



Government of **Western Australia**  
Department of **Water**

# Arrowsmith and Jurien

groundwater allocation plan

Statement of response

Department of Water

August 2010



Statement of response –  
Arrowsmith and Jurien  
groundwater allocation  
plans

Department of Water

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# Statement of response – Arrowsmith and Jurien groundwater allocation plans

This statement is the Department of Water's response to the comments received on both the *Arrowsmith groundwater area allocation plan for public comment* (DoW 2009a) and the *Jurien groundwater area allocation plan for public comment* (DoW 2009b).

All the comments we received were considered in finalising these two plans — *Arrowsmith groundwater allocation plan* (DoW 2010a) and *Jurien groundwater allocation plan* (DoW 2010b).

## The public comment period

The two allocation plans were open for public comment from 14 August to 30 October for Arrowsmith and from 18 September to 18 December 2009 for Jurien.

During this time letters inviting comment on the plans were sent to:

- local members of parliament
- local government authorities
- Indigenous representatives
- government departments
- industry associations, industry representatives and environmental groups
- individuals who expressed an interest in water management in the state's Mid West region.

An invitation to comment and attend community presentations was also advertised during the first week of the public comment period for each plan in the following newspapers:

### Arrowsmith

- The West Australian
- Geraldton Guardian
- Geraldton MidWest Times
- Dongara Denison Local Rag
- NARNEWS
- Farm Weekly

### Jurien

- The West Australian
- Jurien Craytales
- Dandaragan Redgum Reports
- Countryman
- NARNEWS
- Farm Weekly
- Geraldton Mid-West Times
- Central Midlands & Coastal Advocate

The department's Mid West Gascoyne regional office also discussed each plan on ABC radio with announcements on key aspects of the plans, how long the plans were open for comment, and when the presentations to the community would be held.

The department held public presentations to help facilitate the consultation process and give the community a chance to ask questions on each of the allocation plans. The presentations were generally well received by the attendees and gave community members the chance to provide valuable feedback to the department on its water management.

The presentations for the Arrowsmith groundwater allocation plan were held at:

- Geraldton, Ocean Centre Hotel – Monday 7 September 2009
- Mingenew Community Hall – Tuesday 8 September 2009
- Eneabba Recreation Centre Hall – Wednesday 9 September 2009

There were eight community members at the Geraldton presentation, eleven at the Mingenew presentation, and eight at the Eneabba presentation.

The presentations for the Jurien groundwater allocation plan were held at:

- Badgingarra Shire Hall – 12 Monday October 2009
- Dandaragan Shire Hall – 13 Tuesday October 2009

There were nine community members at the Badgingarra presentation and fifteen at the Dandaragan presentation.

Attendees at the presentations ranged from local farmers and farming companies to local government and state government representatives, mining companies and other industry groups.

## Comments received and the department's responses

A total of 17 submissions were received from a range of interest groups (Table 1). The comments and questions raised during the public meetings were also used in this process.

The department combined the statement of response for the two groundwater allocation plans because the issues covered by each submission applied to both areas.

A list of the respondents and their associated interest group is given at the end of this report (see Table 7). Respondents representing a specific interest group may also have commented on other areas of interest.

We appreciate the effort put into all of the submissions have considered all the comments in finalising the plans. The submissions we received on each allocation plan were used to improve our plans. This statement responds to the comments and summarises how they are addressed by the management arrangements set out in each plan.



Table 1 Interest groupings of respondents to the draft plan

Interest group	Number of submissions	
	Arrowsmith	Jurien
Agricultural		
Environmental		1
Community		
Mining and industry	2	1
Public water supply	1	1
Local resident		1
Local government	1	
State government agencies	5	4
<b>Total</b>	<b>6</b>	<b>8</b>

The following tables provide a summary of the main issues and questions raised through the public consultation process and the department's responses (Tables 2 to 6). The comments have been grouped by the type of issue related to water allocation that was raised in the submissions.

Most of the comments received were concerned with:

- the process for allocating water
- the licensing policies, including trading
- monitoring
- public water supply
- future community consultation
- access to information and water availability
- meeting future demand.

