the current funding agreement, state governments would have difficulty matching this under the NPA arrangements.

Anticipated timeframe for completion of GABSI3 works or expenditure of all funds variesIt may take another 5-10 years to complete IPs and 10-15 years to expend all funds, although there isn't consensus

State representatives were asked how long it would take for all GABSI3 works to be completed. Emerging from this was that:

- Queensland has completed all works in IPs to date and aims to have all remaining bores complete by 30 June 2017 (under an assumption of an extended GABSI3 program).
- NSW intends to complete its GABSI 3 works program, which it could do within a similar timeframe proposed by Queensland.
- SA identified that a lack of state funding is a limitation to implementation of works. It continues to

draw on its technical expertise to deliver projects but funding restrictions mean that they are taking a long term perspective for delivery.

States were unclear as to whether GAB capping and piping work would continue beyond GABSI3 funding

State governments may continue to fund bore rehabilitation works in some form beyond GABSI3 but it is dependent on a number of factors including, state capacity to fund, landholder participation rates through to the end of GABSI3 and access to resources.

As Queensland intends to complete all works under an extended GABSI3 program (ie by 2017), it didn't cite a need to continue funding beyond this program. It did, however, mention the need to address landholder participation which is a key barrier to meeting this goal.

NSW put forward that the State would probably keep funding bore rehabilitation works beyond GABSI3. NSW implementation personnel estimated they could complete an additional 250 bores over a 10-15 year timeframe.

SA made reference to the bore rehabilitation works being infinitely in need of funding as bore rehabilitation needs increase. Increasingly, its ability to access state funding is limited. SA proposed that under the current arrangements, SA would be able to fulfil its spending profile over approximately a ten year period. It also identified that the recent decline of the mining boom may enable the state to access resources which has previously constrained implementation of projects. SA only has 35 bores remaining at present that require rehabilitation works.

9.3 Addressing GABSI uptake

Reconsider the role of government and the GABCC to capture remaining bores – use of "champions" or "stick" measures

Recognising that the remaining bores to be completed under the GABSI program are amongst the most difficult, a number of stakeholders cited the need for different approaches to complete the remaining bores. Key suggestions raised during the consultations included:

- Introducing "stick" measures, such as regulation of water use, or fines.
- Encouraging landholders to participate, recognising that recent "good" seasons may support renewed interest in participating in GABSI3 due to improved cash flow.
- Promoting participation in the program through "GAB Champions". It was well recognised that engagement with landholders is best channelled through peers to promote the benefits of participating in GABSI. Stakeholders identified that this was particularly useful for landholders to see 'first hand' the benefits, including those of improved property management. Many stakeholders identified that the use of this method of promotion was currently used, but additional funding may be required to enhance this. Another stakeholder suggested that the GABCC could be more proactive in promoting GABSI, as many of its members are close to the issues of landholders.
- Increasing financial incentives to landholders; however, the issue of landholder equity was raised by most stakeholders.
- Some stakeholders pointed to landholders who were "waiting it out" to see if there would be additional assistance, or until they are in a better position to participate. A final push or from government or advertising a "last chance" round with these landholders may emphasis the need

to participate under GABSI3 before its end.

Increasingly, jurisdictions are considering changes to the way they approach the program to increase participation and address remaining bores. Among these are:

- Queensland will be investigating a range of measures (including regulatory measures) to encourage landholder participation.
- South Australia would like to investigate alternative landholder financing avenues such as low interest loans (such as the South East Confined Aquifer Well Rehabilitation scheme) to encourage participation. SA also pointed to a need for a bore assurance scheme for longer term rehabilitation and maintenance needs.
- In NSW, water sharing plans beyond 2013 will incorporate licensing for wasted water- regulating for legally flowing bore use.

Changing the eligibility criteria to increase participation will not necessarily increase uptake

State representatives were asked if greater flexibility in the eligibility criteria would increase participation. All states identified close relationships with potential participants of GABSI3 and had flexibility in tailoring solutions under GABSI3 to access funding (eg property management and designs). It is not the eligibility criteria per se, which are a barrier to participation in GABSI3. Considering:

- NSW currently uses a prioritisation process which flags the $/ML opportunity for bores to be rehabilitated. As part of this process, it has removed the minimum flow thresholds for participation and has used a scaled subsidy from east to west of the state. This has encouraged landholder participation. There is no shortage of interested landholders in NSW, so altered eligibility criteria would do little to increase uptake, which appears to largely be limited by landholders obtaining funding.
- In SA, the nature of bore rehabilitation works is non-voluntary, so the biggest issue is attaining funding (state and commonwealth). Finalising some of these bores may be assisted by accessing commonwealth funds through a 50/50 arrangement given landholders don't contribute in SA.
- Queensland on the other hand, is experiencing issues with landholder participation, driven by other financial commitments among potential GABSI3 participants. Bores captured under the program are assessed on a first-in, first-served basis. Broadening the eligibility criteria would not, in the view of Queensland, achieve increased rehabilitation of legally uncontrolled bores.

A number of stakeholders identified emerging issues in the GAB which they thought were not captured under GABSI3. These include bore integrity and failure issues, and cease-to-flow bores flowing after a long dormant period. The current eligibility criteria do not provide flexibility to address these under GABSI3.

9.4 Future options for GABSI

Continue the program after GABSI3 is completed, with revised targets and activities

While all stakeholders supported the continuation of the GABSI program, they were fairly divided on the issue of the nature of the future program. The majority of stakeholders supported a time extension for GABSI3 to finalise all remaining planned bore works given weather and equipment limitations. However, views on GABSI beyond GABSI3 varied

substantially. Among suggestions put forward were to:

- Reassess investment priorities upon the completion of GABSI3 to define future objectives, funding and the need for a "GABSI4" (including if works beyond GABSI3 have reached a point of diminishing returns)
- Redefine the eligibility criteria or types of activities "GABSI4" might address (eg emerging issues such as bore integrity, assurance and legacy maintenance issues)
- Permanently committing funds to bore rehabilitation works, due to the ongoing needs in the GAB ("a permanent line item in state budgets")
- Considering how subsidies can be targeted or improved for landholder participation (this is particularly the case for bore trust arrangements, or complex bores where one landholder is significantly financially burdened by proposed rehabilitation works)
- Consider alternative financing arrangements and opportunities to improve landholder participation. For example, a handful of stakeholders suggested developing a landholder assistance scheme; a "kitty" funded by resource companies for low/no interest loans for landholders. Others suggested rolling the remaining Commonwealth funds for GABSI into a seed fund for a bore assurance scheme, improving the Rural Assistance Authority funding approvals and requirements , and to consider a 'salinity offset scheme' or other direct funding arrangement in conjunction with CSG companies.
- Providing GABSI4 funding opportunities to landholders that reflect the cost escalation of bore rehabilitation works that has occurred since the beginning of GABSI3.
- Improving monitoring and metering to measure and report on pressure recovery in the GAB.

Emerging issues may require an alternative program

Stakeholders identified a series of emerging issues in the GAB, which although not the focus of the targeted activities of GABSI3, may require attention in an alternative program. Emerging issues raised included:

- Bore integrity and failure
- Cease-to-flow bores beginning to flow
- Interaquifer leakage
- Low flowing bores under higher pressure

Although these may be incorporated into a more flexible "GABSI4", these may require a targeted program with specific, relevant objectives.

A number of stakeholders raised the concept of a "bore assurance scheme", which could utilise Commonwealth funding (left over from GABSI) as a seed for the scheme. Such as scheme would enable landholders to manage well failure issues, through ongoing premium payments. This would assist landholders to manage risk, while enabling the development of a longer term rehabilitation fund. These stakeholders suggested the scheme be administered by the Commonwealth.

9.5 Emerging issues

Concern about interaction between GABSI and CSG developments

Many stakeholders identified the rapid expansion of CSG developments as a source of potential conflict with the GABSI rollout. A number of these stakeholders held concerns over the possible impacts of CSG developments on the GAB.

Many stakeholders spoke of a need to incorporate a more precautionary approach to GAB management, including dedicating more funding to understand the hydrogeological conceptualisation of the GAB. Many of these stakeholders held perceptions that extractive industries 'interfered' heavily with the science to promote their activities.

Among these responses, some stakeholders believed there is a need to put a moratorium on CSG activity until its impact on the GAB was better understood. Others believed that the GABSI program must be continued to support water savings, but held concerns that these may be redirected in future to other industries including CSG and agriculture. Others were concerned about CSG bore drilling and lack of CSG bore maintenance which may undermine some of the benefits of GABSI.

Conflicting interests of state government in managing and regulating CSG and water

A number of stakeholders cited that conflicting regulatory frameworks between water and extractive industries were a threat to the benefits of GABSI. In these cases, stakeholders identified issues including disaggregation of water licensing and allocation between the industries, perceptions of CSG impacts on water quality and supply, and in interacting regions; CSG water use offsetting the gains made by GABSI in those areas.

A number of stakeholders identified that there has been significant investments by both landholders and government in GABSI, which could be "undone" through CSG approvals. Many stakeholders identified that due to the extractive industry royalty frameworks, state government is inherently conflicted in investing in GAB priorities alongside of development approvals. A number of stakeholders perceived that GABSI investments to re-establish water levels and pressure in the GAB will be effectively wasted in lieu of unlimited water take by mining companies. These stakeholders called for licensing and legislative framework discrepancies to be resolved. Other stakeholders sought the need for enhanced monitoring and evaluation, and cohesive planning frameworks.

It was also suggested that extractive industries such as CSG should consider establishing a trust to support the cost of landholder bore rehabilitation. The view was that this would improve their image as "corporate citizens" and develop community partnerships.

10. Discussion

This section ties together the information gained through the literature review and through the stakeholder analysis. Using these information sources, conclusions are drawn with regard to the effectiveness and efficiency of the GABSI3 program. The discussion is organised into the over-arching analysis themes used for the stakeholder consultation analysis, and presents the key ideas, reasons and from these, recommendations on how the effectiveness and efficiency of each component of the program could be improved.

10.1 Theme 1: Progress against assessment criteria

The assessment criteria against which the program is being evaluated in this mid-term review are:

1. Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems (Outcome A, NPA).
2. Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20 (RFQ).
3. Maintenance or improvement in the flow of water to GAB-dependent springs (Outcome B, NPA).
4. Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders (Outcome E, NPA).
5. Assisting implementation of NWI commitments (adapted from Outcome 14, NPA).
6. Completion of projects and activities, as specified in the States' annual Implementation Plans (Output 15, NPA).
7. At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes (Output 16, NPA).

The information used to assess progress against these criteria comes from a range of sources, including implementation plans, progress reports, literature and the stakeholder analysis described in section 5. The results are discussed below.

