

Carnarvon Ministerial Advisory Committee

Executive summary medium-term review



EXECUTIVE SUMMARY MEDIUM-TERM REVIEW

BACKGROUND

The Carnarvon Ministerial Advisory Committee (CMAC) was established in October 2013 by the then Ministers for Water, and Agriculture and Food. The Committee's formation was in response to dry conditions for three successive years that led to a shortage of irrigation water for the summer of 2013/14 and significant concern by growers that they did not have adequate water for their summer crops.

The CMAC undertook a series of remedial and support actions supplemented by two minor rain events during this period, which allowed irrigation to continue with limited interruption. These matters are reported in the soon-to-be-published Carnarvon Irrigation District Short-Term Response Plan: November 2013 to April 2014, prepared by the CMAC for the two Ministers.

In the short-term response plan, the CMAC advised that with the continual increase in demands for water and the planned expansion of agriculture in the region, the measures undertaken during 2013/14 alone are unlikely to be sufficient to manage future periods of high water demand. In addition, the CMAC advised that with the implementation of the Gascoyne Foodbowl Initiative (GFI), the vision prepared by the Gascoyne Development Commission (GDC) for an expanded impact of the agriculture economy in the region, as well as the recognition of significant limitations with existing infrastructure, it would be appropriate to review the structure and operation of irrigation supply and management in the region and develop a more strategic and collaborative approach for its management in the medium-term of five and more years.

This medium-term review and its recommendations provide the Government with advice and direction on matters to be resolved that enable irrigated agriculture to develop and prosper in the region in the future. It identifies the specific components that need evaluation and the information that must be gathered to enable decisions to be made with a full understanding of all costs, responsibilities and implications.

The executive summary of this report has incorporated the key findings and recommendations against each key finding. They have been developed through the CMAC and endorsed by its members following the meeting of 9 July 2014. The review will be provided to the Minister for Water and the Minister for Agriculture and Food by the CMAC through their respective Directors General.

KEY FINDINGS

1. GOVERNMENT POLICY SETTINGS

There are a number of key policy areas and initiatives that will impact on the future management and operations of the Carnarvon irrigation district. These include:

Governance and economic:

- the decision by Government in 2004 to establish two grower-owned cooperatives — the Gascoyne Water Asset Mutual Co-operative Limited (GWAMCO) and the Gascoyne Water Cooperatives (GWC) — and transfer ownership and operation of the irrigation water distribution assets to them;
- the extension of the grower-owned cooperatives' role in water supply through joint development and ultimate ownership and operation of the first stage of the Northern Borefield;
- the previous granting of infrastructure (irrigation pipeline and Northern Borefield) to GWAMCO and GWC without a requirement for compensation to Government; and
- the ongoing significant Government subsidy for the supply of water to producers.

Water Resources:

- the agreement that water in subarea A for growers' own usage is self supply and not included in the water supply scheme managed by the cooperatives;
- the current reliability of supply conditions which guarantee water to 80 per cent reliability as outlined in the *Lower Gascoyne water allocation plan 2011*; and
- the provision of a reserve for future public drinking water supply for Carnarvon from the Southern Borefield through the water allocation plan. This reserve ensures that there will be sufficient available public drinking water to meet long-term growth in Carnarvon.

Growth of the horticultural area:

- the development of the GFI to develop further new water resources (up to 4 GL/a) to support industry expansion by 400 hectares (ha) and to identify a further 800 ha for future development. The GFI has also provided extra water to the irrigation system from the current Northern Borefield (and will complete its electrification).

The CMAC has found that there is variable knowledge on a number of the key policies that are the basis of irrigation supply in the Gascoyne. This includes views from some in industry that any new water from the GFI should be made available to current industry. The infrastructure developed as part of the GFI will be considered as part of the CMAC considerations. This will be in line with the current Cabinet-endorsed Royalties for Regions project.

In addition, there is currently no formal mechanism to ensure Government policy for agricultural development in the region and its implementation plans are fully coordinated, and where responsibility and authority are clearly delineated.

There is a positive opportunity to increase the communication and cooperation among the Government jurisdictions that are involved in addressing the matter of water supply for irrigation in the Lower Gascoyne: the Department of Water (DoW), the Department of Agriculture and Food Western Australia (DAFWA), the Department of Regional Development (DRD), the Water Corporation, the GDC and the cooperatives.

Recommendation 1 – the CMAC recommends that all background policies underpinning the Gascoyne irrigation area be reconfirmed as part of the review.

Responsibility: The DoW, the DAFWA, the Corporation and the GDC.

Funding: Within existing agency or GFI budgets.

Timing: 1 October 2014.