**Table 2** General comments received on the plans for public comment

Comment	Department of Water response
<p><b>Support for the plan</b></p> <p>Six respondents expressed their support for the plans, with most agreeing that the plans are a positive step in water management. In particular:</p> <ul style="list-style-type: none"> <li>• the plans provide clear visions, objectives, actions and implementation framework</li> <li>• the plans will not have a negative effect on existing use</li> <li>• provision of sufficient public drinking water for future growth in the region has been accounted for.</li> </ul>	<p>The Department of Water values the input and support for the plan provided by stakeholders and community in the Jurien and Arrowsmith groundwater areas.</p> <p>We will work to ensure information is available and engagement occurs on major issues and concerns as we implement and review these plans.</p>
<p><b>Linking the supporting technical documents with the plans</b></p> <p>One respondent raised the issue that the supporting technical documents contain vital information to support the plans and that some of this information should be included in the plans to clarify the objectives, strategies, actions and decisions made.</p>	<p>We have updated sections 6.1 and 6.2 of each plan with additional information to support the actions and plan implementation. All of our technical documents support the development and content of each plan and are available on our web site.</p> <p>A plan document is not designed to be a repository of technical information. A plan is specifically designed to provide the allocation limits, objectives, policies and strategies for implementing the plan.</p>
<p>One stakeholder suggests further information is required to explain the overall vision of the plan, how it will be achieved and how the community has been involved in the process.</p>	<p>The purpose of the plan is to guide sustainable groundwater allocation decisions, while promoting efficient use of the resources to optimise water use for regional growth.</p> <p>The department’s broader visions and directions for water resource management in the Arrowsmith and Jurien groundwater areas will be further developed with the community through our Mid West regional water planning process (see Section 1.1 of each plan).</p>

Comment	Department of Water response
<p><b>Future communications</b></p> <p>One respondent submitted several comments on future communications, including:</p> <ul style="list-style-type: none"> <li>• licence applicants conducting public meetings on licence proposals</li> <li>• referral of licence applications to other government agencies for advice on economic and social aspects of a licence applications</li> <li>• community consultation for the next plan and ongoing involvement in water management.</li> </ul>	<p>Many of the issues raised through our community consultation are addressed in developing the allocation and regional water plans.</p> <p>Applicants requesting &gt;100 000 kL/yr are required to advertise their application in state and local newspapers as part of the requirements under the <i>Rights in Water and Irrigation Act 1914</i>. The community can comment on these applications as part of the licence process.</p> <p>In addition to the legal requirements the public consultation process for new licences likely to require a higher level of assessment is described in Section 4.3 of each plan.</p> <p>Our referral for advice on technical aspects of a proposal to other government agencies is only related to those licence applications described in the policy.</p> <p>During any future consultation on planning or changes to water allocation we will engage with the community, water users and other government agencies throughout the process.</p>
<p><b>Previous allocation planning in the Arrowsmith and Jurien groundwater areas</b></p> <p>To demonstrate transparency in decision making two respondents suggest outlining past planning policies that are being replaced by this plan.</p>	<p>In general all of the past planning policies documented in interim allocation strategies (WRC 2002a and 2002b) have been reviewed and updated to ensure that the licensing policies are up-to-date and relevant to the current water allocation issues in the plan areas.</p> <p>Specific policy changes that should be noted are:</p> <ul style="list-style-type: none"> <li>• update of the process for allocating water where more than 70% of allocation limit has been licensed (Section 4.1 of each plan).</li> <li>• the policy applying a cap on the volume of water any particular licensee can hold was removed.</li> </ul>
<p><b>General comments</b></p> <p>One respondent commented on the structure of the plan and suggested changes to the order of information in sections 1 and 4, and inclusion of information from the appendices in the main body of the text.</p>	<p>We have updated the plan in light of the suggested changes by moving the most relevant hydrogeological maps to Section 1.4 and restructuring sections 4.1–4.3 of the plans.</p> <p>All editing and general comments on the plans regarding definitions and cross-referencing have been updated.</p>

Comment	Department of Water response
<b>Questions</b>	
<p>1. How will the evaluation statement be publicised and distributed?</p>	<p>Each annual evaluation statement is due on the anniversary date of the final plan release. The statement will be posted on our website and available from the department's Mid West Gascoyne regional office in Geraldton. Interested parties can contact the regional office or email <a href="mailto:allocation.planning@water.wa.gov.au">allocation.planning@water.wa.gov.au</a> around the anniversary date and we can advise you of where and when you can obtain a copy.</p>
<p>2. How do the water allocation plans relate to regional water planning and the National Water Initiative (NWI)?</p>	<p>The water allocation plans are compatible with the NWI as far as possible under the <i>Rights in Water and Irrigation Act 1914</i>. Future changes to the legislation will allow for additional water management mechanisms, where applicable, in future allocation plans. The regional water plan for the Mid West will provide a broader strategic direction for <i>all</i> water management aspects, not just allocation. For more information on how the allocation plans relate to the regional water plans see <a href="http://www.water.wa.gov.au">www.water.wa.gov.au</a> managing our water&gt; Regional water planning&gt;.</p>
<p>3. Has the NWI or any regional water plan influenced the content of the allocation plans and future planning for the whole Mid West Region?</p>	<p>Yes, the NWI has influenced the structure, direction and content of the new allocation plans, compared with the 2002 interim allocation strategies. The most important change has been the inclusion of clear objectives, strategies and implementation framework for the allocation plans, and more transparent water accounting. This has ensured that these plans can be effectively implemented and the department held accountable against the objectives in the plan. The plans meet the intent of the NWI in relation to trading, efficiency, preventing over-allocation and protecting water dependent environments, Regional water planning will influence the direction of future allocation plans in the Mid West region.</p>