10.1.1 Assessment criterion 1 - Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems.

A review of IPs and APRs shows that reporting under GABSI3 partially addresses Assessment criterion 1. Criterion 1 is the primary aim of the GABSI3 program, however there is no available data collected under GABSI3 on the improvement in water pressure in the GAB aquifers. The establishment of the GAB Monitoring Network will help address this gap.

Anecdotal evidence from stakeholders strongly supports progress made towards the increase in pressure in the GAB as a result of the GABSI program. Several landholders have observed bores that have started to flow in recent years after being sub-artesian for many years previous. The complexity of the GAB makes reliable and quantifiable measurement of increasing water pressure difficult, and anecdotal evidence is considered a valuable indicator of progress towards this objective. To better recognise this achievement, the following recommendations are made:

- Collation and interpretation of data from projects measuring pressure in GAB aquifers.
- Reporting by Commonwealth or GABCC stakeholders on changes in pressure, potentially using an indicative selection of monitoring bores.

10.1.2 Assessment criterion 2 – Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20.

States do not specifically report against the works presented in the GAB Strategic Management Plan (SMP) (pg 20), which was compiled on a whole-of Basin basis. Consequently, no detailed assessment of progress towards this criterion has been made, although it is estimated that of the bores identified as possibly requiring rehabilitation in the SMP, up to 480 bores remain.

10.1.3 Assessment criterion 3 – Maintenance or improvement of the flow of water to GAB-dependent springs

The completion of some of the eligible projects will address Assessment criterion 3. If they are planned, the projects that will benefit springs are usually listed in Table 1b of the IPs and APRs. There is no specific measurement of flow in springs by which to assess this criterion. Measurement against this criterion was attempted in GABSI2 through development of a potentiometric surface for the GAB which aimed to show changes in pressure near springs. Given the inherent difficulties in creating a potentiometric surface for deep, layered basins, a volumetric approach has been applied for GABSI3 in the form of Assessment criterion 7 which measures the amount of water to remain in the GAB aquifers as a result of GABSI3.

Partial monitoring of improvement to flow in springs will occur through the GAB Monitoring Network, and through programs outside GABSI, such as in the Queensland annual report on water plans. Anecdotally, spring flow is improving, and stakeholders considered that this was a result of the GABSI3 program. Although this criterion is probably being met, there is no coordinated measurement of progress towards this objective in the current GABSI3 program. A number of stakeholders felt that this objective was best measured and reported on by Commonwealth or GABCC stakeholders, and that it was not the responsibility of State implementation representatives. To fully recognise that effectiveness and efficiency is being achieved for this Outcome, the following actions could be undertaken:

- Collation of data from other projects measuring changes in flow in GAB-dependent springs.
- Reporting at Commonwealth or GABCC level on changes to spring flow, potentially using an indicative selection of springs.

10.1.4 Assessment criterion 4 - Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders; and Assessment criterion 5 - Assisting implementation of NWI commitments.

There are no measurable reporting indicators for Assessment criteria 4 and 5. Although States report on Assessment criterion 4 activities undertaken each year, there is not attempt to measure ‘improvement’. It is considered that these criterion are more relevant to the program as a whole, rather than to the individual States, and should therefore be reported on by the Commonwealth or the GABCC.

The relevance of Assessment criterion 4 to the GABSI3 program was questioned by some stakeholders. The strongest responses believed that GABSI is an infrastructure program and that assessment criterion should be restricted to quantifiable results. Despite this, there was considered to be strong anecdotal evidence of significant improvements in partnerships as a result of the program. Although this objective is possibly being met, it is not being reported on, and no measurable reporting indicators have been set.

Similarly with Assessment criterion 5, most respondents could not relate GABSI achievements to specific NWI commitments, as reporting of progress towards this criterion does not occur within the GABSI3 program. This is because the criterion is an outcome of the NPA rather than an objective and does not have specific measures to evaluate progress. Reporting which links GABSI3 achievements to the NWI may occur through the NWC’s Triennial Assessments. The GABSI3 NPA states that the National Water Commission is responsible for reviewing progress towards implementation of these commitments.

If Assessment criteria 4 and 5 are to be used to evaluate the effectiveness and efficiency of the GABSI3 program, more specific and measurable reporting indicators need to be assigned to these criteria. While the current anecdotal evidence can be used to say that these criteria have been achieved, these Assessment criteria should be revised to allow a measurable evaluation of progress.

Recommendations for improving the effectiveness and efficiency of progress against these Assessment criteria are:

- Consider relevance of these assessment criteria to the GABSI3 program and if it is relevant, revise so that it is measureable.
- Consider preferred approach to reporting on partnerships, such as anecdotal evidence, or through feedback surveys.
- Collate data on contribution of GABSI3 to NWI commitments.
- Report on progress at Commonwealth or GABCC level.

10.1.5 Assessment criterion 6 – Completion of projects and activities, as specified in the States' annual Implementation Plans

Of the seven assessment criteria, this is the only one that is sufficiently addressed through the performance benchmarks and reporting indicators used by the States to report to the Commonwealth. IPs and APRs provide a basis from which Assessment criterion 6 can be assessed.

A review of IPs and APRs indicated that progress towards this assessment criterion had been fully achieved in Queensland, but was lagging in NSW and SA. In terms of fulfilling the allocated expenditure for the GABSI3 program, none of the States is on track to meet NPA spending targets by the end of the program, but all agree that the funds could be spent on GABSI3 projects if the program timeframes were extended.

The strongest reason given in stakeholder consultation for not achieving the planned works (as specified in IPs) and for lagging in the expenditure profile was the increased difficulty States are having in progressing projects through to their conclusion, due to factors including landholder withdrawal and contractor availability. A common perception among State implementation representatives was that the 'low-hanging fruit' had been addressed through earlier GAB bore rehabilitation programs. Now there is a smaller pool of projects, which include the more difficult bores (deep, high pressure and costly to rehabilitate), less willing landholders, and lower environmental benefits for the financial investment. The lack of technical resources was also a relatively common reason for lagging progress, with the mining boom blamed for the unavailability of bore construction contractors.

Bad weather, and the large size of the GABSI3 program were also suggested as reasons for lagging progress, however these ideas did not come through as strongly. The literature review, and earlier discussions on progress of GABSI3 indicated that weather-related delays had a strong influence. It is possible that this idea was not emphasised during the stakeholder consultation though, as it may have been assumed knowledge (or not such an issue over the last 12 months or so).

While some of these reasons are circumstantial and could not have been managed through the program, others indicate potential areas for improvement, and could be addressed through increased effectiveness and efficiency of the GABSI3 program. Potential areas for improvement are the investigation of:

- Ways to increase participation of landholders with deep, high pressure and expensive bores.
- Ways to increase participation of unwilling landholders (or minimise withdrawal of landholders), potentially by emphasising the environmental and personal benefits of involvement.
- Alternative technical contracting resources to backfill the resources currently servicing the mining boom.

Although States responded that the full program of works could be completed if the GABSI3 timeframe was extended, the participation of landholders is still required and measures to further encourage participation and reduce withdrawal should be considered.

10.1.6 Assessment criterion 7 - At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes.

Assessment criterion 7 was introduced as a program outcome for GABSI3 in order to provide a volumetric measure of the amount of water to remain in the GAB aquifers as a result of GABSI3. Assessment criterion 7 is partially addressed in the IPs or the APRs. The reports specify the volume of water saved by completion of each project, however they do not specifically report on whether the water saved is directed to restoring pressure in the Basin, or whether it has been reallocated to consumptive purposes.

Stakeholder responses confirmed that the water saved through the program is largely reallocated back to the GAB for pressure recovery and APRs report on any new GAB water allocations made in the preceeding year. As such, progress towards Assessment criterion 7 is measured and the criterion is fulfilled by all States. It is recommended that this is reported more consistently in APRs.

10.1.7 Summary

While progress is being made towards several of these Assessment criteria, it is often not recognised through current reporting outputs. Table 16 summarises the assessment criteria and how they are currently reported against. Recommendations for improving progress against each Assessment criterion are also shown. Before implementing the recommendations below, it would be prudent to re-evaluate whether each Assessment criterion is a required measure for the program.

Table 16 Reporting against assessment criteria

Assessment criteria	Measurable?	Reported under GABSI3?	Reporting responsibility under GABSI3	Recommendations
Assessment criterion 1 – improve GAB pressure through bore and drain replacement works	Y	N	Not assigned, recommend GABCC or Commonwealth	- Collate data from other projects measuring pressure in GAB aquifers. - Report at Commonwealth or GABCC level on changes in pressure, potentially using an indicative selection of monitoring bores.
Assessment criterion 2 – rehabilitation of GAB bores identified in the SMP	Y	N	Not assigned, recommend States report on this in APRs, and consolidation by Commonwealth	- Progress against completion of bores included in the 880 needing rehabilitation (as identified in the SMP) is reported in APRs.
Assessment criterion 3 – maintain/improve flow to GAB dependent springs	Y	N	Not assigned, recommend GABCC or Commonwealth	- Collate data from other projects measuring changes in flow in GAB-dependent springs - Report at Commonwealth or GABCC level on changes to spring flow, potentially using an indicative selection of springs.
Assessment criterion 4 – improve partnerships	Partial	N	Not assigned, recommend GABCC or	- Revise this assessment criterion so that it is measureable.

Assessment criteria	Measurable?	Reported under GABSI3?	Reporting responsibility under GABSI3	Recommendations
			Commonwealth	- Consider preferred approach to reporting on partnerships, such as anecdotal evidence, or through feedback surveys. - Report on progress at Commonwealth or GABCC level.
Assessment criterion 5 – assist NWI commitments	Partial	N	Not assigned, recommend GABCC or Commonwealth (with reference to NWC reporting).	- Revise this assessment criterion so that it is measureable. - Collate data on contribution of GABSI3 to NWI commitments (from NWC reporting). - Report on progress at Commonwealth or GABCC level.
Assessment criterion 6 – completion of projects as specified in IPs	Y	Y	States	- Investigate ways to increase participation of landholders with deep, high pressure and expensive bores. - Investigate ways to increase participation of unwilling landholders (or reduce landholder withdrawal), potentially by emphasising the environmental and personal benefits of involvement. - Consider potential alternative technical contracting resources to backfill the resources currently servicing the mining boom.
Assessment criterion 7 – 50% of water saved directed back into the GAB	Y	Partial	States	- Report volume of water directed back to the GAB in APRs more consistently

10.2 Theme 2: Perceptions of Success

Stakeholders considered that the program was a resounding success, with the strongest feedback recognising the benefits and achievements of the program. Stakeholders are beginning to see results such as increased bore pressure and flowing springs, and they recognise the importance of reducing wastage and increasing efficiency of water usage. Feedback from landholders also recognised the efforts of State implementation teams, and appreciated the level of engagement between government and landholders on the program.