2. ENGINEERING REVIEW

A key issue for the CMAC was to understand the state of the infrastructure supporting the irrigation industry to assess its efficiency, state of repair and ability to meet future requirements.

An analysis of infrastructure associated with irrigated agriculture in the Lower Gascoyne irrigation area (LGIA) was undertaken by the Water Corporation in conjunction with the cooperatives. This analysis has shown that the integration and operation of existing water infrastructure fails to optimise the management of existing demands and is inadequate to meet expanding agricultural demands. The main findings include:

- the Gascoyne Irrigation Supply Pipeline (GISP) is of an inappropriate hydraulic design and is currently unable to provide the necessary hydraulic head for some existing users. Therefore, it is unable to continuously provide a reliable supply of water to all growers. The existing system would be unable to supply irrigation water to some of the proposed GFI lots north-east of Glades Road without pressure boosting;
- during construction of the GISP, an insufficient number of isolating valves were installed to allow sections of the irrigation pipe to be serviced without shutting down and bleeding the entire pipeline. Further, since construction, air bleed valves have been closed off and pressure control valves at growers' take offs have been removed;
- SCADA telemetry systems both in the Northern Borefield and at grower supply points that were installed are not operating and require overhaul and maintenance;
- the existing GWC water allocation was only partially accessed in 2013, due to the cost of running diesel generators. The electrification of the Northern Borefield which is currently underway, should alleviate this issue;
- the existing main supply pipeline for the Southern Borefield run by the Corporation requires an increasing level of maintenance, although has little impact on the reliability of the scheme. This pipeline is expected to be replaced within the next 2–10 years, placing pressure on bulk water supply costs to GWC;
- electrical supply to the Southern Borefield has required an increase in maintenance; and
- numerous growers do not have suitable (or a sufficient volume of) private water storage to allow for the balancing of flow rates and water pressure, and to allow for blending of water for irrigation. In some cases, growers do not have a secure private water supply for their domestic use.

Recommendation 2.1: The CMAC supports the findings of the technical assessment of the Carnarvon irrigation system's infrastructure undertaken by the Corporation in conjunction with GWAMCO and GWC (as listed above).

Recommendation 2.2: In order to ensure that existing and future infrastructure is adequate to meet future needs, fully integrated and that it enables efficient delivery of water to irrigators, an independent engineering concept design report should be completed. The technical design report should include:

- an outline of service-level conditions and cost trade-offs to support either a gravity flow or pressure-boosted irrigation water distribution system;
- concept engineering designs for the two alternate system configurations (gravity flow or pressure-boosted);
- necessary capital works and capital costs to enable full system integration;
- time table of capital upgrades and changes to the operating plan/approach for the system; and
- estimated capital and operating costs for each component of the system and an outline of when these costs are incurred or how they change over time.

Responsibility: The Water Corporation.

Funding: \$100 000 is required.

Timing: 31 October 2014.

3. OPERATING MODEL AND FUTURE MANAGEMENT OF IRRIGATION SYSTEM

The current water supply system for the LGIA is relatively small (12 gigalitres per year [GL/y]) but it is a complex system. It relies primarily on groundwater obtained from the Southern Borefield by the Water Corporation and from the Northern Borefield by the cooperatives. The GWC then distributes this water according to allocations established from shares purchased in the GWC. The DAFWA is presently developing the Northern Borefield further to the east of existing infrastructure, to provide water for the proposed 400 ha expansion of the GFI. Ownership of the new borefield has not been determined, although the DAFWA has indicated it will not own or manage the borefield, and it identifies it as part of the current system. Once implemented, it could, in principle, result in three separate suppliers of water to the system to a total maximum of only 11.9 GL/y. In addition, growers obtain self-supply water from subarea A (up to 6.1 GL/y).

The CMAC assessed seven operating models for the long-term management and operation of the irrigation system. The view that aggregating the supply infrastructure would provide more effective and efficient management received strong support. Of the seven options, the CMAC considered that options 3 and 5 warrant more detailed analysis against the preferred status quo option 2:

- Option 3 – The cooperatives run all of the bulk irrigation supply systems of both the Northern Borefield and the Southern Borefield;
- Option 5 – The Water Corporation run all of the bulk irrigation supply system of both the Northern Borefield and the Southern Borefield; and
- Option 2 – The cooperatives run the Northern Borefield including the expansions being developed as part of the GFI, while the Water Corporation continues to run the Southern Borefield. This is an expansion of the status quo position.

In all of these options it is assumed that the cooperatives would remain as the sole distributor of irrigation water to growers and that the Water Corporation would remain the provider of potable water for the Carnarvon town scheme supply.