Table 3 Comments on policy for water allocation and licensing

Comment	Department of Water response
<p><i>The policy tables in the final plans have been updated. Several policies that are generic (apply to the whole state) have been separated and listed in Table 2 in each plan as they are documented in existing statewide operational and strategic policies. This means that the policy Table 3 in Section 4.3 in each plan relates specifically to the plan area.</i></p> <p><i>Any statewide process and policy that applies to the plan area is used in assessing a licence application in conjunction with those specifically designed for the plan area.</i></p>	
<p><b>First-in, first-served approach to allocating groundwater</b></p>	
<p>Three respondents commented on the first-in first-served approach to licensing and any new process if this approach is changed. The comments included:</p> <ul style="list-style-type: none"> <li>i. The allocation approach needs to be flexible enough to allow for specific consideration of significant state projects ahead of other projects.</li> <li>ii. The public should be consulted on who gets the water when there is less than 30% remaining for allocation.</li> <li>iii. There is no explanation for why there is a change in the allocation approach from first-in first-served to other options when the licensed entitlements are more than 70% of the allocation limit.</li> </ul>	<p>Currently there are only five resources that have more than 70% of the licensable component allocated. At this time these resources will continue to be managed using the first-in first-served approach.</p> <ul style="list-style-type: none"> <li>i. Any large project of state significance is assessed and processed in accordance with the plan and our standard licensing process. This ensures equity across all licence applicants in rights to water.</li> </ul> <p>Although applications are processed using first-in first-served we recognise that there are cases where applications require a higher priority. This is generally managed on a case-by-case basis and depends upon the amount of water available for licensing.</p> <ul style="list-style-type: none"> <li>ii. The public will be notified about the use of an alternative allocation mechanism through the advertising and listing on the department's website (see Section 4.1 of each plan). The level of community involvement depends on the mechanism chosen to allocate the remaining water.</li> <li>iii. We have updated the plan to include this information (Section 4.1 of each plan).</li> </ul>

Comment	Department of Water response
<p>iv. The plan does not provide clear direction on the decision-making process that will be used to determine which option will be employed to allocate the remaining water.</p> <p>v. Some consideration needs to be given to the applicant whose application triggers the 70% threshold as this process may discriminate against the applicant requiring changes to the assessment process and the timelines for issuing a licence.</p> <p>vi. Alternative mechanisms for allocating water could allow speculators to enter the process and prevent bonafide projects progressing.</p> <p>vii. it is not clear if the market mechanisms for allocating water will have limitations on ownership by individuals or corporations who don't have access to land</p>	<p>iv. The purpose of this allocation approach is to support the NWI intent to facilitate efficient water markets that will determine the value of water, in high demand areas. The department will assess the alternative mechanism to be used on a case-by-case basis and will be based on a number of factors including:</p> <ul style="list-style-type: none"> <li>- demand for water</li> <li>- price of water</li> <li>- resource constraints such as location of the aquifer, water quality, dependent systems and other hydrogeological characteristics</li> <li>- existing water use</li> <li>- legislative constraints.</li> </ul> <p>Justification for the choice will be provided in our correspondence with existing and potential licensees.</p> <p>v. Unless the proposal is for the remainder of the resource, any applicant that triggers the 70% threshold is unlikely to be required to undertake any more work than normal. The timelines for issuing the licence will not change as it will be the applicants who come after that, who will be subject to any alternative mechanism.</p> <p>If there are pending applications and the threshold is reached, applicants will be notified of any changes on how the department will allocate any remaining water.</p> <p>vi. Licences for large volumes or long-term projects (staged developments) include a condition requiring a certain level of development over the project timeframe. Under current legislation the policy of recouping unused entitlements will ensure that any speculators are removed and the water made available for reallocation.</p> <p>vii. Under current legislation any applicant for water, regardless of the allocation mechanism used, must have legal access to the land before a licence can be issued.</p>