Some issues were mentioned which potentially provide opportunities for improving the effectiveness and efficiency of the program. These ideas included a perceived inequity in benefits of bore rehabilitation or drain deletion, particularly in areas where multiple landholders used a single bore. The perception that the achievements of the program were being undermined by CSG development was also common, with landholders feeling that while they were investing in infrastructure to reduce water wastage, CSG companies were free to extract and waste unlimited volumes of water. Another caution recognised that the ‘easy’ bores (higher flowing, close to regional centres, low cost per volume of water saved) bores had been rehabilitated, and that the remaining bores would require additional effort and commitment if the perceived success of the GABSI program was to continue.

These issues suggest the following recommendations that are primarily centred around convincing the remaining landholders to participate, or preventing landholders from withdrawing from the program:

- Consider increased promotion of benefits of participation in the program, including emphasis on the benefits to landholders such as establishment of convenient watering points, increasing aquifer pressure and lower electricity costs.
- Address the issue of CSG with recently available information to allay concerns that savings in one part of the GAB are being squandered in another part. Specifically, emphasise the increasing pressure in the GAB to landholders (evidence for this would need to be collated) and circulate the evidence/studies that suggest there is no hydraulic connection between the GAB bores and the CSG bores.
- Consider the introduction of regulatory measures to induce landholder participation. For example, charges for wasted water. NSW has already introduced this policy but it has not yet been implemented. While this approach may cause greater participation, there needs to be serious consideration of the impacts of introducing regulatory measures. If the main barrier to participation is financial, this change in policy may not be effective as landholders still may not have the financial capacity to participate.
- Develop a strategy for rehabilitating the more 'difficult' bores in the final years of GABSI. This may include 'stick' measures, but is likely to be more effective if it focussed on increased financial assistance. Increasing financial assistance to some landholders may necessitate management of perceived inequity for landholders who have already participated.

10.3 Theme 3: Effectiveness and efficiency of current arrangements

10.3.1 Contracting arrangements

The GABSI NPA is the instrument under which GABSI3 is delivered, and is a non-legally binding agreement between the Commonwealth and the States. The NPA provides for funding from the Commonwealth to the States to undertake through strategic investments in groundwater infrastructure renewal and related activities.

IPs are the instruments under the NPA which set out the individual bore rehabilitation and drain deletion projects planned in each State. These are developed annually by the States and approved by the Commonwealth. Once approved, they provide the basis for works to be completed under the GABSI3 program. It is the responsibility of States to implement these IPs.

The IPs are outcome focussed and allow GABSI3 program delivery arrangements and funding arrangements to vary between States. The States determine which projects are proposed, how landholders are engaged, funding contributions towards certain types of projects, the nature of extension services for the project, staff allocation within State departments and how works are contracted. These matters are then considered by the Commonwealth in determining whether it will agree to the proposed IP. IPs now allow longer projects to be rolled over into future years.

The NPA and IPs devolve most financial risk to the States, as Commonwealth payments are linked to milestones being completed. Where costs increase beyond that agreed, the States have to meet the increased costs.

Contracting arrangements were considered to be appropriate for the GABSI3 program, however stakeholder responses identified that the remaining works within the GABSI program may require alternative contracting arrangements in the future. Future contracting arrangements should potentially be more geared towards completion of the remaining projects, possibly with obligations for landholders to participate, and with an emphasised focus on bore maintenance.

The contracting arrangements between States and landholders for individual projects were generally considered to be comprehensive, and landholders greatly appreciated the efforts made by State implementation

representatives in project development and organisation of contracts. In Queensland and NSW, legally binding contracts are signed between the State and the landholder after pre-feasibility and design works have been agreed. In SA, the contract is between the construction contractor and the government, with no agreements signed between the State and landholder.

The details of contracting arrangements between Commonwealth, States and landholders gained during the literature review and the stakeholder consultation did not identify any significant issues with current arrangements. The flexibility built into the NPA allows States to design program delivery to suit department requirements and landholders needs. The contract process between States and landholders also appears to serve its purpose well, with most respondents being happy with the arrangements and the input of State implementation staff. In terms of contracting therefore, current arrangements appear to be effective, efficient and suitable for delivering GABSI3.

10.3.2 Project selection process and eligibility criteria

The project selection process was generally perceived to encourage landholder participation. Landholders who have participated or who plan to participate found that the selection process encouraged their involvement, while landholders who have declined to participate were more ambivalent about the incentives offered.

Eligibility criteria are well defined, as described in Table 17.

Table 17 Summary of eligibility criteria for bore rehabilitation and drain deletion under the GABSI3 program

State	Eligibility Criteria	Project Prioritisation Approach
Queensland	Includes bores that: - were constructed prior to 1954; - are located in the "Flinders Water Bore Corrosion Area"; - are legally constructed of steel bore casing; and - have become uncontrolled due to corrosive water are also eligible for rehabilitation. - discharge into an existing bore drain and is licensed to do so is eligible for piping.	Queensland approaches landholders with eligible bores individually, then completes projects on a first come, first served basis, since voluntary participation does not exceed the available funding. To be reviewed if voluntary participation increases.
NSW	Includes bores that: - Were constructed prior to the introduction of legislation to construct controlled bores in 1965. - Stock and domestic licensed bores only.	NSW request EOIs from landholders with eligible bores. EOIs are then ranked on a $grant/ML water saved basis. Identifies more interested landholders than can be serviced through the program.
SA	Includes bores that: - were constructed prior to the introduction of state legislation to construct controlled bores in 1973. Can also include bores that were constructed under GABSI1 or GABSI2 that have failed due to technology failure.	Prioritisation based on: - Proximity to mound springs - Risk and consequence of bore failure - Impact on pressure recovery and water savings targets - Technical complexity of project

The eligibility criteria for bores and the selection process for projects do not appear to present any obstacles, or opportunities for improvements to the program. The broadly-based selection criteria enables the necessary bores to be rehabilitated and allows a high level of landholder participation. The prioritisation of projects (based on value of water savings and project proximity to springs, is effective and efficient.

Promotion of the GABSI3 program to landholders emphasised the benefits of involvement, which is especially important in Queensland and NSW where involvement is voluntary. The benefits specifically mentioned include the replacement of old infrastructure with newer, more reliable, and safer infrastructure, improvements in quality and reliability of water supply, and better design of watering points (closer to other infrastructure, electricity, reduced access for feral animals, and weeds). A strong response from landholders confirms that they acknowledge the benefits of GABSI3 and recognise the importance of water efficiency measures. Promotion of GABSI3 appears to be effective, with landholders being aware of the program prior to being involved, and strongly supporting the desired outcomes of GABSI3.

The questions asked in the stakeholder engagement also explored the incentives for landholder participation, and aimed to identify what drivers and obstacles for involvement exist. The strongest barrier to landholder involvement is financial resources. Landholders quoted other financial priorities such as restocking, fencing, and servicing existing loans. Also, the high cost of rehabilitating deep, high pressure bores is difficult for some landholders to afford, even with government contributions. A need for increased financial assistance to rehabilitate and maintain these bores was identified by some stakeholders. This could include low interest loans or higher government contributions and is discussed further in section 10.3.3. In Queensland landholder participation is an issue, so alternative financial arrangements may be particularly important there.

Barriers to participation were perceived to be inequitable distribution of costs and benefits amongst landholders who share a bore, and the broader perception that GABSI achievements and water savings were undermined by CSG extraction companies.

In summary, the eligibility criteria of bores were considered to be effective in enabling landholder participation, and the prioritisation of projects is pragmatic. The primary aspect that discouraged participation was financial. In this case, increased promotion of the benefits of the program for landholders may be a strategy to encourage participation, however there is already wide recognition among stakeholder groups that the program is highly successful and beneficial. As such, further promotion may not have significant impact in increasing awareness of the benefits. Consideration of funding arrangements for the remaining high-flowing bores in particular, appears to be the area where most opportunities for improving effectiveness and efficiency of program delivery exist.

10.3.3 Funding arrangements

Funding arrangements vary between States, as shown in Table 18. Pre-feasibility design work estimates the cost of the works so that landholders know the expected value of their expected contribution. This is where withdrawal of projects by landholders occurs most frequently.

Table 18 Funding contributions for bore rehabilitation and drain replacement work under GABSI3

State	Bore rehabilitation funding	Drain replacement funding	
Queensland	- Commonwealth contribution – 40% - State contribution – 40% - Landholder contribution – 20%	- Commonwealth contribution – 30% - State contribution – 30% - Landholder contribution – 40% (cash & in-kind contributions)	
NSW	- Commonwealth contribution – 40% - State contribution – 40% - Landholder contribution – 20%	Central Zone: - Commonwealth contribution – 35% - State contribution – 35% - Landholder contribution – 30% Warrego Zone: - Commonwealth contribution – 30% - State contribution – 30%	Surat Zone - Commonwealth contribution – 25% - State contribution – 25% - Landholder contribution – 50% Surat Zone: - Commonwealth contribution – 20% - State contribution – 20%

State	Bore rehabilitation funding	Drain replacement funding
		- Landholder contribution – 40% - Landholder contribution – 60%
SA	- Commonwealth contribution – 50% - State contribution – 50%	- Commonwealth contribution – 50% - State contribution – 50%

The present GABSI phase in SA is primarily concerned with either rehabilitation of bores or decommissioning bores that have been replaced in earlier phases of GABSI. For the remaining bores on SA's priority list (ie legally flowing bores drilled before 1973), landowner contributions (if any) are determined on a case by case basis depending on the history of the bore, previous State government contributions to bore maintenance and value for money ($/ML saved) of the rehabilitation. There was feedback that it was difficult to obtain State government funds to match Commonwealth funding for the GABSI program in SA, which also necessitated a more flexible approach to the breakdown of funding between State, Commonwealth and landholders.

The current funding arrangements were considered to be adequate or even generous by the majority of stakeholders, and were a strong incentive to participate. It was suggested that funding arrangements may need to be altered in the future, to cope with the increasing cost of works (inflated by the mining boom) and to encourage landholders with the remaining high-flowing bores to participate. Both landholders and State implementation representatives raised the need to more strongly compel landholders with high flowing bores to participate, either through increased funding, making low interest loans available, or introducing charges for water used.

Increasing government funding for rehabilitation of the remaining high flowing bores also raised the potential issue of inequality, with financial advantages being available to landholders who deferred participation in the program. Although this perceived inequality is an issue for some, there were other landholders who believed the water savings benefits were more important than inequitable funding arrangements. Sustainability of the water resource was broadly recognised as one of the highest priorities for landholders.