A more detailed evaluation needs to be undertaken of the three preferred options identified by the CMAC as the most effective way to run and manage the expanded irrigation system for the Lower Gascoyne. The evaluation would need to include financial, engineering, governance and legal issues and in particular should consider in detail all of the costs for infrastructure, maintenance and operation of the system in perpetuity.

Note: Growers currently extract water from subarea A under a licence and for their own properties. Government policy is to maintain this self-supply arrangement unless all growers indicate a desire to transfer their entitlements to the cooperatives. The CMAC did assess an option in which one entity would extract and manage water from subarea A and feed this into the irrigation scheme pipeline (option 7). The strong opposition by growers to this option is seen as a fatal flaw to its implementation. The option was also strongly opposed by the committee members and not provided as a viable alternative for further assessment.

Recommendation 3.1: The CMAC recommends three options for further assessment by Government. Option 2 – status quo with the Water Corporation managing the Southern Borefield and cooperatives managing the Northern Borefield (including GFI borefield); and two preferred options with a single bulk water supplier to the irrigation system as Option 3 – GWAMCO/GWC and Option 5 the Water Corporation. Note that under the three options:

- the GWC would still manage the distribution supply pipeline to growers;
- the Corporation would manage the town water supply scheme; and
- growers would self-supply from subarea A.

Recommendation 3.2: A due diligence assessment be undertaken by an appropriate consultant for the cooperatives as the preferred bulk water suppliers and the manager of the water distribution to growers against ability to meet performance criteria. The Government to fully engage with the cooperatives and determine and agree on standards of operation and governance to be maintained.

Responsibility: The CMAC.

Funding: \$20 000 – \$30 000 is required.

Timing: October 2014.

4. ECONOMICS AND PRICING MODEL

The assessment completed by the CMAC of the seven operating models did not assess them on financial and cost terms. Capital and operating costs developed as part of recommendation 2.2 that delivers a concept design for future infrastructure, should then be analysed as part of the consideration of operating and pricing models.

In the immediate term, there is a need to review the economic feasibility of the GFI Stage 1 (400 ha expansion) to reflect updated capital and operating costs, likely timings of project components (electrification, Northern Borefield expansion and land expansion) and expected increase in agricultural productivity. In addition, given that the irrigation precinct is serviced by the Southern Collector Main, any material increase to the operating subsidy paid to the Water Corporation will need to be expressly determined and approved by the Minister for Water in Cabinet.

Recommendation 4.1: Undertake an economic consultancy to assess the overall financial implications of the three governance options identified in recommendation 3.1 and the total cost of infrastructure in recommendation 2.2 to provide advice to the Ministers on the most appropriate pricing option (model) for irrigation water in Carnarvon. The water pricing policy should be clearly stated. It is expected that this work will include:

- determination of the capacity of the irrigators and the cooperatives to pay;
- determination of ultimate long run price for irrigation water; and
- advice on the differential between capacity to pay and long run price, reflecting any need for a capital injection or increase in operating subsidy, including any increase arising from recommendation 2.2.

Responsibility: The CMAC.

Funding: \$50 000 is required.

Timing: 31 October 2014.

5. OPERATION AND MANAGEMENT OF THE COOPERATIVES

There has been discussion in the CMAC regarding the continuance of the cooperatives, their capacity and their membership, including:

- the cooperatives are at times limited in capacity to undertake their full role as managers and operators of the irrigation system. Ensuring continuity of key staff is essential to this role and will be progressively more important as the demand for irrigation water increases;
- membership on both cooperative boards is currently limited only to growers and does not include any independent members. These board structures meet the obligations of the cooperatives as identified in the functions, duties, and structure summary of the boards, but limits the opportunity of the boards to take advantage of external skills and advice; and
- an evaluation of the governance of small irrigation cooperatives in Queensland has recognised that a single board structure may be feasible for their operation.

The cooperatives are undertaking an internal review of their operating structures and any changes will be taken to their board membership.

Recommendation 5.1: The cooperatives complete a review of their operating structures and any changes will be taken to their board membership.

Responsibility: The cooperatives.

Funding: Nil required.

Timing: 31 October 2014.

Recommendation 5.2: A review of the current performance and sustainability of small irrigation water cooperatives across Australia to be completed, giving consideration to national trends and outcomes. The intention is that this work will inform future decisions on the most appropriate approach for irrigation water delivery in Western Australia.

Responsibility: The CMAC.

Funding: \$20 000 is required.

Timing: 31 October 2014.

6. WATER RESOURCES OF THE LOWER GASCOYNE AND WATER ALLOCATION PLAN

The current *Lower Gascoyne water allocation plan 2011* was developed in a manner consistent with the principles of the National Water Initiative and provides allocation limits for water resources with appropriate levels of security. Since its publication in 2011, considerable additional monitoring and exploration data has become available. In addition, further agriculture development in the region is being encouraged and will be dependent on additional water resources being sustainably available.