Comment	Department of Water response
viii. alternative options of allocating water should be developed as a statewide policy by the department.	viii. The department is currently developing decision-making guidelines for use across the state, to assess when and where a particular mechanism may be appropriate (under current and proposed legislation). These guidelines will be used in conjunction with the plan to assess alternative mechanisms for allocating water.
<p><b>Hierarchy for water allocation</b></p> <p>Three respondents commented on the priorities for water allocation, particularly the hierarchy of allocating water. This included the suggestion that the hierarchy for allocating water would be more effectively determined on a shire-by-shire basis, in consultation with the communities affected by the decisions.</p>	
<p><b>Water entitlement transactions</b></p> <p>Two respondents commented on water entitlement transactions (trading, leasing and transferring licences) in the plan areas. The comments included:</p> <ul style="list-style-type: none"> <li>• the process and policies involved in water entitlement transactions should be available outside the plan to make sure it is highly publicised</li> <li>• speculation in water should be discouraged</li> <li>• information on trading and the value of a trade should be publicly available.</li> </ul>	<p>The department's hierarchy for allocating water is to ensure that all people have access to drinking water for domestic needs before water is allocated for other uses.</p> <p>The demand for water is determined by the market for water, consistent with the intent of the National Water Initiative. We do not dictate which industries apply for water or when. When a large licence application is received community consultation is likely to be required (see the policies in Section 4.3 of each plan).</p> <p>The trading rules in <i>Operational policy 5.13 – Water entitlement transactions for Western Australia</i> (DoW 2010c) and our allocation plans and licensing policies support effective water use and maximise a licensee's ability to trade, lease or transfer their licence without adversely affecting the water resources, existing users or dependent systems.</p> <p>The trading policy outlines how the department manages speculation in water.</p> <p>We will be updating our website soon to include the process and general requirements for licensing relating to water entitlement transactions to make sure that everyone has access to the same information. This may include information on where trading is active, and the price paid for water.</p>
<p><b>Movement of water between management areas</b></p> <p>Three respondents raised the issue of moving water between management areas (groundwater area or subarea). They included:</p>	
<p>i. updating the policy on moving water between management areas to include an exit strategy and trading options</p>	<p>Moving water out of a groundwater area or subarea may help to meet the demands of industries that do not have access to sufficient volumes or quality of water locally.</p> <p>i. We have updated the policies in each plan to address this issue (Section 4.3.2 of each plan).</p>

Comment	Department of Water response
<p>ii. access by prospective licensees to groundwater for use outside the groundwater area or subarea</p> <p>iii. allowing licensees whose water use occurs in one or more subareas (multiple licences) to be managed as a single licence.</p>	<p>ii. The licensing policies in each plan provide the structure and special considerations associated with moving water out of a management area for use elsewhere. Provided the application is successful water can be moved out of the groundwater area or subarea.</p> <p>iii. Licences are assigned against a resource (aquifer in a subarea) up to an allocation limit, where applicable. Because of the nature of the subareas in the Mid West region there are circumstances where a single licensee is accessing the same resource, but on different sides of a subarea boundary. In these cases we have to licence each draw from the different subareas.</p> <p>These licences generally have the same conditions and reporting requirements to minimise duplication.</p> <p>Cases where multiple licences are issued for a project are often managed under one operating strategy.</p>
<p><b>Licence assessment and process</b></p> <p>Several respondents raised issues relating to the licence assessment process. They included:</p> <p>i. The department should be following up licences that have expired prior to cancelling them.</p> <p>ii. Metered use should match the licensed entitlement.</p> <p>iii. The term of a licence should be <i>in perpetuity</i>.</p>	<p>i. As part of regular licensing process licensees are notified when their licence is due to expire. It is the licensee’s responsibility to ensure their contact information is correct.</p> <p>ii. A licensing approach and performance indicator on matching the volume used (metered) to a licensed entitlement has been included in the final plans (Section 6.2 of each plan).</p> <p>iii. The term for a licence is generally five to ten years, after conditions of any staged development plan are met. This term may increase in the future, subject to legislative changes.</p>
<p><b>Questions</b></p>	
<p>1. Does the department require confirmation of legal access to the land prior to submitting a licence application?</p>	<p>Licence applicants are required to provide proof of legal access to the land that the water is to be obtained from prior to a licence being issued.</p>
<p>2. Is water recouped on an annual basis?</p>	<p>In the plan areas recouping is carried out regularly as part of licensing activity, particularly in high demand areas. This can be as required or on an annual basis.</p>