Perceptions that GABSI3 has fulfilled the majority of its planned bore rehabilitation works may have led to the idea that funding priorities are changing and should be more focussed on maintenance of existing bores in the future. Ideas included establishment of a funding scheme for bore maintenance, or an insurance scheme that landholders would contribute to and could then claim from if bores failed. Any such schemes should be informed by an understanding of GABSI infrastructure lifecycles.

The stakeholder consultation highlighted many positives regarding funding arrangements under GABSI3. Namely, that government funding was appreciated, strongly encouraged participation and landholder contributions were generally considered to be realistic. In the final stages of the program however, it was suggested that changing priorities need to be recognised in order to maximise the effectiveness and efficiency of the program. Alterations to funding arrangements could achieve this, potentially through:

- Increased financial support for the remaining high flowing bores. This may be in the form of further subsidies or low interest loans.
- Establishment of funding support for future bore maintenance.

10.3.4 Reporting

Results show that GABCC members are generally satisfied with the information made available to them on the GABSI3. Updates to the GABCC occur through summary progress reports discussed during GABCC meetings. This was considered to be sufficient by GABCC members.

Most reporting for GABSI occurs between the State implementation teams and the Commonwealth through the provision of IPs and APRs, as required under the NPA. There appears to be some support for the development of a streamlined and consistent reporting template.

In terms of reporting between the States implementation representatives and landholders, responses were variable. Responses from State implementation representatives indicate that formal reporting between State implementation representatives and landholders does generally not occur in Queensland and NSW, but it does occur in SA. The responses from landholders are variable, with landholders from Queensland, NSW and SA responding both that there were reporting requirements and also that there were not reporting requirements. The variation in responses shows that where respondents agreed that reporting was occurring between States and landholders, this was generally of an informal nature, such as verbal reporting and communication.

Reporting arrangements overall appear to be adequate, although several improvements have been suggested. The most formalised reporting lines are between the Commonwealth and States, and potential ways to improve the effectiveness of this reporting are:

- Inclusion of measurable indicators for reporting against GABSI3 assessment criteria.
- Increased reporting by Commonwealth and the GABCC on GABSI3 assessment criteria.

10.3.5 Monitoring quality of works

The quality of bore rehabilitation works is controlled at a contractual level by States, involving the use of standards which must be followed by contractors. The standards used in Queensland and NSW are ‘Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland’, ‘Minimum Construction Requirements for Water Bores in Australia’ and ‘Construction Guidelines – Bore Piping’. NSW mentioned the use of the ‘Farm Water Supplies Manual’ and Australian Standards for other works. As the present GABSI round in SA is primarily concerned with either rehabilitation or decommissioning of legally flowing wells, all works are covered under specific state based legislation (NRM Act 2004) which complies with the ‘Minimum Construction Requirements for Water Bores in Australia’.

Concerns regarding the quality of the works were not strongly put forward, although respondents did raise some anecdotal evidence that reactive water and inappropriate bore construction materials are contributing to bore failure. A review of GABSI infrastructure completed by the Commonwealth in 2010 concluded that there was no systemic failure of GABSI infrastructure. The review also recommended the adoption of the same construction standard across all States, especially for construction of bores and cooling ponds. It was identified that bore construction standards should be updated to focus on bores in corrosive areas (Aurecon, 2010).

In terms of construction of GABSI3 infrastructure, the following suggestions are made to increase the effectiveness and efficiency of replacement or upgraded infrastructure:

- Adopt consistent construction standards for all GABSI works.
- Develop bore construction standards that focus on corrosive environments.

In most cases, these works are inspected on completion by State implementation staff as a precedent to payment. However there was uncertainty among GABCC members whether the quality of the works was inspected, with responses suggesting that there were insufficient resources within States to complete monitoring, and that monitoring was done but not reported. This perception is likely to be a deficiency of program implementation in some cases, and a lack of reporting in others. An opportunity for confirming the effectiveness and efficiency of construction quality monitoring is:

- Monitoring of the appropriate completion of works in included in State reporting.

10.4 Summary of Performance Evaluation

The GABSI3 program is considered a success, with its objectives and outcomes recognised as being important by all stakeholders. The review indicated that progress was being made against all Assessment criteria, however the progress could not be well defined for two reasons:

- Assessment criteria (which are also program objectives and outputs) are generally not measurable.
- Assessment criteria (objectives and outcomes) are not reported against at a program level.

Table 19 Summary of GABSI3 performance against Assessment criteria

Assessment criteria	Measurable?	Has objective been achieved?	Reported under GABSI3?
Assessment criterion 1 – improve GAB pressure through bore and drain replacement works	Y	Yes (probably) Anecdotal evidence of increasing pressure from stakeholders.	Partially measured
Assessment criterion 2 – rehabilitation of GAB bores identified in the SMP	Y	Partially – SMP originally identified 880 bores. 484 rehabilitated under GABSI1 & 2, and 116 under GABSI3. So approx 280 bores remain.[A]	Numbers of bores rehabilitated measured, but reporting does not reference SMP
Assessment criterion 3 – maintain/improve flow to GAB dependent springs	Y	Yes (probably) Anecdotal evidence of increasing flow from stakeholders.	N Partially measured in other GAB programs
Assessment criterion 4 – improve partnerships	Partially	Yes (probably) Anecdotal evidence of from stakeholders.	N
Assessment criterion 5 – assist NWI commitments	Partial	Yes (probably) Anecdotal evidence of from stakeholders.	N
Assessment criterion 6 – completion of projects as specified in IPs	Y	Yes (partially) Obstacles to completing some IPs push projects into following years.	Y
Assessment criterion 7 – 50% of water saved directed back into the GAB	Y	Yes	Some (not all) annual performance reports show any new allocations of water

A – note that an additional 200 bores may have been added to the original list, leaving up to 480 bores that potentially still require rehabilitation.

While the program is considered to be achieving its objectives, there is no guidance on how much progress towards the objectives is required, and hence, no way to assess progress towards meeting those objectives to an acceptable standard. Only Assessment criteria 2 and 7 provide measurable outcomes, and they are not consistently reported against.

In terms of the continuing delivery of an effective and efficient program, the following issues garnered strong responses from stakeholders:

- Rehabilitating the remaining high-flowing bores. Cost is the largest disincentive for landholder participation in these cases.
- Financial contributions have encouraged involvement so far, but arrangements need to be revised to complete the remaining high priority works.

- Declining value for money being realised from the program: projects with the greatest benefit have been done and the remaining projects involved declining returns on investments in terms of $/ML water saved.
- Perceptions that efforts for the GABSI program are being undermined by CSG extraction in other areas of the GAB.

These perceptions suggest the need for adaptive delivery of the GABSI program, both in terms of selling the benefits, and in terms of financial and reporting arrangements, which may include:

- Measures to encourage the remaining landholders to participate in the GABSI3 program, such as:
    - Increased financial assistance for the deep, high flowing bores that are expensive to rehabilitate. This could take the form of higher government contributions to the works, or a low interest loan scheme. Perceptions of inequity among landholders who have participated under the current funding arrangements would need to be managed.
    - Introduction of regulatory measures (such as charging for flowing bores) to induce landholder participation. The impacts of this would require careful consideration, particularly for landholders that cite the financial burden as the main reason for not participating so far.
    - Education campaign that emphasises the successes of the GABSI program in terms of increasing pressure, and the research that suggests CSG bores will have no impact on GAB bores.
- Increased reporting against GABSI3 program objectives, outcomes and outputs as listed in the NPA. This is required to make a robust assessment of the effectiveness and efficiency of GABSI3 and should include:
    - Consideration of whether the assessment criteria for review of effectiveness and efficiency should include all program objectives, outcomes and outputs. In their current form only program outputs are measurable, and even so one of the outputs (50% of water directed to increasing GAB pressure) is only partially reported against.
    - If the current list of objectives, outcomes and outputs are maintained as GABSI3 assessment criteria, the following actions are recommended:
        - Collation of information collected for other programs that relates to the GABSI3 objectives, outcomes and outputs by either the GABCC or the Commonwealth government. This information could be used to assess the effectiveness and efficiency of GABSI3, rather than relying on anecdotal evidence as is currently the case.
        - Revision of GABSI3 objectives, outcomes and outputs to include measurable reporting indicators for each objective, outcome and output.
        - Establishment of a monitoring regime to fill data gaps required to assess progress against objectives, outcomes and outputs. In some cases (such as measuring increasing GAB pressure and increased flow to springs), this is an extensive task that requires a comprehensive monitoring network to be established, its data analysed and reported.

The following section uses this summary of current performance against Assessment criteria to evaluate options for completing GABSI3.

11. Future options analysis

SKM identified and analysed three future options for the GABSI3 program:

Option 1: Extend the timeframe for delivery of GABSI3

Option 2: Continue with GABSI3 as planned

Option 3: Terminate GABSI3

The main elements for each option are described in the table below:

Option	Description and rationale
Extend the timeframe	**Description:** Option 1 involves extending the timeframe for GABSI3 so that all works can be completed and the full projected financial commitment of the program can be utilised towards the original objectives. It is assumed that any extension would occur until either the full program of works in the SMP is completed, or until the Commonwealth funding has been fully spent, whichever occurs first. **Rationale:** This Option has been identified as the GABSI3 program has seen delays to planned works for a wide range of reasons (eg weather delays, limited contribution of State funds, limited resources available). As a result, stakeholders have advised that unless the timeframe for delivering works under the program is extended, it will not be possible to complete the volume of work anticipated by the program. This option will be most viable if the evidence supports a view that the program objectives and outcomes will not be delivered within the current arrangements (ie by 2014) and that a timeframe extension would achieve greater progress against the outcomes and continue to comply with financial accountability requirements on government expenditure.
Continue as planned	**Description:** Option 2 involves continuing with the GABSI3 as planned and not funding works beyond the originally scheduled end date for the program in 2014. The Commonwealth would maintain a commitment to fund work identified in the States' IPs however if insufficient projects have been scheduled to expend the full amount of program funding, unspent funds would no longer be available under GABSI3. **Rationale:** The Commonwealth has committed to spend up to $14.9 million for each of the 5 years of the program until June 2014 to contribute to sustainable and ongoing groundwater management for the Basin. This option maintains the original timing and does not change the objectives, outcomes or outputs of the program as listed in the NPA. This is essentially the 'business as usual' option, that would see progress towards program objectives and outcomes, but would result in underspending of Commonwealth funds. This option will be most viable if the evidence indicates an acceptable level of progress will be made towards the program objectives and outcomes by 2014, and that there is not sufficient data to support continued expenditure on the program.