Use of the Carnarvon groundwater model, or GASFAMS, is the appropriate tool to determine the availability of additional water resources as well as long-term sustainable extraction rates from the range of aquifers in the area.

Monitoring of patterns of water use has shown that the water resources of subarea A are regularly underutilised, even though licensed entitlements exceed allocation limits.

There are significant opportunities for increased water use efficiency by growers. The expansion of the DAFWA irrigated agriculture efficiencies including 'More Dollars per Drop' are key to educating growers in current efficient sprinkler and monitoring systems. A dedicated program for Vietnamese growers should be incorporated.

Recommendation 6.1: Review all existing data and incorporate new information into the existing groundwater model, GASFAMS. Undertake assessment of a range of reasonable extraction scenarios and resulting influences on groundwater resource and groundwater quality.

Responsibility: The DoW.

Funding: \$200 000 funded by the DoW and the GFI.

Timing: 31 October 2015.

7. PEAK DEMAND RESPONSE PLAN

There is an annual peak demand for water from the irrigation system in the period October to the following January each year. This is predicted to occur again in 2014/15, with potential demand exceeding current supply capacity by October 2014. However, allocation limits for water for this period exceed anticipated demand. Consequently, any shortage of water in 2014/15 will be principally due to limitations with infrastructure and the inability to extract groundwater up to allocation limits.

Actions taken during the period 2013/14 to aid in the alleviation of low water supply that were successful in their implementation should remain in place including:

- low aquifer storage (LAS) plans;
- temporary water for periods of high temperatures;
- allocations from subarea A for water of salinity higher than 1000 parts per million; and
- the use of water from additional production bores.

However, the CMAC was not able to identify a single peak demand response plan that addresses all of the issues and options associated with low water supply. A plan of this type is essential for the future, especially as water requirements increase and will more frequently approach or meet allocation limits (recommendations 5.1 and 5.2).

Deliberations of the Low Aquifer Storage Group during the 2013/14 low water period identified the main issues associated with the limited water supply and recommended options available for management. However, the group's authority was limited to the provision of advice and it was not in a position to ensure its recommendations were endorsed and implemented. This group was disbanded once the Minister for Water announced the cancellation of the LAS in May 2014, but has been meeting unofficially to continue the transfer of information and encourage dialogue.

Recommendation 7.1: A peak demand response plan be developed for 2014/15 which is updated and improved annually by September of each year.

Responsibility: Bulk water suppliers.

Funding: Nil required.

Timing: 31 October 2014.

8. COMMUNICATION

Communication within agencies, the cooperatives and the growers are ad hoc. A series of informal meetings with the cooperatives and growers during the recent year has shown strong interest and commitment to understanding water management issues and this dialogue should be maintained. Specific regard is required for the needs and interests of the growers of the Vietnamese community.

Intergovernmental interaction: consideration should be given to the GDC performing the role of chair of the ongoing interagency/cooperative committee.

Recommendation 8.1: A formal communication plan is to be developed that addresses:

- the CMAC's findings to the Ministers;
- the CMAC's recommendations to Carnarvon irrigators;
- process of continuous communication with growers – the cooperatives need to be the key player in informing the growers about the operation and performance of the system;
- specific aspects to be considered in developing the long-term communication plan will include the needs and interests of growers from the Vietnamese community; and
- how the irrigation system will be established in Carnarvon including the roles of infrastructure providers and Government agencies.

Responsibility: The GDC.

Funding: Nil required.

Timing: 31 October 2014.

9. FUTURE PROCESS

It was agreed in 2013 by the then Ministers for Water, and Agriculture; Food that the CMAC would be disbanded with the delivery of the Medium-Term Review. However, the Medium-Term Review by the CMAC recommends a number of follow up engineering and economic studies that, if approved by the Minister for Water and the Minister for Agriculture and Food, are proposed to be completed by November 2014. Therefore, it is proposed by the DoW and the DAFWA (with the support of the CMAC) that the CMAC continues in its current or similar form for a further six months (to December 2014).

The cost of this third stage of works is estimated at approximately \$250 000 to cover four works listed in the recommendations:

1. engineering review (\$100 000);
2. establishing operating standards and review of Cooperatives delivery (\$50 000);
3. economic review for the pricing model (\$50 000); and
4. continuation of the Chair for the CMAC and on costs (\$50 000).

This estimated cost assumes that:

- the DoW and the DAFWA will fund the GASFAMS modelling work;
- each organisation pays for their own costs; and
- a Project Manager is provided by one of the agencies.