Comment	Department of Water response
	Water is not recouped from licensees who are consistently and efficiently using all of their licensed entitlement (see <i>Statewide policy no. 11 – Management of unused licensed water entitlements</i> , WRC 2003).
3. How will the department prevent large allocations being licensed to single users?	<p>See policy group 1.5 and 1.5 in Section 4.3 of each plan.</p> <p>The provisions of each plan allow allocations over 1 GL/yr to be licensed provided:</p> <ul style="list-style-type: none"> <li>• the application meets the requirements of each plan</li> <li>• the application meets the requirements of the <i>Rights in Water and Irrigation Act 1914</i></li> <li>• the volume requested is appropriate for the efficient use of water for the intended purpose</li> <li>• the volume and use of the water is in the public interest.</li> </ul> <p>Determining if the project is in the public interest will be part of the community consultation required for the licence application. This means there will be direct consultation with the local community affected by the licence application.</p>
4. What happens where a single application takes the aquifer to full allocation?	Where an application is submitted that will take up the remainder of the available water the department will apply the policies in the plan.
5. How is the department going to manage cumulative impacts across water users.	<p>Through our regional monitoring network and the measurements undertaken by licensees the department and water users monitor cumulative and localised impacts on the water resource.</p> <p>The performance indicators in each plan will determine when action is taken if the cumulative impacts adversely affect groundwater levels.</p>
6. How does groundwater licensing interact with other state government licensing?	All relevant state and Commonwealth legislation relating to groundwater use applies to any licence application submitted to the department. We align our licence assessment process where possible with other government approvals. However it is the applicant's responsibility to gain the necessary approvals from other government agencies.
7. When are project description documents required?	The plans indicate under what circumstances a project description document is required by a licence applicant (see policy group 1.6 in Section 4.3 of each plan).
8. How will any additional water, identified through further investigations, recouping, or as a result of changing allocation limits, be released?	Where additional water is identified the mechanisms for releasing the water, including the volume available, will be advertised in state and local newspapers or on the department's website.

**Table 4 Comments on allocation limits and water availability**

Comment	Department of Water response
<p><b>Allocation limit methodology</b></p> <p>Two respondents questioned the methodology used in reviewing the allocation limits, particularly the use of recharge to set the volume available for licensing without considering the changes to recharge as a result of land clearing, land use practices and climate.</p> <p>Any review and update of hydrogeological knowledge of the Northern Perth Basin (as identified in Action 1) should consider the impacts of changes in land use and predicted variability in climate.</p>	<p>We acknowledge that land clearing has affected water levels in several aquifers in the Mid West region.</p> <p>The department also considered land clearing, land use practices and climate variability in making the decision to retain the previous allocation limits for both the Jurien and Arrowsmith groundwater areas, to maintain the productive base of the groundwater resources.</p> <p>However, as more information becomes available through meeting Action 5 (Table 6, Section 6.1 of each plan) we can further consider land use change and climate variability when we reassess our allocation limits, where applicable.</p>
<p><b>Access to water availability information</b></p> <p>Two respondents submitted several comments on the accessibility and amount of information available on how much water can be allocated. They included:</p> <ul style="list-style-type: none"> <li>i. The volume of water available for future licensing should be a numerical value and not a statement.</li> <li>ii. The process for obtaining up-to-date water allocation information should be documented in each plan.</li> <li>iii. The methodology for accounting for water licences and availability in the annual evaluation statement should be documented in each plan.</li> <li>iv. Information on water availability should be accessible from the department’s website.</li> </ul>	<ul style="list-style-type: none"> <li>i. Water available is listed in Table 1 of each plan and has remained a statement because the numerical value changes with every licence issued. However, we have qualified the range used to aid in understanding how much water is available.</li> <li>ii. See Section 3.1 of each plan or you can contact our regional office in Geraldton.</li> <li>iii. The department accounts for water licences and availability for licensing in a consistent way for all water resources across the state. This information is obtained for all resources from the department’s Water Resource Licensing database. The purpose of the annual evaluation statement is to assess whether the plan is achieving its objectives, rather than providing up-to-date information on water availability. The statements will include the source and date of information that is used to prepare the statement.</li> <li>iv. The department is currently investigating the feasibility of having up-to-date water availability information (including volumes) on our website.</li> </ul>