Option	Description and rationale
Terminate	**Description:** Option 3 involves terminating GABSI3 as soon as practicable and funding only those works which have already been assessed and approved. No further work would be undertaken to develop a pipeline of further projects. **Rationale:** This option was identified due to the perception of some stakeholders that the program has been highly successful and made progress against objectives, but that the benefits of continuing with the program were diminishing. Factors contributing to the perception of diminishing returns included declining value for money of remaining projects, that most willing participants have already participated, and that water is becoming a lower priority for State governments. This option will be most viable if the evidence base demonstrates that an acceptable level of progress against objectives and outcomes has already been achieved and that continuing the program will result in insufficient returns being achieved.

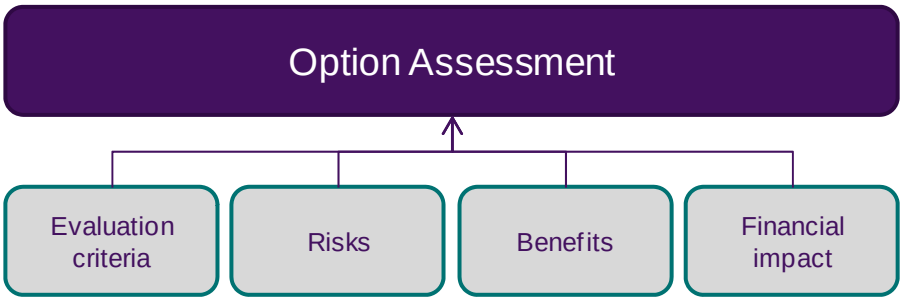
In assessing recommendations for the future of GABSI3, the evaluation considered: the progress of GABSI3 towards program objectives and outcomes (in terms of this report, these are the 'Assessment Criteria'), the risks and benefits of each option, and the financial impact.

A key challenge to the evaluation has been the limited existence of quantitative data, which has heightened the reliance upon stakeholder perceptions (which in some cases have been disputed or contradicted during the assessment). This introduces uncertainty into the assessment and the recommendations recognise this limitation.

11.1 Assessment of future options

SKM assessed the options against:

1. Assessment criteria provided by the department as part of this project incorporating objectives, outcomes and outputs from the NPA, and the bore requiring rehabilitation from the SMP.
2. Risks
3. Benefits
4. Financial impact



These are discussed in more detail in the following sections.

11.1.1 Assessment of future options against assessment criteria

The assessment criteria listed in the table below were provided by the Department to guide the evaluation of GABSI3. SKM has applied the same criteria to assess the relative merits of the future options.

Table 20 Evaluation criteria and source

Evaluation criteria for review	Source
1. Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems	Outcome A, NPA
2. Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20. This includes 880 (or potentially up to 1080) bores in the overall GABSI program.	RFQ PRN112-0683
3. Maintenance or improvement in the flow of water to GAB-dependent springs	Outcome B, NPA
4. Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders	Outcome E, NPA
5. Assisting implementation of NWI commitments	RFQ PRN112-0683
6. Completion of projects and activities, as specified in the States' annual Implementation Plans	Output 15, NPA
7. At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes	Output 16, NPA

The assessment criteria relate largely to the sustainability aspects of the GABSI program, and align with the overall program objective of aspiring to a 'sustainable and on-going groundwater management system for the Basin'.

Table 21 reports on the assessment of the future options against each criterion. All the assessment criteria (with the exception of criteria 2 and 7) were lacking specific indicators which could be evaluated in a quantifiable or absolute sense. In the absence of quantified or definitive measures for these criteria, the approach taken was to assess whether the program had met the stated intent of the objective (eg "Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems" was assessed as being *Likely to meet requirement* if there was sufficient supporting evidence to support the view that water pressure was improved through replacement of old bores). This assessment largely relies upon feedback from stakeholders.

For criterion 1 and criteria 3 to 7, it was assessed that all three options were likely to deliver the requirements as defined by the assessment criteria. This reflects the program success to date, with stakeholder feedback anecdotally confirming that water pressure is improving (bores are starting to flow again after being sub-artesian for many years), flow to springs has increased, strong partnerships have been developed and NWI commitments are being implemented through the program. The completion of works in IPs (criterion 6) and the reallocation of less than 50% of saved water to other uses (criterion 7) are also reported by States in annual progress reports.

The degree to which the future options could meet criteria 1, 3, 4 and 5 will vary as the longer the GABSI3 program continues, the greater the positive impact the program will have upon the criteria. For example, extending timeframes allow for a greater number of bores to be rehabilitated which would further improve the flow of water to GAB-dependent springs. However, without defined indicators, it is difficult to differentiate that progress.

For criteria 6 and 7, it was assessed that there was no valid reason to expect any differentiation in results due to an extension of time across the options.

Criterion 2 was not guaranteed to be met by any of the scenarios however, by extending the timeframe the probability of being able to rehabilitate all legal GAB bores identified in the GAB SMP was increased.

Assessment of the future options against the evaluation criteria is summarised in Table 21.

Table 21 Assessment of future options against criteria

Evaluation criteria for review	Option 1	Option 2	Option 3
1. Improvement in water pressure through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems	G	G	G
2. Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20	A	R	R
3. Maintenance or improvement in the flow of water to GAB-dependent springs	G	G	G
4. Improvement in partnerships between government, industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders	G	G	G
5. Assisting implementation of NWI commitments	G	G	G
6. Completion of projects and activities, as specified in the States' annual Implementation Plans	G	G	G
7. At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes	G	G	G

G Likely to meet requirement

A Has potential to meet requirement

R Unlikely to meet requirement

11.1.2 Assessment of future option risks

This section reports on the key risks that vary between the options and is not intended to represent a full risk assessment of the future program delivery. The key differentiator between the future options is the proposed term of the program, which in turn is likely to affect the budget and volume of works that may be conducted.

Table 22 presents the risks identified for each future option. Due to the diverse nature of the risks and restrictions on data available, a comparative assessment of the quantitative impact of the risks has not been completed.

Table 22 Future option risks

RISKS
Option 1 (Extend the timeframe)
Funding commitment may be spent on lower value for money outcomes, as costs increase and benefits of works decrease
Program extension may only be part of the solution to completing works, as ongoing issues such as landholder reluctance to be involved and inability for landholders to access capital remain.
Timeframes do not provide an incentive for remaining landholders to participate
External factors such as access to resources (eg equipment) and other factors (such as weather) may limit the roll out of the program as seen in previous years and cause further delays
Projections for time required to complete bores identified in the SMP or to spend funding are uncertain, resulting in a lack of clarity for the program end date
Escalated administrative, construction and materials costs may decrease value for money towards the end of the program
Option 2 (Continue as planned)
Full Commonwealth funding commitment to GABSI3 may not be spent
Landholders engaged during the early stages of participation planning may not be able to complete works within the remaining timeframes of GABSI3 which may result in some adverse publicity and negative impacts on relationships with landholders
Rehabilitation of all legal GAB bores identified in the SMP unlikely to be completed
States may experience difficulty in providing additional funds within the set timeframes
Access to resources (eg equipment) and other factors (such as weather) may limit the roll out of the program as seen in previous years and further restrict the completion of bores identified in the SMP
Maximum water savings will not be achieved under the program
Increasing aquifer pressure may result in higher flows (and losses) from remaining uncapped bores
Some bores near springs may not have been rehabilitated, so improvement of flow in springs may be limited
Secondary economic and social benefits that may have occurred in regional communities as a result of rehabilitation of works may be reduced
Escalated administrative, construction and material costs may decrease value for money towards the end of the program
Landholder participation limited to those financially able to participate within the next 12-24 months.
If program ends before an alternative program starts, a loss of momentum may occur
Achievement of program objectives and outcomes is moderate compared with options 1
Option 3 (Terminate)
Full Commonwealth funding commitment of GABSI3 may not be spent

RISKS
Landholders engaged during the early stages of participation planning will not be able to complete works within the remaining timeframes of GABSI3 which may result in some adverse publicity and negative impacts on relationships with landholders
Rehabilitation of all legal GAB bores identified in the SMP will not be completed
Water savings will be lower than anticipated under the program
Increasing aquifer pressure may result in higher flows (and losses) from remaining uncapped bores
Some bores near springs will not have been rehabilitated, so improvement of flow in springs will be limited
Potential damage to partnerships and public backlash due to redirection of funds
Secondary economic and social benefits that may have occurred in regional communities as a result of rehabilitation of works may be reduced
A loss of momentum towards sustainable groundwater management in the GAB may occur which would be difficult to recapture in a new program
Achievement of program objectives and outcomes is lower than options 2 and 3

There are risks associated with each option and without a full review based on quantitative measures and data it is not possible to say which options carries the least risk. Identifying the least risk option depends on which priorities are highest:

- If achieving sustainability and environmental outcomes is the highest priority, then Option 2 (Continue as planned) and Option 3 (Terminate) represent the greater risk as Option 1 (Extend the timeframe) would allow greater completion of works, and therefore greater progress towards sustainability objectives.

- If achieving value for money is the highest priority, then Option 1 (Extend the timeframe) represents the greater risk since according to stakeholder feedback, the majority of high flowing bores have already been rehabilitated (with a few notable exceptions), and remaining bores are more resource intensive to complete. Added to this is the possibility of increasing costs of resources and administration in the future, which means the water saved will be more expensive.

Delayed works due to weather or resourcing shortages are reasons given for the lag in progress of GABSI3, however other reasons were also given that would not be addressed simply by extending the timeframe. For example, inability of landholders to contribute financially, difficulty in obtaining matching funds from State treasuries, or inequity of landholder contribution in situations where bores are shared. Any continuation of the program (Options 1 or 2) should aim to address these obstacles.

In terms of maintaining the strong partnerships developed through the program, Option 3 may exclude landholders who have already expressed interest in participating. Option 2 is likely to maintain the current good relationships, and Option 1 may improve relationships further.

11.1.3 Assessment of future option benefits

Table 23 presents a summary of the potential benefits identified for each future option. Due to the diverse nature of the benefits and restrictions on data available, a comparative assessment of the quantitative impact of the benefits has not been completed.