Comment	Department of Water response
v. Water quality for each resource should be included in Table 1.	v. Water quality within each aquifer is variable (see Appendix A in each plan) so it is difficult to provide a representative figure for each resource. The plan promotes fit-for-purpose use of the appropriate quality water. The allocation limits in Table 1 of each plan are the volumes of water potentially available for use, which may include lower quality water.
<p><b>Security of supply</b></p> <p>One respondent commented on security and reliability of supply. Specifically that the reliability of supply for all users should be documented in each plan. This is particularly important for public water supply as it requires a high level of reliability.</p>	<p>The licence provides security of legal access to water supply. The department has set allocation limits to maximise the likelihood that water users will have a reliable supply once their allocation has been granted. However, the plan states that complex hydrogeology, naturally variable water quality and the distribution of each aquifer may restrict abstraction.</p>
<p><b>Availability of water to meet future demand</b></p> <p>Three respondents commented on the availability of water to meet future demand and economic growth including:</p> <ul style="list-style-type: none"> <li>• population growth and associated industries will increase the demand for water. The plan needs to develop a maximum population usage that can be sustained</li> <li>• iron ore mining activity in the Mid West region is expected to increase over the next 10 years with demand for water predicted to increase by 2% to 25% across the whole region</li> <li>• groundwater is important for future food production and increased competition for water and land will limit this growth</li> <li>• as the area is likely to experience a long-term increase in population and development some guidelines need to be defined as to what the area can actually support without damaging the environment. This can then be used by local government for long term planning.</li> </ul>	<p>The department has developed the plan in response to these demand and development pressures.</p> <p>However, these issues are broader than the allocation plan is intended to address. The department will address sustaining regional population growth and water use industries across our Mid West Gascoyne region in the regional water plan due to be released for public comment at the end of 2012.</p> <p>The regional plan will be developed in close consultation with the community, interested stakeholders and other government agencies. This will include assessment of:</p> <ul style="list-style-type: none"> <li>• population changes and demand</li> <li>• demand by various industries – particularly horticulture, mining and urban development</li> <li>• sustainable regional development</li> <li>• climate variability</li> <li>• water security</li> <li>• alternative sources of water supply</li> <li>• waterways and wetland health.</li> </ul>

Comment	Department of Water response
<p><b>Fractured rock resources</b></p> <p>Two respondents commented on how the fractured rock resources are managed. Comments include:</p> <ul style="list-style-type: none"> <li>the allocation plans do not set allocations for the fractured rock resources as they will be assessed on an impact management basis – this creates uncertainty for water users in knowing what water is available to them.</li> <li>a comprehensive assessment of the fractured rock resources are needed.</li> </ul>	<p>The fractured rock resources are discrete aquifers that hold water in larger rock pores and spaces. It is not possible to quantify the volume of water held across this area because of the varied hydrogeological nature of this resource. The department is in the process of developing a policy on the approach to allocating and accounting for water from fractured rock aquifers to address this issue.</p> <p>We are aware that accessibility and volumes from this resource are highly variable. Any applicant requesting water in the areas east of the Darling Fault on the Darling Plateau needs to be aware of this risk. We are currently assessing the capacity of the groundwater resources in this area to supply water for the mining and industrial needs over the next 30 years.</p> <p>The majority of these groundwater resources are fractured rock aquifers and palaeochannels located outside the Arrowsmith and Jurien groundwater areas. However, water may need to be obtained from these groundwater areas to help meet demand.</p>
<p><b>Questions</b></p>	
<p>1. Are the figures used conservative enough to address climate variability impacts?</p>	<p>We have used the mid range in climate variability predictions of 5% to 10% likely reduction in rainfall for the allocation limit decisions for the current plans. This climate scenario was also used to develop the 2002 allocation limits.</p>
<p>2. The plan areas are currently predicted to receive 5% to 10% less rainfall with higher temperatures (thus decreasing recharge further with an increase in evaporation). If predictions are worse than this how does the plan take that into account?</p>	<p>As part of evaluating the performance of the plan we will assess the condition of the groundwater resources (see actions in Section 6.1 of each plan). If this assessment indicates that climate has affected groundwater recharge and yields, this may trigger a review of the allocation limits.</p>
<p>3. As much of the area has not received average or above rainfall since 2000, how long does it take to see the impacts of this in recharge?</p>	<p>The changes to rainfall recharge as a result of a reduction in rainfall and infiltration varies from aquifer to aquifer. The impacts can be seen in shallow unconfined aquifers before they are seen in the deeper confined aquifers.</p> <p>As stated above, we will assess the condition of the resources annually.</p>

Table 5 Comments on public water supply

Comment	Department of Water response
<p><b>Groundwater reserves for public water supply</b></p> <p>One respondent raised several issues regarding reserves for future public water supply. They included:</p> <ul style="list-style-type: none"> <li>• removal or reduction in the shallow unconfined and confined reserves across the plan areas</li> <li>• using unconfined aquifers for public water supply where confined aquifers are not suitable</li> <li>• the reduction in the reserves be reversed.</li> </ul>	<p>The department has reviewed and rationalised the previous reserves set aside for future public water supply in the Jurien and Arrowsmith groundwater areas on the following basis:</p> <ul style="list-style-type: none"> <li>• Uncertainty regarding the scale of the reserves as there has been no work undertaken to justify the original volumes set since 1995.</li> <li>• Review of the location and likely trends in future demand by all industries across both groundwater areas.</li> <li>• Inevitable restrictions to land use zoning when an aquifer used for public water supply is unconfined.</li> <li>• Review of likely population growth in regional areas across both plan areas.</li> <li>• Predicted impacts on groundwater-dependent ecosystems from increased draw from unconfined aquifers based on current information.</li> <li>• Reserving water is not an efficient use of water where the probability of these sources being used is low. If the initial resource is not adequate to meet new supplies then a review of the reserves and the aquifer they are associated with can be initiated and new sources investigated.</li> </ul>
<p><b>Impact of future investigations on public water supply</b></p> <p>Water reserved outside the planning area, in the same aquifer resource as the existing public water supply, may cause down-gradient impacts. This needs to be investigated before the proposed future allocations can be included in source development planning.</p>	<p>In addition to the water reserved for future regional public water supply in the Arrowsmith and Jurien groundwater areas the department has also reserved water in the Casuarina subarea located in the Gascoyne groundwater area.</p> <p>This reserve of 5 GL/yr in the Casuarina subarea is to help support the town water supply of Geraldton and potentially supply future industrial developments north of Geraldton.</p> <p>We are currently in the process of investigating this resource and its capacity to provide water, without affecting the groundwater throughflow south, as part of the future actions of the <i>Arrowsmith groundwater allocation plan</i>.</p> <p>Following completion of these investigations the reserved volume will be reviewed and updated if necessary, and will be available for any source development planning.</p>

Comment	Department of Water response
<p><b>Public water source areas</b></p> <p>One respondent commented on water source protection areas and the need for a map or explanation of the public drinking water source areas in the plan.</p>	<p>Each public drinking water source protection area has a public drinking water source protection plan associated with it across both plan areas. These documents contain information on the location of the protection area and an explanation of their purpose.</p> <p>A brief description of these areas and how they relate to groundwater licensing is found in the subarea reference sheet document.</p>
<p><b>Questions</b></p> <p>1. What is the likelihood of the Perth metropolitan area taking water from the Jurien or Arrowsmith groundwater area to support its population growth?</p>	<p>Water reserved for future public water supply in the Arrowsmith and Jurien groundwater areas is to meet the drinking water supply needs of Mid West towns (see Section 4.2 of each plan). Public water suppliers have access to these reserves to meet regional demands over the next 30 years.</p>

Table 6 Comments on monitoring

Comment	Department of Water response
<p><b>Monitoring and measurement</b></p> <p>Four respondents commented on various aspects of monitoring and measurement associated with regional, environmental and licensee monitoring.</p>	
<p><i>Regional monitoring</i></p> <p>The regional monitoring comments included:</p> <ul style="list-style-type: none"> <li>• support for the review of the current monitoring program</li> <li>• monitoring is essential to verify the allocation limits in the future</li> <li>• review of the monitoring program should include reporting against its effectiveness and be undertaken more frequently</li> <li>• importance of monitoring water quality and its implications for use.</li> </ul>	<p>We have included additional information in each plan regarding the monitoring program and likely changes (Section 5 of each plan). This includes identifying when and how we will review the condition of the resources in the plan areas.</p> <p>The review of the monitoring program will identify where water quality measurements are required to effectively implement each plan.</p>
<p><i>Licensee monitoring</i></p> <p>The comment regarding monitoring by licensees referred to the ability to negotiate the location of the monitoring bore/s.</p>	<p>It is part of the department’s standard licensing process to negotiate with the applicant on the location of monitoring bores. This allows the licensee to implement a monitoring program (as part of their licence conditions) that is appropriate for managing their licensed take.</p>