Table 23 Future option benefits

Benefits
Option 1 (Extend)
Maximises water saving gains achieved through additional works
Improved partnerships and community engagement achieved through additional works across the GAB
Increased number of bores/drains to be rehabilitated
Provides landholders with a greater opportunity to obtain finance and allow them to participate in the program
More likely to complete remaining high priority bores
Greater return of flow to springs
Maintains momentum built up over the 15 year program
Option 2 (Continue as planned)
Achieves water savings through completed works
Enables States to complete existing planned works under the current and future IPs until 2014
Current strong partnerships likely to be maintained
Partial delivery of program works results in cost savings
Allows landholders who have expressed interest to participate
Reduces risk of funding works of marginal value
The delivery of works to the end of 2014 would continue to engage already identified stakeholders and enhance partnerships
Achieves return of flow to springs
Achieves progress towards NWI commitment of sustainable water management
May encourage landholder participation to take advantage of final government funding
Potential to redirect unspent funds towards emerging priorities such as bore assurance schemes, low interest loans or broader eligibility criteria
Option 3 (Terminate)
Partial delivery of program results in cost savings
Minimises risk of funding works of marginal value
Achieves some return of flow to springs
Achieves some progress towards NWI commitment of sustainable water management
Potential to redirect unspent funds towards emerging priorities such as bore assurance schemes, low interest loans or broader eligibility criteria

In absolute terms, it is highly likely that an extended timeframe for delivering the project (Option 1) would produce greater benefits in terms of sustainability outcomes for the GAB as a greater volume of works can be completed on the bores. The program has successfully delivered against most of the assessment criteria and this will not change under any of the future options considered. While the sustainability benefits for Option 1 are

apparent, the evidence base to support a determination of value for money is not as clear. Options 2 and 3 still deliver against most of the assessment criteria and allow financial savings, which could be redirected into other GAB priorities, such as additional funding for landholders who cannot afford their contribution. Option 2 also has the benefit of potentially providing some impetus to participate in the program before government funding is no longer available. Option 1 may also have a similar consequence if it was designed around a final completion date.

11.1.4 Assessment of future option financial impact

A quantitative assessment of the financial impacts between the future options is not possible due to the reliance of this assessment on stakeholder feedback. A decision to end the program in 2014 or earlier has the potential to generate a spike in projects seeking funding so that landholders avoid missing out on government subsidies. This will be mitigated by the limited capacity of State budgets, restricted ability of landholders to access finance and constraints on equipment and labour required to undertake the works within a limited timeframe.

Table 24 reports on the potential financial impacts of the future options.

Table 24 Future option financial impact

Financial Impact
Option 1 (Extend)
Full Commonwealth funding likely to be spent
Escalating administrative, resources and materials cost may reduce the volume of works that can be completed for the budget
Potentially reduced value for money outcomes due to majority of high value works already being completed
States may experience difficulty in maintaining funding for GABSI as government priorities change
More landholders can afford to participate
Option 2 (Continue as planned)
Funding as per current IPs and jurisdictional planning (full Commonwealth funding would not be spent)
May observe increased interest from landholders aiming to take advantage of government subsidies
Potential pressure to increase funding to complete more projects in the final IPs as landholders take advantage of final government subsidies. Unlikely that this increase could be accommodated due to resource constraints
Landholders may experience increased financial pressure as they will have to maintain their own water supply works
Option 3 (Terminate)
Significant savings across Commonwealth and State investment
A potential reduction of funding directed towards GAB groundwater management
Landholders may experience increased financial pressure as they will have to maintain their own water supply works

The financial impact of each option indicates potential savings relative to the initial budget can be achieved under Options 2 and 3 due to the volume of works being less than forecast. Option 1 may be subject to declining value for money as lower flowing bores make up the majority of remaining works. Option 2 may also be subject to declining value for money to a lesser extent.

11.2 The future of GABSI3: Recommendations

This section presents the core recommendations of this analysis and proposed way forward.

An impediment to the analysis in this report has been the limited existence of quantifiable data and assessment criteria by which to assess the GABSI3 program. Anecdotal evidence and jurisdictional stakeholder feedback supports the view that the program has been successful in achieving outputs that fulfil the GABSI3 objective of *sustainable and ongoing groundwater management for the Basin*. However, the lack of clear targets make it difficult to measure the extent of success or to establish when the program has completed its intended purpose. On the basis of the targets that were established, the GABSI program has already been successful in achieving improved Basin management, ecological and socio-economic outcomes.

Primarily, this analysis has identified:

- The GABSI3 program has been valuable in promoting and implementing sustainable groundwater management within the Basin
- There is wide ranging support for the GABSI3 program
- There are few measurable criteria by which the GABSI3 program can be assessed, and therefore the assessment of achievements and issues is informed by stakeholder feedback. The lack of measureable criteria means there is little clear guidance on when sufficient progress has been achieved and as such, when the program should end.

The available evidence supports the conclusion that the program has already met its objectives to some extent and is considered a success to date. On this basis all future options would satisfy the objective of progress towards sustainable groundwater management in the Basin. However it is also likely that the longer the program runs, the greater the positive impact upon sustainability outcomes. Therefore while all options satisfy sustainability outcomes to some extent, Option 1 represents the most favourable approach from a sustainability perspective, as it:

- Enables the greatest progress towards program objectives and outcomes
- Has the greatest likelihood of completing work on all bores identified in the SMP
- Enables the momentum developed under the program to be maintained.

The majority of stakeholders were supportive of an extension of program timeframes to allow greater completion of the planned works.

However, continued expenditure on government programs must represent value for money (FMA Act, 1997; ANAO, 2006). The feedback received from stakeholders was that most of the high flowing bores had already been rehabilitated, as would be expected if IPs have prioritised works on high flowing bores, and bores near springs. There is a concern that rehabilitating lower flowing bores requires more intensive use of resources for a lesser volume of water saved. There were a few notable exceptions to this where owners of high flowing bores could not afford the landholder contribution, or bore trusts made equitable contributions difficult to assign between users.

Comments from stakeholders supporting the view of declining value for money included:

- Most of the larger schemes with greater water savings were completed under GABSI2 – GABSI3 involves smaller schemes.

- As most big schemes (landholders who wished to cap) have been done, the value for money criteria ($ per ML water saved) will be increasingly difficult to meet.
- Cost effectiveness is becoming less certain, as the scheme has largely exhausted the “low hanging fruit”.

While some stakeholders also commented that GABSI overall has been value for money, there was a view that the value of GABSI3 was lower than earlier phases, as it was designed to ‘mop up’ the outstanding works from GABSI1 and 2, that all the ‘low-hanging fruit’ (easier to rehabilitate, or higher water savings for investment) had been addressed. Stakeholders also noted that works under the GABSI3 program were sometimes ‘over-engineered’ and that works done under GABSI3 were significantly more costly than works done outside the program.

Stakeholder views on declining value for money were later disputed, which emphasises the difficulty of making recommendations based on anecdotal data from stakeholder consultation. The conjecture over whether value for money was declining could not be resolved in this assessment. It is recommended that objective metrics are developed and monitored to review the trends in value for money over the life of GABSI, and that this occurs before a decision is made to alter the GABSI3 program.

Recognising this limitation, Option 2 is recommended on the basis that:

- Progress has already been made towards objectives and outcomes in GABSI3. While extending the program would align with most stakeholder feedback and may enable further progress towards objectives and outcomes which would be beneficial from a sustainability perspective , value for money must be demonstrated to support an extended period of investment.
- Clear guidance and objective criteria on when to stop the program (in the form of termination criteria) is unclear and needs to be built into the program.
- Stakeholder feedback that suggests declining value for money is not evidence based and has been disputed. This uncertainty needs to be resolved before a recommendation to extend the program can be made.

A way forward for continuing work towards *sustainable and ongoing groundwater management for the Basin* is proposed based on the following three key elements:

Element 1: Anticipate completion of GABSI3 in 2014 as planned, with concurrent work to retrofit program logic, and evaluate trends in value for money as a basis for recommending an extension to GABSI timeframe.

Element 2: Establish future priorities for the sustainable management of groundwater in the GAB.

Element 3: Implement a future program with revised priorities, eligibility criteria and funding arrangements.

Figure 1 demonstrates the transition between GABSI3 and the future approach to sustainable groundwater management in the GAB. Further details of each element are discussed in the sections below.

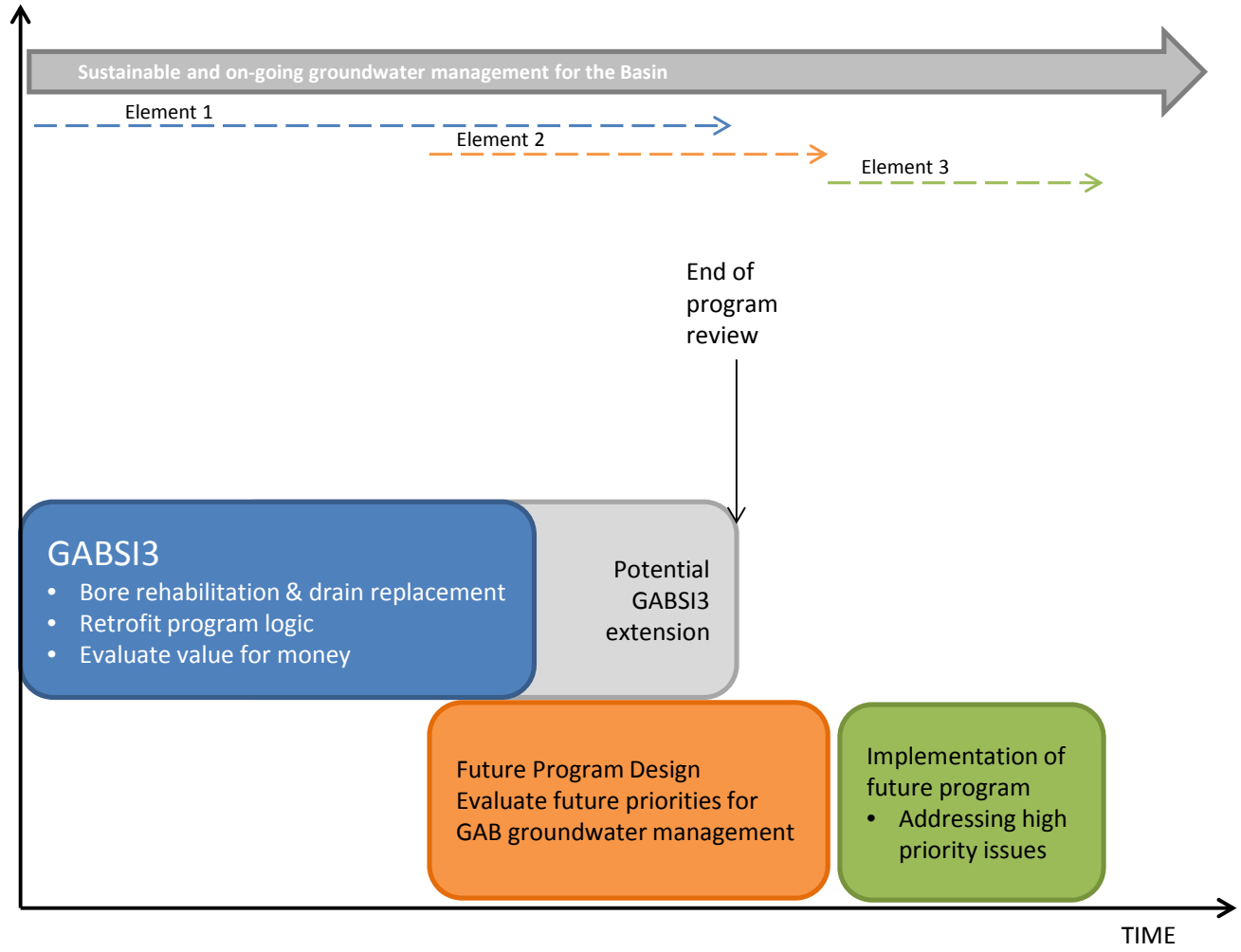


Figure 1 Proposed phase structure for GABSI3 and its future opportunities

11.2.1.1 Element 1- Finalisation of GABSI3

The GABSI program has successfully implemented bore rehabilitation works within the GAB since its inception. Element 1 continues this work, with the following additional components:

- Renewed focus on addressing the remaining high flowing bores, and the remaining bores near springs
- Finalising existing projects with participating landholders.
- A review of trends in value for money over the lifetime of GABSI, and assessment of whether any decline is considered to be unacceptable return on investment. The recommendation to cease GABSI3 in 2014 may change once Element 1 has been completed, if continuing value for money can be demonstrated. In that case, it would be recommended that GABSI3 is extended until government funding has been exhausted.
- Revision of program logic to establish terminal criteria for GABSI3. These criteria may be:
    - Completion of all SMP bores

  - o Full expenditure of Commonwealth funding
  - o A timeframe to be agreed by all parties
  - o A certain value for money threshold
  - o Completion of a reprioritised list of works (eg highest flowing bores, infrastructure near springs, best value for money)
  - o A combination of the above
- The program end should be effectively communicated to stakeholders to encourage participation.

A certain pressure recovery is not recommended as a basis for establishing a terminal criterion due to the inherent difficulties in measuring pressure across large areas and equating pressure increases to bore rehabilitation works.

In addition to this, it is also recommended that the program logic is revised so that a definitive 'end of program review' can be undertaken. This mid-term review has identified that assessment criteria are not definitive, and that no apparent reporting and data collection steps are in place to measure against the criteria. Cognisant of the fact that it is difficult to measure progress such as pressure recovery, improvement in spring flow, or improvement in partnerships on a basin-wide scale, criteria should be revised so that they enable a relative assessment of progress.

Revision of program logic would involve developing assessment criteria that are: 1. Specific; 2. Measurable; 3. Achievable; 4. Relevant; and 5. Timely. Data should then be collected to enable assessment of GABSI3 against its criteria. Steps should be taken to agree, between the States and the Commonwealth, on metrics and data sources to be collected for the review.

Examples of the types of data that might be collected to assess against each of the outcomes is described in Table 25.

Table 25 Possible data collection sources for assessment of GABSI3 assessment criteria

GABSI3 Assessment Criteria	Data sources/types (examples)
Water savings and water pressure recovery through replacement of old bores legally operating in an uncontrolled state with controlled bores and efficient, controlled watering systems	Pressure monitoring data • Selection and monitoring of an indicative suite of GAB bores • Private data (eg BHP Billiton pressure data) • Potentially other projects measuring GAB pressure
Rehabilitation of all legal GAB bores identified by respective State agencies in the Great Artesian Basin Strategic Management Plan (2000) Table 3, page 20	Consolidated excel file of bores, costs, water saved, for each State.
Maintenance of or improvement in water pressure within aquifers in proximity to, or beneath, high value GAB-dependant springs	Ecological spring data • Research studies • QLD annual report on GAB WRP • Spring monitoring data from projects measuring flow
Improvement in partnerships between government,	Information from jurisdictions on the partnerships developed to

industry and the community in the sustainable management and use of the groundwater resources of the Basin, both within and across State borders.	implement projects under GABSI3. Additional information on broader partnerships developed through landholder participation should also be collected, potentially based on targeted surveys as works are undertaken.
Assisting implementation of NWI commitments	Consider information compiled as part of the NWI triennial/biennial assessments, and NWC review of GABSI3.
Completion of projects and activities, as specified in the States' annual Implementation Plans	Consolidated excel file of bores, costs, water saved, for each State.
At least 50 per cent of the water saved under GABSI 3 being directed to restoring pressure in the Basin and not being reallocated for consumptive purposes	Records of reallocated groundwater.

11.2.1.2 Element 2 - Establishing future priorities

Element 2 recognises the concerns that were raised through consultation highlighting associated issues and changing priorities in the GAB. Many of these issues relate to ongoing management of bores in the GAB over time, the need for ongoing oversight of GAB related issues and the need for targeted activities not currently addressed under the GABSI program. These may represent greater benefits than those currently undertaken under GABSI3. This should be a key point of analysis of Element 2 in reviewing and recommending a way forward. Among associated issues identified are:

- High priority activities that have not yet been completed under GABSI (eg high flowing bores, and remaining bores near springs)
- Reflowing bores as pressure increases
- Bore integrity/failure
- Interaquifer leakage

Several priorities and strategies for future groundwater management in the GAB have been identified through this review, and should be considered for future programs:

- A focus on remaining higher flowing bores, and bores near springs that were not captured under GABSI3. From consultation, it is unlikely that all high priority bores will be completed within GABSI3, and that flows may increase as pressure in the GAB increases. These bores should remain a priority under future programs.
- Engaging with financing avenues (eg rural assistance authorities) to establish/enable access to finance for landholders who had trouble accessing finance for rehabilitation works during GABSI3.
- Mobilising additional resources to deliver the program of works. This may include considering alternative contracting resources, working with existing contractors to prioritise GABSI3 outcomes and working with the other States to share resources/knowledge to ensure implementation occurs.
- Designing measures to acquire relevant data to track progress, success and value for money of the program. Agreed reporting metrics should be incorporated into reporting templates. A revised program should also incorporate an improved monitoring and evaluation framework for effective evaluation and communication of program outputs to stakeholders.

- Incorporating broader economic values into the cost benefit proposition of future options. Many of the gains through the GABSI program are peripheral to the reported $/ML metrics, yet anecdotally represent significant socio-economic gains. In addition to informing future program development and review, a proper economic analysis may uncover the comparative benefits of investment into GABSI-type programs not previously recognised under the existing arrangements. Importantly, the outputs of the economic review may serve to attract more funding for future programs. Among the impacts that should be considered as part of the wider economic benefits review are:
    - The impact and sustainability of regional livelihoods resulting from bore rehabilitation works/improved access to water.
    - Industry impacts from secure water supply and increased pressure.
    - Improved land and water management outcomes.
    - Property management outcomes (including water quality, stocking, soil erosion, pest and weed management and irrigation capacity).
    - Improved ecological health of GAB springs.
    - Opportunity cost of future resources.
- Development of a *bore assurance scheme* that assigns government funding as seed funding for bore failure/maintenance insurance. This could target landholders willing to provide a premium, related to the relative risk of bore failure, to a broad insurance scheme cross the GAB. In effect, risk would be transferred to the landholder, but would provide a financial bucket to GAB bore maintenance issues beyond GABSI3.
- Developing a different scheme that targets reflowing bores. Depending on the cost benefit of this type of program, it may range from offering expertise to landholders, improving access to finance or providing grants for “problem” bores.
- Supporting research into groundwater science to understand the impact of GAB activities, to inform the delivery of sustainability measures that provide the most benefit to sustainable GAB management.
- Improving/supporting additional extension activities with GAB bore owners for sustainable land and water management outcomes.
- Establishing compliance measures to ensure high quality of works, cost effectiveness and consistent works specifications.
- Introducing regulatory measures that compel landholders to rehabilitate and maintain their bores, such as introducing licensing and charges for water used. This would require closer monitoring of flow in uncapped bores.
- Broadening the eligibility criteria for bore rehabilitation, so that other bore failure, maintenance or integrity issues can be addressed within a revised program.

An analysis of these options together with details from the final review of GABSI3 would help define the highest benefit priorities for future groundwater management in the GAB. Once priorities have been established program design should establish objectives supported by measureable outcomes and outputs as recommended in section 11.2.1.1. Reporting metrics should be agreed and the data to support progress against metrics should be identified.

This element should overlap with the final stages of GABSI3 (Element 1) so that changes can be implemented without significant delay when GABSI3 finishes. This would minimise loss of momentum, resources and

capacity. The review and the potential changes to the program should be marketed to GAB stakeholders early in Element 2, so that they can prioritise their involvement in the last years of GABSI3 (if it is extended) or wait until future programs are implemented.

11.2.1.3 Element 3 – Implementation of future groundwater management program for the GAB

Element 3 refers to the implementation stage of Element 2 which would have established groundwater management priorities in the GAB. It is envisaged that Element 3 would be an on-going commitment to groundwater management in the GAB.

12. Conclusions

The conclusions of the stakeholder analysis are that the GABSI3 program is considered a success, with its objectives and outcomes recognised as being important. Analysis of stakeholder responses identified some options for improving the effectiveness and efficiency of the program. Many of these recommendations may already be occurring, but may not be currently reported against.

In terms of the continuing delivery of an effective and efficient program, the following issues garnered strong responses from stakeholders:

- The program has been highly successful and is appreciated by stakeholders.
- Rehabilitating the remaining high-flowing bores is a high priority.
- Financial contributions have encouraged involvement so far, but arrangements need to be revised to complete the remaining high priority works. Cost is the largest disincentive for landholders who are yet to participate.
- Perceptions of declining value for money being realised from the program: projects with the greatest benefit have been done and the remaining projects involved declining returns on investments in terms of $/ML water saved.
- Perceptions that efforts for the GABSI program are being undermined by CSG extraction in other areas of the GAB.

Based on the literature review and stakeholder consultation, the performance evaluation of GABSI3 was completed. The evaluation indicated that progress was being made against all Assessment criteria, however the degree of progress could not be well defined for two reasons:

- Assessment criteria (which are also program objectives and outputs) are generally not measurable.
- Assessment criteria (objectives and outcomes) are not reported against at a program level.

While the program is considered to be achieving its objectives, the lack of measureable objectives and outcomes means the program does not provide any termination criteria. There is no guidance on how much progress towards the objectives is required, and hence, no way to assess when the objectives have been fulfilled to an acceptable standard. Only Assessment criteria 2 and 7 provide measurable outcomes, and they are not consistently reported against. Performance is summarised below in terms of progress against Assessment criteria and whether reporting allows this progress to be assessed.