<b>Comment</b>	<b>Department of Water response</b>
<p><i>Environmental monitoring</i> One respondent raised the issue of monitoring groundwater-dependent ecosystems and other environmental assets. Concern with the implementation timeframes for the monitoring program and the impacts this may have on the environment was also raised.</p>	<p>The policies in the plan define where monitoring applies to a specific licence. On a regional scale the department has received Australian government funding for the period 2009–12 to conduct the Mid West groundwater-dependent ecosystems study. The study includes on-ground ecological and hydrogeological investigations to characterise how groundwater-dependent ecosystems are sustained. This project will inform the update of the monitoring program in 2012.</p>
<p><b>Questions</b></p> <p>1. The plan is dependent on the installation of monitoring systems and an improved monitoring program for all the aquifers currently used – how quickly can this be achieved?</p>	<p>The revised monitoring program maximises the effectiveness of implementing the plan and ensures that the current resources are managed appropriately. The monitoring program will be initiated in two stages over 2010–12. They are:</p> <ul style="list-style-type: none"> <li>• drilling and investigation work</li> <li>• review of the monitoring program.</li> </ul> <p>At present additional drilling and investigation project work is underway and expected to be completed by 2012.</p>

## Public comment respondents

*Table 7 List of respondents who submitted a public comment and their associated interest group*

<b>Interest group</b>	<b>Public comment respondents</b>
<b>Agricultural</b>	
<b>Community</b>	
<b>Environmental</b>	West Midlands Group
<b>Mining and industry</b>	Tiwest Pty Ltd Geraldton Iron Ore Alliance*
<b>Public water supply</b>	Water Corporation*
<b>Local resident</b>	Mr John Auld
<b>Local government</b>	Shire of Coorow
<b>Other state government</b>	Department of Mines and Petroleum* Department of Indigenous Affairs Department of Agriculture and Food* Midwest Development Commission* Main Roads Western Australia
<b>Members of Parliament</b>	Ms Mia Davis member for Parliament

\*Submitted comments on both plans (DoW 2009a and 2009b).

## Where to next?

We have carefully considered each comment and response in finalising the *Arrowsmith groundwater allocation plan* and the *Jurien groundwater allocation plan*. The final plans will come into force following endorsement by the Minister for Water.

For more information on how each plan will be implemented and reviewed and how it will meet its commitments, please see Section 6 of each plan.

## Further information

Each plan and its supporting documents are available from the department's website: <[www.water.wa.gov.au/allocationplanning](http://www.water.wa.gov.au/allocationplanning)> go to Arrowsmith or Jurien.

For further information please email <[allocation.planning@water.wa.gov.au](mailto:allocation.planning@water.wa.gov.au)> or contact:

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## References

- Water and Rivers Commission 2002a, *Managing the water resources of the Arrowsmith groundwater area, WA – interim sub-regional allocation strategy*, Water and Rivers Commission, Government of Western Australia, Perth.
- 2002b, *Managing the water resources of the Jurien groundwater area, WA – interim sub-regional allocation strategy*, Water and Rivers Commission, Government of Western Australia, Perth.
- Department of Water 2009a, *Arrowsmith groundwater area allocation plan for public comment*, Department of Water, Government of Western Australia, Perth
- 2009b, *Jurien groundwater area allocation plan for public comment*, Department of Water, Government of Western Australia, Perth.
- 2009c, *Review of the Jurien and Arrowsmith groundwater allocation limits*, Water resource allocation planning series no. 36, Department of Water, Government of Western Australia, Perth.
- 2009d, *Jurien groundwater area subarea reference sheets*, Department of Water, Government of Western Australia, Perth.
- 2009e, *Arrowsmith groundwater subarea reference sheets*, Department of Water, Government of Western Australia, Perth.
- 2010a, *Arrowsmith groundwater allocation plan*, Water resource and allocation planning series no. 28, Department of Water, Government of Western Australia, Perth
- 2010b, *Jurien groundwater allocation plan*, Water resource and allocation planning series no. 27, Department of Water, Government of Western Australia, Perth

## Legislation

- Government of Western Australia 1914, *Rights in Water and Irrigation Act*, Author, Perth, Western Australia

## Policies

- 2010c, *Operational policy no. 5.13 – Water entitlement transactions for Western Australia*, Department of Water, Government of Western Australia, Perth.
- 2003, *Statewide policy no. 11 – Management of unused licensed water entitlements*, Government of Western Australia, Perth





RECYCLED CONTENT

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