Assessment criteria	Measurable?	Has objective been achieved?	Reported under GABSI3?
Assessment criterion 1 – improve GAB pressure through bore and drain replacement works	Y	Yes (probably) Anecdotal evidence of increasing pressure from stakeholders.	Partially measured
Assessment criterion 2 – rehabilitation of GAB bores identified in the SMP	Y	Yes (partially)	Numbers of bores rehabilitated measured, but reporting does not reference SMP
Assessment criterion 3 – maintain/improve flow to GAB dependent springs	Y	Yes (probably) Anecdotal evidence of increasing flow from stakeholders.	N Partially measured in other GAB programs
Assessment criterion 4 – improve partnerships	Partially	Yes (probably) Anecdotal evidence of from stakeholders.	N

Assessment criteria	Measurable?	Has objective been achieved?	Reported under GABSI3?
Assessment criterion 5 – assist NWI commitments	Partial	Yes (probably) Anecdotal evidence of from stakeholders.	N
Assessment criterion 6 – completion of projects as specified in IPs	Y	Yes (partially) Obstacles to completing some IPs.	Y
Assessment criterion 7 – 50% of water saved directed back into the GAB	Y	Yes	Some (not all) annual performance reports show any new allocations of water

The three options analysed for the completion of the GABSI3 program were:

Option 1: Extend the timeframe for delivery of GABSI3, to allow continued progress towards planned works program, sustainability objectives, and spending profiles.

Option 2: Continue with GABSI3 as planned, resulting in no change to the program timeframes.

Option 3: Terminate GABSI3, to allow cost savings to government, and cease works and additional progress towards sustainability objectives.

Recognising limitations associated with lack of reliable data against which to assess value for money of the program, a change to current arrangements cannot be recommended. For this reason, Option 2 is recommended on the basis that:

- Progress has already been made towards objectives and outcomes in GABSI3. While extending the program would align with most stakeholder feedback and may enable further progress towards objectives and outcomes which would be beneficial from a sustainability perspective, value for money must be demonstrated to support an extended period of investment.
- Clear guidance and objective criteria on when to stop the program (in the form of termination criteria) is unclear and needs to be built into the program.
- Stakeholder feedback that suggests the value for money of the program has been disputed. This uncertainty needs to be resolved before a recommendation to extend the program can be made.

With completion of GABSI3 as a starting point, SKM recommends an approach consisting of three phases which are:

Element 1: Anticipate completion of GABSI3 in 2014 as planned, with concurrent work to retrofit program logic, and evaluate trends in value for money as a basis for recommending an extension to GABSI timeframe.

Element 2: Establish future priorities for the sustainable management of groundwater in the GAB.

Element 3: Implement a future program with revised priorities, eligibility criteria and funding arrangements.

Before the GABSI3 end date in 2014, the program should:

- Renew focus on addressing the remaining high flowing bores, and the remaining bores near springs
- Finalise existing projects with participating landholders.
- Review of trends in value for money over the lifetime of GABSI, and assess whether any decline is considered to be unacceptable return on investment. The recommendation to cease GABSI3 in 2014

may change once element 1 has been completed, if continuing value for money can be demonstrated. In that case, it would be recommended that GABSI3 is extended until government funding has been exhausted.

- Revise the program logic to establish terminal criteria for GABSI3. These criteria may be:
    - Completion of all SMP bores
    - Full expenditure of Commonwealth funding
    - A timeframe to be agreed by all parties
    - A certain value for money threshold
    - Completion of a reprioritised list of works (eg highest flowing bores, infrastructure near springs, best value for money)
    - A combination of the above
- The program end date should be effectively communicated to stakeholders to encourage participation.
- Revision of program logic so that a definitive 'end of program review' can be undertaken, including development of definitive assessment criteria where possible, and collection of data to measure against the criteria. Since it is difficult to measure progress such as pressure recovery, improvement in spring flow, or improvement in partnerships on a basin-wide scale, criteria should be revised so that they enable a relative assessment of progress.

Many priorities for future investment in groundwater management warrant further consideration for potential inclusion into a future program. Many of these issues relate to ongoing management of bores in the GAB over time, the need for ongoing oversight of GAB related issues and the need for targeted activities not currently addressed under the GABSI program. Some of the issues becoming an increasingly high priority in the GAB are:

- Completion of high priority activities that have not been completed under GABSI (eg high flowing bores, and remaining bores near springs)
- Reflowing bores as GAB pressure increases
- Bore integrity/failure
- Interaquifer leakage

Several priorities and strategies for future groundwater management in the GAB have been identified during this review, and should be considered for future programs:

- A focus on remaining higher flowing bores, and bores near springs that were not captured under GABSI3. From consultation, it is unlikely that all high priority bores will be completed within GABSI3, and that flows may increase as pressure in the GAB increases. These bores should remain a priority under future programs.
- Engaging with financing avenues (eg rural assistance authorities) to establish/enable access to finance for landholders who had trouble accessing finance for rehabilitation works during GABSI3.
- Mobilising additional resources to deliver the program of works. This may include considering alternative contracting resources, working with existing contractors to prioritise GABSI3 outcomes and working with the other States to share resources/knowledge to ensure implementation occurs.

- Designing measures to acquire relevant data to track progress, success and value for money of the program. Agreed reporting metrics should be incorporated into reporting templates. A revised program should also incorporate an improved monitoring and evaluation framework for effective evaluation and communication of program outputs to stakeholders.

- Incorporating broader economic values into the cost benefit proposition of future options. Many of the gains through the GABSI program are peripheral to the reported $/ML metrics, yet anecdotally represent significant socio-economic gains. In addition to informing future program development and review, a proper economic analysis may uncover the comparative benefits of investment into GABSI-type programs not previously recognised under the existing arrangements. Importantly, the outputs of the economic review may serve to attract more funding for future programs.

- Development of a *bore assurance scheme* that assigns government funding as seed funding for bore failure/maintenance insurance. This could target landholders willing to provide a premium, related to the relative risk of bore failure, to a broad insurance scheme cross the GAB. In effect, risk would be transferred to the landholder, but would provide a financial bucket to GAB bore maintenance issues beyond GABSI3.

- Developing a different scheme that targets reflowing bores. Depending on the cost benefit of this type of program, it may range from offering expertise to landholders, improving access to finance or providing grants for “problem” bores.

- Supporting research into groundwater science to understand the impact of GAB activities, to inform the delivery of sustainability measures that provide the most benefit to sustainable GAB management. This may already be occurring through other research programs such the GAB Water Resource Assessment. Conclusions should be incorporated into assessment of future priorities for the GAB.

- Improving/supporting additional extension activities with GAB bore owners for sustainable land and water management outcomes.

- Establishing compliance measures to ensure high quality of works, cost effectiveness and consistent works specifications.

- Introducing regulatory measures that compel landholders to rehabilitate and maintain their bores, such as introducing licensing and charges for water used. This would require closer monitoring of flow in uncapped bores.

- Broadening the eligibility criteria for bore rehabilitation, so that other bore failure, maintenance or integrity issues can be addressed within a revised program.

Once future priorities are established, the costs and benefits of these options should be evaluated and used to inform program design for future groundwater management in the GAB.

13. References

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Queensland Department of Environment and Resource Management (DERM) (now Queensland Department of Natural Resources and Mines (DNRM), 'Minimum Standards for the Construction and Reconditioning of Water Bores that Intersect the Sediments of Artesian Basins in Queensland', March 2012.

Appendix A. Stakeholders

Stakeholder Group	Contact		
GABCC members	Mr Jeff AUSTIN Ms Sarah MOLES Cr Mike MONTGOMERY Mr Matthew Paull Mr Murray TYLER Mrs Sue FERGUSON Mr Des YIN FOO Mr Peter BAKER	Mr Angus EMMOTT Ms Juanita HAMPARSUM Mr Lynn BRAKE Mr Ranald WARBY Mr Derek WHITE Mr Tony HARMAN Mr George GATES Mr Saji JOSEPH	Mr Alan HOLT Mr Roderick GILMOUR Mr Michael GOOD
Commonwealth implementation representative	Mr Greg Manning Assistant Secretary Aquatic Systems Policy Branch, Water Reform Division Department of Sustainability, Environment, Water, Population and Communities Tel: 02 6274 1904, Mob: 0404 823 017 Email: Gregory.Manning@environment.gov.au		
	SA	**NSW**	**Qld**
State implementation representatives	Kevin Dennis Kevin.dennis@sa.gov.au (08) 8463 6958 0418 801 703	Steve Cheal (also SC member) 02 6721 9823 0429 784 056 steve.cheal@water.nsw.gov.au	Thomas Bean Thomas.Bean@dnrm.qld.gov.au 0745 291 211
		George Gates 02 8838 7805 0411 108 783 george.gates@water.nsw.gov.au	Simon Orphant Simon.Orphant@dnrm.qld.gov.au 0745 291 353
			Andrew Piper Andrew.Piper@dnrm.qld.gov.au 0745 291 355
Landholders who have already participated	Mr Greg Campbell Kidman's Holdings Ltd. (08) 8334 7100. 183 Archer Street, North Adelaide.	Ed Fessey "Kulkyne" 02 6874 4935 0427 744 935 efessey@bigpond.com.au	John Chandler chandlerpastoral@bigpond.com 07 4651 1633
	Mr Greg Connors, Mutooroo pastoral Company. Quinyambie Station. 5 King William Road, Unley SA 506. (08) 8091 2516	Sonya Marshall 3B's Bore Trust 02 6796 1424 0428 961 424 teranna1@bigpond.com	Harry Mace malangapastco@bigpond.com 07 4625 9638
		Anne Kennedy 02 6822 3007 0429 023 007 annkenn@bigpond.com	Brian Hughes harrogate.hughes@bigpond.com 07 4741 8673
			Bill Douglas billdouglas@bigpond.com 07 4623 6125

Landholders who are planning to participate	Mr John Hughes, Clifton Hills Pastoral Company. 283 Wakefield street, Adelaide, (08) 8223 2761	Bill McCumstie Nullawa & Dumble Bore Trusts 02 6829 6047 0427 296 050	Jason Hoch thespringsaramac@bigpond.com 07 4651 0552
	Mr David Brook. Brook Proprietary, Aidira Downs Station, Birdsville QLD 4482. (07) 4656 3252	Doug Wilson "Myall" 02 6829 0472 0427 254 837 drwwilson@bigpond.com	Kathy Parry glenberviestation@bigpond.com 07 4746 8625
		Rory Treweeke Angledool Bore Trust 02 6829 1079 0428 634 204 treweeker@bigpond.com	
Landholders who have declined to participate	None	Bill Massman Lower Quambone Bore Trust 02 6823 2202	John Parkinson 07 4630 9608 Fax: 074630 9608
	None	Richard (Dick) Hemphill Quilbone No.3 02 6824 2024 0413 238 160	Rolly Humphries roly64@bigpond.com 07 4934 1600
	None	Gary Eason Pilliga Bore Trust 02 6796 4484	NA

Consultation completed

Attempted contact but consultation did not occur

Not contacted (already had enough responses in category)